

## **Mat-stick cultivation – an economic activity for providing additional livelihood in Paschim Midnapore district of West Bengal**

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### **ABSTRACT**

*Mat-stick, a non-conventional perennial crop, has the potentiality to augment the income and provide gainful employment of rural mass of India. The study thus examines the income potentiality of cultivation of mat-stick in Paschim Midinipur district of West Bengal. The findings of this study clearly advocate the cultivation of this crop. Benefit-cost ratio is worked to be 1.60, which is higher than any competing crop combinations. The wage bill clearly indicates the opportunity to absorb human labour. The only limiting factor, which restricts the allocation of area under this crop, is higher cost of cultivation.*

**Keywords:** Benefit-cost ratio, cost of cultivation, mat-stick

After independence, shortage in food grain production compelled the Indian planners, policy makers and scientist to pull all their efforts to achieved the self-sufficiency in food grain production. After a long struggle India has achieved the cherished objective of self-sufficiency and food security. But the imbalanced growth between agriculture and industry has resulted mass poverty and unemployment. Now planners may be given their attention to sort out ways and means to tackle these twin problems. As more than 70 per cent of population of India earns their livelihood from agriculture, we may think about non-conventional crops which have potentiality to augmenting income and generate employment, these are the key factor for alleviating poverty. Mat-stick (*Cyperus tegetum*) is a non-conventional perennial (as ratoon) crop having 4-5 years life span. This crop can be profitably practiced to increase the income in the rural mass and generate gainful employment (Maiti and Das, 2012). The return of this crop can increase the standard of living of the mass. Moreover this crop is grown on marshy/wet land which may otherwise remain unutilized. Thus it needs, to proper utilization of existing natural resource for better livelihood of people.

This crop is intensively cultivated in Paschim Midnapore district of the state. Mat-stick also cultivated in few blocks of Coochbehar, Howrah, Nadia, North 24 Parganas and South 24 Parganas district. The mat-reed cultivation would go a long way in achieving economic well-being of the farmer. The rhizomes are planted head to head or eye to eye in the furrows and covered with 5-7cm soil in May – June for better performance. In perennial cultivation, root stocks are planted 8-10cm depth apart from row to row and 3-5cm from plant to

plant and field is leveled by planking. The rhizomes tend to come upward to the surface. A well rotten tank or pond mud is put along with rows. In ratoon crop, the earthing up of the crop at every two years interval is essential. Generally, after five years, the fresh rhizomes are planted for cultivation. Cultivation of this crop and mat weaving from shoot is required special skilled labour (Das and Mondal, 2012). Hence, the cultivation of Mat-stick is restricted in few blocks and few district of the state. The present study is restricted to Paschim Midinipur district of West Bengal. Therefore the present study is undertaken to examines the profitability and feasibility in cultivation of mat-stick in Paschim Midinipur district of West Bengal.

### **MATERIALS AND METHODS**

Paschim Midnapore district of West Bengal is purposively selected for this study as the district is well known for finished mat. Mats are also exported from this part. This district is also known as ‘rice-bowl’ of the state. Hence, mat-stick is cultivated only a few blocks of the district. The study has confined to Narayangarh and Sabang block of the district, well known for Mat-stick cultivation. Based on the age of rhizomes as well as mat reed cultivated field from 1-5 years, 20 growers from each age group are selected purposively. Thus a total 100 mat-stick growers are selected for the purpose. Data relating to cost and return for cultivation of mat-stick and its competing crops are collected with the pre-tested survey schedule. *Aman* paddy, *Boro* paddy and Groundnut are observed to be the competing crops of mat-stick. Mostly the mat reeds are cultivated annually in same field upto five years. Simple tabular analysis has been followed to achieve the objectives. Data relates to agriculture year 2011-12 and all relevant data / price has been calculated for the year only. In the present study,

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only Cost A<sub>1</sub> and Cost D have been considered. The following item constitute

Cost A<sub>1</sub> *i.e.*, (i) Cost of seed (ii) cost of manures (iii) cost of fertilizers, (iv) cost of plant protection chemical (v) irrigation charges, (vi) cost of hired human labour (vii) cost of hired machineries (viii) interest on working capital (ix) depreciation on farm assets

The Cost D computed as-

Cost D = Cost A<sub>1</sub> + Imputed value of family labour - Land revenue and cess.

## RESULTS AND DISCUSSION

For examining the profitability and feasibility of the crop it is essential to examine the costs, returns and surplus over cost. Table 1 highlights costs, return and surplus over costs from mat-stick cultivation over five year life span.

The table reveals that cost of cultivation noted to be maximum in 1<sup>st</sup> year of plant age. The higher cost is due to establishment of the crop. During this year land preparation and sowing of rhizomes are done once for entire period of cultivation. Little variation in cost of cultivation during the rest of years is noted. However, variation in Cost D during these years is noted. This clearly reflects the potentiality of utilization of family labour as the difference between Cost D and Cost A<sub>1</sub> shows the imputed value of family labour. Least variation observed in gross return from mat-stick cultivation is not significance. Even after meeting the wage bill of family members, the farmers can be earned about Rs. 47,200.00 per year. This clearly reveals the profitability and remunerativeness of mat-stick cultivation. But the most hindering factor for expansion of area under this crop is high initial investment nature of this crop. As this crop is non-conventional, farmer can hardly get credit from institutional agencies.

**Table 1: Cost and net return of mat-stick cultivation in Paschim Midnapore district (Rs. ha<sup>-1</sup>)**

Year	Cost A <sub>1</sub>	Cost D	Gross return	Surplus over	
				Cost A <sub>1</sub>	Cost D
1 <sup>st</sup>	64312.72	96114.64	127884.06	63571.34	31769.42
2 <sup>nd</sup>	39979.80	76634.32	125824.08	85844.28	49189.76
3 <sup>rd</sup>	40024.26	72244.21	123304.68	83280.42	51060.47
4 <sup>th</sup>	41219.36	74419.67	128614.80	87395.44	54195.13
5 <sup>th</sup>	40877.36	75666.84	125578.98	84701.62	49912.14
Average	45282.70	79015.94	126241.32	80958.62	47225.38

**Table 2: Return-cost analysis of mat-stick and its competing crops (Rs. ha<sup>-1</sup>)**

Particular	Aman paddy	Boro paddy	Groundnut	Mat-stick
Seed/planting material	615.60	684.00	2394.00	8034.72
Organic manure	342.00	342.00	342.00	5278.20
Chemical fertilizer	1504.80	3173.76	1258.56	6773.88
Irrigation	205.20	820.80	205.20	1427.28
Plant protection chemical	1140.00	1026.00	262.20	1054.50
Bullock labour	1641.60	1641.60	2052.00	1738.50
Human labour	7296.00	8208.00	7752.00	53466.00
Miscellaneous	785.46	946.20	901.74	1242.60
Total cost	13530.66	16842.36	15167.70	79015.68
Gross return	17698.50	23712.00	24567.00	126241.32
Benefit-cost ratio	1.31	1.41	1.62	1.60

### Comparative study on return potential between mat and its competing crops.

After calculating the extent of return of raising of any crop, for advocating the expansion of allocation of area, it is essential to examine the feasibility of that crop. Table 2 is showing to examine the profitability of mat-stick cultivation with reference to its competing crops.

The table shows that mat-stick cultivation is incur more cost than its competing crops. It is more than five

times even that of ground nut cultivation which is a cash crop of the area. The most costly items are noted to be wage bill of human labour (hired as well as family), rhizomes, manure and fertilizers. Table also reveals that gross return from mat-stick is also higher than its competing crops. From feasibility point of view, only ground nut is observed to be slightly in advantageous position than mat-stick. The benefit-cost ratio for these two crops is worked out to be about 1.60 and higher than aman and boro paddy.

### Labour absorption

In case of perennial and ratoon crop, profitability analysis is more complex than seasonal crops. In that case, instead of competing crops, it is better to consider crop rotation than individual crops. Average annual cost, return per hectare and cost-benefit ratios of alternative sets of crop combination grown by the sample farmers are shown in table 3.

It is observed from table 3 that net return of raising mat-stick is worked out to be higher compared to any alternative crop combination(s) filled in annual rotation. The annual return is also found to be higher than the combination of two crops of paddy and also slightly higher than combination of two cash crop(s) *i.e.*, boro paddy and groundnut. The annual net return is also

found to be exceedingly higher, *i.e.*, more than three times in case of mat-stick cultivation. Total cost is found to be much higher, *i.e.*, more than any other combinations. This is one of the reasons for the allocation of small area under mat-stick by the farmers. One of the major findings of the study is that mat-stick cultivation engages much higher labour than any other crop combinations.

Besides, mat-stick cultivation, weaving of mat from mat-stick shoot also provides gainful employment of female member of the family. Mat is generally weaved by manually in home in this region, thus female has a chance to income by utilizing their leisure time for mat weaving and support family income. Therefore, it may be said that mat-stick has wide potential in providing gainful employment to rural masses.

**Table 3: Economics indicators relating to the cultivation of mat-stick and its competing crop rotation (Rs. ha<sup>-1</sup> year<sup>-1</sup>)**

Sl. No.	Economic indicator	Crop combination		
		Aman+ Boro paddy	Groundnut +Boro paddy	Mat-stick (Perennial)
1	Human labour	15504.00	15960.00	53466.00
2	Total cost	30373.02	32010.06	79015.68
3	Gross cost	41410.50	48279.00	126241.32
4	Net return	11037.48	16268.94	4721.88
5	Benefit-cost ratio	1.36	1.51	1.60

Mat-stick cultivation is popular in the Paschim Medinipur district of the state. Though the crop is also raising some other districts also, but due to unique cultivation practice and requirement of skilled labour this crop is not popular in overall West Bengal. The study clearly highlights the profitability of mat-stick cultivation. The crop is much more remunerative than any alternative set of crop combinations. Mat-stick cultivation also provides gainful employment to rural masses directly or indirectly. The only retarding factor is the high cost of cultivation of crop. However, Government may initiate step to popularize practicing of this crop. Production of this will help to eradicate rural poverty to extent and utilize the marshy land which otherwise might have remained unutilized.

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