

MOTHBEAN

Botanical Name	-	<i>Vigna acontifolia</i>
Origin	-	India
Synonym	-	Moth



Introduction

Mothbean (*Vigna acontifolia*) is a native crop of hot and dry habitats of northern and western parts of India. These very adjusting abilities have rendered this crop as an indispensable component of cropping system prevailing in arid regions. This crop is used as a source of food, feed, fodder, green manuring and green pasture. Green pods are delicious source of vegetables. Being a pulse, it is a cheap source of vegetable protein for balancing nutritional deficiency.

Crop Status

A total of 9.26 lakh hectares and 2.77 lakh tonnes of Moth production was recorded in the country during the twelfth plan (2012-15) period. Area and production of moth bean has been highest in Rajasthan (96.75% and 94.49%) followed by Gujarat (2.38% and 3.6%). However, yield of Rajasthan (292 kg/ha) was below the National average yield of (299 kg/ha).

Climate

It can tolerate high temperature without any adverse effect on flowering and fruit development. Optimum temperature requirement for growth and development is 25-37°C. Bulk of the cultivation is, confined to dry-lands of arid zone with 250-500 mm rainfall requirement with arrangement of proper drainage.

Varieties

Other than the following specific varieties may be selected from table given below

- Normal maturity group** (> 90 days) Moth Guj. 1 (MG-1), Jadra (IPCMO 943), Jwala (IPCMO-926), IPCMO 880 (26% Protein)
- Medium maturity group** (70-90 days) with uniform rainfall throughout season (i) IPCMO 912 (ii) CZM 1 (both 75-80 days duration) c) **Early maturity group 60-65 days**, higher yield, escape terminal drought especially suitable for late season, drought areas, resistant to YMV.

c) State –wise recommended varieties

State	Varieties
Rajasthan	RMO-257, RMO 435, RMO 2004 (RMB 25), RMO 225, RMO 40, FMM -96, Moth 880, Jwala] CAZRI Moth-2 (CZM 45), CAZRI Moth-3 (CZM 99), TMV(Mb-1)
Gujarat	GMO 1, GMO 2, Maru Bahar (RMO 435)
Maharashtra	CAZRI Moth-2 (CZM 45), CAZRI Moth-3 (CZM 99), Maru Bahar (RMO 435)
Haryana	CAZRI Moth-2 (CZM 45), CAZRI Moth-3 (CZM 99)

Source: Seednet GOI, Min. of Agri. & FW, & ICAR-IIPR, Kanpur

Yield Gap

It is observed that in general average yield gap between FLD and Local yield is about 25-45% gap, need to be improved yield level through adopt the improved package of practice as recommended by research organization and Local KVK etc.

Field Preparation

In a good rainfall year, one ploughing with mouldboard plough and a cross harrowing serve the purpose in arid conditions of western Rajasthan. Other alternative is Sweep Cultivation with a ferti seed drill (developed at CAZRI) that can also be used for inter cultivation in wide spaced crop.

Sowing Time

With the onset of monsoon. Generally start with first soaking rain to second rain after onset of monsoon. Optimum sowing time 2nd to 3rd week of July. Delay in sowing may result in poor growth, poor germination, increased seedling mortality and incidence of pest and diseases and more conspicuously moisture stress at the flowering, the most critical stage.

Seed Rate & Spacing

10-15 kg/ha (short statured, spreading to erect RMO-40 type) for grain and 4-5 kg for mixed crop. For fodder purpose 20-25 kg/ha seed required. Spacing should be maintained as 30-45 cm x 10-20 cm.

Seed Treatment

Seed treatment with 2 g thiram + 1 g Carbendazim / kg of seed. After fungicide treatment seed inoculation with Rhizobium and PSB culture @ 5-7 g /kg of seed.

Irrigation

It is cultivated in dry land and rainfed condition but in long dry spell one irrigation should be given at pod formation stage.

Cropping system

- Generally grown as single (mono) crop in a year mixed or as a sole crop. However, in a year of good rainfall, it can be rotated with mustard.
- Mixed cropping with pearl millet, cluster bean, cowpea, mung & sesame in risk prone areas during monsoon. Varieties recommended are RMO 40 & FMM 96 of mothbean and HHB 67 of Bajra.
- Inter cropping (2:1) - 2/3 rows of mothbean in between two rows of pearl millet.

Plant nutrient management

Besides their N-fixing capacity they have greater power for absorbing less soluble form of 'P'. Recommendation is 20-25 tonnes FYM for improving physical condition and improving water holding capacity of soil along with 10 kg N + 40 kg P₂O₅/ha as basal at the time of sowing or last preparation.

Weed management

Application of Pendimethalin 30 % EC @ 0.75 -1 kg a.i. / ha as pre emergence and one hand weeding at 25-30 days after sowing.

Plant Protection Measures

Pest and diseases in mothbean and their management

S. N	Common Name	Active Period	Incidence	Control Measures
Sucking Pest				
i.	Jassids	II week of August to harvest	Regular	i. Early sowing of crop ii. Inter-cropping with Pearl Millet (1:4). iii. Spray of Dimethoate 30 EC @ 1.7 ml/ liter or Thiomethoxam 25 WG @ 0.2 g/liter or Imidacloprid 17.8 SL @ 0.2 ml /liter of water
ii.	White fly	II week of August to harvest	Regular	
iii.	Thrips	II week of August to harvest	Regular	
iv.	Aphid & mite	II week of Aug. to I week of Sept.	Sporadic minor pest	
Soil/Foliage Pest				
v.	White grub	II week of August to harvest	Sporadic minor pest	i. Undecomposed FYM or composed should not be used ii. Soil application of Phorate 10 G @ 10 kg/ha or Chloropyriphos 1.5 % dust @ 20-25 kg/ha before sowing
vi	Termite	Entire cropping Season	Sporadic minor pest	
Storage Pest				
viii	Pulse beetle <i>calosobruchus chinensis</i>	During storage	Regular	i. Carry Seed moisture level below 10% before storing. ii. Fumigation-Mixing/Smearing with neem leaves /cake & edible oils.

YMV= Yellow Moosaic Virus

Name of Disease/ Causal Organism	Disease Symptoms	Control Measures
Bacterial leaf spot/ blight	Many small, large and irregular brown necrotic spots appear on leaves and In the extreme cases, leaf may fall down	i. Soak the seeds in 500 ppm(0.5 g/ liter) Streptocycline solution for 30 min. before sowing followed by two sprays of Streptocycline (0.01%)combine with 3 g of Copper Oxychloride per litre at an interval of 12 days is recommended.
Yellow mosaic virus	Diseased plant leaves are yellow and small in size.	i. For controlling white fly spray of Dimethoate 30 EC @ 1.7 ml/liter or Imidacloprid 17.8 SL @ 0.2 ml / liter of water and repeat the spray after 15 days interval.
Anthracoise (<i>Collectotrichum spp.</i>)	Circular, black sunken spots with dark centres and bright red or orange margins on leaves and pods. In severe infection affected parts wither off.	i. Seed treatment with Thiram 3 m/kg of seed. ii. Spraying the crop with Mancozeb 75 WP @ 2.5 g/litre of water.

Harvesting , threshing & Storage

Crop is ready to harvest when pods get mature and turn brown. Plant show drying symptom or yellowing of leaves. Estimated Post harvest losses are 9-10% during threshing transportation, processing and storage. Sun drying, heat treatment, and storage at low temperature with low moisture percentage in seeds (8-9%), is recommended.

Yield

With adoption of improved technology 6-8 quintal grain yield and if it is cultivated for fodder 12- 25 q/ha green fodder yield (depend on variety) can be achieved.

Recommendation to achieved higher production

- i) Deep summer ploughing once in 3 years.
 - ii) Seed treatment should be done before sowing.
 - iii) Application of fertilizer should be based on soil test value.
 - iv) Weed control should be done at right time.
 - v) Adopt integrated approach for plant protection.
- For technical information of crop production please contact to district KVK/ nearest KVK.
- To avail benefit from Centrally and State Government running schemes for crop production (ploughing, fertilizers, micronutrient, pesticide, irrigation equipment), agricultural implements, storage infrastructure etc., please contact to your DDA/SADO office.

For more information also visit

- M- kisan portal - <http://mkisan.gov.in>
- Farmers portal - <http://farmer.gov.in>
- Kisan Call Centre (KCC)-Toll Free No.-1800-180-1551
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