

JOURNAL OF PLANT RESOURCES



Volume 24

Number 1



Government of Nepal
Ministry of Agriculture, Forest and Environment

Department of Plant Resources

Thapathali, Kathmandu, Nepal

2026



ISSN 1995 - 8579

Journal of Plant Resources, Vol. 24, No. 1

JOURNAL OF PLANT RESOURCES



Government of Nepal

Ministry of Agriculture, Forest and Environment

Department of Plant Resources

Thapathali, Kathmandu, Nepal

2026

Advisory Board

Dr. Sanjeev Kumar Rai
Mr. Mohan Dev Joshi
Mr. Saroj Kumar Chaudhary

Managing Editor

Ms. Nishanta Shrestha

Editorial Board

Prof. Dr. Sangeeta Rajbhandary
Dr. Madhu Sudan Thapa Magar
Dr. Devi Prasad Bhandari
Mr. Sukra Raj Adhikari
Mr. Pramesh Bahadur Lakhey
Ms. Monika Dahal

Date of Publication: 2026 July

Cover Photo: From top to clock wise direction.

Flower of *Gentiana depressa* D. Don (PC: Amrit KC)
Flower of *Gentiana robusta* King ex Hook.f. (PC: Amrit KC)
Flower of *Iris decora* Wall. (PC: Amrit KC)
Neottia alternifolia (King & Pantl.) Szlach. (PC: Prabin Bhandari)
Flower of *Meconopsis pinnatifolia* C.Y.Wu & H.Chuang (PC: Amrit KC)
Flower of *Rhododendron lepidotum* Wall. ex G.Don (PC: Amrit KC)

© All rights reserved

Department of Plant Resources (DPR)
Thapathali, Kathmandu, Nepal
Tel: 977-1-5351160, 5351161, 5368246, E-mail: info@dpr.gov.np, www.dpr.gov.np

Citation:

Name of the author. (Year of publication). Title of the paper, *Journal of Plant Resources*, 24(1), pages.

ISSN: 1995-8579

Published By:

Publicity and Documentation Section
Department of Plant Resources (DPR), Thapathali, Kathmandu, Nepal.

Reviewers:

Dr. Dipesh Pyakurel	Dr. Prabin Bhandari	Dr. Rajendra K.C.
Dr. Gaurav Parmar	Mr. Pradip Thapa	Associate Prof. Dr. Surya Kant Kalauni
Dr. Himal Timalisina	Associate Prof. Dr. Rajendra Gyawali	Dr. Tirth Raj Pandey
Dr. Keshab Raj Rajbhandari		

The issue can be retrieved from

<http://www.dpr.gov.np>

<http://www.nepjol.info>

Editorial

It is our pleasure to bring out the current issue of Journal of Plant Resources, Volume 24, Number 1, Year 2026, a continuation of research publication by the Department of Plant Resources. Three peer reviewed articles based on original research and one review articles have been incorporated in this issue. The articles have been categorized as plant taxonomy, vegetation ecology, crop production and management and CITES. This issue intends to cover the research activities of the department as well as of other research organizations. We encourage the young researchers to pursue quality research and contribute to build scientific knowledge on plant resources. We would like to establish a link between the inference of scientific research and societies through dissemination of knowledge and information. We believe that the research findings will be useful to the scientific community as well as general public to update the information on recent activities & development of plant science in Nepal.

We would like to thank all peer reviewers whose critical comments and suggestions has helped to improve the quality of the journal. We would like to acknowledge the contribution of the contributors for their interest in publishing their valued work in this journal and looking forward for further cooperation and collaboration with this department.

We would like to apologize in advance for any mistakes in this issue and at the same time promise to improve the future issues based on your valued input.

.

Notes on the Botanical Expedition to Makalu-Barun National Park (Eastern Nepal), with Two New Records for the Flora of Nepal

Amrit KC¹ & Prabin Bhandari^{2*}

¹National Herbarium and Plant Laboratories (KATH), Godawari, Lalitpur, Nepal

²Amrit Campus, Tribhuvan University, Kathmandu, Nepal

*Email: prabinkb02@gmail.com

Received: 21 Jan 2026

Revised: 30 March 2026

Accepted: 21 May 2026

Published: 2 July 2026

Abstract

A botanical exploration was carried out in August 2021 in the Arun and Barun Valleys of Makalu Barun National Park, Sankhuwasabha District, Koshi Province, Eastern Nepal, to document the gymnosperm and angiosperm diversity along an elevational gradient from 700 to 4,800 meters. A total of 179 plant specimens were collected, representing 150 species of gymnosperms and angiosperms, belonging to 39 families and 89 genera. The flora was dominated by Cyperaceae, Orchidaceae, Asteraceae, and Gentianaceae. Notably, two species endemic to Nepal (*Carex esbirajbhandarii* and *Swertia barunensis*) were collected, along with the Himalayan endemic *Begonia flagellaris* (Balsaminaceae). Two rare mycoheterotrophic orchids (*Cyrtosia lindleyana* and *Epipogium aphyllum*) and several protected species (*Abies spectabilis*, *Gnetum montanum* and *Neottia tenuis*) were also collected. The expedition resulted in two taxa newly reported for the flora of Nepal: *Hoya globulosa* (Apocynaceae) and *Neottia alternifolia* (Orchidaceae), extending their known geographical ranges. These findings update floristic information of the Makalu Barun National Park, highlighting its conservation importance, and emphasize the need for continued botanical exploration to support initiatives such as the Flora of Nepal project.

Keywords: Botanical exploration, Eastern Himalaya, Endemic species, Flora of Nepal, *Hoya globulosa*, *Neottia alternifolia*

Introduction

Botanical exploration is crucial for documenting biodiversity. In Eastern Nepal, botanical exploration dates back to the mid-nineteenth century, when the British botanist Joseph Dalton Hooker visited the Mai Valley of Ilam and the Tamur Valley of Taplejung District in 1848 (Hooker, 1854; Rajbhandari, 2016; Rajbhandari et al., 2020). Since then, numerous national and international plant explorers have visited Eastern Nepal, notably Banerjii (1958), Zimmerman (1954-1956), Stainton, who visited the Arun and Tamur Valleys in 1956, and Hara and other Japanese colleagues, in collaboration with the Department of Medicinal Plants, since 1963 (Rajbhandari, 2016). These successive botanical explorations resulted in the collection of hundreds of thousands of plant specimens, which are now deposited in national and international herbaria worldwide (Shrestha et al., 2022). Based on these collections, several local floras were published through the collaborative efforts of Nepalese and international researchers,

including Flora of Eastern Himalaya (Hara, 1966, 1971; Ohashi, 1975), Alpine Flora of Jaljale Himal, East Nepal (Ohba & Akiyama, 1992), and Flora of Hinku and Hunku Valleys, East Nepal (Ohba & Ikeda, 2000). Collectively, these explorations established Eastern Nepal as one of the major centres of plant diversity in the country, harboring more than 3,400 species of flowering plants, 2% of which are endemic to eastern Nepal (Rajbhandari et al., 2020).

Sankhuwasabha is one of the floristically rich districts of Nepal (Bhandari, 2024a; Pendry et al., 2018), benefiting from several plant expeditions conducted over different periods (Rajbhandari, 2016). Stainton explored the Arun Valley in 1956 and collected over 50 plant specimens. Similarly, Banerjii, Upadhaya, and Barchola visited the Arun Valley in 1965 and collected around 100 plant specimens (National Herbarium and Plant Laboratories [KATH], 2026).

Tabata and his team visited several districts of Eastern Nepal, including Sankhuwasabha, in 1978

(Rajbhandari, 2016). In October 1981, a team led by C. Grey-Wilson explored Makalu Barun National Park, during which several new species were described. In 1988, a team from the University of Tokyo led by M. Suzuki explored the Arun and Barun Valleys and collected over 800 plant specimens. Similarly, another team led by M. Minaki collected more than 400 dried plant specimens from the Arun and Barun Valleys in 1990. In 1991, ‘Edinburgh Makalu Expedition 1991’ was organized, led by D.G. Long, with over 400 plant specimens collection from the Arun and Barun Valleys of Sankhuwasabha District. In October 2013, M.L. Pathak and his team visited lower Sankhuwasabha and collected the rare *Gnetum montanum* Markgr. (barcode: KATH022173). In 2018, a team from the Department of Plant Resources visited the Milke-Tinjure areas of Sankhuwasabha District (Rajbhandari et al., 2020). All these efforts have resulted in the collection and preservation of over 5,000 plant specimens from Sankhuwasabha District at KATH (KATH, 2026). Among these, Rajbhandari et al. (2020) cited 698 plant species from Sankhuwasabha District in the book “Flowering Plants of Province No. 1, East Nepal”.

The above account highlights the long history of botanical exploration and the remarkable floristic richness of Sankhuwasabha District. Nevertheless, floral wealth has not been thoroughly documented despite large historical collections, and a number of plant hotspots have not been revisited. In particular, updated information on endemic and narrowly distributed plant species from the Makalu Barun Valley remains limited. To address this gap, a botanical expedition was conducted by the Department of Plant Resources in August 2021 in Makalu Barun National Park, with the objective of retracing the routes of earlier explorations and documenting endemic, rare and common plant species from the region.

Materials and Methods

Study area

The present study was carried out in the Arun and Barun Valleys of the Makalu Barun National Park (MBNP), Sankhuwasabha District, Koshi Province, Eastern Nepal (Figure 1). Makalu Barun

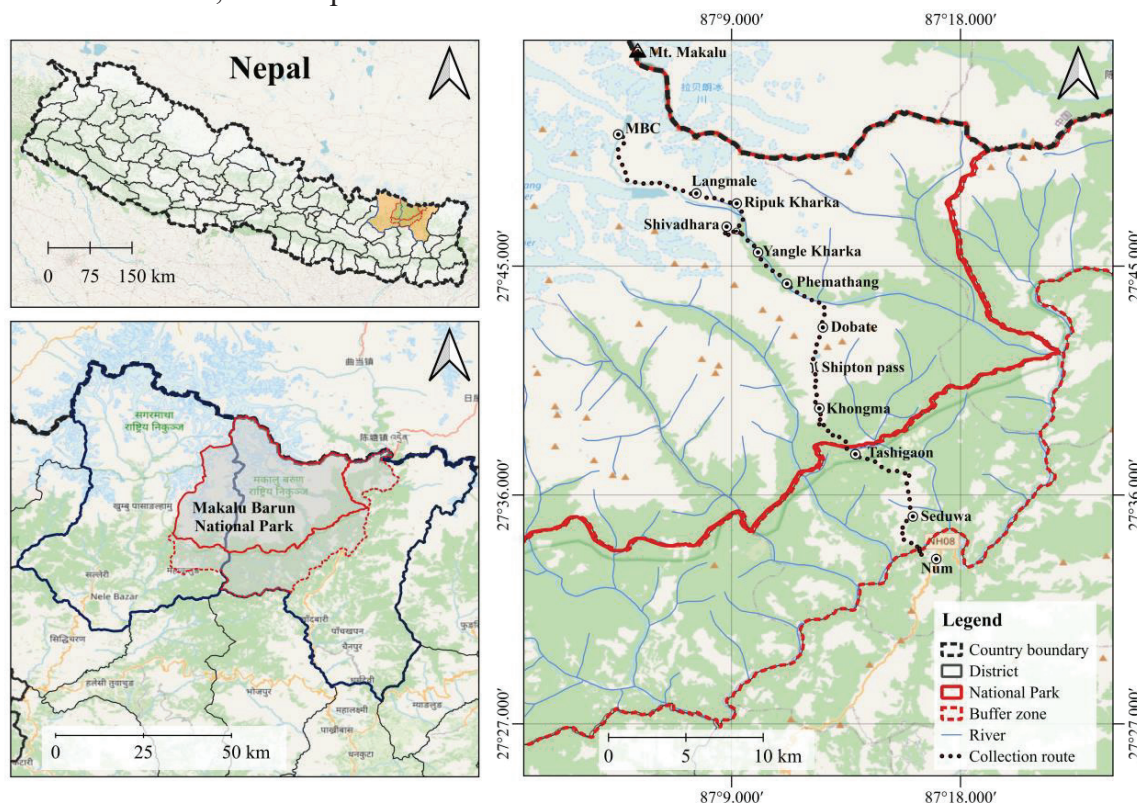


Figure 1: Map of Makalu Barun National Park, Sankhuwasabha District, Nepal, showing the collection route

National Park was established in 1992 and covers an area of 1500 km². The park spans an exceptional elevational range from about 400 meter to over 8000 meter above sea level, making it one of the world's longest elevational gradient within a protected area (Department of National Parks and Wildlife Conservation [DNPWC], 2019).

This park is famous for its geographical and natural features and includes several world-famous Himalayan peaks, such as Mt. Makalu (8463 m), and Mera Peak (6654 m). The park exhibits a wide range of climatic zones from warm tropical at low elevation, to subtropical, temperate and alpine climates at higher elevations. It provides prime habitat for the iconic Red Panda (*Ailurus fulgens*), along with several rare mammals and bird species. Floristically, the area supports more than two dozens of wild *Rhododendron* species (Shrestha et al., 1990), as well as rare taxa such as *Gnetum montanum*, and the primitive angiosperm *Tetracentron sinense* Oliv.

Collection of herbarium specimens

A team led by the Department of Plant Resources (DPR) visited the Makalu Barun National Park, Sankhuwasabha District between 28 August and 09 September 2021. Flowering and fruiting plant specimens were collected along an elevational gradient ranging from 700 meter to 4800 meter above sea level. The lowest elevation represents the Arun River bank near Seduwa, while the highest elevation was reached near Makalu Base Camp. Fresh specimens were collected in polythene bags, and subsequently pressed in the herbarium press. Upon return to KATH, the specimens were dried using a heat-drying method.

Plant identification and nomenclature

The pressed and dried specimens were identified using protologues, standard floristic literature (Bhandari, 2024b; Hara, 1966, 1971; Hara et al., 1978-1982; Hooker, 1885; Li et al., 1995; Ohashi, 1975; Ohba & Akiyama, 1992; Pearce & Cribb, 2002; Polunin & Stainton, 1984; Rajbhandari et al., 2022; Shrestha et al., 2022; Watson, 1999; Watson

et al., 2011), comparison with herbarium specimens at KATH, examination of online images from the Natural History Museum (BM), the Royal Botanic Garden Edinburgh (E) and the Herbarium of the Tokyo University (TI), and expert consultation. Plant nomenclature follows the International Plant Names Index (<https://www.ipni.org/>) and Plants of the World Online (<https://powo.science.kew.org/>). All the collected and identified plant specimens are deposited at KATH.

Results and Discussion

The botanical exploration conducted in August 2021 resulted in the collection of a total of 179 plant specimens from the Makalu Barun National Park of Sankhuwasabha District. Based on critical examination and identification, this study reports three species of gymnosperms (3 genera and 3 families) and 176 species of angiosperms (86 genera, 36 families) (Appendix 1). The collection was dominated by Cyperaceae (27 species), followed by Orchidaceae (26 species), Asteraceae (16 species), Gentianaceae (9 species) and other families (Appendix 1). Among the life forms, herbs dominated the collection with 167 species, followed by shrubs (8 species) and trees (4 species).

Among the recorded taxa, two species endemic to Nepal: *Carex esbirajbhandarii* (Rajbh. & H. Ohba) O. Yano, (Cyperaceae), and *Swertia barunensis* Chassot (Gentianaceae) were collected during this study. *Carex esbirajbhandarii* was previously reported from Ramechhap and Solukhumbu Districts (Rajbhandari & Rai, 2017), and the present collection represents the eastern most record of this species. *Swertia barunensis* was originally described from Sankhuwasabha District (Chassot, 2003), and the present collection reconfirms their occurrence from the type locality. In addition, *Begonia flagellaris* H. Hara (Balsaminaceae), a Himalayan endemic species, was collected from the Tashigaon area, Arun Valley. The occurrence of these endemic species highlights the biogeographic significance of the Makalu Barun National Park as an important refuge for narrowly distributed Himalayan flora.

Furthermore, two rare mycoheterotrophic orchid species, *Cyrtosia lindleyana* Hook.f. & Thomson and *Epipogium aphyllum* Sw., were collected during the expedition. *Cyrtosia lindleyana*, previously reported from Kalikot, Kaski and Sankhuwasabha Districts (KATH, 2026; Rajbhandari & Rai, 2017; Shrestha et al., 2022), is here recollected from Sankhuwasabha District after a gap of 30 years. *Epipogium aphyllum*, previously known only from Dolpa District, Western Nepal (Rajbhandari & Rai, 2017), is reported here for the first time from Eastern Nepal. The presence of these species is ecologically noteworthy, as mycoheterotrophic orchids are strongly associated with mature, undisturbed forest ecosystems characterized by complex fungal networks (Besi et al., 2023; Roy et al., 2009). This expedition also resulted in the collection of several protected plant species including *Abies spectabilis* (D.Don) Mirb. (IUCN: Near Threatened) *Gnetum montanum* (CITES appendix III), and *Neottia tenuis* (Lindl.) Szlach. (CITES appendix II). Other notable collections of medicinal importance include *Aconitum spicatum* (Brühl) Stapf, *Dactylorhiza hatagirea* (D.Don) Soó, *Fritillaria cirrhosa* D.Don, *Neopicrorhiza scrophulariiflora* (Pennell) D.Y.Hong, and *Podophyllum hexandrum* Royle.

One of the major outcomes of the present expedition is the documentation of the two taxa as new records for the flora of Nepal: *Hoya globulosa* Hook.f. ex Dean (Apocynaceae) and *Neottia alternifolia* (King & Pantl.) Szlach. (Orchidaceae). *Scleria terrestris* (L.) Fassett (Cyperaceae), which represents the first collection from Eastern Nepal (Rajbhandari & Rai, 2017; Shrestha et al., 2022), was collected above Arun River bridge, near Seduwa. The discovery of these taxa represents an extension of their known geographical ranges and highlights the importance of botanical exploration, even in historically explored regions.

New records for the Flora of Nepal

1. *Hoya globulosa* Hook.f. ex Dean, Fl. Mag. (London) n.s., 9(no. 102): [list of illustr.], t. 406 (1880). Figure 2A, 3A.

Note: *Hoya globulosa* was previously known from northeast India, Bhutan, China, Laos, and Vietnam (Li, 1995; Plant of World Online[POWO], 2026; Watson, 1999); its collection from Eastern Nepal extends its known western distribution limit. This species is an extensive climber, recognized by having oblong leaves, which are relatively larger, more than 3 cm wide, primary veins not perpendicular to midrib, and the flowers are pubescent and densely arranged in globose umbels (Li, 1995; Watson, 1999). Among the Nepali members of *Hoya*, *H. globulosa* is morphologically similar to *H. fusca*, but differs in leaves with primary veins not perpendicular to the midrib (vs. perpendicular) and creamy-yellow corolla (vs. yellow-brown).

Collection details: Eastern Nepal, Koshi Province, Sankhuwasabha District, Seduwa, near Arun River bridge, 942 m, 08 September 2021, A. KC, P. Bhandari, T.R. Pandey and D. Dawadi MB195 (KATH175629). Sankhuwasabha District, Arun Valley, 700 m, 27 May 2011, M.L. Pathak & L.R. Tharu 20110505 (KATH118191).

2. *Neottia alternifolia* (King & Pantl.) Szlach., Fragm. Florist. Geobot. Supp. 3: 117. (1995); *Listera alternifolia* King & Pantl., J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 126 (1896). Figure 2B, 3B.

Note: The present report of *Neottia alternifolia*, previously recorded from Lachen Valley, Sikkim (Pearce & Cribb 2002), Arunachal Pradesh (Bhaumik & Pathak 2003), and Yunnan Province, China (Jin et al., 2014), represents the western most distributional record of the species. This species is distinguished by its alternate leaves well above ground on a long stem. The rachis is puberulous, floral bracts are ovate-lanceolate, and labellum is narrowly oblanceolate to oblong, with the epichile shortly bilobed (Pearce & Cribb, 2002). Morphologically, it resembles *N. longicaulis*, but differs having alternate or subopposite leaves (vs. opposite leaves).

Collection details: Eastern Nepal, Koshi Province, Sankhuwasabha District, Dobate-Phemathang, 3440 m, 02 September 2021, A. KC, P. Bhandari, T.R. Pandey and D. Dawadi MB083 (KATH175672).



Figure 2: Plant habit, **A.** *Hoya globulosa*; **B.** *Neottia alternifolia* (Photographed by P. Bhandari, September 2021)



Figure 3. Herbarium specimen, **A.** *Hoya globulosa*; **B.** *Neottia alternifolia*

Conclusion

The present floral exploration of the Makalu Barun National Park resulted in the collection of three gymnosperms and 147 angiosperms species of considerable taxonomical and ecological importance. The discovery of new national records, along with range expansion of endemic plant species suggests more exploration is needed even in the historically well-explored region.

Author Contributions

A. KC did field work, specimens curation and digitization, and final editing. P. Bhandari did field work, plant identification, preparation of draft and final editing.

Acknowledgements

The authors are grateful to the Department of Plant Resources, Thapathali, Kathmandu for granting permission and providing institutional support for this research. We sincerely thank the Director General and Deputy Director General of Department of Plant Resources at the time of the study. We are also thankful to KATH, and its then Chief, Mr. Subhash Khatri, for facilitating our visit to Makalu Barun National Park. Mr. Diwakar Dawadi is gratefully acknowledged for managing field logistics and coordinating fieldwork activities. Dr. Tirtha Raj Pandey is acknowledged for his active engagement during plant collection and for his expert opinion on orchid species identification. Mr. Yagya R. Paneru is thanked for his assistance in preparing herbarium labels. We also acknowledge the Department of National Parks and Wildlife Conservation and officers of Makalu Barun National Park, Khandbari, Sankhuwasabha, for granting research permission and supporting our fieldwork.

References

- Banerji, M. L. (1958). Botanical exploration in East Nepal. *Journal of Bombay Natural History Society*, 55, 37-41.
- Besi, E. E., Mustafa, M., Yong, C. S. Y., & Go, R. (2023). Habitat ecology, structure influence diversity, and host-species associations of wild orchids in undisturbed and disturbed forests in Peninsular Malaysia. *Forests*, 14(3), 544. <https://doi.org/10.3390/f14030544>
- Bhandari, P. (2024a). Angiosperm diversity in Nepal. In M. B. Rokaya, & S. R. Sigdel (Eds.), *Flora and Vegetation of Nepal* (pp. 279-298). Springer International Publishing. https://doi.org/10.1007/978-3-031-50702-1_11
- Bhandari, P. (2024b). *A taxonomic study of the family Cyperaceae in Nepal* [Unpublished doctoral dissertation]. University of Chinese Academy of Sciences.
- Bhaumik, M., & Pathak, M. K. (2004). *Neottia alternifolia* (King & Pantl.) Szlach., A new orchid record to Arunachal Pradesh. *Journal of the Orchid Society of India*, 18 (1-2), 1-59.
- Chassot, P. (2003). A new species of *Swertia* L. (Gentianaceae) from Nepal. *Botanical Journal of the Linnean Society*, 141, 389-394. <https://doi.org/10.1046/j.1095-8339.2003.00144.x>
- Department of National Parks and Wildlife Conservation (2019). *Makalu Barun National Park*. https://giwmscdnone.gov.np/media/pages/files/Makalu%20Barun%20National%20Park%20Brochure_pmlafji.pdf
- Hara, H. (Ed.). (1966). *The flora of Eastern Himalaya*. The University of Tokyo.
- Hara, H. (Ed.). (1971). *The flora of Eastern Himalaya*, second report. The University of Tokyo.
- Hara, H., Stearn, W. T., & Williams, L. H. J. (1978). *An enumeration of the flowering plants of Nepal* (Vol. 1). The British Museum (Natural History).
- Hara, H., & Williams, L. H. J. (1979). *An enumeration of the flowering plants of Nepal* (Vol. 2). The British Museum (Natural History).
- Hara, H., Chater, A. O., & Williams, L. H. J. (1982). *An enumeration of the flowering plants of Nepal* (Vol. 3). The British Museum (Natural History).

- Hooker, J. D. (1854). *Himalayan journals; or notes of a naturalist, in Bengal, the Sikkim and Nepal Himalayas, the Khasia Mountains* (Vols. I & II). John Murray.
- Hooker, J. D. (1885). Asclepiadaceae. In J. D. Hooker (Ed.), *The flora of British India* (Vol. 4, pp. 1-78). Reeve and Co.
- Jin, W. T., He, J. H., Zhu, Z. M., & Jin, X. H. (2014). Additional notes on orchids from China. *Journal of Tropical and Subtropical Botany*, 22, 34-37.
- National Herbarium and Plant Laboratories. (2026). Plant Database Online. Retrieved January 9, 2026, from <https://plantdatabase.kath.gov.np>
- Li P.T., Gilbert M. G., & Stevens W. D. (1995). Asclepiadaceae. In Z.Y. Wu, & P. H. Raven (Eds.), *Flora of China* (Vol. 16, 189-270). Science Press and Missouri Botanical Garden Press.
- Ohashi, H. (1975). *Flora of Eastern Himalaya, third report*. The University of Tokyo.
- Ohba, H., & Akiyama, S. (1992). *The alpine flora of the Jaljale Himal, East Nepal*. The University of Tokyo.
- Ohba, H., & Ikeda, H. (Eds.). (2000). *Flora of Hinku and Hunku Valleys, East Nepal*. The University of Tokyo.
- Pearce, N., & Cribb, P. (2002). *The orchids of Bhutan*. Royal Botanic Garden Edinburgh & Royal Government of Bhutan.
- Pendry, C. A., Ikeda, H., Pandey, J., Gudkova, P., Hinchliffe, W., & Jackson, M. (2018). Plant collecting in Bajura District, Far West Nepal, August 2017. *Newsletter of Himalayan Botany*, 50, 1-10.
- Polunin, O., & Stainton, A. (1984). *Flowers of the Himalaya*. Oxford Press.
- Plants of the World Online. (2026). Facilitated by the Royal Botanic Gardens, Kew. Retrieved January 9, 2026, from <https://powo.science.kew.org/>
- Rajbhandari, K. R. (2016). History of botanical explorations in Nepal: 1802-2015. In P. K. Jha, M. Siwakoti, & S. Rajbhandary (Eds.), *Frontiers of Botany* (pp. 1-99). Central Department of Botany, Tribhuvan University.
- Rajbhandari, K. R., & Rai, S. K. (2017). *A handbook of the flowering plants of Nepal* (Vol. 1). Department of Plant Resources.
- Rajbhandari, K. R., Rai, S. K., & Chhetri, R. (2022). *A handbook of the flowering plants of Nepal* (Vol. 4). National Herbarium and Plant Laboratories.
- Rajbhandari, K. R., Tamang, R., Chhetri, R., Khatri, S., Joshi, M. D., & Rai, S. K. (2020). *Flowering plants of Province No. 1, East Nepal*. Ministry of Industry, Tourism, Forest and Environment, Province No. 1.
- Roy, M., Watthana, S., Stier, A., Richard, F., Vessabutr, S., & Selosse, M. A. (2009). Two mycoheterotrophic orchids from Thailand tropical dipterocarpacean forests associate with a broad diversity of ectomycorrhizal fungi. *BMC biology*, 7(1), 51.
- Shrestha, K. K., Bhandari, P., & Bhattarai, S. (2022). *Plants of Nepal (Gymnosperms and Angiosperms)*. Heritage Publishers & Distributors.
- Shrestha, T. B., Sakya, R., & Nepali, H. S. (1990). *Scientific report on field survey of 1989: General and phyto-ecology working paper no. 8*. Makalu-Barun conservation project, Department of National Parks & Wildlife Conservation.
- Watson, M. F. (1999). Asclepiadaceae. In A. J. C., Grierson, & D. G., Long (Eds.), *Flora of Bhutan* (Vol. 2(2), 687-733). Royal Botanic Garden Edinburgh and Royal Government of Bhutan.
- Watson, M. F., Akiyama, S., Ikeda, H., Pendry, C., Rajbhandari, K. R., & Shrestha, K. K. (Eds.). (2011). *Flora of Nepal* (Vol. 3) (*Magnoliaceae - Rosaceae*). Royal Botanic Garden Edinburgh.
- Zimmermann, A. (1954-1956). Résultats des expéditions scientifiques genevoises au Népal en 1952 et 1954: partie botanique: 1, Itinéraires. *Candollea*, 15(1954-1956), 129-147.

Appendix 1 : Detail of the plant species collected during the expedition

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
Gymnosperms							
1	Cupressaceae	<i>Juniperus indica</i> Bertol.	Shrub	3665–4015	Ripuk Kharka–Yangle Kharka	2021.09.06	A. KC et al. MB160 (KATHI 76844)
2	Gnetaceae	<i>Gnetum montanum</i> Markgr.	Shrub	942	near Arun bridge, Seduwa–Num	2021.09.08	A. KC et al. MB194 (KATHI 76914)
3	Pinaceae	<i>Abies spectabilis</i> (D.Don) Mirb.	Tree	3665–4015	Ripuk Kharka–Yangle Kharka	2021.09.06	A. KC et al. MB158 (KATHI 76791)
Angiosperms							
4	Acanthaceae	<i>Thunbergia coccinea</i> Wall. ex D.Don	Climbing herb	1870	Khandari–Num	2021.08.28	A. KC et al. MB003 (KATHI 76930)
5	Aceraceae	<i>Acer pectinatum</i> Wall. ex Brandis	Tree	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB076 (KATHI 76857)
6	Apiaceae	<i>Sinocarum clarkeanum</i> P.K.Mukh. & Constance	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB167 (KATHI 76855)
7	Apiaceae	<i>Oreocome candollei</i> (DC.) Edgew.	Herb	4195	Keke La	2021.09.07	A. KC et al. MB174 (KATHI 76769)
8	Apocynaceae	<i>Hoya globulosa</i> Hook.f. ex Dean	Climbing herb	942	near Arun river bridge, Seduwa–Num	2021.09.08	A. KC et al. MB195 (KATHI 75629)
9	Asteraceae	<i>Leontopodium himalayanum</i> DC.	Herb	3790–4405	Nehe Kharka–Shiva Dhara	2021.09.03	A. KC et al. MB103 (KATHI 76826)
10	Asteraceae	<i>Saussurea eriostemon</i> Wall. ex C.B.Clarke	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB111 (KATHI 76787)
11	Asteraceae	<i>Dubyaea hispida</i> DC.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB113 (KATHI 76834)
12	Asteraceae	<i>Taraxacum eriopodium</i> (D.Don) DC.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB114 (KATHI 76835)
13	Asteraceae	<i>Erigeron multiradiatus</i> (Lindl. ex DC.) Benth. & Hook.f.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB115 (KATH)
14	Asteraceae	<i>Anaphalis nepalensis</i> (Spreng.) Hand.-Mazz.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB118 (KATHI 76848)
15	Asteraceae	<i>Leontopodium jacotianum</i> Beauverd	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB123 (KATHI 76846)
16	Asteraceae	<i>Youngia racemifera</i> (Hook.f.) Babc. & Stebbins	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB124 (KATHI 76845)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
17	Asteraceae	<i>Allardia glabra</i> Decne.	Herb	4844	MBC	2021.09.05	A. KC et al. MB144 (KATHI 76842)
18	Asteraceae	<i>Hippolytia gossypina</i> (Hook.f. & Thomson ex C.B.Clarke) C.Shih	Herb	4844	MBC	2021.09.05	A. KC et al. MB146 (KATHI 76897)
19	Asteraceae	<i>Soroiseris pumila</i> Stebbins	Herb	4844	MBC	2021.09.05	A. KC et al. MB149 (KATHI 76868)
20	Asteraceae	<i>Melanoseris lessertiana</i> (DC.) Decne.	Herb	4450–4695	Merek–Langmale	2021.09.05	A. KC et al. MB157 (KATHI 76852)
21	Asteraceae	<i>Tanacetum atkinsonii</i> (C.B.Clarke) Kitam.	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB164 (KATH)
22	Asteraceae	<i>Cremanthodium pinnatifidum</i> Benth.	Herb	4240–4046	Shipton La–Sano Pokhari	2021.09.07	A. KC et al. MB170 (KATHI 76894)
23	Asteraceae	<i>Cremanthodium reniforme</i> (DC.) Benth.	Herb	4240–4046	Shipton La–Sano Pokhari	2021.09.07	A. KC et al. MB171 (KATHI 76896)
24	Asteraceae	<i>Jacobaea raphanifolia</i> (Wall. ex DC.) B.Nord.	Herb	4240–3624	Shipton La–Khongma	2021.09.07	A. KC et al. MB175 (KATHI 76854)
25	Asteraceae	<i>Saussurea eriostemon</i> Wall. ex C.B.Clarke	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB189 (KATHI 76831)
26	Balsaminaceae	<i>Impatiens bicornuta</i> Wall.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB011 (KATHI 76774)
27	Balsaminaceae	<i>Impatiens prainii</i> Hook.f.	Herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	A. KC et al. MB043 (KATHI 76779)
28	Balsaminaceae	<i>Impatiens stenantha</i> Hook.f.	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB078 (KATHI 76812)
29	Balsaminaceae	<i>Impatiens laxiflora</i> Edgew.	Herb	3510–3863	Vhremathang–Dobate	2021.09.07	A. KC et al. MB163 (KATHI 76767)
30	Balsaminaceae	<i>Impatiens occultans</i> Hook.f.	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB166 (KATHI 76895)
31	Begoniaceae	<i>Begonia hatacoa</i> Buch.-Ham. ex D.Don	Herb	942	near Arun river bridge, near Seduwa	2021.08.29	A. KC et al. MB007 (KATHI 76926)
32	Begoniaceae	<i>Begonia flagellaris</i> H.Hara	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB012 (KATHI 76927)
33	Begoniaceae	<i>Begonia gemmipara</i> Hook.f. & Thomson	Herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	A. KC et al. MB047 (KATHI 76799)
34	Berberidaceae	<i>Podophyllum hexandrum</i> Royle	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB110

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
35	Campanulaceae	<i>Pseudocodon convolvulaceus</i> (Kurtz) D.Y.Hong & H.Sun	Climbing herb	3608–3875	Khongma – Khongma La	2021.09.01	(KATHI76773) A. KC et al. MB054 (KATH)
36	Campanulaceae	<i>Codonopsis benthamii</i> Hook.f. & Thomson	Climbing herb	3608–3875	Khongma – Khongma La	2021.09.01	A. KC et al. MB054a (KATHI76785)
37	Campanulaceae	<i>Pseudocodon convolvulaceus</i> (Kurtz) D.Y.Hong & H.Sun	Herb	3790	Nehe Kharka	2021.09.03	A. KC et al. MB088 (KATHI76780)
38	Campanulaceae	<i>Cyananthus pedunculatus</i> C.B.Clarke	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB116 (KATHI76906)
39	Campanulaceae	<i>Cyananthus incanus</i> Hook.f. & Thomson	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB153 (KATHI76805)
40	Caryophyllaceae	<i>Stellaria sikkimensis</i> Hook.f.	Herb	2930	Danda Kharka	2021.08.31	A. KC et al. MB045 (KATHI76839)
41	Caryophyllaceae	<i>Stellaria decumbens</i> Edgew.	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB082 (KATHI76840)
42	Caryophyllaceae	<i>Eremogone bryophylla</i> (Fernald) Pusalkar & D.K.Singh	Herb	4695	Shershung	2021.09.05	A. KC et al. MB154 (KATHI76851)
43	Crassulaceae	<i>Rhodiola fastigiata</i> (Hook.f. & Thomson) S.H.Fu	Herb	4844	MBC	2021.09.05	A. KC et al. MB143 (KATHI76772)
44	Cyperaceae	<i>Bulbostylis densa</i> (Wall.) Hand.–Mazz.	Herb	1870	Khandari–Num	2021.08.28	A. KC et al. MB002 (KATHI76931)
45	Cyperaceae	<i>Scleria terrestris</i> (L.) Fassett	Herb	785	on the way to Seduwa	2021.08.29	A. KC et al. MB008 (KATHI76928)
46	Cyperaceae	<i>Carex baccans</i> Nees	Herb	1700–1978	Seduwa–Chyaksedanda	2021.08.30	A. KC et al. MB025 (KATHI76802)
47	Cyperaceae	<i>Fimbristylis complanata</i> (Retz.) Link	Herb	1700–1978	Seduwa–Chyaksedanda	2021.08.30	A. KC et al. MB026 (KATHI76804)
48	Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl	Herb	1700–1978	Seduwa	2021.08.30	A. KC et al. MB027 (KATHI76880)
49	Cyperaceae	<i>Eleocharis congesta</i> D.Don	Herb	1700–1978	Seduwa	2021.08.30	A. KC et al. MB028 (KATHI76808)
50	Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl	Herb	1700–1978	Seduwa	2021.08.30	A. KC et al. MB029 (KATHI76903)
51	Cyperaceae	<i>Carex rara</i> Boott	Herb	3608	near Khongma	2021.08.31	A. KC et al. MB030 (KATHI76901)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
52	Cyperaceae	<i>Carex rochebrunii</i> Franch. & Sav.	Herb	3608	near Khongma	2021.08.31	A. KC et al. MB031 (KATHI 76882)
53	Cyperaceae	<i>Carex himalaica</i> T.Koyama	Herb	3608	near Khongma	2021.08.31	A. KC et al. MB032 (KATHI 76881)
54	Cyperaceae	<i>Carex harae</i> (Rajbh. & H.Ohba) O. Yano	Herb	3300	Tasigaon–Khongma	2021.08.31	A. KC et al. MB033 (KATHI 76879)
55	Cyperaceae	<i>Carex rochebrunii</i> Franch. & Sav.	Herb	2100–3608	Tasigaon–Khongma	2021.08.31	A. KC et al. MB034 (KATHI 76878)
56	Cyperaceae	<i>Carex cercostachys</i> Franch.	Herb	4240	Shipton La	2021.09.01	A. KC et al. MB055 (KATHI 76904)
57	Cyperaceae	<i>Carex himalaica</i> T.Koyama	Herb	4240	Shipton La	2021.09.01	A. KC et al. MB056 (KATHI 76823)
58	Cyperaceae	<i>Carex uncinoides</i> Boott	Herb	4240–4192	Shipton La–Keke La	2021.09.01	A. KC et al. MB057 (KATHI 76824)
59	Cyperaceae	<i>Carex himalaica</i> T.Koyama	Herb	4240–4192	Shipton La–Keke La	2021.09.01	A. KC et al. MB059 (KATHI 76824)
60	Cyperaceae	<i>Carex cruenta</i> Nees	Herb	3858–4195	Keke La–Dobate	2021.09.01	A. KC et al. MB061 (KATHI 76861)
61	Cyperaceae	<i>Carex gracilentia</i> Boott ex Boeckeler	Herb	3875–4240	Khongma La–Shipton La	2021.09.01	A. KC et al. MB063 (KATHI 76865)
62	Cyperaceae	<i>Carex munda</i> Boott	Herb	3875–4040	Khongma La–Sano Pokhari	2021.09.01	A. KC et al. MB064 (KATHI 76864)
63	Cyperaceae	<i>Carex harae</i> (Rajbh. & H.Ohba) O. Yano	Herb	3875–4040	Khongma La–Sano Pokhari	2021.09.01	A. KC et al. MB065 (KATHI 76863)
64	Cyperaceae	<i>Carex cercostachys</i> Franch.	Herb	3875–4040	Khongma La–Sano Pokhari	2021.09.01	A. KC et al. MB067 (KATHI 76794)
65	Cyperaceae	<i>Carex munda</i> Boott	Herb	3701	near Khongma, towards Shipton pass	2021.09.01	A. KC et al. MB068 (KATHI 76795)
66	Cyperaceae	<i>Carex esenbeckii</i> Kunth	Herb	3875–4040	Khongma La–Sano Pokhari	2021.09.01	A. KC et al. MB069 (KATHI 76796)
67	Cyperaceae	<i>Carex curticeps</i> C.B.Clarke	Herb	3701	near Khongma, towards Shipton pass	2021.09.01	A. KC et al. MB070 (KATHI 76797)
68	Cyperaceae	<i>Carex inanis</i> Kunth	Herb	3645	near Yangle Kharka	2021.09.02	A. KC et al. MB071 (KATHI 76885)
69	Cyperaceae	<i>Carex esenbeckii</i> Kunth	Herb	3591	Yangle Kharka	2021.09.02	A. KC et al. MB080

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
70	Cyperaceae	<i>Carex esbirajbhandarii</i> (Rajbh. & H.Ohba) O.Yano	Herb	4421	Barun Valley, near Shiva Dhara	2021.09.03	(KATHI76856) A. KC et al. MB092 (KATHI76911)
71	Cyperaceae	<i>Carex haematostoma</i> Nees	Herb	4405	near Shiva Dhara	2021.09.03	A. KC et al. MB094 (KATHI76899)
72	Cyperaceae	<i>Carex fucata</i> Boott ex C.B.Clarke	Herb	3880–4034	Neha Kharka to Shiva Dhara	2021.09.03	A. KC et al. MB095 (KATHI76898)
73	Cyperaceae	<i>Carex cruenta</i> Nees	Herb	4405	Barun Valley, near Shiva Dhara	2021.09.03	A. KC et al. MB096 (KATHI76900)
74	Cyperaceae	<i>Carex neesii</i> S.R.Zhang	Herb	4405	Barun Valley, near Shiva Dhara	2021.09.03	A. KC et al. MB099 (KATHI76910)
75	Cyperaceae	<i>Carex bonatiana</i> (Kük.) N.A.Ivanova	Herb	3665–4015	Yangle Kharka–Ripuk Kharka	2021.09.04	A. KC et al. MB108 (KATH)
76	Cyperaceae	<i>Carex gracilentia</i> Boott ex Boeckeler	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB109 (KATHI76867)
77	Cyperaceae	<i>Blasmus compressus</i> var. <i>brevifolius</i> (C.B.Clarke) Karth.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB112 (KATHI76827)
78	Cyperaceae	<i>Carex munda</i> Boott	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB125 (KATHI76818)
79	Cyperaceae	<i>Carex obscura</i> Nees	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB126 (KATHI76817)
80	Cyperaceae	<i>Carex deasyi</i> (C.B.Clarke) O.Yao & S.R.Zhang	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB129 (KATHI76920)
81	Cyperaceae	<i>Carex bonatiana</i> (Kük.) N.A.Ivanova	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB137 (KATHI76929)
82	Cyperaceae	<i>Carex neesii</i> S.R.Zhang	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB138 (KATHI76820)
83	Cyperaceae	<i>Carex haematostoma</i> Nees	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB139 (KATHI76819)
84	Cyperaceae	<i>Carex cercostachys</i> Franch.	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB152 (KATHI76870)
85	Cyperaceae	<i>Carex parvula</i> O.Yano	Herb	4450–4695	Langmale–Shershung	2021.09.05	A. KC et al. MB197 (KATH)
86	Ericaceae	<i>Rhododendron lepidotum</i> Wall. ex G.Don	Shrub	4695	near Shershung	2021.09.05	A. KC et al. MB156 (KATHI76850)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
87	Eriocaulaceae	<i>Eriocaulon nepalense</i> J.D.Prescott ex Bong.	Herb	1700–1978	Seduwa–Chyaksedanda	2021.08.30	A. KC et al. MB023 (KATH)
88	Euphorbiaceae	<i>Ostodes paniculata</i> Blume	Tree	785	Arun river bridge to Seduwa	2021.08.29	A. KC et al. MB009 (KATH176789)
89	Fabaceae	<i>Phyllolobium donianum</i> (DC.) M.L.Zhang & Podlech	Terrestrial herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB075 (KATH176858)
90	Gentianaceae	<i>Tripterospermum volubile</i> (D.Don) H.Hara	Climbing herb	2930–3608	Danda Kharka–Khongma	2021.08.31	A. KC et al. MB041 (KATH176875)
91	Gentianaceae	<i>Gentiana recurvata</i> C.B.Clarke	Herb	2930–3608	Danda Kharka–Khongma	2021.08.31	A. KC et al. MB042 (KATH176876)
92	Gentianaceae	<i>Swertia wardii</i> C.Marquand	Tufted herb	3790	Neha Kharka	2021.09.03	A. KC et al. MB085 (KATH176909)
93	Gentianaceae	<i>Swertia hookeri</i> C.B.Clarke	Herb	3790–4405	Nehe Kharka–Shiva Dhara	2021.09.03	A. KC et al. MB100 (KATH176919)
94	Gentianaceae	<i>Swertia hookeri</i> C.B.Clarke	Herb	4481	near Parbati cave	2021.09.03	A. KC et al. MB101 (KATH176766)
95	Gentianaceae	<i>Gentiana ehwesii</i> C.B.Clarke	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB120 (KATH)
96	Gentianaceae	<i>Swertia multicaulis</i> D.Don	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB130 (KATH176828)
97	Gentianaceae	<i>Gentiana nubigena</i> Edgew.	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB132 (KATH176815)
98	Gentianaceae	<i>Gentiana crassuloides</i> Bureau & Franch.	Herb	4695–4844	Shershung–MBC	2021.09.05	A. KC et al. MB140 (KATH176821)
99	Gentianaceae	<i>Swertia multicaulis</i> D.Don	Herb	4695	near Sashra pokhari	2021.09.05	A. KC et al. MB151 (KATH176869)
100	Gentianaceae	<i>Gentiana nubigena</i> Edgew.	Herb	4240	near Shipton pass	2021.09.07	A. KC et al. MB172 (KATH176888)
101	Gentianaceae	<i>Swertia barunensis</i> Chassot	Herb	4240–3624	Shipton La–Khongma	2021.09.07	A. KC et al. MB193 (KATH176908)
102	Gesneriaceae	<i>Didymocarpus andersonii</i> C.B.Clarke	Herb	942	along the way to Arun river, near Seduwa	2021.08.29	A. KC et al. MB004 (KATH176902)
103	Gesneriaceae	<i>Leptoboea multiflora</i> (C.B.Clarke) C.B.Clarke	Shrub	942	along the way to Arun river, near Seduwa	2021.08.29	A. KC et al. MB006 (KATH176778)
104	Gesneriaceae	<i>Lysionotus atropurpureus</i> H.Hara	Herb	2100	Tasigaon	2021.08.30	A. KC et al. MB024

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
105	Hypericaceae	<i>Hypericum petiolulatum</i> Hook.f. & Thomson ex Dyer	Herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	(KATHI76776) A. KC et al. MB046 (KATHI76860)
106	Hypericaceae	<i>Hypericum reptans</i> Hook.f. & Thomson ex Dyer	Shrub	3880–3930	Nehe Kharka–Shiva dhara	2021.09.03	A. KC et al. MB107 (KATHI76811)
107	Juncaceae	<i>Juncus harae</i> Miyam. & H.Ohba	Herb	3608	Khongma	2021.09.01	A. KC et al. MB062 (KATHI76862)
108	Juncaceae	<i>Juncus khasiensis</i> Buchenau	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB176 (KATHI76830)
109	Juncaceae	<i>Juncus leucanthus</i> Royle ex D.Don	Herb	4166	near Keke La	2021.09.07	A. KC et al. MB187 (KATHI76814)
110	Juncaceae	<i>Juncus sphacelatus</i> Decne.	Herb	4166	near Keke La	2021.09.07	A. KC et al. MB188 (KATHI76790)
111	Lamiaceae	<i>Salvia campanulata</i> Wall. ex Benth.	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB121 (KATHI76775)
112	Lamiaceae	<i>Salvia clementiae</i> Pendry & Y.K.Wei	Herb	2100–3608	Khongma–Tasigaon	2021.09.07	A. KC et al. MB184 (KATHI76768)
113	Lentibulariaceae	<i>Utricularia furcellata</i> Oliv.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB013 (KATHI76907)
114	Liliaceae	<i>Fritillaria cirrhosa</i> D.Don	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB117 (KATHI76777)
115	Liliaceae	<i>Fritillaria cirrhosa</i> D.Don	Herb	4844	MBC	2021.09.05	A. KC et al. MB141 (KATHI76822)
116	Onagraceae	<i>Epilobium conspersum</i> Hausskn.	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB081 (KATHI76777)
117	Orchidaceae	<i>Cyrtosia lindleyana</i> Hook.f. & Thomson	Herb	2004	near Chilchila, between Khandbari to Num	2021.08.28	A. KC et al. MB001 (KATHI76783)
118	Orchidaceae	<i>Cryptochilus luteus</i> Lindl.	Herb	942	along the way to Arun river, near Seduwa	2021.08.29	A. KC et al. MB005 (KATHI76887)
119	Orchidaceae	<i>Odontochilus lanceolatus</i> (Lindl.) Blume	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB015 (KATHI76781)
120	Orchidaceae	<i>Odontochilus crispus</i> (Lindl.) Hook.f.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB016 (KATHI76925)
121	Orchidaceae	<i>Liparis petiolata</i> (D.Don) P.F.Hunt & Summerh.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB017 (KATHI76932)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
122	Orchidaceae	<i>Oberonia anthropophora</i> Lindl.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB018 (KATHI 76933)
123	Orchidaceae	<i>Calanthe mannii</i> Hook.f.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB019 (KATHI 76793)
124	Orchidaceae	<i>Bulbophyllum rolfei</i> (Kuntze) Seidenf.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB020 (KATHI 76800)
125	Orchidaceae	<i>Goodyera repens</i> (L.) R.Br.	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB021 (KATHI 76798)
126	Orchidaceae	<i>Platanthera nematocaulon</i> (Hook.f.) Kraenzl.	Herb	3608	Khongma	2021.08.31	A. KC et al. MB035 (KATHI 76877)
127	Orchidaceae	<i>Platanthera bakeriana</i> (King & Pantl.) Kraenzl.	Terrestrial herb	3608	near Khongma	2021.08.31	A. KC et al. MB038 (KATHI 76924)
128	Orchidaceae	<i>Goodyera repens</i> (L.) R.Br.	Terrestrial herb	2930–3608	Danda Kharka–Khongma	2021.08.31	A. KC et al. MB039 (KATHI 76923)
129	Orchidaceae	<i>Tipularia josephi</i> Rchb.f. ex Lindl.	Herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	A. KC et al. MB044 (KATHI 76859)
130	Orchidaceae	<i>Satyrium nepalense</i> D.Don	Terrestrial herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	A. KC et al. MB048 (KATHI 76801)
131	Orchidaceae	<i>Platanthera stenantha</i> (Hook.f.) Soó	Terrestrial herb	3608–3875	Khongma – Khongma La	2021.09.01	A. KC et al. MB052 (KATHI 76905)
132	Orchidaceae	<i>Platanthera carnosilabris</i> (Tang & F.T.Wang) X.H.Jin, Schuit. & W.T.Jin	Terrestrial herb	3875–4240	Khongma La–Shipton La	2021.09.01	A. KC et al. MB053 (KATHI 76829)
133	Orchidaceae	<i>Hemipilia chusua</i> (D.Don) Y.T.Tang & H.Peng	Terrestrial herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB073 (KATH)
134	Orchidaceae	<i>Neottia alternifolia</i> (King & Pantl.) Szlach.	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB083 (KATHI 75672)
135	Orchidaceae	<i>Malaxis muscifera</i> (Lindl.) Kuntze	Herb	3790–4405	Nehe Kharka–Shiva dhara	2021.09.03	A. KC et al. MB087 (KATHI 76912)
136	Orchidaceae	<i>Ponerorchis cucullata</i> (L.) X.H.Jin, Schuit. & W.T.Ji	Herb	3790–4405	Nehe Kharka–Shiva dhara	2021.09.03	A. KC et al. MB089 (KATHI 76917)
137	Orchidaceae	<i>Herminium macrophyllum</i> (D.Don) Dandy	Herb	4405	near Shiva Dhara	2021.09.03	A. KC et al. MB090 (KATHI 76913)
138	Orchidaceae	<i>Dactylorhiza hatagirea</i> (D.Don) Soó	Terrestrial herb	4421	Shiva Dhara–Parbati cave	2021.09.03	A. KC et al. MB104 (KATHI 76788)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
139	Orchidaceae	<i>Epipogium aphyllum</i> Sw.	Herb	3902	near Yangle Kharka	2021.09.04	A. KC et al. MB127 (KATHI 76922)
140	Orchidaceae	<i>Neottia tenuis</i> (Lindl.) Szlach.	Herb	3665–4015	Yangle Kharka–Ripuk Kharka	2021.09.04	A. KC et al. MB128 (KATHI 76921)
141	Orchidaceae	<i>Herminium macrophyllum</i> (D.Don) Dandy	Herb	4450–4695	Langmale–Shershung	2021.09.05	A. KC et al. MB136 (KATHI 76816)
142	Orchidaceae	<i>Goodyera fusca</i> (Lindl.) Hook.f.	Herb	4844	MBC	2021.09.05	A. KC et al. MB142 (KATHI 76841)
143	Orchidaceae	<i>Neottia pinetorum</i> (Lindl.) Szlach.	Herb	3902	near Yangle Kharka	2021.09.04	A. KC et al. MB161 (KATHI 76884)
144	Orchidaceae	<i>Platanthera urceolata</i> (C.B.Clarke) R.M.Bateman	Terrestrial herb	3902–3858	Yangle Kharka to Dobate	2021.09.09	A. KC et al. MB162 (KATHI 76883)
145	Orchidaceae	<i>Platanthera stenantha</i> (Hook.f.) Soó	Herb	3608	Khongma	2021.09.07	A. KC et al. MB192 (KATHI 76918)
146	Orobanchaceae	<i>Pedicularis gibbera</i> Prain	Herb	2100–2930	Tasigaon–Danda Kharka	2021.08.31	A. KC et al. MB049 (KATHI 76871)
147	Orobanchaceae	<i>Pedicularis gracilis</i> Wall. ex Benth.	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB074 (KATHI 76866)
148	Orobanchaceae	<i>Pedicularis trichoglossa</i> Hook.f.	Herb	4695	near Sashra pokhari	2021.09.05	A. KC et al. MB150 (KATHI 76784)
149	Papaveraceae	<i>Corydalis juncea</i> Wall.	Herb	3608	Khongma	2021.08.31	A. KC et al. MB040 (KATHI 76874)
150	Papaveraceae	<i>Meconopsis horridula</i> Hook.f. & Thomson	Herb	4450–4695	Langmale–Shershung	2021.09.05	A. KC et al. MB131 (KATHI 76786)
151	Papaveraceae	<i>Corydalis juncea</i> Wall.	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB165 (KATHI 76893)
152	Polygonaceae	<i>Oxyria digyna</i> (L.) Hill	Herb	4173–4443	Tadosha–Langmale	2021.09.04	A. KC et al. MB122 (KATHI 76847)
153	Polygonaceae	<i>Bistorta macrophylla</i> (D.Don) Soják	Herb	4844	MBC	2021.09.05	A. KC et al. MB147 (KATHI 76836)
154	Polygonaceae	<i>Bistorta affinis</i> (D.Don) Greene	Herb	4844	MBC	2021.09.05	A. KC et al. MB148 (KATHI 76837)
155	Polygonaceae	<i>Bistorta amplexicaulis</i> (D.Don) Greene	Herb	4240	Shipton pass	2021.09.07	A. KC et al. MB173 (KATHI 76792)
156	Polygonaceae	<i>Bistorta vacciniifolia</i> (Wall. ex	Herb	4195	Keke La	2021.09.07	A. KC et al. MB178

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
		Meisn.) Greene					(KATHI 76886)
157	Polygonaceae	<i>Rheum acuminatum</i> Hook.f. & Thomson	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB181 (KATHI 76771)
158	Primulaceae	<i>Primula crispata</i> Balf.f. & W.W.Sm.	Herb	4405	around Shiva Dhara	2021.09.03	A. KC et al. MB086 (KATHI 76770)
159	Primulaceae	<i>Primula bellidifolia</i> King ex Hook.f.	Herb	4405	near Shiva Dhara	2021.09.03	A. KC et al. MB102 (KATHI 76810)
160	Primulaceae	<i>Primula wollastonii</i> Balf.f.	Herb	4450–4695	Langnale–Shershung	2021.09.05	A. KC et al. MB133 (KATHI 76782)
161	Primulaceae	<i>Primula primulina</i> (Spreng.) H.Hara	Herb	4450–4695	Langmale–Shershung	2021.09.05	A. KC et al. MB134 (KATHI 76833)
162	Ranunculaceae	<i>Aconitum spicatum</i> (Brühl) Stapf	Herb	3790	Neha Kharka	2021.09.03	A. KC et al. MB084 (KATHI 76916)
163	Ranunculaceae	<i>Thalictrum elegans</i> Wall. ex Royle	Herb	3790–4405	Nehe Kharka–Shiva dhara	2021.09.03	A. KC et al. MB105 (KATHI 76813)
164	Rosaceae	<i>Sorbus microphylla</i> Wenz.	Tree	3665–4015	Ripuk Kharka–Yangle Kharka	2021.09.06	A. KC et al. MB159 (KATHI 76843)
165	Rosaceae	<i>Argentina peduncularis</i> (D.Don) Soják	Herb	3858–4195	Dobate–Keke La	2021.09.07	A. KC et al. MB168 (KATHI 76890)
166	Rosaceae	<i>Potentilla coriandrifolia</i> D.Don	Herb	4195	Keke La	2021.09.07	A. KC et al. MB180 (KATHI 76853)
167	Rosaceae	<i>Argentina peduncularis</i> (D.Don) Soják	Herb	4166	near Keke La	2021.09.07	A. KC et al. MB185 (KATHI 76873)
168	Rosaceae	<i>Potentilla coriandrifolia</i> D.Don	Herb	4240	Shitpon La	2021.09.07	A. KC et al. MB190 (KATHI 76832)
169	Salicaceae	<i>Salix calyculata</i> Hook.f. ex Andersson	running shrub	3875–4240	Khongna La–Shipton La	2021.09.01	A. KC et al. MB050 (KATHI 76825)
170	Salicaceae	<i>Salix lindleyana</i> Wall. ex Andersson	Herb	4695	near Sashra pokhari	2021.09.05	A. KC et al. MB155 (KATHI 76849)
171	Salicaceae	<i>Salix calyculata</i> Hook.f. ex Andersson	Shrub	4240	Shipton La	2021.09.07	A. KC et al. MB182 (KATHI 76809)
172	Salicaceae	<i>Salix calyculata</i> Hook.f. ex Andersson	Shrub	4240	Shipton La	2021.09.07	A. KC et al. MB183 (KATHI 76889)
173	Saxifragaceae	<i>Saxifraga punctulata</i> Engl.	Herb	4844	MBC	2021.09.05	A. KC et al. MB145 (KATHI 76807)

SN	Family	Latin name	Life form	Elevation (m)	Locality	Date of collection	Specimen details
174	Saxifragaceae	<i>Bergenia purpurascens</i> (Hook.f. & Thomson) Engl.	Herb	4240–4046	Shipton La–Sano Pokhari	2021.09.07	A. KC et al. MB169 (KATHI 76891)
175	Saxifragaceae	<i>Saxifraga hispidula</i> D.Don	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB191 (KATHI 76915)
176	Scrophulariaceae	<i>Neopicrorhiza scrophulariiflora</i> (Pennell) D.Y.Hong	Herb	4240	Shipton La	2021.09.07	A. KC et al. MB186 (KATHI 76872)
177	Urticaceae	<i>Pilea approximata</i> C.B.Clarke	Herb	3441	Dobate–Temathang	2021.09.02	A. KC et al. MB079 (KATHI 76806)
178	Urticaceae	<i>Pilea racemosa</i> (Royle) Tuyama	Herb	3790–4405	Nehe Kharka–Shiva dhara	2021.09.03	A. KC et al. MB106 (KATHI 76838)
179	Zingiberaceae	<i>Cautleya gracilis</i> (Sm.) Dandy	Herb	1978–2000	Chyaksedanda–Tasigaon	2021.08.30	A. KC et al. MB022 (KATHI 76803)

Green Spaces in Tribhuvan University: Centers for Plant Diversity

Basu Dev Poudel^{1*}, Neelam Pandey² & Rashika Kafle³

¹Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal

²Herbs Production & Processing Co. Ltd, Jadibuti, Kathmandu, Nepal

³National Botanical Garden, Godawari, Lalitpur, Nepal

*Email: basudev.poudel99@gmail.com

Received: 18 Jan 2026

Revised: 20 May 2026

Accepted: 21 May 2026

Published: 2 July 2026

Abstract

This study documents the floral diversity of Tribhuvan University (TU), a significant urban green space within Kathmandu, Nepal. Field surveys employing the transect walk method were conducted in January and July 2024 to record annual, biennial, and perennial plant species occurring within the study area. A total of 282 species of vascular plants belonging to 222 genera and 90 families were recorded, with herbs constituting the dominant life form. Despite covering a relatively small area of 154.77 hectares, the university supports rich floral diversity and serves as an important practical learning site for students. Urban green spaces harboring such high plant diversity should be prioritized for conservation, ecological research, and sustainable management.

Keywords: Conservation, Habitat, Invasive plants, Urban

Introduction

Biodiversity in urban areas has long been not considered significant because urban ecosystems were regarded as highly disturbed and supporting relatively common species (Kühn & Klotz 2006; Muratet et al., 2008). However, biodiversity in a human dominated area is of major importance for conservation biology (Muratet et al., 2008). Urban green spaces also have been identified as a potential strategy to address land management and ecological concerns (Speak et al., 2015). Majority of the world's human population lives in urban areas where the existence of healthy green spaces supports a variety of plant and animal species (Edeigba et al., 2024). Urbanization is the main component of land transformation processes which cause alteration of landscapes significantly modifying biotic communities at various scales (Kühn & Klotz 2006; McKinney 2006). Furthermore, it reduces green spaces and often causes increased frequency of alien species and loss of native plants (Muratet et al., 2008).

University campuses constitute a significant part of urban green spaces and provide a wide range of habitats for native and rare species (Nagase

et al., 2019). It not only provides educational and recreational benefits for students but also considerable biodiversity benefits (Liu et al., 2017). Floristic study is the documentation of all plants species to identify and understand the plant diversity of a given geographical area (Simpson, 2006). Such studies help in understanding changing floristic patterns, status, new invasions, rare, endemic, threatened and new plants of that geographical area (Rajendran et al., 2014). Compared to the studies in protected areas and forest areas, research on floristic diversity in urban areas of Nepal is relatively limited (Chataut et al., 2024; Manandhar et al., 2007; Pandey & Luitel, 2020; Paudel et al., 2021). Tribhuvan University (TU) area on the Southwestern side of the Kathmandu valley holds diverse habitats including forests, agricultural fields and built-up areas and could be a center of local biodiversity (Panta & Baniya, 2025; Upadhyay et al., 2022). It has a various variety of plants from non-vascular to higher plants (Bhatta et al., 2018; Panta & Baniya, 2025). Several reports are made annually on diversity of species for academic purposes at Tribhuvan University, however, no authentic checklists regarding plant diversity have been published to date. Some previous works conducted at Tribhuvan University include

study of bee flora in the coronation garden (Panta & Baniya, 2025) phenology and water stress of woody species (Shrestha et al., 2007) carbon stock potential (Bhatta et al., 2018) and fauna study of only a few taxonomic groups mainly birds (Upadhyaya et al., 2022). Taxonomic study of plant diversity in an urban green space in University area would be a novel work for Nepal. The present research aimed to study the plant diversity of TU to fill the gaps in the current state of knowledge on the vascular flora of the study area. This can lead to a proper documentation of plant diversity of TU and promote university area as a center to study several floral aspects for students, academicians, researchers and local people.

Materials and Methods

Study area

Tribhuvan University (TU), established in 1959 A.D., is the first national institution of higher education in Nepal. The Central Administrative Office and the Central Campus of the university are in Kirtipur, an ancient town located about

five kilometers Southwest of Kathmandu Valley's major metropolis (Tribhuvan University[TU], 2025; Upadhyaya et al., 2022). TU is geographically located between latitudes 27°40' 20" N - 27°41' 15" N and longitudes 85°17' 50" E - 85°16' 50" E. It covers 1.57 km² (154.77 hectares) of land (TU, 2025). The area is of varying altitude with lower and highest elevation ranges from 1272 to 1413 meter above sea level (Figure 1).

This study was carried out to document the floristic diversity of Tribhuvan University Kirtipur, Kathmandu District. The entire area can be categorized into three habitat types, i.e. building area, forest area and agriculture area. Administrative and academic buildings, playgrounds, TU international cricket stadium, and hostel areas were included in the building area habitat. Seasonal cultivation of commonly cultivated crops like paddy (monsoon) and maize is done by locals in certain portions of the university area. These seasonally cultivated areas, along with a few adjoining grassland patches, were included in the agriculture area. The forested area is part of "Coronation Garden" which was opened on



Figure 1: Tribhuvan University covers area

(Source: <https://www.arcgis.com/home/webscene/viewer.html?webscene=ce6da302c1ef4d92973183a9ea60530b>)

the occasion of coronation of Late King Birendra in 1975 (Bhatta et al., 2018). The Coronation Garden and adjoining forest patches were included in the forest area. The area has a sub-tropical climate with cool and dry winters (October-February), hot and dry summers (March-May) and a hot and humid monsoon (June-September) (Upadhyaya et al., 2022).

Sampling

The floristic survey was conducted in January 2024 and July 2024 to comprehensively cover the study area and assess both floral diversity and its seasonal variation. Two surveys were carried out across different land use types, with data collected through random transect walks during each period (Vempally et al., 2023). These transects covered the agricultural area, building area and forest area. The species presence data were recorded, and plant specimens were collected for the herbarium preparation following standard technique (Bridson & Forman, 1998). However, a large number of recorded species were ornamental (cultivated) in the study area; therefore, herbarium specimens excluding ornamental species were deposited in the Tribhuvan University Central Herbarium (TUCH). Plant species were identified as much as possible during field study and those which could not be identified in the field were later checked for identification with the help of relevant standard taxonomic literatures (Fraser-Jenkins & Kandel, 2019; Fraser-Jenkins et al., 2015; Kandel & Fraser-Jenkins, 2020; Malla et al., 1986; Manandhar et al., 2007; Parmar et al., 2024; Press et al., 2000; Rajbhandary, 2016; Rajbhandari et al., 2020; Rokaya et al., 2024; Shrestha et al., 2022), expertise consultation and tallying the specimens at National Herbarium and Plant Laboratories, Godawari (KATH) and Tribhuvan University Central Herbarium (TUCH). The nomenclature, author citation and local name of each species follow different taxonomic literatures (Parmar et al., 2024; Shrestha et al., 2022) and Plants of World Online (<https://powo.science.kew.org/>). The documented species were identified comprising their botanical names, families, habits, and common and local names (Appendix 1).

Results and Discussion

The green space in Tribhuvan University comprises diverse varieties of flora. This study documented 282 vascular plant species from 222 genera and 90 families, including 172 herbs (61%), 65 trees (23%), 37 shrubs (13%), and 8 climbers (3%) (Figure 2). Based on the life forms, angiosperms were dominating the study area (254 species) with 207 dicots and 47 monocots, which was followed by the Gymnosperms (12) and Pteridophytes (16 species) respectively (Appendix 1; Figure 3).

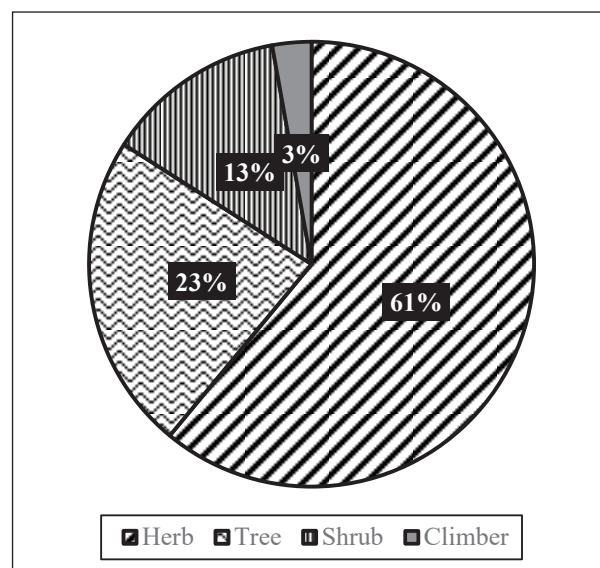


Figure 2: Habit of plant species in the study area

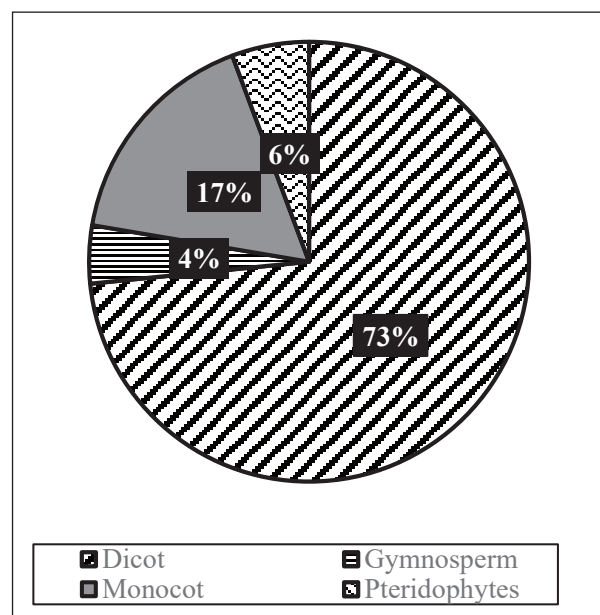


Figure 3: Life form of plant species in the study area

Among the 90 families identified, the most diverse were Asteraceae (28 species), Orchidaceae (18 species), Poaceae (12 species), Solanaceae (10 species), Fabaceae (10 species), Polygonaceae (8 species), Moraceae (9 species), and Caryophyllaceae (8 species), Rosaceae (8 species) and Acanthaceae (7 species) (Figure 4).

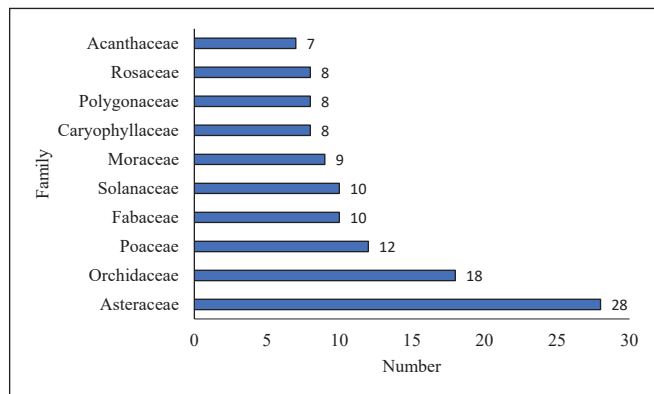


Figure 4: Top ten plant families in the study area

The chord diagram showed that herbs are the dominant life-form belonging to the 54 families, followed by trees (34), shrubs (24), and climbers (6) (Figure 5). Asteraceae was mainly associated with the herbaceous group, reflecting its typical dominance in open and disturbed environments. A study focused on bee flora by Panta & Baniya (2025) at Tribhuvan University concluded Asteraceae as the largest family in terms of genera, and herbs were the most dominant life form, similar to our findings. Moreover, *ex-situ* conservation of species of Orchidaceae and the plantation of species belonging to Caryophyllaceae for ornamental purpose particularly in Central Department of Botany might be the reason of dominance of respective families in the current study area. Furthermore, family Fabaceae included herbs, shrubs, and tree life form and Moraceae and

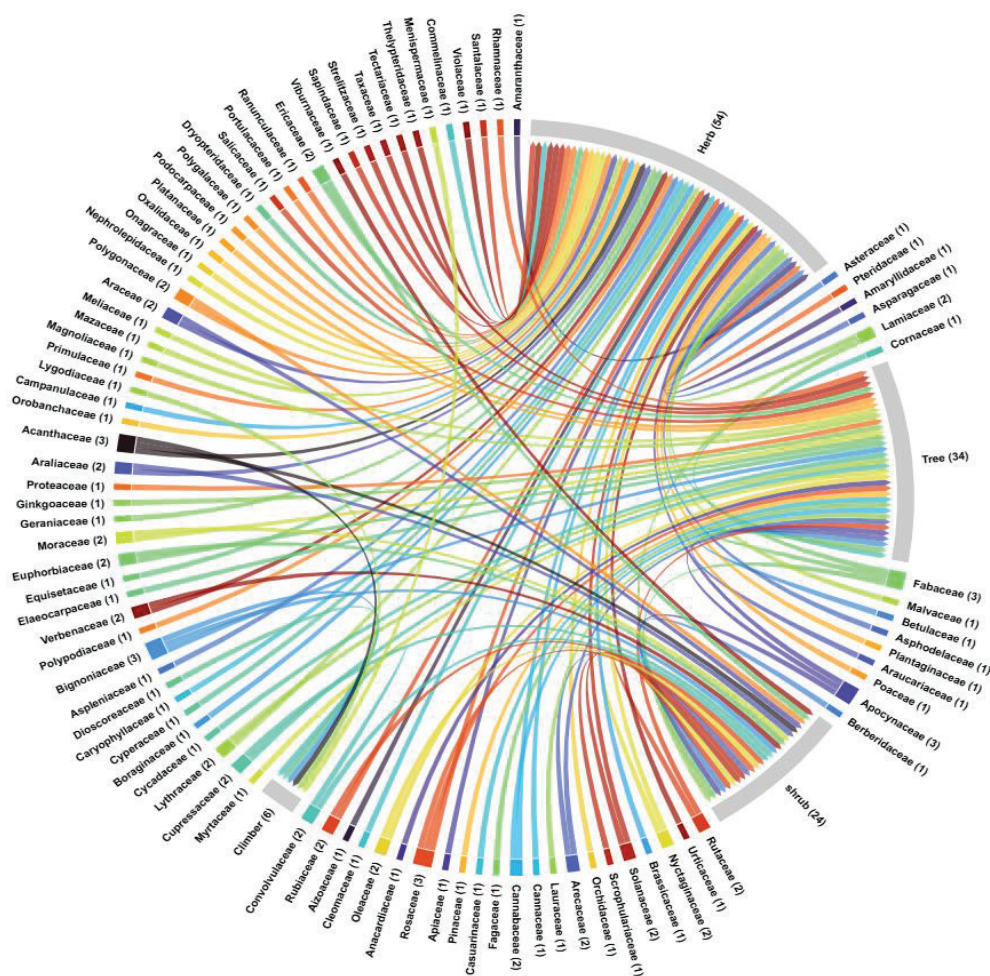


Figure 5: The chord diagram showing plant families across habit categories

Lauraceae were mostly linked to the tree group, highlighting their role in forest structure. The dominance of these families being most diverse can be explained as most of these families adapt to a wide range of environmental conditions, have ability to adapt to climate change and their stress tolerance ability (Boudik et al., 2024).

Out of the 282 species recorded, native species outnumbered introduced species showing the presence of 162 native and 120 introduced species indicating that TU area plays an important role in protecting native species. This result also highlighted another probable aspect of native species being likely to be threatened by introduced species in future. Large number of introduced species were documented in the study area. Introduced species majorly Invasive Alien Plants Species (IAPS) can often outcompete native species and exhibit negative impacts on native biodiversity (Shrestha, 2016; Shrestha et al., 2024). Our results agreed with Chataut et al. (2024) which reported 10 invasive alien species in the Sano Bharayang area of Kathmandu. Likewise, this study also recorded 12 invasive alien species, including *Ageratina adenophora* (Spreng.) R. M. King & H. Rob., *Ageratum conyzoides* L., *Ageratum houstonianum* Mill., *Alternanthera philoxeroides* (Mart.) Griseb., *Amaranthus spinosus* L., *Bidens pilosa* L., *Galinsoga quadriradiata* Ruiz & Pav., *Ipomoea carnea* Jacq., *Lantana camara* L., *Oxalis latifolia* Kunth, *Parthenium hysterophorus* L., and *Xanthium strumarium* L. These were distributed across almost all land-use types within Tribhuvan University, indicating an early warning for the possible threats this invasion would have on native species, and emphasizing the need for conservation of native species. Moreover, an increase in the number of invasive species might cause homogenous vegetation by rapid spread in the university area suppressing native plants.

Among the introduced species, *Solidago canadensis* L. was currently abundant along roadsides and foot trails in the building area, given the history of the species being planted as an ornamental plant and having escaped from the garden (Shrestha et al.,

2022). It is currently reported as a naturalized plant but not yet fully widespread, it is recognized as a potential invasive species in Nepal due to its biology and spread pattern (Poudel et al., 2025). Therefore, early management of this potentially invasive plant would control its spread across the Coronation Garden (forest) area and in nearby agricultural land around Tribhuvan University. Similarly, *Hypoestes phyllostachya* Baker, another introduced species, in the study area currently occupies only certain areas of the forest area (Coronation Garden), but its dominance in the future can be predicted as it shows rapid growth, adaptability, and potential in escaping cultivation and spreading into nearby forests, agricultural lands (Kumar et al., 2025). Its presence in the coronation garden suggests a strong capacity for its establishment and spread under plantation canopies. Dense ground cover formed by the species may suppress native understory species through competition for light, moisture, and nutrients, raising important concerns regarding its potential impacts on native vegetation, reducing species diversity, and altering natural regeneration patterns.

The building area harbored the highest number of plants with 242 species, including 113 introduced and 129 native to Nepal, followed by the forest area with 124 species (76 native and 48 introduced) and the agricultural area with 117 species (79 native and 38 introduced) (Table 1). Precisely, 100 plant species were found exclusively in the building area, 19 species in the agricultural area, and 18 species in the forest area. A total of 56 species were documented across all land use types. Among them, 47 species were common to both the building and forest areas, while 39 species were common to the building and agricultural areas. However, only three species were shared between the forest and agricultural areas (Figure 6).

The highest floral richness recorded in building and forest areas might be because of *ex-situ* conservation of native as well as introduced species since its establishment (Bhatta et al., 2018). However, agricultural areas showed the lowest floral diversity because of the occurrence of

Table 1: Distribution of plant species along different land use types

SN	Habit/Habitat	Agriculture Area			Building Area			Forest Area		
		Introduced	Native	Total	Introduced	Native	Total	Introduced	Native	Total
1	Herb	31	71	102	62	87	149	23	39	62
2	Tree		1	1	24	29	53	15	29	44
3	Shrub	6	3	9	24	10	34	9	5	14
4	Climber	1	4	5	3	3	6	1	3	4
	Total	38	79	117	113	129	242	48	76	124

common weeds during seasonal cultivation. These green spaces in Tribhuvan University area supports a large number of plant species, serving as a center of plant diversity. To enhance these green spaces, the building area and forest area (Coronation Garden) with high number of plant species needs to be prioritized for better management including monitoring & controlling invasive and dominant species like *Lantana camara* and potential IAPS like *Hypoestes phyllostachya*, *Solidago canadensis*, introducing a mixed canopy in forest area to support native understory regeneration, natural litter accumulation in forested areas to improve soil and ecosystem health and establishing long-term monitoring and research by using the university as a living laboratory. Improving green spaces while protecting plant diversity in a university area require a blending of careful planting design conservation and long-term management.

Furthermore, this study showed that Tribhuvan University harbors at least 131 plant species under different conservation categories at the global level, including CITES Appendices II and III and the IUCN Red List (Table 2). Notable species include *Taxus mairei* (Lemée & H.Lév.) S.Y.Hu (IUCN: VU) and *Jacaranda mimosifolia* D.Don (IUCN: VU); *Platycladus orientalis* (L.) Franco (IUCN: NT); *Ginkgo biloba* L. (IUCN: EN) and *Coffea arabica* L. (IUCN: EN); *Brugmansia suaveolens* (Humb. & Bonpl. Ex Willd.) (IUCN: EW); and 18 species of orchids (CITES Appendix II). These, along with other threatened plant groups, are conserved *ex-situ* in the building area and forest area, particularly in the Central Department of Botany and in the Coronation Garden. This emphasizes the role of TU serving as a center for *ex-situ* conservation of these globally threatened species.

Table 2: Conservation status of plant species

Conservation status	Number of species
IUCN (DD)	3
IUCN (LC)	99
IUCN (NT)	2
IUCN (VU)	2
IUCN (EN)	2
IUCN (EW)	1
CITES Appendix II	18
IUCN (LC), CITES Appendix II	3
IUCN (LC), CITES Appendix III	1
Total	131

Conclusion

This study provides a detailed checklist of plant diversity of the Tribhuvan University by means of a thorough botanical survey. TU has been identified to be rich in vascular flora, being dominated

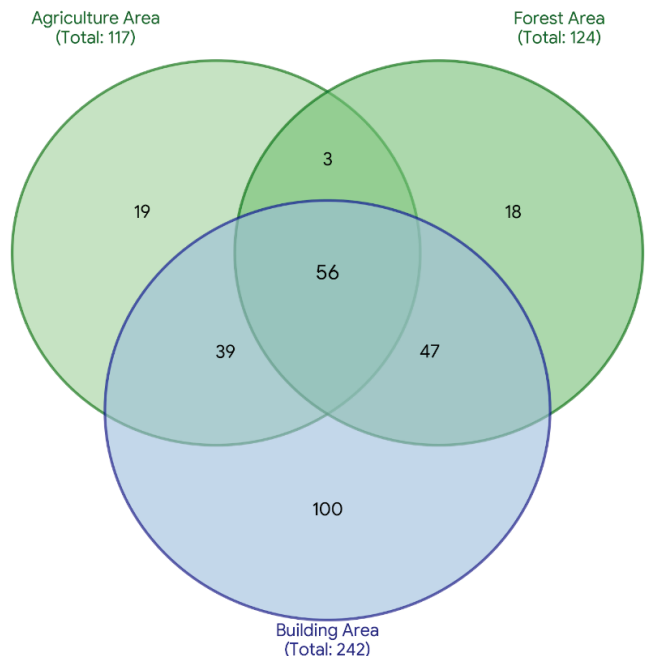


Figure 6: Distribution of plant species as per land use types

mostly by herbs. This result showed that TU is conserving native as well as introduced plants, rare gymnosperms, and even living fossils; therefore it can be considered an important green space in the Kathmandu Valley. Furthermore, the conservation significance of TU is high as it not only protects natural resources but also serves as a repository of knowledge. These findings have special significance as they provide valuable information for the conservation of the habitats, threatened plant species and address the urge for the management of invasive species within the university.

Author Contributions

BD Poudel contributed in conceptual designing along with data collection, data analysis methodology development as well as preparation of manuscript, reviewing and editing the original draft. N Pandey made equal contribution in data collection, analysis and supported in methodology development, drafting, reviewing and editing the original draft. Similarly, R Kafle supported in data collection, writing original draft reviewing and editing.

Acknowledgements

The authors are thankful to Tribhuvan University Central Herbarium (TUCH) for allowing us to examine specimens for identification. We thank Mr. Ajay Neupane, Mr. Roshan Shah, and Mr. Ronish Pandey for helping with herbarium preparation.

References

- Bhatta, S. P., Sharma, K. P., & Balami, S. (2018). Variation in carbon storage among tree species in the planted forest of Kathmandu, Central Nepal. *Current Science*, 115(2), 274-282. <https://doi.org/10.18520/cs/v115/i2/274-282>
- Boudik, S., Khamar, H., Magri, N., Belahbib, N., Zidane, L., Benkhigui, O., & Dahmani, J. (2024). Study of the floristic diversity of the Moulay Driss Zerhoun region in the Prerif Range, Morocco. *Egyptian Journal of Botany*, 64(1), 27-63.
- Bridson, D., & Forman, L. (1998). *The herbarium handbook* (3rd ed.). Royal Botanic Garden, Kew.
- Chataut, G. P., Paudel, B., & Sharma, K. P. (2024). Inventory and assessment of flowering plants in the Sanobharyang area of Kathmandu, Nepal. *Multi-Disciplinary Explorations: The Kasthamandap College Journal*, 2(2), 63-72. <https://doi.org/10.3126/mdekcyj.v2i2.74176>
- Fraser-Jenkins, C. R., Kandel, D. R., & Pariyar, S. (2015). *Ferns and fern-allies of Nepal* (Vol.1). Department of Plant Resources.
- Fraser-Jenkins, C. R., & Kandel, D. R. (2019). *Ferns and fern-allies of Nepal* (Vol. 2). Department of Plant Resources.
- Kandel, D. R., & Fraser-Jenkins, C. R. (2020). *Ferns and fern-allies of Nepal* (Vol. 3). Department of Plant Resources. .
- Kumar, P., Ghosh, P., Deroliya, P. K., & Singh, S. K. (2025). *Hypoestes phyllostachya* Baker: A new record of invasive alien plant species from Uttarakhand, India. *National Academy Science Letters*, 48(2), 217-220.
- Edeigba, B. A., Ashinze, U. K., Umoh, A. A., Biu, P. W., & Daraojimba, A. I. (2024). Urban green spaces and their impact on environmental health: A global review. *World Journal of Advance Research and Reviews*, 21(02), 917-927.
- Kühn, I., & Klotz, S. (2006). Urbanization and homogenization-comparing the floras of urban and rural areas in Germany. *Biological Conservation*, 127(3), 292-300. <https://doi.org/10.1016/j.biocon.2005.06.033>
- Liu, J., Yu, M., Tomlinson, K., & Slik, J.W. F. (2017). Patterns and drivers of plant biodiversity in Chinese university campuses. *Landscape and Urban Planning*, 164, 64-70. <https://doi.org/10.1016/j.landurbplan.2017.04.008>
- Malla, S. B., Rajbhandari, S. B., Shrestha, T. B., Adhikari, P. M., & Adhikari, S. R. (1986). *Flora of Kathmandu Valley*. Department of Medicinal Plants.

- Manandhar, S., Shrestha, B. B., & Lekhak, H. D. (2007). Weeds of paddy field at Kirtipur, Kathmandu. *Scientific World*, 5(5), 100-106.
- McKinney, M. L. (2006). Urbanization as a major cause of biotic homogenization. *Biological Conservation*, 127(3), 247-260. <https://doi.org/10.1016/j.biocon.2005.09.005>
- Muratet, A., Porcher, E., Devictor, V., Arnal, G., Moret, J., Wright, S., & Machon, N. (2008). Evaluation of floristic diversity in urban areas as a basis for habitat management. *Applied Vegetation Science*, 11(4), 451-460. <https://doi.org/10.3170/2008-7-18530>
- Nagase, A., Kurashina, M., Nomura, M., & MacIvor, J. S. (2019). Patterns in urban butterflies and spontaneous plants across a University campus in Japan. *The Pan-Pacific Entomologist*, 94(4), 195-215. <https://doi.org/10.3956/2018-94.4.195>
- Pandey, H. P., & Luitel, D. R. (2020). Diversity and species selection in urban forestry: Reflection from Maitighar to Tinkune Road of Kathmandu Valley, Nepal. *Journal of Environment Sciences*, 6, 19-26.
- Panta, U., & Baniya, C. B. (2025). Seasonal availability of bee flora at Coronation Garden, Kirtipur, Nepal. *Our Nature*, 23(1), 19-27. <https://doi.org/10.3126/on.v23i1.74965>.
- Parmar, G., Kafle, R., Lamichhane, D., & Thapa Magar, M. S. (2024). *Catalogue of plants of National Botanical Garden*. National Botanical Garden.
- Paudel, R., Gautam, K., Gurung, Y., Pokhrel, S., Shrestha, B., B.K, S., Hitang, S., Shrestha, N., Bajracharya, M., & Joshi, G. D. (2021). Diversity of naturalized plant species across the land use types of Kathmandu district, Central Nepal. *Journal of Plant Resources*, 19, 104-113.
- Poudel, Y. B., Poudel, S., Adhikari, B., Paudyal, S. P., & Shrestha, B. B. (2025). *Pilea microphylla* (L.) Liebm. (Urticaceae) and *Solidago canadensis* L. (Asteraceae): First report of naturalized status in Nepal. *Nepal Journal of Botany*, 2, 24-32.
- Press, J. R., Shrestha, K. K., & Sutton D. A. (2000). *Annotated checklist of the flowering plants of Nepal*. The Natural History Museum.
- Rajbhandary, S. (2016). Fern and fern allies of Nepal. In P. K. Jha, M. Siwakoti, & S. Rajbhandary (Eds.), *Frontiers of Botany* (pp. 124-150). Central Department of Botany, Tribhuvan University.
- Rajbhandari, K. R., Joshi, L., Chhetri, R., & Khatri, S. (2020). *A handbook of the Gymnosperms of Nepal*. National Herbarium and Plant Laboratories.
- Rajendran, A., Aravindhan, V., & Sarvalingam, A. (2014). Biodiversity of the Bharathiar University Campus, India: A floristic approach. *International Journal of Biodiversity and Conservation*, 6(4), 308-319.
- Rokaya, M. B., Sigdel, S. R., Kasaju, S. K., & Sherpa L. D. (2024). *Plants of Kathmandu valley: A pictorial guide*. B. Timsina and B. M. Sharma.
- Shrestha, B. B. (2016). Invasive alien plant species in Nepal. In P. K. Jha, M. Siwakoti, & S. Rajbhandary (Eds.), *Frontiers of Botany* (pp. 269-284). Central Department of Botany, Tribhuvan University.
- Shrestha, B. B., Poudel, A. S., & Pandey, M. (2024). Plant invasions in Nepal: What we do not know? In M. B. Rokaya, & S. R. Sigdel (Eds.), *Flora and Vegetation of Nepal* (pp.333-360). Cham: Springer International Publishing
- Shrestha, B. B., Uprety, Y., Nepal, K., Tripathi, S., & Jha, P. K. (2007). Phenology and water relations of eight woody species in the Coronation Garden of Kirtipur, Central Nepal. *Himalayan Journal of Sciences*, 4(6), 49-56.
- Shrestha, K. K., Bhandari, P., & Bhattarai, S. (2022). *Plants of Nepal: Gymnosperms and Angiosperms*. Heritage Publishers & Distributors Pvt. Limited.
- Simpson, M. G. (2006). *Plant systematics*. Elsevier Academy Press.

- Speak, A. F., Mizgajski, A., & Borysiak, J. (2015). Allotment gardens and parks: Provision of ecosystem services with an emphasis on biodiversity. *Urban Forestry & Urban Greening*, 14(4), 772-781.
- Tribhuvan University (2025). *About Tribhuvan University*. Retrieved August 27, 2025, from <https://tu.edu.np/pages/about-us-2>.
- Upadhyaya, L. P., Pandey, N., & Khanal, L. (2022). Tribhuvan University area serves as a greenspace for birds in the Kathmandu Valley, Central Nepal. *Journal of Animal Diversity*, 4(1), 27-40.
- Vempally, P., Chiluveri, M., Kumar, M., Shakith, M. A., Yalal, M., & Chandra, M. (2023). Species diversity, carbon stock density and soil physico-chemical properties of Chauras Campus (Garhwal University) Uttarakhand, India. *Environment and Ecology*, 41(3D), 2168-2174.

Appendix 1 : List of plants recorded in Tribhuvan University

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
1	<i>Hypoestes phyllostachya</i> Baker		1	1	Acanthaceae	A	D	H		रिक्तिके झार	I	TUCH 26-2720
2	<i>Hypoestes triflora</i> (Forssk.) Roem. & Schult.		1	1	Acanthaceae	A	D	H		सिम कुरो	N	
3	<i>Justicia adhatoda</i> L.			1	Acanthaceae	A	D	S	IUCN (LC)		N	
4	<i>Rostellularia diffusa</i> (Willd.) Nees	1		1	Acanthaceae	A	D	H			N	
5	<i>Rostellularia procumbens</i> (L.) Nees	1		1	Acanthaceae	A	D	H			N	
6	<i>Rungia pectinata</i> (L.) Nees	1		1	Acanthaceae	A	D	H		उकुची झार	N	
7	<i>Thunbergia alata</i> Bojer ex Sims			1	Acanthaceae	A	D	C			I	
8	<i>Cleretum bellidifforme</i> (Burm.f.) G.D.Rowley			1	Aizoaceae	A	D	H		डेजी	I	
9	<i>Achyranthes aspera</i> L.	1	1	1	Amaranthaceae	A	D	H		अपमार्ग	N	TUCH 26-2743
10	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	1	1	1	Amaranthaceae	A	D	H	Invasive	जलबन्धु	I	
11	<i>Amaranthus spinosus</i> L.	1		1	Amaranthaceae	A	D	H	Invasive	लुँडे	I	
12	<i>Chenopodium album</i> L.	1			Amaranthaceae	A	D	H		बेथे	N	
13	<i>Cyathula tomentosa</i> (Roth) Moq.	1	1	1	Amaranthaceae	A	D	H		ओलो कुरो, कपासे कुरो	N	
14	<i>Agapanthus africanus</i> (L.) Hoffmanns.			1	Amaryllidaceae	A	M	H		नीर कमल	I	
15	<i>Hippeastrum vittatum</i> (L'Hér.) Herb.			1	Amaryllidaceae	A	M	H		द्वाड फूल	I	
16	<i>Lycoris radiata</i> (L'Hér.) Herb.			1	Amaryllidaceae	A	M	H		रतो माकुने लिली	N	
17	<i>Zephyranthes carinata</i> Herb.			1	Amaryllidaceae	A	M	H		लसुने फूल	I	
18	<i>Choerospondias axillaris</i> (Roxb.) B.L.Burt & A.W.Hill		1		Anacardiaceae	A	D	T	IUCN (LC)	लसुनी	N	
19	<i>Mangifera indica</i> L.			1	Anacardiaceae	A	D	T	IUCN(DD)	आँप	I	
20	<i>Centella asiatica</i> (L.) Urb.	1	1	1	Apiaceae	A	D	H	IUCN (LC)	घोडाताप्रे	N	TUCH 26-2707
21	<i>Cyclospermum leptophyllum</i> (Pers.) Sprague	1		1	Apiaceae	A	D	H			I	
22	<i>Asclepias curassavica</i> L.		1	1	Apocynaceae	A	D	H		खुसानी कोसे फूल	I	
23	<i>Nerium oleander</i> L.			1	Apocynaceae	A	D	S	IUCN (LC)	कतविर	I	
24	<i>Plumeria rubra</i> L.			1	Apocynaceae	A	D	T	IUCN(LC)	नुवा	I	
25	<i>Monstera deliciosa</i> Liebm.		1	1	Araceae	A	M	S		कन्चिनो	I	
26	<i>Zantedeschia aethiopica</i> (L.) Spreng.			1	Araceae	A	M	H	LC	शंख फूल	I	
27	<i>Heptapleurum calypttratum</i> (Hook.f. & Thomson) Y.F.Deng			1	Araliaceae	A	D	S	IUCN (LC)	कुसुमिनो	I	
28	<i>Hydrocotyle sibthorpioides</i> Lam.	1	1	1	Araliaceae	A	D	H	IUCN (LC)	समो घोडाताप्रे	N	TUCH 26-2747
29	<i>Araucaria columnaris</i> (G.Forst.) Hook.		1	1	Araucariaceae	G	G	T	IUCN (LC)	त्रिसम्म रुख	I	
30	<i>Calamus tenuis</i> Roxb.		1		Araceae	A	M	S		बेत बास	N	TUCH 26-2739
31	<i>Trachycarpus maritimus</i> (Wall. ex Mart.) H.Wendl.			1	Araceae	A	M	T			N	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
32	<i>Agave americana</i> L.			1	Asparagaceae	A	M	H	IUCN (LC)	केतुके	I	
33	<i>Aloe vera</i> (L.) Burm.f.			1	Asphodelaceae	A	M	H		चिउ कुमारी	I	
34	<i>Diplazium spectabile</i> (Wall. ex Mett.) Ching		1	1	Aspleniaceae	P	P	H		उयू	N	
35	<i>Acmella calva</i> (DC.) R.K.Jansen	1		1	Asteraceae	A	D	H		महङ्गी	N	TUCH 26-2744
36	<i>Ageratina adenophora</i> (Spreng.) R. M. King & H. Rob.	1	1	1	Asteraceae	A	D	H	Invasive	गन्धे झार	I	TUCH 26-2682
37	<i>Ageratum conyzoides</i> L.	1	1	1	Asteraceae	A	D	H	Invasive	कालो बममारा	I	TUCH 26-2689
38	<i>Ageratum houstonianum</i> Mill.	1	1	1	Asteraceae	A	D	H	Invasive	निलो गन्धे झार	I	
39	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC	1		1	Asteraceae	A	D	H	IUCN (LC)	भिरीङ्गी झार	I	
40	<i>Artemisia dubia</i> Wall. ex Besser	1	1	1	Asteraceae	A	D	H		तितेपाती	N	
41	<i>Artemisia indica</i> Willd.	1	1	1	Asteraceae	A	D	H		तितेपाती	N	TUCH 26-2729
42	<i>Bidens pilosa</i> L.	1	1	1	Asteraceae	A	D	H	Invasive	कालो कुरो	I	
43	<i>Blumea stricta</i> (DC.) Anderb. & Bengtson	1			Asteraceae	A	D	H		राजसल्लो	N	TUCH 26-2681
44	<i>Calendula officinalis</i> L.			1	Asteraceae	A	D	H		असर्फी फूल	I	
45	<i>Cirsium waltichii</i> DC.	1	1	1	Asteraceae	A	D	H		कोई धाकल	N	TUCH 26-2736
46	<i>Cotula hemisphaerica</i> (Roxb.) Wall. ex C.B.Clarke	1			Asteraceae	A	D	H		गलफुले	N	
47	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	1	1	1	Asteraceae	A	D	H		बाख्खे घाँस	I	TUCH 26-2745
48	<i>Dahlia pinnata</i> Cav.			1	Asteraceae	A	D	H		लाहुरे फूल	I	
49	<i>Emilia sonchifolia</i> (L.) DC. ex Wight	1	1	1	Asteraceae	A	D	H		मुलापाते	N	
50	<i>Erigeron annuus</i> (L.) Desf	1		1	Asteraceae	A	D	H			I	TUCH 26-2714
51	<i>Galinsoga quadriradiata</i> Ruiz & Pav	1	1	1	Asteraceae	A	D	H	Invasive	बित्लाङ्गो	I	TUCH 26-2684
52	<i>Gazania rigens</i> (L.) Gaertn.			1	Asteraceae	A	D	H		ग्यालजन	I	
53	<i>Gnaphalium polycaulon</i> Pers.	1		1	Asteraceae	A	D	H	IUCN (LC)	बोकी झार	N	
54	<i>Parthenium hysterophorus</i> L.	1	1	1	Asteraceae	A	D	H	Invasive	पाती झार	I	
55	<i>Pseudognaphalium affine</i> (D.Don) Anderb.	1		1	Asteraceae	A	D	H		बुके फूल	N	TUCH 26-2719
56	<i>Solidago canadensis</i> L.			1	Asteraceae	A	D	H			I	
57	<i>Sonchus oleraceus</i> L.	1		1	Asteraceae	A	D	H		दुधे काँडा	I	
58	<i>Tagetes erecta</i> L.			1	Asteraceae	A	D	H		savapatri	I	
59	<i>Taraxacum</i> sect. <i>Taraxacum</i> F.H.Wigg.	1	1	1	Asteraceae	A	D	H		टुके फूल	I	TUCH 26-2724
60	<i>Tihonia rotundifolia</i> (Mill.) S. F. Blake		1		Asteraceae	A	D	H		रातो सुयंपुखी	I	
61	<i>Xanthium strumarium</i> L.	1	1	1	Asteraceae	A	D	H	Invasive	भेडे कुर्छो	I	
62	<i>Zinnia elegans</i> Jacq.			1	Asteraceae	A	D	H		सुपारी फूल	I	
63	<i>Berberis napaulensis</i> (DC.) Spreng.		1	1	Berberidaceae	A	D	S		जमाने मान्द्रो	N	
64	<i>Alnus nepalensis</i> D.Don		1	1	Betulaceae	A	D	T	IUCN (LC)	उत्तिस	N	TUCH 26-2700
65	<i>Dolichandra unguis-cati</i> (L.) L.G.Lohmann			1	Bignoniaceae	A	D	C		चरी नइये लहरो	I	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
66	<i>Jacaranda mimosifolia</i> D.Don		1	1	Bignoniaceae	A	D	T	IUCN(Vu)	बिन्दूफूल	I	
67	<i>Oroxylum indicum</i> (L.) Kurz			1	Bignoniaceae	A	D	T	IUCN (LC)	टटेतो	N	
68	<i>Tecoma stans</i> (L.) Juss. ex Kunth			1	Bignoniaceae	A	D	S	IUCN (LC)	घटा पुष्प	I	
69	<i>Cynoglossum zeylanicum</i> (Sw. ex Lehm.) Thunb. ex Brand	1	1	1	Boraginaceae	A	D	H		कनिके कुरो	N	TUCH 26-2685
70	<i>Brassica rapa</i> L.	1		1	Brassicaceae	A	D	H		गान्दे मुला	I	
71	<i>Capsella bursa-pastoris</i> (L.) Medik.	1		1	Brassicaceae	A	D	H		तेरी घाँस	N	TUCH 26-2690
72	<i>Lepidium apetalum</i> Willd.		1	1	Brassicaceae	A	D	H		चक्का	N	
73	<i>Nasturtium officinale</i> R.Br.	1			Brassicaceae	A	D	H	IUCN (LC)	सिम साग	I	
74	<i>Rorippa palustris</i> (L.) Besser	1			Brassicaceae	A	D	H			N	TUCH 26-2737
75	<i>Lobelia chinensis</i> Lour.	1	1	1	Campanulaceae	A	D	H			N	
76	<i>Cannabis sativa</i> L.	1		1	Cannabaceae	A	D	H		भाङ्ग, गाँजा	N	
77	<i>Celtis australis</i> L.		1	1	Cannabaceae	A	D	T	IUCN (LC)	खरी	I	TUCH 26-2703
78	<i>Canna × hybrida</i> Rodigas			1	Cannaceae	A	M	H		सर्बदा	I	
79	<i>Canna indica</i> L.			1	Cannaceae	A	M	H		सर्बदा	I	
80	<i>Dianthus barbatus</i> L.			1	Caryophyllaceae	A	D	H		डायथ्यम्	I	
81	<i>Dianthus caryophyllus</i> L.			1	Caryophyllaceae	A	D	H		कानेशन	I	
82	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	1	1	1	Caryophyllaceae	A	D	H		अभिजालो	I	TUCH 26-2746
83	<i>Polycarpon prostratum</i> (Forssk.) Asch. & Schweinf.	1			Caryophyllaceae	A	D	H	IUCN (LC)		N	
84	<i>Stellaria aquatica</i> (L.) Scop.	1		1	Caryophyllaceae	A	D	H			N	TUCH 26-2740
85	<i>Stellaria media</i> (L.) Vill.	1	1	1	Caryophyllaceae	A	D	H		अमले झार	N	
86	<i>Stellaria neglecta</i> (Lej.) Weihe	1	1	1	Caryophyllaceae	A	D	H		हुकु झार	N	
87	<i>Stellaria vestita</i> Kurz	1	1		Caryophyllaceae	A	D	H		खराने झार	N	
88	<i>Casuarina equisetifolia</i> L.		1		Casuarinaceae	A	D	T	IUCN (LC)		I	TUCH 26-2728
89	<i>Cleome spinosa</i> Jacq.			1	Cleomaceae	A	D	H		जुङ्गे फूल	I	
90	<i>Tradescantia fluminensis</i> Vell	1			Commelinaceae	A	D	H			I	
91	<i>Tradescantia pallida</i> (Rose) D.R.Hunt			1	Commelinaceae	A	M	H		काने फूल	I	
92	<i>Convolvulus arvensis</i> L.	1			Convolvulaceae	A	D	C		हलिखुर	N	
93	<i>Cuscuta reflexa</i> Roxb.	1	1	1	Convolvulaceae	A	D	C	IUCN (LC)	आकाश बेली, अमलता	N	
94	<i>Ipomoea carnea</i> Jacq.	1		1	Convolvulaceae	A	D	S	Invasive	बेशम	I	
95	<i>Ipomoea purpurea</i> (L.) Roth	1	1	1	Convolvulaceae	A	D	C		सिउरी	I	TUCH 26-2696
96	<i>Alangium chinense</i> (Lour.) Harms		1		Cornaceae	A	D	T		भालु पाइले	N	TUCH 26-2722
97	<i>Cryptomeria japonica</i> (Thunb. ex L.f.) D.Don		1		Cupressaceae	G	G	T			I	TUCH 26-2732

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
98	<i>Cupressus torulosa</i> D. Don		1	1	Cupressaceae	G	G	T	IUCN (LC)		N	
99	<i>Juniperus communis</i> L.		1		Cupressaceae	G	G	T	IUCN (LC)	बेली पुष्प	N	
100	<i>Juniperus indica</i> Bertol.		1	1	Cupressaceae	G	G	T	IUCN (LC)	धुपी	N	
101	<i>Juniperus recurva</i> Buch.-Ham. ex D. Don		1		Cupressaceae	G	G	T	IUCN (LC)	धुपी	N	
102	<i>Platycladus orientalis</i> (L.) Franco			1	Cupressaceae	P	P	S	IUCN (NT)	मयुसुंखी धुपी	I	TUCH 26-2697
103	<i>Cycas revoluta</i> Thunb.			1	Cycadaceae	G	G	T	IUCN (LC), Appendix II	कलबल, शकल	I	TUCH 26-2691
104	<i>Cyperus alternifolius</i> subsp. <i>flabelliformis</i> Kük.	1	1	1	Cyperaceae	A	M	H	IUCN (LC)	छता मोथे	I	TUCH 26-2702
105	<i>Cyperus compressus</i> L.	1		1	Cyperaceae	A	M	H	IUCN (LC)	मोथे	N	
106	<i>Cyperus cyperoides</i> (L.) Kuntze	1	1	1	Cyperaceae	A	M	H	IUCN (LC)	फिरफिरे झार, मोथे	N	
107	<i>Cyperus mindorensis</i> (Steud.) Huygh	1		1	Cyperaceae	A	M	H			N	
108	<i>Cyperus rotundus</i> L.	1	1	1	Cyperaceae	A	M	H	IUCN (LC)	मोथे	N	
109	<i>Dioscorea deltoidea</i> Wall. ex Griseb.	1		1	Dioscoreaceae	A	M	C	Appendix II	भ्याकुर	N	
110	<i>Polystichum squarrosus</i> (D. Don) Fée			1	Dryopteridaceae	P	P	H		उन्नु	N	
111	<i>Elaeocarpus angustifolius</i> Blume			1	Elaeocarpaceae	A	D	T	IUCN (LC)	रुद्राक्ष	N	
112	<i>Equisetum ramosissimum</i> Desf.	1	1	1	Equisetaceae	P	P	H	IUCN (LC)	औखे झार, कुकुरे झार	N	
113	<i>Rhododendron arboreum</i> Sm.		1		Ericaceae	A	D	T	IUCN (LC)	लालीगुराँस	N	
114	<i>Rhododendron simsii</i> Planch.			1	Ericaceae	A	D	S			I	
115	<i>Euphorbia milii</i> Des Moul.			1	Euphorbiaceae	A	D	S	IUCN (LC), CITES Appendix II	सिमरी	I	
116	<i>Phyllanthus emblica</i> L.			1	Euphorbiaceae	A	D	T	IUCN (LC)	अमला	N	
117	<i>Ricinus communis</i> L.	1	1		Euphorbiaceae	A	D	S		अंडर	I	TUCH 26-2705
118	<i>Albizia chinensis</i> (Osbeck) Merr.		1		Fabaceae	A	D	T		कालो सिसि	N	
119	<i>Bauhinia purpurea</i> L.		1	1	Fabaceae	A	D	T	IUCN (LC)	टाँकी	N	
120	<i>Bauhinia variegata</i> L.		1	1	Fabaceae	A	D	T	IUCN (LC)	कोइरालो	N	TUCH 26-2693
121	<i>Calliandra haematocephala</i> Hassk.			1	Fabaceae	A	D	S	IUCN (LC)	क्यालियान्ड्रा फूल	I	
122	<i>Cassia fistula</i> L.			1	Fabaceae	A	D	T	IUCN (LC)	राजवृक्ष	N	TUCH 26-2717
123	<i>Dalbergia sissoo</i> Roxb. ex DC.		1	1	Fabaceae	A	D	T	IUCN (LC), CITES Appendix II	सिसौ	N	
124	<i>Erythrina arborescens</i> Roxb.			1	Fabaceae	A	D	T		ठेकिकाठ	N	
125	<i>Leucaena leucocephala</i> (Lam.) de Wit		1	1	Fabaceae	A	D	T		इपिल-इपिल	I	TUCH 26-2731
126	<i>Trifolium repens</i> L.	1	1	1	Fabaceae	A	D	H		सेतो बेउली	N	TUCH 26-2688
127	<i>Vicia sativa</i> L.	1			Fabaceae	A	D	H	IUCN (LC)	कुटलीकोसा	N	TUCH 26-2686
128	<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC.		1		Fagaceae	A	D	T	IUCN (LC)	ढाले कटुस	N	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
129	<i>Quercus glauca</i> Thunb.		1		Fagaceae	A	D	T	IUCN (LC)	फलटैट	N	
130	<i>Geranium nepalense</i> Sweet	1	1	1	Geraniaceae	A	D	H		चुनित्रो घाँस	N	TUCH 26-2708
131	<i>Ginkgo biloba</i> L.		1	1	Ginkgoaceae	G		T	IUCN (EN)	गिँको	I	
132	<i>Ajuga parviflora</i> Benth.	1			Lamiaceae	A	D	H		घोके घाँस	N	
133	<i>Clerodendrum japonicum</i> (Thunb.) Sweet			1	Lamiaceae	A	D	S	IUCN (LC)	धागो फूल	N	
134	<i>Holmskioldia sanguinea</i> Retz.			1	Lamiaceae	A	D	S			N	
135	<i>Salvia plebeia</i> R.Br.			1	Lamiaceae	A	D	H		वन बाकरी	N	
136	<i>Salvia rosmarinus</i> Spenn.			1	Lamiaceae	A	D	H		रोजमेरी	I	
137	<i>Salvia splendens</i> Sellow ex Nees			1	Lamiaceae	A	D	H		ठूलो तुलसी	I	
138	<i>Scutellaria discolor</i> Wall. ex Benth.	1	1	1	Lamiaceae	A	D	H		निलो बुट्टे घाँस	N	
139	<i>Camphora officinarum</i> Boerh. ex Fabr		1	1	Lauraceae	A	D	T	IUCN (LC)	कपूर	I	TUCH 26-2711
140	<i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees & Eberm.		1	1	Lauraceae	A	D	T	IUCN (LC)	तेजपात	N	
141	<i>Litsea monopetala</i> (Roxb. ex Baker) Pers.		1	1	Lauraceae	A	D	T	IUCN (LC)	कुटमो	N	TUCH 26-2713
142	<i>Persea americana</i> Mill.			1	Lauraceae	A	D	T	IUCN (LC)		I	
143	<i>Lygodium flexuosum</i> (L.) Sw.	1	1	1	Lygodiaceae	P	P	C		नागबेली	N	
144	<i>Cuphea hyssopifolia</i> Kunth			1	Lythraceae	A	D	H		क्युफिया	I	
145	<i>Cuphea procumbens</i> Ortega	1		1	Lythraceae	A	D	H		सुल्का फूल	I	
146	<i>Lagerstroemia indica</i> L.		1	1	Lythraceae	A	D	T	IUCN (LC)	असारे फूल	N	
147	<i>Lagerstroemia speciosa</i> (L.) Pers			1	Lythraceae	A	D	T	IUCN (LC)	असारे फूल	I	
148	<i>Magnolia grandiflora</i> L.			1	Magnoliaceae	A	D	T	IUCN (LC)	रख कमल	I	
149	<i>Alcea rosea</i> L.			1	Malvaceae	A	D	H		हलिहक	I	
150	<i>Mahva sylvestris</i> L.			1	Malvaceae	A	D	H			I	
151	<i>Mahaviscus arboreus</i> Dill. ex Cav.			1	Malvaceae	A	D	H	IUCN (LC)	घाटी फूल	I	
152	<i>Sida cordata</i> (Burm. fil.) Bors. Waalk.	1	1	1	Malvaceae	A	D	H		बलु झार	N	
153	<i>Urena lobata</i> L.	1	1	1	Malvaceae	A	D	H	IUCN (LC)	डल्ले कुरो	N	
154	<i>Mazus pumilus</i> (Burm. fil.) Steenis	1		1	Mazaceae	A	D	H		मालती झार	N	TUCH 26-2742
155	<i>Melia azedarach</i> L.			1	Meliaceae	A	D	T	IUCN (LC)	बकाईनो	N	
156	<i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thomson		1		Menispermaceae	A	D	C		गुर्जो	N	
157	<i>Ficus auriculata</i> Lour.		1	1	Moraceae	A	D	T	IUCN (LC)	तिमिलो	N	
158	<i>Ficus benghalensis</i> L.			1	Moraceae	A	D	T		वर	N	
159	<i>Ficus benjamina</i> L.			1	Moraceae	A	D	T	IUCN (LC)	समी	N	
160	<i>Ficus elastica</i> Roxb.			1	Moraceae	A	D	T	IUCN (LC)	रबर	N	
161	<i>Ficus lacor</i> Buch.-Ham.			1	Moraceae	A	D	T		काभ्रो	N	
162	<i>Ficus pumila</i> L.			1	Moraceae	A	D	S			I	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
163	<i>Ficus religiosa</i> L.		1	1	Moraceae	A	D	T	IUCN (LC)	पिपल	N	
164	<i>Ficus semicordata</i> Buch.-Ham. ex Sm.		1		Moraceae	A	D	T	IUCN (LC)	खन्यु	N	
165	<i>Morus alba</i> L.		1	1	Moraceae	A	D	T	IUCN (LC)	किन्बु	I	TUCH 26-2695
166	<i>Corymbia citriodora</i> (Hook.) K. D. Hill & L. A. S. Johnson		1	1	Myrtaceae	A	D	T	IUCN (LC)	मसलाको रुख	I	TUCH 26-2698
167	<i>Psidium guajava</i> L.			1	Myrtaceae	A	D	T	IUCN (LC)	अमबा	I	
168	<i>Syzygium jambos</i> (L.) Alston		1	1	Myrtaceae	A	D	T	IUCN (LC)	गुलाब जामुन	I	
169	<i>Nephrolepis cordifolia</i> (L.) C. Presl			1	Nephrolepidaceae	P	P	H		पानिअमाला	N	
170	<i>Bougainvillea glabra</i> Choisy			1	Nyctaginaceae	A	D	S	IUCN (LC)	कागजे फूल	I	
171	<i>Mirabilis jalapa</i> L.			1	Nyctaginaceae	A	D	H		मालती	I	
172	<i>Chrysosaminum humile</i> (L.) Banfi			1	Oleaceae	A	D	S		फुँहलो जाई	N	
173	<i>Jasminum mesnyi</i> Hance		1	1	Oleaceae	A	D	S		डबल जाई	I	
174	<i>Jasminum officinale</i> L.			1	Oleaceae	A	D	S		लहरे जाई	N	
175	<i>Nyctanthes arbor-tristis</i> L.			1	Oleaceae	A	D	T	IUCN (LC)	पाजिात	N	
176	<i>Oenothera rosea</i> L'Hér. ex Aiton	1	1	1	Onagraceae	A	D	H			I	TUCH 26-2727
177	<i>Bulbophyllum careyanum</i> (Hook.) Spreng.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
178	<i>Coelogyne articulata</i> (Lindl.) Rchb.f.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
179	<i>Coelogyne corymbosa</i> Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
180	<i>Coelogyne cristata</i> Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
181	<i>Coelogyne fusca</i> (Lindl.) Rchb.f.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
182	<i>Coelogyne fuscescens</i> Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
183	<i>Coelogyne imbricata</i> (Hook.) Rchb.f.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
184	<i>Cymbidium aloifolium</i> (L.) Sw.			1	Orchidaceae	A	M	H	IUCN (LC)	सुनाखरी	N	
185	<i>Dendrobium crepidatum</i> Lindl. & Paxton			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
186	<i>Dendrobium denudans</i> D. Don			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
187	<i>Dendrobium heterocarpum</i> Wall. ex Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
188	<i>Dendrobium longicornu</i> Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	बावार	N	
189	<i>Gastrochilus dasypogon</i> (Sm.) Kuntze			1	Orchidaceae	A	D	H	CITES Appendix II	सुनाखरी	N	
190	<i>Rhynchostylis retusa</i> (L.) Blume			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
191	<i>Vanda alpina</i> (Lindl.) Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
192	<i>Vanda cristata</i> Wall. ex Lindl.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
193	<i>Vanda flavobrunnea</i> Rchb.f.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
194	<i>Vanda testacea</i> (Lindl.) Rchb.f.			1	Orchidaceae	A	M	H	CITES Appendix II	सुनाखरी	N	
195	<i>Lindenbergia grandiflora</i> Benth.	1		1	Orobanchaceae	A	D	H		भण्डि फूल	N	
196	<i>Oxalis corniculata</i> L.	1	1	1	Oxalidaceae	A	D	H		चरि अमिलो	N	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
197	<i>Oxalis debilis</i> Kunth	1		1	Oxalidaceae	A	D	H			I	
198	<i>Oxalis latifolia</i> Kunth	1	1	1	Oxalidaceae	A	D	H	Invasive	ढूलो चरी अमिलो	I	TUCH 26-2701
199	<i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don		1	1	Pinaceae	G	G	T	IUCN (LC)	देवदार	N	
200	<i>Pinus roxburghii</i> Sarg.		1	1	Pinaceae	G	G	T	IUCN (LC)	रानी सल्ला	N	
201	<i>Antirrhinum majus</i> L.			1	Plantaginaceae	A	D	H		भ्यागुते फूल	I	
202	<i>Mecardonia procumbens</i> (Mill.) Small	1			Plantaginaceae	A	D	H			I	
203	<i>Plantago major</i> L.	1	1	1	Plantaginaceae	A	D	H	IUCN (LC)	चने झार	N	TUCH 26-2710
204	<i>Veronica persica</i> Poir.	1	1	1	Plantaginaceae	A	D	H			I	
205	<i>Platanus orientalis</i> L.			1	Platanaceae	A	D	T	IUCN (DD)	विनार	I	TUCH 26-2723
206	<i>Arundo donax</i> L.	1		1	Poaceae	A	M	H	IUCN (LC)	ढुलो नकट	N	TUCH 26-2687
207	<i>Coix lacryma-jobi</i> L.		1	1	Poaceae	A	M	H		भिरकौलो	N	
208	<i>Cynodon dactylon</i> (L.) Pers.	1	1	1	Poaceae	A	M	H		ढुवो	N	
209	<i>Eleusine indica</i> (L.) Gaertn.	1			Poaceae	A	M	H	IUCN (LC)	कोदो घाँस	N	
210	<i>Hordeum vulgare</i> L.	1			Poaceae	A	M	H	IUCN (LC)	जौ	N	
211	<i>Imperata cylindrica</i> (L.) Raeusch.	1	1	1	Poaceae	A	M	H		सिम्ह	I	TUCH 26-2730
212	<i>Paspalum distichum</i> L.	1	1	1	Poaceae	A	M	H	IUCN (LC)	कोदे घाँस	I	
213	<i>Paspalum scrobiculatum</i> L.	1		1	Poaceae	A	D	H	IUCN (LC)	जैने घाँस	N	
214	<i>Poa annua</i> L.	1			Poaceae	A	M	H	IUCN (LC)	पोडे घाँस	N	TUCH 26-2741
215	<i>Polypogon monspeliensis</i> (L.) Desf.	1			Poaceae	A	M	H			N	TUCH 26-2733
216	<i>Saccharum spontaneum</i> L.	1			Poaceae	A	M	H	IUCN (LC)	काँस	N	
217	<i>Setaria plicata</i> (Lam.) T.Cooke	1		1	Poaceae	A	M	H			N	
218	<i>Podocarpus nerifolius</i> D.Don			1	Podocarpaceae	G	G	T	CITES III (LC)	गुन्सी	N	TUCH 26-2716
219	<i>Polygala crotolaroides</i> Buch.-Ham. ex DC.	1			Polygalaceae	A	D	H			N	
220	<i>Muehlenbeckia platyclada</i> (F. Muell.) Meisn.			1	Polygonaceae	A	D	S			I	
221	<i>Persicaria barbata</i> (L.) H.Hara	1		1	Polygonaceae	A	D	H	IUCN (LC)	रातो भिँ	N	
222	<i>Persicaria hydropiper</i> (L.) Spach	1			Polygonaceae	A	D	H	IUCN (LC)	भिँ झार	N	TUCH 26-2683
223	<i>Persicaria nepalensis</i> (Meisn.) H. Gross	1		1	Polygonaceae	A	D	H		भिँ	N	
224	<i>Persicaria perfoliata</i> (L.) H. Gross	1		1	Polygonaceae	A	D	H		धमाउो काँडा	N	TUCH 26-2725
225	<i>Polygonum plebeium</i> R.Br.	1			Polygonaceae	A	D	H	IUCN (LC)	मुकुल झार	N	
226	<i>Rumex dentatus</i> L.	1	1	1	Polygonaceae	A	D	H			N	
227	<i>Rumex nepalensis</i> Spreng.	1		1	Polygonaceae	A	D	H		हलहले	N	TUCH 26-2709
228	<i>Drynaria mollis</i> Bedd.		1	1	Polypodiaceae	P	P	H		अनू	N	
229	<i>Drynaria propinqua</i> (Wall. ex Mett.) J. Sm. ex Bedd.		1	1	Polypodiaceae	P	P	H		अनू	N	
230	<i>Pyrrosia costata</i> (Wall. ex C.Presl) Tagawa. & K.Iwats.			1	Polypodiaceae	P	P	H		अनू	N	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
231	<i>Portulaca oleracea</i> L.	1	1	1	Portulacaceae	A	D	H	IUCN (LC)	गड्यौंउला झार, कुल्फा साग	I	
232	<i>Lysimachia arvensis</i> (L.) U. Manns & Anderb.	1		1	Primulaceae	A	D	H		अमरिले	N	
233	<i>Grevillea robusta</i> A. Cunn. ex R. Br.		1	1	Proteaceae	A	D	T	IUCN (LC)	काईयो फूल	I	
234	<i>Adiantum capillus-veneris</i> L.	1	1	1	Pteridaceae	P	P	H	IUCN (LC)	काने उयू	N	TUCH 26-2726
235	<i>Adiantum philippense</i> L.	1	1	1	Pteridaceae	P	P	H			N	
236	<i>Pteris major</i> (Bedd.) ined.			1	Pteridaceae	P	P	H		उयू	N	
237	<i>Pteris vittata</i> L.	1	1	1	Pteridaceae	P	P	H	IUCN (LC)	उयू	N	
238	<i>Ranunculus sceleratus</i> L.	1		1	Ranunculaceae	A	D	H	IUCN (LC)	नाककोर	N	TUCH 26-2734
239	<i>Ziziphus incurva</i> Roxb.		1	1	Rhamnaceae	A	D	T	IUCN (LC)	हाडे वयर	N	
240	<i>Chaenomeles japonica</i> (Thunb.) Lindl. ex Spach			1	Rosaceae	A	D	S	IUCN (LC)	क्यानोमेली	I	
241	<i>Potentilla indica</i> (Andrews) Th. Wolf	1		1	Rosaceae	A	D	H		भुईं ऐसेलु	N	TUCH 26-2704
242	<i>Prunus cerasoides</i> Buch.-Ham. ex D. Don	1		1	Rosaceae	A	D	T	IUCN (LC)	ऐयू	N	
243	<i>Pyrus pashia</i> Buch.-Ham. ex D. Don		1	1	Rosaceae	A	D	T	IUCN (LC)	मयल	N	TUCH 26-2715
244	<i>Pyrus pyrifolia</i> (Burm.f.) Nakai			1	Rosaceae	A	D	T		नासपती	I	
245	<i>Rosa chinensis</i> Jacq.		1	1	Rosaceae	A	D	S		अन्तर गुलाफ	I	
246	<i>Rubus ellipticus</i> Sm.	1	1	1	Rosaceae	A	D	S	IUCN (LC)	ऐसेलु	N	TUCH 26-2735
247	<i>Spiraea bella</i> Sims		1		Rosaceae	A	D	S	IUCN (LC)	सेतो खरोटो	N	TUCH 26-2680
248	<i>Coffea arabica</i> L.			1	Rubiaceae	A	D	S	IUCN (EN)	कफी	I	
249	<i>Gardenia jasminoides</i> J.Ellis			1	Rubiaceae	A	D	S	IUCN (LC)	इन्द्र कमल	I	
250	<i>Rubia manjith</i> Roxb.	1	1	1	Rubiaceae	A	D	H		मजिठो	N	
251	<i>Berberis koenigii</i> L.			1	Rutaceae	A	D	S	IUCN (LC)	मिठो निम, कडीपत्ता	N	TUCH 26-2706
252	<i>Citrus maxima</i> (Burm.) Merr.		1	1	Rutaceae	A	D	T	IUCN (LC)	भोगटे	I	
253	<i>Melaleuca citrina</i> (Curtis) Dum.Cours.		1	1	Rutaceae	A	D	T		कालिक फूल	I	
254	<i>Populus nigra</i> L.			1	Salicaceae	A	D	T			I	
255	<i>Salix babylonica</i> L.		1	1	Salicaceae	A	D	T	IUCN (DD)	बैस	I	TUCH 26-2699
256	<i>Viscum monoicum</i> Roxb. ex DC.		1		Santalaceae	A	D	H			N	
257	<i>Sapindus mukorossi</i> Gaertn.			1	Sapindaceae	A	D	T		गिठ्ठा	I	
258	<i>Buddleia asiatica</i> Lour.	1		1	Scrophulariaceae	A	D	S	IUCN (LC)	भिमेसे पाती	N	
259	<i>Brugmansia suaveolens</i> (Humb. & Bonpl. ex Willd.) Bercht. & J. Presl			1	Solanaceae	A	D	S	IUCN (EW)	धतुरो फूल	I	
260	<i>Cestrum nocturnum</i> L.	1	1	1	Solanaceae	A	D	S	IUCN (LC)	रातकी रानी	I	
261	<i>Cestrum parqui</i> (Lam.) L'Hér.	1	1	1	Solanaceae	A	D	S	IUCN (LC)	मनाझे हम्ना	I	TUCH 26-2694
262	<i>Datura stramonium</i> L.		1	1	Solanaceae	A	D	H		धतुरो	I	

SN	Plant species	AA	FA	BA	Family	Group	Life form	Habit	Conservation status	Local name	Distribution	Voucher number
263	<i>Nicandra physalodes</i> (L.) Gaertn.		1	1	Solanaceae	A	D	H		इसमगोली	I	
264	<i>Physalis peruviana</i> L.	1	1	1	Solanaceae	A	D	H	IUCN(LC)	जड़गली मेवा	I	
265	<i>Solanum aculeatissimum</i> Jacq.	1	1	1	Solanaceae	A	D	S		कापटकारी	I	
266	<i>Solanum nigrum</i> L.	1	1	1	Solanaceae	A	D	H		कालो बिही	N	TUCH 26-2712
267	<i>Solanum pseudocapsicum</i> L.	1	1	1	Solanaceae	A	D	H		सोनो बिही	I	
268	<i>Solanum torvum</i> Sw.			1	Solanaceae	A	D	S		बिहि	I	TUCH 26-2738
269	<i>Strelitzia reginae</i> Banks			1	Strelitzaceae	A	D	H		चरी फूल	I	
270	<i>Taxus mairei</i> (Lemée & H.Lév.) S.Y.Hu		1		Taxaceae	G	G	T	IUCN (VU)	लौठ सल्ला	N	TUCH 26-2692
271	<i>Tectaria coadunata</i> (J.Sm.) C.Chr.	1		1	Tectariaceae	P	P	H		काली निजो	N	
272	<i>Thelypteris penangiana</i> (Hook.) C.F.Reed			1	Thelypteridaceae	P	P	H		अन्यू	N	
273	<i>Thelypteris procera</i> (D.Don) Fraser-Jenk.			1	Thelypteridaceae	P	P	H		अन्यू	N	
274	<i>Boehmeria penduliflora</i> Wedd. ex D. G. Long		1		Urticaceae	A	D	H		काम्लो बॉस	N	TUCH 26-2718
275	<i>Pilea microphylla</i> (L.) Liebm			1	Urticaceae	A	D	H			I	TUCH 26-2748
276	<i>Urtica dioica</i> L.	1	1		Urticaceae	A	D	H	IUCN (LC)	सिस्नु	N	
277	<i>Duranta erecta</i> L.		1	1	Verbenaceae	A	D	S	IUCN (LC)	निल कांडा	I	
278	<i>Lantana camara</i> L.	1	1	1	Verbenaceae	A	D	S	Invasive	वन भंडा	I	
279	<i>Verbena officinalis</i> L.			1	Verbenaceae	A	D	H		पित्त मारी	N	
280	<i>Sambucus javanica</i> Reinw. ex Blume	1	1	1	Viburnaceae	A	D	S	IUCN (LC)	कानिके फूल	N	TUCH 26-2721
281	<i>Viola canescens</i> Wall.	1		1	Violaceae	A	D	H			N	
282	<i>Viola tricolor</i> L.			1	Violaceae	A	D	H		पुतली फूल	I	

Note : AA- Agriculture area; FA - Forest area; BA- Building area; I - Introduced; N - Native; Group: A - Angiosperm; G - Gymnosperm; P - Pteridophytes; Life Form: M - Monocot; D - Dicot; P - Pteridophytes; G - Gymnosperm; H - Herb; S - Shurb; T - Tree; C - Climber; DD - Data Deficient; LC - Least Concern; NT - Near Threatened; VU - Vulnerable; EN - Endangered; EW - Extinct in the Wild

Assessment of Different Nutrient Sources on Production and Profitability of Barley (*Hordeum vulgare* L.) in Khairahani, Chitwan

Achyut Gaire*, Anugya Dawadi & Sulochana Aryal

Institute of Agriculture and Animal Science, Rampur Campus, Tribhuvan University, Nepal

*Email: achyut.gaire@rc.tu.edu.np

Received: 21 Jan 2026

Revised: 18 May 2026

Accepted: 21 May 2026

Published: 2 July 2026

Abstract

Although nutrient management plays a crucial role in determining the productivity of barley (*Hordeum vulgare* L.), comparative information on the effectiveness of organic and inorganic nutrient sources under local conditions is still scarce. A field experiment was conducted during the 2024, Rabi season at Khairahani, Chitwan, to evaluate the effects of different nutrient sources on growth, yield, and profitability of barley var. Mustangey Jau. Using a randomized complete block design with five treatments-controls, chemical fertilizer NPK, poultry manure, farmyard manure, and vermicompost-each replicated four times, significant differences were observed in plant height, leaf area index, effective tillers, and grain yield. NPK fertilizer produced the highest plant height (94.80 cm), leaf area index (0.18), effective tillers (6.52), and grain yield (1.69 t/ha), followed by poultry manure and vermicompost. Organic sources improved growth over the control but yielded less than NPK. Economic analysis showed NPK achieved the highest net return and benefit-cost ratio (2.19), followed by poultry manure (1.34). Therefore, the application of recommended NPK fertilizer is suggested for maximizing barley yield and profitability, while poultry manure can be considered as a suitable organic alternative for improving productivity compared with other organic sources.

Keywords: Benefit-cost ratio, Chemical fertilizer, Grain yield, Organic manure

Introduction

Barley (*Hordeum vulgare* L.) is one of the earliest domesticated cereal crops and ranks as the world's fourth most important cereal after maize, rice, and wheat. In Nepal, it stands fifth after rice, maize, wheat, and millet, with an annual production of 24,931 Mt and an average yield of 1.34 Mt ha⁻¹ (Ministry of Agriculture and Livestock Development [MoALD], 2024). Its wide adaptability-from drylands to humid subtropics (Martin et al., 2006) and from the Terai plains to high hills -makes barley a resilient crop capable of thriving under diverse agro-ecological conditions. Despite its potential, barley remains an underutilized crop in Nepal, although it holds significant promise for enhancing food and nutritional security, particularly in marginal and rainfed areas (Pandey et al., 2006).

The adaptability of barely to a wide range of environmental conditions makes it a crucial crop in both temperate and semi-arid regions (Verma,

2022). However, to optimize its yield potential and ensure profitability, effective nutrient management is essential. Nutrients play a pivotal role in plant growth, development, and productivity, influencing physiological processes such as photosynthesis, enzyme activation, and grain filling. However, maximizing its productivity and economic returns remains a key challenge, especially under nutrient-limited conditions. Efficient nutrient management plays a pivotal role in improving the productivity and profitability. The indiscriminate use of inorganic fertilizers has led to soil degradation, nutrient imbalance, and declining soil fertility (Agegnehu et al., 2014). On the other hand, balanced application of nitrogen (N), phosphorus (P), and potassium (K) enhances vegetative growth, tillering, and grain filling, thereby improving yield potential (Jat, 2021). Organic manures such as farmyard manure, poultry manure, and vermicompost contribute not only to nutrient supply but also to improved soil structure, microbial activity, and long-term sustainability (Singh & Kumar, 2015).

In Nepal, farmers commonly use both organic and inorganic nutrient sources in barley cultivation; however, scientific information on their comparative performance under the local conditions of Chitwan is limited. This study aims to evaluate the effect of different nutrient sources on the growth, yield, and economic performance of barley. The findings will help identify a balanced and profitable nutrient management approach, contributing to sustainable production and the revitalization of barley as a climate-resilient crop in Nepal.

Materials and Methods

The experiment was conducted in Khairahani municipality ward no-6, Chitwan with geographical co-ordinates of 27° 37' N and 84° 43' E which is 210 meter above sea level. The experiment was conducted during winter season of 2024. The soil type was silty loam. The climatic data of the experimental site during the cropping period (November-February) are presented in Figure 1. Maximum temperature ranged from about 25 to 30°C and minimum temperature from approximately 7 to 13°C, with a gradual decline from November to January and a slight increase in February. Relative humidity showed a decreasing trend during the period, declining from about 76% in November to around 38% in February. There were five treatments and four replications using Randomized Complete Block Design(RCBD) with 20 cm row to row spacing and 5 cm plant to plant spacing. The individual plot size was 2×2 m² separated with 0.5 meter. The treatments were: control, poultry manure @ 3 tons/ha, vermicompost @ 2 tons/ha, farm yard

manure @ 5 tons/ha and NPK @ 60:30:30 kg/ha as recommended by MoALD, 2024. The farm yard manure, poultry manure and vermicompost were thoroughly mixed and incorporated in the soil a day prior to sowing. Urea, DAP (Diammonium Phosphate) and MOP (Muriate of Potash) were used as inorganic fertilizers. Full dose of P and K and half of the N were applied as basal dose at the time of sowing and remaining dose of N was applied 35 days after sowing. Mustangey Jau (local) landrace of barley was sown on 19th November, 2024 with seed rate of 100 kg/ha. Gap filling was done to ensure optimum plant population after 20 days of sowing. One hand weeding was done at 30 days after sowing.

Different growth and yield attributes were taken at different time intervals. Plant height was measured at 30 day after sowing (DAS), 60 DAS and at harvest from the base of the plant to the top of the main branch of five randomly selected plants in each plot. The number of leaves and leaf area index was also measured at 30 and 45 DAS from the sampled plants and averaged. The number of spikes bearing tillers at harvest in each plot was counted by placing a meter scale along the crop row at five randomly selected sites, and the average was used to calculate the number of effective tillers per plant. Five spikes were selected at random from each plot and measured for spike length and filled and unfilled grains per spike. Plant was harvested on 21st February, 2025 and after threshing, the grains were properly winnowed and cleaned and the grain and straw yield from each plot recorded by the help of weighing balance.

Economic analysis

The economic analysis was conducted to estimate the cost of cultivation, gross return, net return, and benefit-cost (B:C) ratio of buckwheat under different seed priming and fertilizer levels. The cost of cultivation was calculated based on total expenditures on labor, fertilizers, compost, pesticides, and other inputs. Gross return (Rs/ha) was determined from the economic yield at prevailing local market prices, while net return was obtained by subtracting the total cost from gross return. The benefit-cost ratio was computed as the ratio of gross return to total cost of cultivation.

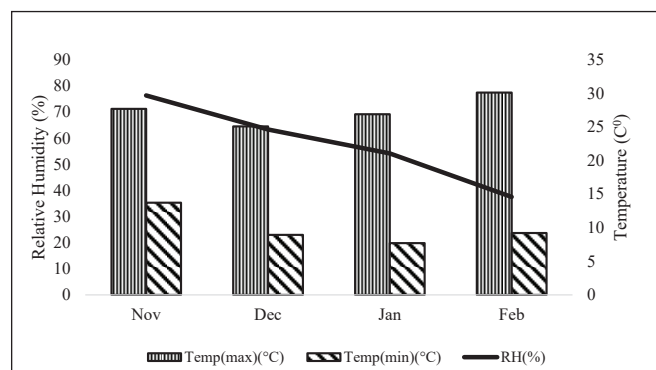


Figure 1: Climatic condition of the experimental site during November, 2024 to February, 2025

Data analysis

The collected data were arranged and tabulated in MS Excel 2023. Then, the arranged data were analyzed using R studio software (version 4.4.1). Mean separation was carried out by using Duncan's Multiple Range Test (DMRT) at 5% level of significance (Gomez & Gomez, 1984).

Climatic data

Climatic data for the experimental site were obtained from the NASA Power online database. During the study period, the maximum temperature ranged between 20.09°C and 30.12°C, while the minimum temperature varied from 7.7°C to 13.74°C. Relative humidity fluctuated from 37.52% in February to 76.39% in November.

Results and Discussion

Growth attributes

The statistical analysis showed that at 30 days after sowing (DAS), plant height did not differ significantly among treatments ($p > 0.05$). At 60 DAS and at harvest, NPK recorded maximum plant height significantly differing with remaining treatments. The availability of essential nutrients, particularly nitrogen on meristematic activity that promotes cell elongation and vegetative growth compared to organic sources due to slower release of nutrients (Singh & Kumar, 2015). Similarly, Leaf number at 45 DAS was found significantly

higher under vermicompost as compared to control. Similar finding was reported by Sunag et al. (2021), who noted that nutrient application enhanced leaf production with higher photosynthetic capacity contributing to higher leaf number. At 30 DAS, Leaf Area Index (LAI) was superior under poultry manure was statistically at par with all the treatments except control. The increases in growth parameters with nitrogen in nutrient sources have also been reported by Dekhane et al. (2017) and Kumari et al. (2023).

Yield attributes

The statistical analysis showed that spike length was not significantly influenced among treatments ($p > 0.05$). The spike length is more due to genetical variability and less sensitive to environmental and soil condition. A highly significant difference among treatments on effective tillers per square meter was observed with highest under NPK application (6.52), followed by vermicompost (5.37), while the lowest was observed in the control (3.50). The balanced and immediate nutrient supply of NPK supports the initiation, survival, and strengthening of tillers and producing effective tillers in barley (Alam et al., 2007). The result agrees with the Prystupa et al., 2003 who reported that number of effective tillers per plant was directly affected by NPK fertilizer application. The thousand grain weight and filled and unfilled grains per spike resulted in non-significant results indicating these traits are primarily controlled by varietal characteristics rather than external nutrient supply (Samarah, 2005).

Table 1: Effect of different nutrient sources on growth attributes of barley in Khairahani, Chitwan during 2024/2025

Treatments	PH at 30 DAS	PH at 60 DAS	PH at Harvest	LN at 30 DAS	LN at 45 DAS	LAI at 30 DAS	LAI at 45 DAS
Control	36.10	48.17 ^b	66.95 ^b	9.90	15.95 ^b	0.16 ^b	1.96
Poultry manure	34.95	51.78 ^b	73.25 ^b	9.81	16.25 ^{ab}	0.20 ^a	2.12
NPK	36.28	70.35 ^a	94.80 ^a	11.0	17.0 ^{ab}	0.18 ^{ab}	2.08
FYM	33.35	49.75 ^b	73.45 ^b	9.80	16.50 ^{ab}	0.17 ^{ab}	1.75
Vermicompost	33.60	50.25 ^b	72.80 ^b	10.22	20.45 ^a	0.19 ^a	1.68
LSD(0.05)	4.37	5.88	7.38	1.75	4.08	0.025	0.50
SEm(±)	0.63	0.85	1.07	0.53	1.25	0.003	0.07
CV (%)	8.14	7.06	6.28	11.07	15.38	9.09	17.08
F-test	NS	***	***	NS	**	*	NS
Grand Mean	34.85	54.06	76.25	10.28	17.23	0.18	1.92

Note: *Significant at 0.05 probability level, **Significant at 0.01 probability level, ***Significant at 0.001 probability level, NS - Non-significant; LSD - Least Significant Difference; CV - Coefficient of Variation; SEm - Standard Error of Mean. Means within the column followed by common letter do not significantly different at 5% level by DMRT, PH-Plant Height; LN-LeafNumber; LAI-Leaf Area Index

Grain yield and straw yield

The statistical analysis showed that there was a highly significant difference among treatments on grain yield at $p < 0.001$. Treatment NPK recorded significantly higher grain yield (1.69 t/ha) followed by vermicompost (1.45 t/ha) and poultry manure (1.29 t/ha). Control exhibited the lowest grain yield. Barley yield responded higher under NPK application due to immediate release of essential nutrient particularly nitrogen, which promotes tiller formation, leaf area expansion and ultimately higher assimilate partitioning into grains while other organic fertilizer slowly released nutrient. Different nutrient sources showed non-significant effect over straw yield may be due to nutrient distributing, crop

naturally channels nutrients into grains than straw. Similar results were obtained by Kumar et al. (2022).

Correlation analysis of yield and yield attributes

The correlation analysis highlights a strong relationship between various yield components and the grain yield of barley (Figure 2). Positive correlations were observed for spike length, effective tillers per hill, and filled grains per spike with grain yield, whereas unfilled grains per spike showed a negative association. These findings indicate that higher numbers of tillers, longer spikes, and more filled grains per spike contribute to increased grain yield, while a lower number of unfilled grains per spike is associated with higher productivity (Table 2).

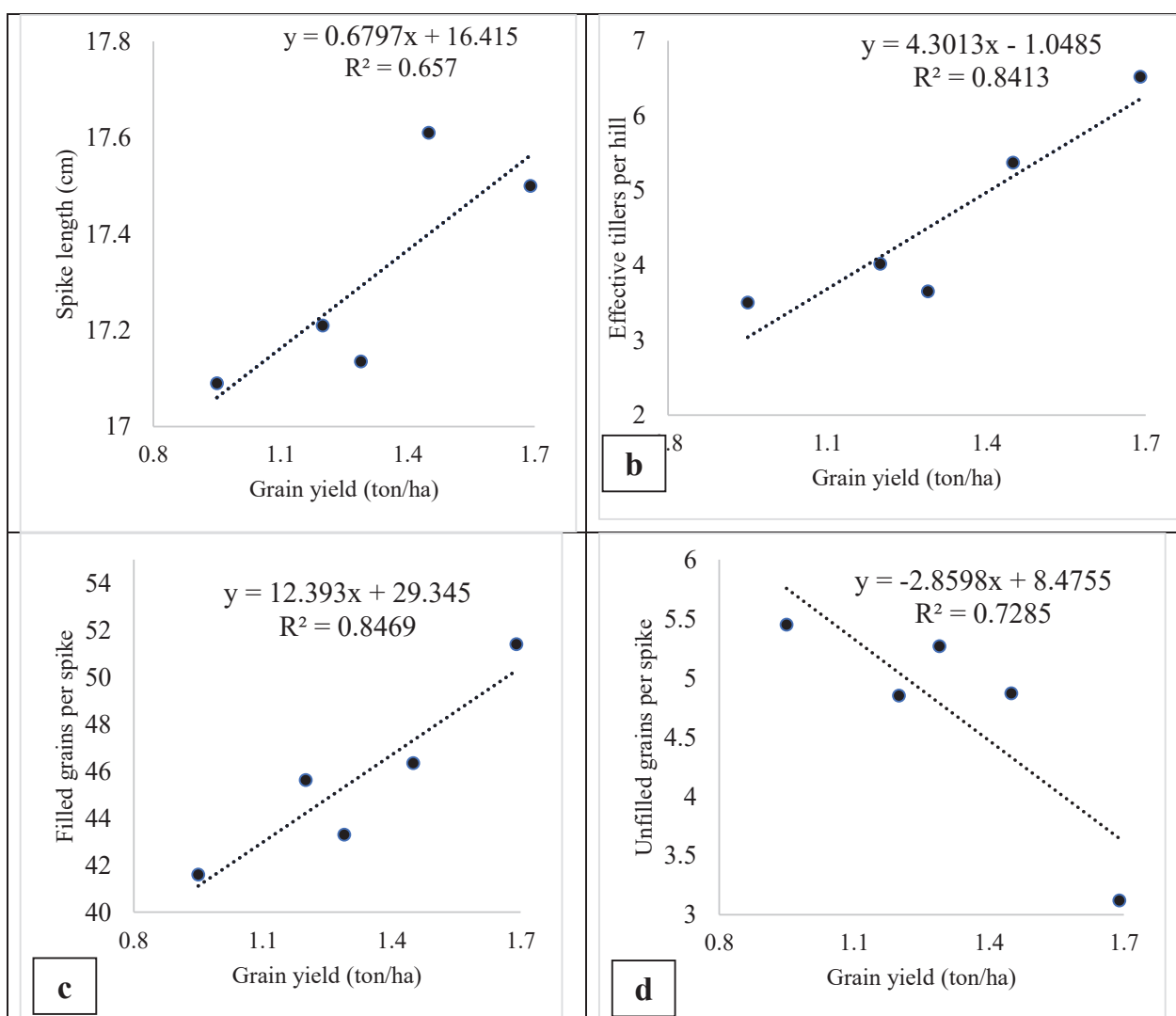


Figure 2: Correlation between spike length and grain yield; (a) Effective tiller per hill and grain yield; (b) Filled grains per spike and grain yield; (c) Unfilled grains per spike and grain yield; (d) of barley

Economics of barley

The highly significant variation was recorded in gross income, net income, and B:C ratio among the nutrient sources. The superiority of NPK treatments can be attributed to their higher grain yield, which directly translated into greater returns. In addition, the cost of cultivation was relatively lower under NPK, further improving profitability (Table 3). Similar findings have been reported by Jat et al. (2021) and Dinka et al. (2018). The reduced profitability of organic sources, especially vermicompost, was mainly due to its higher cost of cultivation. The maximum B:C ratio (2.16) was

obtained with NPK application. NPK emerged as the most profitable nutrient source for barley production.

Conclusion

Different nutrient sources had a significant impact on the growth, yield, and economic performance of barley. Among the tested treatments, NPK fertilizer resulted in the highest growth, yield, and profitability, followed by vermicompost, poultry manure, and FYM. These results indicate that NPK was the most effective nutrient source for maximizing barley production. However, integrating organic and inorganic fertilizers could further improve soil health

Table 2: Effect of different nutrient sources on yield attributes and yield of barley in Khairahani, Chitwan during 2024/2025

Treatments	Spike Length (cm)	Effective tillers per hill	1000 Grain Weight (g)	Filled grains per spike	Unfilled grains per spike	Grain yield (t/ha)	Straw yield (t/ha)
Control	17.09	3.50 ^b	46.62	41.60	5.45	0.95 ^d	1.37
Poultry manure	17.14	3.65 ^b	47.62	43.30	5.27	1.29 ^{bc}	1.47
NPK	17.50	6.52 ^a	47.67	51.40	3.12	1.69 ^a	2.05
FYM	17.21	4.02 ^b	43.65	45.62	4.85	1.20 ^c	1.41
Vermicompost	17.61	5.37 ^a	48.25	46.35	4.87	1.45 ^b	1.76
LSD (0.05)	1.12	1.34	9.47	8.83	3.06	0.17	0.49
SEm(±)	0.34	0.48	1.37	2.27	0.44	0.02	0.07
CV (%)	4.20	18.91	13.15	24.02	12.56	8.84	19.76
F-test	NS	***	NS	NS	NS	***	NS
Grand mean	17.31	4.61	46.76	45.65	4.71	1.31	1.61

Note: ***Significant at 0.01 probability level; NS - Non-significant; LSD - Least Significant Difference; CV - Coefficient of Variation; SEm - Standard Error of Mean. Means within the column followed by common letter do not significantly different at 5% level by DMRT

Table 3: Effect of different nutrient sources on economics of barley in Khairahani, Chitwan during 2024/2025

Treatments	Cost of Cultivation (Nrs. Per ha)	Gross income (Nrs. Per ha)	Net income (Nrs. Per ha)	B:C ratio
Control	79000	106283 ^d	27283 ^b	1.35 ^b
Poultry manure	103000	138828 ^c	35828 ^b	1.35 ^b
NPK	83200	182865 ^a	99665 ^a	2.19 ^a
FYM	104000	129876 ^c	25876 ^b	1.25 ^b
Vermicompost	133000	157102 ^b	24102 ^b	1.18 ^b
LSD	-	23081.09	17828.55	0.20
SEM (+)	-	7300	7300	0.06
CV%	-	10.64	27.19	8.96
F-probability	-	***	***	***
Grand mean	-	142991	42551	1.46

Note: ***Significant at 0.001 probability level; LSD - Least Significant Difference; CV - Coefficient of Variation; SEm - Standard Error of Mean. Means within the column followed by common letter do not significantly different at 5% level by DMRT

and maintain long-term productivity, suggesting a balanced nutrient management approach for optimal barley cultivation.

Author Contributions

A Gaire did conceptualization, methodology, formal data analysis, writing draft, and final editing. A Dawadi and S Aryal did field work, data collection, data curation, data analysis and lab work.

Acknowledgements

The authors gratefully acknowledge the Rampur Campus, Institute of Agriculture and Animal Science, Khairahani, Chitwan, for providing the research field and laboratory facilities essential for this study.

References

- Agegehu, G., Van Beek, C., & Bird, M. I. (2014). Influence of integrated soil fertility management in wheat and tef productivity and soil chemical properties in the highland tropical environment. *Journal of Soil Science and Plant Nutrition*, 14(3), 532-545. <https://doi.org/10.4067/S0718-95162014005000042>
- Alam, M. Z., Haider, S. A., & Paul, N. K. (2007). Yield and yield components of barley (*Hordeum vulgare* L.) cultivars in relation to nitrogen fertilizer. *Journal of Applied Science Research*, 3(10), 1022-1026.
- Dekhane, S. S., Mangave, B. D., Patel, D. J., & Dumbre, R. B. (2017). Effect of organic products on plant growth and yield of wheat. *International Journal of Horticulture, Agriculture and Food Science*, 1(4), 13-16. <https://doi.org/10.22161/ijhaf.1.4.2>
- Dinka, T. B., Goshu, T. A., & Haile, E. H. (2018). Effect of integrated nutrient management on growth and yield of food barley (*Hordeum vulgare*) variety in Tokekutaye district, West Showa zone, Ethiopia. *Advances in Crop Science and Technology*, 6(3), 1-8. <https://doi.org/10.4172/2329-8863.1000365>
- Gomez, K.A., & Gomez, A.A. (1984). *Statistical procedures for agricultural research* (2nd ed.). John Wiley & Sons.
- Jat, M. L., Chaplot, P. C., Bairwa, D. D., Meena, S. N., & Dhayal, B. C. (2021). Effects of integrated nutrient management on yield and economics of barley (*Hordeum vulgare*). *Indian Journal of Agronomy*, 66(4), 425-429. <https://doi.org/10.59797/ija.v66i4.2888>
- Kumar, D., Singh, M. M., Yadav, M. R., Makarana, G., Kushwaha, M., Dutta, S., Bhattacharjee, S., & Rajesh, R. (2022). Growth and yield performance of fodder oats (*Avena sativa*) grown under different nutrient management practices. *Indian Journal of Agricultural Sciences*, 92(2), 267-272. <https://doi.org/10.56093/ijas.v92i2.122250>
- Kumari, R., Alam, M. S., Patel, J. N., & Raj, Y. (2023). Influence of chemical fertilizer and organic manure on enhancing the production of barley (*Hordeum vulgare* L.) crop in Himachal Pradesh, India. *Journal of Scientific Research and Reports*, 30(5), 1-10. <https://doi.org/10.9734/jsrr/2023/v30i51813>
- Martin, J. H., Waldren, R. P., & Stamp, D. L. (2006). *Principles of field crop production*. Pearson Prentice Hall.
- Ministry of Agriculture and Livestock Development. (2024). *Statistical information on Nepalese agriculture*. Government of Nepal.
- Pandey, M., Wagner, C., Friedt, W., & Ordon, F. (2006). Genetic relatedness and population differentiation of Himalayan hulless barley (*Hordeum vulgare* L.) landraces inferred with SSRs. *Theoretical and Applied Genetics*, 113, 715-729. <https://doi.org/10.1007/s00122-006-0340-0>
- Prystupa, P., Slafer, G. A., & Savin, R. (2003). Leaf appearance, tillering and their coordination in response to N×P fertilization in barley. *Plant and Soil*, 255, 587-594. <https://doi.org/10.1023/A:1026018702317>

- Samarah, N. H. (2005). Effects of drought stress on growth and yield of barley. *Agronomy for Sustainable Development*, 25(1), 145-149. <https://doi.org/10.1051/agro:2004064>
- Singh, D., & Kumar, A. (2015). Effect of inorganic and organic sources of nutrients on yield and nutrient uptake by wheat and soil fertility. *Annals of Plant and Soil Research*, 17(2), 146-149.
- Sunag, M. N., Singh, R. P., Singh, R., & Singh, K. (2021). Effect of integrated nutrient management on the performance of barley (*Hordeum vulgare* L.). *The Pharma Innovation Journal*, 10(9), 1492-1496. <https://www.thepharmajournal.com>
- Verma, R. P. S., Lal, C., Malik, R., Kharub, A. S., & Kumar, L. (2022). Barley improvement: Current status and future prospects in changing scenario. In P. L. Kashyap et al. (Eds.), *New horizons in wheat and barley research* (pp. 221-245). Springer. https://doi.org/10.1007/978-981-16-4449-8_6

CITES Listed Plants of Nepal and their Trade Status for Last 50 Years

Kalpana Sharma Dhakal^{1*}, Gopal Sharma¹, Saroja Adhikari¹, Jwala Shrestha² & Til Kumari Thapa²

¹Department of Plant Resources, Thapathali, Kathmandu, Nepal

²National Herbarium and Plant Laboratories (KATH), Godawari, Lalitpur, Nepal

*Email: kalpanasharmadhakal@gmail.com

Received: 21 Jan 2026

Revised: 30 March 2026

Accepted: 21 May 2026

Published: 2 July 2026

Abstract

Over the past 50 years, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has played a significant role in regulating and controlling the unsustainable international trade of wildlife and plants, protecting significant number of species. Nepal, as the 12th party to CITES, has actively participated in these conservation efforts. This review examines the history of Nepalese plant inclusion and deletion in CITES appendices, compiles a comprehensive list of Nepalese plant species listed under CITES, and assesses their trade status. The analysis was based on CITES COP documents related to amendment of Nepal's CITES listed plants, their relevant resolutions, the CITES trade database, Nepalese customs data. Currently, 509 Nepalese plant species are listed under CITES, comprising 504 species in Appendix II and five species in Appendix III, with none included in Appendix I. Between 1977 and 2024, a total of 118 plant species were exported from Nepal for commercial purpose including 82 native and 36 non-native species. *Nardostachys jatamansi* has remained in continuous trade since 2008 except 2019, while no trade has been recorded for Appendix III species. The findings highlight the challenges of delisting the species once included in Appendix I and II and also suggest to include those species in Appendix III which are traded in high volume. Outreaching the stakeholder for awareness, promoting propagation, regular funding for supporting research, strong implementation of relevant plans, policies and legislation are keys for conservation of endangered plants species.

Keywords: Conservation, Endangered, International trade, Over-exploitation, Policies, Protection

Introduction

Wildlife and plant trafficking have become a lucrative multi-billion-dollar industry worldwide, leading to unsustainable trade with severe consequences for the conservation of endangered species. Such direct exploitation is identified as the second leading cause of the disastrous disappearance of species after habitat destruction (Endangered Species Coalition [ESC], 2020). Approximately 5.8% of globally threatened and near threatened species assessed on the IUCN Red List, (2,211 species) are expected to be threatened by international trade (Challender et al., 2022). Among these, nearly half (47%) face an extremely high (Critically Endangered) or very high (Endangered) risk of extinction due to the international trade. One-third of all species likely to be threatened by international trade are

plants, particularly from the classes Magnoliopsida [mainly cacti (Cactaceae spp.), Dipterocarps (Dipterocarpaceae spp.) and legumes (Fabaceae spp.)] and Liliopsida (predominantly Orchids). More than half (59%) of the species determined to be likely threatened by international trade are listed in one or more of the CITES appendices (Challender et al., 2022).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international treaty for the conservation of endangered species through the control and regulation of international trade ensuring their survival by issuing permits and certificates for trade. CITES is one of the largest conservation agreements with 185 member parties which has celebrated 50 years of regulating the world's

international wildlife trade in 2025. Currently over 40,900 species including about 6,610 animal species and 34,310 plant species are listed under CITES for the regulation of international trade (<http://www.cites.org>). They are listed in the three CITES Appendices (Appendix I, Appendix II, and Appendix III) on the basis of degree of protection.

Among the CITES listed plants, 1593 species (ca. 4%) are used for medicinal purposes worldwide. Approximately 800 CITES-listed MAPs from all sources were reported in trade by exporters for commercial purposes between 2010 and 2022. Twelve CITES listed MAPs including *Nardostachys jatamansi* (D.Don) DC. account for approximately 98% of the wild sourced exports (Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], 2025).

For the conservation of endangered wildlife through regulated international trade, Nepal became 12th party of CITES in 18th June 1975 and entered into force in 16th September 1975. Since then, Nepal is implementing CITES by participating in Conference of the Parties (COP), lobbying to update the species list in Appendices, developing national legislation, designating Management Authorities and Scientific Authorities, issuing trade permits and certificates, submitting annual reports to the Secretariat, preparing non-detriment findings and conservation action plan for CITES listed species. The Department of Plant Resources has prepared the Jatamansi Conservation and Action Plan (2024-2033) and implementing it in collaboration with several Governmental and other organizations (Department of Plant Resources[DPR], 2024).

Nepal has published checklists of CITES-listed plant species at various times over the past five decades (Department of Forests[DoF], 2018; Department of National Parks and Wild Life Conservation [DNPWC], 2018; International Union for Conservation of Nature[IUCN], 1995; Joshi et al., 2017; Ministry of Forests and Soil Conservation[MoFSC], 2014). These publications demonstrate increase in the number of recorded taxa, rising from 13 taxa in the earliest publication-comprising three entire families one entire genus,

four species listed in Appendix II and five species in Appendix III to 417 plant species of Nepal in latest publication, which was prepared based on information available from the official CITES species database (<http://checklist.cites.org>). After 2018, numerous Orchid species have been newly recorded from Nepal, including *Ania penangiana* (Hook.f.) Summerh., *Neottia longicaulis* (King & Pantl.) Szlach., *Calanthe himalaicum* Raskoti, *Calanthe longipes* Hook.f. etc (Bhandari et al., 2019; Bhandari et al., 2020; Kafle et al., 2024; Raskoti & Ale, 2019). Furthermore, at the COP 19 of CITES, the entire genus *Rhodiola* was included in Appendix II recognizing the necessity of regulating its international trade to ensure sustainability (CITES, 2023). These newly reported taxa and inclusion of genus *Rhodiola* further emphasize the need to update the national checklist of CITES-listed plant species of Nepal.

Despite the ecological and economic importance of CITES-listed plant species in Nepal, studies on their international trade status remain limited. Most of the published research has focused on a few taxa. For example, several researchers have studied the trade and conservation concern of Orchids which constitute one of the largest groups of CITES-regulated plants in Nepal (Bashyal et al., 2023; Subedi et al., 2013; Wildlife Conservation Nepal[WCN], 2003). Similarly, several investigators have examined the international trade of commercially important alpine species *Nardostachys jatamansi* (CITES, 2025; DPR, 2019; DPR, 2025; Smith-Hall, 2023). Likewise, Gaire et al. (2022) predicted the potential trade dynamics of *Rauvolfia serpentina* in Nepal and CITES (2025) has estimated the international legal trade of *Taxus wallichiana* from 2010 to 2022. However, these studies represent only a fraction of the total CITES-listed diversity, indicating that comprehensive analysis of trade patterns, volumes and sustainability across the broader range of CITES-regulated plants in Nepal are still lacking.

This paper aims to enhance knowledge and understanding of currently updated CITES-listed plant species of Nepal, including their history of inclusion in and deletion from different appendices.

Trade records from the CITES trade database (1977-2024) was analysed to identify the species that have been traded among the total number of CITES-listed plants in the country. The findings of this study are expected to play a significant role in guiding conservation priorities for highly traded species and supporting evidence-based decisions on the delisting of species that show no record of international trade.

Materials and Methods

This study is based on the review of CITES COP documents (Proposal for amendment of Appendices I and II, Amendments to Appendices I and II adopted at COP 1 to COP 19), resolutions related to Nepal's plant species provided in CITES website. Secondary literatures on trade and information related to Nepal's CITES listed plants as well as CITES trade database were reviewed.

Compilation of the CITES listed species of Nepal

The CITES listed plant species of Nepal were compiled on the basis of CITES Appendices which is valid from 7 February 2025 available in documents section of CITES websites (<https://cites.org/eng/app/appendices.php>). Taxa included in these Appendices were recorded at the species level when individual species were listed, at the genus level when an entire genus was included and at the family level when an entire family was included. Only taxa included in CITES Appendix I and Appendix II that have been reported from Nepal were considered in this compilation. Orchidaceae species were listed on the basis of online published flora of Nepal manuscript (<https://floraofnepal.org.np/online-flora/>), Rajbhandari (2015), Rajbhandari & Rai (2017), Raskoti (2009) and Shrestha et al. (2022). Similarly, all the species of genus *Dalbergia* spp., *Euphorbia* spp. (succulent only), and *Rhodiola* spp. were listed on the basis of Shrestha et al. (2022). Similarly, *Taxus* spp. were based on Rajbhandari et al. (2020) and *Cyathea* spp. were based on Fraser-Jenkins et al. (2015). Their accepted scientific names, families were verified from Plants of the World Online. English and Nepali names were extracted from relevant literatures (Joshi et al., 2017; Rajbhandari et al., 2020; Shrestha et al., 2022).

The history about the inclusion or deletion of the species and their proponent parties were based on the proposed proposals for amendment of Appendices I and II and amendments to Appendices I and II adopted from the COP 1 to COP 19 (<https://cites.org/eng/meetings/COP>).

Assessment of trade status

Comparative tabulation report of export of CITES listed plants of Nepal from 1975 A.D to 2025 A.D. (50 years) was retrieved from CITES trade database (Appendix 1). The species in trade on the basis of appendix, significantly traded species and volume of trade were analysed from the extracted data.

For the triangulation of data, the five-year (2017 A.D. to 2021 A.D.) export/import data (H.S. code: 12119090000 and description: other plants or parts, of a kind used in perfumery, pharmacy etc.) from the Department of Customs, Nepal was collected in 2021. From these data CITES listed species were filtered. Trade status were assessed from the filtered data. Seized sample identification record in the Department of Plant Resources from 2016 to 2022 and some trade related secondary literatures were reviewed for illegal trade.

Results and Discussion

CITES listed plant species of Nepal: History of inclusion and deletion

A review of the CITES Appendices from COP 1 to COP 19, as documented on the official CITES website reveals the historical progression of plant species listings related to Nepal. Under Article XV of the Convention, species may be added, removed or transferred between Appendices I and II only by the Conference of the Parties, either during formal meetings or through postal procedures. In contrast, Appendix III listings can be amended unilaterally by any party at any time.

Following the first COP in 1976, there were no plant species of Nepal listed under Appendix I, whereas three whole family (Cyatheaceae, Cycadaceae and Orchidaceae), one whole genus (*Euphorbia*) and one species *Dioscorea deltoidea*

were included in Appendix II. Appendix III listed five plant species (*Gnetum montanum*, *Magnolia hodgsonii*, *Meconopsis regia*, *Podocarpus neriifolius*, *Tetracentron sinense*) all of which were proposed by Nepal. Notably, there have been no changes to the Appendix III listing to date. In contrast, several amendments have been made to Appendix II overtime. During COP 2 (1979), the genus *Ceropegia* proposed by India, was added to Appendix II.

Earlier, at COP 7 (1989), the genus *Paphiopedilum* was transferred from Appendix II to Appendix I following a proposal by the Netherlands. During the same meeting, India proposed the inclusion of *Rauvolfia serpentina*, *Podophyllum hexandrum* and *Nardostachys jatamansi* in Appendix II; however, only the first two species were accepted while proposal for *Nardostachys jatamansi* was rejected.

India subsequently re-proposed again *Nardostachys jatamansi* at COP 9 (1994) along with *Taxus wallichiana*. But only the proposal for *T. wallichiana* was adopted while the proposal for *N. jatamansi* was rejected again. *N. jatamansi* was finally included in Appendix II at COP 10 (1997) after a third proposal by India. In the same meeting, non-succulent species of *Euphorbia* were excluded from CITES provisions. At COP 11 (2000), the genus *Ceropegia* was deleted following a proposal by Switzerland.

At COP 13 (2004), China and the United States of America proposed the inclusion of *Taxus fuana* and all infraspecific taxa in Appendix II, which was adopted. At COP 17 (2016), Argentina, Brazil, Guatemala and Kenya proposed to include the genus *Dalbergia* in Appendix II with exception to the species included in Appendix I. The proposal was adopted and all species of *Dalbergia* with exception to the species included in Appendix I was included in Appendix II.

At COP 18 (2019), Bangladesh, Bhutan, India and Nepal jointly proposed to delist *Dalbergia sissoo* from Appendix II, which was not adopted. Later a similar proposal submitted by India and Nepal at COP 19 (2022), which was not accepted again. Whereas, a proposal by China, European Union,

Ukraine, United Kingdom and Northern Ireland, United States of America resulted in the successful inclusion of the entire genus *Rhodiola* in Appendix II at COP 19.

A review of these appendices further indicates that Nepal has submitted proposal for amendment only twice at COP 18 and COP 19. Amendments under CITES are intended to enhance the protection of wild species from overexploitation, incorporating updated scientific data, trade dynamics, population trends and issues related to “look-alike” species. These decisions are guided by the best available scientific evidence and information on population status and trends (CITES, 2016). India and Nepal proposed twice for the delisting of *Dalbergia sissoo* from Appendix II, which was not adopted by the parties in the COPs. This shows that it is a difficult task to delist the species once included in Appendix I and II.

Importantly, Nepal has not proposed any plant species for the inclusion in Appendices I and II. Nepal is protecting the CITES-listed plant species relying on global data or population assessments from other countries. This may be attributed to insufficient national data on CITES-listed plant species.

Status of CITES-listed plant species in Nepal

After the inclusion and deletion of the plant species in CITES Appendices, currently Nepal has a total of 509 plant species under CITES comprising 504 species in Appendix II and five species in Appendix III, with none included in Appendix I (Appendix 2). Appendix II listings dominate, reflecting a global emphasis on regulating trade in species that are not necessarily threatened with extinction but may become so if trade is not regulated. Joshi et al. (2017), DoF (2018) and DNPWC (2018) had reported two species *Paphiopedilum insigne* and *Paphiopedilum venustum* as listed in Appendix I of CITES, based on the CITES species checklist available on its official website. Similarly, Raskoti and Ale (2011) recorded two species *Paphiopedilum fairrieanum* and *P. venustum* as first records for Nepal. However, these species are not documented in recent literature (<https://floraofnepal.org.np/online->

flora; Rajbhandari & Rai, 2017). Furthermore, specimens deposited at National Herbarium and Plant Laboratories (KATH) lack precise locality coordinates for *Paphiopedilum fairrieianum* and *P. venustum*. Thus, these species were not considered in the present study.

At taxonomic levels, Appendix II includes two whole family (Orchidaceae and Cycadaceae), three whole genus (*Cyathea*, *Dalbergia*, *Rhodiola*) and nine species [*Rauvolfia serpentina*, *Podophyllum hexandrum*, *Dioscorea deltoidea*, *Taxus contorta*, *Taxus wallichiana*, *Nardostachys jatamansi* & three species of *Euphorbia* (succulent species only)] and Appendix III includes five species (*Gnetum montanum*, *Magnolia hodgsonii*, *Meconopsis regia*, *Podocarpus neriifolius*, *Tetracentron sinense* of Nepal (Figure 1). The total number of species can vary over time as a result of additions or removals from different CITES Appendices, along with the new report of the species.

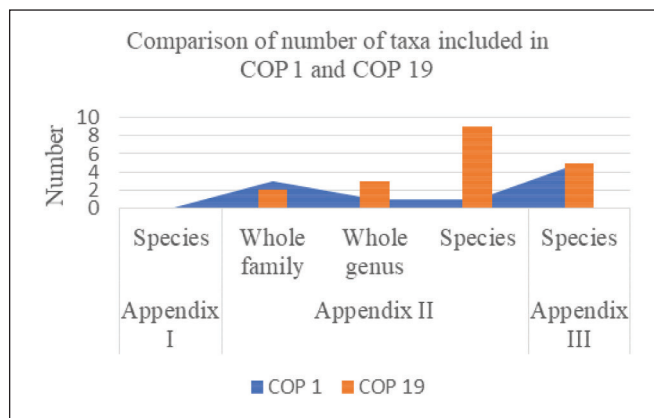


Figure 1: Comparison of number of whole family, whole genus, and species of Nepal included in appendices from COP 1 to COP 19

Trade status

Nepal regulates trade of CITES listed plants through the prevailing law 'Control of International Trade of Endangered Wild Fauna and Flora Act, 2017 (CITES Act, 2017) and Control of International Trade of Endangered Wild Fauna and Flora Regulation, 2019 (CITES Regulation, 2019) requiring permit for export/import. Before the enactment of CITES act and CITES regulation, Nepal regulates the CITES listed plants in coordination with other legislations like National Parks and Wildlife Conservation

Act (1973), Forest Act (1993) and Regulation (1995), Export and Import (Control) Act (1957) and Regulation (1978), Environment Protection Act (1996) and Regulation (1997), Customs Act (2007) and Regulation (2007), Orchid collection and cultivation development directive (2012) etc. The management authority - Department of Forests and Soil Conservation, provide permit for export/import of all CITES listed plant species after getting advice that the export/import will not be detrimental to the survival of that species from the scientific authority - Department of Plant Resources.

Analysis of export data of CITES listed plant species of Nepal sourced from CITES Trade Database: According to CITES Trade Database, a total of 508 export records were found for different purposes, with some repetition of species across records. The majority of export (approximately 92%) were for commercial purpose (Figure 2). Regarding the source of specimens, about 38% of taxa have no information while 30% were exported from wild source, 29% export were from artificially propagated source and 3% originated from seized specimens (Figure 3).

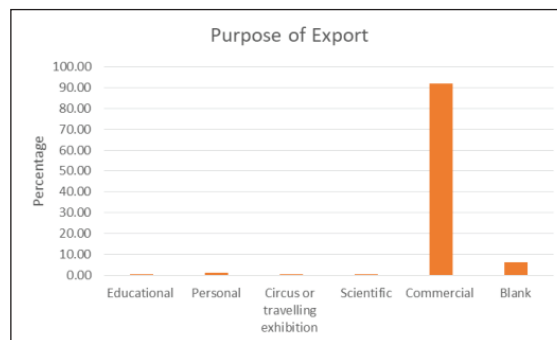


Figure 2: Percentage covered by different purpose of export from Nepal

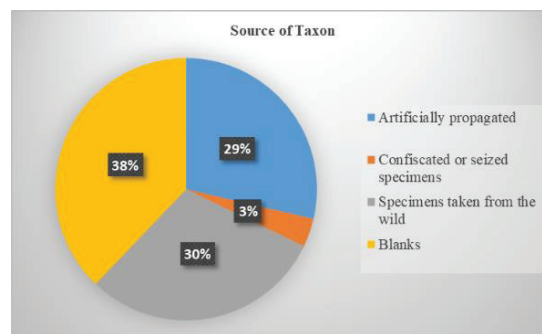


Figure 3: percentage covered by source of Taxon exported from Nepal

In total, the export records comprise 118 plant species belonging to 43 genera and six families that were exported from Nepal for commercial purposes between 1977 and 2024. However, 71 records remain unidentified at the species level and 19 records have identified only at the family level. Of the 118 species recorded in trade, three species listed under Appendix I (all non-native species) and 115 species listed under Appendix II were exported (Figure 4). The five species currently included in Nepal's Appendix III listing have not been recorded in international trade during the past 50 years. Furthermore, these species are not included in Nepal's protected species list (Government of Nepal [GoN], 2024). According to CITES (2019a), Appendix III is intended for native species that are already protected under a Party's domestic legislation and for which the Party seeks the cooperation of other CITES Parties to monitor and control international trade. In this context, Nepal may consider reviewing its current Appendix III listings and replacing these five species with other native species that are subject to significant legal trade or are affected by illegal international trade.

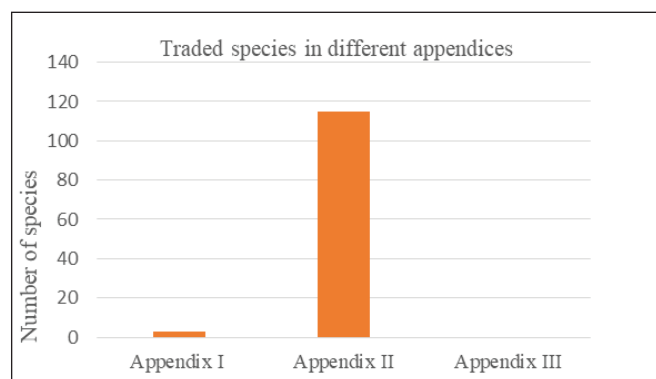


Figure 4: Number of traded plant species from Nepal under CITES appendices (1977-2024)

The trade was strongly dominated by Orchidaceae which accounted for 112 of the 118 species recorded including 78 native species and 34 exotic species suggesting that a considerable proportion of traded orchids may be non-native, possibly reflecting re-export or artificially propagated. The remaining species include *Cycas pectinata*, *Dalbergia latifolia*, *Pterocarpus santalinus*, *Taxus wallichiana*, *Aquilaria* spp. and *Nardostachys jatamansi*.

Most significantly traded species from Nepal is *Nardostachys jatamansi* [2,919,135 kg of derivatives (marc), 15 kg extract, 55,186.3 kg oil, 1,17,000 kg powder and 3,78,120 kg of roots] which is traded continuously from 2008 to 2024, except in 2019. *N. jatamansi* is followed by *Taxus* spp. (10,019.8 kg of extract and powder) from 2013 A.D. to 2024 A.D. Export of *N. jatamansi* from Nepal was banned in 1995 which was amended in 2001 and allowed to export in processed form. Since then, *N. jatamansi* has been exporting in processed form (DPR, 2019). However, the roots of *N. jatamansi* was reported as traded in 2011, 2012 and 2021 in CITES trade database. These records may reflect misreporting of product types, with processed material (e.g., marc) whereby processed materials were recorded as roots.

Due to the lack of unit in most of the exported Orchid species in CITES trade database, it became difficult to assess how much mass or specimens of Orchids were exported for commercial purpose. For trade records in which the unit of measurement was not specified, assuming number of specimens as unit for live exported Orchids, it was found that 59,399 live specimens and 18,706.7 kg of Orchid stems produced through artificial methods/cultivation were exported, whereas 71,879.13 kg of Orchid stems were exported from wild sources. Out of the total exported Orchid species, *Dendrobium eriiflorum* is the topmost exported species followed by *Dendrobium aphyllum*, *Dendrobium amoenum*, *Dendrobium fimbriatum*, *Dendrobium nobile*, *Dendrobium transparens*. Besides *Dendrobium* species, other Orchid species in highly trade are *Calanthe plantaginea*, *Pleione* spp. (Table 1) etc. Since 1977, Orchids were exported from Nepal till 2016. But after 2016, there were no record of any export of Orchids is found in CITES trade database, primarily due to the promulgation of CITES Act in 2017, which imposed a temporary ban on the export of all CITES-listed species, including Orchids. This legal restriction was lifted in 2019 after amendments to the Act and the introduction of CITES Regulation, which allowed the resumption of exports under stricter regulation mechanisms. However, despite the reopening of trade, its management plan has not yet been prepared in accordance with the rule 22 of

CITES Regulation (2019) resulting in absence of Orchid export.

After the promulgation of CITES act (2017), four species i.e. *Nardostachys jatamansi*, *Taxus* spp. *Dalbergia latifolia* and *Cycas pectinata* were found to be exported for commercial purpose. According to CITES trade database, *D. latifolia* was first reported in international trade from Nepal in 2023, with 1,120 kg wood product reported imported by China following its inclusion in CITES Appendix II in 2017. Like-wise *C. pectinata* was first reported in international trade in 2022 with 9 units recorded as 'roots' imported by Netherlands.

Nepal is a top exporting party for wild sourced *N. jatamansi* (2,513,283 kg, 2,983 litres) and *Taxus wallichiana* (9,907 kg) for commercial purposes between 2010 and 2022 (CITES, 2025). Due to high volume of international trade, the 22nd meeting of Plant committee of CITES in 2015 retain the species/country combination *N. jatamansi*/Nepal in the Review of Significant Trade (RST) process and categorized as "action is needed". In 2017, 23rd meeting of Plant committee and 70th meeting of

CITES standing committee recommended Nepal to establish zero export quota for wild specimens by December 2017 and prepare non-detriment findings (NDF) of *N. jatamansi* with precautionary quota by September 2019 (CITES, 2019b). With these recommendations, the management authority of CITES flora Department of Forests and Soil Conservation) requested the scientific authority of CITES flora, Department of Plant Resources, to prepare Non-Detriment Finding (NDF) with precautionary quota. Furthermore, the management authority imposed a ban on issuing export permits for *N. jatamansi* from may 2017 to 2019. DPR prepared the NDF of *N. jatamansi* for five-year periods with proposed 382.7 MT of dry rhizomes annual quota for international trade (DPR, 2019). The CITES Secretariat published an export quota of 382.7 MT of dry rhizomes or its derivatives equivalent to this amount in February 2020 in its website as 2019 additional quota, which is continued till 2024. Since the NDF has a validity period of five-years, it was revised in 2025 by the Department of Plant Resources. The revised NDF established an annual international quota of 690.746 MT of marc and 9800

Table 1: Top orchid species exported for trade purpose from Nepal in different years

SN	Name of the species	Exported year	Exported quantity	Specimens	Source
1.	Orchidaceae spp. (Not mentioned any species name)	1978, 1980, 1981-1985, 1987, 1988, 1990, 1994, 1995, 1998, 2000, 2002, 2003	26961 3380 14544	Live Flowers Live	A - -
2.	<i>Calanthe plantaginea</i>	1984, 1985, 1986, 1987, 1989, 1991, 1995, 1998	29297	Live	A
3.	<i>Pleione</i> spp.	1977, 1979, 1985	24035	Live	-
4.	<i>Dendrobium</i> spp.	1977, 1979, 1985, 1987, 1989, 1991, 1995, 2008, 2009, 2014, 2016	9000 kg 1239 8007.2 kg 346.5 kg	Live Live Stems Stems	A - W A
5.	<i>Dendrobium eriiflorum</i>	2008, 2009, 2015	3 kg 23990 kg	Stems	A W
6.	<i>Dendrobium aphyllum</i>	1980, 1981, 1982, 1995, 2008, 2010, 2013	9647 kg 10893.91kg	Live Stems	W W
7.	<i>Dendrobium amoenum</i>	1981, 1982, 1991, 1995, 2013	259 9308.91 kg	Live Stems	A W
8.	<i>Dendrobium fimbriatum</i>	1980, 1981, 1987, 1991, 1995, 2013	271 9308.91 kg	Live Stems	A W
9.	<i>Dendrobium nobile</i>	1980, 1981, 1987, 1995, 2002, 2016	1 Shipment 120 3675.2 kg	Live Stems	A A
10	<i>Dendrobium transparens</i>	1991, 1995, 2013, 2014, 2015, 2016	1550 kg	Stems	A

Note: A- Artificially propagated; W- Wild

Source: CITES trade database

litre of oil along with a domestic trade of 25.6 MT of dry rhizome of *N. jatamansi* per year (DPR, 2025). The CITES secretariat published the updated quota for international trade on 16 September 2025 on its official website.

Analysis of Nepal's customs data: According to five-year custom data of Nepal's, only four CITES listed species (*Nardostachys jatamansi*, *Taxus* spp., *Rauvolfia serpentina* and *Podophyllum hexandrum*) were in trade. Two species *N. jatamansi* (marc) and *Taxus* spp. (10 DAB III) were found exported from Nepal (Table 2). The marc of *N. jatamansi* were found exported regularly from 2016 to 2021 except fiscal year (2018/2019). Like wise the extract from *Taxus* spp. (10 DAB III) were exported in fiscal year 2016/2017 and 2020/2021 from Nepal which is also reported in CITES trade database.

The customs import data analysis shows that three CITES listed plant species *Nardostachys jatamansi*, *Rauvolfia serpentina* and *Podophyllum hexandrum* were imported in Nepal (Table 3). *N. jatamansi* is imported with different names like Jatamansi marc, Spikenard root, *Nardostachys chinensis* Batal, and jatamansi powder. Though Nepal is exporting *Nardostachys jatamansi*, the import report shows import of huge amount in two fiscal years (2016/2017 and 2017/2018). This may be due to inclusion of Nepal's *N. jatamansi* in the Review of Significant Trade (RST) process from 2017 to 2019 which banned the export of Nepal's *N. jatamansi*

and also may be due to the promulgation of the CITES Act in 2017, which prohibited the harvesting and trade of all CITES-listed species, including *N. Jatamansi*. So, to sustain domestic Jatamansi processing industries and meet domestic demand, it may be imported in huge quantities. Very less volume (57.2 kg) of *R. serpentina* were imported in 2019/20 in Nepal.

According to Tiwari et al. (2004), a total of 30,225 kg of *Rauvolfia serpentina* was demanded by Governmental and Non-governmental Ayurvedic companies/trading houses in the Kathmandu valley. Herb Production and Processing Company Limited (HPPCL), Gorkha Ayurveda Company Limited, Dabur Nepal, and Singha Darbar Vaidhyakhana are the major buyers in the country. As mentioned by Gaire et al. (2022), the records of the Jadibuti Association of Nepal show 500 tons of *Rauvolfia serpentina* were collected in 2020 from the Community and Government-managed forests. Community forests and private cultivators supplied *R. serpentina* to regional level traders. After processing, Nepal exports to India (80%), European countries (10%), and remaining 10% for domestic consumption. Though the export of *R. serpentina* is mentioned in the literature, no records of its export were found in Customs data for the fiscal year 2016/2017 to 2020/21 and in the CITES Trade Database for the period 1977-2024. According to CITES Act 2017 and Regulations 2019, permits

Table 2: Export of medicinal plants from Nepal (in kg)

SN	Name of the species	Fiscal Year				
		2016/17	2017/18	2018/19	2019/20	2020/21
1.	<i>Nardostachys jatamansi</i> (Jatamansi marc)	297483	60564	-	74800	318730
2.	<i>Taxus</i> sp. (10 DAB III)	20	-	-	-	12

Source: Department of Customs

Table 3: Import of medicinal plants to Nepal (in kg)

SN	Name of the species	Fiscal Year				
		2016/17	2017/18	2018/19	2019/20	2020/21
1.	<i>Nardostachys jatamansi</i> (Jatamansi marc, Spikenard root, <i>Nardostachys chinensis</i> Batal, jatamansi powder)	83646	55549	1508	210	-
2.	<i>Rauvolfia serpentina</i> (Sarpagandha)	-	-	-	57.2	-
3.	<i>Podophyllum hexandrum</i>	-	-	-	-	7560

Source: Department of Customs

are required for the trade of CITES listed species, regardless of whether they are collected from the wild or artificially propagated. The absence of records in both Customs and CITES trade database suggests that *R. serpentina* may have been traded through informal channels or exported under a different name.

The import record from Customs indicate that the domestic demand of *Podophyllum hexandrum* and *Rauvolfia serpentina* is more than their production in Nepal.

Study on seized sample identification record in the Department of Plant Resources from 2016 to 2022 found that mostly Orchid spp. like *Dactylorhiza hatagirea*, *Pleione* sp., *Dendrobium eriiflorum*, and other *Dendrobium* spp. as well as *Pterocarpus santalinus* were seized in different years. According to DoF (2018), more than 200 metric tons of *Pterocarpus santalinus* timber seized over the past 20 years have been stockpiled in Nepal.

Orchid species are often collected by economically disadvantaged local people who lack awareness of legal restrictions on collection and trade of CITES-listed species (WCN, 2003). WCN (2003) had estimated about 5,000 quintals of orchids are harvested from the Churiya forest of Nepal and noticed export to India. Likewise Subedi et al. (2013) had estimated an annual trade of 5 tons for 2008-2009 in Dakshinkali, Kathmandu which are exported to India and China, and occasionally to Hong Kong. Both studies highlighted the trade of *Dendrobium* sp. However, there is no record of Orchid trade in CITES trade database between 2003 and 2007, while significant trade of *Dendrobium* spp. from wild sources is recorded in the database from 2008 to 2015 (Table 1). Field observation as well as Subedi et al. (2013) further indicate that many wild-collected orchids were sold openly in local markets (e.g., Dakshinkali), online platforms and nurseries. This reflects both high market demand and limited awareness among stakeholders regarding CITES regulations.

Conclusions

The CITES has celebrated 50 years of regulating the world's international wildlife trade in 2025. Within 50 years, Nepal has actively participated in the conservation of 509 plant species by controlling and regulating the trade through the existing laws and regulations. Out of these 509 species, 504 species are listed in Appendix II and five species are listed in Appendix III. All the species of Nepal included in Appendix II are proposed by other countries, mostly India. Nepal has only proposed to include five species in Appendix III only.

This study highlights the need for periodic review of Nepal's CITES-listed plant species to ensure that the Appendices accurately reflect current conservation and trade realities. The findings indicate that the five species currently included in Appendix III and some species listed in Appendix II, such as *Dioscorea deltoidea* and *Cyathea* spp. which have not been recorded in trade over the past two decades may also be considered for deletion from Appendix II after studying their population status and trade trend. Amendment to CITES Appendices require indepth information on the biological character as well as trade trends and exploitation levels. So indepth research on their population status, trade trend and level of exploitation are highly recommended which requires continuous funding. Thus, management of fund and priority of research on highly traded and threatened plants are the keys for the conservation of endangered species.

For the sustainable collection, harvesting and trade of any CITES listed species, preparation of the tools like Conservation Action Plan and Non-Detriment Findings (NDF) is a must. In this context, Government of Nepal has prepared 10-year Conservation Action Plan and an NDF for *Nardostachys jatamansi*. For the conservation of this species, all the stakeholders including each and every tier of the Government should give serious effort for the implementation of the conservation action plan. Likewise promoting the cultivation of high-value traded species among local communities can help to reduce the pressure on wild populations while supporting livelihoods.

There is an urgent need to outreach all stakeholder to enhance awareness about the CITES listed species of Nepal, their need of conservation and their existing relevant legal provisions for the conservation of these species. Regular consultation with the stakeholders, trainings, seminars, workshops would be the effective means of raising awareness. In addition, targeted awareness campaigns through mass media such as radio, television, social media can broaden public understanding, especially among rural and resource dependent communities. The development and dissemination of easy-to-understand educational materials in local languages as well as the integration of conservation topics into school and university curricula can further strengthen long-term awareness.

Furthermore, strong implementation of relevant acts and regulations as well as promoting the artificial propagation techniques, such as cultivation and tissue culture for high valued and market demanded species and producing them in large quantities can lead to the reduction of pressure on wild population fulfilling the market demand. Continuous research on the population status as well as trade trends of highly valued plants is essential for the long-term conservation of endangered plant species.

Author Contributions

First author developed the concept, assessed data and prepared manuscript. First and second author collected data from different sources. Third and fourth author critically reviewed the manuscript. Fifth author verified the accepted scientific name. All authors reviewed and finalized the paper.

Acknowledgements

The authors express their sincere gratitude to Director General of DPR, Dr. Sanjeev Kumar Rai; Deputy Director Generals, Mr. Mohan Dev Joshi and Mr. Saroj Kumar Chaudhary for their encouragement and guidance. The authors are thankful to the Department of Customs, Tripureshwor, Kathmandu for providing export/import data of MAPs.

References

- Bashyal, R., Paudel, K., Hinsley, A., & Phelps, J. (2023). Making sense of domestic wildlife and CITES legislation: the example of Nepal's orchids. *Biological Conservation*, 280, 109951.
- Bhandari, P., Shakya, L. R., & Chaudhary, R. P. (2019). *Zeuxine lindleyana* (Orchidaceae)- A new record for the flora of Nepal. *The Journal of Japanese Botany*, 94(1), 45-46.
- Bhandari, P., Shrestha, K., KC, A., & Shrestha, K. K. (2020). Three new records of orchids from Nepal. *The Journal of Japanese Botany*, 95(1), 41-46.
- Challender, D., Cremona, P., Malsch, K., Robinson, J., Pavitt, A., Scott, J., Hoffmann, R., Joolia, A., Oldfield, T., Jenkins, R., Conde, D., Taylor, C. H., & Hoffmann, M., (2022). Identifying species likely threatened by international trade on the IUCN Red List can inform CITES trade measures. *Research Square*.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2016). *Resolution. Conf. 9.24 (Rev. COP 17), Criteria for amendment of Appendices I and II*.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2019a). *Resolution. Conf. 9.25 (Rev. COP 18), Implementation of the Convention for species in Appendix III*.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (2019b). *SC71 Doc. 12. Seventy-first meeting of the Standing Committee Geneva (Switzerland), 16 August 2019. Review of significant trade in specimens of Appendix-II species*.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2023). *Notification to the Parties No. 2023/005: Amendments to Appendices I and II of the Convention adopted by the Conference of the Parties at its 19th meeting (Panama, 14 -25 November 2022)* https://cites.org/sites/default/files/notifications/E-Notif-2023-005_0.pdf
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2025). *COP*

- 20 Inf. 1, Annex 1. CITES –listed medicinal and aromatic plant (MAP) species in international trade.
- Department of National Parks and Wild Life Conservation. (2018). *CITES listed endangered fauna and flora of Nepal*.
- Department of Forests. (2018). *CITES implementation in Nepal: An introduction*.
- Department of Plant Resources. (2019). *Non-detrimental findings for Nardostachys grandiflora (D. Don) DC. from Nepal*.
- Department of Plant Resources. (2024). *Jatamansi conservation action plan*.
- Department of Plant Resources. (2025). *Non-detrimental findings for Nardostachys jatamansi (D. Don) DC. from Nepal*.
- Endangered Species Coalition. (2020). *Trafficked 10 species threatened by the wildlife trade*.
- Fraser-Jenkins, C. R., Kandel, D. R., & Pariyar, S. (2015). *Ferns and fern-allies of Nepal*, (Vol. 1) (PP 149-159). National Herbarium and Plant Laboratories.
- Gaire, D., Jiang, L., Adhikari, B., Bhattarai, S., & Panthi, S. (2022). Predicting the potential distribution, trade, and conservation of *Rauvolfia serpentina* in Nepal. *Applied Ecology and Environmenal research*, 20(6), 4999-5022.
- Government of Nepal. (2024). Nepal Gazette (Part 5), Section 73, No. 38,
- International Union for Conservation of Nature. (1995). *Nepal's flora and fauna in the current CITES lists*.
- Joshi, N., Dhakal, K. S., & Saud, D. S. (2017). *Checklist of CITES listed flora of Nepal*. Department of Plant Resources.
- Kafle, R., Thapa Magar, M. S., & Parmar, G. (2024). *Calanthe longipes* Hook.f., a new record of Orchidaceae for the flora of Nepal. *Banko Janakari*, 34(1), 51-56.
- Ministry of Forests and Soil Conservation. (2014). *Nepal national biodiversity strategy and action plan: 2014-2020*.
- Rajbhandari, K. R. (2015). *A handbook of the orchids of Nepal*. Department of Plant Resources.
- Rajbhandari, K. R., & Rai, S. K. (2017). *A handbook of the flowering plants of Nepal* (Vol. 1). Department of Plant Resources.
- Rajbhandari, K. R., Joshi, L., Chhetri, R., & Khatri, S. (2020). *A handbook of the Gymnosperms of Nepal*. Department of Plant Resources.
- Raskoti, B. B. (2009). *The orchids of Nepal*. Bhakta Bahadur Raskoti and Rita Ale.
- Raskoti, B. B., & Ale, R. (2011). *Paphiopedilum fairrieanum* (Lindl.) Stein and *Paphiopedilum venustum* (Wall. ex Sims) Pfitzer, new records of genus *Paphiopedilum* Pfitzer (Orchidaceae) for flora of Nepal. *The McAllen International Orchid Society Journal*, 12(8), 7-11.
- Raskoti, B. B., & Ale, R. (2019). New species of orchids and notes on Orchidaceae of Nepal. *Phytotaxa*, 394(4), 257-266.
- Shrestha, K. K., Bhandari, P., & Bhattarai, S. (2022). *Plants of Nepal* (Gymnosperms and Angiosperms). Heritage Publishers & Distributors. Pvt. Ltd.
- Smith-Hall, C., Pyakurel, D., Meilby, H., Pouliot, M., Ghimire, P. L., Ghimire, S. K., Madsen, S. T., Paneru, Y. R., Subedi, B. P., Timoshyna, A., & Treue, T. (2023). The sustainability of trade in wild plants-A data integration approach tested on critically endangered *Nardostachys jatamansi*. *PNAS Nexus*, 2(11), 328.
- Subedi, A., Kunwar, B., Choi, Y., Dai, Y., Andel, T. V., Chaudhary, R. P., Boer, H. J. D., & Gravendeel, B. (2013). Collection and trade of wild harvested orchids in Nepal. *Journal of Ethnobiology and Ethnomedicine*, 9, 64.
- Tiwari, N. N., Poudel, R. C., & Uprety, Y. (2004): Study on domestic market of Medicinal and Aromatic Plants (MAPs) in Kathmandu Valley.
- Wildlife Conservation Nepal. (2003). *Orchids in the Churiya hills and their survival in Nepal*.

Appendix 1: Comparative tabulation report of export of CITES listed plants of Nepal from (1977 to 2024) retrived from CITES trade database on 1 February 2026

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1977	II	<i>Calanthe</i> spp.	Orchidaceae	GB	NP		10		live			
1977	II	<i>Coelogyne</i> spp.	Orchidaceae	GB	NP		10		live			
1977	II	<i>Dendrobium</i> spp.	Orchidaceae	GB	NP		3		live			
1977	II	<i>Pleione</i> spp.	Orchidaceae	GB	NP		24010		live			
1978	II	<i>Orchidaceae</i> spp.	Orchidaceae	US	NP		2		live			
1979	II	<i>Aerides</i> spp.	Orchidaceae	GB	NP		40		live			
1979	II	<i>Aerides</i> spp.	Orchidaceae	US	NP		37		live		T	
1979	II	<i>Arachnis</i> spp.	Orchidaceae	US	NP		5		live		T	
1979	II	<i>Arundina</i> spp.	Orchidaceae	US	NP		1		live		T	
1979	II	<i>Bulbophyllum</i> spp.	Orchidaceae	US	NP		14		live		T	
1979	II	<i>Calanthe</i> spp.	Orchidaceae	US	NP		6		live		T	
1979	II	<i>Coelogyne</i> spp.	Orchidaceae	GB	NP		522		live			
1979	II	<i>Coelogyne</i> spp.	Orchidaceae	US	NP		52		live		T	
1979	II	<i>Cymbidium</i> spp.	Orchidaceae	GB	NP		120		live			
1979	II	<i>Cymbidium</i> spp.	Orchidaceae	US	NP		10		live		T	
1979	II	<i>Dendrobium</i> spp.	Orchidaceae	GB	NP		1110		live			
1979	II	<i>Dendrobium</i> spp.	Orchidaceae	US	NP		109		live		T	
1979	II	<i>Doritis</i> spp.	Orchidaceae	US	NP		5		live		T	
1979	II	<i>Eria</i> spp.	Orchidaceae	US	NP		2		live		T	
1979	II	<i>Paphiopedilum</i> spp.	Orchidaceae	GB	NP		940		live			
1979	II	<i>Pleione</i> spp.	Orchidaceae	GB	NP		4		live			
1979	II	<i>Pleione</i> spp.	Orchidaceae	US	NP		9		live		T	
1979	II	<i>Rhynchostylis</i> spp.	Orchidaceae	US	NP		12		live		T	
1979	II	<i>Saccolabium</i> spp.	Orchidaceae	GB	NP		20		live			
1979	II	<i>Saccolabium</i> spp.	Orchidaceae	US	NP		1		live		T	
1979	II	<i>Thunia</i> spp.	Orchidaceae	US	NP		6		live		T	
1979	II	<i>Vanda</i> spp.	Orchidaceae	GB	NP		2		live			
1979	II	<i>Vanda</i> spp.	Orchidaceae	US	NP		31		live		T	
1979	II	<i>Vandopsis</i> spp.	Orchidaceae	US	NP		3		live		T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1980	II	<i>Calanthe masuca</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Coelogyne corymbosa</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Coelogyne cristata</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Coelogyne fuscescens</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Coelogyne nitida</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Coelogyne stricta</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium aphyllum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium densiflorum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium formosum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium heterocarpum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium nobile</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Dendrobium polyanthum</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Eria coronaria</i>	Orchidaceae	US	NP		100		live		T	
1980	II	Orchidaceae spp.	Orchidaceae	JP	NP	XX	3380		flowers			
1980	II	<i>Pinalia spicata</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Pleione maculate</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Pleione praecox</i>	Orchidaceae	US	NP		200		live		T	
1980	II	<i>Rhynchostylis retusa</i>	Orchidaceae	US	NP		200		live		T	
1980	II	<i>Vanda ampullaceal</i>	Orchidaceae	US	NP		100		live		T	
1980	II	<i>Vanda cristata</i>	Orchidaceae	US	NP		200		live		T	
1980	II	<i>Vanda lilacina</i>	Orchidaceae	US	NP		200		live		T	
1980	II	<i>Vandopsis undulata</i>	Orchidaceae	US	NP		200		live		T	
1981	I	<i>Renanthera imschootiana</i>	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	I	<i>Vanda coerulea</i>	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	II	<i>Aerides multiflora</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Aerides odorata</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Bulbophyllum leopardinum</i>	Orchidaceae	US	NP		10		live		T	
1981	II	<i>Bulbophyllum ornatissimum</i>	Orchidaceae	US	NP		20		live		T	
1981	II	<i>Calanthe brevicornu</i>	Orchidaceae	US	NP		10		live		T	
1981	II	<i>Calanthe masuca</i>	Orchidaceae	US	NP		14		live		T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1981	II	<i>Coelogyne corymbosa</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Coelogyne cristata</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Coelogyne nitida</i>	Orchidaceae	GB	NP		48		live		T	
1981	II	<i>Coelogyne nitida</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Coelogyne stricta</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Coelogyne stricta</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Coelogyne viscosa</i>	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	II	<i>Cymbidium devonianum</i>	Orchidaceae	GB	NP		19		live		T	
1981	II	<i>Cymbidium elegans</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Cymbidium iridioides</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium amoenum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium aphyllum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium chrysanthum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium clavatum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium crepidatum</i>	Orchidaceae	US	NP		10		live		T	
1981	II	<i>Dendrobium densiflorum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium formosum</i>	Orchidaceae	US	NP		15		live		T	
1981	II	<i>Dendrobium heterocarpum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium infundibulum</i>	Orchidaceae	US	NP	XX	2		live	shipments	T	
1981	II	<i>Dendrobium longicornu</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium moschatum</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium nobile</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Dendrobium nobile</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Dendrobium wardianum</i>	Orchidaceae	GB	NP		88		live		T	
1981	II	<i>Eria coronaria</i>	Orchidaceae	GB	NP		9		live		T	
1981	II	Orchidaceae spp.	Orchidaceae	JP	NP		1765		live		T	
1981	II	<i>Paphiopedilum</i> spp.	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	II	<i>Paphiopedilum fairrieianum</i>	Orchidaceae	GB	NP		40		live		T	
1981	II	<i>Paphiopedilum hirsutissimum</i>	Orchidaceae	GB	NP		40		live		T	
1981	II	<i>Phaius</i> spp.	Orchidaceae	US	NP		1		live	shipments	T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1981	II	<i>Phaius tankervilleae</i>	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	II	<i>Phalaenopsis mannii</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Phalaenopsis parishii</i>	Orchidaceae	US	NP	XX	1		live	shipments	T	
1981	II	<i>Phalaenopsis parishii</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Pleione hookeriana</i>	Orchidaceae	US	NP		1		live	shipments	T	
1981	II	<i>Rhynchostylis retusa</i>	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Thunia</i> spp.	Orchidaceae	US	NP		1		live		T	
1981	II	<i>Vanda ampullacea</i>	Orchidaceae	GB	NP		5		live		T	
1981	II	<i>Vanda cristata</i>	Orchidaceae	GB	NP		20		live		T	
1982	II	<i>Aerides multiflora</i>	Orchidaceae	US	NP		52		live		T	
1982	II	<i>Aerides odorata</i>	Orchidaceae	US	NP		52		live		T	
1982	II	<i>Arachnis cathcartii</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Arachnis clarkei</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Arundina graminifolia</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Bulbophyllum careyanum</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Bulbophyllum helenae</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Bulbophyllum hirtum</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Bulbophyllum leopardinum</i>	Orchidaceae	US	NP		2		live		T	
1982	II	<i>Bulbophyllum lepidum</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Calanthe herbacea</i>	Orchidaceae	US	NP		100		live		T	
1982	II	<i>Cleisostoma racemiferum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Coelogyne corymbosa</i>	Orchidaceae	US	NP		202		live		T	
1982	II	<i>Coelogyne cristata</i>	Orchidaceae	US	NP		102		live		T	
1982	II	<i>Coelogyne nitida</i>	Orchidaceae	US	NP		302		live		T	
1982	II	<i>Coelogyne ovalis</i>	Orchidaceae	US	NP		100		live		T	
1982	II	<i>Coelogyne prolifera</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Coelogyne stricta</i>	Orchidaceae	US	NP		102		live		T	
1982	II	<i>Cymbidium</i> spp.	Orchidaceae	US	NP		200		live		T	
1982	II	<i>Cymbidium aloifolium</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Cymbidium elegans</i>	Orchidaceae	US	NP		260		live		T	
1982	II	<i>Cymbidium ensifolium</i>	Orchidaceae	US	NP		200		live		T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1982	II	<i>Cymbidium iridioides</i>	Orchidaceae	US	NP		30		live		T	
1982	II	<i>Dendrobium amoenum</i>	Orchidaceae	US	NP		54		live		T	
1982	II	<i>Dendrobium aphyllum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Dendrobium chrysanthum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Dendrobium clavatum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Dendrobium crepidatum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Dendrobium heterocarpum</i>	Orchidaceae	US	NP		352		live		T	
1982	II	<i>Dendrobium litiuiflorum</i>	Orchidaceae	US	NP		150		live		T	
1982	II	<i>Dendrobium longicornu</i>	Orchidaceae	US	NP		200		live		T	
1982	II	<i>Dendrobium moschatum</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Dendrobium polyanthum</i>	Orchidaceae	US	NP		102		live		T	
1982	II	<i>Dendrobium terminale</i>	Orchidaceae	US	NP		100		live		T	
1982	II	<i>Gastrochilus acutifolius</i>	Orchidaceae	US	NP		25		live		T	
1982	II	<i>Gastrochilus calceolaris</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Kingidium</i> spp.	Orchidaceae	US	NP		25		live		T	
1982	II	Orchidaceae spp.	Orchidaceae	JP	NP		1400		live		T	A
1982	II	Orchidaceae spp.	Orchidaceae	US	NP		2		live		T	
1982	II	<i>Pholidota imbricate</i>	Orchidaceae	US	NP		50		live		T	
1982	II	<i>Pleione humilis</i>	Orchidaceae	US	NP		100		live		T	
1982	II	<i>Pleione praecox</i>	Orchidaceae	US	NP		52		live		T	
1982	II	<i>Rhynchostylis retusa</i>	Orchidaceae	US	NP		102		live		T	
1982	II	<i>Thunia</i> spp.	Orchidaceae	US	NP		177		live		T	
1982	II	<i>Vanda ampullacea</i>	Orchidaceae	US	NP		100		live		T	
1982	II	<i>Vanda cristata</i>	Orchidaceae	US	NP		152		live		T	
1982	II	<i>Vandopsis undulata</i>	Orchidaceae	US	NP		100		live		T	
1983	II	Orchidaceae spp.	Orchidaceae	JP	NP		11527		live		T	
1984	II	<i>Bulbophyllum refractum</i>	Orchidaceae	US	NP		15		live		T	
1984	II	<i>Calanthe brevicornu</i>	Orchidaceae	US	NP		75		live		T	
1984	II	<i>Calanthe plantaginea</i>	Orchidaceae	US	NP		75		live		T	
1984	II	<i>Calanthe puberula</i>	Orchidaceae	US	NP		15		live		T	
1984	II	Orchidaceae spp.	Orchidaceae	JP	NP		1250		live		T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1984	II	Orchidaceae spp.	Orchidaceae	US	NP		13		live			I
1985	II	<i>Agrostophyllum</i> spp.	Orchidaceae	CH	NP		2		live			
1985	II	<i>Bulbophyllum</i> spp.	Orchidaceae	CH	NP		16		live			
1985	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		1500		live		T	
1985	II	<i>Coelogyne</i> spp.	Orchidaceae	CH	NP		3		live			
1985	II	<i>Cymbidium</i> spp.	Orchidaceae	CH	NP		1		live			
1985	II	<i>Dendrobium</i> spp.	Orchidaceae	CH	NP		4		live			
1985	II	Orchidaceae spp.	Orchidaceae	US	NP		150		live			I
1985	II	<i>Panisea</i> spp.	Orchidaceae	CH	NP		2		live			
1985	II	<i>Pleione</i> spp.	Orchidaceae	CH	NP		12		live			
1985	II	<i>Thunia</i> spp.	Orchidaceae	CH	NP		1		live			
1985	II	<i>Vanda</i> spp.	Orchidaceae	CH	NP		2		live			
1986	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		9500		live		T	
1987	II	<i>Aerides multiflora</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Aerides odorata</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Calanthe brevicornu</i>	Orchidaceae	JP	NP		2000		live		T	A
1987	II	<i>Calanthe mannii</i>	Orchidaceae	JP	NP		350		live		T	A
1987	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		16000		live		T	A
1987	II	<i>Calanthe tricarinata</i>	Orchidaceae	JP	NP		2000		live		T	A
1987	II	<i>Cattleya</i> spp.	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Coelogyne flaccida</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Coelogyne nitida</i>	Orchidaceae	JP	NP		1000		live		T	A
1987	II	<i>Coelogyne ovalis</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Coelogyne prolifera</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Cymbidium</i> spp.	Orchidaceae	JP	NP		3		live		T	A
1987	II	<i>Cymbidium cyperifolium</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Cymbidium iridioides</i>	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Cymbidium lancifolium</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Dendrobium</i> spp.	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Dendrobium amplum</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Dendrobium anosmum</i>	Orchidaceae	JP	NP		15		live		T	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1987	II	<i>Dendrobium bicameratum</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Dendrobium densiflorum</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Dendrobium devonianum</i>	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Dendrobium nobile</i>	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Eria coronaria</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Eulophia alta</i>	Orchidaceae	JP	NP		1		live		T	A
1987	II	Orchidaceae spp.	Orchidaceae	US	NP		5		live			I
1987	II	<i>Panisea uniflora</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Papilionanthe teres</i>	Orchidaceae	JP	NP		1		live		T	A
1987	II	<i>Pholidota imbricate</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Pinalia spicata</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Rhynchostylis retusa</i>	Orchidaceae	JP	NP		15		live		T	A
1987	II	<i>Vanda cristata</i>	Orchidaceae	JP	NP		15		live		T	A
1988	II	Orchidaceae spp.	Orchidaceae	US	NP		4		live			I
1989	II	<i>Calanthe plantaginea</i>	Orchidaceae	DE	NP		2		live		T	A
1989	II	<i>Coelogyne nitida</i>	Orchidaceae	DE	NP		4		live		T	A
1989	II	<i>Cymbidium</i> spp.	Orchidaceae	DE	NP		2		live		T	A
1989	II	<i>Cymbidium devonianum</i>	Orchidaceae	DE	NP		2		live		T	A
1989	II	<i>Dendrobium</i> spp.	Orchidaceae	US	NP		2		live			I
1989	II	<i>Dendrobium densiflorum</i>	Orchidaceae	DE	NP		2		live		T	A
1989	II	<i>Paphiopedilum insigne</i>	Orchidaceae	DE	NP		2		live		T	A
1990	II	Orchidaceae spp.	Orchidaceae	JP	NP		25556		live		T	A
1991	II	<i>Bulbophyllum alatum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Bulbophyllum guttulatum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Bulbophyllum leopardinum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Calanthe brevicornu</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		1000		live		T	A
1991	II	<i>Coelogyne corymbosa</i>	Orchidaceae	JP	NP		200		live		T	A
1991	II	<i>Coelogyne cristata</i>	Orchidaceae	JP	NP		400		live		T	A
1991	II	<i>Coelogyne cristata</i>	Orchidaceae	JP	NP		5		live		T	

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1991	II	<i>Coelogyne flaccida</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Coelogyne prolifera</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Coelogyne stricta</i>	Orchidaceae	JP	NP		300		live		T	A
1991	II	<i>Cymbidium</i> spp.	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Cymbidium cyperifolium</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Cymbidium devonianum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Cymbidium iridioides</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium</i> spp.	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium amoenum</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Dendrobium anceps</i>	Orchidaceae	JP	NP		25		live		T	A
1991	II	<i>Dendrobium bicameratum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium chrysanthum</i>	Orchidaceae	JP	NP		50		live		T	A
1991	II	<i>Dendrobium chrysanthum</i>	Orchidaceae	JP	NP		10		live		T	
1991	II	<i>Dendrobium clavatum</i>	Orchidaceae	JP	NP		50		live		T	A
1991	II	<i>Dendrobium densiflorum</i>	Orchidaceae	JP	NP		400		live		T	A
1991	II	<i>Dendrobium densiflorum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium elatum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium heterocarpum</i>	Orchidaceae	JP	NP		50		live		T	A
1991	II	<i>Dendrobium longicornu</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Dendrobium longicornu</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Dendrobium transparens</i>	Orchidaceae	JP	NP		200		live		T	A
1991	II	<i>Diplomeris hirsute</i>	Orchidaceae	JP	NP		25		live		T	A
1991	II	<i>Eria</i> spp.	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Eria coronaria</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Pinalia spicata</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Pleione hookeriana</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Pleione hookeriana</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Pleione humilis</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Pleione humilis</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Pleione praecox</i>	Orchidaceae	JP	NP		100		live		T	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1991	II	<i>Pleione praecox</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Rhynchostylis retusa</i>	Orchidaceae	JP	NP		5		live		T	
1991	II	<i>Thunia alba</i>	Orchidaceae	JP	NP		100		live		T	A
1991	II	<i>Vanda cristata</i>	Orchidaceae	JP	NP		5		live		T	
1993	II	<i>Cymbidium iridioides</i>	Orchidaceae	JP	NP		125		live		T	
1993	II	<i>Phaius wallichii</i>	Orchidaceae	JP	NP		500		live		T	
1994	I	<i>Paphiopedilum spp.</i>	Orchidaceae	US	NP		2		live		P	I
1994	II	<i>Orchidaceae spp.</i>	Orchidaceae	US	NP		40		live		P	I
1995	II	<i>Aerides fieldingii</i>	Orchidaceae	JP	NP		50		live		T	A
1995	II	<i>Aerides multiflora</i>	Orchidaceae	JP	NP		50		live		T	A
1995	II	<i>Aerides odorata</i>	Orchidaceae	JP	NP		6		live		T	A
1995	II	<i>Bulbophyllum odoratissimum</i>	Orchidaceae	JP	NP		4		live		T	A
1995	II	<i>Bulbophyllum umbellatum</i>	Orchidaceae	JP	NP		4		live		T	A
1995	II	<i>Calanthe brevicornu</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	<i>Calanthe masuca</i>	Orchidaceae	JP	NP		50		live		T	A
1995	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		220		live		T	A
1995	II	<i>Coelogyne corymbosa</i>	Orchidaceae	JP	NP		220		live		T	A
1995	II	<i>Coelogyne cristata</i>	Orchidaceae	JP	NP		220		live		T	A
1995	II	<i>Coelogyne flaccida</i>	Orchidaceae	JP	NP		20		live		T	A
1995	II	<i>Coelogyne nitida</i>	Orchidaceae	JP	NP		20		live		T	A
1995	II	<i>Coelogyne stricta</i>	Orchidaceae	JP	NP		20		live		T	A
1995	II	<i>Cryptochilus luteus</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Cymbidium cyperifolium</i>	Orchidaceae	JP	NP		20		live		T	A
1995	II	<i>Cymbidium devonianum</i>	Orchidaceae	JP	NP		120		live		T	A
1995	II	<i>Cymbidium lowianum</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Cymbidium tigrinum</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	<i>Dendrobium spp.</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Dendrobium amoenum</i>	Orchidaceae	JP	NP		104		live		T	A
1995	II	<i>Dendrobium amplum</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Dendrobium anceps</i>	Orchidaceae	JP	NP		2		live		T	A
1995	II	<i>Dendrobium aphyllum</i>	Orchidaceae	JP	NP		4		live		T	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1995	II	<i>Dendrobium capillipes</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Dendrobium chrysanthum</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Dendrobium chrysotoxum</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Dendrobium denneanum</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Dendrobium densiflorum</i>	Orchidaceae	JP	NP		20		live		T	A
1995	II	<i>Dendrobium denudans</i>	Orchidaceae	JP	NP		2		live		T	A
1995	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	JP	NP		150		live		T	A
1995	II	<i>Dendrobium heterocarpum</i>	Orchidaceae	JP	NP		70		live		T	A
1995	II	<i>Dendrobium hookerianum</i>	Orchidaceae	JP	NP		50		live		T	A
1995	II	<i>Dendrobium infundibulum</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Dendrobium lindleyi</i>	Orchidaceae	JP	NP		100		live		T	A
1995	II	<i>Dendrobium nobile</i>	Orchidaceae	JP	NP		15		live		T	A
1995	II	<i>Dendrobium polyanthum</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Dendrobium thyrsiflorum</i>	Orchidaceae	JP	NP		150		live		T	A
1995	II	<i>Dendrobium transparens</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Dendrobium wardianum</i>	Orchidaceae	JP	NP		150		live		T	A
1995	II	<i>Dendrobium williamsonii</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	<i>Hygrochilus parishii</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	Orchidaceae spp.	Orchidaceae	JP	NP			12	live		S	A
1995	II	Orchidaceae spp.	Orchidaceae	JP	NP			3500	live			
1995	II	<i>Papilionanthe teres</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	<i>Pleione humilis</i>	Orchidaceae	JP	NP		5		live		T	A
1995	II	<i>Rhynchostylis retusa</i>	Orchidaceae	JP	NP		10		live		T	A
1995	II	<i>Schoenorchis</i> spp.	Orchidaceae	JP	NP		200		live		T	A
1995	II	<i>Vanda ampullacea</i>	Orchidaceae	JP	NP		504		live		T	A
1995	II	<i>Vanda coerulescens</i>	Orchidaceae	JP	NP		25		live		T	A
1995	II	<i>Vanda cristata</i>	Orchidaceae	JP	NP		170		live		T	A
1995	II	<i>Vanda stangeana</i>	Orchidaceae	JP	NP		50		live		T	A
1997	I	<i>Paphiopedilum insigne</i>	Orchidaceae	NL	NP		255		live		T	A
1998	II	<i>Calanthe plantaginea</i>	Orchidaceae	JP	NP		1000		live		T	A
1998	II	<i>Cymbidium</i> spp.	Orchidaceae	DE	NP		25		live		T	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
1998	II	<i>Cymbidium</i> spp.	Orchidaceae	US	NP		2		live		P	I
1998	II	<i>Cymbidium lowianum</i>	Orchidaceae	JP	NP		300		live		T	A
1998	II	<i>Cymbidium tigrinum</i>	Orchidaceae	JP	NP		300		live		T	A
1998	II	<i>Dendrobium chrysotoxum</i>	Orchidaceae	JP	NP		100		live		T	A
1998	II	<i>Dendrobium thyrsiflorum</i>	Orchidaceae	JP	NP		300		live		T	A
1998	II	<i>Dendrobium wardianum</i>	Orchidaceae	JP	NP		100		live		T	A
1998	II	Orchidaceae spp.	Orchidaceae	US	NP		5		live		P	I
1998	II	<i>Renanthera</i> spp.	Orchidaceae	DE	NP		5		live		T	A
1998	II	<i>Rhynchostylis retusa</i>	Orchidaceae	DE	NP		10		live		T	A
2000	II	<i>Cypripedium</i> spp.	Orchidaceae	CZ	NP		426		live		T	I
2000	II	Orchidaceae spp.	Orchidaceae	CZ	NP		1		live			I
2000	II	<i>Phalaenopsis amabilis</i>	Orchidaceae	NL	NP		1500		live		T	A
2002	II	<i>Coelogyne</i> spp.	Orchidaceae	JP	NP		4		live		T	A
2002	II	<i>Dendrobium bicameratum</i>	Orchidaceae	JP	NP		2		live		T	A
2002	II	<i>Dendrobium hellwigianum</i>	Orchidaceae	JP	NP		4		live		T	A
2002	II	<i>Dendrobium nobile</i>	Orchidaceae	JP	NP		2		live		T	A
2002	II	Orchidaceae spp.	Orchidaceae	JP	NP		5		live		T	A
2003	II	<i>Pterocarpus santalinus</i>	Leguminosae	CN	NP		96000		timber	kg	T	W
2003	II	Orchidaceae spp.	Orchidaceae	US	NP		2		roots		P	I
2008	II	<i>Dendrobium</i> spp.	Orchidaceae	CN	NP		4000		live	kg	T	A
2008	II	<i>Dendrobium aphyllum</i>	Orchidaceae	CH	NP			7992	live	kg	T	W
2008	II	<i>Dendrobium aphyllum</i>	Orchidaceae	CN	NP		1500		live	kg	T	W
2008	II	<i>Dendrobium eriiflorum</i>	Orchidaceae	CN	NP		18990		stems	kg	T	W
2008	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP			159.5	oil	kg	T	W
2008	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			10	oil	kg	T	W
2008	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			40453	derivatives	kg	T	W
2008	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			51	oil	kg	T	W
2008	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			24048	derivatives	kg	T	W
2009	II	<i>Pterocarpus santalinus</i>	Leguminosae	IN	NP			28600	logs	kg	T	W
2009	II	<i>Dendrobium</i> spp.	Orchidaceae	CN	NP		5000		live	kg	T	A
2009	II	<i>Dendrobium eriiflorum</i>	Orchidaceae	CN	NP		5000		roots	kg	T	W

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2009	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			7350	derivatives	kg	T	W
2009	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			51	oil	kg	T	W
2009	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			67048	derivatives	kg	T	W
2010	II	<i>Pterocarpus santalinus</i>	Leguminosae	IN	NP			13073	logs	kg	T	W
2010	II	<i>Dendrobium aphyllum</i>	Orchidaceae	TH	NP			1585	stems	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			5	oil	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP			49	oil	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			9856	derivatives	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			524	oil	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			35170	derivatives	kg	T	W
2010	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			135	oil	kg	T	W
2011	II	<i>Pterocarpus santalinus</i>	Leguminosae	US	NP		1		chips		T	I
2011	II	<i>Aquilaria</i> spp.	Thymelaeaceae	US	NP		1		chips		T	I
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP			53.55	oil	kg	T	W
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			28	oil	kg	T	W
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			19250	derivatives	kg	T	W
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			866	oil	kg	T	W
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			77380	roots	kg	T	W
2011	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			22307	derivatives	kg	T	W
2012	II	<i>Pterocarpus santalinus</i>	Leguminosae	US	NP		1.8		carvings	kg	P	I
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP			99.7	oil	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			30	oil	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			44989	derivatives	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			674	oil	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			83599	roots	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			58581	derivatives	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			30	oil	kg	T	W
2012	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			5	oil	kg		
2013	II	<i>Coelogyne nitida</i>	Orchidaceae	JP	NP			5	live		T	A
2013	II	<i>Cymbidium</i> spp.	Orchidaceae	JP	NP			6	live		T	A
2013	II	<i>Cymbidium iridioides</i>	Orchidaceae	JP	NP			3	live		Q	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2013	II	<i>Dendrobium amoenum</i>	Orchidaceae	TH	NP			9308.91	stems	kg	T	W
2013	II	<i>Dendrobium aphyllum</i>	Orchidaceae	TH	NP	XX		9308.91	stems	kg	T	W
2013	II	<i>Dendrobium dixonianum</i>	Orchidaceae	CN	NP			346.5	roots	kg	T	A
2013	II	<i>Dendrobium fimbriatum</i>	Orchidaceae	TH	NP			9308.91	stems	kg	T	W
2013	II	<i>Dendrobium transparens</i>	Orchidaceae	CN	NP			650	roots	kg	T	A
2013	II	<i>Otochilus fuscus</i>	Orchidaceae	JP	NP			4	live		T	A
2013	II	<i>Taxus wallichiana</i>	Taxaceae	AE	NP			0.25	extract	kg	T	W
2013	II	<i>Taxus wallichiana</i>	Taxaceae	IN	NP			4.25	extract	kg	T	W
2013	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP			180	oil	kg	T	W
2013	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			103927.59	derivatives	kg	T	W
2013	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2404	oil	kg	T	W
2013	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			24507	derivatives	kg	T	W
2013	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			25	oil	kg	T	W
2013	N	<i>Lycopodium clavatum</i>	Lycopodiaceae	DE	NP		450		leaves	kg	T	W
2013	N	<i>Lycopodium clavatum</i>	Lycopodiaceae	DE	NP		110		powder	kg	T	W
2014	II	<i>Dendrobium</i> spp.	Orchidaceae	CN	NP		346.5		stems	kg	T	A
2014	II	<i>Dendrobium dixonianum</i>	Orchidaceae	TH	NP	XX		2378.20	stems	kg	T	W
2014	II	<i>Dendrobium transparens</i>	Orchidaceae	CN	NP		650		stems	kg	T	A
2014	II	<i>Taxus wallichiana</i>	Taxaceae	AE	NP			21	extract	kg	T	W
2014	II	<i>Taxus wallichiana</i>	Taxaceae	IN	NP			0.25	extract	kg	T	W
2014	II	<i>Taxus wallichiana</i>	Taxaceae	JP	NP			0.05	extract	kg	T	W
2014	II	<i>Aquilaria</i> spp.	Thymelaeaceae	US	NP		2		oil		T	I
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP		50	50	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			2850	derivatives	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP		20	20	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP			100	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	DE	NP		25	40	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP		34	84	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP		10	10	oil	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			211622	derivatives	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			3117	oil	kg	T	W

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			64400	derivatives	kg	T	W
2014	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			135	oil	kg	T	W
2015	II	<i>Dendrobium eriiflorum</i>	Orchidaceae	TH	NP			3	stems	kg	T	A
2015	II	<i>Dendrobium transparens</i>	Orchidaceae	CN	NP			200	stems	kg		
2015	II	<i>Taxus wallichiana</i>	Taxaceae	AE	NP			9847	extract	kg	T	W
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP		216.5	10	oil	kg	T	W
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP		15000000		extract	mg	T	W
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP		25		oil	kg	T	A
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	DE	NP		20		oil	kg	T	W
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP		50	3	oil	kg	T	W
2015	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP		126	2651	oil	kg	T	W
2016	II	<i>Dendrobium</i> spp.	Orchidaceae	TH	NP			8007.2	stems	kg	T	W
2016	II	<i>Dendrobium anosmum</i>	Orchidaceae	TH	NP		1734.40		stems	kg	T	A
2016	II	<i>Dendrobium denudans</i>	Orchidaceae	TH	NP		2597.60		stems	kg	T	A
2016	II	<i>Dendrobium nobile</i>	Orchidaceae	TH	NP		3675.20		stems	kg	T	A
2016	II	<i>Dendrobium transparens</i>	Orchidaceae	CN	NP		700	700	stems	kg	T	A
2016	II	<i>Taxus wallichiana</i>	Taxaceae	AE	NP			20	extract	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			6360	derivatives	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP		150	404	oil	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP			25	oil	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			214159	derivatives	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			3964	oil	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	KR	NP			1	oil	kg	E	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			97740	derivatives	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			1486	oil	kg	T	W
2016	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP		60		oil	ml	T	I
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP		254		oil	kg	T	W
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	DE	NP			10	oil	kg	T	W
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP		25	50	oil	kg	T	W
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			193033	derivatives	kg	T	W
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			21283	oil	kg	T	W

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			83264	derivatives	kg	T	W
2017	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			818	oil	kg	T	W
2018	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			63	oil	kg	T	W
2020	II	<i>Taxus wallichiana</i>	Taxaceae	IN	NP			14	extract	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP			36700	derivatives	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			4930	derivatives	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP			1	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP		30	30	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CN	NP			20	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			5	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			191520	derivatives	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2895.4	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	JP	NP			2	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			144640	derivatives	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	TW	NP			11	oil	kg	T	W
2020	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			245	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP		67	67	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			5000	derivatives	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP		50	50	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CN	NP		20	10	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	DE	NP			10	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			1	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP			5	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			319156	derivatives	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2991.5	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP		217141		roots	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	JP	NP		1	1	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			36260	derivatives	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	TW	NP			5	oil	kg	T	W
2021	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			601	oil	kg	T	W
2022	II	<i>Cycas pectinata</i>	Cycadaceae	NL	NP			9	roots	Number	T	A

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
										of specimens		
2022	II	<i>Cycas pectinata</i>	Cycadaceae	NL	NP		9		roots		T	A
2022	II	<i>Taxus wallichiana</i>	Taxaceae	IN	NP			21	extract	kg	T	A
2022	II	<i>Aquilaria</i> spp.	Thymelaeaceae	US	NP		634		derivatives	g	T	I
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP			7000	derivatives	kg	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP		98.7	98.7	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BE	NP			9.87	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP		4.935	4.935	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	FR	NP			9.87	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			178225	derivatives	kg	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2541.550	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IT	NP			4.935	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	JP	NP		2		oil	kg	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	JP	NP			1.974	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	KR	NP			4.935	oil	l	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			190480	derivatives	kg	T	W
2022	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			305.97	oil	l	T	W
2023	II	<i>Dalbergia latifolia</i>	Leguminosae	CN	NP		1120		wood product	kg	T	A
2023	II	<i>Taxus</i> spp.	Taxaceae	IN	NP			36	extract	kg	T	A
2023	II	<i>Taxus</i> spp.	Taxaceae	IN	NP			5	extract	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP		100		oil	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP			98.7	oil	l	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			1500	derivatives	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CH	NP			7.403	oil	l	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CN	NP		4		oil	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CN	NP			3.948	oil	l	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP			4.935	oil	l	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			363359	derivatives	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2781.367	oil	l	T	W

Year	App.	Taxon	Family	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP		117000		powder	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			2500	derivatives	kg	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	TW	NP			1.974	oil	l	T	W
2023	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			356.307	oil	l	T	W
2024	II	<i>Taxus</i> spp.	Taxaceae	IN	NP			41	powder	kg	T	A
2024	II	<i>Taxus</i> spp.	Taxaceae	IN	NP			5	powder	kg	T	W
2024	II	<i>Taxus</i> spp.	Taxaceae	US	NP			5	powder	kg	T	A
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	AE	NP			23750	derivatives	kg	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BD	NP			500	derivatives	kg	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	BG	NP			2.961	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CA	NP			0.4935	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	CN	NP			3.948	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	DE	NP			45.727	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	GB	NP		4.935		oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			70700	derivatives	kg	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	IN	NP			2110.289	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	PK	NP			12000	derivatives	kg	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	TW	NP			1	oil	l	T	W
2024	II	<i>Nardostachys grandiflora</i>	Valerianaceae	US	NP			243.296	oil	l	T	W

Note: A: Artificially propagated; W: Wild, I: Seized; T: Trade; E: Education; Q: Circus; P: Personal; S: Scientific; g: Grams, kg: Kilograms; l: Litres; mg: Milligrams; ml: Millilitres.

AE: United Arab Emirates; BE: Belgium; BD: Bangladesh; BG: Bulgaria; CA: Canada; CH: Switzerland; CN: China; CZ: Czech Republic; DE: Germany; FR: France; GB: United Kingdom of Great Britain and Northern Ireland; IN: India; IT: Italy; JP: Japan; KR: Republic of Korea; NL: Netherlands; NP: Nepal; PK: Pakistan; TH: Thailand; TW: Taiwan, Province of China; US: United States of America.

Appendix 2: Checklist of CITES species of Nepal**CITES Appendix I**

Currently, no plant species from Nepal are included in Appendix I.

CITES Appendix II

SN	Scientific name	Family	English name	Nepali name
1	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Rauwolfia Root, Serpentine root ,Serpentine Wood, Snake-root ,Devil-pepper, Snakewood	सर्पगन्धा, चौदमरुवा
2	<i>Podophyllum hexandrum</i> Royle	Berberidaceae	Himalayan May-apple, Indian Podophyllum, Podophyllum Resin	लघुपत्र, पाप्रा, वन भान्टा
3	<i>Cyathea gigantea</i> (Wall. ex Hook) Holttum Syn : <i>Alsophila gigantea</i> Wall. ex Hook.	Cyatheaceae	Tree fern	रुख उन्यू
4	<i>Cyathea brunoniana</i> (C.B. Clarke) C.B. Clarke & Baker	Cyatheaceae	Tree fern	रुख उन्यू
5	<i>Cyathea chinensis</i> Copel.	Cyatheaceae	Tree fern	
6	<i>Cyathea gammiei</i> R.D. Dixit	Cyatheaceae	Tree fern	
7	<i>Cyathea khasyana</i> (Moore ex Kuhn) Domin	Cyatheaceae	Tall tree fern	रुख उन्यू
8	<i>Cyathea spinulosa</i> Wall. ex. Hook.	Cyatheaceae	Tree fern	रुख उन्यू
9	<i>Cycas pectinata</i> Buch.-Ham.	Cycadaceae	Cycas	कलवल, थाकल
10	<i>Dioscorea deltoidea</i> Wall. ex Griseb.	Dioscoreaceae	Deltoid yam/ Nepali yam	कुकुर तरुल, भ्याकुर
11	<i>Euphorbia fusiformis</i> Buch.-Ham. ex D. Don	Euphorbiaceae		वन मुली
12	<i>Euphorbia prostrata</i> Aiton	Euphorbiaceae		कनिके घाँस
13	<i>Euphorbia royleana</i> Boiss	Euphorbiaceae		सिउडी
14	<i>Dalbergia lanceolaria</i> L.f.	Leguminosae		बादरे शिरिष
15	<i>Dalbergia latifolia</i> Roxb.	Leguminosae	Rose wood	सतिसाल
16	<i>Dalbergia pinnata</i> (Lour.) Prain	Leguminosae		डामर
17	<i>Dalbergia sericea</i> G. Don	Leguminosae	Silky Dalbergia	
18	<i>Dalbergia sissoo</i> Roxb. ex DC.	Leguminosae	Indian sissoo	सिसौ
29	<i>Dalbergia stipulacea</i> Roxb.	Leguminosae	East himalayn dalbergia	टाटेवीर
20	<i>Dalbergia volubilis</i> Roxb.	Leguminosae	Climbing dalbergia	
21	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Orchidaceae		रसना
22	<i>Acanthophippium striatum</i> Lindl.	Orchidaceae	The striped Acanthophippium	
23	<i>Aerides multiflora</i> Roxb.	Orchidaceae	Cat's -Tail Orchid	प्याजी सुनाखरी
24	<i>Aerides odorata</i> Lour.	Orchidaceae	The Fragrant Aerides	परजिवी
25	<i>Agrostophyllum callosum</i> Rchb. f.	Orchidaceae		
26	<i>Agrostophyllum panicale</i> (Wall. ex Lindl.) Rchb. f.	Orchidaceae		
27	<i>Ania penangiana</i> (Hook.f.) Summerh.	Orchidaceae		
28	<i>Anoetochilus roxburghii</i> (Wall.) Lindl.	Orchidaceae	Roxburgh's Anoetochilus	
29	<i>Anthogonium gracile</i> Wall. ex Lindl.	Orchidaceae		
30	<i>Aphyllorchis alpina</i> King & Pantl.	Orchidaceae	The Alpine Aphyllorchis	

SN	Scientific name	Family	English name	Nepali name
31	<i>Apostasia wallichii</i> R.Br.	Orchidaceae		
32	<i>Arachnis cathcartii</i> (Lindl.) J.J. Sm.	Orchidaceae		
33	<i>Arachnis clarkei</i> (Rchb.f.) J.J.Sm	Orchidaceae	Clark's Arachnanthe	
34	<i>Arundina graminifolia</i> (D. Don) Hochr.	Orchidaceae	Bamboo orchid	गाभा
35	<i>Brachycorythis galeandra</i> (Rchb.f.) Summerh	Orchidaceae		
36	<i>Brachycorythis obcordata</i> (Lindl. ex Wall.) Summerh.	Orchidaceae	The Reverse Heart-Shaped Brachycorythis	गामडोल, कालादाना
37	<i>Bulbophyllum affine</i> Lindl.	Orchidaceae	The Similar Bulbophyllum	
38	<i>Bulbophyllum ambrosia</i> (Hance) Schltr.	Orchidaceae	The Sweet-Smelling Bulbophyllum	
39	<i>Bulbophyllum bisetum</i> Lindl.	Orchidaceae	The Two Bristled Bulbophyllum	
40	<i>Bulbophyllum careyanum</i> (Hook.) Spreng.	Orchidaceae	Carey's Bulbophyllum	वन हर्चुल, थुर, परजिवी
41	<i>Bulbophyllum cariniflorum</i> Rchb.f.	Orchidaceae	The Keeled Flower Bulbophyllum	
42	<i>Bulbophyllum caudatum</i> Lindl.	Orchidaceae		
43	<i>Bulbophyllum cauliflorum</i> Hook.f.	Orchidaceae	The Stem Flowering Bulbophyllum	
44	<i>Bulbophyllum cirrhatum</i> (Lindl.) Hook. f.	Orchidaceae		
45	<i>Bulbophyllum crabro</i> (C.S.P. Parish & Rchb.f.) J.J. Verm., Schuit. & de Vogel	Orchidaceae		
46	<i>Bulbophyllum crassipes</i> Hook. f.	Orchidaceae		
47	<i>Bulbophyllum cylindraceum</i> Wall. ex Lindl.	Orchidaceae	The Cylindrical Bulbophyllum	
48	<i>Bulbophyllum elatum</i> (Hook.f.) J.J.Sm.	Orchidaceae	The Tall Bulbophyllum	
49	<i>Bulbophyllum emarginatum</i> (Finet) J.J.Sm.	Orchidaceae	The Emarginate Bulbophyllum	
50	<i>Bulbophyllum eublepharum</i> Rchb.f.	Orchidaceae		
51	<i>Bulbophyllum gamblei</i> (Hook. f.) Hook. f.			
52	<i>Bulbophyllum griffithii</i> (Lindl.) Rchb.f.	Orchidaceae		
53	<i>Bulbophyllum guttulatum</i> (Hook. f.) Balakr.	Orchidaceae	The small spotted Bulbophyllum	
54	<i>Bulbophyllum helenae</i> (Kuntze) J.J.Sm.	Orchidaceae	Horned Rhytionanthos	
55	<i>Bulbophyllum hirtum</i> (Sm.) Lindl. ex Wall.	Orchidaceae	The Bristly Bulbophyllum	
56	<i>Bulbophyllum khaoyaiense</i> Seidenf.	Orchidaceae		
57	<i>Bulbophyllum kingii</i> Hook.f.	Orchidaceae		
58	<i>Bulbophyllum leopardinum</i> (Wall.) Lindl. ex Wall.	Orchidaceae	The leopard spotted Bulbophyllum	थुर, परजिवी
59	<i>Bulbophyllum moniliforme</i> C.S.P.Parish & Rchb.f.	Orchidaceae	The Necklace-Like Bulbophyllum	
60	<i>Bulbophyllum muscicola</i> Rchb. f.	Orchidaceae	The Moss-Growing Bulbophyllum	
61	<i>Bulbophyllum nepalense</i> Raskoti & Ale	Orchidaceae		
62	<i>Bulbophyllum odoratissimum</i> (Sm.) Lindl. ex Wall.	Orchidaceae	The Fragrant Bulbophyllum	थुर्जो
63	<i>Bulbophyllum polyrrhizum</i> Lindl.	Orchidaceae		
64	<i>Bulbophyllum raskotii</i> J.J.Verm., Schuit. & de Vogel	Orchidaceae		
65	<i>Bulbophyllum refractum</i> (Zoll.) Rchb. f.			
66	<i>Bulbophyllum reptans</i> (Lindl.) Lindl. ex Wall.	Orchidaceae	The Crawling Bulbophyllum	
67	<i>Bulbophyllum retusiusculum</i> Rchb.f.	Orchidaceae	The blunted Cirrhopetalum	
68	<i>Bulbophyllum rigidum</i> King & Pantl.	Orchidaceae	Rigid Bulbophyllum	

SN	Scientific name	Family	English name	Nepali name
69	<i>Bulbophyllum rolfei</i> (Kuntze) Seidenf.	Orchidaceae	Rolfe's Bulbophyllum	
70	<i>Bulbophyllum roseopictum</i> J.J.Verm., Schuit. & de Vogel	Orchidaceae		
71	<i>Bulbophyllum roxburghii</i> (Lindl.) Rchb.f.	Orchidaceae	Roxburgh's Bulbophyllum	
72	<i>Bulbophyllum sarcophyllum</i> (King & Pantl.) J. J. Sm.	Orchidaceae	The Fleshy Red-Leafed Bulbophyllum	
73	<i>Bulbophyllum scabratum</i> Rchb.f.	Orchidaceae	The Rough Bulbophyllum	
74	<i>Bulbophyllum secundum</i> Hook.f.	Orchidaceae	The One Sided Bulbophyllum	
75	<i>Bulbophyllum sterile</i> (Lam.) Suresh			
76	<i>Bulbophyllum striatum</i> (Griff.) Rchb.f.	Orchidaceae	The Striate Bulbophyllum	
77	<i>Bulbophyllum sunipia</i> J.J.Verm., Schuit. & de Vogel			
78	<i>Bulbophyllum triste</i> Rchb.f.	Orchidaceae	The Dark Bulbophyllum	
79	<i>Bulbophyllum umbellatum</i> Lindl.	Orchidaceae	The Umbrella Bulbophyllum	
80	<i>Bulbophyllum viridiflorum</i> (Hook.f.) Schltr.	Orchidaceae	The Green Flowered Bulbophyllum	
81	<i>Bulbophyllum wallichii</i> Rchb.f.	Orchidaceae		
82	<i>Bulbophyllum yoksunense</i> J.J.Sm.	Orchidaceae	The Yoksun Bulbophyllum	
83	<i>Bulbophyllum yunnanense</i> Rolfe	Orchidaceae	The Yunnan Bulbophyllum	
84	<i>Calanthe alpina</i> Hook.f. ex Lindl.	Orchidaceae	The Alpine Calanthe	
85	<i>Calanthe arcuata</i> Rolfe	Orchidaceae		
86	<i>Calanthe biloba</i> Lindl.	Orchidaceae	The Two Lobed Calanthe	
87	<i>Calanthe brevicornu</i> Lindl.	Orchidaceae	The Short Spurred Calanthe	
88	<i>Calanthe chloroleuca</i> Lindl.	Orchidaceae	The Greenish-White Calanthe	
89	<i>Calanthe davidii</i> Franch.	Orchidaceae	David's Calanthe	
90	<i>Calanthe densiflora</i> Lindl.	Orchidaceae	The Densely Flowered Calanthe	
91	<i>Calanthe griffithii</i> Lindl.	Orchidaceae	Griffith's Calanthe	
92	<i>Calanthe himalaicum</i> Raskoti	Orchidaceae		
93	<i>Calanthe longipes</i> Hook.f.	Orchidaceae		
94	<i>Calanthe mannii</i> Hook.f.	Orchidaceae	Mann's Calanthe	बाँदरको धोती
95	<i>Calanthe masuca</i> (D.Don) Lindl	Orchidaceae		पंखा फूल
96	<i>Calanthe metoensis</i> Z.H.Tsi & K.Y.Lang	Orchidaceae		
97	<i>Calanthe plantaginea</i> Lindl.	Orchidaceae	The Plantago-Like Calanthe	पंखा फूल
98	<i>Calanthe puberula</i> Lindl.	Orchidaceae	The Hairy Calanthe	वन अदुवा
99	<i>Calanthe tankervilleae</i> (Banks) M.W.Chase, Christenh. & Schuit.	Orchidaceae	Nun's-Hood Orchid	
100	<i>Calanthe tricarinata</i> Lindl.	Orchidaceae	Three keeled Calanthe	
101	<i>Calanthe trulliformis</i> King & Pantl.	Orchidaceae	The Trulliform Calanthe	
102	<i>Calanthe woodfordii</i> (Hook.) M.W.Chase, Christenh. & Schuit.	Orchidaceae		
103	<i>Callostylis rigida</i> Blume	Orchidaceae		
104	<i>Cephalanthera erecta</i> (Thunb.) Blume	Orchidaceae	Erect cephalanthera	
105	<i>Cephalanthera longifolia</i> (L.) Fritsch	Orchidaceae	The white lady orchid	
106	<i>Ceratostylis himalaica</i> Hook. f.,	Orchidaceae		
107	<i>Cheirostylis griffithii</i> Lindl.	Orchidaceae	Griffith's Cheirostylis	
108	<i>Chiloschista parishii</i> Seidenf.	Orchidaceae		
109	<i>Chiloschista usneoides</i> (D. Don) Lindl.	Orchidaceae	Lichen-like Chiloschista	
110	<i>Chrysoglossum ornatum</i> Blume	Orchidaceae	Hastate lip orchid	
111	<i>Cleisostoma aspersum</i> (Rchb.f.) Garay	Orchidaceae		
112	<i>Cleisostoma filiforme</i> (Lindl.) Garay	Orchidaceae		
113	<i>Cleisostoma racemiferum</i> (Lindl.) Garay	Orchidaceae	The Spike Shaped Flower Raceme	
114	<i>Cleisostoma simondii</i> (Gagnep.) Seidenf.	Orchidaceae	Simond's Cleisostoma	

SN	Scientific name	Family	English name	Nepali name
115	<i>Coelogyne alba</i> (Lindl.) Rchb.f.	Orchidaceae		
116	<i>Coelogyne articulata</i> (Lindl.) Rchb.f.	Orchidaceae		
117	<i>Coelogyne corymbosa</i> Lindl.	Orchidaceae	The Umbrella-Like Coelogyne	चाँदीगाभा, झौपाते
118	<i>Coelogyne cristata</i> Lindl.	Orchidaceae	The Crested Coelogyne	भालु केरा, चाँदीगाभा
119	<i>Coelogyne demissa</i> (D.Don) M.W.Chase & Schuit.	Orchidaceae		हात्ती टाउके
120	<i>Coelogyne fimbriata</i> Lindl.	Orchidaceae	The Fringed Coelogyne	जिवन्ती
121	<i>Coelogyne flaccida</i> Lindl.	Orchidaceae	The Loose Coelogyne	थुरगाभा, चाँदीगाभा
122	<i>Coelogyne fusca</i> (Lindl.) Rchb.f.	Orchidaceae		
123	<i>Coelogyne fuscescens</i> Lindl.	Orchidaceae	Yellow Coelogyne	वनकेरा
124	<i>Coelogyne gardneriana</i> Lindl.	Orchidaceae		
125	<i>Coelogyne imbricata</i> (Hook.) Rchb.f.	Orchidaceae		पत्थरकेरा, भालुकेरा
126	<i>Coelogyne lancilabia</i> (Seidenf.) R.Rice	Orchidaceae		
127	<i>Coelogyne longipes</i> Lindl.	Orchidaceae	The Long Stemmed Coelogyne	
128	<i>Coelogyne nitida</i> (Wall. ex D. Don) Lindl.	Orchidaceae	The shining Coelogyne	चाँदीगाभा, पारा फूल, वनलसुन, थुर
129	<i>Coelogyne ovalis</i> Lindl.	Orchidaceae	The fringed Coelogyne	
130	<i>Coelogyne pallida</i> (Lindl.) Rchb.f.	Orchidaceae		
131	<i>Coelogyne panchaseensis</i> (Subedi) M.W.Chase & Schuit.	Orchidaceae		
132	<i>Coelogyne porrecta</i> (Lindl.) Rchb.f.	Orchidaceae		जिवन्ती
133	<i>Coelogyne prolifera</i> Lindl.	Orchidaceae	The rich fruit Coelogyne	थुर, गाउजो
134	<i>Coelogyne protracta</i> (Hook.f.) R.Rice	Orchidaceae		
135	<i>Coelogyne punctulata</i> Lindl.	Orchidaceae	Lip eye-shaped spotted Coelogyne	
136	<i>Coelogyne raizadae</i> S.K.Jain & S.Das	Orchidaceae	Raizada's Coelogyne	
137	<i>Coelogyne recurva</i> (Lindl.) Rchb.f.	Orchidaceae		
138	<i>Coelogyne stricta</i> (D.Don) Schltr.	Orchidaceae	The Rigid Coelogyne	वन पियाज
139	<i>Coelogyne uniflora</i> Lindl.	Orchidaceae		
140	<i>Corallorhiza trifida</i> Chatel.	Orchidaceae		
141	<i>Cremastra appendiculata</i> (D. Don) Makino	Orchidaceae		
142	<i>Crepidium acuminatum</i> (D.Don) Szlach.	Orchidaceae		
143	<i>Crepidium bauritum</i> (Lindl.) Szlach.	Orchidaceae		
144	<i>Crepidium khasianum</i> (Hook.f.) Szlach.	Orchidaceae		
145	<i>Crepidium purpureum</i> (Lindl.) Szlach.	Orchidaceae		
146	<i>Cryptochilus acuminatus</i> (Griff.) Schuit., Y.P.Ng & H.A.Pedersen	Orchidaceae		
147	<i>Cryptochilus luteus</i> Lindl.	Orchidaceae		
148	<i>Cryptochilus sanguineus</i> Wall.	Orchidaceae	The Blood-Red Cryptochilus	
149	<i>Cryptochilus strictus</i> (Lindl.) Schuit., Y.P.Ng & H.A.Pedersen	Orchidaceae		
150	<i>Cylindrolobus biflorus</i> (Griff.) Rauschert	Orchidaceae		
151	<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	The Aloe-Leafed Cymbidium	हरजोर, वनहर्चुल, कमारो
152	<i>Cymbidium crassifolium</i> Herb.	Orchidaceae		
153	<i>Cymbidium cyperifolium</i> Wall. ex Lindl.	Orchidaceae	The Cyperus -Like leafed Cymbidium	
154	<i>Cymbidium devonianum</i> Paxton	Orchidaceae	Devon's Cymbidium	थिर गाभा

SN	Scientific name	Family	English name	Nepali name
155	<i>Cymbidium eburneum</i> Lindl.	Orchidaceae	The Ivory-Colored Cymbidium	
156	<i>Cymbidium elegans</i> Lindl.	Orchidaceae	The Elegant Cymbidium	थुर
157	<i>Cymbidium erythraeum</i> Lindl.	Orchidaceae	The Red-Spotted Lip Cymbidium	
158	<i>Cymbidium gammieanum</i> King & Pantl.	Orchidaceae	Gammie's Cymbidium	
159	<i>Cymbidium hookerianum</i> Rchb.f.	Orchidaceae	Large flower Cymbidium	
160	<i>Cymbidium iridioides</i> D.Don	Orchidaceae	The Iris- like Cymbidium	थुर
161	<i>Cymbidium lancifolium</i> Hook.	Orchidaceae	The Lance- Leafed Cymbidium	
162	<i>Cymbilabia undulata</i> (Lindl.) D.K. Liu & Ming. H. Li	Orchidaceae		
163	<i>Cypripedium cordigerum</i> D.Don	Orchidaceae	The Heart- Shaped Lip Cypripedium	जिब्रे, ठुलो काकोली
164	<i>Cypripedium elegans</i> Rchb.f.	Orchidaceae	Camel's foot	
165	<i>Cypripedium himalaicum</i> Rolfe.	Orchidaceae	The gaint flower Cypripedium	खुजुक्पा
166	<i>Cyrtosia lindleyana</i> Hook. f. & Thomson	Orchidaceae		
167	<i>Dactylorhiza hatagirea</i> (D.Don) Soo	Orchidaceae		पाँच औँले, हताजडी
168	<i>Dactylorhiza viridis</i> (L.) R.M.Bateman, Pridgeon & M.W.Chase	Orchidaceae	Frog orchid	
169	<i>Dendrobium amoenum</i> Wall. ex Lindl.	Orchidaceae	The lovely Dendrobium	थुर, जीवन्ती
170	<i>Dendrobium amplum</i> Lindl.	Orchidaceae		
171	<i>Dendrobium anceps</i> Sw.	Orchidaceae	The Double- Edged Dendrobium	
172	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	The Hooded Dendrobium	
173	<i>Dendrobium bicameratum</i> Lindl.	Orchidaceae	The Two Chambered Dendrobium	
174	<i>Dendrobium chrysanthum</i> Wall. ex Lindl.	Orchidaceae	The Golden Yellow Flowered Dendrobium	
175	<i>Dendrobium chryseum</i> Rolfe	Orchidaceae	The Yellow Flowered Dendrobium	
176	<i>Dendrobium crepidatum</i> Lindl. & Paxton	Orchidaceae	The Shoe-Lip Dendrobium	
177	<i>Dendrobium darjeelingense</i> Pradhan	Orchidaceae		
178	<i>Dendrobium denneanum</i> Kerr Syn: <i>Dendrobium clavatum</i> Lindley ex Wallich	Orchidaceae	The Denne Dendrobium	
179	<i>Dendrobium densiflorum</i> Lindl.	Orchidaceae	The Densely Flower Dendrobium	सुनगाँभा
180	<i>Dendrobium denudans</i> D. Don	Orchidaceae	Stripped Dendrobium	
181	<i>Dendrobium eriiflorum</i> Griff.	Orchidaceae	The Eria- Like Flowered Dendrobium	थुर्जो
182	<i>Dendrobium fimbriatum</i> Hook.	Orchidaceae	The Fringe- Lipped Dendrobium	
183	<i>Dendrobium formosum</i> Roxb. ex Lindl.	Orchidaceae	The Giant - Flowered Dendrobium	
184	<i>Dendrobium fugax</i> Rchb.f.	Orchidaceae		
185	<i>Dendrobium fuscescens</i> Griff.	Orchidaceae		
186	<i>Dendrobium gibsonii</i> Paxton	Orchidaceae	Gibson's Dendrobium	
187	<i>Dendrobium heterocarpum</i> Wall. ex Lindl. Syn: <i>Dendrobium aureum</i> Lindl.	Orchidaceae	The Different Fruit Dendrobium	
188	<i>Dendrobium hookerianum</i> Lindl.	Orchidaceae		
189	<i>Dendrobium longicornu</i> Lindl.	Orchidaceae	The Long-Horned Dendrobium	काउसे, बावर
190	<i>Dendrobium moniliforme</i> (L.) Sw. Syn: <i>Dendrobium candidum</i> Wallich ex Lindley	Orchidaceae	The Necklace-Shaped Dendrobium	

SN	Scientific name	Family	English name	Nepali name
191	<i>Dendrobium monticola</i> P.F. Hunt & Summerh.	Orchidaceae	The Mountain Living Dendrobium	जीवन्ती
192	<i>Dendrobium moschatum</i> (Banks) Sw.	Orchidaceae	The Musky Smelling Dendrobium	
193	<i>Dendrobium nobile</i> Lindl.	Orchidaceae	The Noble Dendrobium	
194	<i>Dendrobium plicatile</i> Lindl.	Orchidaceae		
195	<i>Dendrobium polyanthum</i> Wall. ex Lindl.	Orchidaceae	The Many Flowered Dendrobium	
196	<i>Dendrobium porphyrochilum</i> Lindl.	Orchidaceae	The Purple Lipped Dendrobium	
197	<i>Dendrobium rotundatum</i> (Lindl.) Hook. f. Syn : <i>Epigeneium rotundatum</i> (Lindl.) Summerh.	Orchidaceae	The Rounded Epigeneium	
198	<i>Dendrobium transparens</i> Wall. ex Lindl.	Orchidaceae	The Translucent Dendrobium	परजीवी, थुर
199	<i>Dendrolirium lasiopetalum</i> (Willd.) S.C. Chen & J.J. Wood	Orchidaceae		
200	<i>Dendrolirium nepalensis</i> (Bajrach. & K K Shrestha,) Bajrach.	Orchidaceae		
201	<i>Didymoplexis pallens</i> Griff.	Orchidaceae	The Pale Didymoplexis	
202	<i>Dienia cylindrostachya</i> Lindl.	Orchidaceae		ढुकुना
203	<i>Dienia ophrydis</i> (J.Koenig) Seidenf.	Orchidaceae		
204	<i>Diplomeris hirsuta</i> (Lindl.) Lindl.	Orchidaceae	The Hairy Diplomeris	
205	<i>Epipactis helleborine</i> (L.) Crantz	Orchidaceae		
206	<i>Epipactis royleana</i> Lindl.	Orchidaceae	Gaint Helleborine	
207	<i>Epipactis veratrifolia</i> Boiss. & Hohen.	Orchidaceae		
208	<i>Epipogium aphyllum</i> Sw.	Orchidaceae	Ghost orchid	
209	<i>Epipogium japonicum</i> Makino	Orchidaceae		
210	<i>Epipogium roseum</i> (D. Don) Lindl.	Orchidaceae	The Rose Epipogium	
211	<i>Eria clausa</i> King & Pantl.	Orchidaceae		
212	<i>Eria coronaria</i> (Lindl.) Rchb.f.	Orchidaceae	The Crowned lip Eria	
213	<i>Eulophia bicallosa</i> (D.Don) P.F.Hunt & Summerh.	Orchidaceae		हात्ती पाइले
214	<i>Eulophia cernua</i> (Wild.) M.W. Chase, Kumar & Schuit.	Orchidaceae		
215	<i>Eulophia dabia</i> (D.Don) Hochr.	Orchidaceae		हात्ती पाइले
216	<i>Eulophia explanata</i> Lindl.	Orchidaceae	Eulophia	
217	<i>Eulophia flava</i> (Lindl.) Hook.f.	Orchidaceae	The Yellow Eulophia	
218	<i>Eulophia graminea</i> Lindl.	Orchidaceae		
219	<i>Eulophia herbacea</i> Lindl.	Orchidaceae		
220	<i>Eulophia mackinnonii</i> Duthie	Orchidaceae		
221	<i>Eulophia nuda</i> Lindl.	Orchidaceae		
222	<i>Eulophia obtusa</i> (Lindl.) Hook.f.	Orchidaceae		
223	<i>Galearis roborovskii</i> (Maxim.) S.C.Chen, P.J.Cribb & S.W.Gale	Orchidaceae		
224	<i>Galearis spathulata</i> (Lindl.) P.F. Hunt	Orchidaceae	The Spathulate Galearis	
225	<i>Gastrochilus acutifolius</i> (Lindl.) Kuntze	Orchidaceae	The Pointed-Leaf Gastrochilus	
226	<i>Gastrochilus affinis</i> (King & Pantl.) Schltr.	Orchidaceae		
227	<i>Gastrochilus calceolaris</i> (Buch.- Ham.exSm.) D.Don.	Orchidaceae	The Shoe-Shaped Gastrochilus	
228	<i>Gastrochilus dasypogon</i> (Sm.) Kuntze	Orchidaceae	The Dense Beard Gastrochilus	
229	<i>Gastrochilus distichus</i> (Lindl.) Kuntze	Orchidaceae		
230	<i>Gastrochilus obliquus</i> (Lindl.) Kuntze	Orchidaceae		
231	<i>Gastrochilus pseudodistichus</i> (King &	Orchidaceae		

SN	Scientific name	Family	English name	Nepali name
	Pantl.) Schltr.			
232	<i>Gastrodia falconeri</i> D.L.Jones & M.A.Clem.	Orchidaceae		
233	<i>Goodyera biflora</i> (Lindl.) Hook.f.	Orchidaceae	The Two Flowered Goodyera	नक्ली भृङ्गराज, नक्ली जिवन्ती
234	<i>Goodyera foliosa</i> (Lindl.) Benth. ex C.B. Clarke	Orchidaceae	The Leafy Goodyera	
235	<i>Goodyera fusca</i> (Lindl.) Hook.f.	Orchidaceae		
236	<i>Goodyera hemsleyana</i> King & Pantl.	Orchidaceae		
237	<i>Goodyera henryi</i> Rolfe	Orchidaceae	Short-raceme rattlesnake plantain	
238	<i>Goodyera marginata</i> Lindl.	Orchidaceae		
239	<i>Goodyera nankoensis</i> Fukuy.	Orchidaceae	The Nanko Goodyer	
240	<i>Goodyera procera</i> (Ker Gawl.) Hook.	Orchidaceae	The Tall Goodyera	
241	<i>Goodyera recurva</i> Lindl.	Orchidaceae	The Recurved Goodyera	
242	<i>Goodyera repens</i> (L.) R.Br.	Orchidaceae		
243	<i>Goodyera schlechtendaliana</i> Rchb.f	Orchidaceae		
244	<i>Goodyera viridiflora</i> (Blume) Lindl. ex D. Dietr.	Orchidaceae	The Heart-Shaped Goodyera	
245	<i>Goodyera vittata</i> (Lindl.) Benth. ex Hook.f.	Orchidaceae		
246	<i>Gymnadenia orchidis</i> Lindl.	Orchidaceae		
247	<i>Habenaria aitchisonii</i> Rchb.f.	Orchidaceae	Aitchison's Habenaria	
248	<i>Habenaria arietina</i> Hook.f.	Orchidaceae		
249	<i>Habenaria commelinifolia</i> (Roxb.) Wall. ex Lindl.	Orchidaceae		
250	<i>Habenaria dentata</i> Schltr.	Orchidaceae	The Toothed Habenaria	
251	<i>Habenaria digitata</i> Lindl.	Orchidaceae	The Fingered Habenaria	
252	<i>Habenaria diphylla</i> (Nimmo) Dalzell	Orchidaceae		
253	<i>Habenaria furcifera</i> Lindl.	Orchidaceae		सँकलो
254	<i>Habenaria intermedia</i> D.Don	Orchidaceae		थुनमा
255	<i>Habenaria josephi</i> Rchb. f.	Orchidaceae		
256	<i>Habenaria malintana</i> (Blanco) Merr.	Orchidaceae		
257	<i>Habenaria malleifera</i> Hook.f.	Orchidaceae	The Hammer-Carrying Habenaria	
258	<i>Habenaria marginata</i> Colebr.	Orchidaceae		
259	<i>Habenaria palpensis</i> Raskoti	Orchidaceae		
260	<i>Habenaria pantlingiana</i> Kraenzl.	Orchidaceae		
261	<i>Habenaria pectinata</i> D.Don	Orchidaceae		
262	<i>Habenaria plantaginea</i> Lindl.	Orchidaceae		
263	<i>Habenaria pubescens</i> Lindl.	Orchidaceae	The Hairy Habenaria	
264	<i>Habenaria reniformis</i> (D. Don) Hook.f.	Orchidaceae	The Kidney Shaped Habenaria	
265	<i>Habenaria sandiegoensis</i> Raskoti	Orchidaceae		
266	<i>Habenaria stenopetala</i> Lindl.	Orchidaceae		
267	<i>Hemipilia chusua</i> (D. Don) Y. Tang & H. Peng			
268	<i>Hemipilia cordifolia</i> Lindl.	Orchidaceae	The Heart-Shaped Leaf Hemipilia	
269	<i>Hemipilia calcicola</i> (W. W. Sm.) Y. Tang & H. Peng	Orchidaceae		
270	<i>Hemipilia cucullata</i> (L.) Y. Tang, H. Peng & T. Yukawa	Orchidaceae		
271	<i>Hemipilia secundiflora</i> (Kraenzl.) Y. Tang & H. Peng.	Orchidaceae		
272	<i>Herminium alaschanicum</i> Maxim.	Orchidaceae	The Alas Shan Herminium	

SN	Scientific name	Family	English name	Nepali name
273	<i>Herminium albomarginatum</i> (King) X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		
274	<i>Herminium chloranthum</i> Tang & F.T.Wang	Orchidaceae	The Green Herminium	
275	<i>Herminium clavigerum</i> (Lindl.) X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		कङ्गा
276	<i>Herminium duthiei</i> Hook. f.	Orchidaceae		
277	<i>Herminium edgeworthii</i> (Hook.f. ex Collett) X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		कङ्गाछा
278	<i>Herminium elisabethae</i> (Duthie) Tang & F.T.Wang	Orchidaceae		
279	<i>Herminium fallax</i> (Lindl.) Hook.f.	Orchidaceae		
280	<i>Herminium fimbriatum</i> (Raskoti) X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		
281	<i>Herminium gracile</i> King & Pantl.	Orchidaceae		
282	<i>Herminium handelii</i> X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		
283	<i>Herminium hongdeyuanii</i> Raskoti	Orchidaceae		
284	<i>Herminium jaffreyanum</i> King & Pantl.	Orchidaceae		
285	<i>Herminium josephi</i> Rchb.f.	Orchidaceae		
286	<i>Herminium kamengense</i> A.N.Rao	Orchidaceae		
287	<i>Herminium lanceum</i> (Thunb. ex Sw.) Vuijk	Orchidaceae		
288	<i>Herminium latilabre</i> (Lindl.) X.H.Jin, Schuit., Raskoti & Lu Q.Huang	Orchidaceae		
289	<i>Herminium longilobatum</i> S.N Hegde & A.N. Rao	Orchidaceae		
290	<i>Herminium mackinnonii</i> Duthie	Orchidaceae		
291	<i>Herminium macrophyllum</i> (D.Don) Dandy	Orchidaceae	The Large Leaved Herminium	
292	<i>Herminium mannii</i> (Rchb.f.) Tang & F.T.Wang	Orchidaceae		
293	<i>Herminium monophyllum</i> (D.Don) P.F.Hunt & Summerh.	Orchidaceae		
294	<i>Herminium monorchis</i> (L.) R.Br.	Orchidaceae		
295	<i>Herminium pugioniforme</i> Lindl. ex Hook.f.	Orchidaceae		
296	<i>Herminium quinquelobum</i> King & Pantl.	Orchidaceae	The 5 Lobed Herminium	
297	<i>Herminium souliei</i> (Finet) Rolfe	Orchidaceae	Soulie's Herminium	
298	<i>Herpysma longicaulis</i> Lindl.	Orchidaceae		
299	<i>Lecanorchis japonica</i> Blume	Orchidaceae		
300	<i>Liparis bootanensis</i> Griff.	Orchidaceae	The Bhutan Liparis	
301	<i>Liparis campylostalis</i> Rchb.f.	Orchidaceae		
302	<i>Liparis cathcartii</i> Hook.f.	Orchidaceae		
303	<i>Liparis cespitosa</i> (Lam.) Lindl.	Orchidaceae	The Clumping Liparis	
304	<i>Liparis cordifolia</i> Hook.f.	Orchidaceae		
305	<i>Liparis deflexa</i> Hook.f.	Orchidaceae	The Deflexed Liparis	
306	<i>Liparis duthiei</i> Hook. f.	Orchidaceae		
307	<i>Liparis elliptica</i> Wight	Orchidaceae	The Elliptic Liparis	
308	<i>Liparis ferruginea</i> Lindl.	Orchidaceae		
309	<i>Liparis glossula</i> Rchb.f.	Orchidaceae	The Tongue-Like Liparis	
310	<i>Liparis langtangensis</i> Raskoti & Ale	Orchidaceae		
311	<i>Liparis nervosa</i> (Thunb.) Lindl.	Orchidaceae	The veined Liparis	

SN	Scientific name	Family	English name	Nepali name
312	<i>Liparis odorata</i> (Willd.) Lindl.	Orchidaceae	The Fragrant Liparis	
313	<i>Liparis olivacea</i> Lindl.	Orchidaceae	The veined Liparis	
314	<i>Liparis perpusilla</i> Hook.f.	Orchidaceae	The Tiny Liparis	
315	<i>Liparis petiolata</i> (D. Don) P.F. Hunt & Summerh.	Orchidaceae	The Petiolate leaf Liparis	
316	<i>Liparis plantaginea</i> Lindl.	Orchidaceae		
317	<i>Liparis platyrachis</i> Hook.f.	Orchidaceae	The Broad Rachis Liparis	
318	<i>Liparis pygmaea</i> King & Pantl.	Orchidaceae		
319	<i>Liparis resupinata</i> Ridl.	Orchidaceae		
320	<i>Liparis rostrata</i> Rehb.f.	Orchidaceae		
321	<i>Liparis somae</i> Hayata	Orchidaceae		
322	<i>Liparis stricklandiana</i> Rehb. f.	Orchidaceae	Strickland's Liparis	
323	<i>Liparis viridiflora</i> (Blume) Lindl.	Orchidaceae	Green-Flowered Liparis	
324	<i>Luisia inconspicua</i> (Hook. f.) King & Pantl.	Orchidaceae		
325	<i>Luisia trichorrhiza</i> (Hook.) Blume	Orchidaceae	The Hair-Like Root Luisia	अर्जोना
326	<i>Luisia zeylanica</i> Lindl.	Orchidaceae		कौवाको केरा,बोरि झार
327	<i>Malaxis dolpensis</i> M.R. Shrestha, L.R. Shakya & Ghimire	Orchidaceae		
328	<i>Malaxis monophyllos</i> (L.) Sw.	Orchidaceae		
329	<i>Malaxis muscifera</i> (Lindl.) Kuntze	Orchidaceae		रसाभक
330	<i>Malaxis tamurensis</i> Tuyama	Orchidaceae		
331	<i>Mycaranthes floribunda</i> (D. Don) S. C. Chen & J. J. Wood	Orchidaceae		
332	<i>Neottia acuminata</i> Schltr.	Orchidaceae		
333	<i>Neottia chandrae</i> Raskoti, J.J. Wood & Ale	Orchidaceae		
334	<i>Neottia listeroides</i> Lindl.	Orchidaceae	Listera- Like Neottia	
335	<i>Neottia longicaulis</i> (King & Pantl.) Szlach.	Orchidaceae		
336	<i>Neottia mucronata</i> (Panigrahi & J.J. Wood) Szlach.	Orchidaceae	The Abruptly Pointed Neottia	
337	<i>Neottia nepalensis</i> (N.P. Balakr.) Szlach. Syn. : <i>Listera nepalensis</i> N. P. Balakr.	Orchidaceae		
338	<i>Neottia pinetorum</i> (Lindl.) Szlach.	Orchidaceae	The Pine-Wood Growing Neottia	
339	<i>Neottia tenii</i> Schltr.	Orchidaceae		
340	<i>Neottia tenuis</i> (Lindl.) Szlach. Syn. : <i>Listera tenuis</i> Lindl.	Orchidaceae	The Slender Neottia	
341	<i>Nephelaphyllum pulchrum</i> Blume	Orchidaceae		
342	<i>Nervilia concolor</i> (Blume) Schltr.	Orchidaceae		स्थल कमल
343	<i>Nervilia gammieana</i> (Hook.f.) Pfitzer	Orchidaceae		
344	<i>Nervilia mackinnonii</i> (Duthie) Schltr.	Orchidaceae	Mackinnon's Nervilia	
345	<i>Nervilia macroglossa</i> (Hook.f.) Schltr.	Orchidaceae	The Large Tongued Nervilia	
346	<i>Nervilia plicata</i> (Andrews) Schltr.	Orchidaceae	The Folded Nervilia	
347	<i>Nervilia simplex</i> (Thouars) Schltr	Orchidaceae		
348	<i>Oberonia acaulis</i> Griff.	Orchidaceae		
349	<i>Oberonia brachystachys</i> Lindl.	Orchidaceae	The Short Scape Oberonia	
350	<i>Oberonia caulescens</i> Lindl.	Orchidaceae	The Offshoot Forming Oberonia	
351	<i>Oberonia cavaleriei</i> Finet	Orchidaceae	Cavaliere's Oberonia	

SN	Scientific name	Family	English name	Nepali name
352	<i>Oberonia emarginata</i> King & Pantl.	Orchidaceae		
353	<i>Oberonia ensiformis</i> (Sm.) Lindl.	Orchidaceae		
354	<i>Oberonia falcata</i> King & Pantl.	Orchidaceae		
355	<i>Oberonia falconeri</i> Hook.f.	Orchidaceae		
356	<i>Oberonia jenkinsiana</i> Griff. ex Lindl.	Orchidaceae		
357	<i>Oberonia lobulata</i> King & Pantl.	Orchidaceae		
358	<i>Oberonia longilabris</i> King & Pantl.	Orchidaceae		
359	<i>Oberonia mucronata</i> (D. Don) Ormerod & Seidenf.	Orchidaceae		
360	<i>Oberonia obcordata</i> Lindl.	Orchidaceae	The Reverse Heart Shaped Oberonia	
361	<i>Oberonia pachyphylla</i> King & Pantl.	Orchidaceae		
362	<i>Oberonia pachyrachis</i> Rchb.f. ex Hook.f.	Orchidaceae	The Broad Rachis Oberonia	
363	<i>Oberonia parvula</i> King & Pantl.	Orchidaceae		
364	<i>Oberonia prainiana</i> King & Pantl.	Orchidaceae	Prain's Oberonia	
365	<i>Oberonia pyrulifera</i> Lindl.	Orchidaceae		
366	<i>Oberonia rufilabris</i> Lindl.	Orchidaceae		
367	<i>Odontochilus crispus</i> (Lindl.) Hook.f.	Orchidaceae		
368	<i>Odontochilus elwesii</i> C.B.Clarke ex Hook.f.	Orchidaceae		
369	<i>Odontochilus lanceolatus</i> (Lindl.) Blume	Orchidaceae		
370	<i>Odontochilus nandae</i> Raskoti & Kurzweil	Orchidaceae		
371	<i>Odontochilus pumilus</i> Hook.f.	Orchidaceae		
372	<i>Oreorchis foliosa</i> (Lindl.) Lindl.	Orchidaceae		
373	<i>Oreorchis indica</i> (Lindl.) Hook. f.	Orchidaceae		
374	<i>Oreorchis micrantha</i> Lindl.	Orchidaceae		
375	<i>Oreorchis nepalensis</i> N.Pearce & P.J.Cribb	Orchidaceae		
376	<i>Oreorchis porphyranthes</i> Tuyama	Orchidaceae		
377	<i>Pachystoma pubescens</i> Blume	Orchidaceae	The Hairy Pachystoma	
378	<i>Papilionanthe teres</i> (Roxb.) Schltr.	Orchidaceae	The Terete Leaf Papilionanthe	हरजोर, थुर्जो
379	<i>Papilionanthe uniflora</i> (Lindl.) Garay	Orchidaceae	The Single Flower Panisea	
380	<i>Papilionanthe vandarum</i> (Rchb.f.) Garay	Orchidaceae	The Vanda-Like Papilionanthe	
381	<i>Pecteilis gigantea</i> (Sm.) Raf.	Orchidaceae	The Giant Pecteilis	
382	<i>Pecteilis susannae</i> (L.) Raf.	Orchidaceae	Susanna's Pecteilis	
383	<i>Pecteilis triflora</i> (D. Don) Tang & F.T. Wang	Orchidaceae	The Three flowered Pecteilis	
384	<i>Pelatantheria insectifera</i> (Reichb.f.) Ridl.	Orchidaceae	The Insect-Bearing Pelatanthera	
385	<i>Peristylus affinis</i> (D.Don) Seidenf.	Orchidaceae		
386	<i>Peristylus biermannianus</i> (King & Pantl.) X.H.Jin, Schuit. & W.T.Jin	Orchidaceae	Biermann's Peristylus	
387	<i>Peristylus calcaratus</i> (Rolfe) S.Y.Hu	Orchidaceae	The Spurred Peristylus	
388	<i>Peristylus constrictus</i> (Lindl.) Lindl.	Orchidaceae		
389	<i>Peristylus densus</i> (Lindl.) Santapau & Kapadia	Orchidaceae	The Dense Peristylus	
390	<i>Peristylus goodyeroides</i> (D. Don) Lindl.	Orchidaceae	The Goodyera-Like Peristylus	
391	<i>Peristylus hamiltonianus</i> (Lindl.) Lindl.	Orchidaceae	Hamilton's Peristylus	
392	<i>Peristylus intrudens</i> (Ames) Ormerod	Orchidaceae	The Thrust In Peristylus	
393	<i>Peristylus lacertifer</i> (Lindl.) J.J. Sm.	Orchidaceae		
395	<i>Peristylus lawii</i> Wight	Orchidaceae	Law's Peristylus	
395	<i>Peristylus parishii</i> Rchb.f.	Orchidaceae	Parish's Peristylus	
396	<i>Peristylus prainii</i> (Hook.f.) Kraenzl.	Orchidaceae	Prain's Peristylus	

SN	Scientific name	Family	English name	Nepali name
397	<i>Peristylus tipulifer</i> (C.S.P. Parish & Rchb.f.) Mukerjee	Orchidaceae		
398	<i>Phalaenopsis deliciosa</i> Rchb.f.	Orchidaceae	The Delicate Phalaenopsis	
399	<i>Phalaenopsis difformis</i> (Wall. ex Lindl.) Kocyan & Schuit	Orchidaceae		
400	<i>Phalaenopsis mannii</i> Rchb.f.	Orchidaceae	Mann's Phalaenopsis	
401	<i>Phalaenopsis parishii</i> Rchb.f.	Orchidaceae	Parish's Phalaenopsis	
402	<i>Phalaenopsis taenialis</i> (Lindl.) Christenson & Pradhan	Orchidaceae	The Bandage-Like Phalaenopsis	
403	<i>Phreatia elegans</i> Lindl.	Orchidaceae		
404	<i>Pinalia acervata</i> (Lindl.) Kuntze	Orchidaceae		
405	<i>Pinalia amica</i> (Rchb.f.) Kuntze	Orchidaceae		
406	<i>Pinalia annapurnensis</i> (L.R. Shakya & M.R. Shrestha) Schuit., Y.P. Ng & H.A. Pedersen	Orchidaceae		
407	<i>Pinalia apertiflora</i> (Summerh.) A.N. Rao	Orchidaceae		
408	<i>Pinalia baniae</i> (Bajrach., L.R. Shakya & Chettri) Schuit., Y.P. Ng & H.A. Pedersen	Orchidaceae		
409	<i>Pinalia bipunctata</i> (Lindl.) Kuntze	Orchidaceae		
410	<i>Pinalia bractescens</i> (Lindl.) Kuntze	Orchidaceae		
411	<i>Pinalia concolor</i> (C.S.P. Parish & Rchb.f.) Kuntze	Orchidaceae		
412	<i>Pinalia excavata</i> (Lindl.) Kuntze	Orchidaceae		
413	<i>Pinalia graminifolia</i> (Lindl.) Kuntze	Orchidaceae		
414	<i>Pinalia leucantha</i> Kuntze	Orchidaceae		
415	<i>Pinalia obesa</i> (Lindl.) Kuntze	Orchidaceae		
416	<i>Pinalia pokharensis</i> (Bajrach., Subedi & K.K. Shrestha) Schuit., Y.P. Ng & H.A. Pedersen	Orchidaceae		
417	<i>Pinalia spicata</i> (D. Don) S.C. Chen & J.J. Wood	Orchidaceae		
418	<i>Platanthera bakeriana</i> (King & Pantl.) Kraenzl.	Orchidaceae	Baker's Platanthera	
419	<i>Platanthera carnosilabris</i> (Tang & F.T. Wang) X.H. Jin, Schuit. & W.T. Jin	Orchidaceae		
420	<i>Platanthera dambungensis</i> K. Prasad	Orchidaceae		
421	<i>Platanthera dulongensis</i> X.H. Jin & Efimov	Orchidaceae		
422	<i>Platanthera japonica</i> (Thunb.) Lindl.	Orchidaceae	The Japanese Platanthera	
423	<i>Platanthera leptocaulon</i> (Hook.f.) SooA	Orchidaceae	The Narrow Peduncle Platanthera	
424	<i>Platanthera nematocaulon</i> (Hook.f.) Kraenzl.	Orchidaceae		
425	<i>Platanthera pachycaulon</i> (Hook.f.) Soó	Orchidaceae		
426	<i>Platanthera sikkimensis</i> (Hook.f.) Kraenzl.	Orchidaceae		
427	<i>Platanthera stenantha</i> (Hook.f.) Soo	Orchidaceae	The Slim Flowered Platanthera	
428	<i>Platanthera stenoglossa</i> Hayata	Orchidaceae		
429	<i>Platanthera superantha</i> (J.J. Wood) X.H. Jin, Schuit., Raskoti & Lu Q. Huang	Orchidaceae		
430	<i>Platanthera urceolata</i> (C.B. Clarke) R.M. Bateman	Orchidaceae		
431	<i>Pleione coronaria</i> P.J. Cribb & C.Z. Tang	Orchidaceae	The Wreath- Shaped Pleione	

SN	Scientific name	Family	English name	Nepali name
432	<i>Pleione hookeriana</i> (Lindl.) Rollisson	Orchidaceae	Hooker's Pleione	
433	<i>Pleione humilis</i> (Sm.) D. Don	Orchidaceae	The low Growing Pleione	बती टाउके, हाथी टाउके
434	<i>Pleione maculata</i> (Lindl.) Lindl. & Paxton	Orchidaceae	The Spotted Pleione	लसुन पाते
435	<i>Pleione praecox</i> (Sm.) D. Don	Orchidaceae	The Early Blooming Pleione	भुइ चम्पा, लसुन पाते, शक्ती गुम्वा
436	<i>Podochilus cultratus</i> Lindl.	Orchidaceae		
437	<i>Porpax elwesii</i> (Rchb. f.) Rolfe	Orchidaceae		
438	<i>Porpax extinctoria</i> (Lindl.) Schuit., Y.P. Ng & H.A. Pedersen	Orchidaceae		
439	<i>Porpax meirax</i> (C.S.P. Parish & Rchb. f.) King & Pantl.	Orchidaceae		
440	<i>Porpax parviflora</i> (D. Don) Ormerod & Kurzweil	Orchidaceae		
441	<i>Porpax pusilla</i> (Griff.) Schuit. Y.P. Ng & H.A. Pederson	Orchidaceae		
442	<i>Pteroceras teres</i> (Blume) Holttum	Orchidaceae	The Terete Leafed Pteroceras	
443	<i>Rhomboda abbreviata</i> (Lindl.) Ormerod	Orchidaceae	The Cut Short Rhomboda	
444	<i>Rhynchostylis retusa</i> (L.) Blume	Orchidaceae	The blunt Rhynchostylis	चँद्रीफूल धोगेगाभा
445	<i>Risleya atropurpurea</i> King & Pantl.	Orchidaceae		
446	<i>Robiquetia succisa</i> (Lindl.) Seidenf. & Garay	Orchidaceae	The Abruptly Broken Off Robiquetia	
447	<i>Satyrium nepalense</i> D. Don	Orchidaceae		गामडोल, थाम्नी
448	<i>Schoenorchis gemmata</i> (Lindl.) J. J. Sm.	Orchidaceae	The Sparkling Schoenorchis	
449	<i>Smitinandia micrantha</i> (Lindl.) Holttum	Orchidaceae	The Small Flowered Smitinandia	थिजो
450	<i>Spathoglottis ixioides</i> (D. Don) Lindl.	Orchidaceae		
451	<i>Spiranthes australis</i> (R.Br.) Lindl.	Orchidaceae		बेरुवे सुनाखरी
452	<i>Spiranthes flexuosa</i> (Sm.) Lindl.	Orchidaceae	Nepalese Ladies Tresses	
453	<i>Taeniophyllum scaberulum</i> Hook.f.	Orchidaceae	The Slightly Roughened Taeniophyllum	
454	<i>Tainia minor</i> Hook. f.	Orchidaceae		
455	<i>Thelasis longifolia</i> Hook. f.	Orchidaceae		
456	<i>Thelasis pygmaea</i> (Griff.) Lindl.	Orchidaceae	The Tiny Thelasis	
457	<i>Thunia alba</i> (Lindl.) Rchb. f.	Orchidaceae		चँदी फूल, गोलाईनो
458	<i>Tipularia josephi</i> Rchb.f. ex Lindl.	Orchidaceae		
459	<i>Trichotosia dasyphylla</i> (C.S.P. Parish & Rchb. f.) Kraenzl.	Orchidaceae		
460	<i>Tropidia curculigoides</i> Lindl.	Orchidaceae		
461	<i>Uncifera acuminata</i> Lindl.	Orchidaceae	The Acuminate Uncifera	
462	<i>Uncifera lancifolia</i> (King & Pantl.) Schltr.	Orchidaceae		
463	<i>Vanda alpina</i> (Lindl.) Lindl.	Orchidaceae	The Montane Vanda	
464	<i>Vanda ampullacea</i> (Roxb.) L.M. Gardiner	Orchidaceae		
465	<i>Vanda bicolor</i> Griff.	Orchidaceae		
466	<i>Vanda cristata</i> Wall. ex Lindl.	Orchidaceae	The Comb Vanda	हरचुर, भ्यागुतेफूल
467	<i>Vanda griffithii</i> Lindl.	Orchidaceae		
468	<i>Vanda parviflora</i> Lindl.	Orchidaceae		

SN	Scientific name	Family	English name	Nepali name
469	<i>Vanda tessellata</i> (Roxb.) Hook. ex G. Don	Orchidaceae	The Lattice- Like Paterned Flower Vanda	परजीवी, रसना, गाइतबारे, हरजोर
470	<i>Vanda testacea</i> (Lindl.) Rehb.f.	Orchidaceae	The Small Flower Vanda	हरजोर
471	<i>Zeuxine affinis</i> (Lindl.) Benth. ex Hook.f.	Orchidaceae		
472	<i>Zeuxine flava</i> (Wall. ex Lindl.) Trimen	Orchidaceae		
473	<i>Zeuxine goodyeroides</i> Lindl.	Orchidaceae		
474	<i>Zeuxine integrilabella</i> C. S. Leou	Orchidaceae		
475	<i>Zeuxine lindleyana</i> A.N. Rao	Orchidaceae		
476	<i>Zeuxine longilabris</i> (Lindl.) Trimen	Orchidaceae	The Long Lipped Zeuxine	
477	<i>Zeuxine membranacea</i> Lindl.	Orchidaceae		
478	<i>Zeuxine nervosa</i> (Wall. ex Lindl.) Benth. ex Trimen	Orchidaceae		
479	<i>Zeuxine reflexa</i> King & Pantl.	Orchidaceae		
480	<i>Zeuxine strateumatica</i> (L.) Schltr.	Orchidaceae	Centipede Grass Orchid	कंसझार
481	<i>Taxus contorta</i> Griff. Syn: <i>Taxus fuana</i> Nan Li & R.R. Mill	Taxaceae	West Himalayan Yew	सिङ्गी, लौठ सल्ला
482	<i>Taxus wallichiana</i> Zucc.	Taxaceae	East Himalayan Yew	बर्मे सल्ला, लौठ सल्ला
483	<i>Nardostachys jatamansi</i> (D. Don) DC. Syn: <i>Nardostachys grandiflora</i> DC.	Caprifoliaceae	Spikenard	जटामसी, भुल्ले
484	<i>Rhodiola amabilis</i> (H. Ohba) H. Ohba	Crassulaceae		
485	<i>Rhodiola bupleuroides</i> (Wall. ex Hook.f. & Thomson) S.H. Fu	Crassulaceae		सोहलो-मार्पो
486	<i>Rhodiola calliantha</i> (H. Ohba) H. Ohba	Crassulaceae		
487	<i>Rhodiola chrysanthemifolia</i> (H. Lév.) S.H. Fu	Crassulaceae		
488	<i>Rhodiola coccinea</i> (Royle) Boriss.	Crassulaceae		
489	<i>Rhodiola crenulata</i> (Hook.f. & Thomson) H. Ohba	Crassulaceae		सोहलो-मार्पो
490	<i>Rhodiola cretinii</i> (Raym.-Hamet) H. Ohba	Crassulaceae		
491	<i>Rhodiola discolor</i> (Franch.) S.H. Fu	Crassulaceae		
492	<i>Rhodiola fastigiata</i> (Hook.f. & Thomson) S.H. Fu	Crassulaceae		
493	<i>Rhodiola heterodonta</i> (Hook.f. & Thomson) Boriss.	Crassulaceae		
494	<i>Rhodiola himalensis</i> (D. Don) S.H. Fu	Crassulaceae		
495	<i>Rhodiola humilis</i> (Hook.f. & Thomson) S.H. Fu	Crassulaceae		
496	<i>Rhodiola imbricata</i> Edgew.	Crassulaceae		
497	<i>Rhodiola lobulata</i> (N.B. Singh & U.C. Bhattach.) H. Ohba	Crassulaceae		
498	<i>Rhodiola nepalica</i> (H. Ohba) H. Ohba	Crassulaceae		
499	<i>Rhodiola prainii</i> (Raym.-Hamet) H. Ohba	Crassulaceae		
500	<i>Rhodiola purpureoviridis</i> (Præger) S.H. Fu	Crassulaceae		
501	<i>Rhodiola sinuata</i> (Royle ex Edgew.) S.H. Fu	Crassulaceae		
502	<i>Rhodiola smithii</i> (Raym.-Hamet) S.H. Fu	Crassulaceae		
503	<i>Rhodiola tibetica</i> (Hook.f. & Thomson) S.H. Fu	Crassulaceae		
504	<i>Rhodiola wallichiana</i> (Hook.) S.H. Fu	Crassulaceae		अम्बासीन

CITES Appendix III

SN	Scientific name	Family	English name	Nepali name
1	<i>Gnetum montanum</i> Markgr.	Gnetaceae	Gnetum	भोटे लहरा
2	<i>Meconopsis regia</i> G. Taylor	Papaveraceae	Himalayan Poppy	क्यासर
3	<i>Podocarpus neriifolius</i> D.Don	Podocarpaceae	Mount teak	गुन्सी
4	<i>Tetracentron sinense</i> Oliv.	Trochodendraceae	Spur leaf	झरीकोटे, किम्बुक
5	<i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H.Keng	Magnoliaceae	Montha doi	भोटे चाँप

Guidelines to Authors

The **Journal of Plant Resources (*J. Pl. Reso.*)** is an annual scientific publication of Department of Plant Resources (DPR), Thapathali, Kathmandu, Nepal. It is a double-blind peer-reviewed journal that publishes articles on plant sciences mainly focused on systematic botany, ethnobotany, pharmacognosy, phytochemistry, pharmacology, plant microbiology, analytical chemistry, climate change, biotechnology, wetlands, invasive species, plant ecology and conservation biology. The Editorial Board reserves all the rights to accept or reject the submitted papers. It may alter or modify the style of presentation wherever necessary. The manuscript submitted should not be previously submitted for publication elsewhere. The Journal of Plant Resources will accept the following contributions:

- I. **Original research article:** It should report complete studies and new results of interest to the journal audience. All key experimental procedures necessary for the understanding of the research should be included in the main body of the text. Sufficient information to ensure accurate reproducibility must be provided. It should include Title, Abstract, Keywords, Introduction, Materials and Methods, Results and Discussion, Conclusion, Author Contributions, Acknowledgements, References and Appendix (if required). If the original research article is based on funded or supported research, the author should acknowledge the funding/supporting organization in the acknowledgments section. Supplementary materials such as raw data set, program codes, chromatograms etc supporting the findings of the research must be submitted. **Submission of herbarium specimens, as mentioned in clause 11 of this guideline, is compulsory for this type of article.** Paper submitted for publication should not exceed 10 printed pages (except table and figures).
- II. **Review paper:** It should be tutorial in nature, and provide a broad and balanced overview of a research field for the journal audience. It should describe how the field is progressing and key challenges to be overcome in the future. It should include Title, Abstract, Keywords, Introduction, Author Defined Sections/Subsections, Conclusion, Author Contributions, Acknowledgements and References. The titles and contents of the Author Defined Sections/Sub-sections between Introduction and Conclusion may vary as per the authors' requirement(s). Paper submitted for publication should not exceed 15 printed pages (except tables and figures).
- III. **Short communication:** It should be a brief report of research findings relevant to the journal's scope. Neither detailed background information nor extensive discussion is required. It should focus on quick publication of preliminary findings related to new ideas, emerging topics, new direction of applications, negative results. It should include main body and references. The main body should not have any titles/subtitles and should not be subdivided into sections. The length of the paper should not exceed two printed pages including the references. The authors are encouraged to submit complete research article for the short communication at their convenience.
- IV. **New Record:** It should report a species new to science or a region or a country. It should include abstract, keywords, main body and references. The main body should contain background information, methodology followed, taxonomic treatment of the species being reported (scientific name with complete reference, type, description, distribution, habitat, specimens examined, local name (if applicable)). The main body should include acknowledgement in the last paragraph without separate subtitle. Images of the species with proper scaling must be provided. **Submission of herbarium specimens, as mentioned in clause 11 of this guideline, is compulsory for this type of article.** The length of the paper should not exceed four printed pages including the references.

Guidelines for the Manuscript

The authors are requested to prepare their manuscripts in Times New Roman following the guidelines using the provided template (Template File Name: J.Pl.Reso. Template 2026.docx, <https://docs.google.com/document/d/1AgU34Vl8t9wQVLluHvVqLe60G0QAYPry/edit>) and submit manuscripts as a word document in electronic version to the managing editor via info@dpr.gov.np and journalofplantresources@gmail.com. The authors must submit filled and signed digital versions (PDF or JPEG) of the following forms along with the manuscripts: i. Declaration letter, ii. Authorship letter (the forms have been provided as declaration.docx and authorship.docx). **The manuscript submission email along with these documents must be CC'ed to all the coauthor(s). All coauthors must fill the Google Form (<https://forms.gle/jC3TLjB71vMxNMSr5>) confirming the coauthorship. The articles without duly filled and signed declaration or authorship letters or without coauthorship confirmation (Google Form) or not CC'ed to all the coauthors will be straightforward rejected.**

1. **Language:** The journal language is British English.
2. **Title of paper (first heading)** should be informative and concise, and in title case (Capitalize the first character of each word except common stop words like 'and', 'at', 'of', 'in' etc), all letters bold, with 14 font size, center alignment, paragraph spacing zero point before and 12 points after, line spacing single. The title should include:
 - The name(s) of the author(s), font size 11, bold, center alignment, paragraph spacing both before and after zero, line spacing single. The names should be separated by comma. Each author name should be followed by number in superscript indicating the affiliation and address of the author.
 - The affiliation(s) and address (es) of the author(s), should give full address, font size 10, bold, center alignment, line spacing single, paragraph spacing both before and after zero. Each address should start in a new line and should be preceded by a number in superscript linking it to relevant author.
 - The email address of the corresponding author font size 10, email heading bold with semicolon, normal and center alignment, line spacing single, paragraph spacing before zero after 12 points.
 - Asterisk (*) should be given to the name of corresponding author at the end of the name.
 - Email address of the corresponding author should be marked with asterisk (*) in front of email heading.
3. **Abstract:** Heading font size 10, bold, center alignment, paragraph spacing before 6 points and after 12 points. Text font size 10, normal, with line spacing 1, justified. Word count for abstract should not exceed 250 words. The abstract should not contain any undefined abbreviations or references.
4. **Keywords:** Heading font size 10, bold with semicolon, normal, left alignment, paragraph spacing before 12 points and after 12 points. Four to six key words should be provided arranged in alphabetical order. The keywords should not be repeated from title. The first letter of each keyword should be capital while the remaining letters should be small. Text normal with font size 10, botanical names should be in italicized.
5. **Author Contribution:** The contributions of each author should be clearly mentioned. Only the initials of the author name(s) should be used.
6. **Typeface and font size**
 - Second headings (Introduction, Materials and Methods, Results and Discussion, Conclusion, Author Contributions, Acknowledgements and References) should be with font size 12, bold, left alignment, paragraph spacing 12 point before and 6 point after.
 - Third heading should be with font size 12, bold, italics, left alignment, paragraph spacing 12 point before and 6 point after.
 - Fourth heading should be with font size 12, bold, with colon and then text, paragraph spacing 6 point before and 6 point after.
 - Fifth heading should be with font size 12, normal, with left indentation 0.25 inch, with colon and then text, paragraph spacing 6 point before and 6 point after.

- For References, the text should be with font size 12, normal, with hanging indent of 0.25 inches, paragraph spacing 6 point before and 6 point after.
- The remaining text should be with font size 12 throughout the text including page numbers. The text paragraphs should be justified, with paragraph spacing 6 point before and 6 point after. The page numbers should have central alignment.
- Use tab stops or other commands for indents, not the space bar.
- Equations and formulae should be typed in 12 point font size.

7. Tables, Figures and Appendices:

- Tables and figures should be placed at the end of the section (heading or sub-heading text) where they are discussed.
- Tables longer than one page should be listed as appendices at the end of the article.
- The table number and caption should be placed above the body of the table.
- The figure number and the caption should be placed below the figure.
- The appendix number and caption should be placed above the appendix.
- The table or figure or appendix caption should be with font size 10, first letter capital and remaining letters small, left alignment, line spacing single, paragraph spacing 6 points before and 6 points after.

Example: **Figure 1: (Bold)** (Title/caption: Not bold)

Table 1: (Bold) (Title/caption: Not bold)

Appendix 1: (Bold) (Title/caption: Not bold)

- Figure and table numbering must be continuous throughout the manuscript.
- The text in tables, charts and appendices should be Times New Roman, font size 10.
- Charts, tables and appendices should be editable and should not be provided as images. Chart legends should have font size 10.
- Charts should also be provided as separate excel files containing base data.
- Charts showing the statistical analysis should include sample size and statistical significance (p-value).
- Images/Maps should be provided separately as TIFF, JPG or PNG files having resolution of at least 300 dpi.
- The in-text citations of tables, figures and appendices should follow the following pattern:

For Table	 (Table 1)
For Appendix	 (Appendix 1)
For Figure	 (Figure 1)

8. Spacing:

- Spacing in heading: Line spacing single; for spacing before and after paragraph, refer to clause 5
- Spacing throughout body of text: Line spacing single; for spacing before and after paragraph, refer to clause 5
- Spacing for references: Line spacing single; for spacing before and after paragraph, refer to clause 5
- Spacing for contents of tables: single spacing.

9. Scientific names:

- The scientific names should follow **The International Plant Name Index** (<https://www.ipni.org/>), **MycoBank** (<https://www.mycobank.org/>), **AlgaeBase** (<https://www.algaebase.org/>), **List of Prokaryotic names with Standing in Nomenclature** (<https://lpsn.dsmz.de/>), **Integrated Taxonomic Information System** (<https://www.itis.gov/>), **Plants of the World Online** (<https://powo.science.kew.org/>), **World Flora Online** (<https://www.worldfloraonline.org/>), **Tropicos** (<https://www.tropicos.org/home>) latest version.
- The scientific names should be in italics with author citation in normal.
- Each first mention of scientific name in the article should include complete author citation. In the following text, in each paragraph, the first mention of the scientific name should not be abbreviated.

10. Abbreviations:

The abbreviated phrases should be mentioned in full the first time they are used with the abbreviated words in the brackets, for example, Department of Plant Resources (DPR).

11. Herbarium specimen: Voucher specimens of the studied plant species should be submitted at a public herbarium indexed in *Index Herbariorum*. The voucher specimens must be cited in the article as follows: collector(s) and collector number, herbarium code (plus herbarium accession number or barcode). Names of collectors and collector numbers must be in italics, herbarium codes in parentheses. **Submission and citation of voucher specimens is compulsory for original research article and new record.****12. In text citation and references:**

The list of references should only include works that are cited in the text. Citation of a reference as "in press" implies that the work has been accepted for publication. The references should be arranged in alphabetical order by last name of the first author of each work. The references with the same authors should be arranged in chronological order. In case of in text citation, the alphabetical order should be used separated by semi-colon. **American Psychological Association (APA) 7th edition** format should be followed for references and in text citation.

Some examples of references and in text citations in APA format are given below.

Sources	In Text Citation		In the Reference List
	Parenthetical Citation	Narrative Citation	
Books (In the references list and in-text citation for books, use copyright date. Do not use reprint date)			
One author	 (Manandhar, 2002)	Manandhar (2002) explained.....	Manandhar, N. P. (2002). <i>Plants and people of Nepal</i> . Timber Press.
Two authors	 (Michaels & Balling, 2000)	According to Michaels and Balling (2000).....	Michaels, P. J., & Balling, R. C. (2000). <i>The satanic gases: Clearing the air about global warming</i> . Cato Institute.
Three or more author	 (Press et al., 2000)	According to Press et al. (2000)	Press, J. R., Shrestha, K. K., & Sutton, D. A. (2000). <i>Annotated checklist of the flowering plants of Nepal</i> . The Natural History Museum.
Books and ebooks with DOI	(Ewert et al., 2014)	According to Ewert et al. (2014)	Ewert, E. W., Mitten, D. S., & Overholt, J. R. (2014). <i>Natural environments and human health</i> . CAB International. https://doi.org/10.1079/9781845939199.0000
ebook - free online, no DOI	(Lessig, 2011)	According to Lessig (2011)	Lessig, L. (2011). <i>Republic, lost: How money corrupts – and a plan to stop it</i> . Twelve. https://lesterland.lessig.org/pdf/republic-lost.pdf
Whole edited books	 (Miller & Smith, 1996)	Miller and Smith (1996) stated that.....	Miller, J., & Smith, T. (Eds.). (1996). <i>Cape Cod stories: Tales from Cape Cod, Nantucket, and Martha's Vineyard</i> . Chronicle Books. For a single editor, use "(Ed.)".
Book chapter in an edited book	 (Dangol, 2015)	Dangol (2015) found that.....	Dangol, D. R. (2015). Status of weed science in Nepal. In V. S. Rao, N. T. Yaduraja, N. R. Chandrasena, G. Hasan, & A. R. Sharma (Eds.), <i>Weed science in Asian Pacific Region</i> (pp. 305-322). Asian Pacific Weed Science Society; Indian Weed Science Society.

Sources	In Text Citation		In the Reference List
	Parenthetical Citation	Narrative Citation	
Book edition	 (Aspinall 2014)	Aspinall (2014) showed that....	Aspinall, V. (Ed.) (2014). <i>Clinical procedure in veterinary nursing</i> (3rd ed.). Elsevier.
Single volume of multivolume work	 (Fraser-Jenkins et al., 2015)	Fraser-Jenkins et al. (2015) stated that	Fraser-Jenkins, C. R., Kandel, D. R., & Pariyar, S. (2015). <i>Ferns and fern-allies of Nepal</i> (Vol. 1). Department of Plant Resources.
Several volumes of multivolume work	 (Grierson & Long, 1983-2000)	According to Grierson and Long (1983-2000)	Grierson, A. J. C., & Long, D. G. (1983-2000). <i>Flora of Bhutan</i> (Vols. 1-3). Royal Botanic Garden Edinburgh.
Book chapter without an author	("Is abortion immoral?", 2012)	In "Is abortion immoral" (2012),	Is abortion immoral? (2012). In C. Levine(Ed.). <i>Taking sides: Clashing views on bioethical issues</i> (14 th ed.) (pp. 132-133). McGraw Hill.
Book with same author and publisher	 (Indian Road Congress, 2009)	According to Indian Road Congress (2009),	Indian Road Congress. (2009). <i>Guidelines on landscaping and tree plantation</i> . If the author and publisher are the same, then omit the publisher name
Journal articles			
One author	 (Khanal, 2011)	Khanal (2011) highlighted	Khanal, S. P. (2011). Achievements, challenges and opportunities of statistics for the twenty-first century. <i>Management Dynamics</i> , 15(1), 15-21.
Two authors	 (Vetaas & Grytnes, 2002)	According to Vetaas and Grytnes (2002)	Vetaas, O. R., & Grytnes, J. A. (2002). Distribution of vascular plants species richness and endemic richness along the Himalayan elevation gradient in Nepal. <i>Global Ecology and Biogeography</i> , 11, 291-301.
Three or more authors	 (Joshi et al., 2013)	Joshi et al. (2013) found that.....	Joshi, N., Siwakoti, M., & Kehlenbeck, K. (2013). Developing a priority setting approach for domestication of indigenous fruit and nut species in Makawanpur district, Nepal. <i>Acta Horticulturae</i> , 979, 97-106.
Internet article based on a point source with doi assigned	 (Stultz, 2006).	According to Stultz (2006).....	Stultz, J. (2006). Integrating exposure therapy and analytic therapy in trauma treatment. <i>American Journal of Orthopsychiatry</i> , 76(4), 482-488. https://doi.org/10.1037/0002-9432.76.4.482 .
Internet article (e-journal) with no doi assigned	 (Sillick & Schulte, 2006)	Sillick and Schulte (2006) examined.....	Sillick, T. J., & Schulte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. <i>E-Journal of Applied Psychology</i> , 2(2), 38-48. http://ojs.lib.swin.edu.au/index.php/ejap/article/view/71/100
Journal Article in press	(Ruiza et al., in press)	Ruiza et al. (in press)	Ruiza, L. A., Serrano, L., Españab, P. P., Martinez-Indarte, L., Gómez, A., Urangab, A., Castroa, S., Artarazb, A., & Zalacaina, R. (in press). Factors influencing long-term survival after hospitalization with pneumococcal pneumonia. <i>Journal of Infection</i> .

Sources	In Text Citation		In the Reference List
	Parenthetical Citation	Narrative Citation	
Proceedings			
Conference articles in regularly published conference proceedings	(Herculano-Houzel et al., 2008)	Herculano-Houzel et al. (2008) found that.....	Herculano-Houzel, S., Collins, C. E., Wong, P., Kaas, J. H., & Lent, R. (2008). The basic nonuniformity of the cerebral cortex. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 105(34), 12593-12598. https://doi.org/10.1073/pnas.0805417105
Conference proceedings published as a book (Entire Proceeding)	(Zegwaard & Hoskyn, 2008)	Zegwaard & Hoskyn (2008) reported that.....	Zegwaard, K. E., & Hoskyn, K. (Eds.). (2015). <i>New Zealand Association for Cooperative Education 2015 conference proceedings: Refereed proceedings of the 18th New Zealand Association for Cooperative Education conference</i> . New Zealand Association for Cooperative Education. https://www.nzace.ac.nz/wp-content/uploads/2016/06/2015-wellington.pdf
Paper in a proceeding	 (Gummer, 2015)	Gummer (2015) has reported that.....	Gummer, P. (2015). The value of students entering industry-driven competitions and awards. In K. E. Zegwaard, & K. Hoskyn (Eds.), <i>New Zealand Association for Cooperative Education 2015 conference proceedings: Refereed proceedings of the 18th New Zealand Association for Cooperative Education conference</i> . New Zealand Association for Cooperative Education. https://www.nzace.ac.nz/wp-content/uploads/2016/06/2015-wellington.pdf
Theses and Dissertations			
Unpublished theses and dissertations	 (Das, 1998)	Das (1998) found that	Das, A.N. (1998). <i>Socioeconomics of bamboos in eastern Nepal</i> [Unpublished doctoral dissertation]. University of Aberdeen.
Theses or dissertation published online	 (Miller, 2019)	Miller (2019) suggested that.....	Miller, T. (2019). <i>Enhancing readiness: An exploration of the New Zealand Qualified Firefighter Programme</i> [Master's thesis, Auckland University of Technology]. Tuwhera. https://openrepository.aut.ac.nz/handle/10292/12338
Websites and webpages:			
This category should be used only if there is no other suitable reference category , and the work has no parent or overarching publication (e.g. journals, reports, social media, conference papers, etc) other than the website itself.			
Citing an entire website	 (http://www.kidspsyche.org)		Not included in reference list.
Webpage on a website with an individual author	 (Sparks, 2019)	According to Sparks (2019)	Sparks, D. (2019). Women's wellness: Lifestyle strategies ease some bladder control problems. Mayo Clinic. https://newsnetwork.mayoclinic.org/discussion/women-wellness-lifestyle-strategies-ease-some-bladder-control-problems/

Sources	In Text Citation		In the Reference List
	Parenthetical Citation	Narrative Citation	
Webpage on a website with a government agency group author	 (Ministry of Health, 2018, August 2)	According to Ministry of Health (2018, August 2)	Ministry of Health. (2018, August 2). <i>Maori disability support services</i> . https://www.health.govt.nz/our-work/disability-services/maori-disability-support-services When the author and site name are the same, omit the site name Or New Zealand Medicines and Medical Devices Safety Authority. (2014, May 28). <i>Important changes to the definition of medicines and medical devices effective 1 July 2014</i> . Ministry of Health. https://www.medsafe.govt.nz/Medicines/policy-statements/definition-of-med.asp Include the names of parent agencies in the source element
Webpage on a website with no date	 (Athletics New Zealand, n.d.)	Athletics New Zealand (n.d.) has mentioned	Athletics New Zealand. (n.d.). Form a new club. http://www.athletics.org.nz/Clubs/Starting-a-New-Club
Webpage on a website with a retrieval date	 (Worldometer, n.d.)	Worldometer (n.d.) indicated that	Worldometer. (n.d.). <i>Current world population</i> . Retrieved January 16, 2020, from https://www.worldometers.info/ Stirling, J., Hamer, M., & Hughes, B. (2016, July 29). <i>Dopamine for use in paediatric cardiology</i> . Auckland District Health Board. Retrieved January 28, 2020, from https://www.starship.org.nz/guidelines/dopamine-for-use-in-paediatric-cardiology/ Note: Include a retrieval date only when the content is designed to change over time and the page is not archived.
Wikipedia	 (Global warming, 2019, December 9)	Global warming (2019, December 9) has mentioned	Global warming. (2019, December 9). In <i>Wikipedia</i> . http://en.wikipedia.org/wiki/Global_warming Psychometric assessment. (n.d.). In <i>The psychology wiki</i> . Retrieved January 28, 2009, from http://psychology.wikia.com/wiki/Psychometric_assessment
Catalogue of Life	 (Roskov et al., 2019)	Roskov et al. (2019) indicated that	Roskov Y., Ower G., Orrell T., Nicolson D., Bailly N., Kirk P. M., Bourgoin T., DeWalt R. E., Decock W., Nieukerken E. van, Zarucchi J., & Penev L. (Eds.). (2019). <i>Species 2000 & ITIS Catalogue of Life, 2019 Annual Checklist</i> . Species 2000. www.catalogueoflife.org/annual-checklist/2019 .

Sources	In Text Citation		In the Reference List
	Parenthetical Citation	Narrative Citation	
Data Sets			
Data set with author and version	 (Ministry for the Environment, 2016)	Ministry for the Environment (2016) has stated that	Ministry for the Environment. (2016). <i>Vulnerable catchments</i> (Version 17) [Data set]. https://data.mfe.govt.nz/layer/53523-vulnerable-catchments/
Data set with author but without version	 (Ministry of Education, 2015)	Ministry of Education (2015) showed that	Ministry of Education. (2015). <i>Transient students</i> [Data set]. https://catalogue.data.govt.nz/dataset/transient-students
Unpublished raw data	(Klette, 2014)	According to Klette (2014).....	Klette, R. (2014). [Data for computer vision spatial value statistics] [Unpublished raw data]. Auckland University of Technology.
Author in secondary citations	showed in the study (Seidenberg & McClelland, 1990, as cited in Coltheart et al., 1993)	Seidenberg & McClelland, (1990, as cited in Coltheart et al., 1993) showed.....	Coltheart, M., Curtis, B. Atkins, P., & Haller, M. (1993). Models of reading aloud: Dual-route and parallel-distributed-processing approaches. <i>Psychological Review</i> , 100, 589-608. Enter the reference for the source you have read (secondary source).
Personal communications	Given all the political factors... (I. Tokugawa, personal communication, January 25, 2019).	I. Tokugawa (personal communication, January 25, 2019) suggested in an email that.....	No entry in the reference list is needed as personal communications are unable to be retrieved.
You Tube video or other streaming video	(MSNBC, 2020)	MSNBC (2020)	MSNBC.(2020, January 7). <i>Julian Castro endorses Elizabeth Warren</i> [Video]. You Tube. https://www.youtube.com/watch?v=UK2Tzc8H5po
Newspaper article or magazine	 (Bangnall, 1998)	According to Bangnall (1998)	Eaqub, S. (2019, September/October). Generation rent revisited. <i>Metro</i> , 12(425), 64–77.

* Unpublished works and personal communications like email, interviews, telephone conversation and discussions are cited in the text only and are not included in the reference list.

Some specific conditions in In-text citations,

	Parenthetical Citation	Narrative Citation
Works with the same author and same date Add a, b, etc. to the year in the in-text citation and reference list.	 (Smith, 2020a, 2020b)	In her papers Smith (2020a, 2020b) described ...
For authors with the same surname, include the initials and arrange names alphabetically	 (A. Smith, 2020; B. Smith, 2019)	Alexandra Smith (2020) and Brian Smith (2019) provided ...
Group author with abbreviation	First citation - full name with abbreviation: (National Institute of Water and Atmospheric Research [NIWA], 2020) Subsequent citations: (NIWA, 2020)	First citation - full name with abbreviation: National Institute of Water and Atmospheric Research (NIWA, 2020) reported ... Subsequent citations: NIWA (2020) provided ...
Group author without abbreviation	 (Ports of Auckland, 2020)	Ports of Auckland (2020) reported ...
Citing multiple works Parenthetical citation: place citations in alphabetical order separated by a semi-colon. Narrative citation: citations can be presented in any order.	 (Jones, 2020; Ports of Auckland, 2019; Smith et al., 2020)	Smith et al. (2020), Jones (2020), and Ports of Auckland (2019) examined ...
Work without a date If there is no date or the date cannot be determined, use "n.d."	 (Flesch, n.d.)	Flesch (n.d.) described ...

Note: A: Artificially propagated; W: Wild, I: Seized; T: Trade; E: Education; Q: Circus; P: Personal; S: Scientific; g: Grams, kg: Kilograms; l: Litres; mg: Milligrams; ml: Millilitres.

AE: United Arab Emirates; BE: Belgium; BD: Bangladesh; BG: Bulgaria; CA: Canada; CH: Switzerland; CN: China; CZ: Czech Republic; DE: Germany; FR: France; GB: United Kingdom of Great Britain and Northern Ireland; IN: India; IT: Italy; JP: Japan; KR: Republic of Korea; NL: Netherlands; NP: Nepal; PK: Pakistan; TH: Thailand; TW: Taiwan, Province of China; US: United States of America.

Contents

1. **Amrit KC & Prabin Bhandari** 1
Notes on the Botanical Expedition to Makalu-Barun National Park (Eastern Nepal),
with Two New Records for the Flora of Nepal
2. **Basu Dev Poudel, Neelam Pandey & Rashika Kafle** 19
Green Spaces in Tribhuvan University: Centers for Plant Diversity
3. **Achyut Gaire, Anugya Dawadi & Sulochana Aryal** 37
Assessment of Different Nutrient Sources on Production and Profitability of Barley
(*Hordeum vulgare* L.) in Khairahani, Chitwan

Review Article

4. **Kalpana Sharma Dhakal, Gopal Sharma, Saroja Adhikari, Jwala Shrestha & Til Kumari Thapa** 44
CITES Listed Plants of Nepal and their Trade Status for Last 50 Years