

# A checklist of the cultivated plants of Yunnan (PR China)

Chun-Yan Li · Guang-Yong Zhang ·  
Karl Hammer · Chun-Yan Yang · Chun-Lin Long

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**Abstract** Based on literature sources and the authors' field surveys in the past 20 years (particularly in 2008 and 2009), a checklist of cultivated plants of Yunnan (Southwest China) was compiled. It contains 1,701 taxa belonging to 1,562 different species, 837 genera and 190 families. The alphabetically ordered articles for the taxa contain the botanical name, the plant family, Chinese name and folk names, details of plant uses, information about the plant's regional

distribution, places of origin, and references to relevant, mostly Yunnan literature sources. The checklist provides a useful tool for the exploration of plant genetic resources and may be equally interesting for agronomists, horticulturists, botanists, ethnobotanists and others who are interested in cultivated plants.

**Keywords** Checklist · Chinese ethnobotany · Chinese plant names · Cultivated plants · Yunnan

This paper is dedicated to Peter Hanelt on the occasion of his 80th birthday. Due to his first missions for studying and collecting cultivated plants in China in 1956 and 1958 under the guidance of his admired teacher Prof. R. Mansfeld he developed a deep appreciation of China's rich flora (Danert et al., Danert and Hanelt). During his latest mission in China (1988) he met with one of the authors of this paper (Ch.-L. L.) and planted lasting enthusiasm for plant diversity research.

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C.-Y. Li · C.-Y. Yang · C.-L. Long (✉)  
Kunming Institute of Botany (KIB), Chinese Academy of Sciences, 650204 Kunming, China  
e-mail: chunlinlong@hotmail.com

C.-Y. Li  
College of Life Science and Technology, Honghe University, 661100 Mengzi, China

G.-Y. Zhang  
Honghe Institute of Tropical Agricultural Sciences, 661300 Hekou, China

## Introduction

This paper is dedicated to Peter Hanelt on the occasion of his 80th birthday. In his first missions for studying and collecting cultivated plants in China in 1956 under the guidance of his supervisor, Prof. R. Mansfeld, and in 1958 he developed a deep appreciation of their rich flora (Danert et al. 1961; Danert and Hanelt 1961).

K. Hammer  
Department of Agrobiodiversity, Institute of Crop Science, Kassel University, 34109 Witzenhausen, Germany

C.-L. Long  
College of Life and Environmental Sciences, Minzu University of China, 100081 Beijing, China

During his latest mission in China (1988) he met with one of the authors of this paper (Ch.-L. Long) and laid the ground for continuing enthusiasm.

Yunnan Province is situated in Southwestern China, 20°8'32"–29°15'8"N, 97°31'39"–106°11'47"E, 990 km from north to south, 864.9 km from east to west, elevation of 76.4–6,740 m above sea level. It covers a total area of 394,000 square kilometers, accounting for 4.11% of China's total land territory and ranking the 8th in China. Yunnan Province's climate and geography is diverse and includes tropical, subtropical, temperate, cold and other weather types; varied terrain having valleys, basins, hills, mountains, highlands, and other all-terrain interlaced distribution; and complicated soil type.

Yunnan's varied climatic and geographical characteristics has allowed for the evolution and growth of an enormous diversity of plants. Yunnan is also culturally rich, with 26 of China's 56 officially recognized minority ethnic groups, many of these groups still practice traditional farming techniques, which contribute to the extensive genetic diversity of crop plants in Yunnan.

Yunnan Province has the richest variety of plants in China. Of the 31,142 species of higher plants in China, 16,201 species are found in Yunnan, accounting for 52% of China's flora. Thus, Yunnan has been known as the Kingdom of Plants, where harbors the biggest flora at the provincial level in the whole country.

To quickly thoroughly analyze the crop plants of Yunnan, the checklist method (Hammer 1991) was used. This method has previously been shown to be useful in similar situations in different parts of the world, e.g., in the Ghāt oases (Hammer and Perrino 1985), Libya (Hammer et al. 1988), Cuba (Esquivel et al. 1989), South Italy (Hammer et al. 1990), Korea (Hoang et al. 1997), Ustica (Italy) (Hammer et al. 1998), and Oman (Hammer et al. 2009).

## Materials and methods

The inventory for taxa in the checklist consist of botanical name, family, and Chinese folk names, details of plant uses, distribution, places of origin and finally, references to relevant literature. The plants are presented in alphabetical order according to their botanical names (see Electronic supplementary material).

## Botanical names

The checklist indicates only the accepted botanical names of the species (*taxa*).

## Folk names

The Yunnan plant names have been taken from different literature sources, others were added on the basis of information gathered during our expeditions. It was not possible to present the names in a standardized form.

## Plant uses

The following modes of use have been found with their abbreviations as used in the list, the used parts are given also in abbreviated form in brackets (Table 1).

## Distribution

The abbreviations are used to indicate the distribution areas as follows:

CYP.	Central Yunnan
WYP.	Western Yunnan
SYP.	Southern Yunnan
EYP.	Eastern Yunnan

**Table 1** Abbreviations of uses and used parts

Uses	Used parts
A. afforestation	(b.) bulb
C. cereal	(ba.) bark
E. edible fungus	(fb.) fruitbody
Ed. edible	(fl.) flower
Fi. fiber crop	(fo.) footstalk
Fr. fruit	(fr.) fruit
Fo. fodder crop	(h.) herb
For. forage	(k.) kernel
H. horticultural plant	(l.) leaf
I. industrial crop	(p.) pericarp
M. medicinal plant	(r.) root, rhizome
Me. medicinal fungus	(s.) seed
Oi. oil crop	(st.) stem
Pa. pasture	(t.) tuberous root
Sp. spice and condiment	(tu.) tuber
St. starch plant	(v.) velamen
T. timber	(w.) wood
V. vegetable	

- NWY. Northwest Yunnan  
 SEY. Southeast Yunnan  
 NEY. Northeast Yunnan  
 SWY. Southwest Yunnan  
 BP. Baoshan Prefecture (City), including: Longyang, Shidian, Tengchong, Longling, Changning  
 CHP. Chuxiong Prefecture, including: Chuxiong, Shuangbai, Mouding, Nanhua, Yao'an, Dayao, Yongren, Yuanmou, Wuding, Lufeng  
 DEP. Dehong Prefecture, including: Luxi, Ruili, Lianghe, Yingjiang, Longchuan  
 DIP. Diqing Prefecture, including: Xianggelila, Deqin, Weixi  
 DP. Dali Prefecture, including: Dali, Xiangyun, Binchuan, Midu, Yongping, Yunlong, Eryuan, Jianchuan, Heqing, Yangbi, Nanjian, Weishan  
 HP. Honghe Prefecture, including: Mengzi, Gejiu, Kaiyuan, Luchun, Jianshui, Shiping, Mile, Luxi, Yuanyang, Honghe, Jinping, Hekou, Pingbian  
 KP. Kunming Prefecture (City), including: Kunming (Wuhua, Guandu, Panlong, Xishan, Dongchuan), Anning, Chenggong, Jinning, Fumin, Yiliang, Songming, Shilin, Luquan, Xundian  
 LIP. Lijiang Prefecture (City), including: Gucheng, Yongsheng, Huaping, Yulong, Ninglang  
 LP. Lincang Prefecture (City), including: Linxiang, Fengqing, Yunxian, Yongde, Zhenkang, Shuangjiang, Gengma, Cangyuan  
 NP. Nujiang Prefecture, including: Lushui, Fugong, Gongshan, Lanping  
 PP. Puer Prefecture (City), including: Simao, Ning'er, Mojiang, Jingdong, Jinggu, Zhenyuan, Jiangcheng, Menglian, Lancang, Ximeng  
 QP. Qujing Prefecture (City), including: Qilin, Xuanwei, Malong, Luliang, Shizong, Luoping, Fuyuan, Huize, Zhanyi  
 WP. Wenshan Prefecture, including: Wenshan, Yanshan, Xichou, Malipo, Maguan, Qiubei, Guangnan, Funing  
 XP. Xishuangbanna Prefecture, including: Jinghong, Menghai, Mengla  
 YP. Yuxi Prefecture (City), including: Hongta, Jiangchuan, Chengjiang, Tonghai, Huaning, Yimen, Eshan, Xinping, Yuanjiang  
 ZHP. Zhaotong Prefecture (City), including: Zhaoyang, Ludian, Qiaojia, Yanjin, Dagan, Yongshan, Suijiang, Zhenxiang, Yiliang, Weixin, Shuifu

A map of Yunnan Province is provided (see Fig. 1).

## References

The references are mostly from Yunnan literature sources. We tried to find at least one literature source indicating that a certain species is (was) cultivated in Yunnan.

For a few species, apart from our observations and records based on our long-term field experiences in Yunnan, no other reference sources were found.

## Results: Checklist

See the “checklist of cultivated plants of Yunnan”, attached to this paper (see Electronic supplementary material).

## Discussion

Yunnan's crop plants represent a vast genetic resource. A total of 1,701 taxa belonging to 1,562 different species, 837 genera and 190 families (Index of families and genera in Table 2) have been recorded in the checklist. There are more than 500 species main cultivated plants in Yunnan, accounting for 80% of China's total. Yunnan is the original center of Asian cultivated rice, buckwheat, tea, sugar cane and other crops, and diversified center of rice, barley, wheat, soybean, broad bean, kidney bean, ramie, rape, tobacco, tea and other crop genetic resources of China (Ye and Dai 2000).

In recent years, Yunnan's wide range of crop genetic resources has come under pressure from farms' conversion to cultivating just one or several improved crop varieties. As more land is being used to grow only a few varieties crop species gradually decrease, crop

**Fig. 1** Map of Yunnan Province



varieties continue to become more uniform, and the genetic basis of varieties become more and more narrow. At present, people have recognized the consequences of genetic erosion and have made an effort to maintain crop genetic resources by establishing protected areas for *in situ* conservation, introducing crop varieties into botanical gardens or other living collections for *ex situ* conservation, and establishing germplasm banks. For example, “The China Southwest Germplasm Bank of Wild Species”, was finished in 2007 at the Kunming Institute of Botany, Chinese Academy of Sciences (Li and Pritchard 2009).

Additional information is also obtained for “Mansfeld’s Encyclopedia of Agricultural and Horticultural Crops” (Hanelt and IPK 2001) and other world-wide treatments on cultivated plants. “Mansfeld’s Encyclopedia” was used for a cross-check of the entries for the Yunnan-checklist. For possible comparisons, e.g., checking species numbers of different checklists, it should be noted that in “Mansfeld’s Encyclopedia” the cultivated plants are confined to agricultural and horticultural crops (except

ornamentals and forest trees), whereas these excluded groups of cultivated plants are included in the Yunnan-checklist. This more complete approach can be also directly used for estimations of the world figures of cultivated plants (Khoshbakht and Hammer 2008). About 950 taxa of the Yunnan-checklist fit with “Mansfeld’s Encyclopedia” and thus provide additional information for a future edition. About 720 other taxa do not appear in “Mansfeld’s Encyclopedia”. A good part of them will be ornamental plants. But there are also some taxa which need to be included into a future edition, e.g., some ornamental aquatic plants like alligator flag (*Thalia geniculata*, Marantaceae). A detailed study of the information collected will result in many new entries for “Mansfeld’s Encyclopedia”, thus further developing this “opus magnum” on the basis of the “Mansfeld Phenomenon” (Pistrick 2003; Hanelt 2003), for developing the global agrobiodiversity movement (Hammer 2004).

Common species of cultivated plants in Yunnan are mostly food crops, including staple food crops, pulses, spices and condiment, and vegetables. Many

**Table 2** Index of families and genera

Acanthaceae (21)	<i>Acanthus</i> , <i>Adhatoda</i> , <i>Andrographis</i> , <i>Aphelandra</i> , <i>Baphicacanthus</i> , <i>Barleria</i> (2), <i>Callispidia</i> , <i>Clinacanthus</i> , <i>Eranthemum</i> , <i>Fittonia</i> , <i>Gendarussa</i> , <i>Hypoestes</i> , <i>Jacobinia</i> , <i>Justicia</i> , <i>Pachystachys</i> , <i>Peristrophe</i> , <i>Pseuderanthemum</i> , <i>Rhinacanthus</i> , <i>Sanchezia</i> , <i>Strobilanthes</i> , <i>Thunbergia</i> (3)
Acoraceae	<i>Acorus</i> (3)
Adiantaceae	<i>Adiantum</i>
Agaricaceae (2)	<i>Agaricus</i> (5), <i>Macrolepiota</i>
Agavaceae (7)	<i>Agave</i> (3), <i>Beaucarnea</i> , <i>Cordyline</i> (2), <i>Dracaena</i> (7), <i>Polianthes</i> , <i>Sansevieria</i> (3), <i>Yucca</i>
Aizoaceae (2)	<i>Aptenia</i> , <i>Lampranthus</i>
Alismataceae (2)	<i>Alisma</i> , <i>Sagittaria</i>
Alliaceae	<i>Allium</i> (7)
Amaranthaceae (7)	<i>Achyranthes</i> , <i>Alternanthera</i> (3), <i>Amaranthus</i> (5), <i>Celosia</i> (2), <i>Cyathula</i> (2), <i>Gomphrena</i> , <i>Iresine</i>
Amaryllidaceae (11)	<i>Agapanthus</i> , <i>Alstroemeria</i> , <i>Amaryllis</i> , <i>Clivia</i> (2), <i>Crinum</i> (3), <i>Hippeastrum</i> (2), <i>Hymenocallis</i> , <i>Lycoris</i> (2), <i>Narcissus</i> (2), <i>Scadoxus</i> , <i>Zephyranthes</i>
Anacardiaceae (8)	<i>Anacardium</i> , <i>Choerospondias</i> , <i>Dracontomelon</i> , <i>Mangifera</i> , <i>Pistacia</i> (3), <i>Schinus</i> , <i>Spondias</i> , <i>Toxicodendron</i>
Annonaceae (4)	<i>Annona</i> (4), <i>Artabotrys</i> (2), <i>Cananga</i> , <i>Polyalthia</i>
Apocynaceae (26)	<i>Adenium</i> , <i>Allemanda</i> (2), <i>Alstonia</i> (3), <i>Asclepias</i> , <i>Calotropis</i> , <i>Carissa</i> , <i>Cascabela</i> , <i>Catharanthus</i> , <i>Cerbera</i> , <i>Ceropegia</i> , <i>Cryptostegia</i> , <i>Cynanchum</i> , <i>Dischidia</i> , <i>Dregea</i> , <i>Ervatamia</i> , <i>Funtumia</i> , <i>Gomphocarpus</i> , <i>Holarrhena</i> , <i>Hoya</i> , <i>Nerium</i> , <i>Plumeria</i> (2), <i>Rauwolfia</i> (5), <i>Strophanthus</i> (2), <i>Telosma</i> , <i>Vinca</i> , <i>Voacanga</i>
Aquifoliaceae	<i>Ilex</i> (2)
Araceae (20)	<i>Aglaonema</i> (4), <i>Alocasia</i> (4), <i>Amorphophallus</i> (9), <i>Anthurium</i> (4), <i>Caladium</i> (2), <i>Colocasia</i> (3), <i>Dieffenbachia</i> (3), <i>Monstera</i> , <i>Philodendron</i> (4), <i>Pinellia</i> , <i>Pistia</i> , <i>Rhaphidophora</i> (2), <i>Scindapsus</i> , <i>Spathiphyllum</i> (3), <i>Stuednera</i> , <i>Syngonium</i> (2), <i>Typhonium</i> (3), <i>Xanthosoma</i> (2), <i>Zamioculcas</i> , <i>Zantedeschia</i>
Araliaceae (8)	<i>Acanthopanax</i> , <i>Dizygotheca</i> , <i>Fatsia</i> , <i>Hedera</i> (2), <i>Heteropanax</i> , <i>Panax</i> (3), <i>Polyscias</i> (3), <i>Schefflera</i> (5)
Araucariaceae	<i>Araucaria</i> (3)
Aristolochiaceae	<i>Aristolochia</i> (3)
Asparagaceae	<i>Asparagus</i> (5)
Aspidiaceae	<i>Arachniodes</i>
Aspleniaceae	<i>Neottopteris</i>
Auriculariaceae	<i>Auricularia</i> (4)
Balsaminaceae	<i>Impatiens</i> (6)
Basellaceae (2)	<i>Anredera</i> , <i>Basella</i>
Begoniaceae	<i>Begonia</i> (10)
Berberidaceae (4)	<i>Berberis</i> , <i>Dyosma</i> , <i>Mahonia</i> (4), <i>Nandina</i>
Betulaceae	<i>Alnus</i>
Bignoniaceae (12)	<i>Campsis</i> (2), <i>Catalpa</i> (2), <i>Crescentia</i> , <i>Incarvillea</i> , <i>Jacaranda</i> , <i>Millingtonia</i> , <i>Oroxylum</i> , <i>Pauldopia</i> , <i>Pyrostegia</i> , <i>Spathodea</i> , <i>Tecoma</i> , <i>Tecomaria</i>
Bixaceae	<i>Bixa</i>
Bolbitiaceae	<i>Agroclype</i> (2)
Bombacaceae (5)	<i>Adansonia</i> , <i>Bombax</i> , <i>Ceiba</i> , <i>Ochroma</i> , <i>Pachira</i>
Boraginaceae	<i>Symphytum</i>
Bromeliaceae (8)	<i>Aechmea</i> , <i>Ananas</i> (2), <i>Billbergia</i> , <i>Cryptanthus</i> (2), <i>Guzmania</i> , <i>Neoregelia</i> (3), <i>Tillandsia</i> , <i>Vriesea</i>
Burseraceae (2)	<i>Boswellia</i> , <i>Canarium</i> (2)
Buxaceae (3)	<i>Buxus</i> (3), <i>Pachysandra</i> , <i>Simmondsia</i>
Cactaceae (11)	<i>Echinopsis</i> , <i>Epiphyllum</i> , <i>Hylocereus</i> , <i>Mammillaria</i> (2), <i>Nopalxochia</i> , <i>Opuntia</i> (2), <i>Peniocereus</i> , <i>Pereskia</i> , <i>Rhipsalis</i> , <i>Schlumbergera</i> , <i>Selenicereus</i>
Caesalpiniaceae (13)	<i>Adenanthera</i> , <i>Azelia</i> , <i>Bauhinia</i> (3), <i>Caesalpinia</i> (5), <i>Cassia</i> (13), <i>Cercis</i> , <i>Delonix</i> , <i>Erythrophleum</i> (2), <i>Gleditsia</i> (2), <i>Haematoxylum</i> , <i>Saraca</i> , <i>Schizolobium</i> , <i>Tamarindus</i>
Calycanthaceae	<i>Chimonanthus</i> (2)

**Table 2** continued

Campanulaceae (2)	<i>Codonopsis, Platycodon</i>
Cannabaceae (2)	<i>Cannabis, Humulus</i>
Cannaceae	<i>Canna</i> (6)
Capparaceae (3)	<i>Cleome, Crateva, Gynandropsis</i> (2)
Caprifoliaceae (2)	<i>Lonicera, Viburnum</i> (2)
Caricaceae	<i>Carica</i>
Caryophyllaceae (4)	<i>Dianthus</i> (3), <i>Gypsophila, Psammosilene, Silene</i>
Casuarinaceae	<i>Casuarina</i> (2)
Celastraceae	<i>Euonymus</i>
Chenopodiaceae (3)	<i>Beta, Kochia, Spinacia</i>
Chloranthaceae	<i>Chloranthus</i> (3)
Clavicipitaceae	<i>Cordyceps</i>
Climacodontaceae	<i>Mycoleptodonoides</i>
Combretaceae (3)	<i>Anogeissus, Quisqualis, Terminalia</i> (2)
Commelinaceae (2)	<i>Setcreasea, Tradescantia</i> (4)
Compositae (45)	<i>Achillea, Ageratum, Arctium, Argyranthemum, Artemisia</i> (4), <i>Aster, Atractylodes</i> (3), <i>Aucklandia, Bellis, Calendula, Callistephus, Carthamus, Centaurea, Chrysanthemum</i> (4), <i>Coreopsis</i> (2), <i>Cosmos</i> (2), <i>Crossostephium, Cynara, Dahlia, Echinacea, Erigeron, Eupatorium, Gaillardia, Gazania, Gerbera, Guizotia, Gynura</i> (2), <i>Helianthus</i> (3), <i>Inula, Lactuca, Liatris, Melampodium, Pericallis, Rudbeckia, Senecio</i> (2), <i>Silybum, Solidago, Stevia, Tagetes</i> (2), <i>Tanacetum, Tithonia, Tragopogon</i> (2), <i>Wedelia, Xerochrysum, Zinnia</i> (2)
Convolvulaceae (5)	<i>Calonyction, Dichondra, Ipomoea</i> (2), <i>Pharbitis</i> (2), <i>Quamoclit</i>
Coprinaceae	<i>Coprinus</i>
Cornaceae (3)	<i>Aucuba</i> (2), <i>Dendrobenthamia, Helwingia</i>
Crassulaceae (5)	<i>Echeveria, Kalanchoe</i> (3), <i>Penthorum, Sedum</i> (4), <i>Sinocrassula</i>
Cruciferae (9)	<i>Brassica</i> (4), <i>Capsella, Erysimum, Euclidium, Iberis, Isatis, Lobularia, Matthiola, Raphanus</i> (2)
Cucurbitaceae (11)	<i>Benincasa, Citrullus, Cucumis</i> (3), <i>Cucurbita</i> (3), <i>Hemsleya, Lagenaria, Luffa</i> (2), <i>Momordica</i> (2), <i>Sechium, Siraitia, Trichosanthes</i> (2)
Cupressaceae (9)	<i>Calocedrus, Chamaecyparis</i> (3), <i>Cupressus</i> (4), <i>Fokienia, Juniperus</i> (2), <i>Platyclusus, Sabina</i> (4), <i>Thuja, Thujopsis</i>
Cyatheaaceae	<i>Cyathea</i>
Cycadaceae (2)	<i>Cycas</i> (5), <i>Zamia</i> (2)
Cyperaceae (3)	<i>Cyperus</i> (2), <i>Eleocharis, Eriophorum</i>
Davalliaceae	<i>Nephrolepis</i> (2)
Davidiaceae	<i>Davidia</i>
Dioscoreaceae	<i>Dioscorea</i> (4)
Dipterocarpaceae	<i>Dipterocarpus</i>
Ebenaceae	<i>Diospyros</i> (2)
Elaeagnaceae	<i>Elaeagnus</i>
Ericaceae	<i>Rhododendron</i> (6)
Erythroxylaceae	<i>Erythroxylum</i>
Eucommiaceae	<i>Eucommia</i>
Euphorbiaceae (16)	<i>Acalypha</i> (2), <i>Alchornea, Aleurites</i> (3), <i>Baccaurea</i> (2), <i>Bischofia, Codiaeum</i> (2), <i>Croton</i> (4), <i>Euphorbia</i> (9), <i>Excoecaria, Hevea, Jatropha</i> (4), <i>Manihot, Pedilanthus, Ricinus, Sapium, Sauropus</i>
Fagaceae (2)	<i>Castanea, Quercus</i> (2)
Fistulinaceae	<i>Fistulina</i>
Flacourtiaceae (2)	<i>Hydnocarpus</i> (2), <i>Itoa</i>

**Table 2** continued

Fumariaceae (3)	<i>Dactylicapnos, Dicentra, Eomecon</i>
Ganodermataceae	<i>Ganoderma</i> (2)
Gentianaceae	<i>Eustoma</i>
Geraniaceae	<i>Pelargonium</i> (3)
Gesneriaceae (6)	<i>Aeschynanthus, Codonanthe, Nematanthus, Paraboea, Saintpaulia, Sinningia</i>
Ginkgoaceae	<i>Ginkgo</i>
Gramineae (41)	<i>Agrostis, Arrhenatherum, Avena</i> (2), <i>Axonopus, Bambusa</i> (16), <i>Bromus</i> (2), <i>Cephalostachyum, Chimonocalamus, Coix</i> (2), <i>Cymbopogon</i> (4), <i>Cynodon, Dactylis, Dendrocalamus</i> (6), <i>Eleusine, Elymus, Eremochloa, Fargesia, Festuca</i> (2), <i>Hordeum, Lolium</i> (2), <i>Oryza, Panicum</i> (2), <i>Pennisetum</i> (2), <i>Phleum, Phyllostachys</i> (7), <i>Poa</i> (2), <i>Pseudosasa, Qiongzhueta, Saccharum</i> (2), <i>Schizostachyum, Secale, Setaria, Sinocalamus, Sorghum, Stenotaphrum, Thyrsostachys</i> (2), <i>Triticum</i> (4), <i>Vetiveria, Zea, Zizania, Zoysia</i> (3)
Guttiferae (3)	<i>Mesua, Ochrocarpus, Pentadesma</i>
Hamamelidaceae (2)	<i>Exbucklandia, Liquidambar</i>
Hericiaceae	<i>Hericium</i> (2)
Hydrocharitaceae	<i>Ottelia</i>
Hypoxidaceae	<i>Curculigo</i>
Illiciaceae	<i>Illicium</i>
Iridaceae (7)	<i>Belamcanda, Crocosmia, Eleutherine, Freesia, Gladiolus, Iris</i> (4), <i>Tigridia</i>
Juglandaceae	<i>Juglans</i> (2)
Juncaceae	<i>Juncus</i>
Labiatae (15)	<i>Agastache, Elsholtzia</i> (3), <i>Lavandula, Lycopus, Mentha</i> (3), <i>Nepeta, Ocimum</i> (2), <i>Orthosiphon, Perilla, Plectranthus, Pogostemon, Salvia</i> (3), <i>Schizonepeta, Solenostemon, Stachys</i>
Lauraceae (5)	<i>Cinnamomum</i> (9), <i>Laurus, Lindera, Litsea</i> (2), <i>Persea</i>
Liliaceae (17)	<i>Aloe</i> (2), <i>Aspidistra</i> (2), <i>Chlorophytum</i> (2), <i>Disporopsis, Disporum, Fritillaria</i> (2), <i>Gloriosa, Hemerocallis</i> (3), <i>Hosta, Hyacinthus, Lilium</i> (5), <i>Liriope, Ophiopogon, Polygonatum, Reineckea, Rohdea, Tulipa</i> (3)
Linaceae	<i>Linum</i>
Lobeliaceae (2)	<i>Lobelia, Pratia</i>
Loganiaceae	<i>Strychnos</i>
Lythraceae (3)	<i>Cuphea, Lagerstroemia</i> (2), <i>Lawsonia</i>
Magnoliaceae (6)	<i>Liriodendron</i> (2), <i>Magnolia</i> (11), <i>Manglietia</i> (2), <i>Michelia</i> (5), <i>Paramichelia, Tsoongiodendron</i>
Malvaceae (7)	<i>Abelmoschus</i> (3), <i>Abutilon</i> (2), <i>Alcea, Gossypium</i> (3), <i>Hibiscus</i> (8), <i>Malva</i> (3), <i>Malvaviscus</i>
Marantaceae (3)	<i>Calathea</i> (5), <i>Maranta</i> (2), <i>Stromanthe</i>
Melastomataceae	<i>Sonerila</i>
Meliaceae (6)	<i>Aglaia</i> (2), <i>Aphanamixis, Azadirachta, Melia, Swietenia</i> (2), <i>Toona</i>
Menispermaceae (2)	<i>Cocculus, Stephania</i>
Mimosaceae (9)	<i>Acacia</i> (10), <i>Albizia</i> (4), <i>Calliandra</i> (2), <i>Desmanthus, Leucaena, Mimosa</i> (2), <i>Paraserianthes, Parkia, Pithecellobium</i> (2)
Moraceae (5)	<i>Artocarpus</i> (2), <i>Broussonetia, Cudrania, Ficus</i> (12), <i>Morus</i> (5)
Moringaceae	<i>Moringa</i>
Musaceae (3)	<i>Ensete, Musa</i> (5), <i>Musella</i>
Myricaceae	<i>Myrica</i>
Myristicaceae	<i>Myristica</i>
Myrsinaceae	<i>Ardisia</i> (3)
Myrtaceae (8)	<i>Callistemon</i> (3), <i>Eucalyptus</i> (48), <i>Eugenia, Melaleuca</i> (2), <i>Pimenta, Psidium, Rhodomyrtus, Syzygium</i> (5)
Nepenthaceae	<i>Nepenthes</i>

**Table 2** continued

Nyctaginaceae (2)	<i>Bougainvillea</i> (2), <i>Mirabilis</i>
Nymphaeaceae (4)	<i>Nelumbo</i> , <i>Nuphar</i> , <i>Nymphaea</i> (3), <i>Victoria</i>
Nyssaceae (2)	<i>Camptotheca</i> , <i>Nyssa</i>
Oleaceae (7)	<i>Forsythia</i> (2), <i>Fraxinus</i> , <i>Jasminum</i> (5), <i>Ligustrum</i> (3), <i>Olea</i> (2), <i>Osmanthus</i> , <i>Syringa</i>
Onagraceae (2)	<i>Fuchsia</i> , <i>Oenothera</i> (3)
Orchidaceae (11)	<i>Cattleya</i> , <i>Cymbidium</i> (8), <i>Dendrobium</i> , <i>Eria</i> , <i>Gastrodia</i> , <i>Nervilia</i> , <i>Oncidium</i> , <i>Paphiopedilum</i> (6), <i>Phalaenopsis</i> , <i>Vanda</i> (2), <i>Vanilla</i>
Oxalidaceae (2)	<i>Averrhoa</i> , <i>Oxalis</i> (3)
Palmae (22)	<i>Archontophoenix</i> , <i>Areca</i> , <i>Arenga</i> , <i>Borassus</i> , <i>Calamus</i> , <i>Caryota</i> (3), <i>Chamaedorea</i> , <i>Chrysalidocarpus</i> , <i>Cocos</i> , <i>Corypha</i> (2), <i>Daemonorops</i> (2), <i>Elaeis</i> , <i>Livistona</i> (3), <i>Mascarena</i> , <i>Phoenix</i> (7), <i>Raphia</i> , <i>Rhapis</i> (2), <i>Roystonea</i> , <i>Sabal</i> , <i>Salacca</i> , <i>Syagrus</i> , <i>Trachycarpus</i> (2)
Pandanaceae	<i>Pandanus</i> (2)
Papaveraceae (3)	<i>Argemone</i> , <i>Macleaya</i> , <i>Papaver</i> (3)
Papilionaceae (42)	<i>Abrus</i> , <i>Amorpha</i> , <i>Arachis</i> , <i>Astragalus</i> (2), <i>Bowringia</i> , <i>Butea</i> , <i>Cajanus</i> , <i>Canavalia</i> , <i>Caragana</i> , <i>Cicer</i> , <i>Clitoria</i> , <i>Codariocalyx</i> , <i>Crotalaria</i> (4), <i>Cyamopsis</i> , <i>Dalbergia</i> (2), <i>Erythrina</i> (6), <i>Gliricidia</i> , <i>Glycine</i> (2), <i>Indigofera</i> , <i>Inga</i> , <i>Lablab</i> , <i>Lathyrus</i> (2), <i>Lens</i> , <i>Medicago</i> , <i>Melilotus</i> , <i>Mucuna</i> (2), <i>Pachyrhizus</i> , <i>Phaseolus</i> (3), <i>Pisum</i> , <i>Psophocarpus</i> , <i>Psoralea</i> , <i>Pterocarpus</i> , <i>Pueraria</i> (2), <i>Robinia</i> , <i>Sesbania</i> (2), <i>Sophora</i> (3), <i>Tephrosia</i> , <i>Trifolium</i> (3), <i>Trigonella</i> , <i>Vicia</i> (4), <i>Vigna</i> (4), <i>Wisteria</i>
Passifloraceae	<i>Passiflora</i> (4)
Pedaliaceae	<i>Sesamum</i>
Phallaceae (2)	<i>Dictyophora</i> (3), <i>Phallus</i>
Phytolaccaceae	<i>Phytolacca</i> (2)
Pinaceae (4)	<i>Cedrus</i> , <i>Larix</i> , <i>Pinus</i> (10), <i>Pseudolarix</i>
Piperaceae (3)	<i>Peperomia</i> (5), <i>Piper</i> (4), <i>Pothomorphe</i>
Pittosporaceae	<i>Pittosporum</i> (2)
Plantaginaceae	<i>Plantago</i>
Platanaceae	<i>Platanus</i> (2)
Platyneriaceae	<i>Platynerium</i> (2)
Pleurotaceae (2)	<i>Hohenbuehelia</i> , <i>Pleurotus</i> (9)
Plumbaginaceae (2)	<i>Limonium</i> (2), <i>Plumbago</i> (3)
Pluteaceae	<i>Volvariella</i> (2)
Podocarpaceae	<i>Podocarpus</i> (4)
Polemoniaceae	<i>Phlox</i> (2)
Polygonaceae (4)	<i>Fagopyrum</i> (2), <i>Muehlenbeckia</i> , <i>Polygonum</i> (5), <i>Rheum</i> (2)
Polyporaceae (6)	<i>Grifola</i> , <i>Laetiporus</i> , <i>Neolentinus</i> , <i>Polyporus</i> , <i>Trametes</i> , <i>Wolfiporia</i>
Pontederiaceae	<i>Eichhornia</i>
Portulacaceae (3)	<i>Portulaca</i> (2), <i>Portulacaria</i> , <i>Talinum</i>
Primulaceae (4)	<i>Anagallis</i> , <i>Cyclamen</i> , <i>Lysimachia</i> , <i>Primula</i> (4)
Proteaceae (2)	<i>Grevillea</i> (2), <i>Macadamia</i>
Pteridaceae	<i>Pteris</i>
Punicaceae	<i>Punica</i>
Ranunculaceae (8)	<i>Aconitum</i> (3), <i>Clematis</i> (2), <i>Coptis</i> (2), <i>Delphinium</i> , <i>Nigella</i> , <i>Paeonia</i> (4), <i>Ranunculus</i> , <i>Thalictrum</i>
Rhamnaceae (3)	<i>Colubrina</i> , <i>Hovenia</i> (2), <i>Ziziphus</i> (2)
Rosaceae (15)	<i>Chaenomeles</i> (3), <i>Crataegus</i> , <i>Cydonia</i> , <i>Docynia</i> , <i>Eriobotrya</i> , <i>Fragaria</i> (2), <i>Kerria</i> , <i>Malus</i> (6), <i>Photinia</i> , <i>Prinsepia</i> , <i>Prunus</i> (8), <i>Pyracantha</i> , <i>Pyrus</i> (4), <i>Rosa</i> (5), <i>Spiraea</i>
Rubiaceae (11)	<i>Anthocephalus</i> , <i>Cephaelis</i> , <i>Cinchona</i> (3), <i>Coffea</i> (4), <i>Gardenia</i> (2), <i>Ixora</i> (2), <i>Luculia</i> (2), <i>Morinda</i> , <i>Mussaenda</i> (2), <i>Pentas</i> , <i>Serissa</i> (2)



**Table 2** continued

Rutaceae (11)	<i>Aegle, Citrus</i> (15), <i>Clausena, Euodia, Fortunella, Murraya, Orixa, Phellodendron</i> (2), <i>Poncirus, Ruta, Zanthoxylum</i> (5)
Salicaceae (2)	<i>Populus</i> (3), <i>Salix</i>
Santalaceae	<i>Santalum</i>
Sapindaceae (8)	<i>Cardiospermum, Dimocarpus</i> (2), <i>Dodonaea, Koelreuteria</i> (2), <i>Litchi, Nephelium, Sapindus</i> (2), <i>Schleichera</i>
Sapotaceae (3)	<i>Manilkara, Pouteria, Synsepalum</i>
Saururaceae	<i>Houttuynia</i>
Saxifragaceae (2)	<i>Hydrangea, Saxifraga</i>
Schizophyllaceae	<i>Schizophyllum</i>
Scrophulariaceae(10)	<i>Adenosma, Antirrhinum, Calceolaria, Digitalis, Mimulus, Paulownia</i> (2), <i>Rehmannia, Russelia, Scrophularia, Torenia</i>
Simaroubaceae	<i>Brucea</i>
Solanaceae (12)	<i>Brugmansia, Capsicum</i> (2), <i>Cestrum, Cyphomandra, Datura</i> (2), <i>Lycium, Lycopersicon, Nicandra, Nicotiana</i> (2), <i>Petunia, Scopolia</i> (3), <i>Solanum</i> (7)
Sparganiaceae	<i>Sparganium</i>
Stemonaceae	<i>Stemona</i>
Sterculiaceae (6)	<i>Brachychiton, Eriolaena, Firmiana</i> (2), <i>Pentapetes, Sterculia</i> (5), <i>Theobroma</i>
Strelitziaceae (3)	<i>Heliconia</i> (5), <i>Ravenala, Strelitzia</i>
Strophariaceae (2)	<i>Pholiota</i> (2), <i>Stropharia</i>
Styracaceae	<i>Styrax</i> (2)
Tamaricaceae	<i>Tamarix</i>
Taxaceae (2)	<i>Taxus, Torreya</i>
Taxodiaceae (9)	<i>Cryptomeria, Cunninghamia, Glyptostrobus, Metasequoia, Sciadopitys, Sequoia, Sequoiadendron, Taiwania, Taxodium</i> (2)
Theaceae (4)	<i>Camellia</i> (11), <i>Schima, Ternstroemia, Tutcheria</i>
Thymelaeaceae (4)	<i>Aquilaria, Daphne, Edgeworthia, Wikstroemia</i>
Tiliaceae (2)	<i>Corchorus, Tilia</i>
Toricelliaceae	<i>Torricellia</i>
Tremellaceae	<i>Tremella</i> (3)
Tricholomataceae (7)	<i>Armillariella</i> (2), <i>Flammulina, Hypsizigus, Lentinula, Lepista, Oudemansiella, Tricholoma</i>
Trilliaceae	<i>Paris</i>
Tropaeolaceae	<i>Tropaeolum</i>
Turneraceae	<i>Turnera</i>
Typhaceae	<i>Typha</i>
Ulmaceae	<i>Ulmus</i> (2)
Umbelliferae (13)	<i>Ammi, Anethum, Angelica</i> (3), <i>Apium, Carum, Centella, Coriandrum, Daucus, Eryngium, Foeniculum, Ligusticum</i> (2), <i>Pastinaca, Saposhnikovia</i>
Urticaceae (3)	<i>Boehmeria, Girardinia, Pilea</i> (2)
Verbenaceae (8)	<i>Callicarpa, Clerodendrum</i> (5), <i>Duranta, Lantana, Nyctanthes, Stachytarpheta, Tectona, Verbena</i>
Violaceae	<i>Viola</i> (2)
Vitaceae (4)	<i>Cayratia, Leea, Parthenocissus, Vitis</i> (2)
Zingiberaceae (8)	<i>Alpinia</i> (6), <i>Anomum</i> (7), <i>Curcuma</i> (6), <i>Etingera, Hedychium</i> (3), <i>Kaempferia</i> (2), <i>Stahlianthus</i> (2), <i>Zingiber</i> (4)

The plant families represented are given in alphabetical order. For each family, the genera represented are also listed alphabetically. The number of species per family or genus is given in brackets, except for the case of one species per family or genus. Intraspecific taxa are not considered in the counts

tree species for forestation, reforestation or biological prevention, such as *Pinus yunnanensis* and *Populus yunnanensis*, are also very common in the province. Some species with Yunnan as the distribution center have widely been cultivated in the province. People like to grow *Camellia reticulata* as a garden plant. And *Prunus cerasoides*, *Begonia taliensis*, *Luculia intermedia*, and other native plants are also common species for landscape. These plants are with potential in horticulture because of their distinguished features (such as beautiful flowers, good smells, long-term blooming time, or nice shape).

There are many rare and endangered plant species in Yunnan Province. The cultivation of these species has alleviated the survival pressure of wild populations and even improved their sustainable uses. For example, Yunnan is rich in Magnoliaceae members but most species are with less population sizes or with only a few individuals. Other species such as *Paphiopedilum* spp., *Qiongzhueta tumidinoda*, and *Davidia involuocrata* var. *vilmoriniana* are very rare or endangered in the natural habitats, too. Through artificial propagation, these species have been cultivated in gardens, indoors or parks, and could become common ornamental plants which strongly support horticultural and forest development in some areas.

With 25 ethnic groups and many traditional communities in Yunnan, their cultural diversity and various indigenous botanical knowledge have maintained and improved the diversity of cultivated plants in this mountainous province. Many species (particularly the medicinal and edible plants) had been domesticated from their wild populations, and enlarged the numbers of cultivated plants. The indigenous peoples introduced wild plants, such as *Acacia pennata*, *Eryngium foetidum*, *Baccaurea ramiflora* and *Adhatoda vasica*, into their homegardens. These species gradually became cultivated plants in the province. The traditional culture has maintained and developed genetic diversity of cultivated plants in Yunnan. Again taking *Camellia reticulata* as an example, over 200 local varieties or landraces have been discovered and recorded, in which most of them are kept in the temples, religious sites or homegardens, or close to old buildings. They have been managed and developed by the ethnic peoples in central and western Yunnan. A few local varieties of this beautiful plant have been exported to different countries.

*Musella lasiocarpa* (Musaceae) is endemic to the valleys between Yunnan and Sichuan provinces (Liu et al. 2003; Long et al. 2008). Its wild populations can only be found on the rocky cliffs in a few spots, and become very rare and endangered. It is because the local people (especially those from the Yi ethnic group) have grown this multi-purpose species in their homegardens or farming fields in a large scale for hundreds of years, this precious monotype species can be maintained and used sustainably in Yunnan. We checked the genetic diversity of wild populations (Yang et al. 2009). The genetic diversity of cultivated populations, however, has not been examined. To keep rich genetic diversity of *Musella lasiocarpa* in the cultivated populations for future development, it is necessary to examine their genetic diversity through molecular markers. In addition, the wild populations should be preserved either *in situ* or *ex situ*. Some other species like *Paris polyphylla* and *Coptis teeta* should adopt the same strategy so as to conserve their wild populations and genetic diversity as well.

On an international scale the checklist also provides input for plant genetic resource research (Ford-Lloyd et al. 2010).

The checklist is a useful foundation for agronomists to explore plant genetic resources in Yunnan, and it serves as an important tool for future research. Horticulturists, ethnobotanists and others will also find this checklist particularly useful because it contains a large number of cultivated ornamental, medicinal and other economic plants.

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