

Cultivation Protocol For

Allium stracheyi



Family: Liliaceae

Local/common names:
Jambu Farn, Jungli piyaz

Status: Rare

Distribution and habitat: The species is naturally distributed in East Asia from Afghanistan, Pakistan and Kashmir Himalayas to the Central Himalayas. The natural habitat of the plant is forest clearings and shrubberies in the montane to upper sub-alpine zone (at a height of 3,000-4,800 m). It is found growing naturally in the moist meadows in Dayara, Panwali Kantha and Mana valley and dry steep pastures in the Niti valley in Uttarakhand. Generally, it is found growing in patches where soil type is good with fair amount of humus and organic matter.

Environment for growth: It prefers fertile soils and can be spotted in abundance on mountain slopes with well-drained soil and receiving plenty of sunlight. Porous sandy soil rich in nitrogen and potassium is suitable for cultivation of this species. The soil should neither too clayey nor too sandy soil. Tillth increase plant growth at higher altitudes. At lower elevations (2,200-2,800 m) plain beds with sandy loam textured soil and rich organic carbon content is suitable for *Allium* cultivation. It is a perennial crop and once it is sown or transplanted it can continue up to 20-25 years. The plant grows best under a cold, dry climate on sandy loam soil.

Parts used: Leaves, flower, seeds and tubers.

Market rate: The leaves are harvested thrice from the fourth year and the total yearly production is around 60-65 kg per bigha (1 bigha = 800 sq. m). One kg of the raw material costs Rs. 400-500/-

Agro-technology

- **Means of propagation:** The plant is propagated either through seeds or bulbs. As the plant is a perennial and the vegetative parts are harvested twice and thrice. Farmers prefer vegetative propagation through bulbs. The seeds are usually not collected, as seed germination rate is very poor.
- **Collection of seeds:** The seeds are not frequently collected as it hampers the harvest for the pre-winter. As the seed germination and survival rate of the seedlings are not very encouraging farmers do not prefer seed collection. Flowering occurs in July-August and by end of October mature seeds begin to disperse in the air and the plant starts drying.
- **Seed treatment and germination:** Seed treatment with GA₃ is done to stimulate and synchronize germination in *Allium stracheyi*. The minimum germination reported so far has been 65%. It takes approximately 8-16 days for the plants to emerge after sowing. The optimum soil temperature for germination ranges from 10 to 25°C (50-77°F). The roots remain dormant during the winter and new shoots come up in March-April when the snow melts.
- **Land preparation and soil work:** Prior to seed sowing, the land must be well ploughed and a fair amount of FYM (farmyard manure) must be mixed with the soil to improve its physical properties and increase its organic matter content. It is recommended to prepare raised seedbeds of size 1.5 m x 1 m x 15 cm. The FYM should be added to the soil at least 15 days before transplantation or sowing. The manure should be well mixed with the soil. A huge quantity of

organic manure consisting of humus and leaf litter is required for its cultivation especially at lower altitudes. Approximately 50 qt manure is required for one hectare of land. The beds are ploughed or dug out and manuring is done before planting.

- **Nursery preparation:** The seeds are sown in a warm area (18-22°C) for 2-4 weeks, shifted to 0- 4°C for 4-6 weeks (chilling treatment) and then again shifted to a warmer area (5-12°C) for germination. Cold greenhouses or cold frames are ideal for stimulating germination. The plant grows wildy in well-drained soils under sunny conditions.
- **Transplantation:** The saplings are transplanted out when they are 20 cm tall during the month of May. The transplanted plants are placed 7-10 cm apart in rows and about 45 cm gaps are maintained in between the lines. Around 1/4 to 1/2 cup of complete organic fertilizer is worked into each 2 m of furrow. The transplants are buried up to the first leaf notch in a furrow at least 10 cm deep. In one hectare of land approximately 1,80,000 to 2,70,000 plants can be grown. Thus for one bigha, (12.5 bigha = 1 ha) the suggested number of plants is 14,500-21,000. The rootstocks are usually kept around 3-4 inches apart at the time of transplant. The seedlings are generally transplanted 2-3 inches apart.
- **Vegetative propagation:** Vegetative propagation is carried out through bulbs and the bulbs should be planted fairly deeply. One bulb can survive up to 25-30 years.
- **Water management:** At an early stage of seedling growth and at the time of tuber transplant, watering is needed every 24 hours during the pre-monsoon season, but at the time of maturity, irrigation after 4-5 days is sufficient.
- **Maturity and harvesting:** The crop is generally harvested thrice a year, first in the month of April, second in June and third in September or October at higher elevations and once or twice at lower altitudes. The above ground biomass is harvested through a sickle.
- **Weed control:** If forest soil or humus if applied, weeds come up very frequently and accordingly weeding with the help of a shallow scraper, may be required every fifteen to twenty days during the early development stages and during rains. Care must be taken that small saplings are not destroyed along with the weeds. Hence cautious hand weeding is suggested.
- **Post harvest technique:** The harvested above ground biomass is cut into small pieces and dried in mild sun. After drying, the crop is put into cotton bags and protected from moisture to retain its flavour for a longer period. The material is ground and can be stored under dry conditions in cotton bags for six months. The approximate production is estimated at 79-102 kg/ha. Under cultivated conditions, the production can attain up to 125-150 kg/ha up to a 2,200 m altitude. The production increases as the altitude increases.