

Cultivation Protocol For

Dioscorea deltoidea

No Image

Family: Dioscoreaceae

Local/common names:

Elephant's foot, Wild Yam,
Dioscorea, Singli-mingli
(Himachal), Kins, Ganj
(Himachal), Genti
(Uttarakhand)

Status: Near threatened (IUCN)

Distribution and habitat: *Dioscorea deltoidea* is naturally found in temperate to sub-alpine regions of the Himalayas ranging from 1000-3500 m in Pakistan, India, Nepal and southwest China. It is fairly common in Kangra valley and Kinnaur in Himachal Pradesh, the upper reaches of Tons and Yamuna and the dry temperate regions of Uttarkashi, Chamoli and Kumaon hills in Uttarakhand. In West Bengal the species is available in Darjeeling district and in the Chungthang region in Sikkim.

Environment for growth: A well-drained loose textured sandy alluvial soil rich in humus is optimum for the growth of *Dioscorea deltoidea*. The species prefers a more or less neutral soil pH (6.8-7.2) for optimum growth of the tubers. *Dioscorea* grows better where annual rainfall varies from 100-200 cm and minimum temperature in winter reaches below freezing point and maximum temperature does not go more than 32-34°C. *Dioscorea* prefers growing on northern and eastern slopes in shaded but well drained conditions.

Parts used: Roots

Market rate: The dried tuber of *Dioscorea deltoidea* is sold in the domestic as well as in the national market. The price varies in the national markets from Rs. 60 to 100/- per kg.

Agro-technology

- **Means of propagation:** Although seeds are considered the most reliable method of propagation, in case of *Dioscorea* seed is not considered the appropriate because of very low germination percentage. Thus, the plant is commonly propagated through leaf node or rhizome cuttings.
- **Collection of seeds:** The seeds are sown pre-winter or in spring in nursery beds under shade. Later the germinated seedlings are collected and transplanted in the field at 4 x 45 cm or 60 x 60 cm spacing with some support structure because of the creeping habit of the plants.
- **Land preparation and soil work:** Land should be ploughed thoroughly so that the soil particles become powdery. Before ploughing stones, pebbles, unwanted shrubs and grasses with strong root systems are removed. Then farm yard manure or forest humus should be well mixed with soil and the land should be leveled properly. Although 1-2 tons of FYM is sufficient for one bigha (800 sq. m), the soil should be tested for NPK first before applying the FYM. Land with some degree of slope is always preferred and the selected land should be face the northeast direction.
- **Transplantation:** Immediately after harvesting, the tubers become dormant. A chilling treatment of 60 days at 4°C gives about 90% sprouting thus saving the time of cultivation. Tubers are planted in furrows. Deep furrows are made at 60 cm row-to-row distance. Within the row plant to plant distance should be 30 cm and at 5 cm below the soil level. New sprouts come in spring.
- **Vegetative propagation:** The plant can be easily propagated from rhizome cuttings. Tubers with a diameter of 5 cm yield good results. They are generally

susceptible to many soil-borne diseases and should be treated with fungicides. The tubers dipped in 0.2 % brassicol for 10 minutes before plantation yield good results.

- **Water management:** *Dioscorea* requires moist soil and regular irrigation is only required during May-June. However, for the cold desert area where the annual precipitation is very low, irrigation should be continued even in July and August. For newly planted crops, irrigation is given whenever required in the first year.
- **Weed and pest control:** *Dioscorea* is a weak stemmed tender plant and is unable to compete with weeds, which are stronger. Hence it is always suggested to give stronger support to the plant to lessen the competition with other plants. As shade is provided to the plants, growth of the weeds is minimized. No major pest and disease attacks have been reported though root rot is observed. The causal organism is either *Penicillium* spp., *Fusarium* spp. or *Alternaria* spp. A treatment of 0.2% brassicol before planting yields good results. Wilting of leaves is observed sometimes after the plant attains a height of 1 m. Some aphid and mites also attack the plant for which insecticides like thiodan (0.3%) and endosulphan have been found effective although bio-pesticides like neem can also be used.
- **Maturity and harvesting:** *Dioscorea deltoidea* is generally grown for three years. The tubers are harvested in November but the time of harvest varies according to altitude and agro-climatic conditions. The tubers are deep and are harvested by a pickaxe. Afterharvesting, the tubers are washed in running water and dried in an open space under shade for a few days depending upon the temperature and humidity. The dried tubers are then stored in gunny bags and stored at room temperature.