

PKM-1 DRUMSTICK-PRODUCTION TECHNOLOGY

Drumstick (*Moringa oleifera*) is an important perennial multi purpose vegetable grown widely in southern and western parts of India. Its tender leaves and immature or half – mature fruits are eaten. It is a delicacy in the south Indian households. It is most popular for its distinct, appealing flavouring fruits. The flower buds are also used for culinary purposes. Besides, it has medicinal value also. Its pods are mainly used in curry making and in some areas leaves and flowers are also used for culinary purpose. It contains good amount of minerals such as calcium (440 mg) and rich in iron (0.85mg) and vitamin C (120 mg) for every 100 g fresh pod weight. Besides as a vegetable it is having many other uses such as; clarification of turbid water used for drinking purpose in villages in place of Alum by using dry seeds. The juice from the leaves believed to stabilized blood pressure, the flowers are used to cure inflammations, the pods are used to treat rheumatism and the bark can be used as a digestive material. The varieties of drumstick are classified as annual and perennial ones. The annuals are short – duration crops.

PKM-1 :

An annual bush type drumstick, it flowers 90 -100 days after planting. It yields about 275 fruits per plant annually. The total fruit weight being 33-35kg. The fruits are 65-70 cm long weighing 160g. It can be ratooned for 3 years.

SOIL AND CLIMATE

Normally it can be grown in any type of soil, but sandy loam soil with good drainage is more suitable for its cultivation. Water logged and heavy soils are not suitable. This is a crop of low rainfall regions. Normally the planting of seedlings coincides with the commencement of rainy season i.e. June – July. If there is a provision or irrigation and providing little shade in the initial few days, the crop can be planted in any season of the year except very cold months when night temperatures are less than 15⁰C. A pH range of 6.5 – 8 is ideal.

Season:

June – July and November-December are well suited for sowing.

Sowing : About 1.0 – 1.10 kg seed is enough for a hectare. (100 g will have about 300 seeds). Pits of 45cm x 45cm x 45cm size are dug at 2.5 m x 2.5 m spacing one week before planting. The farmyard manure @ 15kg/pit is applied. A 60cm circular irrigation basin is made around the pit, The pits are closed.

Two seeds are sown 3cm deep in each pit in the centre. Seeds germinate 7-9 days after sowing.

Nursery raising : Raise the seedlings in 15 cm x 10 cm dimension polythene covers filled with sand, Soil and FYM in equal proportion. Sow one seed per cover, at a depth of 2 cm. The seeds will germinate within a week and seedlings will be ready for transplanting in about 4 to 5 weeks when they attain an height of about 15-20 cm.

Manures and fertilizers : 100 : 100 :100 kg / ha N:P₂O₅ : K₂ O /ha/year. Farm Yard Manure @ 8-10 kg per plant has to be applied to the planting pit 8-10 days before planting of seedlings and 50 Kg each of nitrogen, Phosphorus and potash per ha. is to be applied at the time of planting and the same dose is repeated at every six months interval for the crop.

High density planting and fertigation in moringa PKM 1 : High density planting at 1.5 X 1.0 m spacing with two plants /hill and plant population 13,333 / ha along with the application of fertilizer dose of 135 : 23 :45 g of NPK / pit (150%) through drip increase the yield of moringa. In this, apply phosphorus basally as soil application. Apply N and K in the form of urea and muriate of potash through drip.

Pinching : Plants with overgrown branches cause difficulty in harvesting.To facilitate more branching, pinching of main shoots on 80th day after sowing or when they are about 75 cm in height and two times with monthly intervals are to be taken. after first pinching.This will register the highest yield of fruits.

After cultivation :

Gap fill within a month. Grow short duration vegetable like cowpea, bhendi and tomato as intercrop.

Weeding :

The field should be maintained weed – free for initial 2 months. As plants grow to a height of 3 feet, there is no need for weeding. If necessary, weeding can be done.

Irrigation :

This crop is quite hardy and during dry season requires irrigation one in two weeks and for commercial cultivation drip irrigation can be adopted with daily application rate of 12 to 16 liters of water per tree during other seasons. Where water sources are scarce life saving irrigation or pot watering once in two weeks during dry period will sustain the crop.

INSECT PEST MANAGEMENT

Insect management

As a general recommendation to reduce pest incidence at the time of organic manure application give Neem Cake @ 500 g per plant and also enrich the FYM with Trichoderma @ 1 kg per tonne of FYM.

In June-July and Jan- Feb, when plants give new flushes, spray malathion (0.2%) .

During flowering period, spray Monocrotophos @ 1 ml/L to prevent thrips.

If flower webber is seen one or two sprays of carbaryl (2.5 g/L) along with Nuvan (2ml/L) can be given.

Plant protection

Pests

Moringa pod fly management :

Soil application of Thiamethoxam 25 WG @ 200g a.i. / ha on 150, 180 and 210 days after planting; placement of fermented tomato fruit trap @ 25 / ha; and need based foliar spray of Spinosad 45 SC @ 56g a.i. / ha followed by Profenophos 50 EC@ 250g a.i. / ha.

Bud worm, leaf caterpillar and leaf webber: Dust Carbaryl 10 D @ 25 kg/ha or spray Carbaryl 50 WP @ 2 g/l.

Hairy caterpillar :

Use flame torch when the caterpillars settle on the tree trunk.

Disease Management

Powdery mildew and sometimes leaf spot diseases are the only diseases of economic importance which can be managed by foliar spraying of Wet table sulphur (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.075%) or Dinocap (0.1%) or Carbendazim (0.1%).

Harvesting and Post Harvest Management :

If there is more flower clustering on the tree then the yield is low. An individual inflorescence carries 19-126 flowers, average being 53, But it results only in one fruit. Normally 3-5 fruits / inflorescence are obtained. Fruit set ranges from 1.0-2.8 % . The percentage fruit set varies from tree to tree. The fruit length varies from 25-100cm depending upon the type of moringa variety. Each fruit weights around 150-230g containing 10-20 seeds each on an average.

Annual drumstick starts bearing from 6th month onwards, providing 200 fruits / plant annum. Its average yield is 52 tonnes / ha.

The ratoon crop is obtained by pruning its trees to a height of 1 m after harvesting. The plants start bearing 4-5 months after heading back. Thus 2 ratoons can be taken. After rationing NPK along with 25 kg farmyard manure are applied.

A number of value- added products can be prepared if its availability is in excess. They are moringa pickle, dehydrated moringa, moringa leaf powder and moringa flesh mesocarp powder.

For seeds and quarries related to cultivation

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