

## WILD RELATIVES OF GENUS *ALLIUM* L. IN HIMALAYAS

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*The wild relatives of genus Allium have long been utilized as spices and condiments while occupying place in hill agriculture as a semi-domesticated crop. During an exploratory survey of plant genetic resources and related ethnobotanical study in the Himalayas, some of the wild Allium species such as Allium ampeloprasum L., A. ascalonicum L., A. auriculatum Kunth, A. cernuum Roth, A. carolinianum D C., A. chinense G. Don, A. consanguineum Kunth, A. humile Kunth, A. przewalskianum Regel, A. rubellum M. Bieb., A. semonovii Regel, A. tuberosum Rottl. ex Spreng., A. prattii Wright, and A. wallichii Kunth were collected. Besides widely cultivated plants like garlic, Indian leek, leek, nodding onion, onion and shallot etc., these Allium species are partially cultivated by the natives in their kitchen garden or backyards for green vegetables, spices and condiments. The field information on distribution, habitats, taxonomical characteristics and methods of utilization is highlighted to focus attention on these wild economic, useful genetic resources for future commercial exploitation.*

Himalayan zone of India is represented by the states of Jammu and Kashmir, Himachal Pradesh, hilly regions of Uttar Pradesh and north-eastern region. It represents extreme climatic variations, topographic situations like undulating slopes, valleys and gorges. The Himalayas have provided several economically important plants used as food, medicines, spices and condiments etc. *Allium* is one of such species under present context. It is widely distributed in the temperate and alpine zones of the world, i.e., Europe, northern Asia, north-west America, the Altai mountains and middle Asia (Mani, 1978). It has about 500 species all over the world, of which thirty species are found in India (Santapau and Henry, 1973; Babu, 1977). So far, 15 species have been

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reported from temperate and alpine zones of Himalaya in India. Occasionally, a few of them are cultivated by the natives. Until recently despite their importance, little has been known about the taxonomy, utilization and cultivation of these wild *Allium* species. Therefore, an attempt is made in this paper to investigate these species of *Allium*, being native of Himalaya.

#### CULTIVATED AND SEMI-DOMESTICATED ALLIUMS

The best known six species as domesticated and extensively cultivated in the area, between the elevation of 300-3500 m are *Allium ampeloprasum* L. - Leek, *Hargandh*, *Sidhum*, *Vilaiti lahsoon*; *A. ascalonicum* L. - Shallot, *Dhun*; *A. cepa* L. - Onion, *Pyaz*; *A. cernuum* Roth - Nodding onion, *Lady's leek*, *Sikwa*; *A. sativum* L. - Garlic, *Lahsoon* and *A. tuberosum* Rottl. ex Spreng. - Indian leek, *Markua*.

The present survey on *Allium* species exploration, collection and ethnobotany is based on the guidelines and principles suggested by Jain and Rao (1977), Jain (1987) and Hawkes (1980). The information about habitat, uses, occurrence, abundance were gathered by repeated enquiries from the local folk and frequent field trips. Previous collections of *Allium* species have also been consulted from the Herbaria, such as Botanical Survey of India, Northern Circle, Dehra Dun (BSD), Taxonomy Branch, FRI, Dehra Dun (DD) and Department of Botany, Sh. H.N. Bahuguna Garhwal University Herbarium (GUH), Srinagar (U.P.). All the information from various field trips, folk people and herbaria are compiled. These wild *Allium* species are also maintained in the field gene bank and herbarium of NBPGR Regional Station-Bhowali, Nainital, U.P.

*Allium* is a bulbous herb with characteristic odour. Leaves variable, fistular, flat, elliptic, filiform or linear. Flowers white, yellow, red, rosy or purple, golden yellow, blue in capitata umbels, enclosed in 1-3 membranous spathes, stellate. Petals 6, free or fused into a corolla tube at the base. Stamens hypogynous or inserted on the perianth, filaments free or connate below, anthers oblong. Ovary 5-fused carpels, 3-chambered each with many ovules. Style 1, filiform. Fruit a capsule, 3-valved, rarely a fleshy berry, small. Seeds few, compressed, black. It is very close to the family Iridaceae, distinguished by its 6 stamens. It is also distinguished from Liliaceae by its superior ovary. Flowers are surrounded in the bud by a papery spathe or flowers born in branched clusters. On the basis of inflorescence characteristics, *Allium* is now placed in the commonly known Daffodil family, Amaryllidaceae (Hara *et al.*, 1978-82; Polunin and Stainton, 1984).

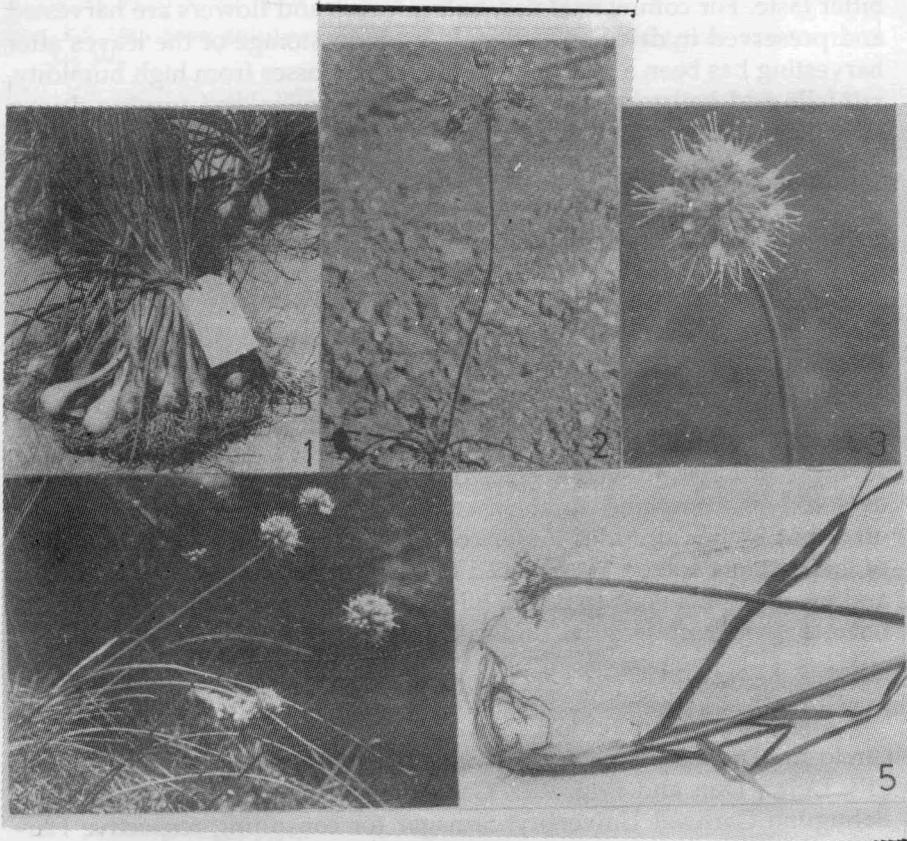


Fig. 1 *Allium ascalonicum* L.  
 Fig. 2 *A. chinense* G. Don  
 Fig. 3 *A. consanguineum* Kunth  
 Fig. 4 *A. rubellum* M. Bieb.  
 Fig. 5 *A. tuberosum* Rotl. ex Spreng.

### METHOD OF UTILIZATION

In Himalayan zone, the wild species of *Alliums*, most often called *Doona*, *Dunn*, *Dhun*, *Pharan*, are the aromatic green vegetables used in pulverized state, primarily for seasoning or garnishing foods and beverages. These are characterized by pungency, strong odour, sweet and bitter taste. For commercial use, bulbs, leaves and flowers are harvested and preserved in dried condition. Long term storage of the leaves after harvesting has been a problem mainly due to losses from high humidity, rainfalls and hailstorms. In such cases, sun-drying and furnace drying have been successful against spoilage and for prolonging storage life upto 12-14 weeks.

During the natural season of wild *Allium* species in the month of April to November, sprouting, flowering and senescence occur. The plant parts such as leaves, flowers and bulbs are harvested, collected and supplied by the natives from their difficult wild habitat. But in recent years, due to heavy demand of dried leaves of *Allium auriculatum* Kunth, *A. humile* Kunth, *A. rubellum* M. Bieb., these have occupied a significant place in hill agriculture as semi-domesticated crops (Negi, 1986, 1988; Negi and Gaur, 1991; Negi and Pant, 1992).

To conclude the wild species of *Allium* have been relatively under-explored as compared to their commercial potential. These may be grown at higher altitudes under cooler climates. So far the exploitation of these *Allium* species is restricted to the natives. However, such valued and useful plants need to be scientifically evaluated to screen promising ones for wider cultivation under standardized package of practices.

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