

**Fertilizer management in Drumstick under semidry condition of Bundelkhand region of Madhya Pradesh.**

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**Abstract:** Drumstick (*Moringa olifera* Lank.) is well known for its multipurpose attributes, wide adaptability and ease of establishment. Maximum farmers of the region cultivating unknown perennial drumstick crop without any nutrient management, the present investigation was carried out to study the Fertilizer management in Drumstick under semidry condition of Bundelkhand region of Madhya Pradesh sandy clay loam soil of Research Farm, College of Agric, Tikamgarh, Madhya Pradesh, India.. The results showed that the crop performance with respect to the tree growth, yield and yield components were significantly higher in 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers The higher yields were mainly due to higher number of pods produced per tree rather than fruit size.

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**Key words:** nutrients, drumstick, cultivars

**Introduction**

Drumstick (*Moringa oleifera*) is well known for its multi-purpose attributes, wide adaptability and ease of establishment. Every part of the plant is of food value. drumstick leaves contain seven times more vitamin –C than oranges, four times more calcium than milk, four times more vitamin A than Carrot, three times more potassium than banana and two times more protein than milk. Hence, it is considered as a powerhouse of nutritional value. The crop is grown purely as dry crop and nutrient management under dry land is rarely practiced. Mostly farmers' are used perennial drumstick without any management in the semi-dry condition. Hence, annual drumstick (cv.PKM-1) was introduced in the semi-dry condition to study the performance of annual bearing cultivar under nutrient management.

**Materials and methods**

Experiment was conducted in 2008-2009 on sandy clay loam soil of Research farm, JNKVV-campus College of Agriculture, Tikamgarh, Madhya Pradesh. Seven treatments comprising of Nitrogen (100g/plant), Phosphorus (100g/plant), Potassium (50g/plant), 50% Fertilizers+50% FYM, 50% fertilizers+Vermicompost, 50%Fertilizers+25% FYM+25%Vermicompost, and 50% Fertilizers+25% FYM+25% Vermicompost+Biofertilizers were supply to plant. The crop was raised with protective irrigation and warranted plant protection measures were adopted using biopesticides. Seeds of drumstick (cv-pkm-1) were collected from Horticulture College & Research

Institute, Perriyakulam, Tamil Nadu and planted seedlings of 60 days in 3x3meter space. Seedlings are raised in plastic bags by making four holes on such bags,(one inch from the bottom of bag and from top) to facilitate drainage. 5-10g organic manure is added in the bag with soil. Previously soaked seeds in protectant are dipped to a depth of 1/2cm and gently covered with spraying manure and fertilizers. For cultivation, dig the pits at the spacing of 2.5meter either way to a size of 45x45x45cmd and add organic manures and biofertilizers as per treatments and mix it with top soil. Before planting into pit, seedlings tip are pinched to facilitate branching. After three months of planting, fertilizer doses were applied and nitrogen was given at bearing stage.

**Results and discussion**

It is clear from the Table that the maximum plant height 4.8meter was observed in 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers followed by 50% Fertilizers+50% FYM (4.3meter)while the minimum height (3.0met.) was found in control. The highest number of branches (17) was associated with 50% Fertilizers+25%FYM+25%Vermicompost followed by 50% Fertilizer+50% FYM and T7.These two are statistically at par. Minimum days taken in the initiation of flowering (150) in 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers while maximum days taken (180) in Control. Maximum days taken in the formation of pod (240) in the control while minimum days (208) in 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers.The

maximum pod length (37cm) was found in 50% Fertilizer+25%

FYM+25%Vermicompost+Biofertilizerswhile minimum length (20cm) was observed in control. The maximum pod girth (6.3cm) was observed in 50% Fertilizer+25%

FYM+25%Vermicompost+Biofertilizersfollowed by 50% Fertilizer+25% FYM+25%Vermicompost valued 5.7cm.while minimum values were associated with control (4.0cm).Maximum number of pods/tree/year (225) was found with 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers followed by 50% Fertilizer+50%Vermicompost valued 210 while minimum values was associated with control (160). The maximum pod weight (80.32g) was associated with 50% Fertilizer+25% FYM+25%Vermicompost+Biofertilizers followed by 50% Fertilizer+25% FYM+25%Vermicompost while the minimum pod weight (55.47g) was found in control. The highest pod yield (10.91t/ha) was found in 50% Fertilizer+25%

FYM+25%Vermicompost+Biofertilizersfollowed by 50% Fertilizer+ 50% Vermicompost while minimum yield 7.76t/ha was found with control.The higher yield mainly due to higher number of pods produced per tree rather than fruit size. The maximum number of seeds/pod(14)wasfound in 50% Fertilizer+25% FYM+25%Vermicompost +Biofertilizers followed by 50% Fertilizer+50%Vermicompst.(12)while the minimum seeds/pod was linked with control(7). Sundararaj etal(1) reported that the application of 7.5kg FYM and 370g ammonium sulphate/tree/year gave threefold increase in yield when compared to unmanured trees. Reghunath (2) confirmed that the application of 10-20kg FYM,along with 60gNitrogen,80g Phosphorus, and 40g Potash per tree

per year is recommended under Kerela condition.Prabhakar and Hebbber(3) also confirmed the similar results and explained that the crop performance with respect to tree growth, yield and yield components significantly influenced by organic treatments.

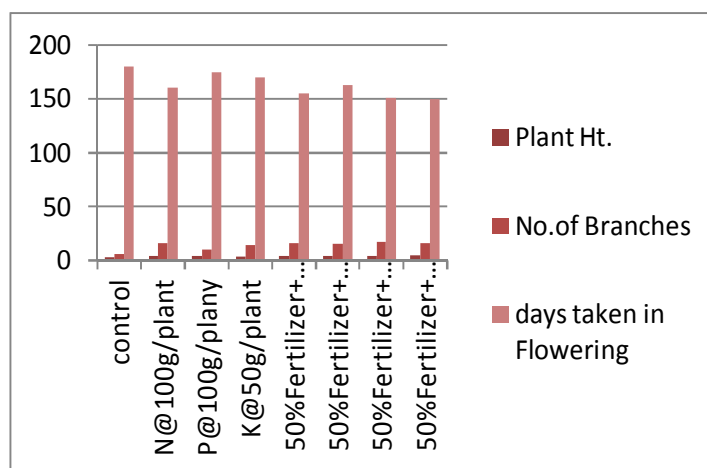


Fig-1 Response of nutrients on growth traits

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Table1- Response of treatments on different traits of drumstick

Treatments	Plant height (Met.)	No. of branches	Days taken in initiation of Flow.	Days taken in pod formation	Pod length (cm)	Pod girth	No. of pods/ tree/year	Pod wt.	Pod yield (t/ha)	No. of seeds/pod
Control	3.0	6	180	240	20	4.0	160	55.47	7.76	7
Nitrogen@100g/ plant	4.1	16	160	234	23	4.9	173	61.36	8.390	10
Phosphorus@100g/plant	3.8	10	175	238	18	4.2	170	59.98	8.245	8
Potash@50g/ plant	3.5	14	170	236	15	4.1	172	60.33	8.342	9
50%Fertilizers+50% FYM	4.3	16	155	210	35	5.5	199	65.59	9.65	10
50%Fertilizers+50 % Vermicompost	4.01	15	163	222	30	5.3	210	68.82	10.185	12
50%Fertilizers+25% FYM+25% VC	4.2	17	151	215	32	5.7	200	74.80	9.7	10
50%Fertilizers+25% FYM+25%VC+Biofertilizers	4.8	16	150	208	31	6.3	225	80.32	10.91	14
CD at 5%	0.25	2.18	2.59	3.75	1.14	.27	4.58	2.37	1.18	1.07

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