Exotic Ornamental Flora of Kashmir Valley-An overview

Shabana Aslam[1], Khursheed Ahmad Ganaie[2], AQ John[3] and GH Dar[1]

1. Department of Botany, University of Kashmir, Srinagar, J& K, India190006
2. Department of Botany, Islamia college of Science and Commerce, Srinagar, J& K, India 190006
3. Division of Floriculture, Medicinal and Aromatic plants, SKUAST- Kashmir, J& K, India 191121
Shabana_botany@yahoo.com; khursheedtrali@yahoo.co.in

Abstract: The Kashmir Himalaya, known for its indigenous and endemic flora, also provides home to a large number of exotic plants, which exhibit a wide taxonomical and distributional stretch. Although, some preliminary studies have been carried out in the region on some aspects of its exotic flora (Stewart 1972, Singh and Misri 1974, Singh and Kachroo,1983, Ara *et al.*1995, Dar *et al.*1995), the inventorization and documentation of its exotic ornamentals has received a little or negligible attention. There is a lot of scope for these exotic ornamentals in the floriculture industry of Kashmir, but lack of authentic identification has been as a big hurdle in their scientific management. It is in this backdrop that the present floristic study was carried out to identify, inventorize, document, and characterize the exotic ornamental plant species grown in the Valley. The present study has revealed that Kashmir Valley grows 317 exotic ornamental plant species, which belong to 209 genera in 85 families. Dicotyledons are the largest group, represented by 252 species in 163 genera and 67 families. Monocotyledons comprise 52 species in 37 genera and 13 families. Gymnosperms are the smallest group, with 13 species distributed in 9 genera and 5 families. Asteraceae is the largest family containing 33 exotic ornamental species. This is the first assessment of alien ornamental flora of the Kashmir Valley. [New York Science Journal 2010;3(5):78-82]. (ISSN: 1554-0200).

Key words: exotic, ornamental plants, Kashmir, floriculture

1. Introduction

Nature has nurtured man in its lap since its existence. Food, shelter and clothing were primary gifts which nature bestowed to the baby of mankind. With its development the horizontal and vertical needs which time challenged were also bestowed by nursing nature. Man landed on the zenith of development which include cultural, economic, political, social and wide array of other developments utilizing the fuel injected by nature in his inner. Cracking the contribution of nature into components, plants rank first. The plants served man with many purposes besides providing the basic life support system of food, shelter, and clothing.

The Valley of Kashmir is ranked as paradise on earth. It provides home to a large number of plant and animal species (Dar, *et al*, 2002, Singh and Kachroo, 1983, Lambert, 1933, Naqshi, *et al*, 1976). This hospitable approach is not only restricted to native species but to exotics as well (Dar, *et al* 1995, 2002, Singh and Misri, 1974, Ara, et al, 1995). The valley hosts a large number of exotic plant species showing wide taxonomic diversity (Dar. *et al*, 1995, 2002, Ara. *et al*, 1995, Stewart, 1972, Khuroo. *et al*, 2007). The economy of valley is agriculture based economy (John, *et al*, 2007). The latest plant based industry which has taken off in the valley is floriculture (). The scope of this industry in Kashmir is tremendous owing to conducive climato-edaphic conditions (Zeerak, *et al*, 2007, John, *et al*, 1996). Exotic ornamentals grown in Kashmir show better performance in both quality and quantity attributes as compared to other regions of India (John et al, 1996, 2007). The cut flowers, essential oils, bulbs etc. witness huge production compared to other regions of India (John, *et al* 1996). The industry has a lot of scope to generate revenue and change fortunes of masses. There is no documentation of exotic ornamentals growing in Kashmir valley. The authentic identification and documentation of exotic ornamentals has been perceived as a hurdle for speedy growth of floriculture industry (John, *et al*, 1996). Besides, the economy of state being agriculture based, demands that exotic invasives be first documented and then kept under constant monitoring as invasive species are known for causing tremendous economic losses in agricultural productivity (John, *et al*, 1996, Khuroo, *et al* 2007). Exotic alien invasive species are also notoriously known for eroding native species richness and driving species to extinction (Pysek, 1998, Pysek *et al*, 2002, 2004). Exotic invasive species are categorized as threat to native species diversity, as the former displace the latter. It is in this backdrop that why the present study of exploration, authentic

identification, inventorisation, and documentation of exotic ornamental flora was carried out.

2. Materials and Methods

2.1 Exploration

Although all places dwelling exotic ornamentals were scanned and the diversity assessed but the places harbouring maximum diversity were selected as the main collection and study sites.

The exploration was carried out in every nook and corner of Kashmir valley India. The whole flora was scanned for screening ornamental exotics. The main sites which were surveyed include:

1. Model floriculture centre, Sirajbagh, Cheshmashahi, (Now Tulip garden).
2. Nehru Memorial Botanical Garden, Cheshmashahi.
3. Nishat Garden.
4. Shalimar Garden.
5. Harwan Garden.
6. Division of Floriculture SKAUST-K.
7. Floriculture Division Government Agriculture Department Lal Mandi
8. Govt.Arts Emporium Garden
9. Hazratbal Park.
10. Kashmir University Botanical Garden.
11. Kokernag
12. Achabal
13. Pahalgam
14. Nurseries/roadside plant vendors.
15. Private lawns.

2.2. Collection and identification

The exotic ornamental plants were collected and then identified to species level using available literature. The voucher specimens of all collected and identified species have been deposited in KASH-Herbarium of Kashmir University. The whole information regarding their taxonomic affinity, taxonomic dispersion, local distribution, native origin, abundance has been compiled in the form of a data base.

3. Results and Discussion

The present study revealed that the paradise is housing 317 exotic ornamental species beautifying its corridors and corners. These 317 alien ornamental species were found to be dispersed in 209 genera and 85 families (Figure 1). Dicotyledons as usual turned out to be the largest group represented by 252 species, 163 genera, and 67 families. Monocots in the region comprised of 52 species, 37 genera, and 13 families. Gymnosperms were found to be the smallest group with 13 species distributed in 9 genera and 5 families (Figure 2). The family Asteraceae proved to be the largest family hosting 33 exotic ornamental species (Table 1) and genus Prunus is the largest genus with 8 species (Table 2). The habit analysis of exotic ornamental flora revealed that herbs comprise of 156 species while as shrubs consisted of 95 species with 66 species of trees (Figure 3).

Figure 1.

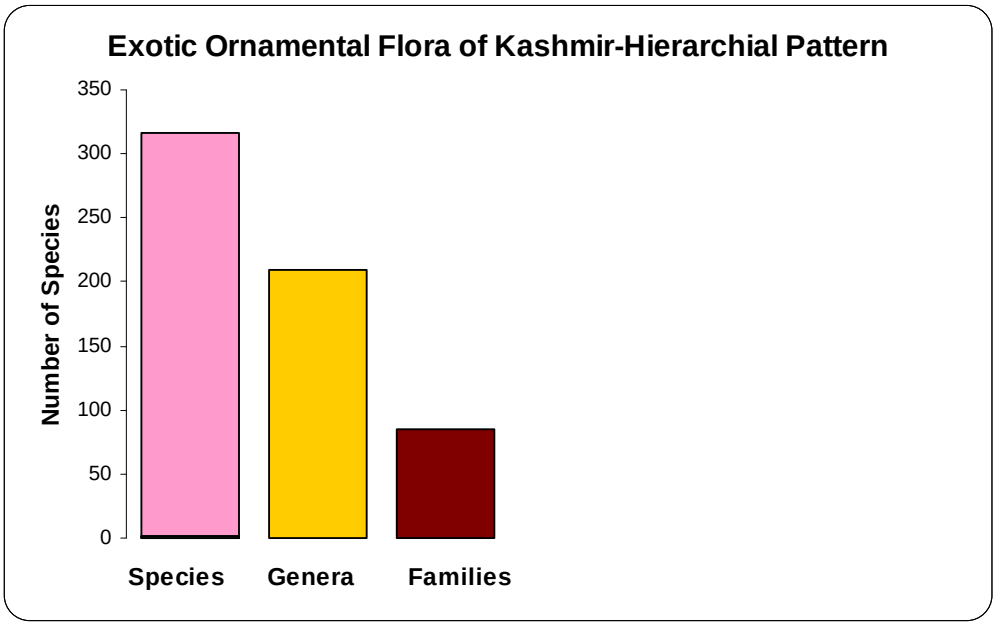


Figure 2

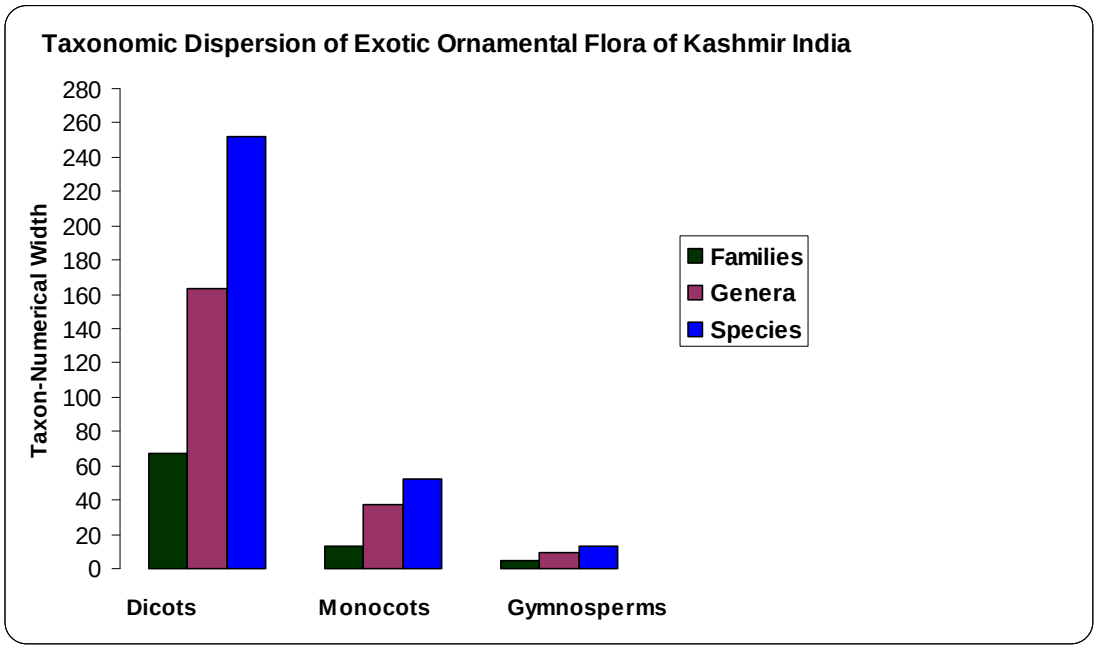


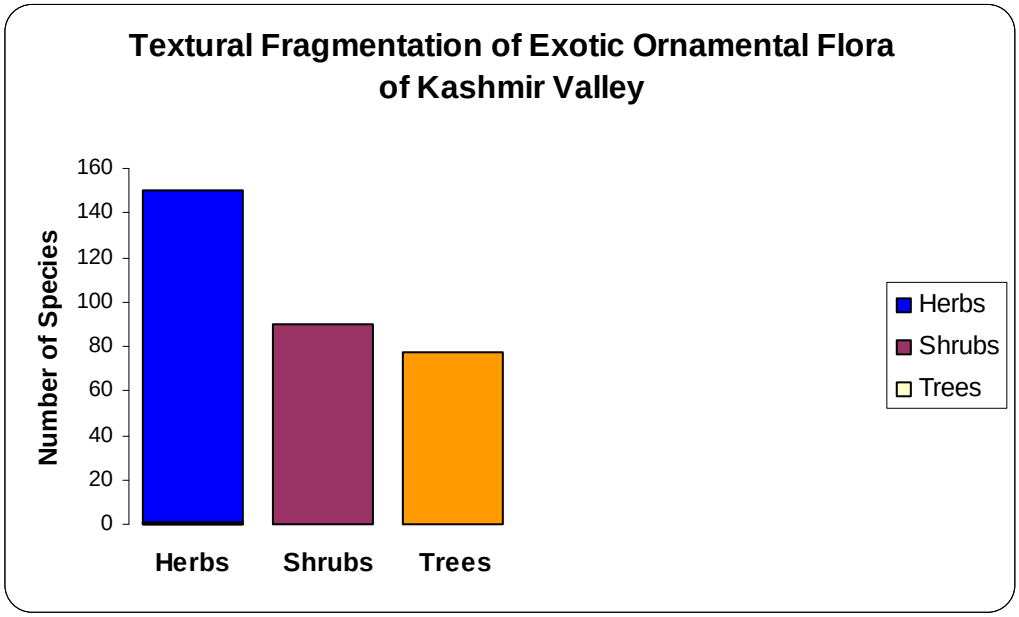
Table 1: Top 10 families in terms of %age of exotic ornamental species

S. No	Family	Percentage of Species
1	Asteraceae	10.41 %
2	Rosaceae	7.25%
3	Liliaceae	4.73%
4	Oleaceae	4.10%
5	Caryophyllaceae	3.47%
6	Amaryllidaceae	3.15%
7	Salicaceae	3.15%
8	Iridaceae	3.15%
9	Leguminosae	3.15%
10	Ranunculaceae	2.52%

Table 2: Top 10 genera with maximum number of species

S. No	Genus	Number of Species
1	*Prunus*	8
2	*Salix*	7
3	*Ligustrum*	6
4	*Magnolia*	5
5	*Iris*	5
6	*Rosa*	5
7	*Dianthus*	5
8	*Amaranthus*	4
9	*Lilium*	4
10	*Narcissus*	3

Figure 3



The Valley of Kashmir is witnessing continuous introduction of exotic plant and animal species owing to globalisation which has condensed the world into a global village. The high-tech cross border transport and migration of humans has provided easy pathway to plant species to witness a wide spread on the world map. Our present study on the exotic flora elucidates and reveals that horticulture is the main pathway which invites and accumulates exotics in this part of Himalaya. The present study is so far the major floristic study on exotic ornamentals of the valley which documents 317 exotic ornamental plant species, most of them reported for the first time from the valley. The study

reveals that the ornamental species which are highly ranked in the international floriculture market show better degree of occurrence and performance in terms of yield viz. flower size, flower number, bulb production, bulb size, herbage and oil content in the valley. This finding can surely attract growers and expand the present dimensions of floriculture industry in the state.

The present inventory of exotic ornamental plant species growing in Kashmir valley will be of great utility for the socio-economic development of the state. The inventory will serve as a data base for floriculture industry. The valuable species with international market have been provided with authentic identification and characterization. The data base provides a baseline for further research on exotic flora in general and exotic ornamentals in particular.

The present documentary also finds tremendous significance as a data base for State Agricultural department- for monitoring and managing exotic invasive species which cause tremendous loss to crops and economy. Besides, the inventory will be of great help to conservation biologists for ranking threats to native flora.

Acknowledgements

Authors are thankful to the Division of floriculture, Government of Jammu and Kashmir for permitting us to carry out the field work in various gardens and parks, including the very famous Nehru Memorial Botanical Garden.

Corresponding Author
Dr Khursheed Ahmad
Department of Botany
ICSC, University of Kashmir
J&K, India
Mob: 09419419147
E mail: khursheedtrali@yahoo.co.in

References

1. Ara S, Naqshi AR, Baba MY. Indigenous and exotic trees and shrubs of Kashmir Valley. *Indian J. Forestry* (Addl. Ser.) 1995; 8: 272-233

2. Dar GH, Naqshi AR, Ara S. New records and new taxa of flowering plants from Jammu & Kashmir State 1970-1992. *Oriental Sci*. (Spl. Publ.). 1995; pp 33-44.

3. Dar GH, Bhagat RC, Khan MA. *Biodiversity of the Kashmir Himalayas.* Valley Book House, Srinagar, India. 2002.

4. John AQ, Bichoo GA, Siddique MAA. Performance of Gladiolus cultivars in Kashmir. *Flora- and Fauna- Jhansi*. 1996; 2:1, 75-77.

5. John AQ, Rather ZA, Paul TM, Neelofer. Evaluation of ornamental bulbous plants for landscaping in temperate regions. *Journal of Ornamental Horticulture,* 2007; 10 (1): 1-8.

6. Khuroo AA, Irfan R, Reshi, Z, Wafai BA. The alien flora of Kashmir Himalayas. *Biol Invasions* 2007; 9: 269-292.

7. Lambert WJ. List of trees and shrubs for Jammu and Kashmir Forest Circles. *Bot.Ser. For.Bull.*1933; *No*. 80

8. Naqshi AR, Javeid GN. Two new plant records for India. *J. Bombay Nat. Hist. Soc.*1976b; 74(2): 393-394.

9. Pysek P. Is there a taxonomic pattern to plant invasion? *Oikos* 1998; 82:282-294

10. Pysek P, Sadlo J, Mandek B. Catalogue of Alien plants of Czech Republic. *Preslia Praha* 2002; 74:97-186.

11. Pysek, P, Richardson DM, Rajmanek M, Webster GL, Williamson M, Kirschner J. Alien plants in checklists and flora: towards better communication between taxonomists and ecologists. *Taxon* 2004; 53:131-143.

12. Singh JB, Kachroo P. Exotic trees and shrubs of Kashmir. *Ind Forester* 1983; 109:60-76.

13. Singh G, Misri B. Some exotic ornamentals of Kashmir. *Indian J. Hort.* 1974; 31(1): 91-94.

14. Stewart RR. An annotated catalogue of the vascular plants of West Pakistan and Kashmir. 1972; pp. 1-1028. *In:* Nasir E and Ali S I (Eds.), *Flora of West Pakistan.* Fakhri Press, Karachi.

15. Zeerak NA, Wani SA. Diversity of Irises from Kashmir Himalaya. *Journal of Ornamental Horticulture,* 2007; 10 (2): 115-118.

2/5/2010