

## Seeds germination and seedlings analysis of *Saussurea costus* in Genwala and Bagori of district Uttarkashi (Uttarakhand)

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### SUMMARY

*Saussurea costus* syn. *Saussurea lappa* is a well known and important medicinal plant widely used in several indigenous systems of medicine for the treatment of various ailments, viz., asthma, inflammatory diseases, ulcer and stomach problems. Different pharmacological experiments in a number of *in-vitro* and *in vivo* models have convincingly demonstrated the ability of *Saussurea costus* to exhibit anti-inflammatory, anti-ulcer, anti-cancer and hepatoprotective activities, lending support to the rationale behind several of its traditional uses. The present review is an up-to-date and comprehensive analysis of seed germination, survival percentage and seeding analysis of *Saussurea costus* in lower and higher Himalayan altitudinal villages of district Uttarkashi. The present study deals with successful seeds germination, survival percentage and seedlings analysis of this species using both field and within the polyhouse techniques in low and high altitudinal villages. The materials were collected from the Besaj Sang Ikai, Uttarkashi. Vegetative propagation was achieved by rooting runner cuttings. Seedlings were measured by seed germination and survival percentage, root and shoot length. A significant increment in root length was recorded in high altitudinal polyhouse condition as compared to low altitude. In low altitudinal village Genwala, open field condition seed germination percentage and survival percentage ranged from 5.00 per cent, 18.00 per cent and 18.18 per cent to 25.00 per cent while in low altitudinal village seed germination percentage and survival percentage within polyhouse ranged from 23.00 per cent to 45.00 per cent and 40.45 per cent to 66.70 per cent, respectively. Highest percentage of seed germination and survival percentage were noticed in high altitudinal village, Bagori (Within polyhouse) from 40.50 per cent to 60.00 per cent (seed germination), 60.70 per cent to 76.50 per cent (survival percentage), respectively. The leaves are produced in a dense basal rosette, and spiral up the flowering stem. The woolly hairs in high altitude species of the family are the densest, and aid in thermoregulation of the flowers, minimizing frost damage at night, and also preventing ultraviolet light damage from the intense high altitude sunlight.

**Key Words :** Conventional, Hepatoprotective activities, Polyhouse, Multiplication, Thermoregulation

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**S***aussurea costus* (Falc.) Lipsch. locally known as Kuth, belong to family Asteraceae is a perennial aromatic herb. It is 1-2 m tall, with a thick fibrous stem. Leaves radical

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with long lobately winged stalks. Root stout, carrot like, 60 cm long, possessing a characteristic penetrating odour. Flowers are dark purple or black in colour. Nayar and Shastry, 1988; Stainton, 1988 and Samant *et al.*, 1998 reported that it is distributed between 2500- 3000 masl in the Himalaya, and native to the Himalayan region. Its natural populations are reported from the higher elevations of Jammu and Kashmir and Himachal Pradesh (Aswal and Mehrotra, 1994) and now cultivated in Kashmir, Himachal Pradesh and in some part of Uttarakhand. The medicinal properties of *Saussurea costus* are well documented in different systems of medicine. Its roots have a strong and sweet aromatic odour with bitter tastes, and used as antiseptic, in controlling bronchial asthma (Anonymous, 1972). It is also used for curing various diseases