Asparagus racemosus Willd.

Synonym: *A. acerosus Roxb.; A. dubius Decne.; A. fasciculatus R. Br.; A. jacquemontii Baker*

Family: Asparagaceae

Ayurvedic Name: Satavari

Hindi Name: Satavari

Trade Name: Satavari

Habit: Shrub

Part Used: Tuber

Active Ingredient: Racemoside, Shatavarin

Biological activity: Anticancer, Anti-inflammatory, Antimicrobial, Antiseptic, antiallergic, Antioxidant, Antiulcer, Detoxicant, Immunity booster, Antiagining etc.

Traditional and Therapeutic use: *Asparagus* is reputed to be a tonic and a geriatric. The tubers are used to increase secretion of milk and appetite of lactating women. The tubers are anti-diarrhoetic, diuretic, nutritive, tonic, aphrodisiac, appetizer, and alterative. They are also reported to increase lactation. In addition, the plant is considered slightly sweet, and is useful in the diseases of blood, kidney, liver, scalding urine, rheumatism, gleet, and gonorrhoea.

Morphological and floral characteristics: Scandent, much-branched, spinous shrub with tuberous roots. The roots are fascicled, fleshy, spindle-shaped, light ash-coloured externally and white internally, more or less smooth when fresh, but on drying, develop longitudinal wrinkles and lack any well-marked odour. Branches are modified into cladodes with long basal decurved spines.

Distribution: *A. racemosus* is widely found in tropical and sub-tropical parts of India, including the Andaman Islands. It is also found in the Himalayas, up to an altitude of 1,500 m. The plant is very common in the upper Gangetic plains and the Bihar plateau.

Climate and Soil: The plant prefers temperatures ranging from 10 ^{0}C - 40 ^{0}C and annual average rainfall of 600– 1000 mm. A well-drained fertile sandy-loam to clay-loam soil, with a pH of 6–8 is best suited for its cultivation with staking support. Satavari can be grown in open land as well as under shade, but very high moisture levels results in rotting of root. By nature, the plant is xerophytic and prefers the semi-arid to subtropical, cool environment.

Nursery technique

***Raising Planting material*:**

It can be propagated either by seeds, root, or rhizome cuttings. Healthy seeds are sown in raised nursery beds between April and May by broadcasting them at 5 cm apart, in order to facilitate decay of the hard seed coat by the time monsoon commences. The seeds are covered with a light sand and leaf mould mixture at 1:1 ratio. The bed is regularly watered to keep it moist. The seeds germinate within 10-15 days of sowing.

Main field plantation

Land preparation: The land should be given a deep disc ploughing, followed by harrowing and levelling. The field is normally divided into plots, keeping one irrigation channel in between two rows of plots.

Transplanting and optimum spacing: The 60-day-old seedlings, between 4 cm and 45 cm tall, are ready for transplanting. It is advisable to transplant the seedlings 60 cm x 60 cm apart in the field, using bamboo stakes. A plant population of 30,000/ha is considered adequate in moist conditions. These are transplanted in field at the onset of monsoon in July. The ridge method of transplanting is superior in comparison to flat method.

Fertilizers: About 10 tonnes of well-decomposed FYM is thoroughly mixed in the soil one month before transplanting. The plant further requires a fertilizer dose of 60 kg nitrogen, 40 kg phosphate, and 40 kg potash per hectare for optimum growth and higher tuberous root yield. One-third of nitrogen and entire dose of phosphate and potash should be placed 10–12 cm deep in the rows before transplanting.

Weed control: It is necessary to carry out three weeding and hoeing operations to keep the field free from weeds for initial two month period. After two months, it grows enough to cover the inter-row spaces and prevents weed growth.

Irrigation: Irrigating the field immediately after transplanting the seedlings in field. The second irrigation is done after seven days of seedling establishment. If there is no rainfall and dry spell prevails for more than 15 days, one more irrigation should be given. During winters, irrigation at 30-day intervals is enough for good growth. Irrigation should be done during seed formation stage and before harvesting of the tuberous roots for obtaining higher seed yield and easy digging of tuberous roots. Deficient soil moisture during March–June brings down root yield significantly. Hence, three to four irrigations during this period are essential.

Diseases and pest control: No serious insects, pests, and disease have been reported in this crop.

Crop maturity and harvesting: The crop matures in 12 months after planting; however, for seed harvesting, it is recommended to be harvested only after 20 months. November–December is the best time for harvesting tuberous roots when the above-ground parts start turning pale yellow.

Post-harvest management: After harvesting, the tubers are washed well in running water thereafter; these are dried in open sun for one to two days. The tuberous roots are then kept in Luke warm water for one hour to soften the outer covering of the tubers. It facilitates removal of outer skin. The harvested roots are peeled manually by pulling their outer thin covering. These peeled tubers are then kept in shade for drying. Dried tuberous roots are packed in cardboard boxes and stored.

Yield: The yields is about 4 – 5 MT per hectare along with 35 kg of seeds.