

Effect of different pre-sowing seed treatments on germination and plant growth characteristics of seabuckthorn (*Hippophae salicifolia* D. Don)

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ABSTRACT

Seabuckthorn berries (fruits) were harvested at optimum maturity (ripe stage) from natural population in Badrinath area of Distt. Chamoli, Uttarakhand. The seeds were separated manually from the residue left after pulp extraction and stored at room temperature (8-18°C) in paper bags, for four months before further experimentation. The seeds were treated for 18 hours with different PGR'S and chemicals along with other treatments *i.e.* stratification and luke warm water. The results reveal that IAA @ 100 and 200 ppm were most suitable treatments for various plant growth parameters, including germination and survival percentage, closely followed by Kinetin @100 ppm and GA₃ @ 400 ppm indicating that seabuckthorn can successfully be propagated by seeds using different growth regulators.

Key words : Seabuckthorn, *Hippophae salicifolia*, Seed, Propagation, IAA, IBA, GA, Kinetin, Plant growth parameters.

Seabuckthorn (*Hippophae spp.*) is a deciduous, dioecious shrub or tree of the family "Elegnaceae" grown naturally at higher altitudes of temperate zone of Asia and Europe. After China, Indian Himalaya is believed to possess about 1,00,000 ha, the world's second largest seabuckthorn resources that are distributed in Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim at an altitude of 7,000-12,000 ft amsl (Chauhan *et al.*, 2003, Singh, 2003). Three main species of Seabuckthorn distributed in India are *Hippophae rhamnoides*, *Hippophae salicifolia* and *Hippophae tibetana*. Out of these, *H. salicifolia* is found in Uttarakhand under natural conditions (Yadav *et al.*, 2006). In Uttarakhand, the plant is mainly confined to the river beds of drier ranges of North-Western Himalayas consisting Sukhi, Harsil, Gangotri, Mandakini Ghati, Alaknanda Ghati and Jamuna Ghati, Badrinath, Har-ki-Dun, Kalli Valley, Gori Valley, Buddhi, Byans, Darma, etc. (Maikhuri and Singh, 1994; Uniyal and Uniyal, 2001; Pokhriyal *et al.*, 2004).

Seabuckthorn has great ecological significance as its roots possess excellent soil binding properties. Frankia present in the root nodules fixes atmospheric nitrogen @ 180 kg/ha/annum. Natural seabuckthorn forest can yield 750-1,500 kg of berries/ha. Seabuckthorn berries are a rich source of vitamin C, caretonoids, minerals, vitamin B, vitamin E and vitamin K. Seeds contain high quality oil

which has many bioactive substances (Rongsen, 1992). So far, no domestication work of seabuckthorn has been done in Uttarakhand. The important reasons for this being lack of awareness regarding its nutritive value and use, inaccessible areas of natural stands, unavailability of technology for multiplication and multipurpose utilization with special reference to Uttarakhand hills. Most of the work done on seabuckthorn multiplication and utilization is on *Hippophae rhamnoides*. The availability of information on the similar aspects of *Hippophae salicifolia* is scanty in the literature. The present investigations were, therefore, conducted to undertake the standardization work on the multiplication of *Hippophae salicifolia*, by seeds naturally grown in Uttarakhand and to access the effect of different pre-sowing seed treatments on germination and plant growth characteristics of Seabuckthorn (*Hippophae salicifolia* D. Don).

MATERIALS AND METHODS

Seabuckthorn berries were collected at optimum maturity (ripe stage) from natural population in Badrinath area (2879 m amsl, N 30°42.824' longitude, E 79°29.924' latitude and Aspect 75° SE) of district Chamoli, Uttarakhand, in the month of October, 2005 and brought to the laboratory of Department of Horticulture, Hill Campus, Ranichauri. Fruits, after thorough washing, were squeezed over a sieve to extract the pulp. From the left over residue, the seeds were separated manually after shade drying. The separated seeds were packed in paper