Annual Report

2081/82 (2024/25)

NPSN: 024/082/83 | NGB: 61/2025

Government of Nepal
Nepal Agricultural Research Council
National Agriculture Genetic Resources Centre
(Genebank)
Khumaltar, Lalitpur, Nepal

Brinjal Diversity

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(NAGRC, Genebank)
Khumaltar, Lalitpur, Nepal
2025

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Government of Nepal
NEPAL AGRICULTURAL RESEARCH COUNCIL
(Est by GoN under the Nepal Agricultural Research Council Act, 2048 BS)
NATIONAL AGRICULTURE GENETIC RESOURCES CENTER
(National Genebank)
Khumaltar, Lalitpur

FOREWORD

Agrobiodiversity (ABD) underpins food, nutrition, health, livelihoods, and environmental security, and is vital to advancing agricultural sciences. It encompasses six components—crop, aquatic, livestock, forage, insect, and microorganism genetic resources—along with domesticated, semi-domesticated, wild relatives, and wild edible species (CALFIM and DSWW), and associated traditional knowledge. In Nepal, 28% of the 24,300 documented species are agricultural genetic resources (AGRs), of which 40–100% have already been lost. The nation depends on foreign germplasm for nearly 95% of its needs, underscoring the mandate of the National Agricultural Genetic Resources Center (NAGRC) to conserve and make available existing ABD for current and future use.

NAGRC initiated National Genebank and Agrobiodiversity Day on 21 Aswin in 2018. Despite interruptions in 2019 and 2020 due to COVID-19, the day continues to be observed annually, alongside National Agrobiodiversity Day and Week in Magh. The Genebank is advancing toward becoming a SMART (Scientifically Managed Agricultural Research and Technology) Center.

In FY 2024/25, NAGRC implemented three regular (CUAB, FMP, CWR) and three special (supplementary) projects (MRQ, REGAGRI, On-farm) with a team of 18 staff members. Conservation efforts employed four strategies—ex-situ, on-farm, in-situ, and conservation breeding—and 101 good practices, in collaboration with government agencies, research institutions, universities, I/NGOs, and communities. Key achievements include establishing a Database for Identifying and Utilizing Agricultural Genetic Diversity and launching a digital genebank.

This report summarizes the year's conservation and utilization activities and serves as a reference for researchers, policymakers, and practitioners. I extend sincere thanks to the publication team—Deepa Singh Shrestha, Pradip Thapa, Dr Mukunda Bhattarai, Bikash Bhusal, and Surendra Shrestha—and to all NAGRC staff for their contributions. Financial support from NARC, WWF-Nepal, FAO, and FAO-Nepal is gratefully acknowledged.

Sustained collective action is essential to safeguard Nepal's agrobiodiversity, ensuring its long-term availability and strengthening national and global resilience.

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ABBREVIATIONS

ACR	Active Collection Room
AGR	Agricultural genetic resource
AGRs	Agricultural Genetic Resources
AKC	Agriculture Knowledge Center
APGR	Agricultural Plant Genetic Resources
ARS	Agriculture Research Station
BCR	Base Collection Room
CAC	Collection Acceptance Committee
CALFIM	Crop, Aquatic, Livestock, Forage, Insect, Microorganism
CAT	Climate Analogue Tool
CDABCC	Crop Development and Agriculture Biodiversity Conservation Center
CSB	Community Seed Bank
CUAB	Conservation and Utilization of Agro-biodiversity
CUAGR	Conservation and Utilization of Agricultural Genetic Resource
CUAPGR	Conservation and Utilization of Agricultural Plant Genetic Resource
DADO	District Agriculture Development Office
DNA	Deoxyribonucleic acid
DoA	Department of Agriculture
DoAR	Directorate of Agricultural Research
DSWW	Domesticated, Semi-domesticated, Wild relative, Wild edible
EPB	Evolutionary Plant Breeding
FMP	Farm Management Project
GAC	Germplasm Exchange Authority Committee
GIS	Geographic Information System
HCRP	Hill Crops Research Program
HRS	Horticulture Research Station
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LCP	Local Crop Project
LI-BIRD	Local Initiatives for Biodiversity Research and Development
MALIM	Management of aquatic AGR, livestock, insect, microorganism
MoALD	Ministry of Agriculture and Livestock Development
MoALMAC	Ministry of Agriculture, Land management and Cooperation
NAGRC	National Agriculture Genetic Resources Center
NABGRC	National Animal Breeding & Genetics Research Centre
NFRC	National Fish Research Centre
NPPRC	National Plant Pathology Research Center
PAL	Project activity leader
RNA	Ribose Nuclear Acid
SDC	Swiss Development Cooperation
SMART	Scientifically managed agricultural research and technology
SRMT	Station Research Management Team
SQCC	Seed Quality Control Centre
SSR	Simple Sequence Repeats
WIEWS	World Information and Early Warning System

Glossary related to agrobiodiversity and Genebank

English word	नेपाली शब्द
1. Accession	परिग्रहण
2. Active collection	सक्रिय सङ्कलन
3. Agro biodiversity trail	कृषि जैविक विविधता पद मार्ग
4. Agro ecology	कृषि पर्यावरण
5. Agro gene sanctuary	कृषि वंशाणु आरक्ष स्थल
6. Agro plantation	कृषि वृक्षारोपण
7. Agrobiodiversity	कृषि जैविक विविधता
8. Agrobiodiversity fair	कृषि जैविक विविधता मेला
9. Agrobiodiversity rich farmer	कृषि जैविक विविधताले धनाढ्य किसान
10. Agro-ecosystem	कृषि पारिस्थितिक प्रणाली
11. Agro-insect	कृषि किरा, किसान किरा
12. Agro-microorganism	कृषि शुक्ष्म जीवाणु
13. Agronomic crop	खेत-वारी बाली, खाद्य बाली
14. Allele	बैकल्पिक गुण, सहजीन
15. Aqua pond genebank	जलीय कुण्ड जिन बैंक
16. Backcrossing	पुन:संकरण
17. Base collection	आधार सङ्कलन
18. Biotechnology	जैवप्रविधि
19. Black box	काल बक्स
20. Breed	नश्ल
21. Character	चरित्र
22. Characterization	चरित्र चित्रण

English word	नेपाली शब्द
23. Chromosome	गुणसूत्र
24. Climate resilience	जलवायु सहनशीलता
25. Clonal selection	क्लोन चयन
26. Clone	अलैंगिक सन्तति
27. Cold storage	शीतभण्डारण
28. Collection	संकलन
29. Community field genebank	सामुदायिक फिल्ड जिन बैंक
30. Community seed bank	सामुदायिक बीउ बैंक
31. Composite variety	मिश्रित जात
32. Conservation	संरक्षण
33. Core collection	मूल सङ्कलन
34. Crop	बाली
35. Cross pollinated	पर सेचित
36. Crossbreeding	संकर प्रजनन
37. Crossing	शंकरण
38. Cryo bank	अति-शीत बैंक, क्रायो बैंक
39. Cultivar	खे-जात, खेती गरिने जात
40. Custodian	संरक्षक
41. Data	आंकडा
42. Database	डाटाबेस
43. Deep regenerative agriculture	गहन पुनरुत्थानशील कृषि
44. Diversity	विविधता
45. Diversity block	विविधता ब्लक
46. Diversity fair	विविधता मेला

English word	नेपाली शब्द
47. Diversity kit	विविधताको पोको
48. Diversity rich solution	विविधता-युक्त समाधान
49. DNA (Deoxyribonucleic acid)	डी.एन.ए. (डिअक्सिराइबोन्यूक्लिक एसिड)
50. DNA bank	डि.यन.ए. बैंक
51. Domesticated	घरपालुवा, घरेलु
52. Domestication	घरेलुकरण
53. Drought	सुख्खा
54. Drying room	सुकाउने कोठा
55. Duplicate sample	नक्कली/प्रतिकृति नमूना
56. Ecological agriculture	पर्यावरणीय कृषि
57. Ecological pest management	पर्यावरणीय शत्रु जीव व्यवस्थापन
58. Ecological yield	पर्यावरणीय उत्पादन
59. Ecosystem services	पारिस्थितिक सेवाहरु
60. Editshop	सम्पादन-शाला
61. Elite line	कुलीन आनुरुप
62. Endangered	लोपोन्मुख, संकटापन्न
63. Epistasis	एपिस्टासिस, सहजीन अन्तरक्रिय
64. Evaluation	मूल्यांकन
65. Evolutionary plant breeding	उत्परिवर्तनशिल बाली प्रजनन्
66. Ex-situ	पर-स्थानीय
67. Farmer's day	कृषक दिवस
68. Farmers' variety	कृषक जात
69. Field day	खेतबारी दिवस
70. Field genebank	फिल्ड जिन बैंक
71. Food	खाना, आहार
72. Food fair	खाध्य मेला

English word	नेपाली शब्द
73. Gene	जिन
74. Gene flow	जीन प्रवाह
75. Genebank	जिन बैंक
76. Genetic	आनुवंशिक
77. Genetic diversity	आनुवंशिक विविधता
78. Genetic drift	आनुवंशिक विचलन
79. Genetic engineering	आनुवंशिक इन्जिनियरिङ
80. Genetic enhancement	आनुवंशिक सुधार
81. Genetic erosion	आनुवंशिक क्षय
82. Genetic gain	आनुवंशिक प्राप्ति
83. Genetic resources	आनुवंशिक स्रोत
84. Genetics	अनुवंशशास्त्र
85. Genome	जीनोम
86. Genotype	आनुरुप, वंशिकरुप, जिनोटाइप, आनुवंशिक संरचना
87. Genus	जाति
88. Geographical indication	भौगोलिक संकेत
89. Germination	उमारशक्ति
90. Germplasm	जर्मप्लाज्म, आनुवंशिक बस्तु
91. Germplasm utilization	जर्मप्लाज्म उपयोग
92. Herbaria	हर्बेरिया
93. Heritability	वंशाणुगतता
94. Heterosis (Hybrid vigor)	संकर/बर्ण शक्ति
95. Household genebank	घरायसी जिन बैंक
96. Hybrid	बर्णशंकर
97. Hybridization	संकरण

English word	नेपाली शब्द
98. Inclusive agriculture	समाबेशी कृषि
99. Indigenous	रैथाने
100. Insect	किरा
101. Insect-field genebank	किरा फिल्ड जिन बैंक
102. In-situ	स्व-स्थानीय
103. Introgression	समावेशन
104. Label	लेवल
105. Landrace	भुमि-जात, कृषकको जात
106. Landrace enhancement	भुमि-जात सुधार
107. Line	आनुरुप
108. Line × tester analysis	आनुरुप × परीक्षक विश्लेषण
109. Linkage	जीन संलग्नता
110. Livestock farm genebank	पशुपंक्षी फार्म जिन बैंक
111. Local	स्थानीय
112. Long term	दीर्घकालिन
113. Major	मूख्य
114. Marker-assisted selection	चिन्ह-आधारित चयन
115. Medium term	मध्यकालिन
116. Microbial field genebank	सूक्ष्म जीवाणु फिल्ड जिन बैंक
117. Microorganism	सूक्ष्म जीवाणु
118. Minor	सहायक
119. Molecular breeding	आणविक प्रजनन
120. Morphology	आवरण
121. Multiplication	बृद्धि
122. Mutation breeding	उत्परिवर्तन प्रजनन

English word	नेपाली शब्द
123. Native	रैथाने
124. Nature positive	प्रकृति मैत्री
125. Neglected	अपहेलित
126. Non-orthodox	न्यून-चिस्यान अ-सहन, सुकाउन नमिल्ने
127. Nutraceutical cereal	औषधीय अनाज
128. Nutrition	पोषण
129. On-farm	घर-गोठ-खेतिस्थलीय
130. open-air market	हाटबजार
131. Organoleptic test	इन्द्रिय परिक्षण
132. Orthodox	न्यून-चिस्यान सहन, सुकाउन मिल्ने
133. Participatory plant breeding	सहभागितामुलक बाली प्रजनन्
134. Participatory varietal selection	सहभागितामुलक जातीय छनौट
135. Passport	पासपोर्ट
136. Pest	शत्रु जीव
137. Phenotype	बाह्य रुप, स्वरुप
138. Plant	वनस्पति
139. Plant breeding	बाली प्रजनन्
140. Polyploidy	बहुगुणसूत्रिता
141. Population	जातीय संख्या
142. Post breeding	प्रजननोपरान्त
143. Pre breeding	पुर्व प्रजनन्
144. Primary	प्राथमिक
145. Pseudocereal	नक्कली अन्न
146. Pure line	शुद्ध आनुरुप
147. Purity	शुद्धता
148. Qualitative trait	गुणात्मक विशेषता
149. Quality	गुणस्तर
150. Quantitative trait	परिमाणात्मक विशेषता
151. Rare	दुर्लभ

English word	नेपाली शब्द
152. Recalcitrant	न्यून-चिस्यान अ-सहन, सुकाउन नमिल्ने
153. Recombinant DNA	पुन:संयोजित डिएनए
154. Recurrent selection	पुनरावृत्ति चयन
155. Red list	खतरा सुची
156. Red zone	जोखिम क्षेत्र
157. Regeneration	पुनरोत्पादन
158. Rejuvenation	पुनर्जीविकरण
159. Repatriation	पुनर्स्थापना
160. Resistance breeding	प्रतिरोधी प्रजनन
161. Resources	स्रोतहरु
162. Safety backup	सुरक्षित प्रति
163. Safety duplication (in black box)	सुरक्षित प्रतिरुप
164. School field genebank	स्कूल फिल्ड जिन बैंक
165. Secondary	माध्यमिक
166. Security	सुरक्षा
167. Seed bank	बीउ बैंक
168. Selection	छनौट, चयन
169. Selfing	स्व-सेचन, स्व-शंकरण
170. Self-pollinated	स्व-सेचित
171. Semen	वीर्य
172. Semi-domesticated	अर्ध जंगली
173. Sharingshop	साझेदारी शाला
174. Short term	अल्पकालीन
175. Site specific	ठाउँ बिशेष
176. Smart	शानदार, बेजोड
177. Species	प्रजाति
178. Storage	भण्डारण

English word	नेपाली शब्द
179. Stress	तनाव, चाप, बलाघात
180. Submergence	डुबान
181. Sustainable agriculture	दिगो कृषि
182. Synthetic variety	कृत्रिम जात
183. Tag	संकेत, त्याग
184. Taste	स्वाद
185. Tissue bank	तन्तु बैंक
186. Tolerant	सहनशील
187. Traditional knowledge	परम्परागत ज्ञान
188. Trait	गुण
189. Transgenic plant	रुपान्तरित/जीएम बोटबिरुवा
190. Ultra-low temperature	अति-न्यून तापक्रम
191. Underutilized	उपेक्षित, कम प्रयोगमा आएको
192. Unique	अद्वितीय
193. Variation	फरकपन, फरकता
194. Variety	जात
195. Vegetative	वानस्पतिक
196. Vegetatively propagated crop	वानस्पतिक प्रसारित बाली
197. Viability	जीवितपना, जीवनक्षमता
198. Wild	जंगली
199. Wild edible	जंगली खान योग्य
200. Wild relatives	जंगली नातेदार प्रजाति
201. Workshop	कार्यशाला
202. Writeshop	लेखन शाला
203. Yield improvement	उत्पादन सुधार

केहि परिभाषा र दायरा

कृषि आनुवंशिक स्रोत : मानबहरु हुर्कन, बढ्न र बाच्नको लागि चाहिने जीवित वस्तुहरुलाइ कृषि आनुवंशिक स्रोत भनिन्छ जस्तै धान, भैंसी, असला माछा, मौरी, च्याउ आदि । यस अन्तर्गत बाली, घाँसे बाली, पशुपन्क्षि, कृषि किरा, कृषि शुक्ष्म जीवाणु र जलीय कृषि आनुवंशिक स्रोतहरु पर्दछ ।

रैथाने कृषि आनुवंशिक स्रोत : आफ्नै देश, तथा ठाउँमा उत्पति भएको वा केहि न केहि गुणको विकास भएको कृषि आनुवंशिक स्रोतलाइ रैथाने कृषि आनुवंशिक स्रोत भनिन्छ । यी स्रोतहरु केहि न केहि गुणमा अन्य ठाउँ वा देशको स्रोतहरु भन्दा फरक हुन्छ।

जात : प्रजाति भन्दा तल्लो तहको आनुवंशिक स्रोत जुन सबै एकै खाले हुन्छन (केहि सामान्य गुणहरु फरक पनि हुन सक्छन), कुनै नाम बिशेष वाट चिनिन्छ, एकै प्रबिधि मार्फत खेति तथा प्रयोग गरिन्छ र अन्य स्रोत भन्दा फरक पहिचान भएको लाइ जात भनिन्छ, जस्तै खोकु सुन्तला, मन्सुली धान, घ्यु मकै, आदि । साधारण भाषामा बोल्दा सबै कृषि आनुवंशिक स्रोतहरु, बाली, घाँसे बाली, पशुपन्क्षि, माछा, किरा, शुक्ष्म जीवाणु अन्तरगत जात भनेर कुरा गरिन्छ, भैंसीको जात, किराको जात, आदि । पशुपन्क्षिकोलाइ नश्ल भनिए पनि यो सब्द कमै प्रयोग भएको पाइन्छ ।

रैथाने बालि : कुनै कालखण्डमा जुन बाली अन्तरगतको सबै जातहरु तेही ठाउँ वा देशमा उत्पाती भएको हुन्छ, त्यसलाई रैथाने बालि भनिन्छ, जस्तै, फापर, धान, कोदो, नासपाती, आदी । यस्ता बालीहरुको आनुवंशिक विविधता प्रचुर मात्रामा तेही ठाउँ वा देशमा पाइन्छ र हुनु पर्छ साथै उक्त बालि उक्त ठाउको पारिस्थितिकी प्रणाली, धार्मिक, संस्कृति, सामाजिक तथा खाध्य प्रणालीको एक अभिन्न अंग भएको हुन्छ ।

रैथाने जात : रैथाने बालि जस्तै कुनै निश्चित ठाउँ व देशमा उत्पति भएको जातलाइ रैथाने जात भनिन्छ । यस्ता जातको आनुवंशिक विविधता प्रचुर मात्रामा तेही ठाउँ वा देशमा पाइन्छ र हुनु पर्छ साथै उक्त जात उक्त ठाउको पारिस्थितिकी प्रणाली, धार्मिक, संस्कृति, सामाजिक तथा खाध्य प्रणालीको एक अभिन्न अंग भएको हुन्छ । समन्धित ठाउँमा नै उत्पति भएको वा कम्तिमा एउटा गुण, तत्व/ नयापन तेही ठाउँमा विकास/ उत्पति भएको जात नै रैथाने जात हो ।

रैथाने नश्ल : रैथाने जात जस्तै गुण भएको पशुपन्क्षिलाइ रैथाने जात भनिन्छ ।

स्थानीय कृषि आनुवंशिक स्रोत : समन्धित ठाउँमा पूर्ण रुपमा अनुकुलन र स्थानीयकरण भएको कृषि आनुवंशिक स्रोत (बाली, घाँसे बाली, पशुपन्क्षि, कृषि किरा, कृषि शुक्ष्म जीवाणु, जलीय कृषि आनुवंशिक स्रोत) जस्तै आलु, मकै, स्याउ, आदि, वा उत्पति नभएको तर बि.स. 2007 साल अगाढी देखि नेपालमा पाइने स्रोतहरु, वा निश्चित ठाउँमा 60 वर्ष भन्दा बढी नियमित रुपमा खेति/पाल्दै गर्दै आएको स्रोतहरु ।

स्थानीय जात : समन्धित ठाउँमा पूर्ण रुपमा अनुकुलन र स्थानीयकरण भएको जातहरु जस्तै मुडे आलु, पहेलो मकै, आदि, वा उत्पति नभएको तर बि.स. 2007 साल अगाडी देखि नेपालमा पाइने जातहरु, वा निश्चित ठाउँमा 60 वर्ष भन्दा बढी नियमित रुपमा खेति वा पाल्दै गर्दै आएको जातहरु ।

स्थानीय उपज (उत्पादन) : बिउ अन्य ठाउँ वाट ल्याए पनि समन्धित ठाउँमा नै खेति गरिएको, वा पालिएको जात वाट प्राप्त खान योग्य वस्तुलाइ स्थानीय उपज भनिन्छ । रैथाने वा स्थानीय जात नभए पनि समन्धित ठाउँको माटो वा गोठमा उत्पादन गरिएको हुनु पर्छ ।

स्थानीय जातको उपज (उत्पादन) : समन्धित ठाउँको स्थानीय जात वाट उत्पादन गरिएको, वा पालिएको खान योग्य वस्तुलाइ स्थानीय जातको उपज भनिन्छ । स्थानीय जात नै समन्धित ठाउँको माटो वा गोठमा उत्पादन गरिएको हुनु पर्छ । राम्रोको दृष्टिकोण (स्वस्थ, पोषण, फाइदाजनक) वाट सबै भन्दा राम्रो रैथाने जातको,त्यसपछि स्थानीय जातको र त्यसपछि स्थानीय उपज हुन्छ ।

कृषकको-जात : भुमि-जातलाइ नै कृषकको जात भनिन्छ, जस्तै झिनुवा धान, जुम्ली सिमि, मिरकुटे केरा । कृषकहरुले बर्षौ देखि आफैले उत्पादन र संरक्षण गर्दै आएको यस्ता जातहरु उक्त किसानको व्यक्तिगत सम्पति हुन् जान्छ ।

भुमि-जात : कृषक आफैले सदियेउ देखि खेति तथा बिउ उत्पादन गर्दै आएको, र उक्त जातको विकासमा अन्य संघ/संस्था तथा बाली प्रजनकको कुनै भूमिका नरहेको जातलाई भुमि-जात भनिन्छ । यी जातहरु बहुरुपीय हुन्छन अर्थात् एकै जात भित्र पनि धेरै विविधता पाइन्छ, जस्तै जुम्ली मार्शी धान, कालानमक, समुन्द्र फिनी आदि । तेही विविधताले गर्दा यिनीहरु उत्परिवर्तनशिल हुन्छन र वाताबरण अनुकुलन हुन्छन ।

ठाउँ बिशेष जात : ठाउँ पिच्छे, वा घर पिच्छे फरक फरक जातहरु पाइन्छ जस्तै जुम्ली मार्शी धान जुम्लामा, कालानमक धान तराई क्षेत्रमा, तिनै जाथारुलाई ठाउँ बिशेष जात भनिन्छ र यिनीहरुमा ठाउँ बिशेष गुणहरु हुन्छ।

बहुरुपीय जात : एकै जात भित्र धेरै विविधता गुणहरु जस्तै बिभिन्न रङ, आकार, प्रकार, उचाई, सानो-ठुलो आदि भएको जात, जस्तै जुम्ली मार्शी धान, कालानमक, समुन्द्र फिनी आदि लाइ बहुरुपीय जात भनिन्छ । तेही विविधताले गर्दा यिनीहरु उत्परिवर्तनशिल हुन्छन र वाताबरण अनुकुलन हुन्छन । यस्ता जातहरु पोषणयुक्त हुनुको साथै समय अनुकुल परिवर्तन हुन् सक्ने हुन्छ । यस्ता जातहरुको धेरै फाइदाहरु हुने हुँदा यी जातहरु किसान आफैले दर्ता गरि बेच बिखन गर्न पाउने व्यवस्था हुनु पर्छ ।

एकरुपिय जात : कुनै पनि गुणहरुमा विविधता नभएको जात जस्तै खुमल-4 धान, मन्सुली धान, रामपुर ह्याब्रिड मकै आदि । धेरै जसो सिफारिस गरिएको जातहरु एकरुपिय छन् ।

कु-अन्न : कुहाएर खाने, तथा गुम्साएर झार्ने भएकोले कोदोलाइ कु-अन्न भनिएको हुन् सक्छ । परम्परागत रुपमा कोदोलाई कु-अन्न, जुठो अन्न, गरिबले खाने अन्न, हेपिएको अन्न भनिन्छ । तर पोषण तत्व र मानब स्वस्थको आधारमा अन्नलाइ श्री-अन्न, सु-अन्न र कु-अन्नमा बिभाजन गर्न सकिन्छ ।

श्री-अन्न : यी अन्नहरुमा रेसाको मात्रा 8-12.5% पाइन्छ र स्वस्थ जीवनलाइ मजवुत बनाई बिरामीलाइ ठिक गर्न सक्ने गुण हुन्छ र मानब शरीरलाई फाइदामात्रा हुने गुण हुन्छ जस्तै कागुनो, बाँसपाते कोदो, धान कोदो, सामा, कोदी । यिनीहरुलाइ अमृत अन्न वा पोषण अन्न वा औषधीय अन्न पनि भनिन्छ ।

सु-अन्न : यी अन्नहरुमा रेसाको मात्रा 6% भन्दा कम पाइन्छ र स्वस्थ जीवनलाइ स्वस्थ नै राख्ने सक्ने, तर बिरामीलाइ ठिक गर्न नसक्ने अर्थात् मानब शरीरलाई धेरै फाइदा पनि नहुने र बेफाइदा पनि नहुने अन्नहरु जस्तै कोदो, जुनेलो, घोंगे, चिनो र मकै।

कु-अन्न : 1.5% भन्दा कम रेसा भएको अन्नहरु, र मानब शरीरलाइ बेफाइदा हुने जस्तै धान, गहुँ ।

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नेपाल कृषि आनुवंशिक स्रोत केन्द्र (राष्ट्रिय जीनबैंक) ले नेपालमा कृषि आनुवंशिक स्रोत (AGR) व्यवस्थापनमा नेतृत्वको भूमिका निरन्तर निर्वाह गर्दै आएको छ। यसमा कृषि, पशुपालन, घासे तथा चारण बाली, कृषि कीरा, कृषि सूक्ष्मजीवाणू र जलीय आनुवंशिक स्रोतहरु वृद्धि तथा संरक्षणमा अग्रिणी भूमिका खेल्दै आएको छ। आ. ब 2081/82 मा खोज, संकलन, वितरण, संरक्षण, चारित्रिक चित्रण, मुल्यांकन तथा पूर्व बाली प्रजनन्, आंकडा व्यवस्थापन, प्रकाशन र क्षमता वृद्धि अन्तर्गत गरिएको प्रगतिको संक्षेपमा प्रस्तुत गरिएको छ।

कृषि आनुवंशिक स्रोत खोज तथा संरक्षण

- आनुवंशिक स्रोत संरक्षणका उद्देश्यसहित कृषि बोटबिरुवा आनुवंशिक स्रोतको अन्वेषण र सङ्कलनगर्ने जीनबैंकको नियमित गतिविधि हो। 2081/82 मा 45 जिल्लामा 77 रैथाने बालीको खोजि तथा सङ्कलन गरि ल्याइएको थियो। यी सङ्कलनहरुमा 56 बालीका प्रजातिहरु समावेश छन्, जसमा 629 खाद्य प्रजातिका, 231 जंगली, र 54 दुर्लभ किसिमका बालीहरु छन् ।
- विशेष बाली अनुसार जंगली (ओराइजा रुफिपोगों, निवारा र ओराइजा ग्रानुलाटा) धानको खोज तथा सङ्कलन पाँच जिल्लाहरु (कपिलबस्तु, रुपन्देही, पाल्पा, बाँके र चितवनबाट) सङ्कलन गरिएको थियो।
- विभिन्न रैथाने 29वटा फूलहरुको खोज तथा सङ्कलन गरिएको थियो।

संरक्षण

बीउ परीक्षण तथा चारित्रिक चित्रण

- विभिन्न 32 बालिहरुका 794 जातका नमुनाहरु सफा गरि उमार शक्ति परीक्षण गरिएको।
- 145नमूनाहरुको उमारशक्ति परिक्षणगरि 85% भन्दा कम भएकोले बिउलाई पुन-उत्पादन गरेको थियो।

मध्य तथा दिर्घकालिन कक्षमा संरक्षण

- विभिन्न 69 बालिका 709 जातहरु नयाँ दर्ता गरी बीउलाई मध्य तथा दिर्घकालिन संरक्षण कक्षमा भण्डारण गरिएको छ।

फिल्ड जीनबैंक

- कम चिस्यानमा बीउ सुकाएर भण्डारण गर्न नसकिने प्रजातिहरु (recalcitrant seeds) र बिरुवाबाट प्रसारण गर्न सकिने प्रजातिहरु (Vegetatively propagated species) को संरक्षणको लागि केन्द्रको 1500 व.मी. क्षेत्रफलमा फिल्ड जिन बैंकको स्थापना गरि संरक्षण गरेको।
- यस वर्ष वीउ भण्डारण गर्न नसकिने बिभिन्न प्रजातिहरु 201 फिल्ड जिन बैंकमा भण्डारण गरिएको छ।
- 2000 जातका प्रविष्टि प्रणाली सहितको डेटाबेस कायम गरिएको।
- रैथाने जातका बालिका डाटाहरुलाई व्यवस्थित रुपमा प्रकासित गरि राखिएको छ ।
- कृषि अनुसन्धान निर्देशनालय, तरहरा, सुनसरी, कृषि अनुसन्धान निर्देशनालय, खजुरा, बाँके र चरन तथा घाँसबाली अनुसन्धान केन्द्र, धुन्चे, रसुवामा फिल्ड जीनबैंकहरुमा कृषि आनुवंशिक स्रोतको डाटाबेस तयार गरिएको।

तन्तु बैंक (Tissue Culture)

- केरा, अलैची, सखरखण्ड, गोलभेडा र आलुबालीका गरि 105 जातहरु नमुनाहरु तन्तु प्रजनन बिधि मार्फत तन्तु बैंकमा

तयार गरि फिल्डमा लगाएको तथा तन्तु बैंकमा राखेको ।

डीएनए बैंक (DNA Bank)

- मकैको (28 वटा) र सिमिको (58 वटा) को जिनोमिक डि एन य सुरक्षित गरि डि एन य बैंकमा राखिएको गरिएको।
- यस यस आर मार्कर प्रयोग गरी मकैका 28 र सिमीका 58 स्थानीय जातहरुको अनुवांशिक विविधता अध्ययन गरिएको।

फार्म-आधारित संरक्षणको कार्य (On-Farm Conservation)

- 5 वटा समुदायिक बीउ बैंकहरुको अनुगमन, मुल्यानकन तथा विश्लेषण गरि अवाश्याक प्राविधिक सहयोग प्रदान गरिएको।

चारित्रिक चित्रण, मूल्याङ्कन तथा पूर्व बिउ प्रजनन्

- अन्न बालिका 516 भूमिजातहरुको (कोदो, जौ, कागुनो, उवा, गहुँ, धान तथा जङ्गली) राष्ट्रिय जीन बैंकमा, खुमलटारमा चारित्रिक चित्रण र बिउ पुनरुत्पादन गरिएको।
- बागबानी बालीहरुको 455 भूमिजातहरुको (सिमी, काँक्रो, टमाटर, खुर्सानी, लसुन र भन्टा)हरुको चारित्रिक चित्रण र बिउ पुनरुत्पादन गरिएको।
    - विभिन्न बालीहरुको चारित्रिक चित्रण गरि बिशेष गुणको आधारमा उत्क्रिस्ठ पूर्व प्रजनन् (elite lines) जातहरुलाई पहिचान गरिएको जसमा टमाटर 5, लसुन 9, खुर्सानी 2, डल्ले खुर्सानी 7

भूमीजातहरुको वितरण (Germplasm Distribution)

- 842 स्थानीय 12 बालिका भूमि जातहरु वितरण (अनुसन्धानकर्ता, किसान तथा विश्वविद्यालयहरुमा) वितरण गरियो।

पुन:स्थापना (Repatriation)

- 12 वटा बालिका 366 भूमिजातहरु विभिन्न समुदायलाई प्रदान गरि पुन:स्थापना तत् क्षेत्रलाई दिएको।

किसानको जात दर्ता (Farmer Variety Registration)

- तीनवोटा स्थानीय जातहरु जसमा (उदयपुरको सेतो कोदो, ओखलढुङ्गाको सेतो सिमी, कैलालीको थारु आलु) बीउ बिजन ऐन 2013 अनुसार दर्ताका लागि योग्य ठहरिएलाई दर्ता गरेको।

डेटाबेस व्यवस्थापन (Database Management)

- राष्ट्रिय जीनबैंकमा यो वर्ष थप 709 विटा विभिन्न बालिका भूमिजातहरुलाई सुरक्षित राखेको।
- यो वर्ष 2000 पासपोर्ट डेटा जेनोसिसको डाटा सरोबरमा राक्नको लागि तैयार गरेको।

जलीयकुण्ड, वनस्पति र जीवजन्तु संरक्षण (Aquatic flora and fauna conservation)

- चार स्थानीय माछा प्रजाति (बाममाछा, गडेर झिगेमाछा, रोहु, नाइनी) खुमल जलीयकुण्डमा संरक्षणको लागि राखेको।

- रैथाने बाली खोज तथा सङ्कलन गर्नको लागि पासपोर्ट फारम एप विकास गरी वेबसाइटमा अपलोड गरेको।

कृषि कीरा र सूक्ष्मजीवाणू संरक्षण (Agro-insect and microbes conservation)

- रोल्पा, नुवाकोट, लमजुङमा सामूहिक छलफल गरि कृषि किराको अध्ययन, 20 अर्थोपोड र मोलस्क प्रजातिको कृषि किरा संरक्षणको लागि संरक्षणको लागि किसानहरु सित सहकार्य गरिएको।
- कोदोकोबालीको छेउमा धनिया लगाउदा लाहिकिरा नियन्त्रण भएकोले कोदोबाली भित्र धनियाँ खेति गर्दा उत्पादन तथा बिषादी तथा खेतबारीमा कमि आयको।
- काली झिँगा कीरा (Black soldier fly) pupation का लागि सुक्खा मल/सब्स्ट्रेट उपयुक्त बातावरण दिई अनुसन्धानलाई अगाडी बढाएको।
- स्थानीय मेटाराईजम स्पेसीस इन्तोमोप्याथोजेनिक फंगस संकलन र संरक्षण गरेको सङ्कलन र संरक्षण।

नीति निर्माणमा योगदान (Policy Support and Contribution)

- नार्कको राष्ट्रिय जीनबैंकले एबियस् नेपाल (ABS-Nepal), पीभीपी र यफ (PVP&FR), यनबिसाप (NBSAP), एटियससि (ATSC), यनएबिसिसि (NABCC), एबियस् (ABS) बिषय बिसेसज्ञ सिजीआरएफए (Expert Team-CGRFA) र मल्टीलेट्रल पद्धिती (Multilateral System) को कार्य योजनामा उल्लेखनिय सुधारमा गरि प्रतिबिदन तयार गरेको।नेपाल जीनबैंक संलग्न भएका नीतिहरु तल संक्षिप्त रुपमा उल्लेख गरिएको। अन्य थपकार्यहरु जीन बैंकले धेरै स्थानीय र प्रादेशिक सरकारहरुसित सहकार्य गरि नीति र रणनीतिहरुमा योगदान, समीक्षा र सम्पादन गरेको।
- मुख्य नीति, ऐन र रणनीतिहरु निर्माणमा सहयोग
    - कृषि जैविक विविधता नीति 2071
    - आईटिपीआरअफए (ITPGRFA-MLS) कार्यान्वयन योजना 2018-2025
    - कृषि जैविकविविधता संरक्षण र उपयोग विधेयक संरक्षण
    - बीउ ऐन र नियमावली
    - एबियस् (ABS) बिषय बिसेसज्ञ सिजीआरएफए (Expert Team-CGRFA) परामर्स तथा नीति निर्माणमा सहयोग गरेको
    - पहुँच तथा लाभ बाँडफाँडको बहुपक्षीय प्रणालीको कार्यप्रणाली अभिवृद्धि गर्न कार्यदल बनाई सामुहिक छलफल गरेको
    - एबियस (ABS) विधेयक
    - नेपाल एग्रोइक्लोजिकल रोडम्याप 2025-2045
    - पीभीयस (PVP&FR) विधेयक
    - भौगोलिक संकेत विधेयक
    - पाठ्यक्रम विकास र संशोधन

EXECUTIVE SUMMARY

NAGRC has continued its role of leadership for management six kinds of agricultural genetic resources (AGR) i.e. crops, forages, livestock, agro-insects, agro-microbes and aquatic genetic resources of agriculture genetic resources in Nepal. In addition to this, the NAGRC team has actively supported in the agrobiodiversity policy formulation. The achievements made during 2081/82 in collection and distribution, conservation, characterization, evaluation and pre-breeding, database management, publications and capacity building are summarized hereunder:

Germplasm Exploration and Collection

- Exploration and collection of agricultural plant genetic resources with the objectives of germplasm collection for conservation are the regular activities of genebank. In 2081/82 a total of 77 explorations were carried out in 45 districts. These collections consist of 56 crop species which include 629 cultivated, 231 wild and 54 rare categories of ten different groups.
- The 3 crop specific exploration and collection of wild rice collected 5 accessions of 2 species (*O. rufipogan*, *O. nivara and O. granulata*) from five districts (Kapilvastu, Rupandehi, Palpa, Banke and Chitwan).
- The 3 crop specific exploration and collection of local flowers collected 29 accessions

Conservation

Seed testing and characterization

- Seed viability tests of 794 samples of 32 crops were assessed
- 145 samples showed germination below 85 percent which requires regeneration or re-collection.

Ex situ conservation

- Seeds of 709 accessions of 69 different crop species were conserved as new entries in active and base collections.

Field Genebank

- Field gene bank has been established in 1,500 m2 for vegetatively propagated crops and crops with recalcitrant seeds established.

- 201 accessions of different crops collected from different parts of the country and conserved in khumal field genebank.
- A database is maintained with accessioning system.
- Catalogue of non-orthodox species published.
- Documentation of Agriculture genetic resources conserved in field genebank of DoAR Tarahara , DoAR Nepalgunj and Fodder and pasture research program, Dhunche, Rasuwa

Tissue Bank

- About 105 accessions from five horticultural crops, namely banana (22 accessions), large cardamom (18 accessions), sweet potato (15 accessions), potato (20 accessions), and tomato (25 accessions) have been maintained in Tissue Bank.

DNA Bank

- Molecular characterization and genetic study of the Fifty-eight nepalese common bean (phaseolus vulgaris l.) landraces collected from 26 districts by using 15 pairs simple sequence repeats (SSR) markers.
- Genetic Diversity Analysis Of 30 Marigold (Tagetes Spp.) Landraces Collected From The Ilam, Jhapa, Sunsari, And Morang Districts Using 15 SSR Markers: Insights For Conservation And Breeding Programs

On-farm Conservation

- A total of 5 different community seed banks were monitored, gap analyzed and provided technical support for strengthening.

Characterization and Evaluation Pre-Breeding

- A total of 516 accessions of 7 agronomical crops comprising Fingermillet, Naked barley, Foxtail millet, Barley, Wheat, Rice and wild rice were grown for phenotyping and multiplication at NAGRC Khumaltar.
- A total of 455 accessions of 6 horticultural crops comprising Bean, Cucumber, Tomato, Chilli, Garlic and broad leaf mustard were grown for phenotyping and multiplication at NAGRC Khumaltar.
- Promising accessions termed as elite lines for various agro-morphological characters have been identified. Five tomato (yield), nine garlic (bulb and leaf), 2 Chilli (yield) and 7 Broad leaf mustard (organoleptic taste) identified.

Germplasm Distribution

- A total of 842 local landraces of 12 crops were distributed to researchers, plant breeders, universities across multiple districts for scientific study, evaluation, and crop improvement.

Repatriation

- Total 366 accessions of 12 crops were provided to the different communities for repatriation to re-establish the agriculture system.

Farmers Variety Registration

- Three potential native landraces: *Seto Kodo* from Udayapur, *Seto Simi* from Okhaldhunga, and *Tharu Aalu* from Kailali has been identified as potential for registration under Annex 2-Schedule D of Seed Regulation (2013) of Nepal which has a dedicated provision to register local crop landrace and commonly known as a "Relaxed Provision" for varietal registration.

Database Management

- Total of 709 accessions under NGRCO conserved in ex situ
- Upto 2000 passport data validated and updated

Aquatic flora and fauna conservation

- Conservation efforts added four local fish species, *Grass carp, Rahu, Naini and Common carp* were released in the Khumal Aqua Pond Genebank.
- Guidelines and a passport format and passport app developed and uploaded in the website

Agro insect and microbes' conservation

- A study combined with group discussions conducted in Rolpa, Nuwakot, and Lamjung districts, a review identified 20 edible species of 20 arthropod and mollusc.
- Cropping patterns as push and pull strategy study indicated Cowpea crops bordered with coriander to be best combination for aphid control.
- Dry wastes/ dry substrates were identified as the appropriate substrate for pupation of black soldier fly in a study conducted on this single year.
- Collection and conservation of native virulent entomopathogenic fungus Metarhyzium sp for further studies.

Capacity building programs

Different capacity building activities were conducted strengthened skills and awareness in sustainable agriculture and agrobiodiversity through:

- Workshops on National Agroecology Roadmap and Agrobiodiversity in Climate-Resilient Agriculture.
- Consultancy on ABS Bill at the National Genebank.
- Orientation and field planning for the on-farm project.
- Agro-Biodiversity Week and Day celebrations in Arghakhanchi to promote local crop diversity and community engagement.
- These initiatives enhanced knowledge, stakeholder participation, and support for sustainable management of Nepal's agricultural biodiversity.

Policy support and contribution

The Nepal Genebank has actively developed and revised various policies, acts, and strategies namely: ABS-Nepal, PVP&FR, NBSAP, ATSC, NABCC, the ABS Expert Team-CGRFA, and the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing. The policies in which the Nepal Genebank has been involved are briefly outlined below. In addition, Genebank has contributed, reviewed and edited many policies and strategies of many local and provincial governments.

Agrobiodiversity policy 2071 BS (2014)

- IMISAP: International Treaty on Plant Genetic Resources for Food and Agriculture and Multilateral System (ITPGRFA-MLS) Implementation Strategy and Action Plan 2018-2025
- Agrobiodiversity Conservation and Utilization bill and regulation
- Seed act and regulation
- ABS Expert Team-CGRFA
- Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing
- Access and benefit sharing bill (ABS Bill)
- Nepal Agroecological Roadmap (NAR) 2025-2045
- Plant Variety Protection and Farmers' Rights Bill (PVP&FR)
- Geographical Indication bill
- Curriculum development and revision

Special projects

Regagri Project

The Deep Regenerative Agriculture Project made significant progress in its first year across Manang and Mustang through a series of foundational activities. Project inception workshops held in both districts introduced the project's objectives and engaged key stakeholders. A comprehensive baseline survey documented native agrobiodiversity and traditional practices from 197 households, supported by FGDs and KIIs.

Field missions led to the collection of 20 accessions from 10 crops, now conserved at the National Genebank. A stakeholder consultation with the Muktinath Development Committee initiated steps toward establishing an Agro-Gene Sanctuary, while municipality-level workshops facilitated participatory discussions on local challenges such as climate change, declining traditional crops, and pest pressures.

Additionally, three orientation trainings reached about 105 farmers, introducing the Deep Regenerative Agriculture concept, participatory assessment tools, and the importance of documenting local genetic resources. These combined efforts laid a strong foundation for future project activities, promoting the conservation, sustainable use, and integration of native agrobiodiversity into resilient farming systems.

Enhancing Conservation and Utilization of Plant Genetic Resources in Nepal For Food And Nutrition Security Under Unpredictable Climate (On-Farm Project)

The International Treaty's Benefit Sharing Fund-supported On-Farm Conservation Project, implemented by the National Genebank since 2024, focuses on conserving and utilizing local crop diversity to enhance food security, climate resilience, and sustainable agriculture in Nepal.

Key activities included the establishment of a Project Coordination Committee (PCC) and project launch events in Banke (Kohalpur) and Lamjung (Madhyanepal), which engaged policymakers, farmers, and local stakeholders to promote traditional crops, seed conservation, and eco-friendly farming.

Comprehensive baseline surveys in both sites captured critical insights into farming systems, socio-economic conditions, seed practices, and the status of traditional crops. Findings highlighted strong community reliance on informal seed systems, erosion of local landraces, and the pivotal role of women in agriculture, emphasizing the need for conservation, value chain development, and policy support.

Two major Agrobiodiversity Fairs in Lamjung and Banke showcased hundreds of local landraces and traditional knowledge, facilitating seed exchange, awareness, and community-led conservation. Exploration and collection efforts resulted in 89 accessions of 54 crops, while significant progress was made in the in situ conservation of wild rice species (*Oryza granulata, O. rufipogon,* and *O. nivara*), preserving valuable genetic diversity for future breeding.

Overall, the project's first year successfully established strong community engagement, strengthened local seed systems, enhanced awareness of agrobiodiversity's value, and laid the groundwork for long-term conservation and sustainable utilization of Nepal's rich genetic resources.

Several capacity-building activities were carried out to strengthen knowledge, policy dialogue, and community engagement in agrobiodiversity and sustainable agriculture. These included participation in national workshops on agroecology and climate-resilient agriculture, a consultancy meeting on the ABS Bill, and orientation and planning sessions for on-farm projects. Additionally, Agrobiodiversity Week and Day celebrations were organized in Arghakhanchi to raise awareness and promote local crop conservation.

Productivity Enhancement of Priority Crops (Millets, Rapeseed, And Quinoa) Through Piloting and Upscaling of Tailored, Innovative, Climate Resilient, And Sustainable Agricultural Practices in Nepal (MRQ PROJECT)

This FAO-funded project, implemented by the National Genebank, aimed to enhance the productivity, resilience, and sustainability of priority crops—finger millet, rapeseed, and quinoa—through soil health improvement, agrobiodiversity conservation, climate-smart technologies, and gender-inclusive capacity building via Farmer Field Schools (FFS).

Finger Millet:

Finger millet (*Eleusine coracana*) is a nutrient-rich, climate-resilient cereal cultivated on 224,935 ha in Nepal. Multi-location trials in Gerkhutar (Nuwakot) and Gabhar (Banke) evaluated nine varieties and landraces. Lamre Kodo was the highest-yielding (3.10 t/ha), Hasure Kodo matured early and performed well in drought-prone areas, and Arun Kodo and Gabhar Kodo suited low-input systems. Improved agronomic practices—including biofertilizers, NPK application, integrated pest management, intercropping, and mechanization—enhanced yields by 30–40%, reduced labor, improved resilience, and conserved soil fertility. FFS and participatory training increased farmer awareness of nutritional, economic, and cultural benefits, emphasizing gender-sensitive approaches and indigenous knowledge. Promising landraces with disease resistance and stress tolerance were identified for future breeding and sustainable intensification.

Rapeseed:

Rapeseed (*Brassica campestris var. toria*) is Nepal's key oilseed, essential for livelihoods and nutrition. Productivity is limited by low-yielding varieties, pests, declining soils, labor-intensive processing, and weak markets. Project interventions in Kapilvastu (Terai) and Gerkhutar (mid-hills) focused on high-yielding varieties, climate-smart practices, pollinator management, market linkages, and value addition. Small-scale tori mills were promoted to reduce drudgery and improve oil recovery, especially benefiting women. Trials identified Madhuwani tori (1.55 t/ha) and Gerkhu red tori (1.66 t/ha) as top performers, with NGRC02751 demonstrating wide adaptability. Climate-smart interventions increased yields by 20–25% and strengthened farmer knowledge and market linkages.

Integration of improved varieties, sustainable agronomic practices, climate-smart management, value addition, and participatory capacity building has enhanced productivity, resilience, and income for smallholder farmers. Targeted varietal selection and adoption of traditional knowledge combined with scientific innovations can strengthen food security, livelihoods, and cultural heritage, while promoting climate-resilient and sustainable farming systems across Nepal.

1. WORKING CONTEXT

The National Genebank is working to collect and conserve all six categories of agricultural genetic resources (AGRs): crops, forages, livestock, agro-insects, agro-microbes, and aquatic species including wild. Each collection mission documents passport descriptors to ensure proper identification and record-keeping. However, several challenges persist during collection:

- Farmers are often reluctant to provide seed samples.
- Limited quantities from farmers restrict the capture of full diversity.
- Most samples are taken from stored seeds rather than standing crops, reducing genetic representation.
- Collectors face difficulties in identifying samples accurately.
- Duplicates are hard to detect, increasing the risk of redundancy.
- Conservation and collections are more focused on crops
- Collected germplasm is characterized, multiplied, and evaluated at Khumaltar, NARC stations, and community genebanks. Accessions meeting Genebank standards receive permanent identification numbers, and their data is stored in an accessible database.

To promote conservation through use, the Genebank encourages wider utilization of landraces by farmers and researchers. Effective management and sustainable use of AGRs require collaboration among all stakeholders, and the Genebank has initiated partnerships to ensure collective responsibility in conserving Nepal's agricultural diversity.

Requirements for getting accession number to each variety or landrace

NAGRC needs both e-copy and print copy of 1. Passport data (can use passport app available at https://genebank.narc.gov.np/), 2. Characterization and evaluation data, 3. Photos, 4. Enough fresh seeds (1/2 to 1 kg), if not seed (or non-orthodox crops), then field genebank information with photos, 5. Proposal submitted to SQCC, and 6. If possible, recent germination test result.

For non-orthodox crops, respective station should maintain variety in Field Genebank. It takes two to three weeks to get accession number, as we need a germination report. If germination is less than 85%, NAGRC does not assign a number. We do not provide accession number to F1 hybrid but provide to their parental lines.

राष्ट्रिय जिन बैंकको कार्यदेश

1. प्राथमिकताको आधारमा कृषि आनुवंशिक स्रोतहरुको खोज, संकलन र संरक्षण ।
2. कृषि आनुवंशिक स्रोतहरु सम्बन्धित मार्गचित्र, अध्ययन अनुसन्धान र दिशानिर्देश ।
3. कृषि आनुवंशिक स्रोतहरुको डि.एन.ए.सम्बन्धित जानकारी र सूचना सहित, पासपोर्ट, चरित्र चित्रण, मूल्यांकन तथा परम्परागत ज्ञानको अभिलेख व्यवस्थापन ।
4. कृषि आनुवंशिक स्रोतहरुको वैज्ञानिक व्यवस्थापन तथा परिचालन ।
5. रैथाने आनुवंशिक स्रोतहरुको पंजीकरण, उपयोग एवं कृषि जैविक विविधताको व्यवस्थापनको लागि अनुकुल वाताबरणको निर्माणमा सहजीकरण ।
6. कृषि आनुवंशिक स्रोतहरु सम्बन्धि नीति तथा कार्यक्रम तयार गर्न सम्बन्धित निकायलाई आवश्यक सहयोग।
7. कृषि जैविक विविधता सम्बन्धि जनशक्तिहरुको क्षमता अभिबृद्धि ।
8. परिषद्को स्विकृतीमा राष्ट्रिय तथा अन्तराष्ट्रिय संघ संस्थाहरु सँग समन्वय तथा सहकार्य ।

राष्ट्रिय जिन बैंक

स्थापना : 2067 जम्मा क्षेत्र : 2.7 हे. भवन संख्या : 5

ल्याब संख्या : 5 जम्मा कर्मचारी : 20 बैंक किसिम : 12

1.1 Program summary of FY 2081/82

Table 1: Approved project list in FY 2081/82

SN	Title of the Project	Activities, n	Project Leader	Status	Budget (000)	Type
1	Farm, Lab and Bank Management Project (FLBMP)	9	Dr Bal Krishna Joshi	On-going	2206	FMP
2	Conservation and Utilization of Agricultural Biodiversity (CUAB): CUAPGR+MALIM-AGR	20	Dr Bal Krishna Joshi	On-going	7222	MS
3	Conservation and utilization of wild relatives of cultivated plants in Nepal (CWR)	5	Deepa Singh Shrestha	On-going	767	RI
	Total	**34**			**1,01,95**	

Table 2: 2081/82 को बार्षिक र चौमासिक कार्यक्रम तथा बजेट सारांश

क्र.सं.	क्रियाकलापहरु	2081/82 आ. व. को (रु हजारमा)														
		बार्षिक लक्ष्य			प्रथम त्रैमासिक लक्ष्य			दोस्रो त्रैमासिक लक्ष्य			तेस्रो त्रैमासिक लक्ष्य			चौथो त्रैमासिक लक्ष्य		
		पहिलो	भार	बजेट	पहिलो	भार	बजेट	पहिलो	भार	बजेट	पहिलो	भार	बजेट	पहिलो	भार	बजेट
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
(क)	संचालन (परियोजना) खर्च	34	64.8	101.95	3	14.08	22.16	5	17.73	27.90	10	17.29	27.21	16	15.7	24,70
(ख)	उपभोग खर्च			181.30			53.98			41.43			43.33			42.56
(ग)	प्रशासनिक खर्च			59.69			15.45			20.18			12.97			11.11
(घ)	**कूल चालु खर्च (क+ख+ग)**	34	65	343	3	14	92	5	18	90	10	17	84	16	16	78
(ङ)	**जम्मा पूँजीगत खर्च**	20	35.2	55.44	3	4.1	7.63	14	23.5	38.99	3	7.63	10.00			
(च)	**कूल जम्मा खर्च (कूल चालु+पुँजीगत) = (घ+ङ)**	**54**	**100**	**398.38**	**6**	**18.18**	**99.22**	**19**	**41.23**	**128.50**	**13**	**24.92**	**93.51**	**16**	**15.7**	**78.37**

Table 3: Project Activity Leader (PAL) in FY 2081/82 (2024/2025)

SN	Name of the Project and Activity	Activity Leader	Ending Quarter
1	Conservation and Utilization of Agricultural Biodiversity (CUAB)	Dr BK Joshi	
A.	*Conservation and utilization of agricultural plant genetic resources (CUAPGR)*		
1.1	Germplasm exploration, collection and distribution	Dr BK Joshi	4
1.2	Seed testing and characterization	DS Shrestha	4
1.3	Seed processing and conservation in medium- and long-term storages	Dr M Bhattarai	4
1.4	Management and strengthening field genebank	P Thapa	3
1.5	Regeneration, multiplication and characterization of agronomic crops	Dr M Bhattarai	4
1.6	Regeneration, multiplication and characterization of horticultural crops	DS Shrestha	4
1.7	Evaluation and pre-breeding of agronomic crops	P Thapa	4
1.8	Evaluation and pre-breeding of horticultural crops	DS Shrestha	4
1.9	Maintenance of diversity blocks, agro gene sanctuary, raithane nursery, and herbal conservation garden	DS Shrestha	4
1.10	In-vitro conservation of vegetatively propagated and recalcitrant seed crops	Dr M Bhattarai	3
1.11	Molecular markers for management of agricultural biodiversity	P Thapa	4

SN	Name of the Project and Activity	Activity Leader	Ending Quarter
1.12	On-farm conservation and utilization of agricultural biodiversity	Dr BK Joshi	4
1.13	In-situ conservation and utilization of agricultural biodiversity	B Bhusal	3
1.14	Documentation and database management	Dr M Bhattarai	4
1.15	Cloud based database management	Dr M Bhattarai	1
B.	*Management of aquatic, livestock, insect and microbial agri. Genetic resources (MALIM-AGR)*		
1.16	ALIM-AGR conservation update and strategy	Dr BK Joshi	3
1.17	Establishment and strengthening of mushroom park	Dr M Bhattarai	1
1.18	Strengthening aqua pond genebank	B Bhusal	2
1.19	Conservation and utilization of agro-insects	B Bhusal	3
1.20	Diversity assessment and conservation of mountain livestock	Dr M Bhattarai	2
2	Farm, Lab and Bank Management Project (FLBMP)	Dr BK Joshi	
2.1	Office support, maintenance and beautification	Dr BK Joshi	4
2.2	Office level proposal seminar	P Thapa	2
2.3	Office and farm security	SR Ojha	4
2.4	Progress review and program planning workshop	Dr BK Joshi	4
2.5	Day and week celebration	Dr BK Joshi	3
2.6	Capacity development	Dr M Bhattarai	3
2.7	Monitoring, evaluation and travelling seminar	Dr BK Joshi	4
2.8	Coordination and collaboration	DS Shrestha	3
2.9	Publication	Dr BK Joshi	4
3	Conservation and utilization of wild relatives of cultivated plants in Nepal (CWR)	DS Shrestha	
3.1	Survey to locate existing and lost habitats for wild rice	DS Shrestha	1
3.2	In-situ conservation of wild rice through repatriation and selecting research sites	RP Mainali	2
3.3	Ex-situ conservation of wild rice in field gene bank and seed bank	RP Mainali	3
3.4	Morphological characterization of wild rice at in-situ and ex-situ level	RP Mainali	2
3.5	Molecular characterization of wild rice	RP Mainali	3

Table 4: सुचक अनुसारको प्रगति (आ.व. 2081/82)

क्र.स	सुचक	हाल सम्मको प्रगति
1	बालीहरुका रैथाने/स्थानीय जातहरुको 600 परिग्रहण संकलन।	विभिन्न 18 जिल्लाबाट 39 बालीको 710 परिग्रहण संकलन
2	नेपालमा पाइने जंगली धानका 2 प्रजातिहरुको नक्सांकन, विविधता मापन र स्वस्थानिय संरक्षण।	विभिन्न 3 जिल्लाका (मकवानपुर, कपिलवस्तु, पर्सा,) विभिन्न ठाउँमा जंगली धानको सर्वेक्षण; पर्सा राष्ट्रिय निकुन्जमा Oryza officinalis, मदन पोखरा, पाल्पा श्री परेवाशोरी सामुदायिक वन, लोथरमा Oryza granulata, स्वस्थानीय संरक्षण क्षेत्र स्थापनाको लागि छलफल र तयारी; Oryza rufipogan, Oryza nivara जीन बैंकमा रोपियो
3	नार्कको अनुसन्धान केन्द्रहरुमा स्थापित 3 फिल्ड जिन बैंकहरुको जातीय अभिलेख तयार।	80 Non-orthodox परिग्रहण संकलन, चरन तथा घाँसेबाली अनुसन्धान कार्यक्रमको फिल्ड जिनबैंक संरक्षित प्रजाति तथा परिग्रहणको अभिलेखिकरण (24 प्रजाति संरक्षण), कृषि अनुसन्धान निर्देशनालय, खजुरा र लुम्लेको फिल्ड जिनबैंकमा संरक्षित आनुवंशिक श्रोतको अभिलेखीकरण (26 बालिका 60 परिग्रहण)
4	बालीहरुका रैथाने/स्थानीय जातहरुको 500 परिग्रहणहरुलाई सुरक्षित रुपमा मध्यकालीन तथा दीर्घकालीन संरक्षण कक्षमा राखिने।	33 बालिका 561 परिग्रहणहरुलाई मध्यकालिन, दिर्घकालीन कक्षमा संरक्षण with QR code; 10 बर्ष मध्यकालिन, दिर्घकालीन कक्षमा संरक्षण गरिएको कोदोको बिउको 95% उमरर्शक्ति
5	5 वटा सामुदायिक बिउ/जीन बैंकहरु मार्फत घरगोठ-खेतिस्थलीय संरक्षण तथा दिगो उपयोग।	श्री सृजनशिल बिउ उत्पादक समूह, अन्नपूर्ण सामिदायिक बिउ बैंक मा कृषि जैविक विविधता संरक्षण सम्बन्धि अभिमुखीकरण; गाभर भ्याली सामुदायिक जिन बैंकमा संरक्षित 6 सम्भागको अभिलेखीकरण; आर्वा सामुदायिक बीउ बैंक, कचोर्वा सामुदायिक बीउ बैंक, बासगढी सामुदायिक बीउ बैंकमा छलफल तथा अन्तरक्रिया
6	न्युन चिस्यान असहन (Non-Orthodox) बालीका जातहरु तन्तु बैंकमा संरक्षण (50 वटा)।	विभिन्न चार बालीको (आलु, केरा, अलैची र टमाटर) का 61 बिरुवा उत्पादन गरि संरक्षण गरिएको
7	रैथाने/स्थानीय बालीहरुको 200 परिग्रहणहरुको molecular मार्फत विविधता मापन र DNA बैंकमा संरक्षण।	सात बालीको 284 परिग्रहणको DNA निकाली संरक्षण गरिएको (लट्टे-78, सयपत्री-30,उवा-81, अलैची -2, जंगली धान-23,कोदो-38, मकै-32); Diversity assessment of Nepalese marigold landraces; DNA quantification of 1500 samples

क्र.स	सुचक	हाल सम्मको प्रगति
8	बहु बालीका 50 वटा उत्कृष्ट रैथाने तथा स्थानीय जातहरु (elite lines) को पहिचान।	विभिन्न बालिका 53 उत्कृष्ट जात पहिचान (धादिंगको रातो कोदो-बढी फल्ने, सोलुखुम्बु र रामेछापको स्थानीय कोदो-छिटो पाक्ने, कागुनोको 4 जात, गहुँको 14, उवाको 12 तथा जौंको 9, तोरीको 2 उत्कृष्ट जात पहिचान भएको); रायोको जात पहिचान (Soft texture, late bolting) maintained by bud pollination); घिरौलाको Near to gynocious line identified (हरियो घिरौला-बारा जिल्लाबाट); उवाको बढी फल्ने जात (NGRC01261) पहिचान
9	Digital genebank मा 1000 रैथाने/स्थानीय परिग्रहणहरुको पासपोर्ट डाटा थप।	49 वटा बालीको 2000 परिग्रहणको पासपोर्ट डाटा तयार; Use of GB pass-app and digital genebank
10	10 सरकारी/गैर सरकारी निकायहरुसंग सहकार्य गरी बाली, पशुपन्छी, कृषि-किरा, कृषि-सुक्ष्मजीवाणु, घाँसेबाली र जलीय कृषि आनुवंशिक स्रोतहरुको संरक्षण तथा उपयोग गरिने।	पर्सा राष्ट्रिय निकुन्ज र राष्ट्रिय प्रकृति संरक्षण कोष संग जंगली धनको स्वस्थानिय संरक्षण; सहास नेपाल, लिबर्ड, राष्ट्रिय फलफुल विकास केन्द्र, बाली विकास केन्द्र, कोहलपुर पालिका, SHECHEN karuna, CSB association, IAAS, ICIMOD, Gorkha School, लाई रैथाने जात पंजीकरणको लागि प्राविधिक सहयोग; Worldwide Nature Conservation Nepal (WWN) रैथाने परियोजना अन्तर्गत विभिन्न ठाउमा हाट बजारको लागि networking र प्राबिधिक सहयोग; श्री परेवाश्वोरी समुदाहिक वन उपभोगता समूह संग जंगली धान स्वस्थानिय संरक्षण

Additional: National agrobiodiversity day and week, Genebank day, National AGRs conservation day, Aqua pond genebank, Agro gene sanctuary, Agro-insect field genebank, Habitat for agro insects, agro-microbes, birds, Domestication and wild vegetable garden, Herbal conservation garden, Livestock farm genebank, Household insect field genebank, Banana trail, Different banks in academic institutes and farms, Community genebank, Digital genebank (online database: Genebnk website, WIEWS and Genesys), Black box, Long term evolutionary rice population, Many different banks in all NARC stations, GI; **सेवा**: बिभिन्न बालिका 418 परिग्रहण विभिन्न संघ संस्था तथा कृषकलाइ वितरण, 250 कार्यलय, संघ-संस्थाहरुलाई परामर्श सेवा, 175 जना कृषक, विधार्थीहरु, अन्य, भ्रमण, 61 वटा प्रकाशनहरु 350 वितरण, 22 बिधार्थीले शिक्षण लिएको, 100 कक्षाको लागि श्रोत व्यक्ति प्रदान; **10** वटा निकायलाइ बिउ (**250** परिग्रहण) भण्डारको लागि ठाउँ दिएको; Accession number given for registration: 24.

This year mission: Database generated and managed. Database for Identifying and Utilizing Agricultural Genetic Diversity.

1.2 This year's mission

Database generated and managed. Database for Identifying and Utilizing Agricultural Genetic Diversity

This year, the Nepal Genebank set its mission on generating and managing a comprehensive database for the identification and utilization of agricultural genetic diversity. Unlike last year's focus on conservation in partnership with stakeholders, the priority in this year has been on strengthening information systems to ensure effective documentation and accessibility of genetic resources. The database has become central to handling accessions and enabling their scientific and practical use.

The system covers a wide range of agricultural genetic resources, including orthodox and non-orthodox seeds, agro-insects, agro-microbes, livestock, aquatic species, and forages. It incorporates passport, characterization, evaluation, molecular, image, distribution, and regeneration data. Passport data for both orthodox and non-orthodox materials have been published in online and print formats, increasing accessibility to stakeholders.

To improve documentation and sharing, tools such as a Passport App and electronic field books have been promoted, while the database itself has been disseminated through various media and platforms. Database management strategies were also discussed with researchers, farmers, students, and other stakeholders through orientations and training programs. Importantly, data generation has been carried out not only by national institutions but also by community-level organizations, ensuring inclusivity and broader participation.

आ.ब. 2081/82 को जिन बैंकको लक्ष्य

डाटाबेस तयारी र व्यवस्थापन: कृषि आनुवंशिक विविधता पहिचान र उपयोगको लागि डाटाबेस

2. INTRODUCTION

Nepal is exceptionally rich in agrobiodiversity, with its economy largely dependent on goods and services from these resources. Diverse agro-climatic zones, complex farming systems, varied ethnic and socioeconomic settings, and dramatic elevation differences (60–8848 m) have created numerous micro-niches supporting immense agricultural diversity. The country's three physiographic regions—Tarai, Hill, and Mountain—experience climates ranging from tropical to arctic, further enriched by six distinct seasons.

Although Nepal covers less than 0.1% of global land, it harbors remarkable biodiversity: 2.2% of flowering plants, 8.5% of birds, 4% of mammals, and nearly half of the world's angiosperm families. It ranks tenth in Asia and 31st globally for flowering plant diversity.

Globally, plants provide most human nutrition, but diets rely dangerously on a few crops. Of 10,000–12,000 edible species, only 150–200 are widely used, with rice, wheat, and maize alone providing nearly 60% of calories. Meeting future food demand will depend heavily on plant genetic resources (PGRs) for crop improvement, as land expansion is limited and unsustainable. By 2050, over 70% of yield increases must come from higher productivity, making conservation and use of genetic resources vital.

Agricultural genetic resources (AGRs) serve as the foundation for plant breeding, nutritional enhancement, and long-term food security. Gene banks conserve AGRs for safe storage, direct use, scientific research, breeding, and future repatriation. Nepal's traditionally inherited cultivars and livestock breeds place it among the world's priority regions for conservation. However, modernization, commercialization, and climate change are driving genetic erosion, with over 75% of global crop diversity lost in the 20th century, and 40–100% of Nepalese agrobiodiversity depending on the species and sites. Many landraces have been replaced by hybrids, though remote areas still act as refuges for threatened species. Climate change further threatens food security, with South Asia projected to lose up to 30% of rice and wheat yields by 2030.

Recognizing these challenges, Nepal established the National Agriculture Genetic Resources Center (Genebank) in 2010 at Khumaltar. The Genebank conserves valuable resources through five units: Collection and Distribution, Conservation, Characterization and Evaluation, Biotechnology, and Documentation/Training. It represents a national milestone in safeguarding agricultural biodiversity for sustainable use and future prosperity.

Total accessions of orthodox seed conserved in medium and long term at National Genebank, Khumaltar (till 16 July 2025)

SN	Crop	Scientific name	नेपाली नाम	Acc.
Cereals (अन्न बालीहरु)				6934
1.	Barley	Hordeum vulgare L.	जौ	1029
2.	Maize	Zea mays L.	मकै	876
3.	Naked Barley	Hordeum vulgare var.nudum L.	उवा, करु	349
4.	Rice, paddy	Oryza sativa L.	धान	2782
5.	Wild rice	Oryza nivara/rufipogon L	जङ्गली धान	22
6.	Wheat	Triticum aestivum L.	गहुँ	1876
Pseudo-cereals (नक्कली अन्न बालीहरु)				691
7.	Amaranth	Amaranthus spp. (4 species)	लट्टे, मार्से	328
8.	Common Buckwheat	Fagopyrum esculentum Moench.	मिठे फापर	147
9.	Tartary Buckwheat	Fagopyrum tataricum L. Gaertn.	तिते फापर	21
Millets (कोदो बालीहरु)				1335
10.	Barnyard Millet	Echinochloa frumentacea Link.	सामा	7
11.	Brown top millet	Brachiaria ramosa		1
12.	Finger Millet	Eluesine corocana L. Gaertn.	कोदो	1228
13.	Foxtail Millet	Setariaitalica L. Beauv.	कागुनो	50
14.	Little Millet	Panicum sumatrense Roth.	कुट्कि, धान कोदो	1
15.	Proso Millet	Panicum miliaceum L.	चीनु	47
16.	Pearl Millet	Pennisetum glaucum	घोगे	1
17.	Sorghum	Sorghum biclor L.	जुनेलो	2
Pulses (दलहन बालीहरु)				1675
18.	Adjuki Bean	Vigna angularis Ohwi & Ohashi	मास लहरी	2
19.	Bean, French Bean	Phaseolus vulgaris L.	सिमी	309
20.	Black Gram	Vigna mungo L.	मास	77
21.	Chickpea	Cicer arietinum L.	चना	325
22.	Cowpea	Vigna unguiculata L.	बोडी	75
23.	Faba (Broad) Bean	Vicia faba L.	बकुला	27
24.	Field Pea	Pisum sativum L.	सानो केराउ, कला	14
25.	Grass Pea	Lathyrus sativus L.	खेसरी	110
26.	Green Gram, Mung Bean	Vigna radiata L.	मुंग, हरियो मास	21
27.	Horse Gram	Dolichos biflorus Roxb.	गहत	60
28.	Lentil	Lens culinaris Medic.	मसुरो	236
29.	Pea	Pisum sativum L.	केराउ	50

SN	Crop	Scientific name	नेपाली नाम	Acc.
30.	Pigeon Pea	Cajanus cajan L. Huth.	रहर	22
31.	Rice Bean	Vigna umbellata Thung. Ohwi & Ohashi	मस्यांग, सिल्टुङ	145
32.	Soybean	Glycine max L. Merr.	भटमास	202
Oilseed Crops (तेल बालीहरु)				302
33.	Groundnut	Arachishy pogaea L.	बदाम	9
34.	Linseed	Linumusitatis simum L.	आलस	35
35.	Mustard, Rapeseed	Brassica campestris L.var.toria Duth& Full	तोरी	133
36.	Yellow Mustard	Sinapis alba	सर्स्यु	8
37.	Niger	Guizotia abyssinica L. Cross	फिलिंगे, झुसेतिल	15
38.	Perilla	Perilla frutescens L.	सिलाम, तिल्खुरो	22
39.	Sarson	Brassica campestris L. var. sarson Prain.	सर्स्यु	44
40.	Sesame	Seasamum indicum L.	तिल	34
41.	Sunflower	Helianthus annuus L.	सुर्यमुखी	2
Vegetables (तरकारी बालीहरु)				481
42.	Balsam Apple	Momordica balsamina L.	बरेला, करेला, चुच्चे करेला	10
43.	Bitter Gourd	Momordica charantia L.	तिते करेला, करेला	2
44.	Bottle gourd	Lagenaria siceraria	लौका	5
45.	Brinjal, Egg Plant	Solanumme longena L.	भण्टा	35
46.	Broad Leaf Mustard	Brassica juncea L.	रायो	43
47.	Carrot	Dacuscarota L.	गांजर	2
48.	Cauliflower	Brassica oleracea L. Var. botrytis L.	फुलगोबी, काउली	3
49.	Chinese Mallow, Cluster Mallow	Malva verticillata L.	लाफा साग, चिप्ले साग	1
50.	Cucumber	Cucumus sativus L.	कांक्रो	107
51.	Sponge gourd	Luffa aegyptiace	घिरौला	52
52.	Tomato	Solanum lycopersicum	गोलभेडा	18
53.	Garden Cress	Lepidium sativum L.	चमसुर	28
54.	Lamb's Quarter	Chenopodium album L.	बेथे	2
55.	Lettuce	Brassica japonica Thb. Sieb	जिरिको साग	2
56.	Okra, Lady's Finger	Abelmoschuseschulentus L. Moench.	भिण्डी, रामतोरिया	79
57.	Pumpkin	Cucurbita moschata Duchesne.	फर्सि, कद्दु	15
58.	Radish	Raphaus sativus L.	मुला, चोतो	49
59.	Spinach	Spinacia oleracea L.	पालुंगो	12
60.	Spine Gourd	Momordica dioica Roxb.	चटेल, झुसे करेला	1
61.	Turnip	Brassica rapa L. var.rapa	सलगम	2
62.	Ash gourd	Benincasa hispida	कुवींन्ड़ो	6

SN	Crop	Scientific name	**नेपाली नाम**	Acc.
63.	Snake gourd	Trichosanthes cucumerina	चिचिँन्ड्रो	1
Fruits **(फलफुल बालीहरु)**				3
64.	Indian Plum	Zizyphus jujube Mill.	वयर	1
65.	Pear	Pyruscom munis L.	नासपाती	1
66.	Pomegranate	Punica granatum L.	अनार	1
Spices **(मसला बालीहरु)**				162
67.	Chilli pepper	Capsicum frutescens L.	खुर्सानी	111
68.	Coriander	Coriandrum sativum L.	धनिया	30
69.	Fennel	Foeniculum vulgare L.	सौंफ	5
70.	Fenugreek	Trigonella foenum-graecum L.	मेथी	4
71.	Large Cardamom	Amomum subulatum Roxb.	अलैंची	5
72.	Onion	Allium cepa L.	प्याज	7
Fibers **(रेशा बालीहरु)**				12
73.	Hemp	Cannabis sativa L.	भाङ्ग, गाजा	4
74.	Jute	Corchorus olitorius L.	जुट	8
Forages and fodders **(डाले तथा घाँसे बालीहरु)**				83
75.	Alfalfa, Lucern		लुसर्न	3
76.	Arrow leaf dock	Rumex hastatus	अमिलो घांस	62
77.	Berseem	Trifolium alexandrinum L.	बर्सिम	2
78.	Cock's Foot	Dactylis glomerata L.	कक्स फुट	1
79.	Oat	Avena sativa L.	जै	7
80.	Rye Grass	Lolium perenne L.	राई	3
81.	Stylo Grass	Stylo santhisscabra L.	स्टाइलो घाँस	1
82.	Teosinte Grass	Zea perennis L.	टियोसिन्टे घाँस	1
83.	Vetch	Vicia sativa L.	कुटिल कोसा	3
Crop Wild Relatives **(बालीका जंगली नातेदारहरु)**				107
84.	Others (अन्य)			45
85.	Total Species (जम्मा)		**>336** प्रजाति	11830

Table 5: Total accessions of APGRs conserved in field Genebank, National Genebank, Khumaltar (till 16 July 2025)

S.N.	Crop	Nepali Name	Scientific Name	No of accessions
1	Potato	आलु	Solanum tuberosum L.	2
2	Yam	तरुल	Dioscorea alata	13
3	Turmeric	बेसार	Curcuma longa	138
4	Garlic	लसुन	Allium sativum	71
5	Chayot	स्कुस	Sechium edule	10
6	Shallot	छ्यापी	Allium ascalonicum	2
7	Wild yam	बन तरुल	Dioscorea hamiltonii Hook. f.	1
8	Taro	पिंडालु	Colocasia esculenta L.	67
9	Sugarcane	उखु	Saccharium officinarum L.	27
10	Banana	केरा	Musa paradisiaca L.	108
11	Sweet orange	मौसम	Citrus × sinensis (L.) Osbeck.	2
12	Mandarin	सुन्तला	Citrus reticulata Blanco.	1
13	Tree tomato	गोलभेंडा	Solanum betaceum Cav.	2
14	Lemon	निबुवा	Citrus limon	6
15	Lime	कागाती	Citrus aurantifolia	7
16	Rough lemon	ज्यमिर	Citrus junos Tanaka	3
17	Wild pear	जंगली नासपाती	Pyrus pashia	4
18	Pear	नासपाती	Pyrus pyrifolia	13
19	Nepalese hog plum	लप्सी	Choerospondias axillaris	4
20	Peach	आरु	Prunus persica	5
21	Plum	आरुबखडा	Prunus domestica	4
21	Persimmon	हलुवाबेत	Diospyros virginiana	2
22	Pummelo	भोगटे	Citrus grandis	5
23	Betel leaf	पान	Piper betle L.	2
24	Sweet potato	सकरखण्ड	Ipomea batatas L.	1
25	Apple	स्याउ	Malus domestica	4
26	Black Juniper	धुपी	Juniperus indica	1
27	Kumquat	मुन्ताला	Citrus japonica	1
28	Sour lime	अमिलो कागाती	Citrus aurantifolia	1
29	Rhododendron	लालीगुराँस	Rhododendron arboreum	1
30	Gooseberry	अमला	Phyllanthus emblica	1
31	Bottle brush	कल्की फुल	Melaleuca viminalis	1
32	Mango	आँप	Mangifera indica	1

S.N.	Crop	**Nepali Name**	Scientific Name	No of accessions
33	Guava	अम्बा	Psidium guajava	2
34	Butterfly pea	अपराजिता	Clitoria ternatea	1
35	Sour orange	कालो ज्यामिर	Citrus aurantium	1
36	Pomegranate	अनार	Punica granatum	1
37	Walnut	ओखर	Juglans regia	2
38	Barro	बर्रो	Terminalia chebula	1
39	Harro	हर्रो	Terminalia bellirica	1
40	Wood apple	बेल	Aegle marmelos	1
41	Mountain Ebony	कोइरालोको फुल	Bauhinia variegata	1
42	Avocado	घ्यू फल	Persia americana	3
43	Rose apple	स्याउ गुलाब	Syzgium jambos	1
44	Night jasmine	पारिजात	Nyctanthes arbotristis	1
45	Fodder fig	नेबारो	Ficus carica	1
46	Oleaster	मदिलो	Elaeagnus angustifolia	1
47	Cherry	पैयुँ	Prunus sarasoides	1
48	Sichuan pepper	टिमुर	Zanthoxylum armatum	1
49	Chestnut/katus	कटुस	Castanopsis tribuloides	1
50	Pineapple	भुई कटहर	Ananus comosus	1
51	Aloe vera	घिऊकुमारी	Aloe barbadensis miller	1
52	Citron	बिमिरो	Citrus medica	1
53	Holy basil	तुलसी	Ocimum sanctum	1
54	Barmuda	सेतो दुबो	Chlorophytum comosum	1
55	Rosemery	रोजमेरी	Salvia Rosmarinus Spenn.	1
56	Sweet flag	बोजो	Acorus calamus	2
57	Lemon grass	कागते घाँस	Cymbopogon schoenanthus	1
58	Elephant's Ear Plant	कर्कलो	Alocasia escukenta L.Schott	1
59	Poinsettia	लालुपाते	Euphorbia pulcherrima	2
60	Ficus tree	तिमिलो	Ficus benjamina	1
61	Oak	बंझी/तिखे बाँझ	Quercus robur	1
62	Giloy	गुर्जो	Tinospora cordifolia	1
63	Soapberry	रिठा	Sapindus mukorossi Gaertn	1
64	Pacan nut	चुच्चे ओखर	Carya illinoinensis	1
65	Box berry	काफल	Myrica esulenta Buch-Ham	1
66	Cardamom	अलैंची	Amomum aromaticum	8
67	White mangolia	चम्पा	Mangolia grandiflora	1
68	Cherry plum	आल्चा	Prunus cerasifera	1
69	Mahonia	जमाने मान्द्रो	Berberis napaulensis	1

S.N.	Crop	**Nepali Name**	Scientific Name	No of accessions
70	Red lotus	रातो कमल	Nelumbo nucifera	1
71	Rose	गुलाब	Rose rubiginosa	1
72	Barberry	चुत्रो	Berberis aristate	1
73	Bay berry	काफल	Myrica esculenta	1
74	Passion fruit	लहरे आँप	Passiflora edulis Sims	1
75	Thorn apple	धतुरो	Datura metel	1
76	Indra kamal	इन्द्र कमल	Gardenia jasminoides	1
77	Curry tree	कडी पत्ता	Murraya koenigii	1
78	Silver berry	मल्लिदो	Elaeagnus infundibularis	1
79	Utrasum bead tree	रुद्राक्ष	Elaeocarpus sphaericus	1
80	Stinging nettle	सिस्नु	Urtica dioica L.	1
81	Chinese sumac	भकिम्लो	Rhus chinensis Mill.	1
82	Honey tree	मौवा	Madhuca longifolia	1
83	Nigalo	निगालो	Phyllostachys nigra	1
Total				575

Table 6: History of NAGRC, Khumaltar

Year	Milestone
1937	Start of plant exploration missions undertaken by international organizations
1940	First collection and evaluation of indigenous plants materials by the then His Majesty's Government
1972	Establishment of Vegetable Development Division with emphasis for landraces collections
1984	Establishment of Plant Genetic Resource Section in Agriculture Botany Division of NARC and actively involved in PGR exploration, collection and conservation activities
1986	Establishment of medium-term ex-situ conservation
1993	Member of Convention on Biological Diversity
1994	Establishment of First Community Seed Bank in Dalchowki; Landrace enhancement; National workshop on PGR conservation
2003	Establishment of Community Seed Bank in Bara
2007	Agrobiodiversity policy
2009	Member of ITPGRFA
2010	Establishment of National Genebank (National Agriculture Genetic Resources Center)
2012	Establishment of Field Genebank, Community Field Genebank, Household Genebank
2013	Initiation of Tissue Bank, DNA Bank, Cryo Bank
2014	Establishment of Base Collection Room (BCR-I and BCR-II) (long-term seed conservation), Registration of native landrace
2015	Establishment of Potato Park, Sugarcane Park, Ginger and Turmeric Park; Start of evolutionary plant breeding

Year	Milestone
2016	Establishment of short-term storage for vegetatively propagated and recalcitrant crops, Aqua Pond Genebank, Livestock Farm Genebank, Rejuvenation f mango orchard
2018	Establishment of Agro Gene Sanctuary, started celebrating Genebank and Agrobiodiversity Day, Insect field genebank, microorganism field genebank
2021	Raithane nursery, Herbal tea conservation garden, online database, image bank
2022	Community genebank, household insect-field genebank, national agrobiodiversity year 2079, Agro-plantation

2.1 Mission

Conservation and sustainable use of agricultural genetic resources (AGRs) for sustained agricultural growth and livelihood. AGRs are for food, nutrition, health, business and environment security.

2.2 Objectives

- To explore, collect and conserve AGRs for promoting sustainable use.
- To manage and handle the AGRs scientifically in the country according to the rules and regulations of genetic resources movement.
- To identify the endangered, rare and unique genetic resources and give emphasis to conserve them
- To create a single-entry point to get access to agricultural genetic resources and associated data.
- To locate the center of diversity of all economical crop species in the country.
- To characterize and evaluate genetic resources and avail the resources to researchers, academicians, farmers, entrepreneurs and related stakeholders.
- To screen genetic resources and identify markers associated with particular traits and develop elite lines through pre-breeding.
- To manage database associated with each accession including passport, characterization, evaluation and traditional knowledge.

2.3 Conservation Strategies

Different conservation strategies have been considered so that they complement each other and help to conserve maximum diversity as much as possible. Ex-situ conservation preserves the genetic resources outside their natural habitat mostly in static condition. On-farm conservation, which is, also called dynamic conservation, complement the ex-situ conservation by continued cultivation of locally available landraces. In-situ conservation is useful

to conserve the wild species and its relatives including wild edible species. The Genebank has considered the following four conservation strategies based on the origin and conservation sites of AGRs.

Ex-situ conservation

- Seed conservation as Seed Bank (Base collection and Active, or working collection for orthodox seeds)
- In-vitro conservation (for recalcitrant seeds and vegetatively propagated crops), eg Cryopreservation (Cryo Bank), and Cold storage (Tissue Bank)
- Field Genebank and crop specific parks (for recalcitrant seeds and vegetatively propagated crops)
- DNA bank for all kinds of AGRs

On-farm conservation

- For locally available crop genetic resources as Household Genebank and Community Genebank

In-situ conservation

- For wild edible species and wild relatives of AGRs

Conservation breeding

- Conservation through utilization, developing site specific varieties with broad genetic base, enhancing genetic performance of native landraces, breeding using target landraces, etc

The strategies based on the governance levels are given in Figure 1 along with conservation methods.

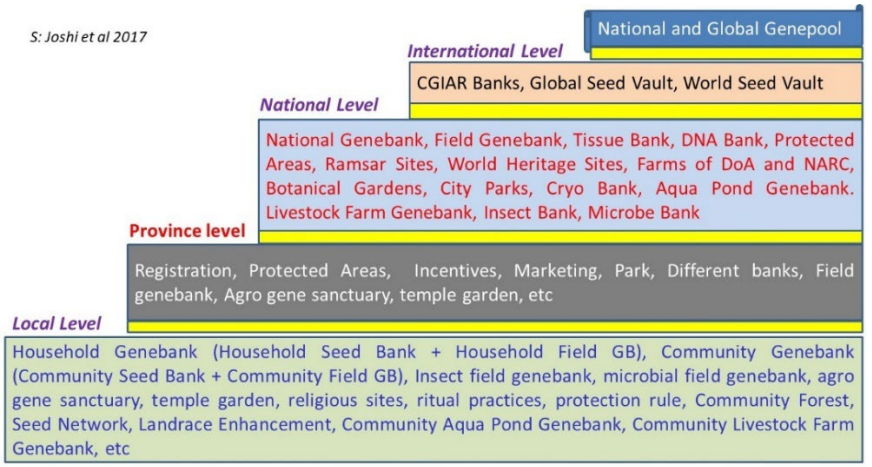


Figure 1: Conservation ladder adopted by NAGRC for management of AGRs in Nepal

2.4 Genetic Resources for Conservation

AGRs for conservation include DSWW (domesticated, semi domesticated, wild edible and wild relatives) of following genetic resources

I. Plant genetic resources: Landraces; Modern and obsolete varieties; Breeding lines eg RILs, Genetic stocks, NILs, Differential lines; Exotic genetic resources; Wild and wild relatives of cultivated crop species; Wild edible plants. These genetic resources are grouped as follows based on economic values in Genebank.

II. Forages genetic resources
III. Aquatic agricultural genetic resources
IV. Livestock genetic resources
V. Agricultural insect genetic resources
VI. Agricultural microorganism genetic resources

2.5 Regular Activities

Exploration and collection
Seed testing and processing
Regeneration and multiplication
Characterization and evaluation
In-vitro culture
Distribution and exchange of materials
Registration
Conservation
Viability monitoring
Genotyping
Screening and pre-breeding
Database management

2.6 Facilities Available in the Center

Long-term storage: Cold store room (called Base Collection Room, BCR) with -20ºC is functional which has capacity of storing about 100,000 accessions for 50-100 years.

Medium term storage: Cold store room (called Active Collection Room, ACR) is functional which has capacity of storing about 50,000 accessions for 10-15 years.

Short term storage: Room temperature for one season storage of germplasm

Seed testing and processing lab: Facilities are available for seed cleaning, viability testing, germination testing, seed drying and packing, characterization and evaluation.

Seed drying room: For slow drying orthodox seeds

In-vitro culture room: Tissue culture room as well as in-vitro cold storage (Tissue Bank) facilities are available.

Molecular research lab: Facility is available for DNA works and conservation (DNA Bank).

Field genebank: A separate plot is allocated for field genebank. Field genebank will be extended along the road and around the office buildings and premises, other NARC's stations.

Agro gene sanctuary: In-situ conservation of domesticated plant species and crop landraces

Aqua pond genebank: For conservation of aquatic agricultural animal and plant species

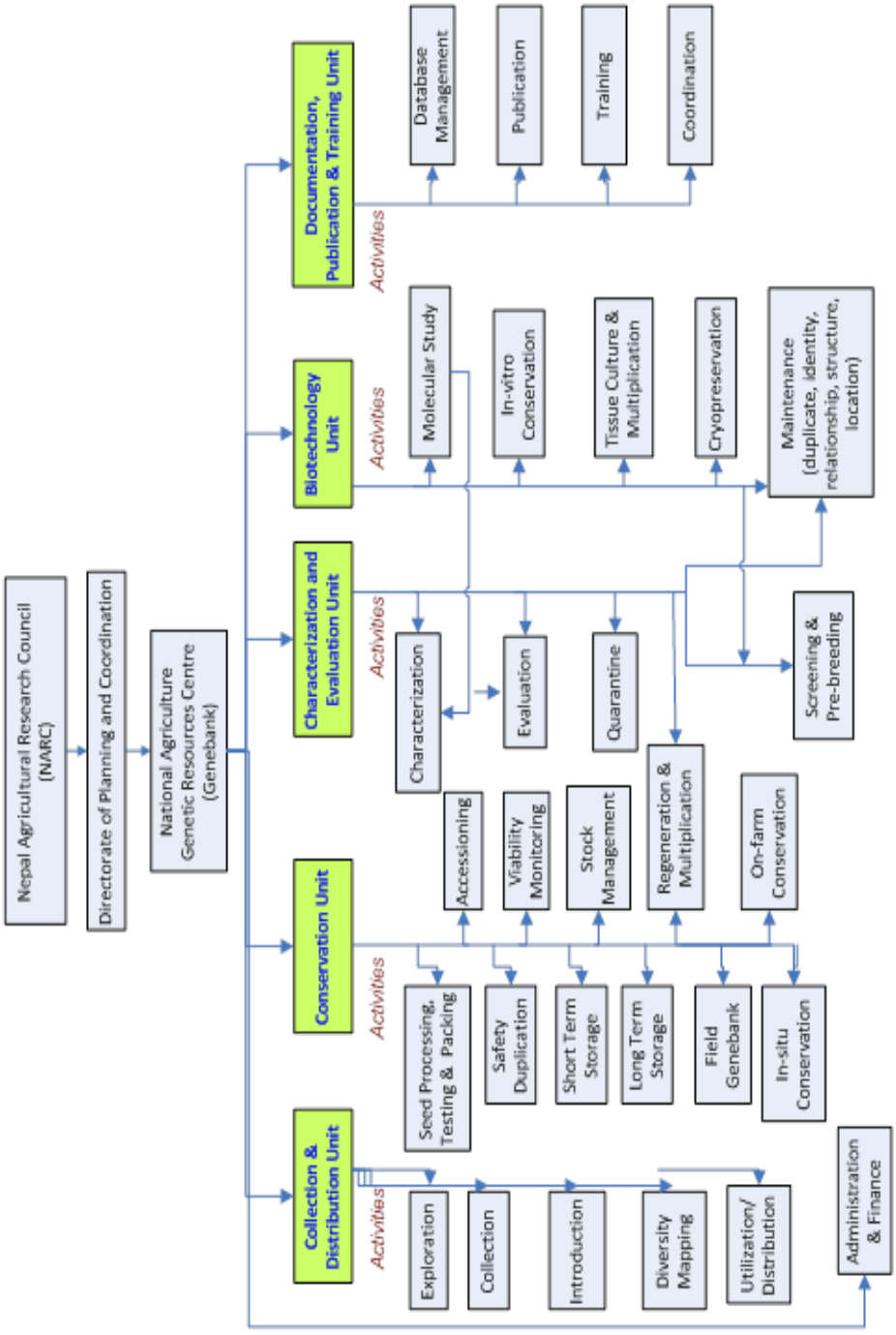
Raithane nursery and herbal team conservation garden: For accelerating the utilization of native crop landraces and herbal plant species

Experimental plot: Field is available for diversity blocks, regeneration, multiplication, characterization and evaluation.

Database management: Documentation facilities for passport, management, characterization, evaluation, pre-breeding and utilization data.

Black box: Space for researchers in medium term storage has been provided following black box system.

Organization Structure and Regular Activities



3. GUIDES FOR AGRS MANAGEMENT

3.1 Germplasm exploration and collection guides

Collection team should prepare/ work followings before and after germplasm exploration and collection mission

1. Gap analysis based on site and species
   a) Using DIVA GIS, Genesys and CAT
   b) Group discussion including red zone and red list, trait specific, KIS, problem based
   c) Review: annual report, collection report, passport database (online and print), news, reports, meeting/ monitoring report
2. Listing sites and identification of collection season
3. Preparation of collection plan: Prepare collection plan, route, major target species, sites, possible stakeholders, diversity kits as a gift, genebank publications for distribution, passport format (understand this format), collection kit, letter, certificate to agrobiodiversity rich farmer, AGRs checklist, exploration and collection guidelines/ papers, district maps, passport app, GPS, etc
4. Study, review and analyze target sites including AGRs diversity
5. Get approval of collection plan
6. Collect diversity and use passport app
7. After collection, organize CAC meeting (to check germplasm quality, passport format and others). Need to approve everything from CAC for further process including travelling cost approval
8. Enter or download passport data in computer and handover both hard and soft copy to Database personnel
9. Hand over seeds/ germplasm to concern personnel
10. Update collection route and write AGRs list along the collection route
11. Write detail report including suggestions for further collection and other works
12. Handover the report to all concern personnel
13. Handover germplasm, passport and report (both hard and e-copy) to conservation unit

BK Joshi; Chief, NAGRC; 2078

3.2 Database management guide and storage system

02 Asar 2079, Working guide prepared by BK Joshi

3.2.1 Data type

Manage long term valued data under the control of NAGRC as given below
Collect phenotype and genotype data including image
CO (collection) is for orthodox and COV for non-orthodox

3.2.2 File based on data type

a. Passport for orthodox and non-orthodox
b. Germplasm distributed data for orthodox and non-orthodox
c. Database of germplasm with accession for listing in NSB for orthodox and non-orthodox
d. MERC data for orthodox and non-orthodox
e. Stock data for orthodox and non-orthodox
f. DNA data, DNA bank, genotype (gel with label, associated traits, fingerprint (along with accession number, local name, district)
g. Tissue bank data (along with accession number, local name, district)

3.2.3 Storage

a. Hard copies (register and print) in GB-106
b. e-copies in
    - Office portable hard disk (GB-Data Pack2078), GB-105
    - Database computer GB-102
    - Google drive: https://drive.google.com/drive/my-drive
    - Genebank website: https://genebank.narc.gov.np/
    - GeneSys: https://www.genesys-pgr.org/a/map/v2LYApy1qK7/@28.278205,84.123929,7z
    - FAO-WIEWS: https://www.fao.org/wiews/data/ex-situ-sdg-251/search/en/?no_cache=1&fbclid=IwAR2I8xSwLSgZN_NTG-x__yzUn2nMK8KOFkMyXeH7Hpdp5mCbMPh-7hSQd9w#results
    - PAL laptop

3.2.4 Notes

- Transfer all data to office (database room GB-106, GB-Data Pack2078, GB database computer) at the end of each fiscal year with one page summary sheet
- Maintain data by fiscal year and then species wise
- For MERC data, first three columns in Excel are for accession number, local name and district. Sheet can be labelled by species name

- Label image by accession number, can link directly to Excel cell
- Print passport data (only useful columns)
- Need official transfer of data and germplasm
- Any other idea and methods can be applied

3.3 Publication cataloging and field labeling system

Genebank Publication Cataloging System

1. Nepal Genebank Book (Continuous Serial Number..., Year...). नेपाल जिनबैंक किताब, अंक... बर्ष .... This is for any publication more than 20 pages (booklet, book, report, proceedings, manual, etc)
2. Nepal Genebank Paper (Continuous Serial Number..., Year...). नेपाल जिन बैंक पत्र, अंक... बर्ष ....This is for brochure, leaflet, factsheet, less than 20 pages size publication
3. Nepal Genebank Poster (Continuous Serial Number..., Year...). नेपाल जिनबैंक पोस्टर, अंक... बर्ष ....This is for posters (we have three size format)
4. Nepal Genebank Form (Continuous Serial Number..., Year...). नेपाल जिनबैंक फारम, अंक... बर्ष .... This is for form, eg passport format, stock management format, etc

Notes

- *If same publication is in both Nep and Eng language, number and year should be same and need to include (नेप or Eng respectively) in parenthesis and Rev for revised version*
- *You also need to take NPSN number from NARC Library and other international number if appropriate*
- *See the latest publication for assigning number to new one*

Year	Nepal Genebank Book/ booklet (NGB)	Nepal Genebank Paper/ leaflet, brochure (NGPLB)	Nepal Genebank Poster factsheet (NGPF)	Nepal Genebank Form (NGF)
FY 2080/81	NGB-46/2023 Passport book NGB-47/2023 annual report 80 NGB-48/2023 millet book NGB-49/2024 good practices, cdabcc	NGPLB-22/2024 suntala NGPLB-23/2024 gaushala NGPLB-01/2014 (Nep/Rii) genebank brochure	NGPF-57/2023 budget summary 58/ 2024 Hornet 59/2024 Livestock	NGF-
81/82	NGB-50/2024 annual report NGB-51/2024 baseline manang	NGPLB-24/2025 (E) NGPLB-24/2025 (N)	NGPF-62/2024 budget summary	

Year	Nepal Genebank Book/ booklet (NGB)	Nepal Genebank Paper/ leaflet, brochure (NGPLB)	Nepal Genebank Poster factsheet (NGPF)	Nepal Genebank Form (NGF)
	NGB-52/2024 mustang NGB-53/2024 Rasuwa monitoring NGB-54/2025 Lamjung, BSF NGB-55/2025 Banke, BSF NGB-56/2025 Non orthodox passport NGB-57/2025: agro insects Nepali NGB-58/2025: livestock Nepali Parwanipur monitoing: 59/2025	NBPLB: 01/2014 (025c)	NGPF-63/2024 wild rice	

3.4 Field labeling in Genebank complex

a. MERC trial board
Name of experiment
Experiment established date
Crop name (English, Nepali)
Scientific name
Total accessions
Plot number and size
Design
Districts collected

b. Accession
Red/ black text in white background (or white in green background)
Plot number:
Accession number:
Landrace name:
Collected district:

c. Perennial crop (field genebank)
Name plate size: 12 x 8”
Color: Red text in white background (or white text in green background)
Accession number:
Common/ Nepali name:
Scientific name
Variety (Eng+ Nep):
Collected district
Planted year:

3.5 Guides and format to other offices for conservation, documentation of AGRs

NAGRC is working on the management of agrobiodiversity (CALFIM, crop, aquatic, livestock, forage, insect and microbial agricultural genetic resources) in all NARC Stations, Centers, and Programs. NAGRC has requested all NARC offices the followings activities for conservation and sustainable utilization of agricultural genetic resources (AGRs). These helps to assure the availability of all native AGRs that existed in the command areas of each office.

1. Publication of detail profile/ catalog of germplasm, genotypes, varieties, breeds, strains (all genotypes that office own) and creation of their image bank (see format). After publishing this profile, new entry from the next year in the station can be added each year in annual report as This Year Collected AGRs
2. Establishment and maintenance of field genebank, aqua pond genebank, livestock farm genebank, poultry farm genebank, tissue bank, DNA bank, agro gene sanctuary, inset field genebank, microbial field genebank, forage field genebank, commodity specific park (for naming these banks, better to start from the name of office location, eg Paripatle Field Genebank, Tarahara Aqua Pond Genebank…)
3. Establishment of Raithane Nursery (for agro plantation in different occasions, giving as gift to visitors and local farmers)
4. Establishment of herbal tea conservation garden (for making herbal tea to staff, guest, conservation and distribution)
5. Label each item (accession / donor number, English name, Nepali name, scientific name, origin, year…)
6. Adopt conservation through beautification (native flowering plants around offices), and conservation through use
7. Domestication of wild agricultural genetic resources
8. Organize agro-plantation, diversity fairs, germplasm rescue mission at a regular basis. Identify red zone and red list of AGRs
9. Fill up passport format of all AGRs
10. Send valuable orthodox crop seeds along with passport data to National Genebank. It is not necessary to invest on orthodox crops/ plants just for conservation.
11. Development of database of all local agricultural genetic resources available in command area of respective office. Agricultural genetic resources include plant genetic resources, livestock genetic resources, forage genetic resources, aquatic genetic resources, insect and micro-organism genetic

resources including domesticated/cultivated, semi domesticated and wild edible and wild relatives of cultivated and domesticated genetic resources)

12. Adoption of accessioning system of germplasm in research (availability of research findings and materials forever to all)
13. Linkage establishment with protected areas, world heritage site, Ramsar and religious sites for conservation of crop wild relatives, wild edible plants and others and community for on-farm conservation
14. Consider conservation breeding, registration of native landraces, start working on geographical indication
15. Crease agro-insect, agro-microbes and agro-birds friendly research centers.

3.6 Basic information of banked AGRs

Office name:
Address:
Focal person:

बैंक/ असल अभ्यास	संख्या	स्थापना बर्ष	क्षेत्रफल् बर्ग मि	कैफियत
फिल्ड जिन बैंक				
घाँसे बाली फिल्ड जिन बैंक				
पशुपन्क्षि फार्म जिन बैंक				
जलीय कुण्ड जिन बैंक				
कृषि किरा फिल्ड जिन बैंक				
कृषि शुक्ष्म जीवाणु फिल्ड जिन बैंक				
कृषि शुक्ष्म जीवाणु कल्चर बैंक				
पुष्प/ पुस्पांजलि बगैचा				
डी.एन.ए. बैंक				
तन्तु बैंक/ क्रायो बैंक				
कृषि वंशाणु आरक्ष स्थल				
जडिबुटी/ औषधीय बाली संरक्षण फोकटा				
घर-गोठ खेतिस्थलिया संरक्षण				
जंगली तरकारी/ फलफुल फोकटा				
बिउ बैंक				

कृषि जैविक विविधता संरक्षण प्रगति

कृषि आनुवंशिक स्रोत/ संरक्षित बैंक*	प्रजाति संख्या (species)	संरक्षित (जात वा परिग्रहण), ग्राम/संख्या)	
		गत बर्ष सम्म संरक्षित	गत आ.व. मा थप
बिउ बैंक			
फिल्ड जिन बैंक			
तन्तु बैंक			
डी.एन.ए बैंक			
कृषि किरा फिल्ड जिन बैंक र बासस्थान			

* समन्धित बैंकहरुको नाम लेख्ने

मापदण्ड: रैथाने तथा स्थानीय, पासपोर्ट डाटा, बिउ सुकाउन नसकिने, सधै प्राप्त हुन् सक्ने, त्याग/ बोर्ड राखेको

थप कार्य: प्रोफाइल (चरित्र चित्रण), घरेलुकरण, बासस्थान, डाटाबेस तयारी, वितरण, रैथाने नर्सरी

List of species and variety/ breed/ strain/ genotype conserved

SN	Number if any, tag	Common name	Nepali name	Variety/ breed/ strain	Scientific name	Collected site/ origin	Year collected	Specific trait	Population size

3.7 Actions at global level

1. Establishment of National Agrobio Park (similar to national park) or National Agro Gene Sanctuary (in all countries)
2. Development of national agrobiodiversity strategy and action plan (NABSAP) (long term)
3. Separate access and benefit sharing mechanism (ABS) for agricultural genetic resources
4. Establishment and maintenance of field genebank, aqua pond genebank, livestock farm genebank, agro gene sanctuary, agro-inset field genebank, agro-microbial field genebank, forage field genebank, crop specific park, etc

5. Establishment of school filed genebank, school agro-insect field genebank, school aqua pond genebank, community genebank, community aqua pond genebank, etc
6. Domestication of wild AGRs
7. Linkage establishment with protected areas, world heritage site, Ramsar and religious sites for conservation of AGRs
8. Germplasm rescue and repatriation
9. Implementation of red zoning, red listing and agrobiodiversity impact assessment (AIA)
10. Making native AGRs competent at local, national and global levels
11. Promoting conservation breeding and evolutionary population
12. Developing and promoting site specific genotypes and food recipe
13. Collection center and market guarantee of all local and native products
14. Promotion of circular agriculture, agroecology, nature positive agricultural practices
15. Declaring international agrobiodiversity year
16. Establishment of agro-hospital, agro-clinic, agro-medical institutes
17. Promotion of AGRs and their products based on ecological yield and food health index
18. Estimation of agrobiodiversity index of each district, province, country
19. Making research and production fields agro-insect friendly, agro-microbe friendly and bird friendly

4. RESEARCH HIGHLIGHTS

A. CROP AND PLANT GENETIC RESOURCES

Major activities under this unit are exploration- collection- introduction- diversity mapping and distribution.

4.1 Collection

Exploration and collection of plant genetic resources are the regular activities of Genebank. Considering the red zoning and red listing system for Agricultural Plant Genetic Resources (APGRs)- NAGRC has initiated a program to translocation endangered and rare landraces from red zones (endangered areas) to safe or green zone regions. Additionally- NAGRC has launched a conservation effort focused on enhancing the aesthetics of the environment- aiming to preserve ornamental plants. This endeavor includes the establishment of living fences and hedgerows using native APGRs- as well as the creation of a nursery for agro-plantation purposes.

To facilitate these conservation and translocation efforts- Geographic Information Systems (GIS) have been employed for gap analysis. This involves generating collection maps and reviewing the collection database to identify gaps and missing species. These findings guide the targeted collection of missing species and the acquisition of specimens from these gaps.

Furthermore- a climate analog tool is utilized to locate sites with analogous climates- enabling the selection of climate-smart germplasm for the repatriation and introduction of landraces. GIS- the climate analog tool (CAT)- and Google Earth are essential tools employed to enhance the management and utilization of APGRs.

Exploration and collection mission was organized in close collaboration with other research stations of NARC and district agricultural development offices. This year- the multi crop germplasm were collected from with the following activities:

- Preparation for multi crop collection mission
- Interaction meetings with the extension workers
- Group meeting with the farmers
- Random sampling from different locations of the districts covered
- Collecting samples by farmer's interview from his/her farm house/stores/fields

This year a total of 77 explorations were carried out in 45 districts. These collections consist of 56 crop species which include 629 cultivated, 231 wild and 54 rare categories of ten different groups.

Table 7: List of collected crop species

S.N	CROP GROUPS	SPECIES
1	Cereals	149
2	Pseudo cereals	24
3	Millets	38
4	Legumes	179
5	Oilseed	65
6	Vegetable	211
7	Fruits	76
8	Spices/Medicinal	110
9	Flower/ornamental	37
10	Forages/weed	25
	Total	**914**

Table 8: List of crop accession with collected district

S.N	DISTRICT	Total
1	Arghakhanchi	19
2	Baglung	53
3	Bajura	2
4	Banke	48
5	Bara	37
6	Bardiya	1
7	Bhaktapur	1
8	Bhojpur	6
9	Chitwan	7
19	Dailekh	2
11	Dhading	28
12	Dhankuta	77
13	Dhanusa	1
14	Dolakha	68
15	Dolpa	5
16	Gorkha	46
17	Jajarkot	2
18	Janakpur	1
19	Kailali	6
20	Kalikot	2
21	Kanchanpur	2
22	Kapilvastu	3
23	Kathmandu	8
24	Kavre	10
25	Khotang	50
26	Lalitpur	11
27	Lamjung	120
28	Makwanpur	56
29	Mustang	18
30	Nuwakot	11
31	Panchthar	1
32	Rasuwa	13
33	Rukum	15
34	Rolpa	4
35	Rupandehi	1
36	Salyan	10
37	Sankhwasaba	5
38	Sindhupalchok	63
39	Sindhuli	15
40	Sunsari	15

S.N	DISTRICT	Total
41	Syangja	48
42	Tanahun	13
43	Terathum	1
44	Udaypur	1
45	Others	8
	Total	**914**

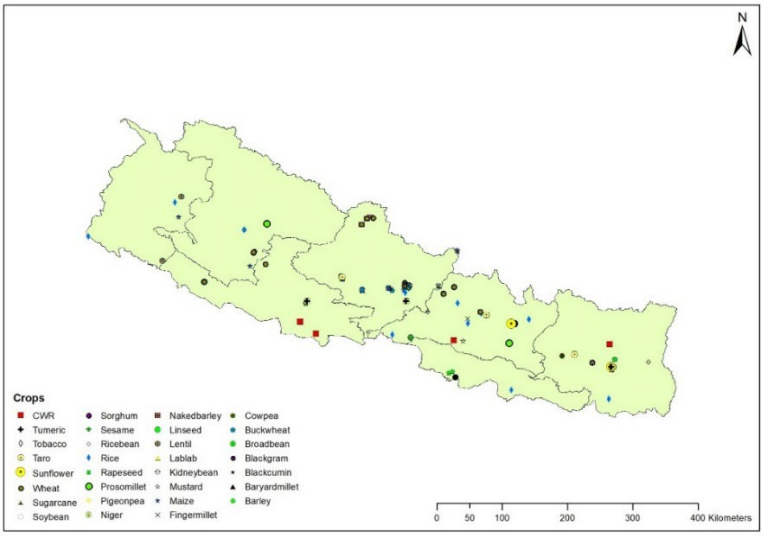


Figure 2: Collection of Agronomic crops in FY 2081/82

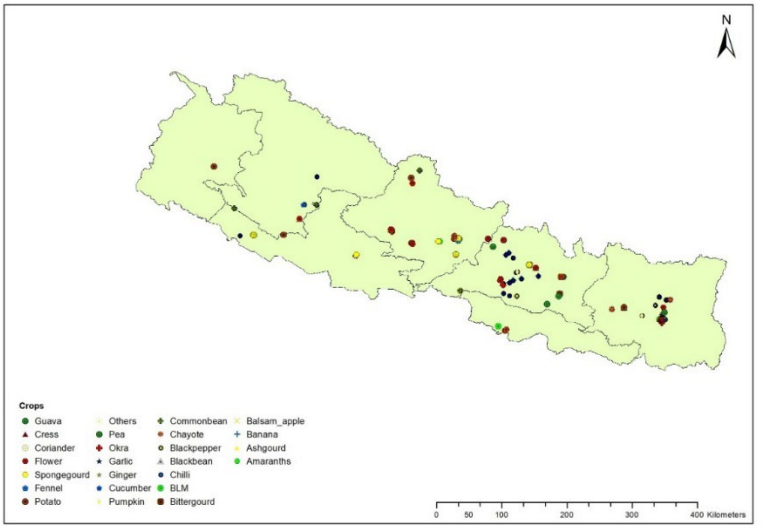


Figure 3: Collection of Horticulture crops in FY 2081/82

4.2 Conservation

4.2.1 Seed viability test

A total of 794 samples were tested for viability . about 608 samples including rice- radish- Fingermillet- wheat- naked barley- barley- cucumber- mustard- sarson- barnyard millet- coriander- maize- black gram- rice bean- horse gram- bean- pea- cowpea- soybean- pigeon pea- buckwheat- jute- fenel- sesame- amaranths- sunflower- okra- proso millet- lentil- chickpea passed the global standard of 85 percent of germination and 145 samples showed germination below 85 percent which requires regeneration or re-collection.

4.2.2 Seed Health test

During seed viability tests- high rate of disease prevalence has been observed in beans. The seed health test of this year focused on beans collections to identify the types of disease prevailing. Among 33 collection- Aspergillus- Alternaria and Cladosporium fungus were observed in the 26 beans . These diseases are seed borne and can be transferred from the seed to the plants in the field. No presence of disease was observed in few beans. Few beans showed the disease complex of two or there fungal diseases.

Seed viability and Seed health testing

S.N.	Crop	Accession	Fungus
1	Beans	CO16075	No disease
2	Beans	CO5356	Aspergillus sp. + Alternaria spp. + Cladosporium sp.
3	Beans	CO16132	No disease
4	Beans	CO16159	No disease
5	Beans	CO16138	No disease
6	Beans	CO16144	No disease
7	Beans	Chyake Simi	Aspergillus sp.
8	Beans	CO16123	No disease
9	Beans	CO14883	Aspergillus sp.
10	Beans	CO19993	Aspergillus sp.
11	Beans	CO4115	Aspergillus Sp. + Cladosporium Sp.
12	Beans	CO1847	Aspergillus sp.
13	Beans	CO1997	Aspergillus sp.
14	Beans	CO15447	Aspergillus sp.

S.N.	Crop	Accession	Fungus
15	Beans	CO14884	Aspergillus sp. + Alternaria spp. + Cladosporium sp.
16	Beans	CO13032	Aspergillus sp. + Alternaria spp. + Cladosporium sp.
17	Beans	CO15015	Aspergillus sp. + Alternaria spp.
18	Beans	CO12940	Aspergillus sp.
19	Beans	CO13046	Aspergillus sp.
20	Beans	Gabar Valley Simi	Aspergillus sp.
21	Beans	CO1987	Aspergillus sp. + Alternaria spp.
22	Beans	CO5797	Aspergillus sp. + Alternaria spp.
23	Beans	CO1989	Aspergillus sp. + Alternaria spp.
24	Beans	CO1985	Aspergillus sp.
25	Beans	CO1986	Aspergillus sp.
26	Beans	CO14016	No disease
27	Beans	CO15367	Aspergillus sp. + Alternaria spp.
28	Beans	CO14449	Aspergillus sp.
29	Beans	CO14870	Aspergillus sp. + Alternaria spp.
30	Beans	CO5360	Insect damage
31	Beans	CO1988	Aspergillus sp.
32	Beans	CO1994	Aspergillus Sp. and Cladosporium Sp.
33	Beans	CO16292	No disease

4.2.3 Seed Bank

Under this activity the seeds that passed the viability test undergo drying, moisture testing and packaging for short-term conservation- long-term conservation. Seeds of 709 accessions of 69 different crop species were conserved as new entries in active and base collections. Maintenance of Diversity Block

Diversity block is an experimental block of landraces maintained with the purpose of research- display and seed multiplication of the rare accessions. Total of 25 accessions of 12 different crops were grown and maintained for display and seed multiplication in the diversity blocks.

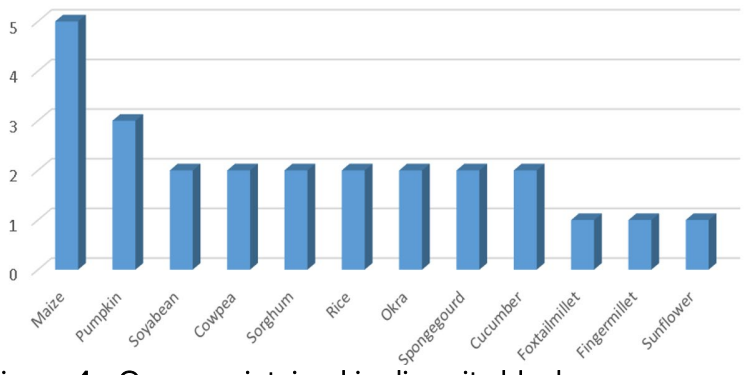


Figure 4: Crops maintained in diversity block

4.2.4 Management and Strengthening of Field Genebank

For conservation and utilization of non-orthodox plant genetic resources, all relevant stakeholders across the country need to establish and strengthen various field genebank in their command area. In this year, National genebank involve on exploration, collection and conservation of different non-orthodox plant genetic resources from all over the country. In this year, 201 accessions of different crops collected from different parts of the country and conserved in khumal field genebank. A seperate database is maintained with accessioning system. Upto date, accession number is provided upto NGRV0712. In this year, separate catalogue of non-orthodox species is published. Standard labelling system is developed and labelling of field genebank species was done with diversity of tags. Agriculture genetic resources conserved in field genebank of DoAR, Tarahara, DoAR Nepalgunj and Fodder and pasture research program, Dhunche, Rasuwa was documented. In dhuche, 24 species were conserved and In DoAR Nepalgunj, 60 accessions of 24 crops were conmserved. In this year, 2 days training for field genebank establishment and strengthening was organized at DoAR, Nepalgunj, there were 25 participants from offices of DoA, NARC, Provincial and Local government as well as universities.

Field genebank at Dhunche, Rasuwa

4.2.5 In-Vitro Tissue Conservation

During the fiscal year 2081/82 (2024/25), the Nepal Genebank under the National Agriculture Genetic Resources Center (NAGRC) made significant advancements in the field of in vitro conservation of horticultural crops. This effort focused on safeguarding vegetatively propagated species that are either difficult to conserve through seeds or possess recalcitrant seed behavior, making tissue culture an ideal approach. The initiative represents an important component of Nepal's broader commitment to the conservation, characterization, and sustainable utilization of its rich plant genetic diversity.

In this reporting period, the Gene Bank successfully maintained 105 accessions from five major horticultural crops, namely banana (22 accessions), large cardamom (18 accessions), sweet potato (15 accessions), potato (20 accessions), and tomato (25 accessions) under in vitro conditions. The program's overarching goal was to ensure the long-term preservation of valuable germplasm while maintaining disease-free, genetically stable, and viable planting materials. These accessions will serve as essential resources for future research, breeding, and reintroduction programs, ensuring that Nepal's horticultural diversity remains resilient in the face of emerging biotic and abiotic stresses.

The in vitro conservation of banana (Musa spp.) was particularly important, given that banana is one of Nepal's most significant fruit crops and is highly susceptible to viral and fungal infections in open-field conditions. Through the use of tissue culture techniques, 22 accessions were preserved in a sterile and controlled environment, minimizing the risk of contamination and maintaining genetic integrity. These clean banana stocks are crucial for multiplication, variety improvement, and supplying disease-free planting materials to farmers.

Similarly, large cardamom (Amomum subulatum Roxb.), which holds high export and livelihood value for Nepal's mid-hill and eastern regions, was successfully conserved through in vitro methods. The conservation of 18 accessions ensures the maintenance of healthy, disease-free clones, particularly important since cardamom cultivation has been severely threatened by viral diseases and rhizome rot. This initiative supports the long-term sustainability of one of Nepal's most valuable spice crops.

The sweet potato (Ipomoea batatas L.) accessions, totaling 15, were also conserved to secure genetic purity and prevent viral degeneration. As a nutrient-rich root crop essential for food and nutrition security, especially in

rural areas, maintaining virus-free plantlets ensures sustainable cultivation and reliable seed stock availability.

For potato (Solanum tuberosum L.), 20 accessions were maintained in vitro to protect against viral infections that commonly spread during field propagation. As one of Nepal's staple crops, the conservation of pathogen-free and genetically stable materials supports ongoing efforts in crop improvement, seed production, and sustainable agriculture.

Lastly, 25 accessions of tomato (Solanum lycopersicum L.) were conserved, representing a range of local and improved varieties. Tomato is not only economically and nutritionally important but also serves as a model species for genetic and physiological studies. The in vitro conservation of tomato germplasm ensures the preservation of valuable traits for future breeding, particularly under changing climatic conditions.

In conclusion, the in vitro conservation of 105 accessions across five horticultural species during the fiscal year 2081/82 marks a significant milestone for the Nepal Genebank's conservation program. This achievement strengthens the national capacity for ex situ conservation, reduces the risk of genetic erosion, and contributes directly to biodiversity conservation, food and nutrition security, and climate adaptation. By maintaining genetically pure, disease-free, and viable accessions, the Nepal Genebank continues to play a pivotal role in securing the nation's horticultural genetic heritage and ensuring its availability for future generations of farmers, researchers, and breeders.

4.2.6 Conservation through beautification, display and utilization

4.2.6.1 Conservation through Raithane Nursery

The Raithane Nursery is one of the key initiatives of the Genebank aimed at enhancing the utilization of plant genetic resources. It specifically conserves and maintains saplings of local and native germplasm, which are distributed based on demand. This initiative promotes the plantation of indigenous and traditional species and cultivars, particularly in urban and peri-urban areas. During the reporting period, the nursery distributed 88 saplings representing 9 species to students, staff, and the general public free of cost (Table 10). At present, the nursery maintains 178 saplings belonging to 12 different species.

Table 9: Conservation through Raithane Nursery

SN	Plant	Number
1	Madilo	15
2	Bhogate	19
3	Barahamase Kagati	12
4	Thulo Kagati	7
5	Haluwabed	2
6	Nibuwa	10
7	Suntala	13
8	Jyamir	8
9	Karelo	2
	Total	**88**

4.2.6.2 Management of Agro Gene Sanctuary– Herbal – Conservation Garden

An Herbal Conservation Garden has been established– dedicated to safeguarding herbal species with the objective of conserving and utilizing local and native herbs. Currently– this garden houses nine different herbal species. This initiative contributes to the preservation of traditional medicinal plants and their genetic diversity. The garden currently consists of 11 species, which are regularly used in the preparation of herbal drinks served daily as well as during meetings and functions. This initiative not only contributes to the Genebank's mission of "conservation through utilization" but also promotes the importance and practice of maintaining herbal gardens.

4.2.6.3 Wild edible garden

A Wild Edible Field Genebank has been established within the Genebank premises with the objective of displaying and promoting rare and wild edible species. Among the collections showcased, the rare banana variety Ghampe Kera stands out as a significant highlight. Currently, a total of 30 species is being conserved and maintained in this wild edible field genebank (Table 10)

Table 10: List of wild edibles conserved and maintained in Wild edible block

SN	English name	Scientific name	Number	District	NGRCO-number
1.	Pomelo	Citrus maxima	1		NGRV-0437
2.	Lime	Citrus aurantiifolia	1		NGRV-0314
3.	Banana (Ghyampe)	Musa sp.	3	Lalitpur	2081 year
4.	Orange (Syau suntala)	*Citrus sinensis*	1	Lamjung	NGRV 0394
5.	Stone apple	*Aegle marmelos*	1		
6.	Kumquat (Muntala)	*Citus japonica*	3	Kathmandu	2070 year
7.	Lime	*Citrus aurantiifolia*	1		
8.	Jasmine	*Gardenia jasminoids*	1		
9.	Peach	*Prunus persica*	2		2082/1/11
10.	Red Hibiscus	*Hibiscus rosa-sinensis*	1		
11	Magnolia (Rukh kamal)	*Magnolia grandiflora*	1	Lalitpur 2079	NGRV 0398
12	Wax mallow (Khursani ful)	*Malvaviscus arboreus*	1	Lamjhung	C016930
13	Hibiscus	*Hibiscus rosa-sinensis*	1	Syangja	C017026
14	Orange	*Citrus sinensis*	1		2082/1/11
15	Hibiscus	*Hibiscus rosa-sinensis*	1	Lamjung	C016935
16	Papaya	*Carica papaya*	2	Gorkha	2082/2/8
17	Karvi White and Pink (Karawari ful)	*Strobilanthes callosa*	2		
18	Rhododendron	*Rhododendron arboreum*	2		
19	August Flower		5	Sindhupalchowk	
20	Roselle	*Hibiscus sabdariffa*	1		
21	Bougainvillea Red	*Bougainvillea spectabilis*	1	Bara	C017181
22	Bougainvillea White	*Bougainvillea spectabilis*	1	Bara	C017182
23	Berbis	*Berberis napaulensis*	1	Lalitpur	C017181
24	Jaiphul		1		
25	Rose (Lahare)	*Rosa indica*	1		

SN	English name	Scientific name	Number	District	NGRCO-number
26	Gooseberry	*Phyllanthus emblica*	2		
27	Wild Brinjal	*Solanum insanum*	1		
28	Pink flower		2		
29.	Fiddle head fern (Nuiro Seto)	*Matteuccia struthiopteris*	1 plot	Syangja	
30	Fiddle head fern (Nuiro Kalo)	*Matteuccia struthiopteris*	1 plot	Chitwan	
31	Halhale spinach	*Rumex nepalensis*	1 plot		
32	Jaluko	*Botrychium lanuginosum*	1 plot		
33	Taro (Pidalu Seto)	*Colocasia esculenta*	1 plot	Dolakha	
34	Gurjo	*Tinospora Cordifolia*	1	Lalitpur	2081

4.2.7 Santaneshwor Agro-Gene Sanctuary:

For conservation and utilization of non-orthodox plant genetic resources, all relevant stakeholders across the country need to establish and strengthen various field genebank in their command area. There was 750-meter banana trail established as a part of santaneshwor agro-gene sanctuary where 35 native banana varieties collected from 10 different mid hill district were planted on the occasion of baisakh akshya Tritiya (Table 12).

Table 11: Conserved landraces of banana at santaneshwor agro-gene santuary

S.N.	Accession No.	Crop	Landrace	Scientific Name	संकलित जिल्ला	वर्ष
1	NGRV0473	Banana	Seto digne	*Musa paradisiaca L.*	गुल्मी	2081
2	NGRV0474	Banana	Kalo digne	*Musa paradisiaca L.*	गुल्मी	2081
3	NGRV0475	Banana	Jhabri keraa	*Musa paradisiaca L.*	गुल्मी	2081
4	NGRV0476	Banana	Maluwa keraa	*Musa paradisiaca L.*	गुल्मी	2081
5	NGRV0477	Banana	Digne keraa	*Musa paradisiaca L.*	गुल्मी	2081
6	NGRV0478	Banana	Bhuin keraa	*Musa paradisiaca L.*	गुल्मी	2081

S.N.	Accession No.	Crop	Landrace	Scientific Name	संकलित जिल्ला	वर्ष
7	NGRV0479	Banana	Gudule keraa	*Musa paradisiaca L.*	गुल्मी	2081
8	NGRV0480	Banana	Sthaniyaa malbhog	*Musa paradisiaca L.*	गुल्मी	2081
9	NGRV0481	Banana	Mungre keraa	*Musa paradisiaca L.*	गुल्मी	2081
10	NGRV0482	Banana	Malbhog keraa	*Musa paradisiaca L.*	गुल्मी	2081
11	NGRV0483	Banana	Phusre keraa	*Musa paradisiaca L.*	गुल्मी	2081
12	NGRV0484	Banana	Maluwa keraa	*Musa paradisiaca L.*	पाल्पा	2081
13	NGRV0485	Banana	Phusre keraa	*Musa paradisiaca L.*	पाल्पा	2081
14	NGRV0486	Banana	Bangali malbhog	*Musa paradisiaca L.*	पाल्पा	2081
15	NGRV0487	Banana	Bangali malbhog	*Musa paradisiaca L.*	पाल्पा	2081
16	NGRV0488	Banana	Phusre keraa	*Musa paradisiaca L.*	पाल्पा	2081
17	NGRV0489	Banana	Maluwa keraa	*Musa paradisiaca L.*	पाल्पा	2081
18	NGRV0490	Banana	Hajariya keraa	*Musa paradisiaca L.*	धादिङ	2081
19	NGRV0491	Banana	Hali mungre keraa	*Musa paradisiaca L.*	धादिङ	2081
20	NGRV0492	Banana	Malbhog keraa	*Musa paradisiaca L.*	धादिङ	2081
21	NGRV0493	Banana	Jhapri keraa	*Musa paradisiaca L.*	धादिङ	2081
22	NGRV0494	Banana	Phsre keraa	*Musa paradisiaca L.*	धादिङ	2081
23	NGRV0495	Banana	Ghiu keraa	*Musa paradisiaca L.*	धादिङ	2081
24	NGRV0496	Banana	Mungre keraa	*Musa paradisiaca L.*	काभ्रेपलान्चोक	2081
25	NGRV0497	Banana	Malbhog keraa	*Musa paradisiaca L.*	काभ्रेपलान्चोक	2081
26	NGRV0498	Banana	Malapu keraa	*Musa paradisiaca L.*	काभ्रेपलान्चोक	2081

S.N.	Accession No.	Crop	Landrace	Scientific Name	संकलित जिल्ला	वर्ष
27	NGRV0499	Banana	Jhapri keraa	*Musa paradisiaca L.*	काभ्रेपलान्चोक	2081
28	NGRV0500	Banana	Malapu keraa	*Musa paradisiaca L.*	ललितपुर	2081
29	NGRV0501	Banana	Kurkuchhe keraa	*Musa paradisiaca L.*	ललितपुर	2081
30	NGRV0502	Banana	Malbhog keraa	*Musa paradisiaca L.*	ललितपुर	2081
31	NGRV0503	Banana	Mungre keraa	*Musa paradisiaca L.*	ललितपुर	2081
32	NGRV0504	Banana	Sthaniyaa malbhog	*Musa paradisiaca L.*	ललितपुर	2081
33	NGRV0450	Banana	Bhim kera	*Musa paradisiaca L.*	नवलपुर	2076
34	NGRV0452	Banana	Lal keraa	*Musa paradisiaca L.*	उदयपुर	2078
35	NGRV0350	Banana	Musi keraa	*Musa paradisiaca L.*	अर्घाखाँची	2070

4.2.8 Geographical Indication for Conservation and Promotion of Native Agro-Biodiversity in Nepal

4.2.8.1 Training on Geographical Indication for Conservation and Promotion of Native Agro-Biodiversity in Nepal

A two-day orientation training program on "Agrobiodiversity Conservation and Geographical Indication" was successfully organized at the Department of Agriculture Research (DoAR), Khajura, Banke on 16–17 Baisakh 2082 (28–29 April 2025). The training was conducted by the National Genebank under NARC, with the primary objective of enhancing participants' understanding of the conservation and sustainable use of Nepal's rich agrobiodiversity and introducing the concept and current initiatives related to Geographical Indication (GI) in agricultural products. A total of 30 participants (including 5 female and 25 male professionals) from various agricultural and research institutions took part in the program. The event commenced with a welcome speech and presentation of training objectives by Ms. Deepa Singh Shrestha, Senior Scientist (S4) at the National Genebank. In her remarks, she emphasized the urgent need to conserve Nepal's indigenous agricultural resources and highlighted the growing importance of GI in adding value to local products while safeguarding farmers' rights.

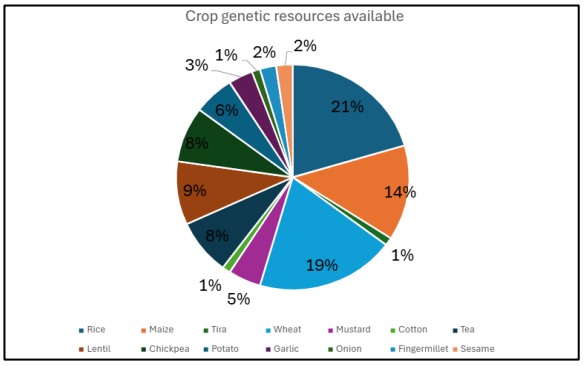
Mr. Pradip Thapa from the National Genebank facilitated multiple sessions focusing on the current status of native agrobiodiversity conservation and utilization in Nepal. Ms. Deepa Singh Shrestha led the third session, which covered documentation techniques for agrobiodiversity, the concept and methodology of geographical indication, and Nepal's ongoing GI registration initiatives. Mr. Padam Paudel from the National Grain Legume Research Program conducted the final session, providing an overview of the diversity, utilization, and conservation challenges of grain legumes in Nepal. He highlighted their nutritional value, economic significance, and role in sustaining rural livelihoods. The training concluded with a reflection and group discussion, where participants shared their key learnings and experiences. Overall, the program successfully achieved its objectives, offering both policy-level and practical insights into agrobiodiversity conservation and GI. Participants appreciated the interactive format and underscored the need for continued capacity-building initiatives in this field. The event was recognized as a significant step toward promoting the sustainable management and value addition of Nepal's agricultural heritage.

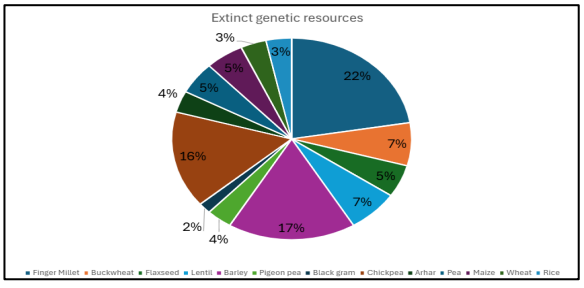
4.2.8.2 Technical support

Technical support was provided for data compilation to facilitate the process of obtaining Geographical Indication (GI) tags for large cardamom (Amomum subulatum Roxb.), lapsi (Choerospondias axillaris), and chiuri (Diploknema butyracea Roxb.). As a technical collaborator with the Food Research Division, support was extended in the development of questionnaires and in the collection of morphological data for large cardamom (thulo elaichi). Similarly, for chiuri (Nepali butter tree) and lapsi (Nepalese hog plum), technical assistance was provided in preparing questionnaires for field-level data collection.

4.2.9 On-Farm and In-Situ Conservation, and Utilization of Agricultural Biodiversity

Community seed bank and community genebank (CGB) play a vitol role for the conservation and promotion of local agrobiodiversity. There are 54 functional community seed banks for conservation of orthodox species and two community genebank (Gabhar valley and rammapur) which conserve and promote all the six components of agro-biodiversity. In this year, monitoring visit was done in 5 community seed banks (Annapurna CSB, Ghanpokhara CSB, Arwa CSB, Kacharwa CSB and Dalchoki CSB) and Gabhar valley and rammapur community gene banks. In this year, conserved AGRs in gabhar valley CSB was done. Detailed field survey including HH survey, KII and FGD was done and data was analyzed by using Microsoft excel.





4.3 Characterization- Evaluation and Pre-breeding

4.3.1 Characterization/ evaluation of agronomic crops

A. Finger Millet *(Eleusine coracana (l.) Gaertn)*

Finger millet (Eleusine coracana L. Gaertn.), a tetraploid (2n=4x=36) cereal within the Chloridoideae subfamily, of the grass family Poaceae (Goswami et al., 2015). It is indigenous to the Ethiopian highlands and commonly known as

"Ragi" or "Mandua" which later spread to India around 3,000 years ago, and became integral to traditional diets (Gebreyohannes et al., 2021). It holds the genomic constitution AABB and is distinguished by its nutritional richness (Goswami et al., 2015). Among Eleusine species, two are economically significant; E. indica, a diploid (2n=18) invasive weed prevalent in tropical agro-ecosystems, and the cultivated tetraploid E. coracana subsp. coracana, a staple crop in semi-arid regions of Africa and South Asia (Hilu & de Wet, 1976). Its high calcium, iron, and dietary fiber content, coupled with essential amino acids and gluten-free properties, positions it as a vital food source for populations grappling with malnutrition and gluten intolerance.

The research was conducted at the research field National Agriculture Genetic Resources Centre during 2024 to characterize agro-morphological traits and assess genetic diversity of finger millet landraces. This study evaluated thirty-nine finger millet landraces collected from eight districts in an augmented design with two replications from June to December 2024. A total of 8 qualitative and 16 quantitative traits were taken and analyzed using the descriptive and multivariate analysis.

Table 12: Descriptive statistics of the finger millet landraces

Parameters	Mean	SD	CV	Min	Max
Days to 50% heading	97.31	5.02	5.16	89.00	112.00
Days to 50% flowering	101.17	5.89	5.82	91.00	120.00
Days to 50% maturity	130.27	5.08	3.90	122.00	141.00
Plant height (cm)	102.91	14.06	13.66	61.16	136.60
No of grains per spike	53.64	7.47	13.93	27.40	75.40
Grain length (mm)	9.74	1.49	15.29	7.98	26.14
Grain width (mm)	2.82	0.26	9.38	2.27	3.55
Thousand grain weight (gm)	25.74	6.60	25.63	12.00	49.80
Yield (kg/ha)	1.21	0.77	63.90	0.03	3.60

Figure 5: Head orientation diversity among the studied finger millet landraces

B. Naked Barley (*Hordeum vulgare L. var. nudum*)

Barley (Hordeum vulgare L.) is a self-pollinated diploid plant (2n = 14) in the genus Hordeum, family Gramineae. It is the 5th most important crop after rice, maize wheat and millet. There are two main types of cultivated barley. The commonly grown type (Hordeum vulgare L.) has a husk that stays tightly attached to the grain. The other type, called naked or hulless barley (Hordeum vulgare var. nudum L.), has a loose husk that comes off easily during threshing(Pandey et al., 2006).Naked barley (also called hulless barley), known locally in Nepal as Uwa or Mudule Jau, is different from regular hulled barley because its outer husk comes off easily during threshing (Bhatty, 1999).Naked barley is thought to have been domesticated after hulled barley, around 6500 BC(Zohary & Hopf, 2000) .The hulless grain trait is controlled by a single recessive gene called 'nud', which is found on the long arm of chromosome 7H (Kikuchi et al., 2003).Barley contains four to six times higher level of minerals such as calcium,magnesium,potassium and ten times higher level of iron in comparison to wheat (Abdel-Aal E.M., 2016).

The field experiment was carried out at the plant breeding research field of National Agriculture Genetic Resources Centre during 2024 and 2025 with the aim of evaluating the agro-morphological traits and assessing the diversity of Naked barley landraces. The study involved the collection of 81 landraces from 15 districts across Nepal, characterized through an augmented rod row non replicated block design. Thirteen quantitative and seven qualitative traits were

recorded, and mean data were analyzed through both descriptive and multivariate methods.

Table 13: Descriptive statistics of the 81 accession of naked barley landraces

Variables	Min	Max	Mean	Std.dev	CV (%)	H'
Days to 50% emergence	10	29	10.38	2.16	20.80	0.36
Chlorophyll content	33.33	46.8	40.45	3.36	8.30	0.83
Days to first heading	80	107	93.60	6.09	6.51	0.88
Days to 50% heading	88	121	99.98	5.95	5.95	0.84
Days to 50% flowering	97	127	110.20	6.47	5.87	0.86
Days to 80% maturity	131	153	139.52	4.57	3.27	0.82
Flag leaf length (Cm)	3.4	12.2	8.08	1.83	22.60	0.92
Flag leaf width (Cm)	0.58	1.6	1.08	0.22	20.36	0.89
Spike length (Cm)	4.88	9.24	6.60	1.01	15.33	0.85
Awn length (Cm)	2.94	11.3	7.55	3.06	40.57	0.75
Peduncle length (Cm)	33.22	59.24	46.55	5.55	11.92	0.92
Plant height (Cm)	85.44	135.72	117.16	9.71	8.28	0.83
Spike exertion (Cm)	8.6	32.32	23.82	5.19	21.78	0.90

Figure 6: Spike Diversity among Nepalese Naked Barley Landraces

Table 14: Descriptive statistics of the 61 accessions of naked barley landraces

S.N.	Traits	Range(min)	Range(max)	Mean ± SEM	Std dev	CV (%)
1.	Days to 1st heading	77	102	90.24±0.79	6.23	6.90
2.	Days to 50% heading	91	108	98.49±0.63	4.99	5.06
3.	Days to 1st maturity	123	144	131.05±0.64	5.02	3.83
4.	Days to 80% maturity	133	166	143.46±1.01	7.94	5.54
5.	Flag leaf length (cm)	6.46	13.88	9.71±0.23	1.78	18.38
6.	Flag leaf width (cm)	0.7	1.74	1.21±0.02	0.17	14.40
7.	Plant height (cm)	91.66	131.08	112.81±1.08	8.54	7.57
8.	Awn length (cm)	1.5	11.56	7.11±0.40	3.18	44.80
9.	Spike exertion	15.36	32.02	23.46±0.54	4.22	18
10.	Spike length (cm)	4.22	10.78	6.12±0.15	1.16	18.92
11.	Peduncle length (cm)	37.02	55.32	46.04±0.63	4.94	10.73
12.	No. of seed per spike	40.6	74.2	56.34±1.06	8.32	14.76
13.	Seed length(mm)	5.66	7.99	6.73±0.06	0.44	6.50
14.	Seed width (mm)	2.44	4.002	3.31±0.04	0.35	10.48
15.	Seed thickness (mm)	1.64	2.91	2.38±0.04	0.31	13.02
16.	1000 grain weight(gm)	11.1	51.5	29.73±1.11	8.83	29.69
17.	Yield (kg)	0.06	1.87	0.73±0.04	0.30	41

C. Foxtail Millet (*Setaria italica*)

Millets belong to family Poaceae and are recommended cereal crop for regions that are prone to drought because they are tough, small seeded grasses that thrive in arid climates as rainfed crops with low soil fertility and moisture levels (Kheya et al., 2023). Among millets, Foxtail millet is a self-pollinated crop rank second among the millets having chromosome number 2n =18. It is predominant in southern Europe, subtropical, tropical asia, temperate asia and also the important cereals of Nepal (Sapkota et al., 2016). It is cultivated on 271,183ha with production of 304,105mt and productivity of 1,121kg/ha globally (FAO, 2024). Foxtail millet is a nutrient-dense grain that is low in fat and high in dietary fiber, protein, vitamins, and minerals. It helps manage diabetes because of its low glycemic index, which releases glucose gradually. It facilitates digestion and supports gut health because it is gluten-free. It also offers anti-aging qualities, helps with weight loss, improves bone health because of its

calcium levels, and helps against cancer because of its strong antioxidant content (Origin, 2020). The foxtail millet grain has same method of cooking as rice, and has many food applications such as porridge, puddling, bread, rolls, chips, cakes, flour and noodles (Swamy, 2020).

The research was conducted at National Agriculture Genetic Resources Centre during 2024–2025 to characterize agro-morphological traits and assess genetic diversity of foxtail millet landraces. Sixty-six landraces were characterized and evaluated using an augmented replicated block design. Twenty-one quantitative and seventeen qualitative traits were measured by using the standard descriptor and analyzed by descriptive and multivariate methods.

Table 15: Descriptive statistics of the characterized foxtail millet landraces

Variables	Min	Max	Median	Mean	SE.mean	std.dev	coef.var
Flag leaf length (cm)	14.1	47	30.38	30.07	0.87	7.09	23.57
Flag leaf width (cm)	1.54	3.42	2.32	2.33	0.05	0.39	16.71
Stem diameter (cm)	1.45	4.78	2.971	3.04	0.09	0.77	25.17
Inflorescence length	7.5	30.18	16.89	16.95	0.62	5.00	29.51
Inflorescence width	0.96	2.94	1.98	1.96	0.06	0.46	23.26
Days to First emergence	9	20	13	13.85	0.46	3.72	26.84
Days to 50% emergence	15	24	18	18.32	0.30	2.45	13.37
Days to first heading	58	114	79	78.44	1.20	9.72	12.39
Basal Tiller	1	5.6	3.4	3.19	0.12	0.98	30.69
Productive tiller	1	5.4	3.1	3.11	0.12	0.99	31.88
Panicle exertion	7.3	23.84	15.56	15.51	0.40	3.23	20.80
Sheath length	9.68	20.16	15.33	15.38	0.31	2.49	16.20
Peduncle length	19.38	41.52	31.05	30.69	0.60	4.85	15.81
Plant height	74	166.92	123.16	120.18	2.93	23.84	19.83
Leaf number	4.8	13.8	10.2	9.98	0.29	2.38	23.87
Grain weight /Panicle (g)	0.926	15.076	4.02	4.62	0.28	2.31	49.95
Maturing uniformity (%)	75	98	85	87.39	0.90	7.27	8.32
Leaf senescence (%)	25	95	50	55.45	2.22	18.01	32.47
Days to 50% flowering	76	127	94	94.98	1.51	12.27	12.91
100 seed wt	0.05	0.34	0.19	0.19	0.01	0.07	35.86
Chlorophyll content	12.96	64.572	32.232	35.39	1.49	12.12	34.25

D. Barley

The evaluation of barley landraces conserved in the Nepal Genebank during the 2081/082 (2024/2025) season offers a comprehensive understanding of both quantitative and qualitative traits, reflecting the rich genetic diversity present in these materials. The quantitative assessment highlighted a wide range of variations across multiple agronomic and yield-related traits. For instance, days to emergence ranged from 9 to 15 days, with a mean of 9.78 and a coefficient of variation (CV) of 17.33, showing moderate variability. This variability in early growth traits is crucial for adaptation to diverse environments, particularly under varying soil moisture and temperature conditions during germination. The heading and maturity traits demonstrated relatively stable patterns. The mean days to 50% heading was recorded at 105.07, with a low CV of 3.98, while days to 80% maturity averaged 130.07 with an even lower CV of 3.32, indicating a strong uniformity in flowering and maturity periods among the landraces. Such stability in phenological traits is advantageous for crop management and synchronizing harvests. However, despite this stability, days to first heading showed a slightly higher CV of 4.91, suggesting some diversity in heading initiation.

Morphological traits exhibited more variability, underscoring the genetic richness of the landraces. Flag leaf length varied widely from 5.24 to 13.24 cm, with a mean of 8.75 and CV of 17.68, while flag leaf width ranged between 0.42 and 1.24 cm with a CV of 14.99. Since the flag leaf plays a significant role in photosynthesis and grain filling, this diversity provides opportunities for selecting genotypes with improved source capacity. Awn length showed remarkable variation, ranging from 1.64 to 10.26 cm, with a mean of 6.26 and the highest CV among morphological traits (33.23). Such variability in awn development could be linked to adaptation and photosynthetic efficiency, as well as its contribution to seed dispersal. Similarly, spike length ranged from 5.06 to 12.3 cm with a CV of 17.87, and panicle length varied from 28.76 to 46.18 cm with a relatively lower CV of 8.54, indicating moderate diversity in these yield-contributing components. Spike exertion averaged 17.67 cm with a CV of 14.19, while plant height displayed notable diversity, ranging from 91.18 to 153.4 cm, with a mean of 116.11 and CV of 9.58. The wide variation in plant height (cm) suggests the presence of both short and tall landraces, offering scope for selecting varieties adapted to different cultivation practices and lodging resistance.

Yield components demonstrated significant variability. The number of grains per spike ranged from 24.6 to 76.2, with a mean of 55.27 and CV of 17.08, indicating ample genetic variation that directly contributes to yield potential. Similarly, the 1000 grain weight (cm) varied substantially, ranging from 13.2 to

46 g, with a mean of 2.66 and a high CV of 27.22, reflecting diverse genetic backgrounds influencing seed size and weight. Seed traits further supported this diversity, with seed length averaging 9.55 mm, seed width 2.89 mm, and seed thickness 2.14 mm, accompanied by CV values of 8.62, 10.37, and 14.86, respectively. These variations provide opportunities for tailoring seed morphology according to farmer and consumer preferences. Seed weight per plot showed extreme variability, ranging from 165 to 1945 g, with a mean of 770.55 and a very high CV of 49.44, underscoring substantial differences in productivity among the landraces. Correspondingly, grain yield per hectare averaged 1.45 t/ha, but with a wide range of 0.31 to 3.64 t/ha and a CV of 49.75, highlighting the productivity potential of certain landraces that could be harnessed in breeding programs. Moisture content was more consistent, averaging 11.37% with a CV of 7.28, suggesting relative uniformity in grain storability and quality traits.

The qualitative traits presented a contrasting picture of uniformity. Observations on auricle pigmentation, length of rachilla hair, kernel covering, awn color, and lemma color revealed no variation among the landraces, indicating that these traits are largely fixed and stable within the evaluated materials. While this lack of diversity may limit their immediate use in selection for these specific qualitative attributes, it also provides a foundation of stability that could be valuable for maintaining desirable grain characteristics.

Overall, the analysis reveals that barley landraces from the Nepal Genebank harbor considerable genetic diversity in key quantitative traits such as plant height (cm), yield components, seed morphology, and yield potential, while maintaining stability in certain phenological and qualitative traits. The high variability in yield-related traits like grain number per spike, 1000-grain weight, and overall yield per hectare highlights opportunities for breeders to exploit this genetic richness for productivity improvement. At the same time, the consistency in maturity traits ensures that these landraces can provide predictable performance under Nepal's diverse agro-climatic conditions. The combination of diversity and stability evident in these landraces underscores their value as a genetic resource for future barley breeding programs, supporting the development of varieties that are both high-yielding and resilient to environmental stresses.

Table 16: Descriptive statistics of the characterized Barley landraces

S.N.	Traits	Range(min)	Range(max)	Mean ± SEM	Std dev	CV (%)
1.	Days to emergence	9	15	9.78±0.17	1.69	17.33
2.	Days to 1st heading	89	114	98.52±0.48	4.84	4.91
3.	Days to 50% heading	91	115	105.07±0.42	4.18	3.98
4.	Days to 80% maturity	121	142	130.07±0.43	4.32	3.32
5.	Flag leaf length (cm)	5.24	13.24	8.75±0.15	1.55	17.68
6.	Flag leaf width (cm)	0.42	1.24	0.93±0.01	0.14	14.99
7.	Awn length	1.64	10.26	6.26±0.21	2.08	33.23
8.	Spike length	5.06	12.3	7.24±0.13	1.29	17.87
9.	Peduncle length (cm)	28.76	46.18	38.92±0.33	3.32	8.54
10.	Spike exertion	10.30	23.72	17.67±0.25	2.51	14.19
11.	Plant height (cm)	91.18	153.4	116.11±1.11	11.12	9.58
12.	No. of grain per spike	24.6	76.2	55.27±0.94	9.44	17.08
13.	Seed length (mm)	8.004	12.21	9.55±0.08	0.82	8.62
14.	Seed width (mm)	1.792	3.62	2.89±0.03	0.30	10.37
15.	Seed thickness (mm)	1.154	2.85	2.14±0.03	0.32	14.86
16.	1000 grain weight(gm)	13.2	46	2.66±0.07	0.72	27.22
17.	Seed weight per plot(gm)	165	1945	770.55±36.80	380.95	49.44
18.	Moisture content(%)	10.1	15.5	11.37±0.08	0.83	7.28
19.	Yield (t/ha)	0.31	3.64	1.45±0.07	0.72	49.75

E. Rice

The evaluation of 18 quantitative traits revealed substantial variability among the 37 rice landraces, reflecting considerable genetic diversity within the population. Phenological traits showed moderate variation, with days to first heading ranging from 52 to 120 days, averaging 92.49 and exhibiting a

coefficient of variation (CV) of 16.01%, while days to 50% heading varied between 65 and 125 days, with a mean of 98.84 and CV of 15.11%. In contrast, days to maturity ranged from 120 to 160 days, with a mean of 140.41 and CV of only 8.51%, making it the most stable phenological trait. This indicates that although heading behavior varied moderately among genotypes, the time required to reach maturity was relatively uniform, suggesting a less plastic response under the given environmental conditions. Leaf-related traits displayed wide ranges and high variability, highlighting their potential role in distinguishing genotypes. Leaf blade length was the most variable trait, ranging from 25.8 to 123.1 cm with a mean of 42.79 and CV of 49.03%, while flag leaf length varied from 18.9 to 85.5 cm with a CV of 35.21%, reflecting strong morphological diversity. In contrast, flag leaf width (0.9–3.3 cm; CV 27.72%), leaf blade width (0.6–2.4 cm; CV 27.36%), and ligule length (1–2.6 cm; CV 24.42%) exhibited moderate variation. The high variability in leaf length traits is particularly important, as leaf size and morphology influence photosynthetic efficiency, biomass accumulation, and consequently grain yield.

Culm-related traits also contributed to diversity, with culm diameter at the basal internode ranging from 3.17 to 6.49 mm and a relatively low CV of 17.03%, suggesting structural uniformity in stem thickness. In contrast, culm number (6–19; CV 25.78%) and culm length (44.4–146.7 cm; CV 30.21%) were highly variable, reflecting differences in tillering ability and plant height, both of which are critical for lodging resistance, biomass production, and overall yield potential. Panicle and grain yield components exhibited distinct patterns of variability. Panicle length was the most stable reproductive trait, ranging from 17.3 to 26.4 cm with a CV of 8.94%, whereas the number of grains per panicle varied widely from 57 to 235, with a mean of 129.51 and CV of 27.88%, indicating strong genetic potential for improving grain number through selection. Grain morphological traits, including length (6.46–9.17 mm; CV 11.18%), width (2.16–3.51 mm; CV 13.54%), and thickness (1.73–2.37 mm; CV 9.25%), were relatively uniform across genotypes, suggesting stability in grain shape and size. The 1000 grain weight ranged from 18.9 to 32.4 g, with a mean of 25.25 and CV of 12.18%, representing moderate diversity. Grain yield per plant showed the highest agronomic significance and variability, ranging from 0.46 to 4.5 kg with a mean of 2.58 and CV of 36.83%. Such wide variation in yield performance reflects both genetic differences and environmental influences, as well as the contribution of yield components such as grain number per panicle and tiller production.

Overall, the study highlights that maturity and grain dimension traits were relatively stable, whereas leaf morphology, culm traits, and yield components,

particularly grain number per panicle and overall yield, exhibited wide variability. These results indicate that traits such as leaf blade length, flag leaf length, culm length, and yield are important selection criteria in breeding programs aimed at improving productivity and adaptation, providing a strong foundation for the development of high-yielding and well-adapted genotypes.

Table 17: Descriptive statistics of the characterized Rice landraces

S.N.	Traits	Range(min)	Range(max)	Mean ± SEM	Std dev	CV (%)
1.	Days to 1st heading	52	120	92.49±2.47	14.80	16.01
2.	Days to 50% heading	65	125	98.84±2.49	14.93	15.11
3.	Days to maturity	120	160	140.41±1.99	11.94	8.51
4.	Flag leaf length	18.9	85.5	29.15±1.71	10.26	35.21
5.	Flag leaf width	0.9	3.3	1.34±0.06	0.37	27.72
6.	Leaf blade length (cm)	25.8	123.1	42.79±3.50	20.98	49.03
7.	Leaf blade width (cm)	0.6	2.4	1.06±0.05	0.29	27.36
8.	Ligule length	1	2.6	1.61±0.07	0.39	24.42
9.	Culm diameter at basal internode (mm)	3.17	6.49	4.40±0.12	0.75	17.03
10.	Clum number	6	19	10.32±0.44	2.66	25.78
11.	Clum length	44.4	146.7	71.46±3.60	21.59	30.21
12.	Panicle length	17.3	26.4	22.02±0.33	1.97	8.94
13.	No. of grain per panicle	57	235	129.51±6.02	36.11	27.88
14.	Grain length (mm)	6.46	9.17	7.66±0.14	0.86	11.18
15.	Grain width (mm)	2.16	3.51	2.88±0.07	0.39	13.54
16.	Grain thickness (mm)	1.73	2.37	2±0.03	0.19	9.25
17.	1000 seed weight (gm)	18.9	32.4	25.25±0.51	3.08	12.18
18.	Yield (kg)	0.46	4.5	2.58±0.16	0.95	36.83

F. Wheat

A total of 130 wheat landraces conserved in the Nepal Genebank during the 2081/082 (2024/25) cropping season exhibited substantial variability in both quantitative and qualitative traits, reflecting the rich genetic diversity present within this germplasm. Phenological traits demonstrated moderate variability, indicating relative uniformity in key growth stages while still allowing for differences that can be exploited in breeding programs. Days to first heading ranged from 87 to 131 days, with an average of 112.12 and a coefficient of variation (CV) of 8.35%, while days to 50% heading varied between 94 and 144 days, averaging 117.97 with a CV of 8.30%. The onset of first flowering occurred at a mean of 118.44 days with a slightly lower CV of 5.90%, indicating fairly uniform reproductive initiation across the landraces. Maturity was attained at an average of 160.27 days, with minimal variation (CV: 3.78%), highlighting the stability of this trait and its suitability for synchronized harvesting. These observations suggest that although minor differences exist in early growth and flowering behavior, the wheat landraces exhibit considerable consistency in maturity, providing predictable crop performance under Nepal's agro-climatic conditions.

Morphological traits displayed wider variability, reflecting the diverse growth habits and architectural differences among the landraces. Plant height ranged from 57.2 to 144.98 cm, averaging 104.52 cm with a CV of 18.15%, indicating the presence of both dwarf and tall genotypes, which has important implications for lodging resistance, biomass accumulation, and overall yield potential. Spike exertion exhibited the greatest variability among morphological traits, ranging from 2.36 to 46.3 cm, with an average of 21.92 and a CV of 42.82%, highlighting differences in spike emergence and potential for effective grain filling. Peduncle length ranged from 12.6 to 53.1 cm, with a mean of 37.42 and CV of 21.36%, further reflecting structural diversity in spike-bearing portions of the plant. Spike length showed significant variation as well, ranging from 6.5 to 37.6 cm with an average of 11.57 and a CV of 32.19%. The number of spikelets per spike ranged from 7 to 17 with a mean of 9.94 and CV of 10.93%, while the number of grains per spike was relatively lower, ranging from 1 to 3 with a mean of 2.26 and CV of 13.81%, emphasizing moderate variability in reproductive output. Flag leaf length and width exhibited moderate uniformity, with means of 15.46 cm and 4.37 cm, respectively, and CVs of 16.39% and 15.05%, demonstrating some diversity in canopy architecture, which can influence light interception, photosynthetic efficiency, and ultimately grain yield.

Seed-related traits also showed notable variability, offering opportunities for selection in both yield improvement and quality enhancement. Seed length varied from 4.75 to 18.70 mm, with a mean of 6.10 and CV of 20.27%, seed width ranged from 2.144 to 9.382 mm, averaging 3.28 with a CV of 18.71%, and seed thickness ranged from 2.172 to 6.452 mm, with a mean of 2.76 and CV of 15.20%. 1000 grain weight ranged from 23.6 to 61.8 g, averaging 39.49 gm with a CV of 21.23%, reflecting substantial differences in grain mass among the landraces. Grain yield per plant was highly variable, ranging from 0.27 to 2.15 kg, with a mean of 0.96 and CV of 39.46%, underscoring the genetic potential for yield improvement through selection of superior genotypes. This high variability in yield-related traits highlights the influence of multiple factors, including plant height (cm), spikelet number, grain number, and seed size (mm), which collectively determine productivity.

Qualitative traits also revealed diversity in growth habit, with 53.07% of the wheat landraces classified as prostrate type, 23.07% as intermediate, and 23.66% as erect type. This variation in plant architecture is significant for breeding, as growth habit affects light interception, tillering, and lodging resistance. In contrast, seed surface showed no variation among the landraces, indicating stability in this trait across the evaluated materials. The combination of high variability in growth, spike, and yield-related traits, alongside stable phenological and seed surface characteristics, provides an ideal framework for selection and breeding aimed at enhancing productivity, adaptability, and grain quality.

Overall, the findings demonstrate that the wheat landraces conserved in the Nepal Genebank harbor considerable genetic diversity, particularly in traits related to plant architecture, spike morphology, seed characteristics, and yield components. While phenological traits such as heading, flowering, and maturity were relatively stable, ensuring predictable crop performance, the extensive variation in morphological and yield-related traits provides a valuable resource for breeders. Traits such as plant height (cm), spike exertion, spike length (cm), flag leaf dimensions, grain size, and hundred-grain weight are critical selection criteria for developing high-yielding, well-adapted wheat varieties. The presence of diverse growth types further supports selection for agronomic suitability in different environmental conditions and management systems. Leveraging this diversity will allow the development of improved wheat varieties that are both productive and resilient, strengthening the role of wheat in Nepal's agricultural systems and contributing to food security and farmer livelihoods.

Table 18: Descriptive statistics of the characterized Wheat landraces

S.N.	Traits	Range(min)	Range(max)	Mean ± SEM	Std dev	CV (%)
1.	Days to emergence	9	18	10.50±0.12	1.33	12.63
2.	Days to 1st heading	87	131	112.12±0.82	9.37	8.35
3.	Days to 50% heading	94	144	117.97±0.86	9.79	8.30
4.	Days to 1st flowering	110	142	118.44±0.61	6.98	5.90
5.	Days to 80% maturity	158	186	160.27±0.55	6.21	3.78
6.	Flag leaf length	9.05	24.7	15.46±0.22	2.53	16.39
7.	Flag leaf width	2.57	6.54	4.37±0.06	0.66	15.05
8.	Plant height(cm)	57.2	144.98	104.52±1.67	18.97	18.15
9.	Peduncle length	12.6	53.1	37.42±0.70	7.99	21.36
10.	Spike exertion	2.36	46.3	21.92±0.83	9.39	42.82
11.	Spike length	6.5	37.6	11.57±0.33	3.73	32.19
12.	No. of spikelet per spike	7	17	9.94±0.10	1.09	10.93
13.	No. of grain per spike	1	3	2.26±0.03	0.31	13.81
14.	Seed length (mm)	4.75	18.70	6.10±0.11	1.24	20.27
15.	Seed width (mm)	2.144	9.382	3.28±0.05	0.61	18.71
16.	Seed thickness (mm)	2.172	6.452	2.76±0.04	0.42	15.20
17.	1000 grain weight(gm)	23.6	61.8	39.49±0.74	08.39	21.23
18.	Yield (kg)	0.27	2.15	0.96±0.03	0.38	39.46

G. Wild Rice

Three species of wild rice collected from different locations were transplanted in the glass house of the Genebank for ex-situ morphological characterization.

Qualitative traits:

Many traits such as ligule pubescence, ligule color, anther color, leaf blade anthocyanin showed little or no variation, indicating uniformity across accessions. Some traits displayed distinct variation:

Leaf sheath anthocyanin was present only in one accession, suggesting it could serve as a differentiating marker. Stigma color varied (1, 5), indicating visible diversity in reproductive traits. Flag leaf attitude and panicle attitude showed variation (codes 1–7), reflecting differences in plant architecture. Culm habit ranged from spreading (5) to erect (1), showing adaptability differences among accessions. Awn-related traits (presence, color, length, thickness) exhibited strong variability, which is important for domestication and utilization studies.

Quantitative traits

Leaf blade length varied widely (24.1–78.3 cm), reflecting substantial diversity in leaf morphology. Flag leaf width ranged from 1.0–1.78 cm, with moderate variability. Ligule length varied considerably (12–27.2 mm), useful for distinguishing accessions. Culm number showed high variability (5–72 tillers), indicating strong potential for yield-related selection. Panicle traits such as Panicle length (15–24.9) cm, Number of panicles per plant varied sharply (1–22), Panicle number of basal (4–8) displayed variation.

Traits related to plant stature (culm number, culm habit, leaf size) and reproductive organs (stigma color, awn traits, panicle characters) contributed the most to diversity. Traits like ligule color, anther color, and pubescence remained largely invariant, suggesting limited diagnostic value in this set.

The dataset indicates substantial morphological diversity in key agronomic and reproductive traits such as culm number, leaf blade length, panicle number, and awn characteristics. These variations are important for both conservation and breeding programs, as they provide scope for selection of accessions with desirable plant architecture and yield traits.

Accession	CO17294P1	CO17294P2	CO17130	CO17129	CO17128	CO17131
Species	*Oryza granulata*	*Oryza granulata*	*Oryza nivara*	*Oryza nivara*	*Oryza rufipogan*	*Oryza rufipogan*
District	*Lothar*	*Lothar*	*Palpa*	*Kapilvastu*	*Kapilvastu*	*Rupandehi*
Ligule Pubescence	1	1	1	1	1	1
Ligule color	1	1	1	1	1	1
Leaf blade length (cm)	24.5	24.1	64.2	78.3	67	68.24
Flag leaf width (cm)	1.2	1	1.3	1.78	1.7	1.56
Flag leaf attitude	3	3	1	1	1	1
Panicle attitude	1	1	1	7	1	1
Basal leaf sheath color	2	1	1	1	1	1
Leaf sheath anthocyanin	3	0	0	0	0	0
Leaf blade anthocyanin	0	0	0	0	0	0

Accession	C017294P1	C017294P2	C017130	C017129	C017128	C017131
Intensity of green color	3	3	7	3	7	3
Leaf blade attitude	5	5	7	1	7	7
Leaf blade pubescence	3	3	3	3	3	3
Leaf blade pubescence on leaf surface	4	4	4	4	2	2
Leaf margin pubescence	1	1	2	2	2	2
Auricle color	1	2	2	2	2	2
Collar color	2	2	2	2	2	1
Ligule length (mm)	12	13	18.8	23.2	27.2	17.4
Ligule shape	2	2	3	3	3	3
Ligule margin hairiness	0	0	0	0	0	0
Culm habit	5	5	3	3	1	1
Culm length	2	2	4	2	2	4
Culm number	37	72	9.2	5	13.4	5
Culm anthocyanin colouration on nodes	0	0	0	1	1	2
Culm underlying color	2	2	2	2	2	2
stigma color	1	1	5	1	5	5
Anther length (cm)	0.3	0.3	0.304	0.1	0.78	0.4
Anther color	1	1	1	1	1	1
Awns presence	0	0	2	2	2	2
Awns color			6	6	1	6
Awn length			9	5	3	3
Awn thickness (mm)			0.5	0.136	0.112	0.14
Panicle arr. of primary brances	1	1	2	2	2	2
Panicle number of basal branches	4	5	7.6	8	5.6	5.4
Panicle texture	2	2	1	1	2	2
Panicle/plant	15	22	1	3.6	1.8	3.8
Panicle length (cm)	15	20	22.75	23.82	24	24.9

4.3.2 Characterization/evaluation of horticultural crops

A. Common Bean (Phaseolus vulgaris L.)

Common bean (Phaseolus vulgaris L.) is an annual, self-pollinated, diploid (2n=22), legume crop species belongs to family Fabaceae. Common beans are known by various names like; French bean, dry bean, rajma bean, snap bean and kidney bean (Ali, 2016). About 8,000 years ago domestication of beans was

started, which created two gene pools i.e. the Mesoamerican and the Andean. While the Andean pool originated in the Andes mountains of South America, the Mesoamerican pool, which had at least seven races, came from Central America and Mexico (Gepts & Bliss, 1988). The Middle American gene pool's bean seeds are classified as tiny or medium-sized, but the Andean gene pool's phenotypic seeds are typically regarded as bigger (Gepts & Bliss, 1986). The common bean has the genome size of the 473 Mb (Schmutz et al., 2014). A total of 70–80 wild species of the common bean have been found (Rendón-Anaya et al., 2017). Out of total wild species, at least five have been domesticated across various ecological and geographical regions. These include the year bean (P. dumosus Macfady), runner bean (P. coccineus L.), lima bean (P. lunatus L.), tepary bean (P. acutifolius A. Gray), and common bean (P. vulgaris L.) (Rosales-Serna, 2005).

The research was conducted at the laboratory of National Agriculture Genetic Resources Centre during 2024–2025 to characterize seed traits and assess seed diversity of common bean landraces conserved in National genebank. Seeds of two hundred eighty-eight landraces were characterized and evaluated following the guidelines of an IBPGR descriptor. Four quantitative and eleven qualitative traits were measured and analyzed by descriptive and multivariate methods.

Table 19: Descriptive statistics among four quantitative traits

Variables	min	max	mean	Var	Std.dev	CV
seed length	7.98	19.89	12.34	4.41	2.10	17.00
seed breadth	5.18	12.61	7.01	1.04	1.02	15.00
seed thickness	3.47	8.85	5.25	0.71	0.84	16.00
thousand seed weight	135.00	1195.00	347.92	20478.22	143.10	41.00

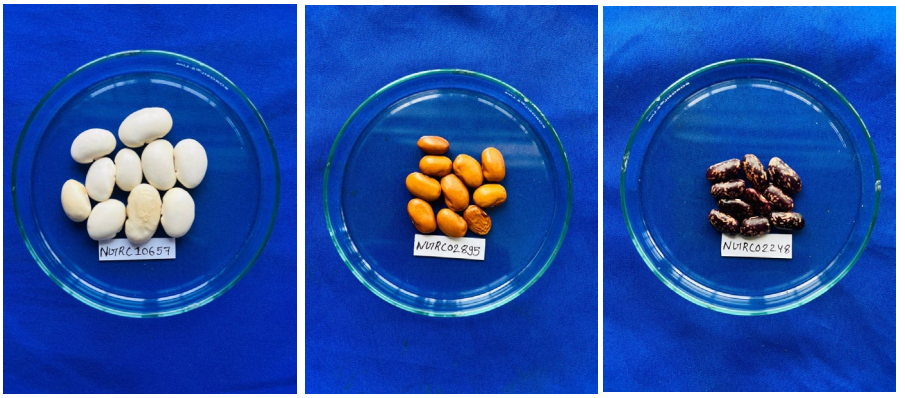


Figure 7: Seed color diversity among Nepalese common bean landraces

B. Cucumber

Cucumber (Cucumis sativus L.), a member of the family Cucurbitaceae, is one of the extensively grown seasonal vegetables. China stands as the leading producer worldwide, contributing nearly 81% of global output, with Turkey and Russia ranking next. In Nepal, it is grown in 9,643 hectares with the production of 150,213 metric tons and productivity 15.58 metric ton per hectare (MOALD,2023/24). The experiment was carried out at the field of NAGRC Khumaltar, Lalitpur during 2024 in non-replicated augmented block design with the objective of agro-morphological characterization and diversity assessment and elite line selection of cucumber landraces. Total 33 cucumber landraces collected from different districts of Nepal were characterization and evaluated for this study. The plot size was 5.4-meter square with two rows adopting row to row distance of 1 meter. The seedling was taken up on 3rd April 2025 in the main cropping season with recommended fertilizer and management practices. The agro-morphological traits were measured at various growth stages according to the cucumber descriptor developed by International Plant Genetic Resources Institute (IPGRI, 2001). Six quantitative and six qualitative traits were recorded at different growth stages of the crops. Basic statistics including mean, maximum, minimum and coefficient of variation (CV) were calculated by using Excel 2016.

Fruit length (CV = 20.97%), Mean ± SD: 33.42 ± 7.01 cm shows moderate variability. Fruit length shows noticeable diversity among accessions, useful for selection in breeding programs. Fruit width (CV = 22.91%), Mean ± SD: 72.01 ± 16.49 mm shows moderate to high variability. This trait shows considerable variation, making it important for distinguishing genotypes. Fruit diameter (CV = 22.36%) Mean ± SD: 28.18 ± 6.3 mm shows moderate to high variability. Fruit diameter is diverse, suggesting genetic differences among accessions. Fruit flesh thickness (CV = 28.96%) Mean ± SD: 22.35 ± 6.47 mm shows high variability. Flesh thickness shows substantial diversity, which is valuable for traits like fruit quality and yield. Fruit peel thickness (CV = 53.86%) Mean ± SD: 0.58 ± 0.31 mm shows very high variability. Peel thickness is extremely diverse, indicating a wide range of genetic variation or strong environmental influence. Could be a key trait for selection in breeding. Seed length (CV = 0.13%) Mean ± SD: 9.47 ± 1.28 mm shows very low variability. Seed length is highly uniform, showing little genetic diversity in this trait. Seed width (CV = 0.07%) Mean ± SD: 3.66 ± 0.27 mm shows very low variability. Seed width is stable across accessions, not very useful for distinguishing genotypes. Number of seeds per fruit (CV = 54.62%) Mean ± SD: 277.71 ± 151.7shows very high variability. Seed

number per fruit shows extreme diversity, making it a key discriminating trait among accessions and important for yield improvement.

This cucumber collection shows substantial diversity in fruit-related traits, particularly peel thickness, flesh thickness, and seed number per fruit, while seed size traits are highly uniform. Traits with high CV are the most informative for selection, breeding, and genetic improvement.

Table 20: Quantitative traits

S.N.	Trait	Max	Min	Mean ± SE	Std	CV%
1	Fruit length	51	20	33.42±0.82	7.01	20.97
2	Fruit width	105.82	19.49	72.01±1.93	16.49	22.91
3	Fruit diameter	53.16	16	28.18±0.73	6.3	22.36
4	Fruit flesh thickness	37.6	8.76	22.35±0.76	6.47	28.96
5	Fruit peel thickness	2.43	0.27	0.58±0.03	0.31	53.86
6	Seed length	11.1	6.78	9.47±0.35	1.28	0.13
7	Seed width	4.01	3.09	3.66±0.076	0.27	0.07
6	No of seeds per fruit	635	12	277.71±18.53	151.7	54.62

Table 21: Qualitative traits

S.N.	Trait	Descriptor	Frequency
1	Shape of the lower half of the fruit	1. Thin 2. Equal 3. Thick	0 5 12
2	Shape of blossom end of fruit	1. Acute 2. Obtuse 3. Rounded 4. Truncate	1 3 13 0
3.	Net formation at maturity for seed harvest	0. Absent 1. Extremely sparse 2. Very sparse 3. Sparse 4. Slightly sparse 5. Intermediate 6. Slightly dense 7. Dense 8. Very dense 9. Extremely dense	1 0 0 5 2 2 1 2 1 2
4.	Flesh color	1. White 2. Creamish white 3. Yellow	3 15 0
5.	Ripe fruit color	1.White	0

S.N.	Trait	Descriptor	Frequency
		2.Yellow 3.Green 4.Orange 5.Brown	13 1 0 3
6.	Fruit pre-dominant shape at stem end	1. Necked 2. Acute 3. Obtuse	0 5 12

C. Tomato

The fruit of tomato (Lycopersicon esculentum) belonging to family solanaceae- a common vegetable- is a popular and highly consumed food in Nepal. It is a herbaceous perennial that is usually grown as an annual crop. Tomato is grown globally where China is the leading country in area and in production as well followed by India. Tomato is grown in 26-791 ha in Nepal with the production of 5-52-607 mt (MOALD-2023/24). The experiment was carried out at the field of NAGRC Khumaltar- Lalitpur during 2025 in replicated augmented design with the objectives of agro-morphological characterization and diversity assessment along with elite line selection of tomato landraces. Total 22 tomato landraces collected from 12 districts of Nepal were characterized and evaluated for this study. The plot size was 3.6 m2 with three rows adopting row to row distance of 60 cm. The transplanting of seedling was taken up on 10th April in the off- season in open field with recommended fertilizer and management practices. The agro-morphological traits were measured at various growth stages according to the tomato descriptor developed by International Plant Genetic Resources Institute (IPGRI- 2001). Seven quantitative and eighteen qualitative traits were recorded at different growth stages of the crop. Basic statistics including mean- maximum- minimum- coefficient of variation (CV) were calculated by using Excel 2016.

Quantitative traits

The analysis of quantitative traits revealed considerable variation among tomato landraces. Vine length ranged from 50 to 200 cm with a mean of 112.17 cm, showing moderate variability (CV = 31.88%). Petal length exhibited high variability (CV = 38.07%), indicating potential diversity for floral traits. Sepal length showed very low variation (CV ≈ 0.14%), suggesting uniformity across landraces. Fruit length (14.99–35.50 cm, CV = 21.19%) and pedicel length (3.13–7.73 cm, CV = 19.47%), Yield per plant (362.3–1188.75 g, CV 16.54%) showed moderate diversity. Pericarp thickness (0.83–5.49 mm) recorded the highest variability (CV = 42.65%), followed by 1000-seed weight (CV = 35.13%),

highlighting strong diversity in fruit quality and seed traits. Yield per plant (362.3–1188.75 g, mean 1246.2 g, CV 16.54%)

Overall, the high coefficients of variation in traits such as pericarp thickness, petal length, and seed weight indicate substantial genetic variability that can be exploited for crop improvement.

Qualitative traits

The frequency distribution of qualitative traits further demonstrated morphological diversity among the landraces:Most accessions were of the dwarf growth type (19 out of 22) with dense stem pubescence (16). Variation was observed in foliage density, leaf attitude, and inflorescence type, with semi-erect and drooping leaf attitudes represented almost equally. The majority of accessions had yellow corolla (22), inserted style position (20), and greenish-white immature fruit color (21), indicating some uniformity in floral and fruit developmental traits. Fruit morphology showed diversity: shapes ranged from flattened (9) to slightly flattened (9) and heart-shaped (1), and mature fruit colors varied from red (14) to pink (5) and orange (2). Traits related to fruit quality, such as fruit shoulder shape and size homogeneity, also showed moderate variation.

The study highlights that tomato landraces maintain significant genetic diversity in both quantitative and qualitative traits. Quantitative traits such as pericarp thickness, seed weight, and petal length provide scope for selection in breeding programs, while variation in fruit shape, size, and color among qualitative traits is valuable for consumer preference and varietal development. The observed diversity underlines the importance of conserving these landraces for future breeding and utilization.

Table 22: Quantitative traits- based diversity among tomato landraces

S.N.	Traits	Min.	Max.	Mean±SE	Std	CV%
1.	Vine length(cm)	50	200	112.17±2.41	35.76	31.88
2.	Petal length(mm)	13	1	6.87±0.17	2.62	38.07
3.	Sepal length(mm)	15	1	3.84±0.14	2.18	0.14
4.	Fruit length	35.5	14.99	20.24±0.29	4.29	21.19
5.	Pedicel length	7.73	3.13	5.33±0.07	1.04	19.47
6.	Thickness of pericarp	5.49	0.83	2.03±0.06	0.87	42.65
7.	Yield (gm)	362.3	1188.75	11246.2± 31.07	206.13	0.018
8.	1000 seed weight(gm)	5.49	0.83	2.03±0.05	0.83	35.13

Table 23: Qualitative traits-based diversity among tomato landraces

S.no.	Traits	Descriptor code	Frequency
1	Plant growth type	Dwarf	19
		Determinate	1
		Semi- determinate	2
		Indeterminate	0
2	Stem pubescence density	Sparse	3
		Intermediate	3
		Dense	16
3	Stem internode length	Short	7
		Intermediate	10
		Long	5
4	Foliage density	Sparse	13
		Intermediate	5
		Dense	4
5	No.of leaves under 1st inflorescence	Few	16
		Many	6
6	Leaf attitude	Semi-erect	9
		Horizontal	2
		Drooping	11
7	Inflorescence type	Uniparous	5
		Uniparous-multiparous	11
		Multiparous	6
8	Corolla type	White	0
		Yellow	22
		Orange	0
		Other	0
9	Style position	Inserted	20
		Same level as stamen	2
		Slightly exerted	0
		Highly exerted	0
10	Exterior color of immature fruit	Greenish white	21
		Light green	1
		Green	0
		Dark green	0
		Very dark green	0
11	Presence of green tips on fruit	Absent	8
		Present	14
12	Fruit shape	Flattened	9
		Slightly flattened	9
		Rounded	0
		High rounded	0
		Heart-shaped	1

S.no.	Traits	Descriptor code	Frequency
13	Fruit size	Very small Small	20 2
14	Fruit size homogeneity	Low Intermediate High	3 14
15	Easiness of fruit to detach from the pedicel	Easy Intermediate Difficult	22 0 0
16	Exterior color of mature colour	Green Yellow Orange Pink Red other	1 0 2 5 14 0
17	Fruit shoulder shape	Flat Slightly depressed Moderately depressed Strongly depressed	9 10 3 0
18	Intensity of exterior color	Light Intermediate Dark	0 22 0

CO 16557

CO14362

CO 15967

NGRCO 9583

NGRCO 9559

D. Chilli

The genus Capsicum is a major fruit vegetable consumed worldwide, primarily as a spice, and includes nearly 40 species (Orobiyi et al., 2017). Of these, only five, C. annuum L., C. chinense Jacq., C. frutescens L., C. baccatum L., and C. pubescens are cultivated (Costa et al., 2006). Chili is cultivated worldwide, with China leading in both cultivation area and total production, followed by Mexico, Indonesia, Spain, and Egypt (FAO, 2023). Chili is grown in 7,714 ha in Nepal with

the production of 75,867 Mt and productivity of 9.84 Mt/ha, while Akabare chili is grown in 1,717 ha with production of 14,547 Mt and productivity of 8.47Mt/ha (MOALD, 2023/24). The experiment was carried out at the field of NAGRC Khumaltar, Lalitpur, during 2024/25 in an augmented block design with the objectives of agro-morphological characterization and diversity assessment, and elite lines selection of garlic landraces. A total of 11 garlic landraces collected from 30 districts of Nepal were characterized and evaluated for this study. The plot size was 4.8 m2 (2.4×2 m) with three rows. The seedling was taken up on 27th April, 2025 in the main cropping season with recommended fertilizer and management practices. The agro-morphological traits were measured at various growth stages according to the garlic descriptor developed by the International Plant Genetic Resources Institute (IPGRI, 2001). Eight quantitative and sixteen qualitative traits were recorded at different growth stages of the crop. Basic statistics, including mean, maximum, minimum, and standard deviation, were calculated by using Excel 2024. A total of 2 elite lines of chili were identified based on the number of fruits per node.

Table 24: Quantitative Traits

S.N.	Traits	Min.	Max.	Mean±SE	Std.	CV (%)
1	First flowering (days)	152	199	179.9±4.8	15.8	8.8
2	50% flowering (days)	155	210	189.1±5.7	18.9	10
3	First fruiting (days)	160	210	191.5±5.1	16.9	8.8
4	Number of flowers per axil	1	3	1.9±0.2	0.7	36.7
5	Leaf length (cm)	9.4	22.3	17.4±1.4	4.6	26.2
6	Leaf width (cm)	3.9	15.7	11.5±1.2	4.1	36.1
7	Anther length (cm)	0.4	0.6	0.5±0.0	0.1	12.3
8	Plant height (cm)	66.4	184.8	131.5±9.8	32.5	24.7

Table 25: Qualitative Traits

S.N.	Traits	Descriptor Code	Frequency
1	Flower position	3. Pendant 5. Intermediate 7. Erect	3 6 2
2	Corolla color	1. White 2. Light yellow 3. Yellow 4. Yellow-green 5. Purple with white base 6. White with purple base 7. White with purple margin	6 5 0 0 0 0 0

S.N.	Traits	Descriptor Code	Frequency
		8. Purple	0
3	Leaf shape	1. Deltoid 2. Ovate 3. Lanceolate	8 2 1
4	Lamina margin	1. Entire 2. Undulate 3. Ciliate	5 5 1
5	Leaf pubescence	3. Sparse 5. Intermediate 7. Dense	10 1 0
6	Plant growth habit	3. Prostrate 5. Intermediate 7. Erect	0 4 7
6	Stigma exertion	3. Inserted 5. Same level 7. Exserted	0 0 11
7	Male sterility	0. Absent 1. Light pink	11 0
8	Calyx margin	1. Entire 2. Intermediate 3. Dentate	0 1 10
9	Corolla spot color	1. White 2. Light yellow 3. Yellow 4. Yellow-green 5. Purple with white base 6. White with purple base 7.White with purple margin 8. Purple	3 1 7 0 0 0 0 0
10	Corolla shape	1. Rotate 2. Campanulate	11 0
11	Calyx annular constriction	0. Absent 1. Present	9 2

S.N.	Traits	Descriptor Code	Frequency
12	Branching habit	3. Sparse 5. Intermediate 7. Dense	2 8 1
13	Leaf density	3. Sparse 5. Intermediate 7. Dense	0 10 1
14	Leaf color	1. Yellow 2. Light yellow 3. Green 4. Dark green 5. Light purple 6. Purple 7. Variegated	0 2 1 8 0 0 0
15	Stem shape	1. Cylindrical 2. Angled 3. Flattened	6 5 0
16	Stem pubescence	3. Sparse 5. Intermediate 7. Dense	5 5 1

Quantitative Traits

First flowering (152–199 days), 50% flowering (155–210 days), first fruiting (160–210 days) showed low variation (CV ~9–10%), suggesting most accessions are relatively uniform in phenology. Number of flowers per axil showed very high variability (CV 36.7%), with values ranging from 1–3. This indicates significant diversity that can influence yield potential. Leaf length (CV 26.2%), leaf width (CV 36.1%), plant height (CV 24.7%) exhibited moderate to high variation, reflecting broad morphological diversity. Such variability is crucial for selection of desirable plant architecture and adaptation. Anther length showed low variation (CV 12.3%), suggesting limited diversity in floral organ size.

Vegetative and yield-related traits (leaf size, flowers per axil, plant height) contributed more to the observed variability than reproductive phenology, indicating good scope for selecting diverse plant types.

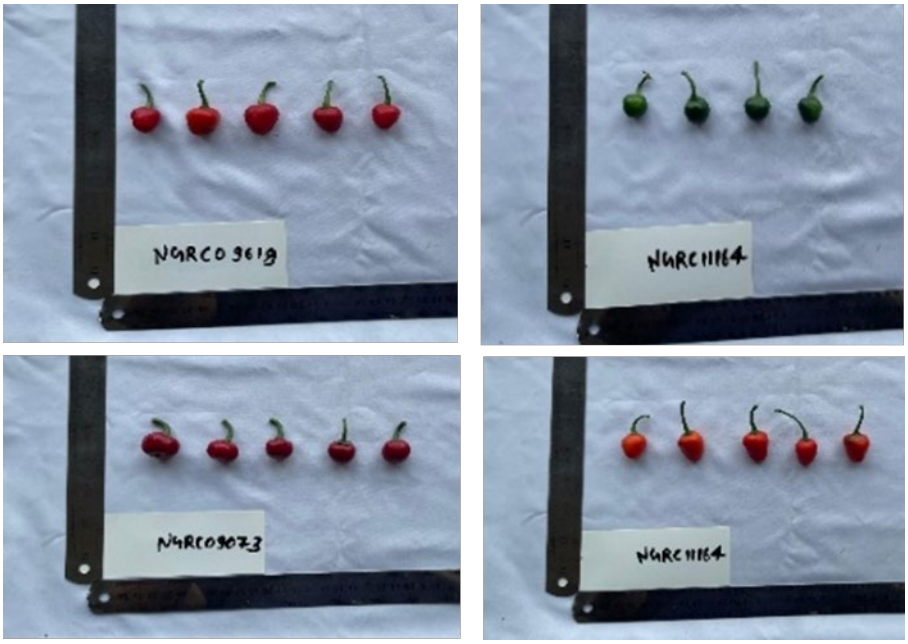
Qualitative Traits

Flower position varied across pendant (3), intermediate (6), and erect (2) types. Corolla color was restricted to white (6) and light yellow (5), showing low color diversity. Corolla spot color varied more widely (white, light yellow, yellow,

purple with white base), indicating moderate variation in floral markings. Corolla shape was uniform (rotate in all 11 accessions), suggesting no variability for this trait. Leaf shape showed diversity but Lamina margin, Leaf pubescence, Leaf density, Leaf color showed low diversity.

Number of flowers per axil, leaf shape, lamina margin, plant height, leaf dimensions, stem traits showed higher diversity. Flower position, branching habit, corolla spot color, stem pubescence showed moderate diversity. Flowering/fruiting duration, corolla shape, stigma exertion, male sterility, leaf pubescence, leaf density, corolla color (only two classes expressed) showed low or no diversity

The population shows moderate overall biodiversity, with greater variation in vegetative and morphological traits (leaf size/shape, stem characters, branching, flower number) than in reproductive and phenological traits (flowering time, stigma exertion, corolla shape). This suggests a narrow genetic base for reproductive traits but ample diversity in vegetative traits, which can be utilized for crop improvement, conservation, and developing varieties with desirable architecture and yield potential.



E. Garlic

Garlic (Allium sativum L.) of the Amaryllidaceae family with (2n = 16) chromosome number is native central Asia. Garlic (Aliium sativum L.) is the second most widely cultivated bulb crop in the world after onion and belongs to the family Amaryllidaceae. It is grown across the globe- with China ranking first in both cultivation area and production- followed by India- the Republic of Korea- Egypt- and the Russian Federation (FAO- 2023). Garlic is grown in 9-943 ha in Nepal with the production of 74- 763 ton (MOALD- 2022/23). The experiment was carried out at the field of NAGRC Khumaltar- Lalitpur- during 2024/25 in a replicated augmented block design with the objectives of agro-morphological characterization and diversity assessment- and elite lines selection of garlic landraces. A total of 92 garlic landraces collected from 30 districts of Nepal were characterized and evaluated for this study. The plot size was 0.225 m2 (0.75×0.3 m) with three rows adopting a row-to-row distance of 10 cm. The seeding was taken up in the main cropping season with recommended fertilizer and management practices. The agro-morphological traits were measured at various growth stages according to the garlic descriptor developed by the International Plant Genetic Resources Institute (IPGRI- 2001). Seven quantitative and twenty-seven qualitative traits were recorded at different growth stages of the crop. Basic statistics- including mean- maximum- minimum- and standard deviation- were calculated by using Excel 2024. A total of 5 elite lines of garlic were identified based on the yield

Table 26: Quantitative Traits

S.N.	Traits	Min.	Max.	Mean±SE	Std.	CV%
1	Plant height (cm)	19.98	51.38	34.45±0.59	7.99	23.19
2	No. of leaves	3	10	5.10±0.08	1.13	22.15
3	Longitudinal diameter of the bulb	24	60.34	42.09±0.49	6.60	15.69
4	Bolting	0	100	66.02±3.29	44.32	67.13
5	No. of cloves per compound bulb	2	30	12.54±0.30	4.04	32.23
6	Weight of cloves (g)	4.62	79	24.01±1.20	16.29	67.82
7	Sample weight (g)	45	770	203±8.67	117.58	57.66
8	Total weight (g)	85	1340	367.93±16.36	221.88	60.30

Table 27: Qualitative Traits

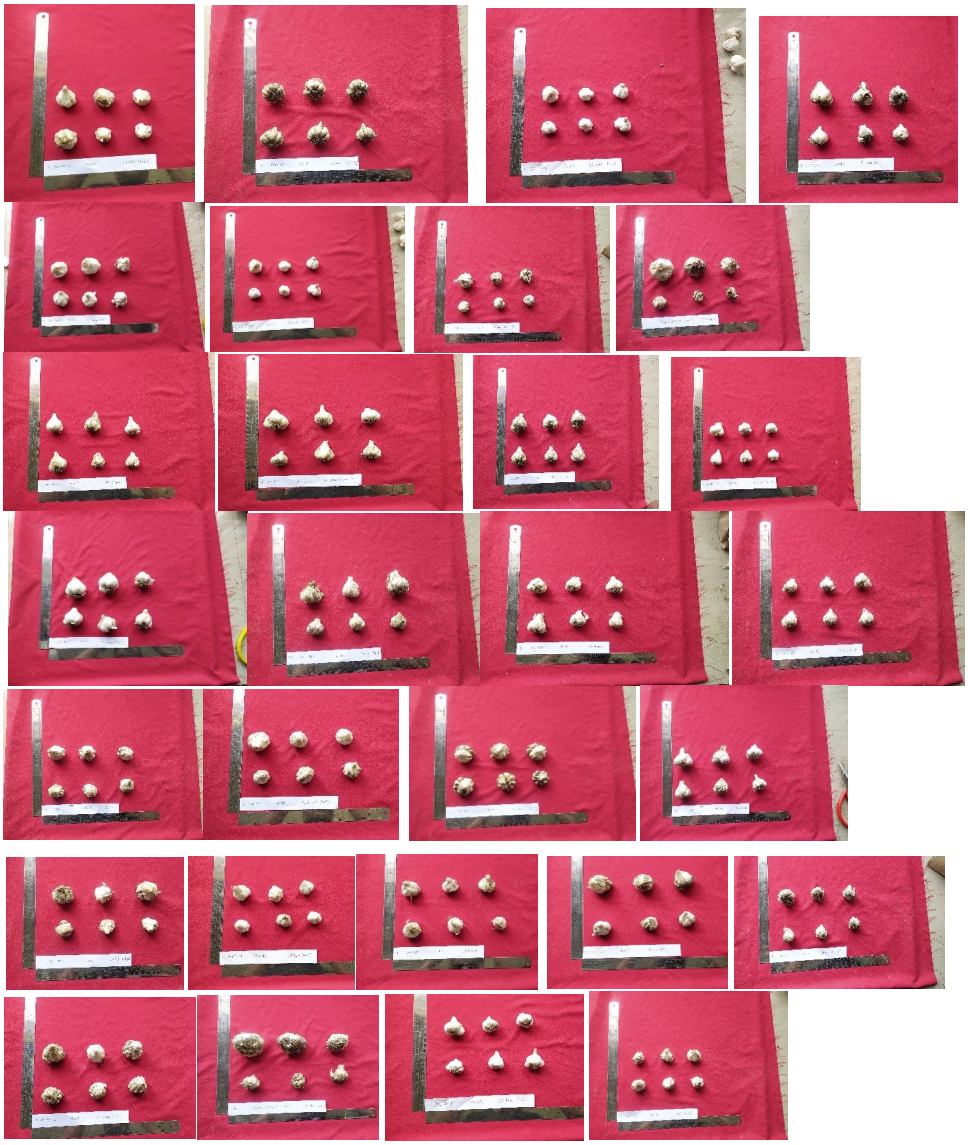
S.N.	Traits	Descriptor Class	Frequency
1	Plant vigor	1. Extremely weak 2. Very weak 3. Weak 4. Slightly weak 5. Intermediate 6. Slightly vigorous 7. Vigorous 8. Very vigorous 9. Extremely Vigorous	0 0 8 13 20 17 22 11 1
2	Anthocyanin at the base of the pseudostem	0. Absent 1. Extremely weak 2. Very weak 3. Weak 4. Slightly weak 5. Intermediate 6. Slightly strong 7. Strong 8. Very strong 9. Extremely strong	0 0 0 17 15 24 18 17 1 0
3	Leaf color intensity	1. Extremely light 2. Very light 3. Light 4. Slightly light 5. Intermediate 6. Slightly dark 7. Dark 8. Very dark	2 22 5 47 0 0 16 0

S.N.	Traits	Descriptor Class	Frequency
		9. Extremely dark	0
4	Shaft diameter	3. Narrow 5. Intermediate 7. Broad	31 38 23
5	Shape of mature dry bulb	1. Flat 2. Flat globe 3. Rhomboid 4. Broad Oval 5. Globe 6. Broad elliptic 7. Ovate 8. spindle 9. High top 99. Others	7 28 33 14 5 2 2 0 1 0
6	Shape of mature garlic bulb	1. Circular 2. Heart Shaped 3. Broad Ovate	15 53 24
7	Outer bulb skin	1.White 2. Light pink 3. Light red 4. Light brown 5. Red 6. Crimson 7. Red Purple	48 18 8 1 2 1 6
8	Anthocyanin stripes on dry external scales	0. Absent 9. Present	16 72
9	Thickness of neck	1. Extremely thin 2. Very thin 3. Thin 4. Slightly thin 5. Intermediate 6. Slightly thick 7. Thick 8. Very thick 9. Extremely thick	0 7 20 6 30 7 6 11 5
10	Neck firmness	1. Extremely loose 2. Very loose 3. Loose 4. Slightly loose 5. Intermediate 6. Slightly tight	14 9 10 2 12 5

S.N.	Traits	Descriptor Class	Frequency
		7. Tight	18
		8. Very tight	13
		9. Extremely tight	9
11	Bulb shape in longitudinal section	1. Transverse narrow elliptical	29
		2. Transverse broad elliptic	
		3. Circular	48
			15
12	Bulb shape of base	1. Recessed	33
		2. Flat	30
		3. Raised	29
13	Compactness of cloves	1. Very loose	8
		3. Loose	17
		5. Intermediate	24
		7. Compact	30
		9. Very compact	13
14	Bulb skin thickness	1. Extremely thin	8
		2. Very thin	23
		3. Thin	17
		4. Slightly thin	9
		5. Intermediate	11
		6. Slightly thick	7
		7. Thick	3
		8. Very thick	11
		9. Extremely thick	3
15	Cracking of bulb skin	1. Extremely frequent	3
		2. Very frequent	15
		3. Frequent	20
		4. Slightly frequent	16
		5. Intermediate	17
		6. Slightly rare	5
		7. Rare	16
		8. Very rare	0
		9. Extremely rare	0
16	Dividing bulb into cloves	1. Extremely easy	6
		2. Very easy	7
		3. easy	20
		4. Slightly easy	12
		5. Intermediate	16
		6. Slightly hard	12
		7. Hard	13
		8. Very hard	4

S.N.	Traits	Descriptor Class	Frequency
		9. Extremely hard	2
17	Clove firmness	1. Extremely tender 2. Very tender 3. Tender 4. Slightly tender 5. Intermediate 6. Slightly tough 7. Tough 8. Very tough 9. Extremely tough	7 15 16 15 24 7 6 2 0
18	Clove skin color	1.White 2. Light pink 3. Light red 4. Light brown 5. Red 6. Crimson 7. Red Purple	34 42 7 0 4 1 4
19	Anthocyanin stripes on clove skin	0. Absent 9. Present	27 65
20	Peeling	1. Extremely easy 2. Very easy 3. easy 4. Slightly easy 5. Intermediate 6. Slightly hard 7. Hard 8. Very hard 9. Extremely hard	5 5 19 14 19 6 17 3 0
21	Clove color of flesh	1. Whitish 2. Yellowish	40 52
22	Clove shape	3. Slim round 5. Flat 7. Thick round	39 21 32
23	Position of cloves at tip of bulb	1. Inserted 2. Same level 3. Exerted	9 24 59
24	Bulb structure type	1.Regular multi-fan groups 2. Regular multi-cloved radial 3. Regular multi-cloved radial 4. Regular quadruple	31 40 10

S.N.	Traits	Descriptor Class	Frequency
		5. Regular two-cloved 6. Irregular	1 0 10
25	Bulb shape in cross section	1. Elliptic 2. Circular	43 49
26	Population uniformity of bulb shape	1. Uniform 2. Variable 3. Highly Variable	51 33 8



F. Broad Leaf Mustard

Broad leaf mustard (Brassica juncea L.) a member of the family Brassicaceae- is one of the extensively grown leafy vegetables. Nepal stands as the leading producer worldwide- contributing nearly 27% of total mustard seed output- with Russia and Canada ranking next. In Nepal- it is grown in 13-131 hectares with the production of 153955 tonnes (MOALD-2023/24). The experiment was carried out at the field of NAGRC Khumaltar- Lalitpur during 2024 in non-replicated augumented block design with the objective of agro-morphological characterization and diversity assessment and elite line selection of BLM landraces. Total 26 BLM landraces collected from 17 districts of Nepal were characterization and evaluated for this study. The plot size was …. with two rows adopting row to row distance of 60cm. The seedling was taken up on 25 september- 2024 in the main cropping season with recommended fertilizer and management practices. The agro-morphological traits were measured at various growth stages according to the BLM descriptor developed by International Plant Genetic Resources Institute (IPGRI- 2001). Seven quantitative and nineteen qualitative traits were recorded at different growth stages of the crops. Basic statistics including mean- maximum- minimum and coefficient of variation (CV) was calculated by using Excel 2016.

Table 28: Quantitative

S.N	Traits	MIN	MAX	SD	Mean	Mean±SE	CV%
1	Emergence % at seedling stage	5	100	35.59	56.76	56.76±7.11	62.71
2	leaf length	22.81	58.48	10.15	37.78	37.78±2.33	26.88
3	Petiole or midrib thickness(mm)	3.28	8.64	1.51	5.5	5.5±0.34	27.58
4	Width of petiole or midrib base(mm)	15.67	52.37	9.48	28.32	28.32±2.17	33.49
5	No. of branches per plant	8.9	17.8	2.41	11.78	11.78±0.52	20.47
6	Plant height(cm)	87.5	192.45	27.31	149.04	149.04±5.96	18.32
7	Number of leaf per plant	9	43	9.46	17.26	17.26±1.89	55.86

Table 29: Qualitative

S.N.	Traits	Descriptor code	Frequency
1	Seeding leaf color	1-white green	0
		2-yellow green	7
		3-Light green	8
		4- Green	5
		5- Dark green	2
		6- Purple green	3
		7- Purple	0

S.N.	Traits	Descriptor code	Frequency
2	Seeding leaf margin	0- Entire 1- Crenate 3- Serrate 4- Undulate 5- Doubly dentate	0 10 6 6 3
3	Seedling leaf pubescence	0- Glabrous 1- Very sparse 3- Sparse 5- Intermediate 7- Abundant 6- Others	1 7 6 9 2 0
4	Plant habitat flowering stage	3- erect 4- Slightly erect 5- Intermediate 6- Slightly spreading 7- Spreading	1 10 0 8 3
5	Flower stalk color	3- pale green 4- Slightly pale green 5- Green 6- Slightly dark green 7- Dark green	1 10 12 1 0
6	Flower stalk Thickness	3- Thin 4- Slightly Thin 5- Intermediate 6- Slightly Thick 7- Thick	1 14 8 1 0
7	Leaf wax	3- Little 4- Slightly Little 5- Intermediate 6- Some 7- Much	3 11 4 1 0
8	Leaf Undulation	0- None 1-Extremely little 2-Very little 3-Little 4- Slightly little 5- Intermediate 6- Some 7- Many	0 2 2 8 2 2 0 3
9	Leaf thickness	3- Thin	2

S.N.	Traits	Descriptor code	Frequency
		4- Slightly Thin	2
		5-Intermediate	5
		6- Slightly Thick	6
		7- Thick	4
10	Petiole or midrib shape	3- Flat	4
		4- Slightly Flat	7
		5- Intermediate	2
		6- Slightly round	6
		7- Round	0
11	Petiole or midrib veins	3- Few	1
		4- lightly few	4
		5- Intermediate	9
		6- Some	5
		7- Many	0
12	Petiole or midrib twisting	0- None	11
		1- Extremely little	2
		2- Very little	3
		3- Little	2
		4- Slightly little	1
		5- Intermediate	0
		6- some	0
		7- much	0
13	Petiole or midrib color	1- White	1
		2- very pale green	2
		3- Plae green	7
		4- Slightly pale green	7
		5- Green	1
		6- Slightly pale purple	1
		7- pale purple	0
		8- purple	0
		9- Dark purple	0
14	Bud Color	3- Pale green	5
		4- Slightly pale green	10
		5- Green	9
		6- Slightly dark green	0
		7- Dark green	0
15	No of lobes in leaf	0-absent	1
		1-Extremely few	3
		2-Very few	3
		3- few	7
		4-Slightly few	0
		5-Intermediate	0

S.N.	Traits	Descriptor code	Frequency
		6-Some 7-Many 8-Very many 9-Extremely many	2 1 1 0
	Leaf glossiness	3- Weak 4- Slightly weak 5- Intermediate 6- Slightly strong 7- Strong	2 7 4 5 1
17	Silique colour before drying	1- Yellow green 2- Green 3- Red green 4- Purple green 5- Purple	20 0 0 0 0
18	Silique attitiude	1- Erect 2- Hanging 3- Pointing down	11 9 0
19	Silique surface outline	3- Smooth 5- Undulating 7- Constricted vessels between seeds	0 13 3

4.3.3 Promising accessions of horticultural crops for agro-morphological traits.

Based on the agro-morphological traits the promising accessions of four crops were identified based on yield and use value. For garlic the traits bulb yield and leaf yield and texture, the promising accessions were grouped into two. BLM were grouped into three based on leaf characters and disease tolerance.

Crop	Trait	Accession
Tomato	Yield	NGRCO 9574, NGRCO 9573, NGRCO 9571, NGRCO 9570, CO 166577
Garlic	Bulb Yield	Bhote, CO 14591, CO 14530, CO 14706, CO 13502
Garlic	Leaf	Dhading, CO 14726, ARM-11, Rajikot 1, CO14706, CO14530, CO1343914
Broad leaf mustard	Leaf character Leaf Yield Virus tolerance	NGRCO 8947 NGRCO 010889, CO 11481, NGRCO 10888 NGRCO 8947, CO 12243, CO 13955, NGRCO 10892
Chilli	No of fruits/node (3)	NGRCO 11164, NGRCO 11166



4.4 Distribution

The National Genebank, under the National Agriculture Genetic Resources Center (NAGRC), Khumaltar, operates with the core mandate of collecting, conserving, and distributing Nepal's valuable plant genetic resources. In line with this mission, the Genebank successfully distributed a total of 842 local landraces of 12 crops to researchers, plant breeders, universities across multiple districts for scientific study, evaluation, and crop improvement. This activity ensures that the genetic diversity preserved in the genebank is actively used to enhance agricultural research and development in Nepal.

Table 30: List of APGR distributed for research

Crop	University/ Research centre	Research Station	Total
Rice	61	82	143
Maize	88	66	154
Lathyrus	43	33	76
Bean	6	4	10
Chickpea	58	43	101
Cowpea	58	43	101
Lentil	58	43	101
Banana	22	16	38
chilli	24	18	42
Taro	8	5	13
wheat	25	18	43
Coriander	12	8	20
Total			**842**

4.5 Repatriation

Repatriation of Plant Genetic Resources (PGR) is a critical component of biodiversity conservation and sustainable use, particularly for countries like Nepal, which are rich in agrobiodiversity but have lost many traditional crop

varieties over time due to modernization, land-use changes, and genetic erosion. The National Genebank of Nepal, under the Nepal Agricultural Research Council (NARC), plays a pivotal role in the repatriation of plant genetic resources. This activity has been one of the major focus of National Genebank of Nepal for Strengthening Food and Nutritional Security, restoring and preservation of agro-cultural heritage and reinforces national sovereign Rights and Benefit Sharing aligning with international agreements such as the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Total 366 accessions of 12 crops were provided to the different communities for repartriation to restablish the agriculture system.

Table 31: List of APGR Repatriated

Crop	Number
Rice	62
Maize	66
Lathyrus	32
Bean	5
Chickpea	44
Cowpea	44
Lentil	44
Banana	17
chilli	18
Taro	6
wheat	19
Coriander	9
	366

4.6 Biotechnology

Biotechnological tools can contribute significantly for the management and sustainable utilization of AGRs. In addition- advances in biotechnology are occurring at a rapid pace and provide novel opportunities for more effective and efficient management of AGRs. Biotechnology applications must be integrated with ongoing conventional conservation activities. Advances in biotechnology (conservation biotechnology) have generated new opportunities for AGRs conservation and utilization. Techniques like in-vitro culture and cryopreservation have made it easy to collect and conserve genetic resources- especially of species that are difficult to conserve as seeds. Tissue culture methods are now widely applied for the elimination of systemic diseases such

as viruses for safe exchange of germplasm. While technologies like enzyme-linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR) have provided tools that are more sensitive and pathogen-specific for seed health testing. Molecular markers are increasingly used for screening germplasm to study genetic diversity- identify redundancies in the collections- test accession stability and integrity- and resolve taxonomic relationships. The technology is also accelerating the utilization of AGRs.

In the past- conservation efforts have been mainly focused on orthodox seeds eg rice- maize- wheat- soybean- mustard- chili- etc and conservation methods are well established for such crops. There are also a number of other important crops that are sterile or produce recalcitrant seeds or do not easily produce seeds- or seed is highly heterozygous and clonal propagation is preferred to conserve. Examples are banana- sweet potato- citrus- mango- sugarcane- cassava- yam- potato and taro- etc. These species are usually conserved in Field Genebanks. Although Field Genebank provides easy access to material for use- they are at the risk of destruction by natural calamities- pests and diseases. Safety duplicates of the living collections are therefore- needed to establish using alternate strategies of conservation and biotechnology has contributed significantly by providing complementary in-vitro conservation options through tissue culture techniques- called tissue bank.

DNA markers- on the other hand- are very effective to manage all kinds of AGRs including orthodox- non-orthodox seed crops and vegetatively propagated crops and other species. The utilization of conserved materials is also being accelerated through the advances made in biotechnology. NAGRC has utilized in-vitro tissue culture and molecular marker technologies to conserve and utilize AGRs.

The major activities of the Biotechnology Unit are molecular characterization and evaluation- in-vitro conservation- tissue culture and multiplication- screening and pre-breeding- and maintenance (duplicate identity- relationships- structure- and location). This unit has two laboratories (Molecular Research Lab and Tissue Culture Lab) to support the AGRs conservation and utilization. Current activities under these two labs are depicted in the flow diagram (Figure 8).

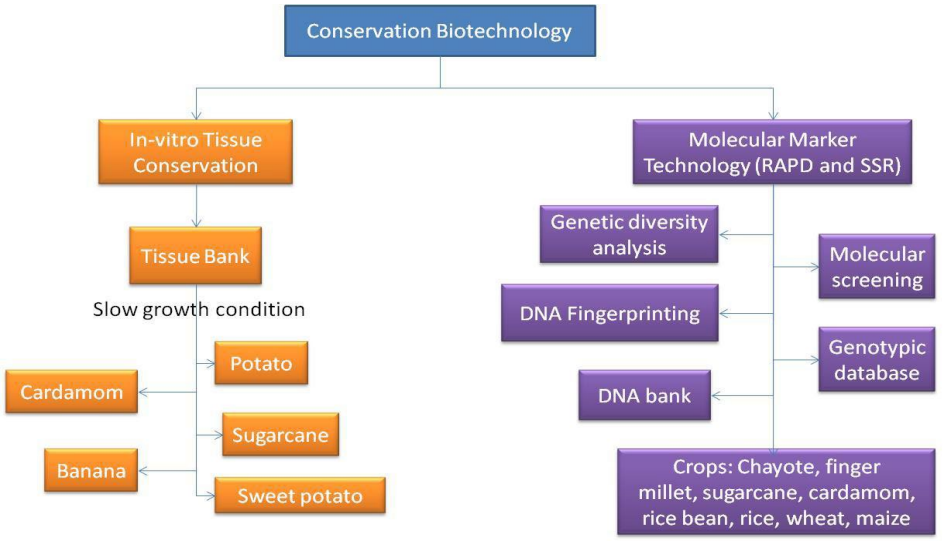


Figure 8: Flow diagram of current activities in Biotechnology Lab.

4.6.1 DNA Bank

The DNA Bank has been established within the Genebank's molecular laboratory to conserve DNA from collected accessions, enabling future omics-based research for biodiversity conservation. Prior to storage, DNA is extracted and quantified to ensure quality and suitability for downstream applications.

During the reporting year, DNA from 1,709 accessions representing 23 crop species was successfully extracted and preserved in the DNA Bank. The highest number of accessions was from rice (366), followed by wheat (201), amaranthus (165), and turmeric (146). Other notable collections included cucumber (106), garlic (64), bean (61), rayo (44), maize (39), and finger millet (38) (Table 31).

Table 32: Crops and their accessions conserved in DNA Bank

S. N	Crop	Accession
1	Akabare Chilly	32
2	Amaranthus	165
3	Bringal	2
4	Chilly	84
5	Cucumber	106
6	Garlic	64
7	Maize	39

8	Mango	84
9	Pea	16
10	Radish	10
11	Rayo	44
12	Rice	366
13	Sword bean	2
14	Turmeric	146
15	Wheat	201
16	Taro	81
17	Bean	61
18	Marigold	30
19	Naked Barley	81
20	wild Rice	23
21	Maize	32
22	finger millet	38
23	cardamom	2
Total		1709

4.6.2 Genetic diversity study

Molecular characterization of the nepalese common bean (phaseolus vulgaris l.) Landraces by using simple sequence repeats markers

The research was conducted at laboratory of National Agriculture Genetic Resources Centre during 2023–2024 to assess genetic diversity of common bean landraces. Fifty-eight landraces collected from 26 districts of Nepal were characterized and genetic diversity assessment was done by using the 15 pairs simple sequence repeats (SSR) markers. Out of the 15 SSR primers, 3(20%) primers were monomorphic, whereas the remaining 12 (80%) markers were polymorphic. The total of 12 quantitative molecular traits were calculated for molecular diversity assessment.

Table 33: Molecular summary statistics

Primers	BP	TB	TA	P alleles	Poly (%)	Allele F
PV-cct001	100-150	61	2	2	100	0.47
BM143	100-180	61	2	2	100	0.47
BM170	200-500	69	2	2	100	0.5
BM184	100-160	55	2	2	100	0.53
BM187	180-500	59	2	2	100	0.5

PV-BR35	100-200	55	2	2	100	0.53
PV-BR185	100-150	55	2	2	100	0.53
SSR-IAC10	280-800	86	2	2	100	0.46
SSR-IAC62	100-150	56	2	2	100	0.52
BMd-12	100-150	61	2	2	100	0.47
BM152	100-150	58	2	2	100	0.5
BM210	100-200	55	2	2	100	0.53
Mean		**60.92**	**2**	**2**	**100**	**0.5**

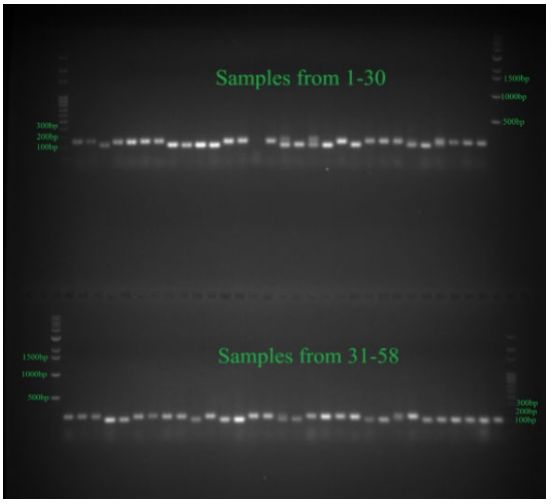


Figure 9: PV-BR185 showing polymorphism At 100-200 bp

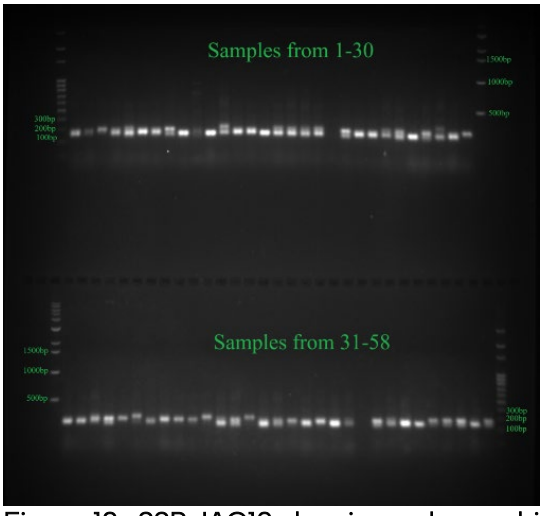


Figure 10: SSR-IAC10 showing polymorphism At 100-200 bp

Genetic diversity analysis of Marigold (Tagetes spp.) landraces using SSR markers: insights for conservation and breeding programs

The research was conducted at National Agriculture Genetic Resources Centre during 2024–2025 to assess genetic diversity of marigold landraces. In this study, 30 marigold landraces were collected from the Ilam, Jhapa, Sunsari, and Morang districts and characterized genetically using 15 pairs simple sequence repeat (SSR) markers. Out Of 15 SSR primers, 9 were monomorphic, whereas the remaining 6 markers were polymorphic. A total of 12 quantitative molecular traits were calculated for genetic diversity assessment (Table 4). The evaluations were based on base pair, total number of alleles, percentage of polymorphism, total number of bands, major allele frequency, gene diversity, observed heterozygosity, expected heterozygosity, polymorphic information content, inbreeding depression, resolving power, effective multiplex ratio, and marker index.

Table 34: Molecular summary statistics

Marker	B. P	TNA	POP	TNB	MAF	(H_o)
TE14	100-500	2	100	8	0.866	0.231
TE12	100-300	2	100	31	0.516	0.499
TE11	100-200	2	100	30	0.500	0.500
TE78	100-150	2	100	31	0.516	0.499
TE70	100-200	2	100	35	0.600	0.480
TE38	100-300	2	100	40	0.666	0.444
Mean		**2**		**29.166**	**0.611**	**0.442**

Note: BP=Base pair,TNA= Total number of alleles, TNB=Total number of bands; MAF=Major allele frequency, Ho= Observed heterozygosity, He= Expected heterozygosity, PIC= Polymorphic information content, f=inbreeding depression, R.P= Resolving power EMR= Effective multiplex ratio and MI= Marker index.

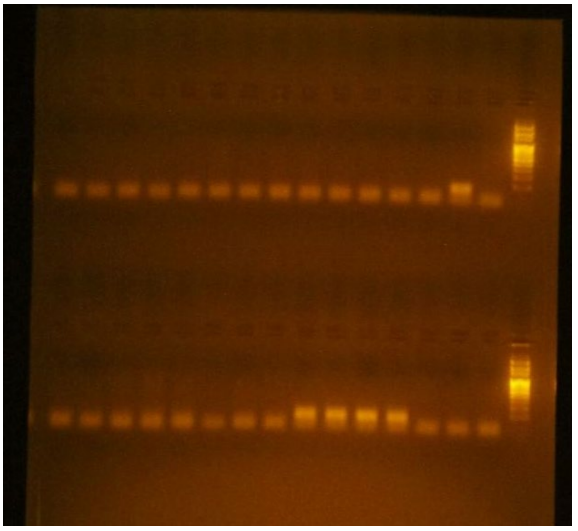


Figure 11: Marker TE14 showing polymorphism at 100–500 bp

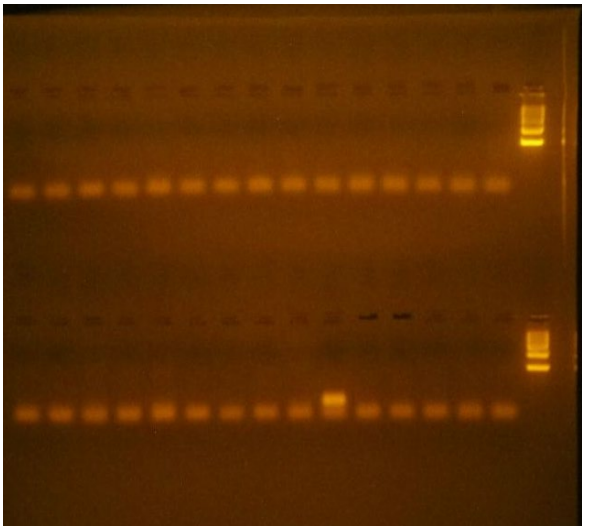


Figure 12: Marker TE 78 showing polymorphism at 100–150 bp

4.7 National listing of landraces

4.7.1 Identification of promising landraces for registration

Varietal registration is the fundamental step to enable legal pathways for commercialization of a particular crop variety. Seed Regulation (2013) of Nepal have a dedicated provision (Annex 2-Schedule D) to register local crop landrace and commonly known as a "Relaxed Provision" for varietal registration. According to this provision, registration proposal can be developed by a farmer/farmer's organization by compiling single season agronomic data from

the farmer's field and submit to variety release and registration sub-committee (VRRSC) of the National Seed Board for registration process. Seed Regulation 2081 clearly categorizes native and local landraces and provides a separate registration system for them. Annex 5 specifically outlines the provisions for registering native varieties.In the current year, the National Genebank, in coordination with Sahas Nepal, identified three potential native landraces: Seto Kodo from Udayapur, Seto Simi from Okhaldhunga, and Tharu Aalu from Kailali. Data collection was carried out from farmers' fields, and a preliminary registration proposal has been developed.In the coming year, proposal will be submitted to VARRSC.

B. Aquatic, livestock, insect and microbial agriculture genetic resources (ALIM-AGR)

In the past, conservation and utilization efforts were primarily focused on crop genetic resources, leading to the undervaluation of the other five components of agrobiodiversity. Recognizing this gap, NAGRC has placed significant emphasis on conserving these overlooked components by conducting various activities independently and in collaboration with other organizations. This year, numerous initiatives have been implemented to conserve aquatic, livestock, agro-insect, and agro-microbe agricultural genetic resources (ALIM-AGRs), ensuring a more holistic approach to agrobiodiversity conservation.

ALIM-AGR conservation update and strategy

NAGRC has developed and implemented 101 conservation strategies, guidelines, and methods to protect the six components of agrobiodiversity, ensuring a comprehensive approach to conservation. These documents have been widely shared to raise awareness and provide guidance. Awareness speeches have reached thousands of participants, and technical support for proper documentation has been provided. The Genebank has facilitated the establishment of various specialized genebanks, including aqua pond genebanks, livestock farm genebanks, agro-insect field genebanks, agro-microbial field genebanks, and forage field genebanks at different sites, research stations, community levels, as well as in schools and colleges. Conservation strategies such as in-situ, ex-situ, on-farm, and conservation breeding have been employed to ensure the protection of these resources. The conservation status of various NARC stations has also been updated. To further enhance these efforts, collaborations have been established with organizations such as ICIMOD, NFRP, NABGRC, DoA, CDABCC, NGRP, NFPRP, MoALD, MoFSC, farming communities, DoLS, Provincial and Local Governments, LIBIRD, IAAS, SWI, NTC, NAST, communities, privates, CBOs, NYC, and IUCN.

To conserve livestock diversity, a livestock farm genebank has been established at the Lumle Livestock Farm, which has successfully conserved seven breeds. Additionally, livestock genetic resources are safeguarded through two community gene banks. Specific efforts include the conservation of the Siri cow at ICIMOD, the Achhami cow in Doti, and various goat breeds in Chitlang, Bandipur, and Khajura. An agro gene sanctuary for agro-birds has been set up in a temple, while native cows are being preserved at Gaushala. Passport descriptors for livestock and agro-insect genetic resources have been developed and shared.

Fish release details

The local fish were release on genebank pound. Fish were collected from Chitwan and godawari, lalitpur

Sn	Fish	quantity	Source
1	Grass Carp	50	Hira Maccha farm, chitwan
2	Rahu	30	Hira Maccha farm, chitwan
3	Naine	30	Hira Maccha farm, chitwan
4.	Common carp	100	National Fishery Research Center, Godawari, Lalitpur

Livestock genetic resources

Summary of the Humla Baseline Survey on Yak, Nak, and Chauri

Humla District, in northwestern Nepal's Karnali Province, represents one of the country's most isolated and high-altitude regions. Its rugged mountains, alpine meadows, and extreme weather shape the livelihood systems of local communities, who rely heavily on yak, nak, and chauri. These animals not only provide milk, meat, fiber, manure, and draft power but also hold deep cultural and spiritual value, making them central to food security, agrobiodiversity, and heritage in the Himalayas.

The baseline survey revealed that climate change is the most critical challenge threatening yak and chauri rearing. Rising temperatures, glacial retreat, and erratic snowfall have altered fragile alpine ecosystems, reducing forage diversity and forcing herders into harsher, higher-altitude zones. As a result, calf mortality, low productivity, and reduced milk and fiber yields are becoming common. The upward shift of vegetation zones has made survival difficult for purebred yak, pushing herders toward chauri hybrids, which tolerate lower altitudes and yield more milk. However, this trend accelerates genetic erosion and risks the disappearance of pure yak populations and their unique traits, along with associated cultural traditions.

Institutional gaps further worsen the situation. Veterinary services and modern husbandry knowledge are scarce, leaving herders vulnerable to disease outbreaks and seasonal feed shortages. Border restrictions with Tibet have curtailed traditional transhumance, increasing pressure on degraded pastures. Despite these challenges, yak and chauri remain indispensable to highland households, with products like cheese, butter, and fiber offering significant potential for niche and eco-tourism markets.

The report highlights the urgent need for interventions such as community-based pasture management, improved fodder systems, genetic conservation through selective breeding, and stronger veterinary outreach. Equally important is investment in milk processing, storage, transport, and value-added yak and chauri products to open niche markets. Beyond infrastructure, special focus must be given to the younger generation. Awareness and training programs should be launched to motivate youth to engage in chauri farming, combining traditional knowledge with modern practices. This generational transfer of skills will ensure the continuity of livelihoods, protect cultural identity, and sustain biodiversity in Humla's highlands.

Agro-insect Insect Genetic Resources

Edible Insects: Current Status, Challenges, and Prospects in Nepal

Edible insects are one of the groups of agro-insects that are directly utilized as a source of food for humans and animals. Government of Nepal prioritizes apiculture, sericulture, and lac culture, however edible insects have got least priority despite their food, cultural, medicinal and nutritional value remain under-researched in Nepal's ethnic diets. A study incorporating group discussions conducted in Rolpa, Nuwakot, and Lamjung districts, supplemented by a review of medical ethnobiology literature. We found that more than 20 species of over 20 arthropod and mollusc species were directly or indirectly consumed in Nepal.

Cropping -pattern on push -pull strategy for the management of cowpea insect pest

The experiment was conducted using a RCBD design that included cowpea crops, trap crops, and layout, with treatments and two replications under open field conditions. Among treatment Cowpea crops bordered with coriander was found best strategy for push-pull management strategy.

Effects of Different Pupation Substrates on the Emergence Rate of Adult Black Soldier Fly

The emergence of adult BSF from pupae is influenced by various environmental and substrate related factors. This study investigated the impact of different substrate on pupal development and adult emergence. Seven substrates were used namely coarse soil, fine soil, soil with moisture, sand, canteen waste, compost waste and dry matter waste. 20 pupae were released in each substrate and monitored for emergence success and time to emergence. 13 pupae were emerged to adult in dry waste, 10 from moist soil, 5 from coarse soil and 1from fine soil, whereas no adults were emerged in sand, canteen waste and compost waste. On an average 79.5 days to adult emergence in moist soil, 78.34 days in dry waste, 68 days in fine soil and 88 days in coarse soil. The adult emergence is may be due to favourable environment and high nutrient availability. These findings highlight the critical role of substrate composition in optimizing BSF rearing systems for sustainable waste management and insect biomass production.

Collection and conservation of Entomopathogenic fungi Metarhizium anisopliae (Native Strains)

Naturally infested larva of tobacco caterpillars were found in finger millet cultivated inside plastic screen house. Infested and non infested larva were counted (table 2). Infested larva were sent to National Plant Pathology center for EPF identification. Different stage of interested larva were collected and preserved for further research .Similarly infested larva sample were sent to National Entomology Research center for preservation.

Date	Infected larva number	Non-infested larva number	Total no. larva	Infested larva percentage
18 Oct 2024	68	8	73	93
5 Nov 2024	23	0	23	100

Agro-microbial Genetic Resources

Mushroom Park

Mushrooms are a unique group of organisms that belong to the kingdom Fungi, distinct from plants, animals, and bacteria. They are the visible fruiting bodies of certain fungi that grow above the ground or on decaying organic matter such as wood, leaf litter, or soil rich in organic compounds. Unlike plants, mushrooms lack chlorophyll and cannot prepare their own food through photosynthesis; instead, they are heterotrophic organisms that depend on breaking down organic matter for their nutrition. Structurally, mushrooms generally consist of a stalk (stipe), a cap (pileus), and gills (lamellae) underneath the cap, where microscopic spores are produced and released for reproduction. These spores allow fungi to spread and colonize new environments. Mushrooms play an essential ecological role as decomposers, breaking down complex organic substances into simpler forms and recycling nutrients back into the ecosystem, thus maintaining soil fertility and the balance of natural habitats. Beyond their ecological function, mushrooms are also valuable to humans as a source of food, medicine, and income. Cultivated mushrooms such as button mushroom (Agaricus bisporus), oyster mushroom (Pleurotus spp.), and shiitake (Lentinula edodes) are widely consumed for their rich flavor, protein, fiber, vitamins (especially B-complex and D), and minerals like potassium, selenium, and iron. They are considered a healthy food option due to their low fat and calorie content and high antioxidant potential. Additionally, certain mushrooms have medicinal properties, being used traditionally and in modern science to boost immunity, reduce cholesterol, and even fight against cancerous cells.

Wild mushrooms, on the other hand, are mushrooms that grow naturally in forests, grasslands, mountains, agricultural fields, and other undisturbed ecosystems without human cultivation or management. They emerge seasonally, often thriving in moist, humid, and shaded environments after rainfall. Wild mushrooms include a vast diversity of species, many of which are edible, highly nutritious, and prized for their unique flavors and medicinal values. For example, species like morels (Morchella spp.), chanterelles (Cantharellus spp.), and porcini (Boletus edulis) are considered delicacies in many parts of the world. In Nepal and other Himalayan regions, wild mushrooms such as Guchhi chyau (morel) and Ban chyau are traditionally collected by local communities both for household consumption and for income generation in local and international markets. However, while wild mushrooms can be valuable, they also come with significant risks. Many wild species closely resemble poisonous varieties, which can cause mild to severe health problems, and in some cases, be fatal if consumed. For example, the deadly Amanita phalloides (death cap) looks similar to some edible species, leading to accidental poisoning. Therefore, careful identification by experts or experienced foragers is essential before consuming wild mushrooms.

In summary, mushrooms represent the fruiting bodies of fungi that play an important role in ecosystems, human diets, and traditional medicine. Cultivated mushrooms are produced under controlled conditions and are widely available as safe food sources, while wild mushrooms grow naturally and offer nutritional, cultural, and economic importance but also pose risks due to the possibility of toxic species. Both cultivated and wild mushrooms highlight the deep connection between fungi, ecosystems, and human society, showing their significance in biodiversity conservation, food security, and sustainable livelihoods.

Collection and Establishment of Mushroom Park with Handover for Research Purposes

A total of ten different species of wild mushrooms were collected from diverse districts of Nepal, including Dolakha, Sindhupalchowk, Lalitpur, Dhading, and Nuwakot, with the objective of establishing a mushroom park for study, conservation, and demonstration purposes. These areas were specifically chosen because of their rich biodiversity, suitable climate, and natural forest ecosystem, which provide favorable habitats for the growth of wild mushrooms. The collected specimens were transferred to the front site of the Gene Bank office building, where a small-scale mushroom park was established as a living collection. This park serves not only as a conservation site but also as a practical

platform for researchers, students, and farmers to study the morphological, ecological, and nutritional characteristics of wild mushrooms. The establishment of such a park is an important step toward documenting Nepal's rich fungal diversity, promoting awareness about the potential value of mushrooms, and preserving genetic resources for future generations.

Among the ten wild mushrooms collected, five species were identified as edible, while the remaining five were categorized as non-edible. The edible mushrooms are considered safe for human consumption and are often valued for their unique flavors, nutritional properties, and traditional use in local diets. These mushrooms could potentially be introduced into cultivation trials, contributing to food security, nutrition, and income generation for farming communities. In contrast, the five non-edible species, while unsuitable for human consumption due to toxicity, unpleasant taste, or indigestibility, are equally important from an ecological and scientific perspective. They may play a vital role in soil health, nutrient cycling, and ecosystem balance, or even contain bioactive compounds that could be studied for medicinal or industrial uses. This classification highlights the importance of proper identification and documentation, as the misidentification of wild mushrooms could lead to poisoning or health hazards.

To ensure scientific accuracy and safe use, five of the collected mushrooms were carefully transferred and handed over to the National Plant Pathology Research Centre, Khumaltar, for verification and further study. At the research center, experts will conduct morphological, microscopic, and molecular analyses to correctly identify the species, evaluate their edibility, and assess potential risks or benefits. This collaboration between the Gene Bank and the research center strengthens the national effort in mushroom research, ensuring that valuable species are preserved, accurately classified, and utilized effectively. Verified edible species can be promoted among farmers for cultivation, while non-edible or toxic species can be used for educational purposes, helping communities distinguish safe mushrooms from harmful ones.

Overall, the collection, establishment, and study of wild mushrooms in the Gene Bank mushroom park demonstrate a practical and scientific initiative aimed at conserving fungal biodiversity while promoting safe utilization. This effort also provides a foundation for future research on edible mushroom domestication, medicinal potential of wild species, and ecological roles of non-edible fungi. By linking conservation with utilization, the program not only safeguards genetic resources but also contributes to sustainable agriculture, nutrition improvement, rural livelihoods, and biodiversity awareness across Nepal.

4.8 FLBMP (FMP) Farm, Lab and Bank Management Project

Activity	Progress
Office support/ maintenance and beautification	Following 8 different committees formed and worked effectively to maintain and support genebank 1. Collection Acceptance Committee (CAC): 3 members 2. Project Activity Leader (PAL): 5 members 3. Station Research Management Team (SMRT): 7 members 4. Procurement Unit (PU): 3 members 5. Physical verification Committee (PVC): 5 members 6. Beautification/ Raithane nursery and herbal conservation garden management committee: 3 members 8. Publication Committee: 7 members One information officer and one planning officer selected. Regular office and farm maintenance activities were carried out. Local ornamental and flowering plants collected from different location and planted in office garden, as hedge row, living fences and others.
Office level proposal seminar	Office level meeting was organized for preliminary discussion to develop project proposal for FY 2082/83 based on previous year proposals. Office level proposal seminar completed and 3 proposals finalized (all are ongoing project)
Office and farm security	Staff, PAL and SMRT meetings organized regularly for security and other discussions. Night security person hired. Electric appliances are regularly checked and repaired by electrician. Farm, lab and bank visited regularly.
Progress review and program planning workshop	4th trimester and annual progress, 1st, 2nd and 3rd trimester progress of FY 2081/82 presented. Proposal review meeting attended and presented. Attended different program planning and review related meetings.
Day and week celebration	Celebrated 14th National genebank and indigenous agriculture day on 21 Aswin; 3rd National agrobiodiversity week at 1st week of Magh, 3rd National agrobiodiversity day at 1st Magh, 7th national agricultural genetic resources conservation day on Balachaturdashi, 1st national millet day, etc. Many different events and activities were carried out and details are given below.
Capacity development	Orientation on GI documentation and training on field genebank organized. In house orientation to staff and interns organized. Native agrobiodiversity related knowledge and good practices shared widely, presented in different forums.

Activity	Progress
Monitoring, evaluation and travelling seminar	A Report of Monitoring, Orientation/Observation and Traveling Seminar on Banking AGRs (MOTSBAGR) in DoAR, Parwanipur; NARP, Parwanipur; AIRS, Birgunj; NSRP, Jeetpur; CSB, Kachorwa and Gadhimai Temple, Bara. DoAR, Tarahara and JRC, Itahari, ARS, Pakhribas, NCARP, Pakhribas, NBRP, Pakhribas, NSRP, Pakhribas. Cooperatives situated in Dhading and Nuwakot District
Coordination and collaboration	Coordination and collaboration have been made with more than 50 organizations for promoting banking of AGRs, documentation, action research, marketing, etc across the country.
Publication and presentation	Titles of all publications and presentations are given in Annex 5. Total 61 publications, consisting of books, book chapters, booklets, leaflets, journal papers, briefing papers and brochures have been published. 51 presentations in different seminars, workshop, meetings, training and other forums have been made. Publications of Genebank have been distributed widely both print and e-copies.

4.9 Agrobiodiversity Celebration and Festival

Native agrobiodiversity often faces neglect and undervaluation. To raise awareness and promote the utilization of agrobiodiversity, organizing celebrations or festivals dedicated to agrobiodiversity is crucial. Engaging all stakeholders through the observance of special days, weeks, or even years, both nationally and internationally, is essential for fostering collaboration.

In Nepal, since 2075 BS, the National Agriculture Genetic Resources Center (NAGRC) has been observing the 21st of Aswin as the National Genebank Anniversary as well as National Agrobiodiversity Day. This initiative was started under the leadership of Dr. Bal Krishna Joshi. Following his initiative, the Government of Nepal declared the year 2079 BS as National Agrobiodiversity Year, during which various national-level actions and events were conducted. NAGRC had approached the Ministry of Agriculture and Livestock Development (MoALD) with a rationale and proposed list of activities for celebrating this year. One significant decision from this year was the declaration of the first week and first day of Magh as National Agrobiodiversity Week and National Agrobiodiversity Day, respectively.

Under Dr. Joshi's leadership, agro gene sanctuaries have been established around temples and sacred sites since 2075 BS by broadcasting the seeds of 100 different crops (known as "satbeej") during the Balachaturdashi festival. Later, in 2079 BS, this day, which falls on Marghshisha Krishna Chaturdashi or Satbeej Chharne Din, was officially designated as National Agricultural Genetic

Resources Conservation Day (AGRs to Nature Day) and a day for establishing agro gene sanctuaries.

NAGRC, along with various other relevant organizations, celebrates these days and weeks annually by organizing a range of events and activities. Below are some key global and national special days, weeks, and years aimed at promoting the conservation and utilization of agrobiodiversity.

कृषि जैविक विविधता समन्धीत अन्तरराष्ट्रिय र राष्ट्रिय दिवसहरु

International days, weeks, years and decades	राष्ट्रिय तहको विशेष दिन, सप्ताह
2022: International Year of Artisanal Fisheries and Aquaculture 2023: International Year of Millets 2011–2020: United Nations Decade on Biodiversity 2016-2025: UN Decade of Action on Nutrition 2019–2028: United Nations Decade of Family Farming 2021–2030: United Nations Decade on Ecosystem Restoration 10 Feb: World Pulses Day 20 May: World Bee Day 21 May: International Tea Day 22 May: International Day for Biological Diversity 5 June: World Environment Day 7 June: World Food Safety Day 17 June: World Day to Combat Desertification and Drought 28 July: World Nature Conservation Day 7 Oct: World Cotton Day 16 Oct: World Food Day 9 Nov: International Week of Science and Peace 5 Dec: World Soil Day	२०७९ साल : राष्ट्रिय कृषि जैविक विविधता बर्ष माघ पहिलो सप्ताह : राष्ट्रिय कृषि जैविक विविधता सप्ताह १ माघ : राष्ट्रीय कृषि जैविक विविधता दिवस २१ आश्विन : राष्ट्रिय जिन बैंक तथा रैथाने कृषि दिवस बालाचतुर्दशी (मार्गशीर्षकृष्ण चतुर्दशी तथा शतबीज छर्ने दिन) : राष्ट्रिय कृषि अनुवांशिक स्रोत संरक्षण दिवस (प्रकृतिलाइ कृषि आनुवंशिक स्रोत दिवस) तथा कृषि वंशाणु आरक्ष स्थल स्थापना दिवस १-७ वैशाख : राष्ट्रिय वन्यजन्तु सप्ताह ७ वैशाख : राष्ट्रिय याक दिवस २५ वैशाख : नेपाल कृषि अनुसन्धान परिषद वार्षिकोत्सव १५ असार : राष्ट्रिय धान दिवस ७ असोज : राष्ट्रिय संरक्षण दिवस २९ चैत्र : वनस्पति विभाग वार्षिकोत्सव, वनस्पति दिवस र राष्ट्रिय वनस्पति पुरस्कार १६ श्रावन : कोदे दिवस

Source: Joshi 2079BS

This year's events on the agrobiodiversity celebration and festival are briefly described below. These events were also shared widely through social media, email, along with brochures and cards.

4.9.1 Agrobiodiversity bathing day

Beginning in August 2023, we designated each Friday as Agrobiodiversity Bathing Day at the Genebank. On this day, staff engage with agrobiodiversity by touching, observing, respecting, walking around, and working with various species, including walking along the agrobiodiversity trail. Frequently, all staff members gather crop residues and other compostable materials to contribute to the composting plot as well as cleaning and working together in the field.

4.9.2 National Millet Day

Beginning this year, the Government of Nepal declared 16th Shrawan as National Millet Day (Rastriya Kodo Diwas) to highlight the nutritional, cultural, and economic importance of millets. While the celebration is commonly referred to as Kodo Diwas, emphasizing finger millet, the Genebank has advocated for its recognition as National Millet Day, encompassing all millet species along with related food items, tools, knowledge, and traditional skills and therefore called as Kode Diwas (राष्ट्रिय कोदे दिवस). The Genebank was involved from the very beginning in the process of declaring the day.

4.9.3 National Genebank (Anniversary) and Indigenous Agriculture Day

The 13th National Genebank Anniversary was celebrated on 21 Aswin 2080, marked by various activities highlighting the importance of agrobiodiversity. The Chief of the Genebank shared invitation and wish cards, along with a brief summary and a call to action for the conservation and utilization of agrobiodiversity. The celebration was held under the slogan, "Agrobiodiversity for Food, Nutrition, Health, Business, and Environment Security." To commemorate this day, numerous conservation banks were established across the country, and various organizations organized special events. In Khumaltar, an agro-plantation event took place, alongside a cleaning campaign aimed at enhancing the environment. Native agricultural genetic resources were used to strengthen hedgerows and living fences, and saplings and seedlings were distributed from the Raithane nursery of NAGRC. Additionally, awards were given to the best intern student and labor, and informational sheets and brochures were widely distributed to raise awareness about the importance of agrobiodiversity.

4.9.4 National Agricultural Genetic Resources Conservation Day (Sat beej chharne din), AGRs to Nature Day

In this year, satbij was broadcasted in the occasion of 3rd national agriculture genetic resource conservation day (AGR to nature day). In this day, all the stakeholders and community involved in satbij broadcasting program as well and they brought banana sapling for planting. As a part of conservation, national genebank distributed cerena bee hive for santaneshwor mandir committee and interaction was done for maintenance of agro-gene sanctuary.





4.9.5 National Agrobiodiversity Week and Day

The visit to Arghakhanchi district was conducted with the primary objective of celebrating Agro-Biodiversity Week 2081 (Magh 1-7) and Agro-Biodiversity Day 2081 (Magh 2), along with a series of interactions, training, monitoring, and collection activities. The celebration and related field programs were organized at Gairagoth and Dhodeni under Bhumikasthan Municipality, with additional visits to Panini-5 (Basarookha and Padena) for orange pocket area monitoring and to Sandhikharkha for the agricultural exhibition program. The mission also included the exploration and collection of local landraces of various crops to strengthen the national agro-biodiversity database.

Dr. Bal Krishna Joshi played a key role in emphasizing the significance of conserving indigenous crops and local landraces during the Agro-Biodiversity Week and Day celebrations in Arghakhanchi. He highlighted the urgent need for farmer scientist collaboration, sustainable farming practices, and policy support to protect Nepal's traditional crop varieties, ensuring their preservation and sustainable use for future generations.

The Agro-Biodiversity Week and Day programs were conducted successfully with active participation from 73 farmers and multiple stakeholders, including representatives from local and provincial governments, the District Agriculture Knowledge Center, the District Veterinary Hospital, the Agriculture Development Bank, and local schools. The main ceremony was chaired by Mr. Khem Raj Chudali, Ward Chairman of Bhumikasthan Municipality-9, Dhikura. The presence of Parliament Member Mr. Ramgi Prasad Ghimire added political significance to the event, highlighting government interest in biodiversity conservation.

Discussions during the events centered on critical challenges such as the rapid decline of local landraces due to the adoption of hybrid and improved varieties, outmigration of farmers, and increased wildlife pressure on crops. Participants emphasized the lack of strong policy frameworks and financial incentives to encourage landrace conservation. Farmers urged the government to take immediate measures to document, conserve, and utilize indigenous varieties that are adapted to local climates and farming systems.

Parliament Member Mr. Ghimire committed to raising the issue at the national level and acknowledged the vital role of the National Genebank in conserving the nation's agricultural heritage. Experts from the Genebank, including Dr. Mukunda Bhattarai, elaborated on the importance of local landraces and the

need to strengthen farmer–scientist partnerships for sustainable agro-biodiversity management. Support from Mr. Bikash Bhusal and Mr. Prakash Poudel ensured smooth facilitation, registration, and program management throughout the event.

Officials from the Agriculture Knowledge Center, the Agriculture Development Bank, and the Bhumikasthan Agriculture Branch stressed the need for farmer-oriented policies, including subsidies for local seeds, improved market access, and guaranteed markets for traditional products. Mr. Yuba Raj Poudel, Secretary of the Lumbini Province Seed Association, emphasized the need for reforming the seed supply system and providing financial incentives to farmers cultivating indigenous varieties.

Local farmers such as Mr. Ram Prasad Bhusal and Ms. Parbati Saru expressed appreciation for the program and requested continued government support. Conservationist farmer Mr. Dharma Raj Paudel, who maintains over 1,500 medicinal plant species, emphasized integrating medicinal plant conservation into agro-biodiversity initiatives.

Additionally, the team visited the orange pocket area of Panini Municipality, where farmers demonstrated sustainable orchard management practices, including maintaining a 100-year-old productive orange tree. The visit also resulted in the collection of 20 traditional landraces—such as maize, turmeric, ginger, hemp, black maize, rice, horse gram, and mustard highlighting the region's rich genetic diversity.

Overall, the visit played a significant role in raising awareness about agricultural biodiversity, documenting valuable local landraces, and fostering collaboration among farmers, researchers, and policymakers. It concluded with a collective commitment to strengthen conservation initiatives, implement supportive policies, and ensure the sustainable use of Nepal's agro-biodiversity for future generations.

4.9.6 National Yak Day

The first National Yak Day in Nepal was celebrated on 7 Baisakh 2082 (April 20, 2025) to acknowledge the immense cultural, ecological, and economic significance of yaks in the Himalayan region. In support of this initiative, the Nepal Genebank conducted a survey in Humla to assess the status of yaks and other Himalayan livestock genetic resources. Relevant yak-related information and findings were shared to raise awareness about the importance of

conserving these valuable genetic resources and promoting sustainable livestock management in high-altitude areas.

नारा: याक चौंरी प्रवर्द्धन: हिमाली जीवन, संस्कृति र पर्यावरण संरक्षण

4.9.7 Banana plantation tradition

750 meter banana trail established with 35 landraces from 10 districts. In this year these landraces characterized. In this year, On the occasion of akshya tritiye, 73 samplings planted.

4.9.8 NARC Anniversary

To mark the 34th anniversary of NARC (NARC Day), NAGRC has strengthened domesticating plot where some wild vegetable species are being grown and managed in Khumaltar. This initiative also aims to support the domestication of these species. In addition, composting and agro-plantation activities were organized as part of this effort.

4.9.9 World Environment Day

5 June is World Environment Day, and to mark this special occasion, the Nepal Genebank organized a cleanup of our premises and planted several trees. Our ongoing efforts is to make agricultural areas agro-insects, agro-microbes and agro-bird friendly.

4.10 Focal species action for conservation and utilization

In conservation efforts, identifying focal species within a community is crucial for ensuring conservation and sustainable utilization. This approach is commonly used in forest conservation, where certain species receive special attention due to their ecological significance. Categories of focal species include flagship, priority, keystone, indicator, umbrella, endangered, dominant, rare, threatened, surrogate, charismatic, tourism, target, substitute, emblematic, focal, foundation, vulnerable, endemic, landscape, invasive, exotic, indigenous, alien, specialty, ambassador, icon, or symbol species. However, this approach is not widely applied to agrobiodiversity. To address this gap, NAGRC has introduced the concept of focal species to promote the conservation and utilization of agricultural genetic resources (AGRs).

4.10.1 National Fruit and Vegetable

In line with NAGRC's initiatives and as part of the activities planned for the National Agrobiodiversity Year, the Government of Nepal declared Mandarin (Suntala) as the national fruit this year. In similar way, Genebank started discussion for identifying national vegetable and possible vegetable species are broad leaf mustard.

4.10.2 Postal Stamp of Native AGRs

हुलाक टिकट

यैथाने कृषि आनुवंशिक स्रोतहरु लोपन्मुख अवस्थामा भएको र तिनीहरु नेपालकै हो भन्ने प्रमाणहरु पनि निकै कम भएको तथा संरक्षण, जनचेतना, नेपालको हो भन्ने प्रमाणको लागि हुलाक टिकटमा निम्न कृषि आनुवंशिक स्रोतहरु अंकित हुलाक टिकट छपाईयो ।

सुन्तला: सुन्तला नेपालमा परापुर्व काल देखी नै खेति गरीदै आएको फल हो । जसलाई हाल नेपालको सरकारले राष्टिय फल घोसण गरेको छ । हाल सुन्तला खेती नेपालको 65 वटा जिल्लामा खेति गरीन्छ । यसको 28451 हेक्टरमा 199195 मेटिक्टन उत्पादन छ । यसको उत्पादनले अ राष्टिय पुग्ने माग धान्न सकिरहेको छैन्न । यस फलको नेपालमा धेरै विभिधता पाईन्छ । साथै यो फल नेपालको विभिन्न संस्कृती तथा जात जाति संग पनि जोडीएको छ । सुन्तला संग जोडीएको नेपाली गित तथा उखान टुक्का पनि छन् । तर यसको उत्पादनले अझै राष्टियको लागि पुग्ने माग धान्न सकिरहेको छैन्न र यसको उत्पादन बढाउन सकेमा अन्तराष्टिय बजारमा पनि प्रश्सत नियार्त गर्न सकिन्न् छ । हुलाक टिकटमा यसको फोटो राखेर राष्टिय स्तरमा प्रचारप्रसार गरी उत्पादन बढाउने र अन्तराष्टिय बजारमा प्रचारप्रसार गरि माग बढाउन सकिन्छ ।

पुत्का मौरी: पुत्का मौरी, मौरी प्रजातिमा पर्ने सबैभन्दा सानो आकारको मौरी हो। यी मौरीहरुको शरीरमा खिल नहुनाले यसले अन्य मौरीले झैं चिल्दैनन । पथ्वीमा झण्डै 500 यो प्रजातिका यी मौरीहरु पाइन्छन । यी मौरीहरु ससारको उष्ण र उपोष्ण हावापानी पाइने क्षेत्रमा बसोवास गर्ने प्रजातिको मौरी हुन । यी मौरीहरु बन जंगलका पुरानो धोद्रो महुारुरुखमा वा जमीनमनिु गोला बनाइ नेपालमा समुद्र सतह बाट 1000 मिटर उचाइसम्मको क्षेत्रमा वसोबास गरेको पाइन्छ। । पुत्कामौरी जलवाय परिवर्तनको प्रभावका कारण 1000 मिटर उचाइभन्दा माथि पनि वसोवास गरेको भेटिन्छ । नेपालमा मेलिपोना स्पेसिस् (Melipona spp) को पत्का मौरी पाइन्छ तर संरक्षणको अभावका कारण यो प्रजातिको मौरी लोपोन्मुख अवस्था रहेको छ खासगरी नेपालको बाँके , बर्दिया र दाङ जिल्लामा पत्कामौरी पाइन्छ । मह उत्पादन कम भएता पनि औषधिको रुपमा प्रयोग गर्न यस मौरीको महको महत्व निकै ठूलो रहेको छ । सामान्यत ठूला मौरीहरुले परागसेचन गर्न नसकेका बनस्पतिहरुमा पत्काले पंरागसेचनमा सहयोग गरी रहेको पाइन्छ साथै प्रकृतिमा रहेका विविधखाले बोटविरुवाहरुमा परागसेचन गराउन सक्ने क्षमता यी पुत्का प्रजातिका मौरीहरुमा बढी भएको पाइन्छ । हुलाक टिकटमा यसको फोटो राखेर

राष्टिय स्तरमा प्रचारप्रसार गरी यसको मह उत्पादन बढाउने र संरक्षणको गर्न टेवा पुग्नेछ । साथै अन्तराष्टिय बजारमा प्रचारप्रसार गरि यसको मह माग बढाउन सकिन्छ ।

रायो साग: नेपालमा सरल र सर्वसुलभ रुपमा जहाँ पनि पाईने तरकारीको रुपमा रायोको साग पाईन्छ। रायोको साग, बहुउपयोगी, स्वास्थ्यकोलागी अनेकौँ फाइदै फाइदा भएको बिशेष जाडो (हिउँद) महिनामा पाइने बिभिन्न हरियो सागपात मध्ये रायोको साग पनि एउटा एक प्रमुख तरकारी हो। यसको खेती नेपालको तराई देखि उच्च पहाड सम्म नै गर्न सकिन्छ र प्राय नेपालको सबै किसिमको माटोमा गर्न तर तराई र मध्य पहाडमा यो हिउँदे वाली हो भने उच्च पहाड जहाँ तुसारो र हिउँ पर्दछ त्यस्तो इलाकामा ग्रीष्म याममा खेती गरिन्छ। रायोको तरकारी औषधिय गुणले भरिपूर्ण हुन्छ । यसलाई उपभोग गर्दा जोर्नी र हड्डी बलियो बनाउँछ, भिटामिन के प्रशस्त मात्रामा हुनाले, रगत जम्ने र अनावश्यक ठाउँमा क्याल्सियम जम्मा हुने क्रम पनि रोक्छ, हड्डी खिइने समस्या भएकाहरुका लागि रायोको साग लाभकारी, महिनावारीमा राहत दिन्छ, शरीरका विकार फाल्छ रायोको सागमा भिटामिन ए, सी र के प्रचुर मात्रामा, स्मरणशक्ति बढाउँछ, मुटु बलियो बनाउँछ, क्यान्सरबाट जोगाउँछ , डन्डीफोर कम गर्छ, गर्भवतीलाई लाभ गर्छ गर्भवती महिलालाई वाकवाकी आउने, टाउको दुख्ने आदि समस्याल बाट पनि मुक्त हुने उल्लेख छ। यसरी हाम्रो देशको प्राय ठाउँमा खति गर्न सकिने र औषधिय गुणले भरिपूर्ण भएको बालीलाई अजै प्रचारप्रसार गर्न सकिए मानव स्वास्थ्यमा उल्लेखिनीय सुधार हुने हुदा हुलाक टिकेट धारै राम्रो हुन्छ ।

नौमुठे गाई: नेपालको राष्ट्रिय गाईलाई हिन्दुहरुको पहिचान, प्रतिष्ठा र सभ्यताको संकेतका रुपमा लिइन्छ । नेपालमा गाईका मुख्य 9 वटा प्रजाती मध्ये 7 प्रजातीका गाई घरमा पालिन्छन भने गौरीगाई र नीलगाई गरी दुई प्रजातीका गाई जंगलमा पाईन्छन । घरमा पालिने गाई मध्ये गौरी गाई सबै भन्दा ठुलो प्रजाती हो भने नौमुठे गाई सबै भन्दा सानो प्रजाती हो । नौमुठे गाई उत्पति स्थल अछाम जिल्लामा भएको मानिन्छ, त्यसैले यसलाई लाई अछामी गाई पनि भनिन्छ। यस गाईलाई 'नौमुठे गाई' भनिनुको कारण यसको उचाई लगभग नौमुठी हुनु, हातको मुट्ठीले गाईको उचाइ नाप्दा नौ मुठी पुग्ने (करिव 80 सेन्टिमिटर) भएकोले भनिएको हो। भगवान गोरक्षनाथले गौ संरक्षणको क्रममा अछामको देवीथुममा आइ सप्तऋषिहरुलाई पवित्र धार्मिक स्थल द्वादश ज्योतिर्लिङ्ग मध्येको बैद्यनाथ क्षेत्रमा नौमुठे गाईलाई संरक्षण तथा प्रवर्धन गर्न जानकारी दिएको किंवदन्ती पाइन्छ। यस प्रजातिको गाईको दुध तथा गहुँतलाई औषधि जन्य रुपमा लिइन्छ । यस प्रजातिका गाईहरुले एक वेतमा करिब 200 लिटरसम्म दुध दिन्छन्। धार्मिक पर्व तथा तिर्थ ब्रतमा यसको दुधलाई बिशेस रुपमा आवश्यक मानिन्छ। हाल यो गाईको प्रजाति लोपोन्मुख स्थितीमा रहेको छ। शहरीकरण, बजारीकरण र आधुनिकीकरणले नौ मुठे गाईको संख्या दिनानुदिन घटिरहेको छ । अछामबाट तिब्र बसाइसराईका कारण पनि नौ मुठे गाई संरक्षणको अभावमा छ । उन्नत जातका गाईको विकासले गर्दा पनि नौ मुठे गाई संरक्षणको ओझेलमा पर्दै गएको छ । संसारकै सबै भन्दा सानो प्रजातीको लोपोन्मुख नौ मुठे गाईको वंश परम्परालाई संरक्षण गरी अछामको पहिचान बचाइ राख्नु आजको आवश्यकता हो । यसरी हाम्रो देशमा मात्र पाईने, र देशको पहिचान समेत बनाएको गाईको संरक्षण गरि संसारभर चीनाउन हुलाक टिकेटमा छाप धारैनै राम्रो माध्यम हुन्छ ।

असला माछा: नेपालको हिम नदि तथा चिसो पनि वहने खोलामा असला माछा पाईन्छ। यो माछाको 17 प्रजातिमध्ये नेपालमा 9 प्रजाति रहेको छन्। नेपालमा 6 सय देखि 35 सय मिटरको उचाइसम्म असला माछा पाइन्छ । असला माछा देश तथा विदेशमा पनि चर्चित छ । चर्चा र महत्व बढी भएकै कारण आलो माछा र सुकुटीको अत्याधिक माग बढेको छ। निकै स्वादिलो हुने भएकाले यसको माग बढेपछि यसको मूल्य पनि बढेको छ। अहिले ताजा माछाको प्रति किलो रु. एक हजार भन्दा माथि र सुकुटी पारेकोलाई प्रतिकिलो रु. दस हजारसम्म छ। यो माछा जापान, अमेरिका, बेलायतलगायत युरोपका विभिन्न मुलुकहरुमा निर्यात हुने गरेको छ। बिदेश पठाउनका लागि सुकुटीको माग धान्न गाह्रो परेको छ। सबैको रोजाइमा पर्ने थालेसँगै खोलामा पाईने माछाको संख्यामा कमी आएको छ। जथाभावी ढङ्गले नदीमा माछा मार्ने कार्य बढेपछि नदी तथा यसका सहायक नदीहरुमा माछा पाउन छाडेका छन्। असला माछाको मुख्य आहारा भनेको लेउ हो, अहिले ढुङ्गामा लेउ होइन, हिलो र फोहोर जमेको भेटिन्छ", रानाले भन्नुभयो, "जथाभावी गिट्टीबालुवा झिक्ने, फोहोर त्यहीँ फ्याँक्ने, खोला मासेर संरचना बनाउने गर्दा माछाको बासस्थान खल्बलिन पुग्यो, दुषित पानीले पनि माछालाई हुर्कन, बढ्न दिएन । अनियन्त्रित नदीजन्य पदार्थको उत्खननका कारण माछालगायत जलचर सङ्कटमा परेको छ । विषादी हाल्ने, पासो थाप्ने र करेन्ट लगाउँदा पनि असला माछा घट्दै गएको छ ।.स्वादिष्ट र गुणकारी असला माछालाई सङ्कटबाट नजोगाउने हो भने गायक बसन्त थापा र गायिका निता पुनमगरको गीतमा मात्र सीमित नबन्ला भन्न सकिन्न । नेपालमा पाइने असला माछा विश्वमै लोपोन्मुख मानिन्छ । असला माछाको संरक्षणका लागि सरकारको ध्यान पुग्न सकेको छैन्। बिभिन्न बिदेशी प्रजातिका माछा पालन गर्ने तथा उपभोग गर्न अन्य देश बाट माछाको अयात भएको बतमान अवस्थामा हाम्रो देशमा पाईने, बहुमुल्य माछा उत्पादन बिद्रि तथा संरक्षण गर्न अपरिहार्य छ । देशमा माछाको अयात घटाई उत्पादन बढाउन तथा पहिचान समते बनाएको असला माछा संरक्षण गरि संसारभर चीनाउन हुलाक टिकेटमा छाप धेरैनै राम्रो माध्यम हुन्छ ।

खरी बाख्रा: नेपालको पूर्वदेखि पश्चिमसम्म मध्य पहाडी भेगमा पाईने बाख्रालाई खरी बाख्रा भनिन्छ । यसलाई कतै कतै पहाड़ी बाख्रा वा औले बाख्रा पनि भनिन्छ। खरी बाख्रा पहाडी बाख्राभित्र पनि रङ्गका आधारमा 6 उपजाति वा उपप्रकार सेती, काली खैरी, घोर्ली, सिंगारी र धोबिनी रहेको छ । खरी जात नेपालको कुल बाखाको जनसंख्याकों 50% बढी हिस्सा ओगटेको मानिन्छ। खरी बाख्रा फरक फरक रंगका हुन्छन् जसलाई आकारमा सानो हुन्छ र यसलाई सामान्यतया पहाड़ी वा औले बाख्रा भनिन्छ। नेपालकों पहाडी र भित्री पहाड़ी क्षेत्रमा 300 देखि 1,500 मिटरको उचाइमा पालिन्छ। वयश्क बोकाको शारिरिक तौल 40-45 के. जी. तथा बाख्रीको 25-35 के. जी. सम्म हुन्छ। यी जातहरुले औसत 16 महिनामा पहिलो बच्चा जन्माउन सक्छन् र 2 वर्षको अन्तरालमा 3 पटक जन्म दिन सक्छन् | आम किसानहरु विदेशी बाख्रा भन्दैमा राम्रो हुन्छ भन्ने मानसिकताले ग्रषितताको कारण नेपालमा पाइने रैथाने बाख्राको संख्या घट्दै गएको छ। 'व्यवसायिक बाख्रापालनमा क्रस ब्रिडिङ गराउने क्रम बढेकाले रैथाने बीउ हराउने खतरा बढ्दै गएको छ। रोगसँग लड्न सक्ने क्षमता बढी भएको र स्वादिलो मासुका लागि परिचित रैथाने बाख्राको बीउ कालान्तरमा अभाव हुनेतर्फ सचेत हुनुपर्छ। खरी बाख्रामा रोगसँग लड्न सक्ने क्षमता बढी र कठोर हावापानीमा अनुकूल र कम भरण प्रणालीमा पनि उत्पादन गर्न सक्ने विषेशता र खाँदा समेत स्वादिलो हुन्छ। परम्परागत चरन व्यवस्थामा समेत यो बाख्रा पालन गर्न सकिन्छ। नेपालको हावा पानि सुवाउदो,

उत्पादन खर्च कम लाग्ने यो रैथाने बाख्वाको संरक्षण गर्न आयस्क छ । हुलाक टिकेटमा खरी बाख्वाको छाप राखेमा आम बाख्वा पाल्ने किसानहरुलाई खरी जातको बाख्वाको पालनमा धनाकर्षण हुने छ ।

लिमे भैंसी: लिमे नेपालको स्थानिय जातका भैसी हो जुन पश्चिम पहाडी भेगका जिल्ला कास्की, स्याङ्जा, पर्वत, बागलुङ तनहुँ र लमजुङमा बढी संख्यामा रहेता पनि नेपालको सबै पहाडी भेगका जिल्लाहरुमा पालिने गरिन्छ. लिमेको दुध स्वदिलो तथा घृतांसको मात्रा बढी भएको हुनाले ग्रामिण क्षेत्रमा कृषकहरुले वढी मन पराएका छन् । लिमे भैसीको कोष केन्द्रिका रेसा 50 हुन्छ । यो भैसी कैलो रङ्गको हुन्छ । यसको छालाको रङ्ग फिका खैरो देखि कैलोसम्मको हुन्छ । आँखी भौ सेतो हुन्छन् । यसको चिउँडोमुनि र छाती वरपर हुने खैरो वा सेतो धर्से रांैहरु यिनीहरुको फरक छुट्याउने एक ठेट लक्षण हो । यसको घुँडा देखि तल पनि सेतो वा खैरो रङ्गले खुट्टाको भागलाई छुट्याएको हुन्छ । यो भैंसी आपेक्षित रुपमा सानो कद र छोटो शारीरिक लम्वाईको हुन्छ । यसको घाँटीतिर घुम्रेको सानो हँसिया आकारका सिङ्ग हुन्छन् । यो नश्लका भैसीहरुको शारीरिक लम्वाई, काँधको उँचाई, अस्थिको उँचाई र छातीको गोलाई सरदर 125 सेमी, 119 सेमी, 110 सेमी र 175 सेमी पाईएको छ । नेपालमा पहिचान भइसकेको भैसीका नश्लहरुमध्ये लिमे भैसीको शरीरको आकार र तौलका दृष्टिकोणले सवैभन्दा सानो नश्लको भैंसी हो । यो भैंसीको औसत शारीरिक तौल 410 केजी पाइएको छ । यो भैसींको स्वभाव अर्ध-उद्धण्ड किसिमको हुने गर्छ । यो भैंसीको देशको सीमित क्षेत्रमा मात्र पालन गरिने भएकोले यसको क्षमता अनुसार संरक्षणका लागि ध्यान पुर्याउन आवश्यक छ।

पारकोटे भैंसी : पारकोटे भैंसीहरु मुलुकको तल्लो देखि उच्च पहाडभर छरिएर रहेका छन भने मुख्य गरी मध्य पहाडमा वढी मात्रामा पाउन सकिन्छ । पारकोटे भैंसीको कोष केन्द्रिका रेसा 50 हुन्छ । पारकोटे भैंसी मुख्यत कालो रङ्गको हुन्छ तर कहिलेकाहीं खैरो र फिका खैरो रङ्गमा पनि पाईन्छ । यो भैंसी लाम्चो अनुहार र चेप्टो टाउको भएको हुन्छ । सिङ्ग तरवार आकारको र शरीरको पछिल्लो भागतिर फर्केको हुन्छ । यसको मध्य कद र शरीरको लम्वाई लिमेको दाजोमा अलि वढी हुन्छ । यसको शरीरमा कुनै पाटा वा धर्सा हुदैन। यसको थुतुनो वा मुख कालो हुन्छ । यो नश्लका भैंसीहरुको शारीरिक लम्वाई, काँधको उँचाई, अस्थिको उँचाई र छातीको गोलाई सरदर 127 सेमी, 124 सेमी, 119 सेमी र 177 सेमी पाईएको छ । यो भैंसीको शारीरिक तौल सरदर 407 केजी पाइएको छ । यो भैंसीको स्वभाव अर्ध-उदण्ड किसिमको हुने गर्छ ।

4.10.3 Registration of location specific elite landraces

With the initiative of NAGRC, the policy has been revised to allow the registration of location-specific landraces with a broad genetic base in the National Seed Board. This year, some landraces have been planned for registration in the National Seed Board by various community seed banks.

4.11 Domestication

Many wild species in Nepal are edible, and farmers regularly harvest vegetables, fruits, and other products from the wild. To support the conservation and sustainable use of these resources, the Nepal Genebank has allocated a dedicated plot for the domestication of wild species. Since last year, the

Genebank has initiated domestication of several wild vegetables, including Chuke Palunge, Niuro, Jaluko, Kaapo, and Hal Hale, aiming to promote their cultivation and reduce pressure on natural populations.

4.12 Policy support and contribution

The Nepal Genebank has actively developed and revised various policies, acts, and strategies. Its Chief, Bal Krishna Joshi, has played a leading role in formulating several of these policies and has represented the Genebank at both national and international levels. He has served on numerous committees and task forces, including ABS-Nepal, PVP&FR, NBSAP, ATSC, NABCC, the ABS Expert Team-CGRFA, and the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing. The policies in which the Nepal Genebank has been involved are briefly outlined below. In addition, Genebank has contributed, reviewed and edited many policies and strategies of many local and provincial governments.

4.12.1 Agrobiodiversity policy 2071 BS (2014)

Under the leadership of the Nepal Genebank, the Agrobiodiversity Policy was amended in 2071 BS (2014). The revised policy incorporated important provisions such as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the recognition and protection of farmers' rights, and the inclusion of components and subcomponents of agrobiodiversity.

4.12.2 IMISAP: International Treaty on Plant Genetic Resources for Food and Agriculture and Multilateral System (ITPGRFA-MLS) Implementation Strategy and Action Plan 2018-2025

To ensure the effective implementation of the ITPGRFA, the Nepal Genebank developed the IMISAP and submitted it to the Ministry of Agriculture and Livestock Development (MoALD) in 2015. Following extensive discussions and revisions, the strategy and action plan were formally approved by MoALD, with implementation spanning from 2018 to 2025. This landmark document was widely shared with the global community, as it was the first of its kind in the world, setting an example for other countries in operationalizing the ITPGRFA and its Multilateral System.

4.12.3 Agrobiodiversity Conservation and Utilization bill and regulation

In 2015, the Nepal Genebank prepared the Agrobiodiversity Conservation and Utilization Bill and its accompanying regulation in both Nepali and English, and submitted them to the Ministry of Agriculture and Livestock Development (MoALD). The drafting process was participatory, involving consultations and interactions at local, provincial, and national levels, with active input from key experts and stakeholders.

4.12.4 Seed act and regulation

In Nepal, farmers were previously unable to register their landraces with the National Seed Board, as the Distinctness, Uniformity, and Stability (DUS) test was mandatory. Seed production was primarily carried out by seed companies, not by farmers themselves. Recognizing that the registration of farmers' varieties by local communities could serve as an effective conservation tool, the Nepal Genebank, in collaboration with other stakeholders, initiated discussions and generated field evidence to support the registration of landraces.

As a result, the Seed Regulation of 2013 introduced a provision allowing farming communities to register their varieties through a simplified process. This milestone was further strengthened by the Seed Act of 2022 and the Seed Regulation of 2024, which legally defined native and local landraces, ensuring their formal recognition and protection. Under these provisions, broad genetic base landraces (with inherent genetic variation) can now be registered without the requirement of a DUS test.

4.12.5 ABS Expert Team-CGRFA

The ABS Expert Team is a global technical and legal body established under the Commission on Genetic Resources for Food and Agriculture (CGRFA). Its Seventh Session was held virtually from 14 to 16 January 2025. During this session, the team worked intensively on assessing the impact of access and benefit-sharing (ABS) measures on genetic resources for food and agriculture (GRFA) and associated traditional knowledge, with the aim of providing informed guidance to member countries and advancing fair and equitable benefit-sharing at the global level.

4.12.6 Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing

To strengthen the Multilateral System (MLS) under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), a formal enhancement process was initiated in 2013, leading to the establishment of the Ad Hoc Open-ended Working Group (OEWG/MLS). The group engaged in multiple negotiation rounds to improve the effectiveness and fairness of the MLS. However, by 2019, discussions stalled due to persistent disagreements—particularly on the scope of the MLS and the terms of monetary benefit-sharing.

The Governing Body of the Treaty (GB-9) revived the process in September 2022, and the 10th Meeting of the Working Group was convened in July 2023. The Nepal Genebank has actively represented Nepal in this process, participating from the 10th to the 13th meeting.

Further momentum was achieved during the 10th Session of the Governing Body (GB-10) in November 2023, which decided to base future negotiations on the 2019 compromise proposal. The working group agreed to focus on three critical areas—referred to as "Hotspots":

- A potential amendment to the Treaty to expand Annex 1, bringing all plant genetic resources for food and agriculture under its scope.
- The structure and rates of payments within the MLS.
- The use of Digital Sequence Information/Genetic Sequence Data (DSI/GSD) and mechanisms for equitable benefit-sharing from its utilization.

The overarching goal of this renewed effort is to finalize and adopt an enhanced Multilateral System by the eleventh session of the Governing Body (GB-11) in 2025. The Nepal Genebank has contributed to this process by submitting Nepal's perspective and positions on these three Hotspots to the Ministry of Agriculture and Livestock Development (MoALD) and to other Asian countries, as well as by suggesting definitions and scopes for key terms in the draft package of measures to the Secretary of the Treaty.

4.12.7 ABS (access and benefit sharing) bill

The Ministry of Forest and Soil Conservation first drafted an ABS Bill in 2002 to align with Nepal's international commitments, including the Nagoya Protocol. Although a draft was prepared, no parliamentary act has yet been passed,

leaving Nepal without a dedicated ABS law. Over the years, many rounds of discussions have been organized, with the Nepal Genebank actively participating and contributing.

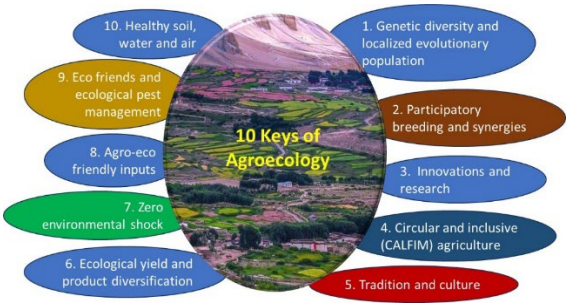
In 2025, a committee was formed to revise and resubmit the ABS Bill, with the Chief of the Nepal Genebank serving as a member. The Genebank has proposed the inclusion of a separate section on agrobiodiversity within the ABS Bill, along with a dedicated regulation for agrobiodiversity. To advance these proposals, the Genebank has convened multiple interaction and consultation meetings with stakeholders at different levels.

4.12.8 NBSAP

Following the implementation of the National Biodiversity Strategy and Action Plan (NBSAP) 2014–2020, the Ministry of Forest and Environment is preparing the next phase of the strategy. The Nepal Genebank has made significant contributions to this process, particularly in highlighting the importance of agrobiodiversity within the broader biodiversity framework. In addition to providing inputs to the overall strategy and action plans, the Genebank has proposed the development of a dedicated document—National Agrobiodiversity Strategy and Action Plan (NABSAP)—to specifically address the conservation and sustainable use of agricultural biodiversity.

4.12.9 Nepal Agroecological Roadmap (NAR) 2025-2045

The Ministry of Agriculture and Livestock Development (MoALD), in collaboration with LIBIRD, is preparing the Nepal Agroecological Roadmap (NAR) 2025–2045. A technical working committee has been formed to guide its development, with the Chief of the Nepal Genebank serving as a member. The Genebank has provided significant input on agrobiodiversity, crop breeding, research, and conservation, ensuring that these areas are effectively integrated into the Roadmap's vision and strategies for sustainable agriculture in Nepal.



4.12.10 Plant Variety Protection and Farmers' Rights Bill (PVP&FR)

Following Nepal's accession to the World Trade Organization (WTO) in 2004, the country was obligated to initiate the drafting of a Plant Variety Protection Act. Nepal's PVP&FR system is sui generis, designed as a specialized framework to protect plant varieties while recognizing farmers' rights.

- The first draft of PVP&FR was prepared in 2005.
- The Nepal Genebank played a key role in developing the third draft of PVP&FR (2018). This process included:

  I. Formation of a 9-member Technical Working Team in 2016 for revising the 2008 draft.
  II. A consultative visit to India in January 2017 for guidance on revisions.
  III. Five consultation meetings between 2015 and 2019.
  IV. Consultancy support in 2019, which contributed to finalizing the 2018 draft.

Currently, the Genebank, in collaboration with the Plant Breeding and Genetics Society of Nepal (PBaGSoN), is working on the fourth draft, PVP&FR 2025. This draft has undergone extensive discussions and consultations:

- Reviewed in AT-SC meetings and consultation sessions at the Genebank.
- Presented at the Multistakeholder Consultation Meeting on PVP&FR in Patan on 18 July 2024, with participation from SQCC, USAID, Genebank, and PBaGSoN.
- Interaction workshop organized at NSSRC with CDABCC and Genebank on 22–23 Paush 2081.
- Interaction program on AI and IPR in Genetics, Plant Breeding, and Seed Science organized by PBaGSoN, LIBIRD, and Genebank on 30 Srawan 2082.
- Engagement with farming communities in August 2025.

The fourth draft is now finalized and will soon be submitted to MoALD and NARC. In addition, the Genebank has prepared a draft of the PVP&FR regulation, complementing the bill and facilitating its implementation.

4.12.11 Geographical Indication bill

The Nepal Genebank recognizes Geographical Indication (GI) as an effective approach for agrobiodiversity management and a means to enhance farmers' economic returns. The Genebank has prepared extensive evidence and

documentation to support GI initiatives and has encouraged community seed banks to explore GI for value addition.

Currently, Nepal does not have a formal GI Act or Regulation. The Ministry of Industry, Commerce, and Supplies is in the process of drafting the GI Bill, and the Genebank has actively contributed to its preparation. The bill is expected to be approved in 2025.

4.12.12 Curriculum development and revision

Since 2014, the Nepal Genebank has actively participated in the development and revision of course curricula for BSc and MSc programs at the Agriculture and Forestry University (AFU), the Institute of Agriculture and Animal Science (IAAS), and their affiliated colleges. The Genebank's involvement ensures that agrobiodiversity, conservation, and related topics are effectively integrated into higher education programs.

C. Special (Supplementary) Projects

SP-GB-1. Deep Regenerative Agriculture in the High-Altitude Mountain Region of Nepal (REGAGRI)

PROJECT INCEPTION WORKSHOP AT PROJECT DISTRICT

The Project Inception Workshop for the Deep Regenerative Project was successfully held on September 26, 2024, at the Krishi Gyan Kendra Hall in Chame, Manang. The program was chaired by Mr. Bikash Bhusal from the National Genebank, with Mr. Matrika Acharya, Chief District Officer (CDO) of Manang, serving as the Chief Guest. Mr. Ananta Kumar Basnet, District Coordination Officer, was also a guest at the event. Mr. Pradip Thapa facilitated the program. A total of 33 participants including 27 males and 6 females from various sectors attended the workshop. The inception workshop, held at District Coordination Office Seminar Hall in Jomsom in 22nd Oct,2024. This program was chaired by vice chief district officer (CDO) of Mrs. Maya Gururng (Chairperson of district coordination committee) was chief guest of this program. There were 26 participants including 20 males and 6 females.


District level inception workshop at Jomsom, Mustang

DOCUMENTATION OF NATIVE AGROBIODIVERSITY OF THE PROJECT SITES

A field survey was conducted in October 2024 in Manang and Mustang districts as part of the baseline report preparation. Two rural municipalities were selected for the survey. In total, 100 households were interviewed in Mustang district and 97 households in Manang district. Additionally, two Focus Group Discussions (FGDs) and five Key Informant Interviews (KIIs) were carried out. Based on the findings, two comprehensive baseline reports were prepared this year.



During household survey at mustang

COLLECTION OF AGRICULTURE GENETIC RESOURCES

There are some unique agriculture genetic resources in Mustang and Manang district. During field survey, we have collected 20 accessions of 10 crops and conserved in long term conservation unit of national genebank.



STAKEHOLDER CONSULTATION MEETING FOR ESTABLISHING MUKTINATH AGRO-GENE SANCTUARY

A consultation meeting with the Muktinath Development Committee was held on 20 April 2025, with 13 participants (11 male, 2 female) including representatives from ACAP Mustang and Varagung Muktikshetra Rural Municipality. Facilitated by Mr. Pradip Thapa (National Genebank), the meeting featured presentations by Dr. Bal Krishna Joshi on program objectives, project progress, and the concept of an Agro-Gene Sanctuary. Participants appreciated the initiative and recommended district-level consultations with the Chief District Officer (CDO) and other stakeholders to ensure wider ownership. The meeting concluded with a commitment to organize follow-up discussions and formalize the establishment process.

MUNICIPALITY LEVEL CONSULTATION WORKSHOP ON DEEP REGENERATIVE AGRICULTURE AT PROJECT SITES

Three consultative workshops were organized across the project sites, engaging stakeholders from the respective rural municipalities along with custodian farmers. The programs were facilitated by Mr. Bikash Bhusal from the National Genebank. Mr. Pradip Thapa, Technical Officer at the National Agriculture Genetic Resources Center (NAGRC) and focal person for the Deep Regenerative Agriculture project, delivered the welcome remarks, presented the program objectives, and provided a comprehensive overview of Nepal's native agro-biodiversity. His session highlighted the project's conceptual framework, ongoing activities, and expected outcomes under the initiative.

Following the technical presentations, participatory discussions were held where local stakeholders shared their insights and concerns. Key issues raised

included the impacts of climate change, limited road access, and outmigration on local food system sustainability. Participants also expressed concern over the rapid decline of traditional crops such as linseed and Tartary buckwheat, now nearing extinction in the region. Furthermore, the spread of new pests and diseases, linked to the introduction of improved apple varieties, was highlighted as a growing challenge to local agriculture.

Municipality level consultation workshop at Chame RM, Manang

ORIENTATION TRAINING ON DEEP REGENERATIVE AGRICULTURE AT PROJECT SITES

Three orientation trainings, one in each project site, were organized to introduce farmers to the concept of Deep Regenerative Agriculture. Each training brought together around 35 farmers, ensuring wide participation from the local communities. The sessions included both presentations and interactive group discussions, enabling farmers to actively engage with the subject matter.A key focus of the training was the use of the Five-Cell Analysis, which served as a participatory tool for identifying and analyzing local agricultural practices, challenges, and opportunities. Through this exercise, farmers systematically assessed their farming systems and highlighted critical areas for improvement. Additionally, the trainings facilitated the documentation of Agricultural Genetic Resources (AGRs), capturing valuable information on local crop varieties and traditional practices. This process not only raised awareness among farmers about the importance of agro-biodiversity but also laid the foundation for integrating indigenous resources into the Deep Regenerative Agriculture framework.


Orientation training on deep regenerative agriculture at Charang, Mustang

SP-GB-2: Enhancing conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate (On-farm Project)

The International Treaty's Benefit Sharing Fund funded On farm Project, implemented by the National Genebank at two project sites since 2024, aims to promote the conservation and utilization of local crop diversity in Nepal . In alignment with the project's objectives and planned activities, a range of initiatives have been carried out, which are summarized below.

PROJECT COORDINATION COMMITTEE MEETING:

A Project Coordination Committee (PCC) meeting was held on December 18, 2024, under the chairmanship of Ms. Matina Joshi (Joint Secretary, MoALD) at the National Genebank. The meeting aimed to:

- Provide orientation on the project concept and working modality
- Discuss inclusion of additional steering committee members
- Review and approve planned project activities

PROJECT LAUNCHING

On February 22, 2025, the National Agriculture Genetic Resources Center (National Genebank), in collaboration with Kohalpur Municipality and Benefit Sharing Funds-FAO, successfully organized the inauguration of an on-farm project and an interaction program on agrobiodiversity at Muktinagar, Manakamana Tole, Ward No. 2, Kohalpur, Banke. The event, chaired by the Ward President of Ward No. 2, was graced by distinguished guests, including Mr. Surya Dhakal, Parliament Member, Durga Prasad Chaudhary the Parliament

Member of Lumbini province, Basanti Neupane Adhikari (Assembly Member, Kohalpur-2), and Sangita Paudel Subedi (Deputy Mayor, Kohalpur). A total of 53 participants, comprising 18 females and 35 males, actively engaged in the program. The interaction session focused on the critical role of agrobiodiversity in ensuring food security, enhancing climate resilience, and promoting sustainable agriculture. Discussions underscored the importance of conserving local crop varieties to boost productivity and adaptability in the face of changing environmental conditions. The on-farm project launch aimed to empower local farmers by providing resources and knowledge to preserve genetic diversity and adopt sustainable farming practices. This initiative aligns with global and national goals to safeguard agricultural heritage while addressing modern challenges such as climate change and food insecurity. The event served as a platform for fostering collaboration among farmers, local government officials, and agricultural experts. It emphasized the need for collective efforts to protect and promote agrobiodiversity, highlighting its benefits for both the environment and livelihoods. By raising awareness and encouraging practical action, the program reinforced the significance of genetic resource conservation in building a resilient agricultural system. This initiative marks a vital step toward sustainable agricultural development in Kohalpur, contributing to long-term food security and environmental sustainability in the region.

PROJECT LAUNCHING AND INTERACTION WORKSHOP- BANKE

On February 7 2025, a significant event was organized in Ward-5, Madhya Nepal Municipality, to promote Nepal's traditional crops and eco-friendly farming practices. The program was led by Mr. Ombir Gurung, Ward Chairman of Ward-5, with Mayor Ramesh Kumar Pandey serving as the chief guest. The event saw

participation from distinguished guests, including Dr. Matina Joshi Baidya and Dr. Ram Krishna Shrestha, Joint Secretaries from the Agriculture Ministry, Basu Regmi, Agriculture Secretary of Gandaki Province, and Dr. Nanda Prasad Shrestha, former head of the Nepal Agricultural Research Council (NARC). Representatives from agriculture departments, research centers, universities, local governments, and schools also attended, totaling 87 participants (50 men and 37 women). The primary objective of the event was to advocate for the preservation and promotion of Nepal's traditional crops and livestock breeds. Emphasis was placed on protecting local seeds and studying their benefits to enhance agricultural sustainability. The program underscored the importance of leveraging local resources to preserve cultural heritage, improve nutritional outcomes, and safeguard the environment. By focusing on indigenous agricultural practices, the initiative aimed to foster farming systems resilient to climate change, reducing reliance on imported resources. Discussions highlighted how traditional crops and eco-friendly methods contribute to sustainable agriculture, aligning with Nepal's environmental and cultural priorities. The event served as a platform for collaboration among stakeholders, encouraging knowledge-sharing and policy support for local agricultural innovation. This initiative marks a vital step toward building a climate-resilient agricultural framework that prioritizes Nepal's unique resources, ensuring food security and environmental sustainability for future generations.

PROJECT LAUNCHING AND INTERACTION WORKSHOP- LUMJUNG

BASELINE SURVEY

Kohalpur, Banke:

The baseline survey conducted presents findings from a baseline survey conducted in Ward No. 2 of Kohalpur Municipality, focusing on the conservation and utilization of agricultural plant genetic resources (APGRs) to enhance food security, climate resilience, and agrobiodiversity. The survey employed a mixed-methods approach, combining household surveys, focus group discussions, and key informant interviews to gather qualitative and quantitative data. A total of 76 households were randomly sampled to assess demographic trends, socio-economic factors, agricultural practices, and food security dynamics. The community profile reflects a significant migratory population that settled in the area 21–30 years ago, primarily driven by economic opportunities, urbanization, and displacement. Agriculture remains the main source of income, with men predominantly engaged in agricultural decision-making, while women take primary responsibility for household decisions. As the area is recognized as a vegetable pocket zone, training programs have largely emphasized vegetable production.

The results reveal a community predominantly engaged in agriculture, with cereals like rice, wheat, and maize forming the staple diet. Most households achieve food sufficiency through cereal crops and also supplement their diet with 38 types of wild edible foods collected from nearby forests. Rice dominates the local cropping system, followed by wheat and mustard. Indigenous crops such as amaranth and buckwheat are widely consumed but face declining cultivation due to market pressures and labor-intensive processing. Key findings indicate a strong reliance on informal seed networks, with farmers sourcing seeds from neighbors, local markets, and agrovets, while institutional support remains absent. Seed sourcing practices vary by crop: households predominantly purchase amaranth and lentil seeds from agro-vets, while other crops rely on mixed sources. The community not only consumes but also markets its produce. Dietary habits indicate a strong preference for the two target crops, especially consumed as leafy vegetables. Traditional seed storage practices, such as botanical additives and mud granaries, are prevalent, yet challenges like pest infestation and moisture control persist. The survey also documents the alarming erosion of traditional crop varieties, with 69 rice landraces already lost. Despite these challenges, farmers express willingness to cultivate indigenous crops, provided market linkages and climate-resilient varieties are made accessible. The report outlines strategic recommendations to address these gaps, emphasizing the need for community based conservation initiatives,

participatory breeding programs, and policy interventions to integrate native genetic resources into formal agricultural systems. By strengthening local seed systems, promoting agroecological practices, and enhancing farmer capacity, the project aims to restore agrobiodiversity, improve livelihoods, and build resilience against climate change. The findings underscore the urgency of preserving traditional knowledge and genetic diversity to ensure sustainable agricultural development in Nepal's Terai region.

Madhyanepal, *Lamjung*

The baseline survey conducted in Madhyanepal Municipality in Lamjung District findings confirm that agriculture remains the backbone of Madhyanepal's rural economy, characterized by mixed farming systems. A significant proportion of households (49%) depend on agriculture and livestock, while 36% also rely on remittances. Small landholdings dominate the landscape, with 56% of households owning between 1 and 5 ropani, and 40% with less than 1 ropani. Women play a dominant role in agriculture: 96% of the surveyed respondents were female, and they were actively involved in seed selection (96%) and household-level decision-making (54%). These statistics highlight the critical role of women in agricultural biodiversity conservation and household food security. The survey explored six target crops — Amaranthus, buckwheat, finger millet, black gram, naked barley, and broad bean. Among these, only finger millet is widely cultivated in the area. Staple crops such as rice, maize, and finger millet form the backbone of the local food system, supplemented by legumes, vegetables, fruits, and some cash crops. Traditional practices like crop rotation, intercropping, and basic water management techniques are still in use to enhance productivity and ecological sustainability. Forage species like kutmero, mulberry, bamboo, siru, kaas, kamlo, gidari, khar, salme, and katus are also part of the integrated farming system, supporting livestock rearing. The productivity and usage patterns of local crops were also assessed. Around 94% of respondents reported finger millet yields of 100–500 kg annually, while 24% produced more than 500 kg. A mixed seed sourcing strategy was observed among 63% of households, with cereals often stored in sacks after drying. Importantly, 51% of households had year-round sufficiency of cereal crops, and a similar percentage had year-round access to green vegetables. However, the utiliztion of crop wild relatives (CWRs) was very limited 60% of households had access to them for only up to 15 days annually. Subsistence farming still dominates, with 89% of households producing solely for home consumption and only 11% engaging in market sales. This underlines the urgent need for value chain development and market access to enhance income generation. Traditional food systems, deeply rooted in local geography and cultural

practices, rely on locally grown ingredients and offer opportunities for nutrition-sensitive and sustainable food development. Culturally significant crops such as black gram (identified as the most important by 95% of respondents) and finger millet (89%) are vital to the local diet and farming system. Soil health, while moderately good in some areas due to organic content, remains a concern due to erosion, nutrient depletion, and pH issues (acidic to neutral). These environmental stressors, compounded by changing climate patterns, pose a serious risk to the region's agrobiodiversity and long-term food security. Beyond agriculture, Madhyanepal is home to important religious and cultural sites such as Nagbhairab Mandir, Ishaneshwor Mandir, and Balkanya Mandir. These sites offer a unique opportunity to integrate cultural heritage with conservation and agrotourism strategies. Furthermore, the region's ethnically diverse population, with 68% Janajati and 19% Dalit representation, brings a wealth of indigenous knowledge and community- based resource management systems that must be harnessed. Based on the findings and gap analysis, additional underutilized crops like wild fruits and vegetables, mango landraces, horse gram, rice bean, and traditional vegetables have been identified for future conservation and utilization efforts.

DIVERSITY FAIR

Samibhanjyang, Lamjung

An Agrobiodiversity Fair was successfully organized on 1st Jestha 2082 (15th May 2025) at Samibhanjyang, Lamjung. The event was inaugurated by Mr. Ramesh Kumar Pandey, Mayor of Madhyanepal Municipality, who graced the occasion as the Chief Guest. The fair was chaired by Mr. Ombir Gurung, Chairperson of Ward No. 5, who also played a pivotal role in planning and coordination. The Agrobiodiversity Fair benefited farmers, students, teachers, government workers, local leaders, researchers, NGOs and policymakers by promoting seed exchange, traditional knowledge, and sustainable practices. It raised awareness of the importance of native agrobiodiversity for food security, nutrition, and climate resilience, while fostering collaboration and community-led conservation efforts. A total of 12 different farmers' groups actively participated in the fair, presenting a diverse range of seed samples and other agricultural genetic materials. The fair created an interactive environment where farmers were able to exchange seeds, knowledge, and experiences related to the conservation and utilization of indigenous agrobiodiversity. The diversity fair was enthusiastically observed by 118 peoples with wide range of stakeholders including students, health workers, teachers, farmers, local leaders, and representatives from relevant institutions. Their participation added value to the

event by encouraging cross-sector dialogue and community involvement. The fair showcased diversity of agricultural genetic resources by various farmer groups . Each group contributed a range of plant genetic materials, including cereals, legumes, vegetables, oilseeds, spices, fruits, wild edibles, medicinal plants, and other indigenous crops and varieties This reflects ongoing community-level efforts in crop conservation, traditional knowledge preservation, and agro-biodiversity maintenance.Nagvairab Mouripalan Krishak Samuha demonstrated the highest diversity, presenting 171 AGRs with particularly strong representation in vegetables and wild edibles. This suggests a well-established diversified farming system. Similarly, Lafa Krishak Samuha presented 146 varieties, with a notable emphasis on underutilized resources such as wild edibles and medicinal plants highlighting the group's deep ethnobotanical knowledge and reliance on traditional dietary and healing practices. Simley Krishak Samuha focused on vegetable and fruit diversity, contributing significantly to household nutrition and the conservation of local garden varieties. Other groups also made valuable contributions, especially in vegetables, fruits, and wild edibles, which emerged as the most represented categories across all participants underscoring their central role in nutrition, food security, and seasonal diets.Medicinal plants were another prominent category, particularly among groups like Sitala Devi, Lafa, and Nagvairab, indicating a strong cultural connection to traditional medicine. In contrast, oilseed diversity was consistently low, possibly due to limited cultivation or greater dependence on external sources for oil crops.

Kohalpur, Banke

An Agrobiodiversity Fair was successfully organized on 16th Jestha 2082 (23rd May 2025) at Shantinagar, Kohalpur, Banke.The event was formally inaugurated by Mr. Purna Prasad Acharya, Chairman of Kohalpur Municipality, and supported by multiple stakeholders. Dr. Mukunda Bhattarai delivered the keynote address, outlining the objectives and vision of the program, while Mr. Surendra Shrestha managed coordination and logistics. A welcome note by Ms. Deepa Singh Shrestha highlighted the importance of conserving agricultural biodiversity. Contributions were made by community leaders, agricultural officials, and custodian farmers, all of whom emphasized the cultural, ecological, and food security value of local landraces. Their experiences reinforced the need to conserve and promote native seeds for sustainable agriculture. The fair was held at the Kohalpur Agriculture Market Management Committee yard, attracting 3,200 visitors and featuring 56 stalls. A total of 105 crop species and 306 local landraces were exhibited, including cereals, pulses, vegetables, fruits, and medicinal plants. Participation included six community seed banks, six

farmer groups, and 46 individual farmers, collectively presenting over 200 seed samples. Demonstrations highlighted the traditional knowledge, cultivation practices, adaptability, and cultural value of each landrace, providing practical learning for visitors and students. The event also showcased Tharu traditional foods (dhikri, dakiya, yogurt, etc.), linking agricultural biodiversity with cultural heritage and agritourism opportunities. The fair provided an important platform for dialogue among farmers, schools, local governments, and project officials under the BSF Project, fostering collaboration for biodiversity conservation and sustainable agricultural development.

EXPLORATION, COLLECTION AND CONSERVATION

In the first year following the diversity fair, preliminary exploration was undertaken resulting in 89 collections of 54 crops. The process typically involved household visits and diversity fairs, obtaining farmers' prior consent, and collecting the seeds they provided.

Exploration and In Situ Conservation of Oryza granulata of wild rice in Parewashwari Community Forestry, Lothar

For the preparation of the meeting and subsequent exploration, preliminary contacts were established with local forest groups. Members of these groups carried out initial reconnaissance and identified potential sites with the presence of wild rice species.

A detailed exploration was later conducted within the Parmeshwari Community Forest. With the support of the forest group members, different aspects and directions of the hill were thoroughly surveyed to locate populations of *Oryza granulata*. Samples were collected for species validation, and population sizes were estimated. Following confirmation, the identified sites were revisited and designated as in situ conservation areas, marked with boards to ensure long-term protection. The major threat to this species at the site is the recurring wildfires, which occur almost every year and pose a significant risk to its survival.

EXPLORATION AND IN SITU CONSERVATION OF ORYZA RUFIPOGON AND NIVARA OF WILD RICE IN KOHALPUR, BANKE

During a recent exploration in the Kohalpur area of Banke district, populations of wild rice (Oryza rufipogon) were observed. These plants were found growing naturally along roadsides and wetland habitats, particularly in areas where water is retained during the rainy season. At the time of observation, plants were at

booting, heading, and flowering stages, indicating that the local environment provides favorable conditions for reproduction. The presence of these wild rice populations is highly significant, as they serve as a living reservoir of genetic variation with potential value for future rice improvement. Initial discussions were held with local farmers, Kohalpur Municipality officials, the Krishi Branch, and the Agriculture Knowledge Center. While most farmers were not previously aware of the ecological and genetic value of wild rice, they expressed interest in protecting these populations once sensitized to their importance.

CAPACITY BUILDING:

- Participation report on "National Agroecology Roadmap
- Participation report on "Discussion on Agrobiodiversity in sustainable agriculture and climate resilient agriculture"
- Consultancy Meeting On Access And Benefit Sharing For (Abs Bill) at National Genebank
- Orientation And Field Planning Of On-Farm Roject
- Agro-Biodiversity Week (Magh 1-7) and Agro-Biodiversity Day Celebration in Dhikura, Gairegoth, and Dhodeni, Arghakhanchi

SP-GB-3: Productivity enhancement of priority crops (Millets, Rapeseed and Quinoa) (MRQ)

This project funded by FAO, Nepal is implemented by National Genebank for year 2024-25 with the primary objective of to enhance the productivity, resilience, and sustainability of Nepal's; priority crops Millets, Rapeseed, and Quinoa. Its mission is to strengthen farmers' livelihoods and food security by improving soil health, conserving agrobiodiversity, promoting climate-smart technologies, and ensuring gender-inclusive participation through capacity building and Farmer Field Schools (FFS).

Fingermillet

Finger millet (Eleusine coracana), a nutrient-rich and climate-resilient cereal, is an important crop in Nepal, finger millet cultivated on 224,935 hectares with an annual production of 300,732 metric tons (MoALD, 2023/24). The project piloted multi-location trials in Gerkhutar, Nuwakot, and Gabhar, Banke, utilizing nine varieties and landraces including Okhle Kodo-1, Kabre Kodo-2, Thulo Kodo, Hasure Kodo, Arun Kodo, Lamre Kodo, Sthaniya Kodo, Local Chaure-1, and Local Kodo Lampate-2. Trials evaluated improved, recommended, and farmers' traditional practices, monitoring key agronomic traits such as plant

height, number of fingers per plant, days to heading, flowering, maturity, 1,000-grain weight, and total yield. Lamre Kodo emerged as the highest-yielding variety at 3.10 t/ha, while Hasure Kodo exhibited early maturity (135 days) and strong performance in drought-prone areas. Arun Kodo and Gabar Kodo showed balanced productivity suitable for low-input systems, whereas varieties with long maturity periods, such as Dalle-1, were less suitable for regions with limited growing seasons. Farmers' traditional intercropping practices, particularly with legumes and maize, often produced a higher number of fingers and competitive grain yields, demonstrating the value of indigenous knowledge in optimizing productivity under local conditions.

The adoption of improved agronomic practices—such as the use of biofertilizers, farmyard manure, NPK fertilization, seed treatment with Thiram, line transplanting, and proper crop spacing—combined with integrated pest management using biopesticides (Metarhizium anisopliae, neem oil) and cultural practices, increased finger millet yields by 30–40%. Conservation tillage and intercropping with legumes further enhanced soil fertility, reduced pest and disease incidence, conserved soil moisture, and strengthened resilience to climatic variability. The introduction of mechanization for land preparation and transplanting reduced labor intensity and improved uniformity in crop establishment, demonstrating the potential of technology adoption in increasing efficiency and productivity. Drought and irrigated trials identified NGRC04852 as the most adaptable variety, performing well under both water-stressed and irrigated conditions. Thulo Kodo and Arun Kodo showed particular drought tolerance, while Lamre Kodo and Sthaniya Kodo were better suited to irrigated conditions, emphasizing the importance of site-specific varietal selection to optimize yield under variable agro-climatic conditions.

Farmer Field Schools (FFS) and training programs played a key role in increasing awareness about the nutritional and economic value of finger millet. Through participatory learning and demonstration plots, farmers; particularly women were educated on the diverse ways finger millet can be processed into dhindo, roti, porridge, snacks, and traditional beverages, opening opportunities for improved household nutrition and income generation. Focused Group Discussions in Gabhar Valley and Gerkhutar revealed strong interest in reviving finger millet cultivation, with participants highlighting the crop's cultural significance, dietary benefits, and climate resilience. These interactions underscored the need for gender-sensitive extension and capacity-building programs to promote adoption of improved practices while respecting traditional knowledge.

Additionally, the project identified promising landraces with valuable traits such as disease resistance, low-temperature adaptation, and suitability for the System of Finger Millet Intensification (SFMI). Varieties like Okhle-1 demonstrated blast tolerance, Rato Kodo was adapted to low temperatures, and Dalle-1, Kavre Kodo-1, and Sailunge Kodo-1 exhibited combined tolerance to blast and brown leaf spot. These findings provide a foundation for future breeding programs aimed at improving grain filling, enhancing drought resilience, and maintaining agrobiodiversity in Nepal's mountainous ecosystems.

In conclusion, the integration of improved agronomic practices, mechanization, climate-smart interventions, and farmer-centered capacity building through FFS has proven effective in enhancing finger millet productivity, resilience, and sustainability. Lamre Kodo is recommended for high-yield production, Hasure Kodo for early harvest and drought-prone regions, and Arun and Gabar Kodo for low-input systems. The combination of traditional knowledge with scientific innovations, promotion of diverse food products, and targeted varietal selection can significantly strengthen food security, preserve cultural heritage, increase smallholder livelihoods, and develop sustainable, climate-resilient finger millet-based farming systems across Nepal.

Rapeseed

Rapeseed (Brassica campestris var. toria), commonly called tori in Nepal, is the most important oilseed crop of the country in terms of area, production, and productivity, playing a vital role in supporting rural livelihoods, nutritional security, and cultural traditions. Despite its economic and nutritional importance, rapeseed productivity in Nepal is constrained by multiple factors including lack of high-yielding varieties, limited access to improved technologies, declining soil fertility, vulnerability to pests and diseases, inadequate market access, processing difficulties, and increasing climatic variability. To overcome these challenges, the National Genebank, Khumaltar, in collaboration with the Oilseed Research Program (ORP) under this project worked to promote climate-smart and sustainable approaches by evaluating elite genotypes, conserving local landraces, piloting resilient management practices, and strengthening farmer capacity.

Specific interventions under this initiative have been concentrated in two contrasting agro-ecological sites: Kapilvastu in the Terai plains and Gerkhutar in Nuwakot in the mid-hills. In Kapilvastu, where rapeseed used to be a

dominant crop but declined due to low yields, labor intensity, and weak markets, efforts have been made to revive production by introducing high-yielding varieties, emphasizing timely sowing, applying balanced doses of NPK with organic manures, integrating pollinator-friendly practices such as beekeeping, and linking farmers to markets to ensure profitability. Farmer group discussions revealed that although rapeseed had lost ground due to productivity and market issues, it retains strong cultural and culinary significance, and farmers expressed keen interest in its revival if provided with improved technologies and assured markets. In Gerkhutar, where rapeseed is grown on marginal hill terraces, interventions have focused on testing improved varieties, adopting climate-smart agronomic practices, managing pollinators, and strengthening awareness about processing, diversification, and value addition. Discussions with farmers highlighted that while cultivation requires less labor compared to other crops, processing remains extremely laborious in the absence of small-scale tori mills. Women, in particular, noted the heavy workload in traditional oil extraction practices, which has discouraged household-level use. Thus, integrating small, efficient tori mills at the community level is crucial to reducing drudgery, improving oil recovery, and enhancing the overall value chain. Moreover, tori mills and oil industries strongly prefer local tori due to its high pungency and flavor, which make it more valuable and marketable compared to imported Chinese tori. This preference creates a reliable market for farmers, ensuring better prices and stable demand.

On-station trials conducted at Madhuwan, Kapilvastu, under RCBD design with eleven genotypes revealed significant variability, with Madhuwani tori recording the highest yield of 1.55 t/ha due to superior plant height, more siliques, and larger seed size, followed by NGRC02751, which demonstrated adaptability. Similarly, on-farm trials at Gerkhutar evaluated ten genotypes under real conditions, with Gerkhu red tori emerging as the top performer (1.66 t/ha), followed by NGRC02751, which again showed wide adaptability across environments. Moreover, the integration of climate-smart practices such as minimum tillage, residue retention, balanced fertilizer application, and crop rotation with legumes boosted yields in 2082 (1.24 t/ha) compared to 2081 (1.1 t/ha), highlighting the importance of sustainable intensification. Encouragingly, the Farmer Field School (FFS) interventions contributed to a 20–25% increase in yield, while also improving farmers' knowledge and awareness about improved varieties, climate-smart management, pollinator conservation, and value addition. These participatory approaches not only

built confidence among farmers but also accelerated adoption of improved practices and strengthened linkages with markets and processors.

These findings underscore the rich genetic variability present within Nepal's rapeseed germplasm and the potential for selecting both location-specific high performers like Madhuwani tori and Gerkhu red tori, as well as stable, broadly adaptable genotypes such as NGRC02751. Adoption of these improved genotypes, combined with sustainable management and pollinator-friendly practices, holds immense promise to enhance productivity, strengthen farmer incomes, and reduce Nepal's dependence on imported edible oils. Furthermore, addressing challenges related to processing and value addition by introducing small-scale tori mills, creating farmer cooperatives, and building stronger market linkages will be critical in expanding rapeseed's role in household consumption and commercialization.

SP-GB-4: TR4 Banana Project

The TR4 Banana Project was implemented in collaboration with the National Plant Pathology Center, Khumaltar, Lalitpur with the aim of collecting, conserving, and propagating local banana landraces to enhance genetic diversity and support disease resistance, particularly against Fusarium wilt (TR4).

During the project, 20 different local banana landraces were collected from various districts of Nepal, including Argakhanchi, Udayapur, Palpa, Dhading, Tanahun, Lalitpur, Nuwakot, Syangja, Nawalpur, and Kavrepalanchowk. The collections were documented with unique NGRC numbers and characterized based on local farmer knowledge and morphological traits. Varieties included Musi Kera, Adiya Kera, Jungali Kera, Ghui Kera, Malbhog Kera, Kali Kapari Kera, Naite Kera, Chini Kera, Bhim Kera, Lalkera, Fusre Kera, Maluwa Kera, Hazari Kera, Vrikote Kera, Ghuikumari Kera, and Mungre Kera. These varieties represent diverse plant heights, fruit sizes, flavors, maturation periods, and unique regional traits.

Out of the collected landraces, 10 were prioritized for in vitro propagation (tissue culture) to ensure healthy, disease-free planting material. Tissue-cultured plants were subsequently planted in the field for conservation and future utilization, while also maintaining backup germplasm in controlled conditions at the Pathology Division.

The project included handover and documentation of collected germplasm to the Plant Pathology Division for ongoing monitoring and disease management studies. This initiative ensures the long-term conservation of banana genetic resources in Nepal and provides a foundation for future breeding programs, especially for developing TR4-resistant varieties.

Outcome:

- Total banana landraces collected: 20
- Districts involved: 10
- Tissue culture plants propagated and field planted: 10 local landraces
- Conservation and research support established for disease resistance and germplasm maintenance

This project strengthened the link between farmers' traditional knowledge and scientific conservation approaches, providing healthy planting materials while preserving Nepal's indigenous banana diversity.

5. TECHNOLOGY TRANSFER AND SERVICES

क्र.सं.	प्रवाह गरिएका सेवा सूविधाहरु	हाल सम्मका उपलब्धिहरु (गुणात्मक तथा संख्यात्मक)
1	स्रोत वीउ /वस्तु /बेर्ना / बिरुवा आदिको वितरण	विभिन्न बालिका 418 परिग्रहणहरुको बिउ/ बेर्ना बिभिन्न अनुसन्धानकर्ता/ संस्था, किसान, विश्व बिधालयलाइ दिएको
2	परामर्श सेवा	250 जनालाई कृषि जैविक विविधता संरक्षण तथा उपयोग सम्बन्धि परामर्श, र 175 जनाले जिन बैंक भ्रमण गरेको
3	घुम्ती शिविर	X
4	प्रविधि प्रसार तथा प्रकाशन	61 वटा बिभिन्न प्रकाशनहरु र मासिक कृषि पत्रिकामा लेख प्रकाशित, 350 जनालाई वितरण, 10 पटक रेडियो तथा टेलिभिजनमा/पत्र पत्रिकालाइ अन्तरवार्ता, 70 वटा अन लाइन सामाजिक संजालमार्फत, र विभिन्न कार्यक्रममा 51 वटा पत्र प्रस्तुति गरेको
5	प्रयोगशाला परीक्षण	बिउबिजन गुणस्तर नियन्त्रण केन्द्रको 3 वटा बिउ नमुना परिक्षण गरिएको, 361 (8 बाली) नमुनाको उमार शक्ति परीक्षण, 6 बालीको 945 नमुनाको डी.एन.ए. मापन
6	ओ.जे.टि तथा इन्टर्नशिप	बि.एस.सि ए.जी. का 15 जना र 7 जना आइ.एस.सि का बिधार्थीहरुले इन्टर्नशिप गरेका
7	पशु प्रजनन् सेवा (पशुपन्क्षि)	गौशाला संग छलफल (स्वर्गद्वारी), मन्दिरहरुमा संरक्षण, पालिका संग छलफल गरेको

क्र.सं.	प्रवाह गरिएका सेवा सूविधाहरु	हाल सम्मका उपलब्धिहरु (गुणात्मक तथा संख्यात्मक)
8	अन्य सेवा	10 वटा निकायलाइ बिउ (250 परिग्रहण) भण्डारको लागि ठाउँ दिएको; 25 वटा संस्थाहरु लाइ 100 कक्षा को लागि श्रोत व्यक्ति प्रदान, 3 वटा अभिमुखीकरण छलफल तथा अन्तरक्रियामा सेवा प्रदान, 24 वटा जात दर्ताको लागि परिग्रहण नम्बर उपलब्ध गराएको

6. BUDGET AND EXPENDITURE

A sum of NRs 3,98,38,000 was annual budget in FY 2081/82 and NRs. 3,98,38,000 was received from NARC and expended all received amount during the period. In addition, the budget for supplementary project for this FY was 1,48,77,000 among which 1,11,41,000 was expended this year. (Annex 6.1).

7. KEY PROBLEMS

- Breaker damaged in Lagankhel, feeder wire damaged in Satdobato, supply of sometimes high voltage
- Equipment and system in long and medium term storages, seed drying room, tissue bank, DNA bank, etc can fail any time and for which immediate budget can be needed. Lack of emergency fund for urgent maintenance works
- Diversity are not being captured due to very few seeds from farmers
- Collections are generally from farm store not from standing crops
- Difficulty on identifying the samples and duplicates and possibility of collecting many duplicates
- Difficulty to regenerate and multiply cross-pollinated crop species
- Poor utilization of indigenous AGRs in breeding and research
- Difficulty on marking sampling sites and sampling method
- Insect pest and disease problems in germplasm
- Seed setting problem during regeneration and non-viability of old collections. Analog site experiment for MERC not well established
- No system of accessioning germplasm before doing research
- Lack of systematic governance mechanism of AGRs in the country. Lack of agrobiodiversity act, law, guiding documents, NABSAP, AB-ABS
- Lack of screen house and glass house facilities. Lack of screening environment
- Limited technical manpower and financial support. Many pathological problems including problems in soil. MERC fields are not well drained

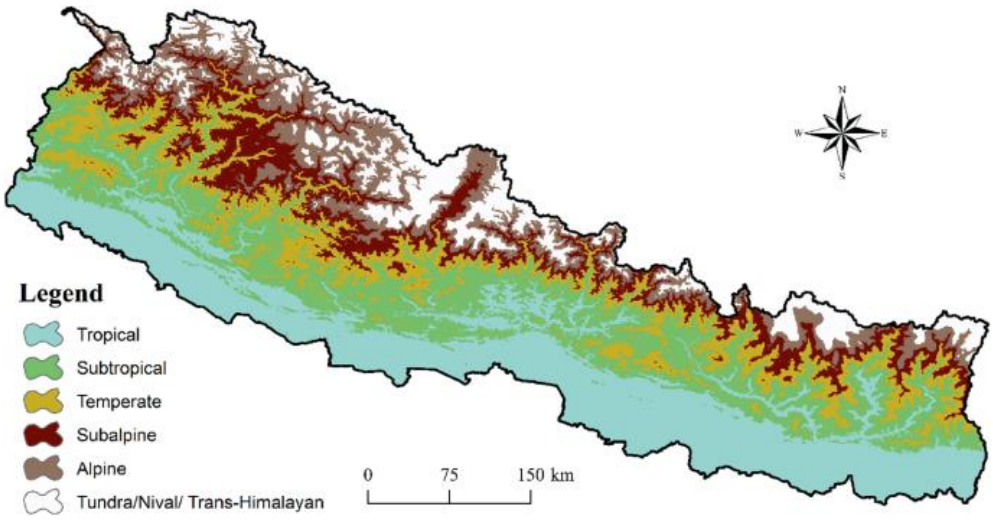
- Poor collaboration with other organizations located across the country
- Very limited works related to on-farm and in-situ conservation across the country
- Database not well managed and accessible, DOI and DNA bar coding not started
- In-situ sites for agrobiodiversity not allocated. High dependency on foreign germplasm
- Conservation of agrobiodiversity not in priority. Many good practices of agrobiodiversity conservation not mainstreamed
- IPR in AGRs not well function. Market of native products not guaranteed
- Not agro-insects, agro-microbes and agro-birds friendly production and research areas
- Grain threshing and drying area not enough
- Lack of screening environment/ glasshouse, composting tech
- No safety duplication/ backup (0 in Global Seed vault, no Seed Bank for backup)

8. WAY FORWARD

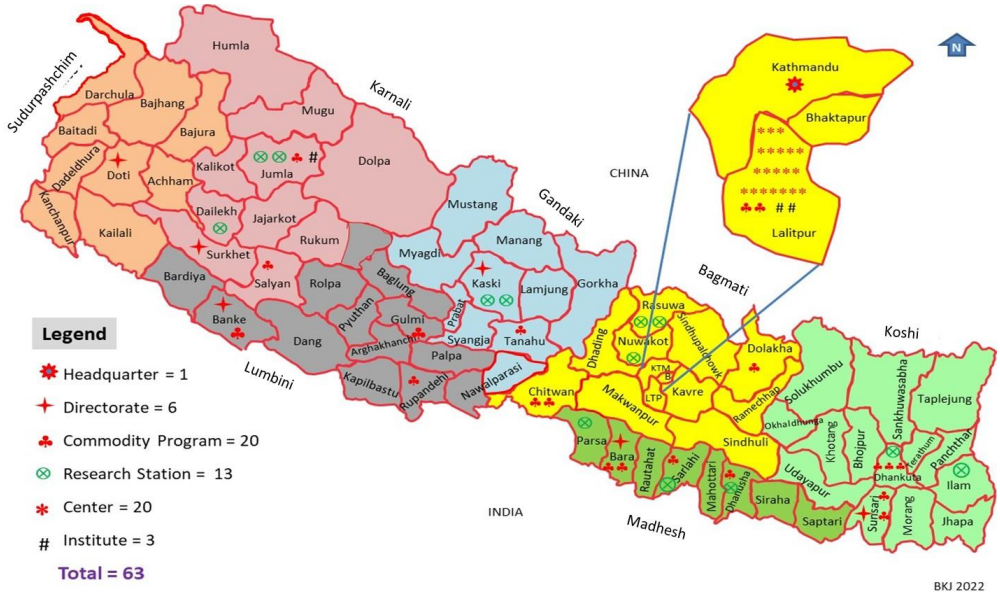
- Development of guidelines for AGRs flows and collections within Genebank and at national and international levels
- Participation in ITPGRFA-MLS and make access to accessions available under MLS to researchers, breeders and farmers
- Construction of screen house and advanced glass house
- Strengthening field genebank, livestock farm genebank, aqua pond genebank, forage field genebank, agro-insect field genebank, agro-microorganism field genebank, commodity specific park and agro gene sanctuary in relevant NARC stations, farms of DoA and other relevant offices
- Strengthen tissue bank and establishment of cryo bank
- Strengthen the conservation and utilization of agro-microorganism, agro-insects, agro-animal and aqua agro-genetic resources
- Establishment of accessioning system
- Strengthen utilization and on-farm conservation
- Red zoning and red listing along with rescue collections and repatriation of germplasm
- Coordination for MERC (multiplication, evaluation, regeneration and collection) among research stations and community seed/ gene bank

- Estimation of agrobiodiversity index at different levels and identification of hot spot areas for agrobiodiversity
- Establishment of in-situ sites for AGRs
- Application of omics technologies in conservation and utilization of AGRs
- Development of searchable online database
- Safety backup/ duplication of major important AGRs (establishing Himalayan seed bank)
- Coordination for in-situ conservation: There are many wild edible species and wild relatives of cultivated species distributed across the country. These are the reservoir for different important genes and evolution continuously takes places interacting with nature. Economical means of in-situ conservation is coordination with National Parks, religiously and culturally protected sites, heritage sites, wetlands and community
- Implementation of action tracks envisioned on the occasion of National Agrobiodiversity Year 2022/23
- Development of national agrobiodiversity strategy and action plan (NABSACP)
- Revision of IMISAP and Agrobiodiversity Policy
  Supporting PVP&FR, ABS, GI and agrobiodiversity conservation and utilization bill for approval and effective implementation

Annex 1. Map of the command areas

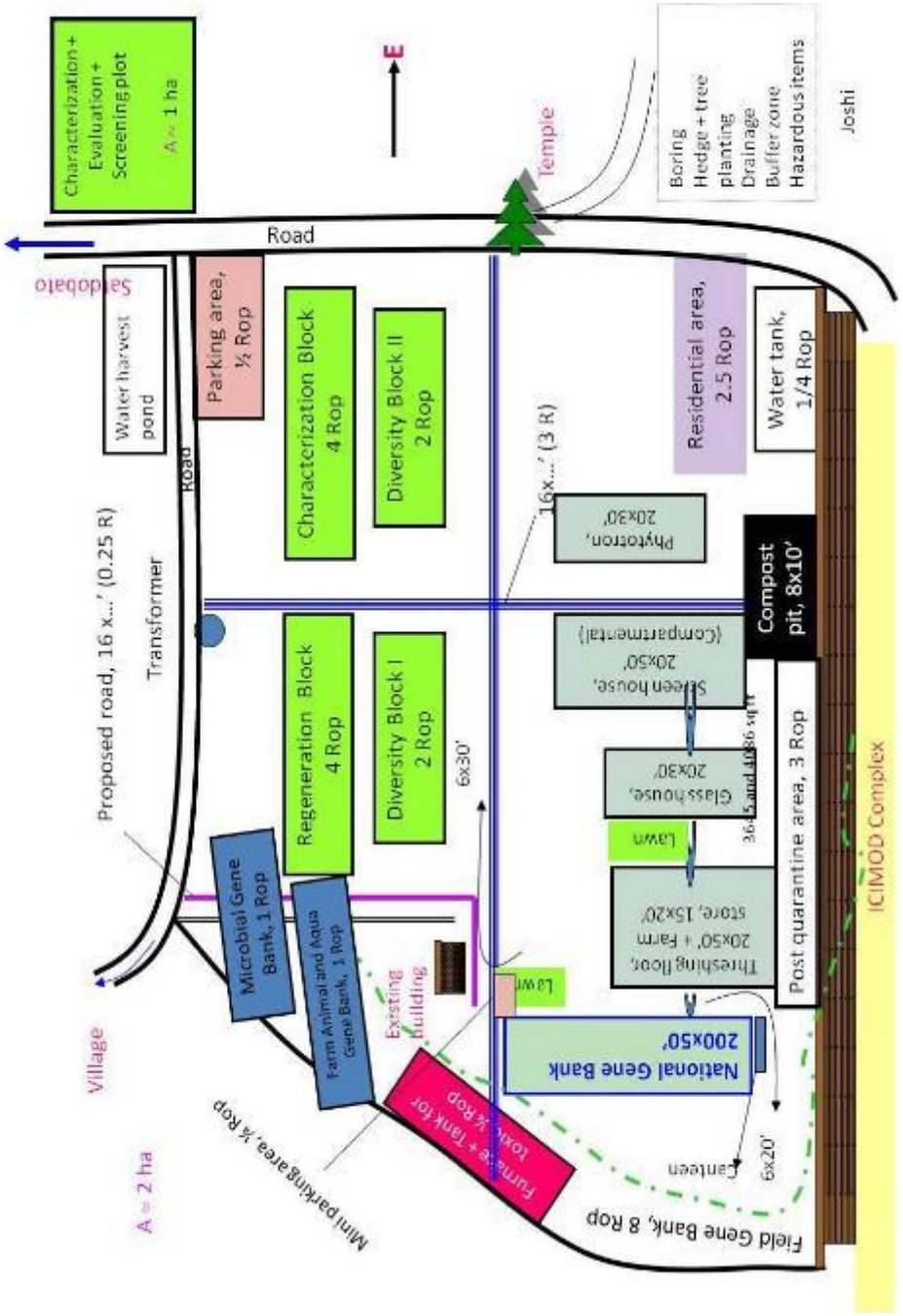


B. NARC Stations



Command areas of NAGRC include all eco-zones (A) and NARC Stations (B).

Annex 2.1. Map of the Genebank Complex, Khumaltar



Annex 2.2 List of laboratory and banking facilities in 2081/82 (2024/25)

SN	Name of laboratory	Major instruments	Manpower in laboratory	Testing facilities
1.	In-vitro Culture Lab	Laminar Hood, In-vitro Culture Room, Autoclave, Shaker, pH meter, Distilled water plant	Dr Mumkunda Bhattarai	For tissue culture and in-vitro conservation
2.	Molecular Research Lab	PCR machine, Tissue lyzer, Centrifuge, Deep fridge, Gel doc, Electrophoresis unit-2, Water bath, autoclave, Pipettes, Vortex, Nano-based Spectrophotometer, ice-maker, Distillation unit	Pradip Thapa	For DNA works (diversity assessment, identification, screening and genes tagging and mapping)
3.	Seed Testing and Processing Lab	Seed germinator, pH meter, Aspirator, Seed grader, Conical divider, Soil divider, Seed counter, Magnifying glass, Gamet seed divider, Digital moisture meter, Oven, Grinding mill, Digital balance, Microscope, Purity board, Compound microscope, Double door seed germinator, QR code printer	Deepa Singh Shrestha	For seed cleaning, testing and characterization
4.	Seed drying and packing Lab	Drying room. Digital weighing machine, Dehumidifier, Moisture meter, Seed dryer, Hygrometer	Dr Mukunda Bhattarai	For drying and packaging for storage
5.	Medium- and Long-Term Storage	Cooler, dehumidifier, rack, Hygrometer	Dr Mukunda Bhattarai	For conserving orthodox seeds to active and base collection
6.	Short Term Storage	Rack, Solar Dryer	Deepa Singh Shrestha	For one season storing of planting materials

Annex 2.3. Human resource in 2081/82 (2024/25)

SN	Name	Position	Qualification	Specialization/ working area
1.	Dr Bal Krishna Joshi	Senior Scientist (S-4)	PhD	Genetics and Plant Breeding
2.	Ms Deepa Singh Shrestha	Senior Scientist (S-4)	MSc	Horticulture
3.	Mr Ajaya Karkee (study leave)	Scientist (S-2)	MSc	Plant Pathology
4.	Mr Ram Prasad Mainali (on leave)	S. Technical Officer (T-7)	MSc	Entomology/ Plant Breeding
5.	Dr Mukunda Bhattarai	Technical Officer (T-6)	PhD	Plant Breeding & genetics
6.	Mr Pradip Thapa	Technical Officer (T-6)	MSc	Plant Breeding
7.	Mr Sitaram Ojha	Admin. Officer (A-6)	BA	Administration
8.	Mr Suman Basnet	Account Officer (A-6)	MCom	Account
9.	Mr Prakash Paudel	Accoutnat (A-5)	MBA	Account
10.	Mr Mohan Kumar Pokhrel	Account Officer (A-6)	MBA	Account
11.	Mr Bikash Bhusal	Technical Officer (T-6)	MSc Ag	Entomology
12.	Mr Kabir Alam Ansari	Electrician (T-5)	Eng. Diploma	
13.	Mr Sanjay Karki	Tech. Assistant (T-4)	SLC	

SN	Name	Position	Qualification	Specialization/ working area
14.	Mr Sunil Kumar Mandal	Tech. Helper (L-5)	SLC	
15.	Ms Indira Adhikari	Tech. Helper (L-2)	SLC	
16.	Ms Rita Thapaliya	Tech. Helper (L-2)	JTA	
17.	Ms Babita Kumari Chaudhari	Tech. Helper (L-2)	SLC	
18.	Ms Goma Basnet	Tech. Helper (L-2)	-	
19.	Ms Nisha Maharjan	Tech. Helper (L-2)	SLC	
20.	Ms Radhika Ghimire	Tech. Helper (L-2)	SLC	
21.	Mr Surendra Kumar Shrestha	Database Officer	BBA	Project staff
22.	Ms Shanti Gurung	JTA	Diploma in Plant Sci	Project staff
23.	Ms Sarala Basnet	JTA	Diploma in Plant Sci	Project staff

Annex 3. Summary progress of research projects and activities in 2081/82 (2024/25)

S.N.	Project/Activity	Annual Budget (Rs. 000)	Project/ Activity Leader Name	Progress description
1	**Project: Farm Management Project (FMP)**	**1457**	**Bal K Joshi**	
1.1	Office support/ maintenance and beautification	432	BK Joshi	Refer section 4.7
1.2	Office level proposal seminar	15	P Thapa	Refer section 4.7
1.3	Office and farm security	280	BK Joshi	Refer section 4.7
1.4	Progress review and program planning workshop	361	BK Joshi	Refer section 4.7
1.5	Day celebration	143	BK Joshi	Refer section 4.7
1.6	Capacity development	150	M Bhattarai	Refer section 4.7
1.7	Monitoring, evaluation and travelling seminar	360	BK Joshi	Refer section 4.7

S.N.	Project/Activity	Annual Budget (Rs. 000)	Project/ Activity Leader Name	Progress description
1.8	Coordination and collaboration	465	BK Joshi	Refer section 4.7
1.9	Publication	0	BK Joshi	Refer section 4.7
2	Project: Conservatin and Use of Agricultural Biodiversity (CUAB)	7222		
2.1	Onfarm conservation and utilization of agricultural biodiversity	110	BK Joshi	Five community seed bank (Srijalsil samuha, Annapurna CSB, Kacharwa, Dalchoki and Gabhar Valley community genebank) visited and interacted with farmers, Conserved crops and accessions in gabhar valley community genebank is updated
2.2	Documentation and database management	242	M Bhattarai	709 accessions conserved in long- and medium-term conservation unit
2.3	Seed testing and characterization	538	DS Shrestha	794 accessions of 32 crops tested and characterized in seed bank
2.4	Evaluation and pre-breeding of horticultural crops	416	DS shrestha	455 accessions of 6 crops characterized and evaluated
2.5	Regeneration, multiplication and characterization of agronomic crops	297	M Bhattarai	516 accessions of 7 crops regenerated and multiplied
2.6	Regeneration, multiplication and characterization of horticultural crops	771	DS Shrestha	455 accessions of 6 crops characterized and Regenerated
2.7	Molecular markers for management of agricultural biodiversity	922	P Thapa	DNA extraction of 274 accesions of 7 crops and conserved in DNA Bank, Genetic diversity assessment of marigold and common bean
2.8	Maintenance of diversity block, agro-gene sanctuary, raithane nursery and herbal conservation garden	194	DS Shrestha	Maintenance of 25 accessions 12 crops in diversity block, 178 accessions of 12 crop species maintained in raithane nursery

S.N.	Project/Activity	Annual Budget (Rs. 000)	Project/ Activity Leader Name	Progress description
2.9	Germplasm exploration, collection and distribution	720	BK Joshi	914 accessions of 34 crops collected from 45 district of Nepal
2.1	Management and strengthening of field genebank	722	P Thapa	80 non orthodox accessions collected from different part of the country, one training organized in Lumbini province, fiele genebank catalogue is prepared and documentation of conserved species in lumle, khajur and dhunche field genebank
2.11	Invitro conservation of vegetatively propagated and recalcitrant seed crops	522	M Bhattarai	105 accessions of 5 crops conserved in tissue culture lab
2.12	Insitu management of agro-biodiversity	80	BK Joshi	Consulated with national park for insitu conservation of AGRs
2.13	Cloud based data management	51	M Bhattarai	2000 passport updated
2.14	Establishment and strengthening of mushroom park	222	M Bhattarai	Inventory of wild fruits prepared. Methodology development for their prioritization undergoing// Survey of wild plant covering 5 districts completed. Exploration and collecttion of 16 species of non-cultivated vegetables around genebank complex
2.15	Strengthening of aquapond genebank	90	B Bhusal	Four breeds collected from chitwan and godawori and conserved in khumal aqua pond genebank
2.16	Conservation and utilization of agro-insects	143	B Bhusal	Survey for edible insect for was done in four districts of Nepal
2.17	Diversity and conservation of lekali cow in humla district	207	M Bhattarai	Survey conducted in humla district and report is prepared (habitat shifting due to the effects of climate change)
2.18	Seed processing and conservation in medicum and long-term storage	600	M Bhattarai	709 accessions of 69 crops conserved in long and medium conservation unit
2.19	Evaluation and pre-breeding of agronomic crops	294	P Thapa	516 accessions of 7 crops regenerated and multiplied

S.N.	Project/Activity	Annual Budget (Rs. 000)	Project/ Activity Leader Name	Progress description
2.20	ALIM-AGR conservation update and strategy	76	BK Joshi	Conservation strategy of six components of agrobiodiversity is initiated
3.	Conservation and utilization of wild relatives' rice of cultivated plants in Nepal	767		
3.1	Survey to locate existing and lost habitats for wild rice	184	BK Joshi	Survey was done in five districts and 2 insitu site esblished in Chitwan and banke
3.2	Ex-situ conservation of wild rice in field gene bank and seed bank	147	BK Joshi	Ex-situ conservation of wild rice in DoAR, Tarahara and National Geneabank
3.3	In-situ conservation of wild rice through repatriation and selecting research sites	80	BK Joshi	Insitu site esblished in Chitwan and banke
3.4	Morphological Characterization of wild rice at in-situ and ex-situ level	85	BK Joshi	Morphological characterization of five accessions of 3 species
3.5	Molecular characterization of wild rice	270	BK Joshi	DNA extraction of 19 accessions of wild rice at the molesular lab of national genebank

Annex 4.1. Training/workshop/seminar organized in 2081/82 (2024/25)

SN	Name of Training/ Workshop/ Seminar	Duration	Target group	Location
1.	फिल्ड जिनबैंक संचालन तथा व्यबस्थापन सम्बधि	2	कर्मचारी + किसान	खजुरा
2	कृषि जैविक विविधता संरक्षण र प्रवर्धनमा भौगोलिक संकेत	2	कर्मचारी + किसान	खजुरा

Annex 4.2 Information disseminated through media in FY 2081/82 (2024/25)

Media: TV, Radio/FM, newspaper/letter (daily, weekly), magazines (bi/monthly), internet (email, facebook, twitter, linkedin, tiktok), sms, etc

SN	Information disseminated/ Media coverage	Type	Name/ type of media	Date/ time
1.	Native agrobio, raithane and genebank day	Interview	Indigenous TV	8 Oct 2024
2.	7 brother millets	Interview	Thaha khabar	24 Sept 2024
3.	About millets	Interview	Daily newspaper	15 Srawan 2081
4.	Seed conservation and agro-insects	Interview	CIN Radio	14 Mangsir 2081
5.	Native seeds and rights	Interview	Rato pati	17 Paush 2081
6.	Agrobiodiversity week and day		aitc tv	29 Paush 2081
7.	Indigenous agriculture and agrobiodiversity	Interview	12 Khari TV	28 Paush 2081
8.	Native agrobiodiversity	Interview	Krishi sanjal	23 Paush 2081

Annex 5. Publications and presentations in FY 2081/82 (2024/25)

Publication of NAGRC and PAL

1. Genebank. 2024. Annual Report 2080/81 (2023/24). National Agriculture Genetic Resources Centre, NARC, Khumaltar, Lalitpur, Nepal.
2. Ghimire NH, KH Dhakal, MP Pandey, and BK Joshi. 2024. Evaluation of Soybean [Glycine Max (L.) Merrill] Germplasm at Multi-Environments of Nepal and Their Stability Assessment using AMMI and GGE Biplot Analysis. *Journal of Nepal Agricultural Research Council*, *10*(1):22–36. https://doi.org/10.3126/jnarc.v10i1.73261
3. Ghimire NH, KH Dhakal, MP Pandey, BK Joshi, B. K., & B Khanal. 2024. Assessment of Agronomic Traits and Molecular Diversity Using SSR Markers in Soyabean, (Glycine Max (L.) Merr. Accessions in Nepal. Agronomy Journal of Nepal, 8, 119–134. https://doi.org/10.3126/ajn.v8i1.70793
4. Joshi BK, N Shrestha, R Pokhrel and R Chaudhary. 2021. Molecular characterization, DNA fingerprinting and genetic diversity analysis of Nepalese rice landraces using SSR markers. Nepal Journal of Biotechnology 12 (2): 169-182. DOI: https://doi.org/10.54796/njb.v12i2.332
5. Joshi BK, P Thapa, M Bhattarai and SR Ojha. 2024. A Report of Monitoring, Orientation/Observation and Traveling Seminar on Banking AGRs (MOTSBAGR) in PFRS, Dhunche; RTRS, Dhunche and FRS, Trishuli. NGB-53/2024. National Agriculture Genetic Resources Center, NARC, Khumaltar, Kathmandu.
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50. मैनाली राम प्रसाद । 2081। नेपालमा जलकुम्भी झारको जैविक व्यवस्थापन सम्बन्धी अनुसन्धान । कीट विज्ञान प्रविधि संग्रह । पेज 75-79।
51. मैनाली राम प्रसाद। 2081। धानको बाला काट्ने फौजी कीरा: पहिचान र ब्यवस्थापन । कीट विज्ञान प्रविधि संग्रह । पेज 11-13।
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53. मैनाली राम प्रसाद। 2081। लाही कीरा: समस्या र समाधान । कीट विज्ञान प्रविधि संग्रह । पेज 28-33
54. राष्ट्रिय जिन बैंक। 2081। जीन बैंक: एक श्रव्यदृश्य। राष्ट्रिय कृषि अनुवांशिक स्रोत केन्द्र (जीन बैंक)। ललितपुर।

B. Poster

1. NAGRC. 2024. Program and budget summary of NAGRC in FY 2081/82. Poster. National Agriculture Genetic Resources Center, NARC, Khumaltar, Kathmandu.

2. Genebank. 2024. 14th National Genebank and Indigenous Agriculture Day. Agrobiodiversity, Genebank and Request. Leaflet. National Agriculture Genetic Resources Center, NARC, Khumaltar, Kathmandu.
3. Bhusal B, Kuldip Ray, Prabhash Maharjan. 2025. Effects of Different Pupation Substrates on the Emergence Rate of Adult Black Soldier Fly, Poster National Plant Protection workshop, 1 July 2025, Square Hotel, Lalitpur.
4. NAGRC. 2025. On-farm project. Species photo poster. Enhancing Conservation and Utilization of Plant Genetic Resources in Nepal for Food and Nutrition Security Under Unpredictable Climate. NAGRC and FAO, Nepal.
5. Joshi BK. 2024. Wild Rice in Nepal: Distribution, Diversity, Conservation and Utilization. Prepared for International Symposium of the World Wild Rice Wring and Academic Exchange meeting of "Lancang-Mekong Granary, Sanya, China; 5-8 Sept 2024.
6. जिन बैंक। 2081। चौधौ राष्ट्रिय जिन बैंक तता दैथाने कृषि दिवस। कृषि जैविक विविधता, जिन बैंक र अनुरोध। पर्चा। राष्ट्रिय जिन बैंक, खुमलटार, काठमाडौँ।

C. Presentations of PAL

1. Bhusal Bikash, Bal Krishana Joshi and Ram Prasad Mainali 2025 Agro-insect: Scope, Status and Conservation Strategies, National Plant Protection workshop, 1 July 2025, Square hotel, lalitpur
2. Bhusal Bikash, Bal Krishana Joshi, Pradip Thapa, Mukunda Bhattarai, Ram Prasad Mainali, Current Status, Challenges, and Prospects of Edible Insects in Nepal 33rd National Winter Crop Workshop (June 16-18, 2025), National Soil Science Research Centre, Khumaltar, Lalitpur
3. Singh Deepa, Agrobiodiversity as a pathway for Sustainable Agricultural Development, Regional workshop on building resilience and sustainability through agroecology as a Nature based Solution (NbS) for green mountain livelihoods, 26 March, 2024, SURKHET
4. Joshi BK. 2025. Intellectual Property Rights (IPR) in Agriculture. Basic In-Service Training for Class-III or equivalent Officer on Agriculture Planning and Management 10th Chaitra 2081 to 16th Baishak 2082 (14 Baisakh 10.45 am) Livestock Training Section, AITC, Hariharbhawan
5. Joshi BK. 2025. Vegetables Genetic Resources: Diversity, Conservation and Challenges. तरकारीको विभिन्न जातहरुको बीउ उत्पादनको अवस्था: सरकारी फार्म केन्द्रहरु बीच राष्ट्रियस्तरको अन्तरक्रिया कार्यक्रम 2082/01/09 र 10, राष्ट्रिय फलफूल विकास केन्द्र, कीर्तिपुरको सभाहल. National Center for Potato, Vegetable and Spice Crops Development
6. Joshi BK. 2025. ITPGFRA MLS, DSI/GSD and ABS: Country Position, Risks, Opportunities, IPs and Disabilities. Indigenous Peoples with Disabilities in the National Biodiversity and Action Plan. NIDA, 15-16 May 2025, Dilibazar, Kathmandu
7. Joshi BK. 2025. Briefing on MLS, DSI and ABS. Expert Consultation Meeting on MLS, DSI/GSD and ABS. Sunday 14 Baisakh 2082, Genebank, Khumaltar.
8. Joshi BK. 2025. Key issues: 1 – Expansion of Annex I. Asia Regional Preparatory Meeting for the Fourteenth Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the

Multilateral System of ITPGRFA. Organized by the Malaysian Agricultural Research and Development Institute (MARDI), with the support of the Secretariat of the ITPGRFA; Kuala Lumpur, Malaysia, 20-22 May 2025

9. Joshi BK. 2025. Key issues: 3 – DSI/GSD (digital sequence information/genetic sequence data). Asia Regional Preparatory Meeting for the Fourteenth Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of ITPGRFA. Organized by the Malaysian Agricultural Research and Development Institute (MARDI), with the support of the Secretariat of the ITPGRFA; Kuala Lumpur, Malaysia, 20-22 May 2025
10. Joshi BK. 2025. Climate change and genetic resource conservation, particularly the threats posed to agricultural gene pools and the risk of genetic erosion. Breeding Talk-4: Experiential Learning Opportunity in Nepal. Theme: International Workforce Development, Food Security, Extreme Weather Impacts and Adaptation, and Sustainable Development in the Himalayas. 22 June 2025, 1.30-4 pm; Nepal Genebank, Khumaltar.
11. Bhusal, R.P Mainali and S. Aryal. 2024. Biopesticides as a promising alternative to control potato tuber moth, *Phthorimaea operculella* (Zeller 1873), in potatoes underfarmer storage conditions. Proceedings of 15th National Outreach Research Workshop. 79-83
12. Binod Prasad Luitel, Tika Ram Chapagain, Dipendra Ghimire, Yubaraj Bhusal and Bikash Bhusal**.** 2024. Evaluation of Genetic Variability and Phenotypic Correlation in WorldVeg Tomato (Solanum lycopersicum L.) Genotypes in Bagmati Province, Nepal. Nepal Horticulture Society. DOI: https://doi.org/10.3126/nh.v18i1.72668
13. Joshi BK, Bikash Bushal, Md Akbal Husen, Asha Rayamajhi, Prem Timilsina and S Ahamad. 2024. Aqua pond genebank: An effective practice for dynamic and evolutionary conservation of aquatic agricultural biodiversity. International conference on aquaculture and fisheries, 23-25 Oct 2024; AFU, Rampur; NFS.
14. Joshi BK. 2024. (agro)Biodiversity Conservation in Climate Resilient Agriculture and Food Security. Training on Climate Resilient Agriculture, 25-27 Kartik 2081 (12 Nov 2024), 11.30-12.30. Google meet, FAO-Nepal and Central Agri Lab, Hariharbhawan.
15. Joshi BK. 2024. Agrobiodiversity + Statistics = Agrobiostatistics. QnA Session with Genebank Chief, (on Agrobio Statistics), 6 Srawan 2081, Khumaltar
16. Joshi BK. 2024. Agrobiodiversity, Animal Genetic Resources and Conservation Approaches. Training lecture for The Officer-level Service Entry Training. 2081/ 06/10, 2.30 pm in Genebank, Khumaltar. AITC, Lalitpur
17. Joshi BK. 2024. Agroecological Approaches for Climate Resilience and Sustainability in Agriculture. Agrobiodiversity and breeding perspectives. Regional Training: Sustainable and Affordable Solutions (SAS) for Climate Resilient Agriculture of Smallholder Farmers in South Asia, 28-31 July 2024. Hotel Himalaya, Kathmandu, Nepal. The SAARC Agriculture Centre (SAC), ICIMOD and Welthungerhilfe (WHH).

18. Joshi BK. 2024. Agroecological Approaches for Climate Resilience and Sustainability in Agriculture: Agrobiodiversity and Breeding Perspectives. 2nd Undergraduate Symposium, 30-31 Srawan 2081. Far Western University, Faculty of Agriculture, Tikapur, Kailali.
19. Joshi BK. 2024. Alternate Crops for Enhancing Food, Nutrition, Health, Business and Environment Security in Nepal. Keynote lecture. 1st Asia-Pacific Congress on Alternate Crops, 9-12 Sep 2024. The Assam Royal Global University, Guwahati, Assam, India
20. Joshi BK. 2024. Baseline information to support Deep Regenerative Agriculture in the High-Altitude Mountain Region of Nepal. Writeshop on Methodologies and Baseline Questionnaire on Deep Regenerative Agriculture in Manang and Mustang, Nepal. 11-13 Bhadra 2081, Nagarkot. National Genebank, Khumaltar.
21. Joshi BK. 2024. Funding needs in Native Agriculture. 8 Asar 2081, Online via zoom. DAAN.
22. Joshi BK. 2024. Geographical indication for promotion and conservation of native agricultural genetic resources (GI project). Special Projects Review Program. 6-7 Ashoj 2081, NARC, Khumaltar.
23. Joshi BK. 2024. How to Write a Scientific Paper. Webinar on Enhancing Writing Skill, 13 Bhadra 2081. DAAN and ASLF
24. Joshi BK. 2024. Intellectual Property and Material Transfer Agreement (IP-MTA). "Policy Round-Table Meeting for Effective Implementation of the Material Transfer Agreement (MTA) among SAARC Member States". September 11-12, 2024; Kathmandu. SAARC Agriculture Centre (SAC) & IRRI South Asia Regional Centre (ISARC)
25. Joshi BK. 2024. Native and Millet Crops Conservation Status and Importance, University' Role and Areas of Collaboration. Interactive debate on native and millets promotion. CDABCC and AFU, 2081/9/01, Rampur, Chitwan.
26. Joshi BK. 2024. Nepal's Experiences on Promoting Indigenous and Local Varieties. International Seed Conference, 22-24 Aug 2024; Yak and Yeti Hotel, Kathmandu. MoALD, NARC, SQCC, and CIMMYT
27. Joshi BK. 2024. Plant Variety Protection and Farmers' Rights (PVP&FR) in Nepal. Interaction workshop on empowering farmers, plant breeders and seed experts on PVP and Farmers' Rights. Plant Breeding and Genetics Society of Nepal (PBaGSoN), and Crop Development and Agrobiodiversity Conservation Center (CDABCC); 22-23 Paush 2081; Khumaltar, Lalitpur
28. Joshi BK. 2024. Plant Variety Protection System in Nepal: Where we are? Multistakeholder Consultation Meeting on Plant Variety Protection and Farmers' Rights (PVP&FR) System in Nepal, 18 July 2024, Lalitpur. SQCC and USAID Agricultural Inputs
29. Joshi BK. 2024. Project brief. PR-90-S-Nepal: Enhancing conservation and utilization of plant genetic resources in Nepal for food and nutrition security under unpredictable climate. Project Coordination Committee (PCC) of On-farm Project, 1st Meeting (18 Dec 2024), Nepal Genebank, Khumaltar.

30. Joshi BK. 2024. Use of Genetic Diversity and Evolutionary Plant Breeding for enhanced resilience to climate change, sustainable crop productivity, and nutrition under rainfed conditions (EPB Project). Special Projects Review Program. 6-7 Ashoj 2081, NARC, Khumaltar.
31. Joshi BK. 2024. Vegetables Genetic Resources, Conservation and Challenges. 15th National Horticulture Seminar, 13-14 November 2024, Kathmandu; National Center for Potato, Vegetable and Spice Crops Development, National Center for Fruit Development, and Nepal Horticulture Society.
32. Joshi BK. 2024. Working Modality: Writeshop and REGAGRI. Writeshop on Baseline Agrobio Survey Report: Manang and Mustang. Deep Regenerative Agriculture in the High-Altitude Mountain Region of Nepal. 20-23 Dec 2024, Nuwakot.
33. Joshi BK. 2025. 1. Format, style and reference manager (Zotero), 2. Project proposal writing tools, 3. General error and mistakes. 8-10 Falgun 2081, Begnas, Pokhara. Training on Project Proposal Writing on Agricultural Sciences. NARI
34. Joshi BK. 2025. 1. Objectives and course outline, setting the scene, Basic concepts of statistics, 2. Choosing a statistical test, and Data entry in Excel and data validation, 3. Principal component and dendrogram for data analysis. 25-27 Magh 2081, Begnas, Pokhara. Statistical Training for Project Leaders. NARI
35. Joshi BK. 2025. 2nd Trimester and Half Year Progress Report, FY 2081/82. National Genebank. 9 Feb 2025, Khumaltar
36. Joshi BK. 2025. Access and benefit sharing for agrobiodiversity (ABS bill). Consultation meeting on access and benefit sharing for agrobiodiversity (ABS bill), Genebank, Khumaltar, 9 Asar 2082
37. Joshi BK. 2025.3rd trimester review, NARC, Khumaltar.
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48. जोशी, बाल कृष्ण, 2082, रैथाने कृषि (खेतिस्थलीय) परियोजना: परिचय, रैथाने कृषि (खेतिस्थलीय) परियोजना: अभिमुखीकरण तथा फिल्ड योजना, 26-29 असार 2082, मध्येनेपाल र बेगनास, लम्जुंग
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D. Publication metrics of authors from Genebank

Aug 2025

Scoring board	BK Joshi	D Singh	RP Mainali	M Bhattarai	P Thapa	B Bhusal
ResearchGate						
Reads	444322		61,366			9,337
Citations	27432		364			30
Research interest score	5219		793			146.7
h-index	23		10			3
Google scholar						
Citations	4043		353			23
h-index	28		9			3
i10-index	120		9			0

Annex 6.1. Regular annual budget and expenditure record of FY 2081/82 (2024/25)

बजेट मुल शीर्षक नं : कृषि अनुसन्धान कार्यक्रम [३१२४११०१३]

बजेट रकम नं.	बजेट रकम	अन्तिम बजेट	खर्च	बाँकी बजेट
21111	पारिश्रमिक कर्मचारी	16933000.00	11,330,934.40	5602065.60
21121	पोशाक	250000.00	170,000.00	80000.00
21132	महंगी भत्ता	600000.00	416,000.00	184000.00
21134	कर्मचारीको बैठक भत्ता	200000.00	199,500.00	500.00
21139	अन्य भत्ता	27000.00	27,000.00	0.00
21213	योगदानमा आधारित बीमा कोष खर्च	120000.00	83,200.00	36800.00
22111	पानी तथा बिजुली	3227000.00	3,217,702.00	9298.00
22112	संचार महसुल	124000.00	123,553.35	446.65
22212	इन्धन (कार्यालय प्रयोजन)	771000.00	766,408.48	4591.52
22213	सवारी साधन मर्मत खर्च	528000.00	527,999.40	0.60
22214	बिमा तथा नवीकरण खर्च	160000.00	86,266.00	73734.00
22221	मेशिनरी तथा औजार मर्मत सम्भार तथा सञ्चालन खर्च	842000.00	841,987.50	12.50
22231	निर्मित सार्वजनिक सम्पत्तिको मर्मत संभार खर्च	280000.00	279,906.62	93.38
22291	अन्य सम्पतिहरुको संचालन तथा सम्भार	40000.00	40,000.00	0.00
22311	मसलन्द तथा कार्यालय सामाग्री	130000.00	129,999.32	0.68
22314	इन्धन - अन्य प्रयोजन	121000.00	118,960.00	2040.00
22315	पत्रपत्रिका, छपाई तथा सूचना प्रकाशन खर्च	237000.00	236,990.92	9.08
22411	सेवा परामर्श खर्च	50000.00	50,000.00	0.00
22412	सूचना प्रणाली तथा सफ्टवेयर संचालन खर्च	100000.00	99,735.00	265.00
22413	करार सेवा शुल्क	60000.00	59,452.00	548.00
22512	सीप विकास तथा जनचेतना तालिम तथा गोष्ठीसम्बन्धी खर्च	428000.00	428,000.00	0.00
22521	उत्पादन सामग्री / सेवा खर्च	6623000.00	6,619,963.38	3036.62
22522	कार्यक्रम खर्च	375000.00	281,167.00	93833.00
22611	अनुगमन, मूल्यांकन खर्च	360000.00	359,837.00	163.00
22612	भ्रमण खर्च	1638000.00	1,637,521.20	478.80
22711	विविध खर्च	70000.00	69,920.00	80.00
	जम्मा	34294000.00	28202003.57	6091996.43

बजेट उपशीर्षक नम्बर: 312411014

बजेट रकम नं.	बजेट रकम	अन्तिम बजेट	खर्च	बाँकि बजेट
31122	मेशिनरी औजार	2157000.00	2119669.70	37330.30
31159	अन्य सार्बजनिक निर्माण	1900000.00	1886419.51	13580.49
31161	निर्मित भवनको संरचनात्मक सुधार खर्च	600000.00	596171.78	3828.22
31171	पुँजीगत सुधार खर्च सार्बजनिक निर्माण	887000.00	882722.10	4277.90
जम्मा		5544000.00	5484983.09	59016.91

Annex 6.2. Special project budget and expenditure record of FY 2081/82 (2024/25)

Special project budget and expenditure record of FY 2080/81 (2023/24)

Name Of Project	Funded By	Budget Received	Expenses	Balance
BSF	FAO	8954266	6911334.98	2042931.02
WWF	WWF	6269376	4218377	2050999
MRQ	FAO	2223030	2191671.03	31358.97
TR 4-BANANA	FAO	38580	38580	0

Annex 6.3. Beruju status of FY 2081/82 (2024/25)

विवरण	रकम	नियमित गरिएको	अशुल उपर गरिएको	बाँकी बेरुजु
2080/81 सम्मको जम्मा बेरुजु	3601195.2	2782728	115969	702,498.20
जम्मा बेरुजु	**3601195.2**	**2782728**	**115969**	**702,498.20**

Annex 6.4. Revenue FY 2081/82 (2024/25)

विवरण	जम्मा
5000 बालि तथा वागवानी अनुसन्धान	38075.00
5500 अन्य प्रशासनिक आम्दानी	340019.76
जम्मा	**378094.76**

Annex 7.1. Brief passport of accessions collected in Genebank 2081/82 (2024/25)

SN	Collection No.	Common name	Local name	Location	Altitude, m
1	Co16306	Banana	केरा	Lalitpur	1330m.
2	Co16307	Banana	केरा	Lalitpur	1330m.
3	Co16308	Banana	केरा	Lalitpur	1330m.
4	Co16309	Banana	केरा	Lalitpur	1330m.
5	Co16310	Banana	केरा	Lalitpur	1330m.
6	Co16311	Banana	केरा	Lalitpur	1330m.
7	Co16312	Black pepper	टिमुर	Kavre	1500m.
8	Co16313	Jaringo	जरिगो	Kavre	1500m.
9	Co16314	nan	निमारो	Kavre	1500m.
10	Co16315	Mulberry	किम्बु	Kavre	1500m.
11	Co16316	nan	द्रोणिका रन्जनी	Kavre	1500m.
12	Co16317	nan	प्याउली	Kavre	1500m.
13	Co16318	Rice	धान	Lalitpur	1321m.
14	Co16319	Rice	धान	Dolakha	1733m.
15	Co16320	Rice	धान	Chitawan	187.17
16	Co16321	Rice	धान	Tanahun	538m.
17	Co16322	Rice	धान	Tanahun	538m.
18	Co16323	Rice	धान	Tanahun	538m.
19	Co16324	Rice	धान	Dolakha	1733m.
20	Co16325	Rice	धान	Dolakha	1733m.
21	Co16326	Rice	धान	Dolakha	1733m.
22	Co16327	Rice	धान	Dolakha	1733m.
23	Co16328	Rice	धान	Chitawan	187.17
24	Co16329	Rice	धान	Dolakha	1733m.
25	Co16330	Rice	धान	Chitawan	217.44
26	Co16331	Rice	धान	Dolakha	1733m.
27	Co16332	Rice	धान	Nuwakot	950m.
28	Co16333	Rice	धान	Tanahun	538m.
29	Co16334	Rice	धान	Nuwakot	950m.
30	Co16335	Rice	धान	Lalitpur	1321m.
31	Co16336	Rice	धान	Chitawan	187.17
32	Co16337	Rice	धान	Tanahun	538m.
33	Co16338	Rice	धान	Tanahun	538m.
34	Co16339	Rice	धान	Tanahun	538m.
35	Co16340	Rice	धान	Tanahun	538m.
36	Co16341	Rice	धान	Tanahun	538m.
37	Co16342	Rice	धान	Sidhupalchok	973m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
38	Co16343	Rice	धान	Tanahun	538m.
39	Co16344	Rice	धान	Tanahun	538m.
40	Co16345	Rice	धान	Lalitpur	1321m.
41	Co16346	Rice	धान	Tanahun	538m.
42	Co16347	Rice	धान	Dolakha	1733m.
43	Co16348	Rice	धान	Tanahun	538m.
44	Co16349	Banana	केरा	Sindhuli	530m.
45	Co16350	Banana	केरा	Sindhuli	530m.
46	Co16351	Banana	केरा	Sindhuli	530m.
47	Co16352	Banana	केरा	Sindhuli	530m.
48	Co16353	Gauva	अम्बा	Sindhuli	530m.
49	Co16354	Custard apple	आटी	Sindhuli	530m.
50	Co16355	Pineapple	भुइकटहर	Sindhuli	530m.
51	Co16356	Banana	केरा	Sindhuli	600m.
52	Co16357	snake gourd	चिचिन्ड़ो	Sindhuli	600m.
53	Co16358	Bitter guord	करेला	Sindhuli	600m.
54	Co16359	Banana	केरा	Sindhuli	299m.
55	Co16360	Okra	भिंडी	Sindhuli	299m.
56	Co16361	Banana	केरा	Sindhuli	299m.
57	Co16362	Banana	केरा	Sindhuli	299m.
58	Co16363	Gauva	अम्बा	Sindhuli	299m.
59	Co16364	Avocado	एभोकाडो	Kavre	880m.
60	Co16365	Banana	केरा	Kavre	880m.
61	Co16366	Banana	केरा	Kavre	880m.
62	Co16367	Banana	केरा	Kavre	880m.
63	Co16368	Banana	केरा	Makwanpur	1170m.
64	Co16369	Banana	केरा	Makwanpur	1170m.
65	Co16370	Banana	केरा	Makwanpur	1170m.
66	Co16371	Banana	केरा	Makwanpur	1500m.
67	Co16372	Banana	केरा	Makwanpur	1500m.
68	Co16373	Banana	केरा	Makwanpur	1500m.
69	Co16374	Banana	केरा	Makwanpur	1144m.
70	Co16375	Banana	केरा	Makwanpur	1144m.
71	Co16376	Banana	केरा	Makwanpur	1144m.
72	Co16377	Banana	केरा	Makwanpur	1144m.
73	Co16378	Banana	केरा	Makwanpur	1500m.
74	Co16379	Banana	केरा	Makwanpur	1312m.
75	Co16380	Banana	केरा	Makwanpur	1312m.
76	Co16381	Banana	केरा	Makwanpur	1312m.
77	Co16382	Banana	केरा	Makwanpur	1312m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
78	Co16383	Banana	केरा	Makwanpur	1330m.
79	Co16384	Banana	केरा	Makwanpur	1330m.
80	Co16385	Banana	केरा	Kathmandu	1588m.
81	Co16386	Banana	केरा	Kathmandu	1588m.
82	Co16387	Banana	केरा	Kathmandu	1588m.
83	Co16388	Banana	केरा	Kathmandu	1588m.
84	Co16389	Banana	केरा	Nuwakot	`1022m.
85	Co16390	Banana	केरा	Nuwakot	`1022m.
86	Co16391	Banana	केरा	Nuwakot	`1022m.
87	Co16392	Banana	केरा	Nuwakot	`1022m.
88	Co16393	Banana	केरा	Nuwakot	`1022m.
89	Co16394	nan		Nuwakot	`1022m.
90	Co16395	Banana	केरा	Nuwakot	`1022m.
91	Co16396	Ash gourd	कुभिन्डो	Nuwakot	1000m.
92	Co16397	Lentil	मुसुरो	Kaelali	149m.
93	Co16398	Rice	धान	Kaelali	153m.
94	Co16399	Pea	सानो मटर	Kaelali	149m.
95	Co16400	Mustard	तोरी	Kaelali	145m.
96	Co16401	Maize	मकै	Kaelali	149m.
97	Co16402	Wheat	गहुँ	Kaelali	145m.
98	Co16403	Buckwheat	फापर	Mustang	3560m.
99	Co16404	Wheat	गहुँ	Mustang	3560m.
100	Co16405	Naked barley	उवा	Mustang	3750m.
101	Co16406	Buckwheat	फापर	Mustang	3920m.
102	Co16407	Wheat	गहुँ	Mustang	3920m.
103	Co16408	Wheat	गहुँ	Mustang	3596m.
104	Co16409	Buckwheat	फापर	Mustang	3408m.
105	Co16410	Naked barley	उवा	Mustang	3408m.
106	Co16411	Common Bean	सिर्मी	Mustang	3408m.
107	Co16412	Radish	मुला	Mustang	3539m.
108	Co16413	Potato	आलु	Mustang	3539m.
109	Co16414	Wheat	गहुँ	Mustang	3539m.
110	Co16415	Wheat	गहुँ	Mustang	3539m.
111	Co16416	Naked barley	उवा	Mustang	3539m.
112	Co16417	Garlic	लसुन	Mustang	3539m.
113	Co16418	Barley	जौ	Mustang	3539m.
114	Co16419	Maize	मकै	Mustang	3539m.
115	Co16420	Buckwheat	फापर	Mustang	3539m.
116	Co16421	Garlic	लसुन	Dolakha	2300m.
117	Co16422	Marigold	सयपत्री फुल	Dolakha	1545m.

SN	Collection No.	Common name	Local name	Location	Altitude, m
118	Co16423	Lab Lab bean	टाटे सिमी	Dolakha	1545m.
119	Co16424	Common Bean	सिमी	Dolakha	1545m.
120	Co16425	Chhinik	छिनिक	Dolakha	1545m.
121	Co16426	Bitter guord	करेला	Dolakha	1545m.
122	Co16427	Radish	मुला	Dolakha	1550m.
123	Co16428	Common Bean	सिमी	Dolakha	1550m.
124	Co16429	Coriander	धनिया	Dolakha	1550m.
125	Co16430	Broadleaf Mustard	रायो	Dolakha	1550m.
126	Co16431	Yam	तरुल	Dolakha	1550m.
127	Co16432	Chilly	खुर्सानी	Dolakha	1550m.
128	Co16433	Velvet flower	मखमली फुल	Dolakha	1550m.
129	Co16434	Sugarcane	उखु	Dolakha	1550m.
130	Co16435	Hemp seed	भांगो	Dolakha	1550m.
131	Co16436	Sweet orange	जुनार	Dolakha	1550m.
132	Co16437	Orange	सुन्तला	Dolakha	1550m.
133	Co16438	Black gram	मास	Dolakha	1550m.
134	Co16439	Sunflower	सूर्यमुखी	Dolakha	1550m.
135	Co16440	Kidney bean	राजमा	Dolakha	1550m.
136	Co16441	Citron	बिमिरो	Dolakha	1694m.
137	Co16442	Tree tomato	रुख टमाटर	Dolakha	1694m.
138	Co16443	Ginger	अदुवा	Dolakha	1694m.
139	Co16444	Chayote	स्कुस	Dolakha	2300m.
140	Co16445	Rapeseed	तोरी	Dolakha	2300m.
141	Co16446	Broadleaf Mustard	रायो	Dolakha	2300m.
142	Co16447	Cannabis	गाजा	Dolakha	2300m.
143	Co16448	Wheat	गहुँ	Dolakha	2300m.
144	Co16449	Cowpea	बोडी	Dolakha	2300m.
145	Co16450	Proso millet	जुनेलो	Dolakha	2300m.
146	Co16451	Buckwheat	फापर	Dolakha	2300m.
147	Co16452	Amaranthus	लट्टे	Dolakha	2300m.
148	Co16453	Common Bean	सिमी	Dolakha	2300m.
149	Co16454	Wheat	गहुँ	Dolakha	1545m.
150	Co16455	Rice	धान	Dolakha	1545m.
151	Co16456	Common Bean	सिमी	Dolakha	1545m.
152	Co16457	Maize	मकै	Dolakha	1545m.
153	Co16458	Chilly	खुर्सानी	Dolakha	1545m.
154	Co16459	Garlic	लसुन	Dolakha	1545m.
155	Co16460	Maize	मकै	Dolakha	1545m.
156	Co16461	Finger millet	कोदो	Dolakha	1545m.
157	Co16462	Rice	धान	Dolakha	1545m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
158	Co16463	Bottle gourd	घिरौला	Dolakha	1545m.
159	Co16464	Amaranthus	लट्टे	Dolakha	1545m.
160	Co16465	Potato	आलु	Dolakha	1545m.
161	Co16466	Soybean	भटमास	Dolakha	1545m.
162	Co16467	Lemon	कागती	Dolakha	1545m.
163	Co16468	Common Bean	सिमी	Dolakha	1545m.
164	Co16469	Pumpkin	फर्सी	Dolakha	1545m.
165	Co16470	Ash gourd	कुभिन्डो	Dolakha	1545m.
166	Co16471	Chayote	स्कुस	Dolakha	1545m.
167	Co16472	Cucumber	काक्रो	Dolakha	1545m.
168	Co16473	Rapeseed	तोरी	Dolakha	1545m.
169	Co16474	Rice	धान	Dolakha	1545m.
170	Co16475	Soybean	भटमास	Dolakha	1545m.
171	Co16476	Buckwheat	फापर	Dolakha	1545m.
172	Co16477	Balsam apple	चुच्चे करेला	Dolakha	1545m.
173	Co16478	Black pepper	टिमुर	Dolakha	1545m.
174	Co16479	Cucumber	काक्रो	Rukum	1783m.
175	Co16480	Hemp seed	भांगो	Rukum	1783m.
176	Co16481	Common Bean	सिमी	Rukum	1722m.
177	Co16482	Rice bean	सिल्टुङ	Rukum	1759m.
178	Co16483	Balsam apple	चुच्चे करेला	Rukum	1774m.
179	Co16484	Maize	मकै	Rukum	1774m.
180	Co16485	Fenugreek	मेथी	Rukum	1775m.
181	Co16486	Cowpea	बोडी	Rukum	1775m.
182	Co16487	Mustard	तोरी	Rukum	1729m.
183	Co16488	Barley	जौ	Rukum	1729m.
184	Co16489	Wheat	गहुँ	Rukum	1729m.
185	Co16490	Finger millet	कोदो	Rukum	1730m.
186	Co16491	Mustard	सर्स्यु	Rukum	1728m.
187	Co16492	Lentil	मसुरो	Rukum	1728m.
188	Co16493	Soybean	भट्ट	Rukum	1730m.
189	Co16494	Chilly	खुर्सानी	Dhading	1030m.
190	Co16495	Maize	मकै	Dhading	1030m.
191	Co16496	Finger millet	कोदो	Dhading	1030m.
192	Co16497	Common Bean	सिमी	Dhading	1030m.
193	Co16498	Cowpea	बोडी	Dhading	1030m.
194	Co16499	Soybean	भटमास	Dhading	1030m.
195	Co16500	Wheat	गहुँ	Dhading	1030m.
196	Co16501	Cucumber	काक्रो	Dhading	1030m.
197	Co16502	Barley	जौ	Dhading	1030m.

SN	Collection No.	Common name	Local name	Location	Altitude, m
198	Co16503	Balsam apple	चुच्चे करेला	Dhading	1030m.
199	Co16504	Broad bean	बकुल्ला	Dhading	1030m.
200	Co16506	Pumpkin	फर्सी	Dhading	1030m.
201	Co16505	Pepper	टिमुर	Salyan	1530m.
202	Co16507	Pea	केराउ	Dhading	1030m.
203	Co16508	Rice	धान	Dhading	1030m.
204	Co16509	Rice	धान	Dhading	910 m.
205	Co16510	Finger millet	कोदो	Dhading	911 m.
206	Co16511	Broad bean	बकुल्ला	Dhading	912 m.
207	Co16512	Maize	मकै	Dhading	913 m.
208	Co16513	Soybean	भटमास	Dhading	914 m.
209	Co16514	Coriander	धनिया	Dhading	915 m.
210	Co16515	Barley	जौ	Dhading	916 m.
211	Co16516	Sesame	तिल	Dhading	917 m.
212	Co16517	Mustard	तोरी	Dhading	918 m.
213	Co16518	Cowpea	बोडी	Dhading	919 m.
214	Co16519	Kidney bean	राजमा	Dhading	920 m.
215	Co16520	Common Bean	सिमी	Dhading	921 m.
216	Co16521	Niger	झुसे तिल	Dhading	922 m.
217	Co16522	Rice bean	मस्यांग	Dhading	923 m.
218	Co16523	Potato	आलु	Salyan	1530m.
219	Co16524	Hemp seed	भांगो	Salyan	1530m.
220	Co16525	Wild brinjal	जंगली भन्टा	Kathmandu	1369m.
221	Co16526	Maize	मकै	Salyan	1600m.
222	Co16527	Lemon	कागती	Salyan	1600m.
223	Co16528	Marigold	मखमली फुल	Salyan	1600m.
224	Co16529	Black bean	सिमी	Salyan	1600m.
225	Co16530	Cardamom	अलैची	Salyan	1600m.
226	Co16531	Palti	पाल्टी	Salyan	1600m.
227	Co16532	Cucumber	काक्रो	Salyan	1600m.
228	Co16533	Finger millet	कोदो	Dolakha	3146m.
229	Co16534	Black bean	कालो सिमी	Sindhupalchok	3866Ft
230	Co16535	Common Bean	सिमी	Sindhupalchok	3866Ft
231	Co16536	Chinese sumac	भकी अमिलो	Sindhupalchok	3866Ft
232	Co16537	Common Bean	सिमी	Sindhupalchok	3866Ft
233	Co16538	Broadleaf Mustard	रायो	Sindhupalchok	3866Ft
234	Co16539	Okra	भिंडी	Sindhupalchok	3866Ft
235	Co16540	Black gram	कालो मास	Sindhupalchok	3866Ft
236	Co16541	Rice	धान	Sindhupalchok	3866Ft
237	Co16542	Chilly	खुर्सानी	Sindhupalchok	3866Ft

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
238	Co16543	Taro	पिडालु	Sindhupalchok	3790 fit
239	Co16544	Barley	जौ	Sindhupalchok	3790 fit
240	Co16545	Holy basil	तुलसी	Sindhupalchok	3790 fit
241	Co16546	Common Bean	सिमी	Sindhupalchok	3790 fit
242	Co16547	Pea	केराउ	Sindhupalchok	3790 fit
243	Co16548	Pea	केराउ	Sindhupalchok	3790 fit
244	Co16549	Horse gram	गहत	Sindhupalchok	3790 fit
245	Co16550	Taro	पिडालु	Sindhupalchok	3790 fit
246	Co16551	Ginger	अदुवा	Sindhupalchok	3790 fit
247	Co16552	Augest flawer	अगस्तीय फुल	Sindhupalchok	3790 fit
248	Co16553	Finger millet	कोदो	Sindhupalchok	3790 fit
249	Co16554	Rice bean	मस्यांग	Sindhupalchok	3790 fit
250	Co16555	Ash gourd	कुबिन्डो	Sindhupalchok	3790 fit
251	Co16556	Finger millet	कोदो	Sindhupalchok	3790 fit
252	Co16557	Tomato	टमाटर	Sindhupalchok	3790 fit
253	Co16558	Chayote	स्कुस	Sindhupalchok	3790 fit
254	Co16559	Garlic	लसुन	Sindhupalchok	3790 fit
255	Co16560	Perilla	सिलाम	Sindhupalchok	3592Ft
256	Co16561	Sesame	तिल	Sindhupalchok	3592Ft
257	Co16562	Marigold	सयपत्री	Sindhupalchok	3790 fit
258	Co16563	Maize	मकै	Sindhupalchok	3592Ft
259	Co16564	Maize	मकै	Sindhupalchok	3592Ft
260	Co16565	Maize	मकै	Sindhupalchok	3592Ft
261	Co16566	Shallot	च्यापी	Sindhupalchok	3866Fit
262	Co16567	Soybean	भटमास	Sindhupalchok	3592Ft
263	Co16568	Maize	मकै	Sindhupalchok	3866Fit
264	Co16569	Cowpea	बोडी	Sindhupalchok	3866Fit
265	Co16570	Chilly	खोर्सानी	Sindhupalchok	4955Ft
266	Co16571	Pumpkin	फर्सी	Sindhupalchok	4955Ft
267	Co16572	Coriander	धनिया	Sindhupalchok	4955Ft
268	Co16573	Sugarcane	उखु	Sindhupalchok	3866Fit
269	Co16574	Common Bean	सिमी	Sindhupalchok	4955Ft
270	Co16575	Kidney bean	राजमा सिमी	Sindhupalchok	3866Fit
271	Co16576	Tree tomato	रुख टमाटर	Sindhupalchok	5208Ft
272	Co16577	Cannabis	गाँजा	Sindhupalchok	3764Ft
273	Co16578	Niger	झुसे तिल	Sindhupalchok	3764Ft
274	Co16579	Wheat	गहुँ	Sindhupalchok	3764Ft
275	Co16580	Common Bean	सिमी	Sindhupalchok	3764Ft
276	Co16581	Broadleaf Mustard	रायो	Sindhupalchok	5123Ft
277	Co16582	Bitter guord	करेला	Sindhupalchok	4955Ft

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
278	Co16583	French bean	सिमी	Sindhupalchok	5208Ft
279	Co16584	Sponge gourd	घिरौला	Sindhupalchok	5208Ft
280	Co16585	Fennel	सुप	Sindhupalchok	5208Ft
281	Co16586	Maize	मकै	Sindhupalchok	5054Ft
282	Co16587	Rice	धान	Sindhupalchok	5054Ft
283	Co16588	Cowpea	बोडी	Sindhupalchok	5054Ft
284	Co16589	Pumpkin	फर्सी	Sindhupalchok	5054Ft
285	Co16590	Orange	सुन्तला	Sindhupalchok	5054Ft
286	Co16591	Wheat	गहुँ	Sindhupalchok	5054Ft
287	Co16592	Finger millet	कोदो	Sindhupalchok	5054Ft
288	Co16593	Black gram	मास	Sindhupalchok	5054Ft
289	Co16594	Finger millet	कोदो	Sindhupalchok	5054Ft
290	Co16595	Rice	धान	Sindhupalchok	5054Ft
291	Co16596	Roselle	अमिल लर्चा	Bardiya	nan
292	Co16597	Cowpea	बोडी	Kanchanpur	200m.
293	Co16598	Rice	धान	Kanchanpur	200m.
294	Co16599	Soybean	भटमास	Dhankuta	1695m.
295	Co16600	Finger millet	कोदो	Dhankuta	1695m.
296	Co16601	Broadleaf Mustard	रायो	Dhankuta	1695m.
297	Co16602	Cowpea	बोडी	Dhankuta	1695m.
298	Co16603	Maize	मकै	Dhankuta	1695m.
299	Co16604	Black gram	मास	Dhankuta	1695m.
300	Co16605	Broad bean	बकुल्ला	Dhankuta	1695m.
301	Co16606	Soybean	भटमास	Dhankuta	1695m.
302	Co16607	Mustard	सर्स्यु	Dhankuta	1695m.
303	Co16608	Rapeseed	तोरी	Dhankuta	1695m.
304	Co16609	Cress	चम्सुर	Dhankuta	1695m.
305	Co16610	Niger	झुसे तिल	Dhankuta	1695m.
306	Co16611	Pepper	टिमुर	Dhankuta	1740m.
307	Co16612	Cowpea	बोडी	Dhankuta	1740m.
308	Co16613	Fennel	सुप	Dhankuta	1740m.
309	Co16614	Cucumber	काक्रो	Dhankuta	1740m.
310	Co16615	Amaranthus	लट्टे	Dhankuta	1740m.
311	Co16616	Horse gram	गहत	Dhankuta	1740m.
312	Co16617	Potato	आलु	Dhankuta	1740m.
313	Co16618	Broadleaf Mustard	रायो	Dhankuta	1740m.
314	Co16619	Tobacco	सुर्ती	Dhankuta	1740m.
315	Co16620	Chayote	स्कुस	Dhankuta	1740m.
316	Co16621	Black gram	मास	Dhankuta	1485m.
317	Co16622	Maize	मकै	Dhankuta	1485m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
318	Co16623	Soybean	भटमास	Dhankuta	1485m.
319	Co16624	Kidney bean	सिमीं	Dhankuta	1485m.
320	Co16625	Black gram	मास	Dhankuta	1485m.
321	Co16626	Maize	मकै	Dhankuta	1485m.
322	Co16627	Cowpea	बोडी	Dhankuta	1508m.
323	Co16628	Finger millet	कोदो	Dhankuta	1508m.
324	Co16629	Rapeseed	तोरी	Dhankuta	1508m.
325	Co16630	Balsam apple	चुच्चे करेला	Dhankuta	6154 Ft
326	Co16631	Common Bean	सिमीं	Dhankuta	6154 Ft
327	Co16632	Finger millet	कोदो	Dhankuta	6154 Ft
328	Co16633	Finger millet	कोदो	Dhankuta	1530m.
329	Co16634	Rice	धान	Dhankuta	6154 Ft
330	Co16635	Radish	मुला	Dhankuta	6154 Ft
331	Co16636	Common Bean	सिमीं	Dhankuta	1485m.
332	Co16637	Okra	भिंडी	Dhankuta	1485m.
333	Co16638	Cowpea	बोडी	Dhankuta	1485m.
334	Co16639	Pumpkin	फर्सी	Dhankuta	1485m.
335	Co16640	Pumpkin	फर्सी	Dhankuta	1485m.
336	Co16641	Chilly	खुर्सानी	Dhankuta	1485m.
337	Co16642	Cucumber	काक्रो	Dhankuta	6154 FT
338	Co16643	Common Bean	सिमीं	Dhankuta	6154 FT
339	Co16644	Common Bean	सिमीं	Dhankuta	6154 FT
340	Co16645	Cowpea	बोडी	Dhankuta	6154 FT
341	Co16646	Chayote	स्कुस	Dhankuta	6154 FT
342	Co16647	Rice bean	मस्यांग	Dhankuta	6154 FT
343	Co16648	Cannabis	भांग	Dhankuta	6154 FT
344	Co16649	Tree tomato	रुख टमाटर	Dhankuta	6154 FT
345	Co16650	Turmeric	बेसार	Dhankuta	1740m.
346	Co16651	sunflower	फुल	Dhankuta	1740m.
347	Co16652	Ginger	अदुवा	Dhankuta	1740m.
348	Co16653	Marigold	सयपत्री फुल	Dhankuta	1740m.
349	Co16654	Potato	आलु	Dhankuta	1740m.
350	Co16655	nan	तिते वि	Dhankuta	1740m.
351	Co16656	Cardamom	अलैंची	Dhankuta	1740m.
352	Co16657	Taro	पिंडालु	Dhankuta	1740m.
353	Co16658	Garlic	लसुन	Dhankuta	1740m.
354	Co16659	Sugarcane	उखु	Dhankuta	1740m.
355	Co16660	Pustakari	पुष्टकारी	Dhankuta	1740m.
356	Co16661	Yam	तरुल	Dhankuta	1740m.
357	Co16662	nan		Dhankuta	1740m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
358	Co16663	Garlic	लसुन	Dhankuta	6154 FT
359	Co16664	Flower	खोर्सानी फुल	Dhankuta	6154 FT
360	Co16665	Common Bean	सिमी	Khotang	1630m.
361	Co16666	Black gram	कालो मास	Khotang	1630m.
362	Co16667	Soybean	भटमास	Khotang	1630m.
363	Co16668	Horse gram	गहत	Khotang	1630m.
364	Co16669	Maize	मकै	Khotang	1630m.
365	Co16670	Lemon	कागती	Khotang	1630m.
366	Co16671	Potato	आलु	Khotang	1630m.
367	Co16672	Rice bean	मस्यांग	Khotang	1630m.
368	Co16673	Katus	कटुस	Khotang	1630m.
369	Co16674	Groudnut	बदाम	Khotang	1630m.
370	Co16675	Soybean	भटमास	Khotang	1630m.
371	Co16676	Soybean	कालो भटमास	Khotang	1630m.
372	Co16677	Cucumber	काक्रो	Khotang	1630m.
373	Co16678	Sweet potato	सखारखण्ड	Khotang	1630m.
374	Co16679	Sweet potato	सखारखण्ड	Khotang	1630m.
375	Co16680	Chilly	खुर्सानी	Khotang	1610m.
376	Co16681	Rapeseed	तोरी	Khotang	1610m.
377	Co16682	Taro	पिडालु	Khotang	1630m.
378	Co16683	Black pepper	टिमुर	Khotang	1610m.
379	Co16684	Black pepper	टिमुर	Khotang	1610m.
380	Co16685	Black bean	कालो सिमी	Khotang	1610m.
381	Co16686	Chayote	स्कुस	Khotang	1630m.
382	Co16687	Ginger	अदुवा	Khotang	1630m.
383	Co16688	Perilla	सिलाम	Khotang	1610m.
384	Co16689	Barley	जौ	Khotang	1610m.
385	Co16690	Cowpea	बोडी	Khotang	1610m.
386	Co16691	Rice	धान	Khotang	1610m.
387	Co16692	Sesame	तिल	Khotang	1610m.
388	Co16693	Finger millet	कोदो	Khotang	1610m.
389	Co16694	Tree tomato	रुख टमाटर	Khotang	1630m.
390	Co16695	Ginger	अदुवा	Khotang	1630m.
391	Co16696	Ginger	अदुवा	Khotang	1630m.
392	Co16697	Cucumber	काक्रो	Khotang	1610m.
393	Co16698	French bean	सिमी	Khotang	1610m.
394	Co16699	Broadleaf Mustard	रायो	Khotang	1610m.
395	Co16700	Broad bean	बकुल्ला	Khotang	1610m.
396	Co16701	Finger millet	कोदो	Khotang	1610m.
397	Co16702	Broadleaf Mustard	रायो	Khotang	1610m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
398	Co16703	Chilly	खोर्सानी	Khotang	1610m.
399	Co16704	Black bean	सिमी	Khotang	1610m.
400	Co16705	French bean	सिमी	Khotang	1350m.
401	Co16706	French bean	सिमी	Khotang	1350m.
402	Co16707	Cowpea	बोडी	Khotang	1350m.
403	Co16708	French bean	सिमी	Khotang	1350m.
404	Co16709	Rice bean	मस्यांग	Khotang	1350m.
405	Co16710	Rice bean	मस्यांग	Khotang	1350m.
406	Co16711	Chayote	स्कुस	Khotang	1350m.
407	Co16712	Chayote	स्कुस	Khotang	1350m.
408	Co16713	French bean	सिमी	Khotang	1350m.
409	Co16714	Soybean	भटमास	Khotang	1350m.
410	Co16715	Kidney bean	राजमा सिमी	Rasuwa	2031m.
411	Co16716	Okra	भिंडी	Rasuwa	1597m.
412	Co16717	Lab Lab bean	सिमी	Rasuwa	2063m.
413	Co16718	Maize	मकै	Rasuwa	2031m.
414	Co16719	Kidney bean	सिमी	Rasuwa	2031m.
415	Co16720	Wheat	गहुँ	Rasuwa	2062m.
416	Co16721	linseed	आलस	Rasuwa	2062m.
417	Co16722	Marigold	सयपत्री फुल	Rasuwa	2069m.
418	Co16723	Pea	केराउ	Rasuwa	2070m.
419	Co16724	Barley	जौ	Rasuwa	2062m.
420	Co16725	Garlic	लसुन	Rasuwa	2062m.
421	Co16726	Rapeseed	तोरी	Rasuwa	2062m.
422	Co16727	Balsam apple	चुच्चे करेला	Rasuwa	2069m.
423	Co16728	Wheat	गहुँ	Kapilbastu	101m.
424	Co16729	Rice bean	मस्यांग	Pachathar	559m.
425	Co16730	Mustard	सर्स्यु	Bhaktpur	1401m.
426	Co16731	Common Bean	सिमी	Tehathum	1532m.
427	Co16732	Rice	धान	Dhanusha	83m.
428	Co16733	Wild flower	पास्वा फुल	Kathmandu	1400m.
429	Co16734	Rice	धान	Gorkha	1356m.
430	Co16735	Black gram	मास	Gorkha	1356m.
431	Co16736	Rice bean	मस्यांग	Gorkha	1356m.
432	Co16737	Ginger	अदुवा	Gorkha	1356m.
433	Co16738	Sesame	तिल	Gorkha	1356m.
434	Co16739	Soybean	भटमास	Gorkha	1356m.
435	Co16740	Turmeric	बेसार	Gorkha	1356m.
436	Co16741	Goosefoot	बेथे	Gorkha	1356m.
437	Co16742	Goosefoot	बेथे	Gorkha	1356m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
438	Co16743	Fennel	सुप	Gorkha	1356m.
439	Co16744	Cowpea	बोडी	Gorkha	1577m.
440	Co16745	Common Bean	सिमी	Gorkha	1577m.
441	Co16746	Cotton	कपास	Gorkha	1577m.
442	Co16747	Black gram	मास	Gorkha	1577m.
443	Co16748	Mustard	तोरी	Gorkha	1577m.
444	Co16749	Finger millet	कोदो	Gorkha	1577m.
445	Co16750	Garlic	लसुन	Gorkha	1587m.
446	Co16751	Chilly	खोर्सानी	Gorkha	1587m.
447	Co16752	Soybean	भटमास	Gorkha	1587m.
448	Co16753	Sweet potato	सखरखण्ड	Gorkha	1587m.
449	Co16754	Banana	केरा	Gorkha	1587m.
450	Co16755	Sittalchini	सितलचिनी	Gorkha	1587m.
451	Co16756	Papaya	मेवा	Gorkha	1387m.
452	Co16757	Pummelo	भोगटे	Gorkha	1587m.
453	Co16758	Chilly	खुर्सानी	Gorkha	1587m.
454	Co16759	Pumpkin	फर्सी	Gorkha	1587m.
455	Co16760	Taro	पिडालु	Gorkha	1587m.
456	Co16761	Chayote	स्कुस	Gorkha	1587m.
457	Co16762	Coriander	धनिया	Gorkha	1587m.
458	Co16763	Horse gram	गहत	Gorkha	1587m.
459	Co16764	Kidney bean	सिमी	Gorkha	1387m.
460	Co16765	Black pepper	टिमुर	Gorkha	1387m.
461	Co16766	Maize	मकै	Gorkha	1387m.
462	Co16767	Rice bean	मस्यांग	Gorkha	1387m.
463	Co16768	Orange	सुन्तला	Gorkha	1387m.
464	Co16769	Sesame	तिल	Gorkha	1387m.
465	Co16770	Cowpea	बोडी	Gorkha	1387m.
466	Co16771	Broadleaf Mustard	रायो	Gorkha	1387m.
467	Co16772	Lemon	निबुवा	Gorkha	1387m.
468	Co16773	Maize	मकै	Gorkha	1387m.
469	Co16774	Okra	भिडी	Gorkha	1387m.
470	Co16775	Rokeweed	जरिगो	Gorkha	1387m.
471	Co16776	Chilly	खुर्सानी	Gorkha	1387m.
472	Co16777	Sponge gourd	घिरौला	Gorkha	1387m.
473	Co16778	Sugarcane	उखु	Gorkha	1387m.
474	Co16779	Rice	धान	nan	nan
475	Co16780	Common Bean	सिमी	nan	nan
476	Co16781	Ring worm plant	सानो ताम्रे	nan	nan
477	Co16782	Finger millet	कोदो	Udayapur	598 m.

SN	Collection No.	Common name	Local name	Location	Altitude, m
478	Co16783	Belchana	बेलचना	nan	nan
479	Co16784	Jujube	बयर	Sankhuwasabha	309m.
480	Co16785	Chayote	स्कुस	Sankhuwasabha	1986m.
481	Co16786	Chayote	स्कुस	Sankhuwasabha	1986m.
482	Co16787	Citron	बिमिरो	Sankhuwasabha	1525m.
483	Co16788	Amaranthus	लट्टे	Sankhuwasabha	1525m.
484	Co16789	Garlic	लसुन	Dhankuta	1388m.
485	Co16790	Chayote	स्कुस	Dhankuta	1388m.
486	Co16791	Chayote	स्कुस	Dhankuta	1388m.
487	Co16792	Buckwheat	मिठे फापर	Dhankuta	1511m.
488	Co16793	Rapeseed	तोरी स्थानीय	Dhankuta	1511m.
489	Co16794	Pumpkin	पहाडे फर्सी	Dhankuta	1511m.
490	Co16795	Pea	मटर केराउ	Dhankuta	1511m.
491	Co16796	Cucumber	काक्रो	Dhankuta	1511m.
492	Co16797	Niger	झुसे तिल	Bhojpur	1795m.
493	Co16798	Buckwheat	फापर	Bhojpur	1795m.
494	Co16799	Sorghum	जुनेलो	Bhojpur	1795m.
495	Co16800	Pumpkin	फर्सी	Bhojpur	1795m.
496	Co16801	Sugarcane	उखु	Bhojpur	1795m.
497	Co16802	Shallot	च्यापी	Bhojpur	1795m.
498	Co16803	Turmeric	बेसार	Arghakhachi	1215m.
499	Co16804	Turmeric	बेसार	Arghakhachi	1215m.
500	Co16805	Turmeric	बेसार	Arghakhachi	1215m.
501	Co16806	Rice	धान	Baglung	1005m.
502	Co16807	Rice	धान	Baglung	1005m.
503	Co16808	Rice	धान	Baglung	1005m.
504	Co16809	Wheat	गहुँ	Baglung	1005m.
505	Co16810	Wheat	गहुँ	Baglung	1005m.
506	Co16811	Maize	मकै	Baglung	1005m.
507	Co16812	Fennel	सुप	Baglung	1005m.
508	Co16813	Pea	केराउ	Baglung	1005m.
509	Co16814	Finger millet	कोदो	Baglung	1592m.
510	Co16815	Buckwheat	फापर	Baglung	1592m.
511	Co16816	Sponge gourd	घिरौला	Baglung	1592m.
512	Co16817	Pumpkin	फर्सी	Baglung	1592m.
513	Co16818	Maize	मकै	Baglung	1592m.
514	Co16819	Black bean	कालो सिमी	Baglung	1592m.
515	Co16820	Cowpea	बोडी	Baglung	1592m.
516	Co16821	Chilly	खुर्सानी	Baglung	1592m.
517	Co16822	Rice	धान	Baglung	1592m.

SN	Collection No.	Common name	Local name	Location	Altitude, m
518	Co16823	Finger millet	कोदो	Baglung	1007m.
519	Co16824	Perilla	सिलाम	Baglung	1007m.
520	Co16825	Okra	भिंडी	Baglung	1007m.
521	Co16826	Broad bean	बकुला	Baglung	1007m.
522	Co16827	Pumpkin	फर्सी	Baglung	1007m.
523	Co16828	Broad bean	बकुल्ला	Baglung	1007m.
524	Co16829	Chilly	खुर्सानी	Baglung	1007m.
525	Co16830	Cannabis	भांगो	Baglung	1007m.
526	Co16831	Finger millet	कोदो	Baglung	1007m.
527	Co16832	Common Bean	सिमी	Baglung	948m.
528	Co16833	Common Bean	सिमी	Baglung	948m.
529	Co16834	Kidney bean	राजमा सिमी	Baglung	948m.
530	Co16835	Cowpea	बोडी	Baglung	948m.
531	Co16836	Cowpea	बोडी	Baglung	948m.
532	Co16837	Black gram	मास	Baglung	948m.
533	Co16838	Rice bean	मस्यांग	Baglung	948m.
534	Co16839	Perilla	सिलाम	Baglung	948m.
535	Co16840	Soybean	भटमास	Baglung	948m.
536	Co16841	Soybean	भटमास	Baglung	948m.
537	Co16842	Pea	केराउ	Baglung	948m.
538	Co16843	Pigeon pea	रहर	Baglung	948m.
539	Co16844	Maize	मकै	Baglung	948m.
540	Co16845	Rice	धान	Baglung	948m.
541	Co16846	Potato	आलु	Baglung	1312m.
542	Co16847	Taro	पिंडालु	Baglung	1312m.
543	Co16848	Garlic	लसुन	Baglung	1582m.
544	Co16849	Lemon	कागती	Baglung	1582m.
545	Co16850	Wild yam	गिट्टा	Baglung	1582m.
546	Co16851	Ginger	अदुवा	Baglung	1582m.
547	Co16852	Chayote	स्कुस	Baglung	1582m.
548	Co16853	Sugarcane	उखु	Baglung	1582m.
549	Co16854	Kappo	कापो	Baglung	1582m.
550	Co16855	Spinach	अमिलो पालुंगो	Baglung	1582m.
551	Co16856	Rose	गुलाब	Baglung	1582m.
552	Co16857	Marigold	सयपत्री फुल	Baglung	1582m.
553	Co16858	Chilly	खुर्सानी	Baglung	1582m.
554	Co16859	Tomato	गोलभेडा	Lalitpur	1341m.
555	Co16860	Maize	मकै	Arghakhachi	1393m.
556	Co16861	Maize	मकै	Arghakhachi	1393m.
557	Co16862	Maize	मकै	Arghakhachi	1215m.

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558	Co16863	Common Bean	सिर्मी बोडी	Arghakhachi	1393m.
559	Co16864	Cowpea	बोडी	Arghakhachi	1393m.
560	Co16865	Rice bean	झिलंगी	Arghakhachi	1393m.
561	Co16866	Black cumin	कालो जिरा	Arghakhachi	1215m.
562	Co16867	Cannabis	गाजा	Arghakhachi	1215m.
563	Co16868	Finger millet	कोदो	Arghakhachi	1215m.
564	Co16869	Mustard	सर्स्यु	Arghakhachi	1215m.
565	Co16870	Rapeseed	तोरी	Arghakhachi	1393m.
566	Co16871	Okra	भिंडी	Arghakhachi	1215m.
567	Co16872	Pumpkin	फर्सी	Arghakhachi	1393m.
568	Co16873	Sponge gourd	तोरायो	Arghakhachi	1215m.
569	Co16874	Ginger	अदुवा	Arghakhachi	1215m.
570	Co16875	Taro	पिडालु	Arghakhachi	1215m.
571	Co16876	Finger millet	कोदो	Kathmandu	1324m.
572	Co16877	Garlic	लसुन	Dolakha	2300m.
573	Co16878	Potato	आलु	Kalikot	1800-2800
574	Co16879	Finger millet	कोदो	Lamjung	721m.
575	Co16880	Finger millet	कोदो	Lamjung	696m.
576	Co16881	Cowpea	बोडी	Lamjung	658m.
577	Co16882	Rice bean	मस्यांग	Lamjung	651m.
578	Co16883	Rice	धान	Lamjung	705m.
579	Co16884	Rice	धान	Lamjung	710m.
580	Co16885	Black gram	फुस्रे मास	Lamjung	721m.
581	Co16886	Soybean	भटमास	Lamjung	644m.
582	Co16887	Horse gram	गहत	Lamjung	644m.
583	Co16888	Sponge gourd	घिरौला	Lamjung	651m.
584	Co16889	Okra	भिंडी	Lamjung	656m.
585	Co16890	Mustard	बन तोरी	Lamjung	656m.
586	Co16891	Maize	मकै	Lamjung	1112m.
587	Co16892	Mustard	सर्स्यू	Lamjung	1113m.
588	Co16893	Rice bean	मस्यांग	Lamjung	1118m.
589	Co16894	Broadleaf Mustard	रायो	Lamjung	1114m.
590	Co16895	Buckwheat	फापर	Lamjung	495m.
591	Co16896	Coriander	धनिया	Lamjung	714m.
592	Co16897	Rice	धान	Lamjung	714m.
593	Co16898	Maize	मकै	Lamjung	714m.
594	Co16899	Cowpea	बोडी	Lamjung	714m.
595	Co16900	Rice bean	मस्यांग	Lamjung	714m.
596	Co16901	okra	भिंडी	Lamjung	714m.
597	Co16902	Rice	धान	Lamjung	714m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
598	Co16903	Soybean	भटमास	Lamjung	726m.
599	Co16904	Broad bean	बकुल्ला	Lamjung	726m.
600	Co16905	Fennel	सौफ	Lamjung	726m.
601	Co16906	Pumpkin	फर्सी	Lamjung	726m.
602	Co16907	Lambs quarters	बेथे	Lamjung	726m.
603	Co16908	Mareti	मरेटी	Lamjung	726m.
604	Co16909	Rice	धान	Lamjung	740m.
605	Co16910	Black pepper	मरिच	Lamjung	740m.
606	Co16911	Rapeseed	तोरी	Lamjung	740m.
607	Co16912	Soybean	भटमास	Lamjung	740m.
608	Co16913	Buckwheat	फापर	Lamjung	740m.
609	Co16914	Chilly	खुर्सानी	Lamjung	740m.
610	Co16915	Lab Lab bean	टाटे सिमी	Lamjung	740m.
611	Co16916	Broadleaf Mustard	रायो	Lamjung	740m.
612	Co16917	Cotton	कपास	Lamjung	740m.
613	Co16918	Cowpea	बोडी	Lamjung	700m.
614	Co16919	Soybean	भटमास	Lamjung	700m.
615	Co16920	Sponge gourd	घिरौला	Lamjung	700m.
616	Co16921	Fennel	सुप	Lamjung	700m.
617	Co16922	Tobacco	सुर्ती	Lamjung	740m.
618	Co16923	Rapeseed	तोरी	Lamjung	740m.
619	Co16924	Broad bean	बकुल्ला	Lamjung	740m.
620	Co16925	Pomelo	बिमिरो	Lamjung	740m.
621	Co16926	Black gram	मास	Lamjung	740m.
622	Co16927	Mustard	तोरी	Lamjung	740m.
623	Co16928	Maize	मकै	Lamjung	740m.
624	Co16929	Garlic	लसुन	Lamjung	740m.
625	Co16930	Flower	फुल	Lamjung	740m.
626	Co16931	Banana	केरा	Lamjung	740m.
627	Co16932	Sweet potato	सखरखण्ड	Lamjung	740m.
628	Co16933	Varuna tree	सिप्लिगान	Lamjung	740m.
629	Co16934	Rose	गुलाब फुल	Lamjung	740m.
630	Co16935	Hibiscus	घन्टी फुल	Lamjung	740m.
631	Co16936	Pea	सानो केराउ	Lamjung	2185 Fit
632	Co16937	Maize	मकै	Lamjung	2185 Fit
633	Co16938	Lentil	मुसुरो	Lamjung	2185 Fit
634	Co16939	Rice	धान	Lamjung	2185Fit
635	Co16940	Rice	धान	Lamjung	2185Fit
636	Co16941	Wheat	गहुँ	Lamjung	2185Fit
637	Co16942	Sugarcane	उखु	Lamjung	2185Fit

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638	Co16943	Sponge gourd	घिरौला	Lamjung	2185Fit
639	Co16944	Jasmine	फुल	Lamjung	2185Fit
640	Co16945	Rice	धान	Lamjung	1550m.
641	Co16946	Finger millet	कोदो	Lamjung	1550m.
642	Co16947	Broadleaf Mustard	रायो	Lamjung	1550m.
643	Co16948	Soybean	भटमास	Lamjung	1550m.
644	Co16949	Maize	मकै	Lamjung	1550m.
645	Co16950	Cucumber	काक्रो	Lamjung	1550m.
646	Co16951	Broadleaf Mustard	रायो	Lamjung	1550m.
647	Co16952	Broadleaf Mustard	रायो	Lamjung	1550m.
648	Co16953	Shallot	छ्यापी	Lamjung	1550m.
649	Co16954	Garlic	लसुन	Lamjung	1550m.
650	Co16955	Garlic	लसुन	Lamjung	1550m.
651	Co16956	Maize	मकै	Lamjung	1750m.
652	Co16957	Finger millet	कोदो	Lamjung	1750m.
653	Co16958	Cucumber	काक्रो	Lamjung	1750m.
654	Co16959	Pumpkin	फर्सी	Lamjung	1750m.
655	Co16960	Finger millet	कोदो	Lamjung	1750m.
656	Co16961	Maize	मकै	Lamjung	1750m.
657	Co16962	Foxtail millet	कागुनो	Lamjung	1750m.
658	Co16963	Pigeon pea	रहर	Lamjung	1750m.
659	Co16964	Sponge gourd	घिरौला	Lamjung	1750m.
660	Co16965	Cowpea	बोडी	Lamjung	1750m.
661	Co16966	Pea	केराउ	Lamjung	1750m.
662	Co16967	Broad bean	बकुल्ला	Lamjung	1790m.
663	Co16968	Common Bean	सिमी	Lamjung	1790m.
664	Co16969	Rice bean	मस्यांग	Lamjung	1790m.
665	Co16970	Lentil	मुसुरो	Lamjung	1790m.
666	Co16971	Potato	आलु	Lamjung	1790m.
667	Co16972	Perilla	सिलाम	Lamjung	1790m.
668	Co16973	Chilly	खुर्सानी	Lamjung	1790m.
669	Co16974	Broadleaf Mustard	रायो	Lamjung	1430m.
670	Co16975	Finger millet	कोदो	Lamjung	1430m.
671	Co16976	Rapeseed	तोरी	Lamjung	1430m.
672	Co16977	Fennel	सुप	Lamjung	1430m.
673	Co16978	Balsam apple	चुच्चे करेला	Lamjung	1430m.
674	Co16979	Common Bean	सिमी	Lamjung	1430m.
675	Co16980	Cucumber	काक्रो	Lamjung	1430m.
676	Co16981	Coriander	धनिया	Lamjung	1430m.
677	Co16982	Broadleaf Mustard	रायो	Lamjung	1430m.

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678	Co16983	Tobacco	सुर्ती	Lamjung	1430m.
679	Co16984	Buckwheat	फापर	Lamjung	1430m.
680	Co16985	Maize	मकै	Lamjung	1820m.
681	Co16986	Common Bean	सिमी	Lamjung	1820m.
682	Co16987	Pea	केराउ	Lamjung	1820m.
683	Co16988	Finger millet	कोदो	Lamjung	1820m.
684	Co16989	Finger millet	कोदो	Lamjung	1820m.
685	Co16990	Cotton	कपास	Lamjung	1820m.
686	Co16991	Rice	धान	Lamjung	1820m.
687	Co16992	Cardamon	अलैची	Lamjung	1820m.
688	Co16993	Sugarcane	उखु	Lamjung	1820m.
689	Co16994	Rose	गुलाब	Lamjung	1820m.
690	Co16995	Marigold	सयपत्री फुल	Lamjung	1820m.
691	Co16996	Broadleaf Mustard	रायो	Bara	76m.
692	Co16997	Rapeseed	तोरी	Bara	76m.
693	Co16998	Mustard	सर्स्यु	Bara	76m.
694	Co16999	Mustard	सर्स्यु	Bara	79m.
695	Co17000	Mustard	सर्स्यु	Bara	79m.
696	Co17001	Rapeseed	तोरी	Bara	79m.
697	Co17002	Maize	मकै	Lamjung	616m.
698	Co17003	Proso millet	कालो चिनो	Dolpa	2251m.
699	Co17004	Proso millet	रातो चिनो	Dolpa	2251.5
700	Co17005	Amaranthus	सेतो लट्टे	Dolpa	2956m.
701	Co17006	Common Buckwheat	मिठे फापर	Dolpa	2492m.
702	Co17007	Foxtail millet	कागुनो	Dolpa	2053m.
703	Co17008	Rice	धान	Lalitpur	1321m.
704	Co17009	Ash gourd	कुविन्ड़ो	Lamjung	750m.
705	Co17010	Ash gourd	कुविन्ड़ो	Lamjung	750m.
706	Co17011	Pumpkin	फर्सी	Kathmandu	1324m.
707	Co17012	Wheat	गहुँ	Rolpa	1813m.
708	Co17013	Black gram	मास	Rolpa	1813m.
709	Co17014	Lentil	मुसुरो	Bajura	1354m.
710	Co17015	Common Bean	सिमी	Dailekh	800m.
711	Co17016	Rice	धान	Jajarkot	1600
712	Co17017	Rice	धान	Bajura	1219m.
713	Co17018	Chilly	खुर्सानी	Dailekh	800m.
714	Co17019	Rice	धान	Janakpur	74m.
715	Co17020	Barberry	चुत्रो	Syangja	906m.
716	Co17021	Potato	आलु	Syangja	818m.
717	Co17022	Giant fern	गाईखुरे	Syangja	906m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
718	Co17023	Small spikenard	सिउँडी	Syangja	906m.
719	Co17024	Marsh pennywort	पईयू	Syangja	906m.
720	Co17025	Wild coriander	धनिया	Syangja	906m.
721	Co17026	Hibiscus	घन्टी फुल	Syangja	906m.
722	Co17027	Rose	गुलाब	Syangja	906m.
723	Co17028	Common Bean	साग सिमी	Syangja	1032m.
724	Co17029	Pepper	टिम्मुर	Syangja	817m.
725	Co17030	Sponge gourd	घिरौला	Syangja	1032m.
726	Co17031	Broadleaf Mustard	रायो	Syangja	817m.
727	Co17032	Rapeseed	तोरी	Syangja	817m.
728	Co17033	Pumpkin	फर्सी	Syangja	817m.
729	Co17034	Okra	भिंडी	Syangja	817m.
730	Co17035	Buckwheat	फापर	Syangja	817m.
731	Co17036	Finger millet	कोदो	Syangja	1032m.
732	Co17037	Rice	धान	Syangja	818m.
733	Co17038	Pea	केराउ	Syangja	818m.
734	Co17039	Chilly	अकबरे खुर्सानी	Syangja	818m.
735	Co17040	Maize	मकै	Syangja	818m.
736	Co17041	Bottle gourd	लौका	Syangja	818m.
737	Co17042	Pumpkin	फर्सी	Syangja	818m.
738	Co17043	Common Bean	सिमी	Syangja	818m.
739	Co17044	Rice	धान	Syangja	818m.
740	Co17045	Buckwheat	फापर	Syangja	818m.
741	Co17046	Black gram	मास	Syangja	818m.
742	Co17047	Soybean	भटमास	Syangja	818m.
743	Co17048	Rapeseed	तोरी	Syangja	818m.
744	Co17049	Rice	धान	Syangja	818m.
745	Co17050	Finger millet	कोदो	Syangja	818m.
746	Co17051	Rice	धान	Syangja	818m.
747	Co17052	Pigeon pea	रहर	Syangja	818m.
748	Co17053	Horse gram	गहत	Syangja	818m.
749	Co17054	Cowpea	बोडी	Syangja	818m.
750	Co17055	Cannabis	भांग	Syangja	818m.
751	Co17056	Elephant's ear	चिप्ले बादल पाते	Syangja	906m.
752	Co17057	Bamboo	निगालो	Syangja	906m.
753	Co17058	Wooly Grape fern	जलुको	Syangja	906m.
754	Co17059	Sword fern	पानी अमला	Syangja	906m.
755	Co17060	Purslane	भुइकटहर	Syangja	906m.
756	Co17061	Broom grass	अम्रिसो	Syangja	906m.
757	Co17062	Fiddlehead fern	निगुरो	Syangja	906m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
758	Co17063	Fiddlehead fern	निगुरो	Syangja	906m.
759	Co17064	Angeri	अगेरी	Syangja	986m.
760	Co17065	Culantro	भैंसे काडे	Syangja	986m.
761	Co17066	Dandelion	लुते झार	Syangja	986m.
762	Co17067	Bahuhinia creeper	अर्चाल	Syangja	986m.
763	Co17068	Sponge gourd	घिरौला	Banke	188m.
764	Co17069	Common Bean	हिउदे सिमी	Banke	175m.
765	Co17070	Pea	केराउ	Banke	174m.
766	Co17071	Lentil	मुसुरो	Banke	174m.
767	Co17072	Pumpkin	फर्सी	Banke	174m.
768	Co17073	Pea	केराउ	Banke	174m.
769	Co17074	Sesame	तिल	Banke	174m.
770	Co17075	Rapeseed	तोरी	Banke	175m.
771	Co17076	Coriander	धनिया	Banke	175m.
772	Co17077	Rice	राधा चार धान	Banke	175m.
773	Co17078	Rice	धान	Banke	174m.
774	Co17079	Okra	भिंडी	Banke	174m.
775	Co17080	Rice bean	सिल्टुङ्	Banke	174m.
776	Co17081	Sponge gourd	घिरौला	Banke	169m.
777	Co17082	Lentil	मुसुरो	Banke	174m.
778	Co17083	Rapeseed	तोरी	Banke	174m.
779	Co17084	Common Bean	हिउदे सिमी	Banke	175m.
780	Co17085	Maize	मकै	Banke	174m.
781	Co17086	Pigeon pea	अडर	Banke	174m.
782	Co17087	Pumpkin	फर्सी	Banke	174m.
783	Co17088	Barley	जौ	Banke	174m.
784	Co17089	Coriander	धनिया	Banke	174m.
785	Co17090	linseed	आलस	Banke	174m.
786	Co17091	Cowpea	बोडी	Banke	173m.
787	Co17092	Pea	केराउ	Banke	173m.
788	Co17093	Rice	धान	Banke	173m.
789	Co17094	Black cumin	काली जिरा	Banke	174m.
790	Co17095	Lentil	मुसुरो	Banke	173m.
791	Co17096	Rice	धान	Banke	173m.
792	Co17097	Soybean	भटमास	Banke	173m.
793	Co17098	Common Bean	हिउदे सिमी	Banke	174m.
794	Co17099	Chickpea	चना	Banke	173m.
795	Co17100	Barley	जौ	Banke	174m.
796	Co17101	Fenugreek	मेथी	Banke	174m.
797	Co17102	Bottle gourd	लौका	Banke	174m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
798	Co17103	Broad bean	बकुल्ला	Banke	174m.
799	Co17104	Ash gourd	कुबिन्डो	Banke	175m.
800	Co17105	Maize	मकै	Banke	175m.
801	Co17106	Brinjal	भन्टा	Banke	175m.
802	Co17107	Pigeon pea	अडर	Banke	174m.
803	Co17108	Wheat	गहुँ	Banke	174m.
804	Co17109	Chickpea	चना	Banke	174m.
805	Co17110	Mustard	सर्स्यु	Banke	174m.
806	Co17111	linseed	आलस	Banke	174m.
807	Co17112	Pea	केराउ	Banke	174m.
808	Co17113	Rapeseed	तोरी	Banke	174m.
809	Co17114	Cowpea	बोडी	Banke	174m.
810	Co17115	Potato	आलु	Banke	174m.
811	Co17116	Rice	धान	Sunsari	136m.
812	Co17117	Rice	धान	Sunsari	136m.
813	Co17118	Rice	धान	Sunsari	136m.
814	Co17119	Rice	धान	Sunsari	136m.
815	Co17120	Rice	धान	Sunsari	136m.
816	Co17121	Rice	धान	Sunsari	136m.
817	Co17122	Rice	धान	Sunsari	136m.
818	Co17123	Rice	धान	Sunsari	136m.
819	Co17124	Rice	धान	Sunsari	136m.
820	Co17125	Rice	धान	Sunsari	136m.
821	Co17126	Rice	धान	Sunsari	136m.
822	Co17127	Banana	केरा	Nuwakot	636m.
823	Co17128	Wild Rice	जंगली धान	Kapilbastu	102m.
824	Co17129	Wild rice	जंगली धान	Kapilbastu	115m.
825	Co17130	Wild rice	जंगली धान	nan	120m.
826	Co17131	Wild rice	जंगली धान	Rupandehi	112m.
827	Co17132	Garlic	लसुन	Chitawan	268m.
828	Co17133	Amaranthus	लट्टे	Chitawan	268m.
829	Co17134	Soybean	भटमास	Dhankuta	1730
830	Co17135	Amaranthus	लट्टे	Dhankuta	1730
831	Co17136	nan	गंगा लगी माटे	Banke	175m.
832	Co17137	Maize	मकै	Kalikot	1770m.
833	Co17138	Barley	जौ	Jajarkot	1600
834	Co17139	Black night shade	निगालो	Makwanpur	2494m.
835	Co17140	Godawari	गोदावरी फुल	Makwanpur	2494m.
836	Co17141	Parijat	घसिंगरे	Makwanpur	2494m.
837	Co17142	nan	अल्लो	Makwanpur	2308m.

SN	Collection No.	Common name	**Local name**	Location	Altitude, m
838	Co17143	nan	सुगन्धावाल	Makwanpur	2308m.
839	Co17144	nan	मजिठो	Makwanpur	2308m.
840	Co17145	Paanch aaule	पाँच औले	Makwanpur	2308m.
841	Co17146	nan	ठुलो ओखर्ती	Makwanpur	2308m.
842	Co17147	nan	चिराइतो	Makwanpur	2308m.
843	Co17148	nan	पासणवेद	Makwanpur	2308m.
844	Co17149	nan	भुई स्याउ	Makwanpur	2308m.
845	Co17150	nan	सोमलता	Makwanpur	2308m.
846	Co17151	nan	लौड़सल्ला	Makwanpur	2308m.
847	Co17152	nan	लेउ पाङ्ग्रा	Makwanpur	2308m.
848	Co17153	Toothbrush tree	बज्रदन्ति	Makwanpur	2308m.
849	Co17154	Digitalis	डिजीटालिस	Makwanpur	2308m.
850	Co17155	nan	पहेलो फुल	Makwanpur	2308m.
851	Co17156	Tamarind	ठोट्ने	Makwanpur	2308m.
852	Co17157	nan	डडीमयल	Makwanpur	2308m.
853	Co17158	China rose/ Hibiscus	मयल	Makwanpur	2308m.
854	Co17159	nan	सेतो धनिया फुल	Makwanpur	2308m.
855	Co17160	Marigold	लाहुरे फुल	Makwanpur	2308m.
856	Co17161	nan	मकै फुल	Makwanpur	2308m.
857	Co17162	Orchid tree	बाको	Makwanpur	2308m.
858	Co17163	Stonecrop	पथरजटा	Makwanpur	2308m.
859	Co17164	Butterfly pea	अपराजिता	Makwanpur	2308m.
860	Co17165	Camphor plant	भिक्स	Makwanpur	2494m.
861	Co17166	Orchid	अकिट	Makwanpur	2494m.
862	Co17167	Godawari	गोदाबरी फुल	Makwanpur	2494m.
863	Co17168		धान फुल	Makwanpur	2494m.
864	Co17169	Godawari	गोदाबरी फुल	Makwanpur	2494m.
865	Co17170	Hibiscus	हंसराज फुल	Makwanpur	2494m.
866	Co17171	Rose	गुलाब फुल	Makwanpur	2494m.
867	Co17172	Rose	लहरे गुलाब	Makwanpur	2494m.
868	Co17173	Orchid	सुनगावा फुल	Makwanpur	2494m.
869	Co17174	Periwinkle	कृष्ण काली फुल	Makwanpur	2494m.
870	Co17175	Jasmine	जसमिन फुल	Makwanpur	2494m.
871	Co17176	orchid	सुनाखरी फुल	Makwanpur	2494m.
872	Co17177	Rose	चाइनिज गुलाब	Makwanpur	2494m.
873	Co17178	Sapota	चिकु	Bara	89m.
874	Co17179	Butterfly pea	अपराजिता	Bara	89m.
875	Co17180	Jasmine	बेली फुल	Bara	89m.
876	Co17181	Bougainvillea	बगमबेली फुल	Bara	89m.
877	Co17182	Bougainvillea	बगमबेली रातो फुल	Bara	89m.

SN	Collection No.	Common name	Local name	Location	Altitude, m
878	Co17183	Drumstick tree	मोरिङ्गा	Bara	89m.
879	Co17184	Mahua	महुवा	Bara	89m.
880	Co17185	Bael	बरहर	Bara	89m.
881	Co17186	Hog plum	अमरा	Bara	89m.
882	Co17187	Rangoon creeper	मधुमलती फुल	Bara	89m.
883	Co17188	Marigold	राखी फुल	Bara	89m.
884	Co17189	Periwinkle	कृष्ण काली फुल	Bara	89m.
885	Co17190	Sorghum	जुनेलो	Bara	101m.
886	Co17191	Barnyard millet	सामा	Bara	101m.
887	Co17192	Pigeon pea	रहर	Bara	101m.
888	Co17193	Common Bean	सिमी	Bara	101m.
889	Co17194	Sorghum	जुनेलो	Bara	101m.
890	Co17195	Broad bean	स्थानीय बकुल्ला	Bara	101m.
891	Co17196	Pigeon pea	खेसरी	Bara	101m.
892	Co17197	Rapeseed	तोरी	Bara	101m.
893	Co17198	Rapeseed	तोरी	Bara	101m.
894	Co17199	Lentil	मुसुरो	Bara	101m.
895	Co17200	Coriander	धनिया	Bara	101m.
896	Co17201	Pea	केराउ	Bara	101m.
897	Co17202	Mustard	सर्स्यु	Bara	101m.
898	Co17203	linseed	आलस	Bara	101m.
899	Co17204	Pigeon pea	रहर	Bara	101m.
900	Co17205	Rice bean	मुङ्ग	Bara	101m.
901	Co17206	Finger millet	कोदो	Bara	101m.
902	Co17207	Wheat	गहुँ	Bara	101m.
903	Co17208	Lentil	मुसुरो	Bara	101m.
904	Co17209	Lovage	ज्वानो		101m.
905	Co17210	Turmeric	हलेदो		101m.
906	Co17211	Wild Amaranths	जंगली लट्टे	Sunsari	76m.
907	Co17212	Goosefoot	बेथे	Sunsari	100m.
908	Co17213	Wild Amaranths	जंगली लट्टे	Sunsari	76m.
909	Co17214	Amaranthus	लट्टे	Sunsari	76m.
910	Co17215	Amaranthus	लट्टे	Dhankuta	1429m.
911	Co17216	Amaranthus	लट्टे	Chitawan	700m.
912	Co17217	Rice bean	मस्यांग	Gorkha	348m.
913	Co17218	Finger millet	कोदो	Rolpa	1813m.
914	Co17219	Soybean	भटमास	Rolpa	1813m.

Annex 7.2. Brief passport of accessions conserved in Genebank 2081/82 (2024/25)

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11143	Rice	कालो काठे धान	Dhading	1210
NGRC11144	Rice	रंजित धान	Morang	75
NGRC11145	Rice	पटने धान	Baitadi	1360
NGRC11146	Rice	चिउरी धान	Baitadi	1315
NGRC11147	Rice	कालो जुँगे	Baitadi	1315
NGRC11148	Rice	सावित्री धान	Bardiya	153
NGRC11149	Rice	सावित्री धन	Banke	149
NGRC11150	Rice	रातो अनदि	Rukum	2600
NGRC11151	Rice	राधा 4	Rupandehi	108
NGRC11152	Rice	राधा 4 मोटो	Banke	149
NGRC11153	Rice	सावा मन्सुली	Banke	149
NGRC11154	Rice	धान	Banke	149
NGRC11155	Rice	स्थानीय धान	Banke	149
NGRC11156	Rice	माला धान	Rupandehi	108
NGRC11157	Rice	अनदी धान	Kapilvastu	107
NGRC11158	Rice	राधा 4	Banke	149
NGRC11159	Rice	राधा 4	Banke	149
NGRC11160	Wheat	स्थानीय गहुँ	Arghakhanchi	1478
NGRC11161	Wheat	स्थानीय गहुँ	Rukum	2600
NGRC11162	Chilli	अकबरे खुर्सानी	Ilam	1202
NGRC11163	Chilli	अकबरे खुर्सानी	Dhading	1025
NGRC11164	Chilli	अकबरे खुर्सानी	Dolakha	2400
NGRC11165	Chilli	डल्ले आपे खुर्सानी	Arghakhanchi	1204
NGRC11166	Chilli	अकबरे खुर्सानी	Sindhupalchok	2111
NGRC11167	Chilli	डल्ले अकबरे	Sindhupalchok	2000
NGRC11168	Chilli	गोलो डल्ले खुर्सानी	Dolakha	2200
NGRC11169	Chilli	डल्ले खुर्सानी	Dhading	1245
NGRC11170	Chilli	लामो खुर्सानी	Taplejung	1766
NGRC11171	Chilli	लोकल खुर्सानी	Lalitpur	1700
NGRC11172	Chilli	पिरे खुर्सानी	Jajarkot	2074
NGRC11173	Brinjal	स्थानीय भन्टा	Gorkha	1234
NGRC11174	Brinjal	हरियो भन्टा	Okhaldhunga	1492
NGRC11175	Wild Rice	जंगली धान	Palpa	696
NGRC11176	Wild Rice	जंगली धान	Palpa	696

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11177	Wild Rice	जंगली धान	Palpa	696
NGRC11178	Wild Rice	जंगली धान	Palpa	696
NGRC11179	Wild Rice	जंगली धान	Palpa	696
NGRC11180	Wild Rice	जंगली धान	Palpa	696
NGRC11181	Wild Rice	जंगली धान	Palpa	696
NGRC11182	Wild Rice	जंगली धान	Palpa	696
NGRC11183	Wild Rice	जंगली धान	Palpa	696
NGRC11184	Wild Rice	जंगली धान	Rupandehi	108
NGRC11185	Wild Rice	जंगली धान	Rupandehi	97
NGRC11186	Wild Rice	जंगली धान	Rupandehi	105
NGRC11187	Wild Rice	जंगली धान	Rupandehi	105
NGRC11188	Wild Rice	जंगली धान	Rupandehi	105
NGRC11189	Wild Rice	जंगली धान	Kapilvastu	121
NGRC11190	Wild Rice	जंगली धान	Kapilvastu	121
NGRC11191	Wild Rice	जंगली धान	Kapilvastu	121
NGRC11192	Wild Rice	जंगली धान	Kapilvastu	121
NGRC11193	Wild Rice	जंगली धान	Kapilvastu	122
NGRC11194	Wild Rice	जंगली धान	Kapilvastu	122
NGRC11195	Wild Rice	जंगली धान	Nawalparasi	115
NGRC11196	Wild Rice	जंगली धान	Nawalparasi	117
NGRC11197	Rice	धान	Kapilvastu	
NGRC11198	Rice	धान	Rupandehi	
NGRC11199	Barley	जौ	Nawalparasi	110 6
NGRC11200	Barley	जौ	Jumla	2514
NGRC11201	Barley	जौ	Dailekh	1,117
NGRC11202	Barley	जौ	Surkhet	700
NGRC11203	Bean	सिमी	Dolpa	2700
NGRC11204	Bean	सिमी	Salyan	906
NGRC11205	Bean	सिमी	Karnali	
NGRC11206	Bean	सिमी	Humla	2,260
NGRC11207	Bean	सिमी	Humla	
NGRC11208	Bean	सिमी	Mugu	2,341
NGRC11209	Lab lab bean	सिमी	Nawalpur	208
NGRC11210	Bean		Laltipur	
NGRC11211	Cowpea	बोडी	Dailekh	1,117
NGRC11212	Cowpea	बोडी	Dailekh	1,470
NGRC11213	Flaxseed	आलस	Kapilvastu	600
NGRC11214	Flaxseed	आलस	Banke	
NGRC11215	Flaxseed	आलस	Dang	

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11216	Flaxseed	आलस	Jumla	2514
NGRC11217	Finger millet	कोदो	Jumla	2277
NGRC11218	Finger millet	कोदो	Jajarkot	2,100
NGRC11219	Finger millet	कोदो	Surkhet	665
NGRC11220	Finger millet	कोदो	Karnali	
NGRC11221	Finger millet	कोदो	Surkhet	3300
NGRC11222	Finger millet	कोदो	Humla	
NGRC11223	Cauliflower	काउली	Dolpa	2,094
NGRC11224	Carrot	गाजर	Dolpa	2,094
NGRC11225	Chickpea	चना	Jumla	
NGRC11226	Soybean	भटमास	Jumla	
NGRC11227	Soybean	भटमास	Jumla	
NGRC11228	Soybean	भटमास	Jajarkot	200
NGRC11229	Soybean	भटमास	Dailekh	1,470
NGRC11230	Soybean	भटमास	Jajarkot	1,714
NGRC11231	Soybean	भटमास	Jumla	2,542
NGRC11232	Sorghum	जुनेलो	Mugu	2,341
NGRC11233	Maize	मकै	Gorkha	1855
NGRC11234	Maize	मकै	Surkhet	
NGRC11235	Maize	मकै	Dailekh	1,470
NGRC11236	Maize	मकै	Surkhet	458
NGRC11237	Maize	मकै	Humla	
NGRC11238	Maize	मकै	Kalikot	2,171
NGRC11239	Maize	मकै	Rasuwa	2001
NGRC11240	Maize	मकै	Tanahun	433
NGRC11241	Maize	मकै	Tanahun	923
NGRC11242	Maize	मकै	Tanahun	871
NGRC11243	Maize	मकै	Syangja	879
NGRC11244	Maize	मकै	Solukhumbu	
NGRC11245	Maize	मकै	Nawalpur	208
NGRC11246	Maize	मकै	Nawalpur	253
NGRC11247	Maize	मकै	Sunsari	106
NGRC11248	Maize	मकै	Sunsari	107
NGRC11249	Maize	मकै	Jajarkot	1511
NGRC11250	Maize	मकै	Jajarkot	1750
NGRC11251	Maize	मकै	Rautahat	110
NGRC11252	Maize	मकै	Jajarkot	1511
NGRC11253	Maize	मकै	Dhading	1025
NGRC11254	Maize	मकै	Dhading	1251

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11255	Maize	मकै	Dhading	431
NGRC11256	Maize	मकै	Dhading	464
NGRC11257	Maize	मकै	Palpa	
NGRC11258	Maize	मकै	Palpa	
NGRC11259	Broad leaf mustard	रायो	Dolpa	2,768
NGRC11260	Rapeseed	तोरी	Rasuwa	1249
NGRC11261	Rapeseed	तोरी	Nuwakot	1323
NGRC11262	Rapeseed	तोरी	Arghakhanhi	
NGRC11263	Rapeseed	तोरी	Arghakhanhi	
NGRC11264	Sarson	सर्स्यु	Dailekh	1,223
NGRC11265	Rapeseed	तोरी	Arghakhanhi	
NGRC11266	Rapeseed	तोरी	Surkhet	1,522
NGRC11267	Rapeseed	तोरी	Surkhet	665
NGRC11268	Rapeseed	तोरी	Gorkha	562
NGRC11269	Sarson	सर्स्यु	Rupandehi	
NGRC11270	Rapeseed	लार्चा साग	Banke	
NGRC11271	Lambs quarter	बेथु	Lalitpur	1365
NGRC11272	Wheat	गहुँ	Jumla	
NGRC11273	Rice	धान	Gulmi	
NGRC11274	Rice	धान	Jumla	2351
NGRC11275	Rice	धान	Jajarkot	1500 - 2000
NGRC11276	Rice	धान	Gulmi	
NGRC11277	Rice	धान	Surkhet	1397
NGRC11278	Rice	धान	Surkhet	699
NGRC11279	Rice	धान	Jumla	
NGRC11280	Rice	धान	Dailekh	
NGRC11281	Rice	धान	Jumla	2542
NGRC11282	Rice	धान	Tanahun	682
NGRC11283	Rice	धान	Tanahun	682
NGRC11284	Rice	धान	Gorkha	685
NGRC11285	Rice	धान	Dhading	1378
NGRC11286	Rice	धान	Dhading	622
NGRC11287	Rice	धान	Jumla	
NGRC11288	Rice	फुल	Bara	69
NGRC11289	Rice	धान	Mugu	2341
NGRC11290	Bean	कालो बर्खे सिमी	Rukum	1722
NGRC11291	Barley	जौ	Dhading	
NGRC11292	Barley	स्थानीय जौ	Jajarkot	1155
NGRC11293	Barley	घाड्ले जौ	Jajarkot	1511

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11294	Barley	स्थानीय जौ	Rautahat	
NGRC11295	Barley	जौ	Dhading	466
NGRC11296	Barley	स्थानीय जौ	Dhading	464
NGRC11297	Barley	स्थानीय जौ	Rasuwa	629
NGRC11298	Barley	स्थानीय जौ	Rasuwa	1286
NGRC11299	Barley	झुसे जौ	Baitadi	1360
NGRC11300	Barley	जुंगे खैरो	Baitadi	1315
NGRC11301	Barley	स्थानीय जौ	Mustang	3539
NGRC11302	Barley	स्थानीय जौ	Rukum	1729
NGRC11303	Naked barley		Mustang	3750
NGRC11304	Buckwheat	मिठे फापर	Mustang	3560
NGRC11305	Buckwheat	तिते फापर	Mustang	3539
NGRC11306	Buckwheat	तिते फापर	Mustang	3920
NGRC11307	Cowpea	सोस्टा	Rukum	1775
NGRC11308	Finger millet	च्याल्ले कोदो	Dolakha	1545
NGRC11309	Finger millet	स्थानीय कोदो	Rukum	1730
NGRC11310	Finger millet	औले कोदो	Dolakha	
NGRC11311	Finger millet	सेतो बेलुरे कोदो	Udayapur	
NGRC11312	Fenugreek	स्थानीय मेथी	Rukum	1775
NGRC11313	Maize	लोकल मकै	Kailali	
NGRC11314	Maize	स्थानीय पहेलो मकै	Mustang	3539
NGRC11315	Maize	डिम्मापुरे मकै	Dolakha	1545
NGRC11316	Maize	पहेलो मकै	Dolakha	1545
NGRC11317	Maize	सेतो घोघो	Rukum	1774
NGRC11318	Rice	सेतो अनदी	Kailali	
NGRC11319	Rice	हरियो मार्सी	Dolakha	1545
NGRC11320	Rice	पोख्रेली धान	Dolakha	1545
NGRC11321	Rice	स्थानीय धान	Dolakha	1545
NGRC11322	Pea	कला	Kailali	
NGRC11323	Lentil	लोकल मुसुरो	kailali	
NGRC11324	Lentil	स्थानीय मुसुरो	Rukum	1728
NGRC11325	Ricebean	स्थानीय सिल्टूङ	Rukum	1759
NGRC11326	Soybean	भटमास	Rukum	1730
NGRC11327	Mustard	लोकल तोरी	Dhading	
NGRC11328	Bellchana	अमिली लार्चा रातो	Dhading	
NGRC11329	Jaringo	रातो जरिंगो	Kavre	
NGRC11330	Wheat	स्थानीय गहुँ	Nawalparasi	
NGRC11331	Wheat	स्थानीय गहुँ	Dhading	
NGRC11332	Wheat	लोकल गहुँ	Kailali	

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11333	Wheat	स्थानीय गहुँ	Mustang	3560
NGRC11334	Wheat	आर =आर 21	Dolakha	1545
NGRC11335	Wheat	स्थानीय गहुँ	Rukum	
NGRC11336	Rice	NR 11105-B-B-27	Lalitpur	
NGRC11337	Bean		Surkhet	
NGRC11338	Broad leaf mustard	HRDBLM004	Surkhet	
NGRC11339	Radish	HRDRAD002		
NGRC11340	Radish	HRDRAD005		
NGRC11341	Finger millet	कोदो		
NGRC11342	Finger millet	कोदो		
NGRC11343	Wheat	गहुँ	Rasuwa	1730
NGRC11344	Ash gourd	कुबिन्ड़ो	Nuwakot	
NGRC11345	Barley	जौ	Sindhupalchok	1155
NGRC11346	Blackgram	मास	Sindhupalchok	1178
NGRC11347	Blackgram	मास	Sindhupalchok	1540
NGRC11348	Blackgram	कालो मास	Dhankuta	1485
NGRC11349	Blackgram	कालो मास	Khotang	1630
NGRC11350	Blackgram	कालो मास	Gorkha	1356
NGRC11351	Blackgram	कालो मास	Gorkha	1577
NGRC11352	Blackgram	फुस्रे मास	Lamjung	721
NGRC11353	Coriander	धनिया	Nawalparasi	
NGRC11354	Coriander	धनिया		
NGRC11355	Coriander	धनिया	Rupandehi	116
NGRC11356	Coriander	धनिया	Kavre	1525
NGRC11357	Coriander	धनिया		
NGRC11358	Coriander	धनिया	Nepalgunj	
NGRC11359	Coriander	धनिया	Nepalgunj	
NGRC11360	Coriander	धनिया		
NGRC11361	Barley	जौ		
NGRC11362	Finger millet	कोदो	Sindhupalchok	1540
NGRC11363	Finger millet	कोदो	Sindhupalchok	1540
NGRC11364	Finger millet	पहेले कोदो	Lamjung	721
NGRC11365	Finger millet	कात्तिके कोदो	Lamjung	696
NGRC11366	Maize	मकै	Sindhupalchok	1094
NGRC11367	Maize	मकै	Sindhupalchok	1094
NGRC11368	Maize	मकै	Sindhupalchok	1540
NGRC11369	Maize	सेतो मकै	Dhankuta	1485
NGRC11370	Maize	पहेले कोदो	Khotang	1630
NGRC11371	Maize	सेतो मकै	Baglung	1005

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11372	Maize	कौडे कालो मकै	Arghakhanchi	1393
NGRC11373	Maize	मकै	Arghakhanchi	1215
NGRC11374	Maize	सेतो मकै	Lamjung	1112
NGRC11375	Mustard	तोरी	Dolakha	1545
NGRC11376	Mustard	तोरी	Rukum	1729
NGRC11377	Yellow mustard	सर्स्युन	Bara	79
NGRC11378	Yellow mustard	सर्स्युन	Rukum	1728
NGRC11379	Mustard	तोरी	Bara	79
NGRC11380	Mustard	तोरी	Bara	76
NGRC11381	Mustard	तोरी	Bara	76
NGRC11382	Yellow mustard	सर्स्युन	Bara	76
NGRC11383	Yellow mustard	सर्स्युन	Bara	79
NGRC11384	Adzuki bean		Dhankuta	
NGRC11385	Rice	मन्सुली धान	Sindhupalchok	`1178
NGRC11386	Rice	धान	Sindhupalchok	1540
NGRC11387	Rice	हजारी धान होचो डाँठ	Kanchanpur	
NGRC11388	Rice	बास्मती धान	Sindhupalchok	1540
NGRC11389	Rice	अटे मार्सी धान	Dhankuta	1875
NGRC11390	Rice	अटे मार्सी धान	Khotang	1610
NGRC11391	Rice	धान	Gorkha	1356
NGRC11392	Rice	धान	Kapilvastu	
NGRC11393	Rice	अनदी धान	Lamjung	705
NGRC11394	Rice	मसिनो धान	Lamjung	710
NGRC11395	Wheat	रातो स्थानीय	Sindhupalchok	1147
NGRC11396	Wheat	गहुँ	Sindhupalchok	1540
NGRC11397	Wheat	गहुँ	Dhading	466
NGRC11398	Cucumber	डल्ले काक्रो	Gulmi	1815
NGRC11399	Cucumber	काँक्रो	Okhaldhunga	250
NGRC11400	Naked barley	उवा	Rasuwa	2062
NGRC11401	Chickpea	चना	Banke	
NGRC11402	Chickpea	चना		
NGRC11403	Chickpea	चना		
NGRC11404	Mungbean	मुंग		
NGRC11405	Maize	मकै		
NGRC11406	Forage oat	Qinghai 444		
NGRC11407	Naked oat	NZA3/18		
NGRC11408	Sesame	Till		
NGRC11409	Ridge gourd	Thimni Torai		

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11410	Sponge gourd	Torai		
NGRC11411	Chilli	खुर्सानी		
NGRC11412	Cucumber	काँक्रो		
NGRC11413	Snake gourd	Local Chichira		
NGRC11414	Pumpkin	Ushukohora		
NGRC11415	Bottle Gourd	Lauka		
NGRC11416	Sponge Gourd	Ghiraula		
NGRC11417	Pigeon pea	रहर		
NGRC11418	Lentil	मुसुरो		
NGRC11419	Wheat	गहुँ		
NGRC11420	Pea	मटर		
NGRC11421	Chickpea	चना		
NGRC11422	Fenugreek	मेथी		
NGRC11423	Bean	सिमी		
NGRC11424	Rice	धान		
NGRC11425	Cucumber	काँक्रो		
NGRC11426	Wheat	गहुँ		
NGRC11427	Chickpea	चना		
NGRC11428	Cowpea	बोडी		
NGRC11429	Pumpkin			
NGRC11430	Chickpea	चना		
NGRC11431	Coriander	धनिया		
NGRC11432	Chickpea	चना		
NGRC11433	Lab lab bean	सिमी		
NGRC11434	Finger millet	कोदो		
NGRC11435	Green gram			
NGRC11436	Buckwheat	फापर		
NGRC11437	Buckwheat	फापर	Lamjung	495
NGRC11438	Buckwheat	फापर	Dolpa	2492
NGRC11439	Buckwheat	फापर		
NGRC11440	Buckwheat	फापर	Lamjung	745
NGRC11441	Barley	जौ	Banke	174
NGRC11442	Barley	जौ	Banke	174
NGRC11443	Bean	सिमी	Baglung	948
NGRC11444	Bean	सिमी	Baglung	949
NGRC11445	Bean	सिमी	Baglung	950
NGRC11446	Kidney bean	राजमा सिमी	Rasuwa	2031
NGRC11447	Kidney bean	राजमा सिमी	Rasuwa	2032
NGRC11448	Blackgram	मास	Baglung	948

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11449	Blackgram	मास	Rolpa	
NGRC11450	Blackgram	मास	Syangja	818
NGRC11451	Broad bean	बकुला	Baglung	1007
NGRC11452	Cowpea	बोडी	Sindhupalchok	1178
NGRC11453	Cowpea	बोडी	Kanchanpur	229
NGRC11454	Cowpea	बोडी	Dhankuta	1695
NGRC11455	Cowpea	बोडी	Dhankuta	1740
NGRC11456	Cowpea	कालो गाजले बोडी	Baglung	948
NGRC11457	Cowpea	रातो बोडी	Baglung	949
NGRC11458	Cowpea	कात्तिके बोडी	Lamjung	658
NGRC11459	Cowpea	कात्तिके बोडी	Syangja	818
NGRC11460	Cowpea	सिउडे बोडी	Banke	141
NGRC11461	Ricebean	मस्याङ	Gorkha	1387
NGRC11462	Ricebean	मस्याङ	Lamjung	651
NGRC11463	Ricebean	मस्याङ	Baglung	948
NGRC11464	Ricebean	मस्याङ	Sindhupalchok	1155
NGRC11465	Ricebean	मस्याङ	Khotang	1630
NGRC11466	Ricebean	मस्याङ	Lamjung	714
NGRC11467	Soybean	भटमास	Dhankuta	1695
NGRC11468	Soybean	कालो भटमास	Khotang	1630
NGRC11469	Soybean	कालो भटमास	Baglung	948
NGRC11470	Soybean	भटमास	Lamjung	740
NGRC11471	Soybean	खैरो भटमास		
NGRC11472	Lentil	मुसुरो	Lamjung	740
NGRC11473	Lentil	मुसुरो	Banke	174
NGRC11474	Lentil	मुसुरो	Banke	174
NGRC11475	Lentil	मुसुरो	Banke	175
NGRC11476	Pea	केराउ	Dailekh	
NGRC11477	Pea	केराउ	Baglung	948
NGRC11478	Pea	केराउ	Lamjung	714
NGRC11479	Pea	केराउ	Banke	174
NGRC11480	Pea	केराउ	Banke	174
NGRC11481	Pea	केराउ	Banke	174
NGRC11482	Pigeon pea	अडर	Baglung	948
NGRC11483	Pigeon pea	अडर	Syangja	818
NGRC11484	Pigeon pea	अडर	Banke	174
NGRC11485	Pigeon pea	अडर	Banke	174
NGRC11486	Wheat	गहुँ	Baglung	1005
NGRC11487	Wheat	गहुँ	Baglung	1005

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11488	Wheat	गहुँ		
NGRC11489	Horsegram	खैरो गहत	Khotang	1630
NGRC11490	Horsegram	स्थानीय गहत	Gorkha	1587
NGRC11491	Horsegram	कालो गहत	Dhankuta	1740
NGRC11492	Horsegram	स्थानीय गहत	Syangja	818
NGRC11493	Soybean	सेतो भटमास	Rasuwa	2031
NGRC11494	Soybean	लोकल भटमास	Sindhupalchok	1155
NGRC11495	Soybean	भटमास	Khotang	1630
NGRC11496	Soybean	भटमास	Khotang	1630
NGRC11497	Soybean	सेतो भटमास	Khotang	1631
NGRC11498	Soybean	सेतो भटमास	Gorkha	1587
NGRC11499	Soybean	सेतो भटमास	Baglung	948
NGRC11500	Soybean	सेतो भटमास	Lamjung	644
NGRC11501	Soybean	सेतो भटमास	Lamjung	726
NGRC11502	Soybean	कालो भट्ट	Banke	173
NGRC11503	Maize	सेतो मकै	Okhaldhunga	1250
NGRC11504	Maize	लेकाली सेतो मकै	Rasuwa	2031
NGRC11505	Maize	सेतो मकै	Rasuwa	2031
NGRC11506	Maize	सेतो मकै	Baglung	948
NGRC11507	Maize	सेतो मिक्स मकै	Lamjung	740
NGRC11508	Maize	सेतो मकै	Lamjung	1550
NGRC11509	Maize	घिउ मकै	Lamjung	616
NGRC11510	Maize	लोकल मकै	Banke	174
NGRC11511	Maize	सेतो मकै	Lamjung	714
NGRC11512	Chickpea	चना		
NGRC11513	Chickpea	चना	Banke	173
NGRC11514	Linseed	आलस	Banke	173
NGRC11515	Linseed	आलस	Banke	173
NGRC11516	Bitter gourd		Bardiya	
NGRC11517	Rapeseed	तोरी	Bardiya	
NGRC11518	Rapeseed	तोरी	Bardiya	
NGRC11519	Rapeseed	तोरी	Bardiya	
NGRC11520	Rapeseed	तोरी	Bardiya	
NGRC11521	Rapeseed	तोरी	Bardiya	
NGRC11522	Rapeseed	तोरी	Nuwakot	
NGRC11523	Rapeseed	तोरी	Nuwakot	
NGRC11524	Rapeseed	तोरी	Nuwakot	
NGRC11525	Wild Rapeseed	बाँके	Nuwakot	
NGRC11526	Mustard	तोरी	Nuwakot	

Acc. No.	Crop	**Local name**	District	Altitude, m
NGRC11527	Yellow Mustard	सर्स्यु न	Nuwakot	
NGRC11528	Yellow Mustard	सर्स्यु न	Nuwakot	
NGRC11529	Yellow Mustard	सर्स्यु न		
NGRC11530	Yellow Mustard	सर्स्यु न		
NGRC11531	Sesame	तिल		
NGRC11532	Sesame	तिल		
NGRC11533	Niger	झुसे तिल		
NGRC11534	Niger	झुसे तिल		
NGRC11535	Fennel	सौफ		
NGRC11536	Fennel	सौफ		
NGRC11537	Garden cress	चम्सुर		
NGRC11538	Garden cress	चम्सुर		
NGRC11539	Okra	भिंडी		
NGRC11540	Okra	भिंडी		
NGRC11541	Okra	भिंडी		
NGRC11542	Radish	मुला		
NGRC11543	Fenugreek	मेथी		
NGRC11544	Ash gourd	कुबिन्ड़ो		
NGRC11545	Ash gourd	कुबिन्ड़ो		
NGRC11546	Balsam apple	बरेला		
NGRC11547	Sponge Gourd	घिरौला		
NGRC11548	Sponge Gourd	घिरौला		
NGRC11549	Peanut	बदाम		
NGRC11550	Perilla	सिलाम		
NGRC11551	Perilla	सिलाम		
NGRC11552	Sunflower	सूर्यमुखी		
NGRC11553	Hump	गाजा		
NGRC11554	Proso millet	चिनो		
NGRC11555	Proso millet	चिनो		
NGRC11556	Foxtail millet	कागुनो		
NGRC11557	Jute	जुट		
NGRC11558	Jute	जुट		
NGRC11559	Finger millet	कोदो		
NGRC11560	Finger millet	कोदो		
NGRC11561	Finger millet	कोदो		
NGRC11562	Finger millet	कोदो		
NGRC11563	Finger millet	कोदो		
NGRC11564	Finger millet	कोदो		
NGRC11565	Finger millet	कोदो		

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11566	Finger millet	कोदो		
NGRC11567	Finger millet	कोदो		
NGRC11568	Finger millet	कोदो		
NGRC11569	Finger millet	कोदो		
NGRC11570	Finger millet	कोदो		
NGRC11571	Finger millet	कोदो		
NGRC11572	Finger millet	कोदो		
NGRC11573	Finger millet	कोदो		
NGRC11574	Finger millet	कोदो		
NGRC11575	Finger millet	कोदो		
NGRC11576	Finger millet	कोदो		
NGRC11577	Finger millet	कोदो		
NGRC11578	Finger millet	कोदो		
NGRC11579	Finger millet	कोदो		
NGRC11580	Finger millet	कोदो		
NGRC11581	Finger millet	कोदो		
NGRC11582	Finger millet	कोदो		
NGRC11583	Finger millet	कोदो		
NGRC11584	Finger millet	कोदो		
NGRC11585	Finger millet	कोदो		
NGRC11586	Finger millet	कोदो		
NGRC11587	Finger millet	कोदो		
NGRC11588	Finger millet	कोदो		
NGRC11589	Finger millet	कोदो		
NGRC11590	Finger millet	कोदो		
NGRC11591	Finger millet	कोदो		
NGRC11592	Finger millet	कोदो		
NGRC11593	Rice	धान		
NGRC11594	Rice	धान		
NGRC11595	Rice	धान		
NGRC11596	Rice	धान		
NGRC11597	Rice	धान		
NGRC11598	Rice	धान		
NGRC11599	Rice	धान		
NGRC11600	Rice	धान		
NGRC11601	Rice	धान		
NGRC11602	Rice	धान		
NGRC11603	Rice	धान		
NGRC11604	Rice	धान		

Acc. No.	Crop	Local name	District	Altitude, m
NGRC11605	Rice	धान		
NGRC11606	Rice	धान		
NGRC11607	Rice	धान		
NGRC11608	Rice	धान		
NGRC11609	Rice	धान		
NGRC11610	Rice	धान		
NGRC11611	Rice	धान		
NGRC11612	Rice	धान		
NGRC11613	Rice	धान		
NGRC11614	Rice	धान		
NGRC11615	Rice	धान		
NGRC11616	Rice	धान		
NGRC11617	Rice	धान		
NGRC11618	Rice	धान		
NGRC11619	Rice	धान		
NGRC11620	Rice	धान		
NGRC11621	Rice	धान		
NGRC11622	Rice	धान		
NGRC11623	Amaranthus	लट्टे		
NGRC11624	Amaranthus	लट्टे		
NGRC11625	Amaranthus	लट्टे		
NGRC11626	Amaranthus	लट्टे		
NGRC11627	Amaranthus	लट्टे		
NGRC11628	Amaranthus	लट्टे		
NGRC11629	Amaranthus	लट्टे		
NGRC11630	Amaranthus	लट्टे		
NGRC11631	Amaranthus	लट्टे		
NGRC11632	Rice	धान		
NGRC 11633	Rice	धान		
NGRC11634	Finger millet	कोदो		
NGRC11635	Finger millet	कोदो		
NGRC11636	Finger millet	कोदो		
NGRC11637	Finger millet	कोदो		
NGRC11638	Finger millet	कोदो		
NGRC11639	Finger millet	कोदो		
NGRC11640	Finger millet	कोदो		
NGRC11641	Finger millet	कोदो		
NGRC11642	Finger millet	कोदो		
NGRC11643	Finger millet	कोदो		

Acc. No.	Crop	**Local name**	District	Altitude, m
NGRC11644	Finger millet	कोदो		
NGRC11645	Finger millet	कोदो		
NGRC11646	Finger millet	कोदो		
NGRC11647	Finger millet	कोदो		
NGRC11648	Finger millet	कोदो		
NGRC11649	Finger millet	कोदो		
NGRC11650	Finger millet	कोदो		
NGRC11651	Finger millet	कोदो		
NGRC11652	Finger millet	कोदो		
NGRC11653	Finger millet	कोदो		
NGRC11654	Finger millet	कोदो		
NGRC11655	Finger millet	कोदो		
NGRC11656	Finger millet	कोदो		
NGRC11657	Finger millet	कोदो		
NGRC11658	Finger millet	कोदो		

Annex 8. 50 action points

Agrobiodiversity includes 6 components and 4 sub components (ie CALFIM: crop, aquatic, livestock, forage, agro-insect and agro-microbial agricultural genetic resources, and DSWW: Domesticated, semi domesticated, wild relatives and wild edible) and associated traditional knowledge. To conserve and utilize these genetic resources, following 50 actions should be implemented effectively across the country.

Key consideration

- Agrobiodiversity is for food, nutrition, health, business and environment security as well as for self-dependent agriculture
- Go for local, work on local, respect local & globalize local
- Let them interact with nature and each other (grow together) and expedite the evolutionary process
- Genetic diversity environment resilient (climate resilient) and sustainable agriculture

Conservation

1. Establishment and maintenance of field genebank, aqua pond genebank, livestock farm genebank, poultry farm genebank, tissue bank, DNA bank, agro gene sanctuary, agro-inset field genebank, agro-microbial field genebank, forage field genebank, herbal conservation garden, etc
2. Establishment of Raithane Nursery (for agro plantation in different occasions, giving as gift to visitors and local farmers) and organizing agro-plantation at regular interval in public areas, community forest
3. Adopting conservation through beautification (native flowering plants around offices, establishing hedge row and living fences using native APGRs) and conservation through use
4. Establishing agro-national park at least in three agroecozones, and agrobio park. Banking AGRs along the road side, city park, public institutes, etc
5. Banking AGRs in School/ College (school field genebank, school livestock farm genebank, school aqua pond genebank, school agro-insect field genebank, etc)
6. Promoting on-farm conservation (community genebank, community seed bank, community field genebank, community aqua pond genebank, community agro-park, household genebank, etc)
7. Establishment of Himalayan seed bank and safety duplication in Svalbard seed vault
8. Organizing germplasm rescue mission regularly
9. Sending valuable orthodox crop seeds along with passport data to National Genebank
10. Linkage establishment with protected areas, world heritage site, Ramsar and religious sites for conservation of AGRs

Awareness and documentation

11. Organization of agrobiodiversity fairs and food fairs
12. Promoting agrobiodiversity related culture, religious, astrology and tradition
13. Establishment of awards for agrobiodiversity conservation and utilization (agrobiodiversity rich farmers)

14. Adoption of accessioning system of germplasm in research, education and extension (availability of research findings and materials forever to all)
15. Publication of detail profile/ catalog/ passport of germplasm, genotypes, varieties, breeds and creation of their image bank and development of online database (searchable)
16. Developing agrobiodiversity index of each district and province and documenting glossary related to agrobiodiversity

Utilization and research

17. Making native AGRs/ maulik technologies competent at local, national and global levels globalizing Nepali products based on best five-traits (purity, quality, tasty, healthy and nutritious)
18. Linking primary producers directly with consumers (eg organizing Raithane hat bazar) and consideration of each farming household as shop. Establishing collection centers of each and every native and local agricultural item (products and inputs)
19. Domestication of wild agricultural genetic resources and repatriation of agricultural genetic resources
20. Developing site specific genotypes and varieties of crops, livestock, forage, agro-insects, agro-microbes and aquatic agricultural genetic resources
21. Promotion of native and local food and using such food in public function, developing and promoting site specific/ cast specific food items
22. Establishing evolutionary population (using segregating/ breeding lines as well cultivars) of all six components of agrobiodiversity
23. Giving first priority to promote nutraceutical cereals (eg 7-brother's millets) and climate smart germplasm in research, education, extension, production and consumption
24. Considering Gaushala as manure factory (different kinds of manure, compost, liquid manure, earthworm manure, etc) as well as cow farm genebank and forage field genebank
25. Promoting conservation through use and monkey protected natural farming
26. Promoting multi-commodities and multi-households commercialization system
27. Registration of native and local landraces at local/ province levels
28. Linking native products with home stay and farm stay

Policy

29. Mainstreaming red zoning and red listing system
30. Mainstreaming agrobiodiversity impact assessment (AIA) system before implementing any project
31. Strong policy formulation for storage and packing materials in nature positive materials (eg wood, clay, bamboo, leaves, barks, fiber, stone, etc)
32. Organizing regular national workshop on agrobiodiversity at 3 years interval
33. Protection and banning of endangered AGRs
34. Making research stations, agricultural fields and farms, buildings, etc agro-insect friendly, agro-microbe friendly and agro-bird friendly
35. Any native and local technologies and germlasm should automatically eligible for marketing, getting incentives and other facilities
36. In small and medium scale, native and local items should be marketed without registration in formal system and such market should be tax free

37. Market of each item (products and inputs) and year round irrigation should be guaranteed
38. Provision of IPR including geographical indication to all potential agricultural genetic resources and traditional knowledge
39. Revision of agrobiodiversity policy and IMISAP
40. Approval of Agrobiodiversity conservation and utilization bill and regulation
41. Plant variety protection and farmers' rights (PVP&FR) should be implemented
42. Access and benefit sharing legislation should be developed separately for agrobiodiversity and traditional knowledge
43. National agrobiodiversity strategy and action plan (NABSAP), including ABS implementation strategy and action plan need to prepare
44. Landraces of all genetic resources and associated knowledge should be treated as private goods
45. Establishment of system of collection of native landraces before implementing cultivation or extension of modern varieties and breeds
46. Establishing agrobio fund
47. Policy favoring agro hospital, agor clinic, and agro medical institutes
48. Requesting UN to declare international agrobiodiversity year
49. Implementing National pride project on native agrobiodiversity
50. Generating and managing DSI and integration of AI

Key references

- Joshi BK, NA Gorkhali, N Pradhan, KH Ghimire, TP Gotame, P KC, RP Mainali, A Karkee and RB Paneru. 2020. Agrobiodiversity and its Conservation in Nepal. Journal of Nepal Agricultural Research Council 6: 14-33. DOI: https://doi.org/10.3126/jnarc.v6i0.28111
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- Joshi BK, D Gauchan, B Bhandari and D Jarvis, eds. 2020. Good Practices for Agrobiodiversity Management. NAGRC, LI-BIRD and Alliance of Bioversity International and CIAT; Kathmandu, Nepal. https://cgspace.cgiar.org/server/api/core/bitstreams/34281ca6-cbc5-4ae4-9293-5f74d3e09fb2/content
- Joshi BK. 2022. 101 good practices and activities for conservation and utilization of agricultural genetic resources (AGRs). National Agriculture Genetic Resources Center, NARC, Khumaltar, Kathmandu. https://www.researchgate.net/publication/367279881

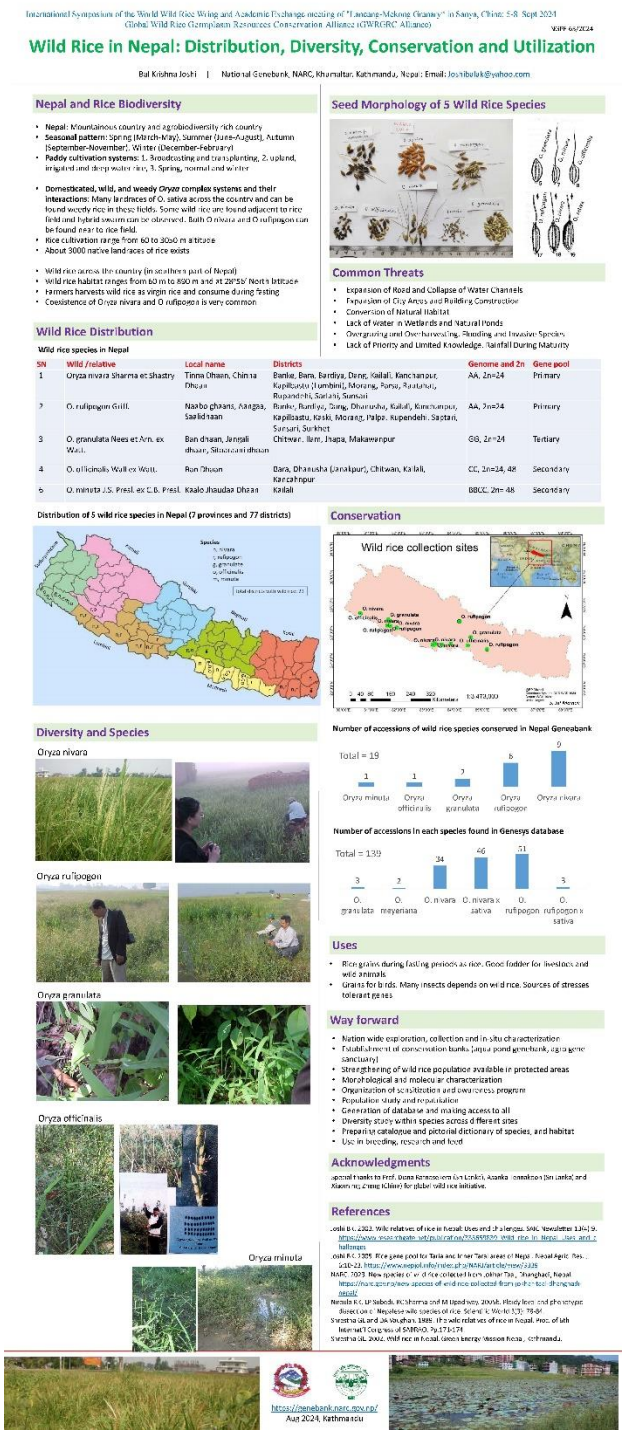
Annex 9. Poster Published in FY2081/82 (2024/25)

National Genebank day card (English)

National Genebank day card (Nepali)

On-farm project crops

NGPF-63/2024: Wild Rice in Nepal



Annex 10. Passport descriptors

Passport descriptors for Livestock Genetic Resources

Genebank-NARC, Khumaltar, PO Box 3055, Kathmandu. Tel: 01 527 5131, 527 5325. www.genebank.narc.gov.np NGF-04

Passport Descriptors for Livestock Genetic Resources

Genebank Reg. No:
Accession No:

A. SAMPLE IDENTIFICATION
Collection/ Donor number:
Livestock (English name):
Livestock (Roman Nepali):
पशुपन्क्षि (नेपाली नाम) :
पशुपन्क्षि (स्थानीय नाम) :
Genus:
Species:
Subspecies:
Ecotype:
Pedigree (parent and source):

Sex: Age:
Breed/ variety (in Nepali and local language with meaning):

B. COLLECTION SITE
Farmer's or donor's name:

I. General
Country: Province:
District: Municipality:
Ward: Village/Tole:
Distance (from ward office):
Nearest market/ famous place:
Latitude (N): Longitude (E):
Altitude (m):

II. Collection source (circle one)
a. Wild b. Farmed

III. Collection domain (circle one)
1. Mountain/Lek 2. High hill 3. Mid hill
4. Foot hill 5. Tarai & Inner Tarai

IV. Habitat
1. Shed house (stall fed) 2. Open field 3. Shed and open field 4. Natural wild 5. Plan area 6. Sloppy area 7. Rocky area 8. Riverside

V. Associated agricultural genetic resources:

C. CHARACTERIZATION AND MANAGEMENT
Breeding time: Gestation period:
Resting system:
Feeding habit:

Usages/ importance including medicinal value

Important traits and distinguishable traits:

Any problems and issues:

D. SAMPLE
I. Type of sample
1. Egg/ ova 2. Sperm 3. Young 3. Mature
4. Cryopreserved 5. Other (specify)

II. Status of sample (circle one)
1. Landrace 2. Improved 3. Wild
4. Breeder's line 5. Other (specify)

III. Original source (circle one and give name)
1. Own 2. Neighbor 3. Nature
4. Institute 5. Other (specify)

IV. From where and when it is introduced?

V. Distribution frequency (circle one)
1. Common 2. Localized 3. Rare
4. Endangered

VI. Population variability (circle one)
1. Uniform 2. Not uniform 3. Mix type

VII. Sampling area covered (m^2):

VIII. Number of sites sampled:

IX. Quantity of material (number or wt):

X. Specimen (any part): 1. Yes 2. No

XI. Photo: 1. Yes 2. No

E. OTHER OBSERVATIONS AND COMMENTS

Collector's name and institute:
Date of collection (English calendar as DD/MM/YYYY):

Genebank-NARC, Khumaltar, PO Box 3055, Kathmandu. Tel: 01 527 5131, 527 5325. www.genebank.narc.gov.np NGF-05

Genebank Reg. No:
Accession No:

Passport Descriptors for Agro-insect Genetic Resources

A. SAMPLE IDENTIFICATION
Collection/ Donor number:
Insect (English name):
Insect (Roman Nepali):
कीरा (नेपाली नाम):
कीरा (स्थानीय नाम)
Order:
Family
Genus:
Species:
Subspecies:

B. COLLECTION SITE
Farmer's or donor's name:

I. General
Country: Province:
District: Municipality:
Ward: Village/Tole:
Distance (from ward office):
Nearest market/ famous place:
Latitude (N): Longitude (E):
Altitude (m):
II. Collection source (Habitat) (circle one)
a. Wild b. Farmed/domesticated
III. Collection domain (circle one)
a. Mountain/Lek b. High hill c. Mid hill
d. Foot hill e. Tarai & Inner Tarai
f. Other

IV. Habitat
a. **Plant Surfaces**: i. Leaves ii. Stems and barkiii. Flowers and fruits iv. Root/tuber
b. Agricultural Lands: c. Grasslands
c. Forests d. Decaying Organic Matter
d. Habitats Aquatic e. Human-Made Structures
V. Associated agricultural genetic resources:

C. CHARACTERIZATION AND MANAGEMENT
a. Natural enemies
1). Parasitoid's i) Egg ii)Larva iii) Adult
Parasitoid host insect .....
2). Predator (Pray.....
3).Parasite
b. weed eaters c. Pollinator
d. Edible e. Productive
f. Used as Feed g. Selling insect
h. Entomotherapy i. Entertainment
j. Scavenger insects k. Soil-improving insects
l. Used in research m. Organic matter decomposers
n. Seed Dispersal o. Other

Special Insect Characters
a. Head type
1) Hypognathous 2) Prognathous 3) Opisthognathous
b. Mouth type
c. Wing types: d. Wings color:
e. Wings color pattern:
f. Other Special Characteristics

Usages/ importance including medicinal value

Any problems and issues:

D. SAMPLE
I. Type of Sample
a. Adult b. Larva/Nymph c. Pupa d. Egg
II. Status of sample (circle one)
a. Domesticated b. Wild c. Other (specify)
IV. From where and when it is introduced?

V. Distribution frequency (circle one)
a. Common b. Localized c. Rare
d. Endangered
VI. Population variability (circle one)
a. Uniform b. Not uniform c. Mix type
VII. Sampling area covered (m^2):

VIII. Number of sites sampled:

IX. Quantity of material (number or wt):

X. Storage Preservation/rearing Information

XI. Storage Method
a. Cryopreservation b. Dried c. Ethanol Deeping

XII. Storage Location:

XIII. Specimen (any part): a. Yes b. No

XIV. Photo: a. Yes b. No

E. OTHER OBSERVATIONS AND COMMENTS

Collector's name and institute:

Date of collection (English calendar as DD/MM/YYYY):

Wild rice (O. granulate)

Wild rice (O. nivara)

Wild rice (O. rufipogon)

Tomato diversity