

ADAPTABILITY OF IMPROVED TECHNOLOGIES IN JUTE CULTIVATION

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ABSTRACT

It was found that the jute variety JRO-524 produced maximum fibre yield (30.94 q/ha) followed by JRO-8432 (30.22q/ha), JRO-66 (29.87 q/ha), JRO-128 (29.55 q/ha) and JRO-524E (28.60 q/ha). In terms of cost benefit ratio of the varieties; JRO-524 was found most suitable (1:36) closely followed by JRO-524E (1:34), JRO-8432 (1:32), JRO-66 (1:31) and JRO-128 (1:31). Farmers perceived JRO-524 as the most suitable variety in the study area. Majority of farmers had reported that they had to face middle men (67.70%) while marketing of jute because of lack of grading of jute in the market (34.38%). The other major constraints faced were, lack of reasonable price in the market (31.25%) and no interaction between Government and jute mills for jute purchasing (16.67%).

Key words: Fibre yield; Marketing; Grading

INTRODUCTION

Jute is the most important commercial crop in India next to cotton. Jute was originally introduced for large-scale cultivation as source of raw material for the packaging industries. Presently, due to availability of huge low cost synthetic fibre products in the market jute is facing a stiff competition for its survival. Evaluation and implementation of modern technologies for its higher productivity and production as well as transfer of these technologies to the growers is very critical.

Jute is cultivated over an area of 8.22 lakh ha producing about 86 lakh bales of fibre with an average productivity of about 2034 kg/ha (1998-99) in India. The production potential of jute at CRIJAF, Barrackpore, Kolkata is 4000 kg/ha while in the national demonstration, lab to land programme and multiple cropping demonstrations conducted on the farmers' fields, the highest fibre yield up to 3700 kg/ha has been achieved with an average yield of 2610 kg/ha by adopting recommended improved practices of jute cultivation under irrigated conditions (Pathak, 2001). This gap could be reduced and jute productivity can be stepped up if proven technologies are extended to the farmers' field. Keeping this in view, the study was undertaken with the following objectives.

1. To demonstrate the performance of latest high yielding jute varieties in the farmers' fields.
2. To motivate the farmers towards increasing adoption level of improved jute production technologies.

METHODOLOGY

This study was conducted during the year 2003-04. In total, 144 farmers from different categories were selected purposively from eight villages of two jute growing districts viz. Devok, Koirapur, Masunda, Iswarigacha, Geedha and

Teghoria of the districts of North 24 Parganas and Kamarkundu I & II (Bhola) of district Hoogly in West Bengal and conducted field demonstrations on the farmers' field. Materials for the present study comprised five high yielding jute varieties viz. JRO-524, JRO-8432, JRO-66, JRO-128 and JRO-524E (Energized seed with recommendation of N : 20, P₂O₅ : 10, K₂O : 10 kg/ha fertilizer dose without plant protection chemical use.) with the recommended package of practices. Locally cultivated varieties, which were being practised by their own management, used as a local check. In the present study, the data were collected through personal interview, group discussion and empirical observations with help of semi-structured interview schedule. Collected data were analyzed by using simple statistical tools like, frequency, percentage and average.

RESULTS AND DISCUSSION

Performance of the cultivated jute varieties tested under the demonstration trials: In view to build up confidence and mobilize the farmers through method as well as result demonstration of the technologies, altogether 144 demonstrations on high yielding varieties of olitorius jute were conducted in the farmers' fields covering 20 ha area in the eight villages. The field observations on competitive as well as comparable performances of different varieties grown with recommended package of practices were recorded regularly. The results are presented in the Table 1 and Fig. 1. It is observed that the average fibre yield of jute obtained from the varieties; JRO-8432 (30.22q/ha) out of 46 demonstrations, JRO-66 (29.87 q/ha) out of 35 demonstrations, JRO-128 (29.55 q/ha) out of 42 demonstrations and JRO-524E (28.60 q/ha) out of 22 demonstrations and the variety JRO-524 (30.94 q/ha). Highest yield was recorded from JRO-524, though the differences in yield were not much to encounter physically. Critical observations indicated that farmers favoured JRO-524 for its

higher yield while JRO-128 for fibre fineness and JRO-524 (E) for less involvement of cost of cultivation. The crop was harvested after 113 days on an average after sowing.

Table 1. Yield performance of high yielding olitorius jute varieties

| S. No. Variety | No. of farmers/ demon. | Crop days (avg.) | Max. yield (q/ha) | Min yield (q/ha) | Average yield (q/ha) | Rank |
|----------------|------------------------|------------------|-------------------|------------------|----------------------|------|
| 1. JRO-8432 | 46 | 115 | 34.04 | 24.73 | 30.22 | II |
| 2. JRO-66 | 35 | 113 | 33.43 | 25.09 | 29.87 | III |
| 3. JRO-128 | 42 | 113 | 32.65 | 26.07 | 29.55 | IV |
| 4. JRO-524E | 22 | 112 | 31.23 | 22.50 | 28.60 | V |
| 5. JRO-524C | 144 | 114 | 34.10 | 27.84 | 30.94 | I |

E-energized seed with RNMV, C-control variety

Economics of high yielding jute varieties : Details of cost of cultivation was recorded for each of the variety (Table 2), which indicated that maximum cost of cultivation per ha involved in case of variety JRO-66 (Rs.20081/-) followed by JRO-524(Rs. 20076/-), JRO-8432 (Rs.20071/-), JRO-128 (Rs. 20046/-) and JRO-524E (Rs. 18767/-). While highest net return was obtained from the variety JRO-524 (Rs. 7131/-) followed by JRO-8432 (Rs. 6619/-), JRO-524E (Rs.6379/-), JRO-66 (Rs. 6227/-) and JRO-128 (Rs. 6037/-). However, net returns from local check variety JRO-524 (Rs.506/-) was comparatively very less from the demonstrated varieties.

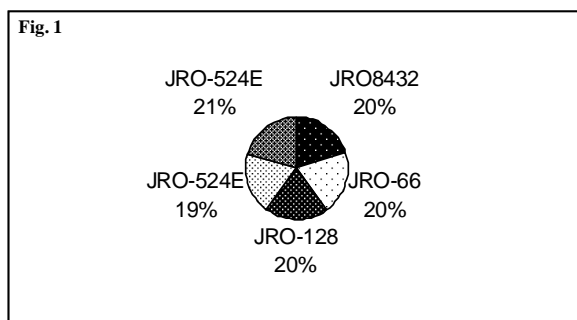
Moreover, in terms of cost benefit ratio of the check jute variety, JRO-524 ranked first (1:1.36) followed by JRO-524E (1:1.34), JRO-8432 (1:1.32), JRO-66(1:1.31) and JRO-128(1:1.31). Though the yield of the variety JRO-524 (E) was 28.60 q/ha which comparatively less than the others varieties, it ranked second in terms of C:B ratio (1:1.34) due to requirement of less cost of cultivation among the demonstration plots while the benefit cost ratio of the local check variety JRO-524 was obtained very low (1.1.02). It is implied that the role of proper management practices contributed much in profitability of the jute cultivation.

Table 2. Economics of the high yielding jute varieties

| S. No | Variety | Cost of cultivation (Rs./ha) | Fibre yield (q.ha-1) | Gross return (Rs./ha) | Net return (Rs./ha) | C:B ratio | Rank |
|-------|----------|------------------------------|----------------------|-----------------------|---------------------|-----------|------|
| 1 | JRO-8432 | 20071 | 30.22 | 26691 | 6619 | 1.32 | III |
| 2 | JRO-66 | 20081 | 29.87 | 26308 | 6227 | 1.31 | IV |
| 3 | JRO-128 | 20046 | 29.55 | 26083 | 6037 | 1.31 | V |
| 4 | JRO-524E | 18767 | 28.60 | 25145 | 6379 | 1.34 | II |
| 5 | JRO-524 | 20076 | 30.94 | 27208 | 7131 | 1.36 | I |
| 6 | Local | 25,590 | 28.00 | 26,096 | 506 | 1.02 | VI |

*Energized seed with recommendation of 20:10:10 N.P.K.fertilizer dose without plant protection chemical use.

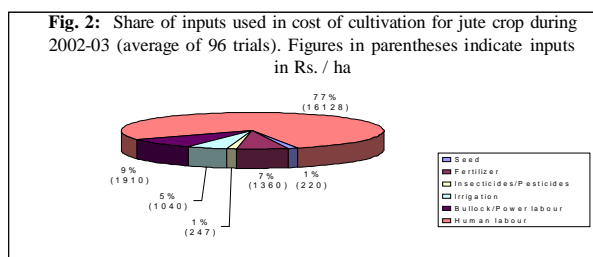
Contribution of input components in cost of cultivation of the jute crops: Cost of cultivation plays a vital role in profitability of the jute cultivation. Farmers always strive to maximize the profitability from jute crop (Pathak, 2001). It is very important to use cost effective crop production technologies for maximizing the profitability. It is important to



minimize the cost on each component of the cultivation. The actual amount spent on each and every input components of cost of cultivation of jute was recorded and are enlisted in the Table 3 and Fig.2.

Table 3. Share of inputs used in cost of cultivation for jute crop

| S. No. | Components | Rs./ha | Contribution (%) |
|--------|-----------------------|--------|------------------|
| 1 | Seed | 220 | 1.05 |
| 2 | Fertilizer | 1,360 | 6.50 |
| 3 | Insecticide/Pesticide | 247 | 1.18 |
| 4 | Irrigation | 1040 | 4.98 |
| 5 | Bullock/Power labor | 1910 | 9.14 |
| 6 | Human labor | 16128 | 77.15 |
| | Total | 20,905 | 100 |



It is revealed that comparatively very large amount was spent on human labour (77.15%), however, it includes family members also, is the major contributing factor in comparison to others towards high cost of cultivation of jute. The data suggest introduction of mechanized farming whenever possible to reduce cost of cultivation substantially.

Constraints faced by the farmers in cultivation of jute crop: The constraints faced by farmers in cultivation of jute crop were recorded through face-to-face interviews, field visits and farmers' meetings. All the constraints were categorized in to five heads and are presented in the Table 4.

Majority of farmers had reported that they had to face middle men (67.70%) while marketing of jute because of lack of grading of jute in the market (34.38%). The other major constraints faced were, lack of reasonable price in the market (31.25%) and non-interaction from Government. and jute mills for jute purchasing (16.67%). Non-availability of timely loan facilities (31.25%) for jute cultivation and high cost of labour (29.17%), were also serious constraints for the farmers. They also reported the constraint of non-availability of suitable water

sources (ponds, etc.) for retting of the jute (15.62%), while 22.32 per cent of the farmers found lack of clean water for retting as a constraints.

Table 4. Constraints faced by the farmers in cultivation of jute crop

| Constraints | Frequency | Percentage |
|---|-----------|------------|
| Financial | | |
| • Non-availability of loan facilities for jute cultivation | 30 | 31.25 |
| Market related | | |
| • Facing middle-man in marketing of jute | 65 | 67.70 |
| • Lack of grading for jute in the market | 33 | 34.38 |
| • Lack of reasonable price in the market | 30 | 31.25 |
| • No interaction between government and jute mills in the jute purchasing | 16 | 16.67 |
| • No market for jute sticks | 12 | 12.50 |
| Retting related | | |
| • Non-availability of suitable water sources (ponds, etc.) for retting | 15 | 15.62 |
| • Non-availability of clean water for retting | 22 | 22.32 |
| Labour related | | |
| • Required more labourers for jute cultivation | 8 | 8.3 |
| • High cost of labourers during peak period of jute cultivation | 28 | 29.17 |
| Other constraints | | |
| • Scarcity of irrigation water | 14 | 14.58 |
| • Lack of soil testing facilities | 13 | 13.54 |
| • Infestation of Hooghly wilt | 12 | 12.50 |
| • Lack of information sources | 11 | 11.46 |
| • Non-availability of improved implements for inter-cultural operations | 10 | 10.42 |
| • Lack of improved pest control measure | 7 | 7.30 |
| • Lack of storage facilities | 6 | 6.25 |

Performance of jute varieties: It is important to know that the year wise performance of the high yielding jute varieties tested in the farmers' field at different places for conviction of the farmers. The performances of all high yielding jute varieties tested in the farmers' field since last three years, were analyzed.

Table 5. Trend of performance of the jute varieties tested in the farmers' field during last three years

| S.N. Jute variety | Year wise fibre yield in (q/ha) | | |
|-------------------|---------------------------------|---------|---------|
| | 2001-02 | 2002-03 | 2003-04 |
| 1 JRO-8432 | 27.39 | 28.17 | 30.22 |
| 2 JRO-66 | 26.00 | 26.87 | 29.87 |
| 3 JRO-524 | 28.86 | 28.98 | 30.94 |

From the above data (Table 5), it is stated that the trend of the variety JRO-524 in terms of yield was quite well.

CONCLUSION

As per the field performance of the jute varieties, it is found that JRO-524 is enough yielding (30.94 q/ha) than the other tested varieties and better than the local (28.00 q/ha). Also, in terms of cost benefit ratio of the jute variety, JRO-524 ranked first (1:1.36) followed by JRO-524E (1:1.34), JRO-8432 (1:1.32), JRO-66 (1:1.31), JRO-128 (1:1.31) and very low obtained from the local practice (1:1.02). It can be inferred that the timely and systematically implementation of all improved technologies along with the management package of practices ensures the increase in production by about 3q/ha yield as well as additional net returns of Rs.6,625/- in comparison to JRO-524. It was also observed that comparatively more amount has been spent on human labour (77.15%) towards cultivation of jute crop which caused reduction in the profitability. There is need to improve marketing system for jute because majority of farmers had faced middle men (67.70%) while marketing of jute because of lack of grading of jute in the market (34.38%).

It was empirically observed that the package approach along with field based skill building did generate a persistent impact on the participating farmers through demonstration on the farmers' field and comparative performance with the farmers' practice.

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