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Extent of Adoption of ATMA Beneficiaries on Ragi Cultivation Practices

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ABSTRACT

The investigation was taken-up in Krishnagiri district of Tamil Nadu to study the extent of adoption of ATMA beneficiaries on recommended ragi cultivation practices. Out of the ten blocks Hosur, Krishnagiri and Shoolagiri were selected based on a greater number of respondents participated in the ATMA training. A sample size of 120 respondents were selected by using proportionate random sampling technique. The collected data were tabulated and analyzed using appropriate statistical tools. The results of the study revealed that nearly half the proportion (46.66 per cent) of the respondents had medium level of adoption followed by low (30.84 per cent) level of adoption on ragi cultivation practices recommended by ATMA. The important constraints expressed by majority of the beneficiaries were labour scarcity, low price to the product, high cost of inputs, non-availability of inputs, non-availability of credit on time, lack of extension services, middle man interaction, inadequate transport facility and delayed repayment.

Key words: ATMA beneficiaries, Extent of adoption, Ragi cultivation practices

Agriculture is an important sector that is vital for the growth of Indian economy. It accounts about 18% of India's GDP and provides employment opportunities to fifty percent of Indian population (Census 2011). Since independence extension works focused on community development later it has shifted towards transfer of technology with policy frame works for food security. Modern technology and education systems with extension support collaborated to meet out the demands of food sufficiency of future population [1]. ATMA has support the state extension system by making it more broad-based and participatory for planning, implementing and monitoring entire agricultural extension activities of a district. Agricultural Technology Management Agency (ATMA) is a registered society of key stakeholders. The ATMA at district level would be increasingly responsible for all the technology dissemination activities at the district level. It would have linkage with all the line departments, research organizations, non-governmental organizations and agencies associated with agricultural development in the district involved in agricultural activities for sustainable agricultural development [2].

The technology broadcasting is made by ATMA is through training all the farmers industry, SC, ST and women

farmers, member of SHG, Farmers interest group (FIG), commodity Interest group (CIG), Tamil Nadu women in Agri Business and extension scheme (TANWABE) and farmers association of the district. ATMA has a funding pattern of 90:10 by the central and state government. ATMA scheme was implemented in 2005 throughout India to directly engage farming communities in planning and implementation and also enable them to achieve better technology transfer outcomes.

In Tamil Nadu Krishnagiri district ranks 1st in area, production, productivity under ragi cultivation currently produced 160446 tonnes covers an area of approximately 41272 ha and productivity of 3.89 tonnes/ha⁻¹ (2017-18). [agricoop.nic.in]. Ragi is a coarse grain grown in arid regions with less sustainable inputs to produce maximum yield on rainfed conditions providing food security in a dry economy and competent of tolerating heat and waterlogged conditions [3]. As the demand increases the area under ragi is increasing gradually with a lower production. This will be a bigger challenge for scientists to develop a new variety that can be tolerated in all circumstances in order to produce maximum yield. Production can be increased if farmers follow the correct package of practices recommended by the extension personnel. ATMA has a greater importance for sustainable development and poverty alleviation of the farmers in Tamil Nadu state, through the observance. Keeping this in view, the present study was conducted to study the extent of adoption of ATMA beneficiaries on recommended ragi cultivation practices and constraints experienced by them in the cultivation of ragi.

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MATERIALS AND METHODS

The study was conducted in Krishnagiri district of Tamil Nadu. Out of ten blocks, three blocks namely Hosur, Krishnagiri and Shoolagiri were selected based on more number of ragi growers participated in the ATMA training. From the three blocks six villages were selected. The selected villages were Nagondapalli, Thattiganapalli, Maharajakadi, Naralapalli, Kudisadhanapalli and Pannapalli. From the six villages a sample size of 120 ATMA beneficiaries who cultivated ragi were selected using proportionate random sampling procedure. The data were collected by a structured and pre-tested interview schedule. The collected data were statistically analyzed using cumulative frequency, percentage analysis, correlation and multiple regression analysis.

RESULTS AND DISCUSSION

Overall adoption level of the beneficiaries on ragi practices recommended by ATMA. The findings on overall

adoption level of beneficiaries on ragi cultivation practices revealed that two fifth of the beneficiaries (46.66%) were under medium category followed by 30.84 percent were under low adoption category and 22.50 percent of them were under high adoption category. This may be attributed to the medium level of knowledge of the beneficiaries [4].

Table 1 Distribution of ATMA beneficiaries according to their extent of adoption about ragi cultivation practices (n=120)

Category	Number of beneficiaries	Percent
Low	37	30.84
Medium	56	46.66
High	27	22.50
Total	120	100.00

Practice-wise extent of adoption of ragi practices recommended by ATMA

The results on distribution of beneficiaries according to their practice-wise adoption of recommended ragi practices are furnished in (Table 2).

Table 2 Distribution of ATMA beneficiaries according to their practice-wise adoption (n=120)

S. No.	Recommended practices	Number of beneficiaries	Percent
1	Field Preparation		
	FYM application @ 12.5 t/ha	93	77.50
2	Varieties		
	Variety (KMR-306, ML-365)	90	75.00
3	Seed Rate		
	Seed rate (Rainfed-15 kg/ha)	79	65.83
4	Bio-fertilizer application		
4a	Application of recommended bio-fertilizer	103	85.83
4b	Application of recommended quantity of bio-fertilizer	96	80.00
	Mean percentage		82.92
5	Spacing and Sowing		
5a	Spacing(25.5x30cm)	96	80.00
5b	Depth of sowing (not less than 2 to 3 cm)	101	84.16
	Mean percentage		82.08
6	Nutrient Management		
6a	NPK (40:20:20) kg/ha fertilizer application	73	60.83
6b	Split doses for NPK application as 50% basal + 25 DAS	60	50.00
	Mean percentage		55.41
7	Integrated Weed Management		
7a	Recommended Pre-emergence herbicide application (Isoproturon 0.5 kg a.i or oxyfluorfen (0.1a.i/ha)	47	39.16
7b	First hand weeding done at 15 DAS	89	74.16
7c	Second hand weeding done at 30-35 DAS	79	65.83
7d	Post emergence herbicide (2,4,D-salt 0.75kg/ha)	38	31.66
	Mean percentage		52.70
8	Pest Management		
8a	Application of recommended pesticide	54	45.00
8b	Application of recommended quantity of Pesticide	49	40.83
	Mean percentage		45.41
9	Disease management		
9a	Application of recommended fungicide	62	51.66
9b	Application of recommended quantity of fungicide	55	45.83
	Mean percentage		48.74
10	Harvesting		
	Time of harvesting	92	76.66

Field preparation

Majority of the beneficiaries (77.50 per cent) adopted recommended quantity of farm yard manure for ragi cultivation. Most of the beneficiaries had a higher degree of

knowledge on field preparation in order to achieve optimum yield and this would have contributed to higher adoption. Further farm yard manure application should be the foundation for crop cultivation that will fertilize the soil by

supplying vital nutrients that display a positive mindset towards the adoption of farm yard manure.

Selection of variety

It could infer from (Table 2) that majority of the beneficiaries (75.00 per cent) cultivated the recommended ragi varieties. Sowing appropriate varieties is important for getting higher yield. Due to awareness most of the beneficiaries adopted recommended ragi varieties such as KMR-306 and ML365.

Seed rate

Around seventy per cent (65.83 per cent) of the beneficiaries adopted the recommended seed rate. Many of the beneficiaries felt that extra seed planting inhibited the loss of seedlings during germination, and thus adopted a higher rate of seed than the recommended quantity for the maintenance of the plant population.

Bio-fertilizer application

The mean knowledge percentage of bio-fertilizer application was (82.92 per cent). Among the sub-items under bio-fertilizer application, recommended bio-fertilizer (azospirillum and phosphobacteria) were adopted by 85.83 per cent of the beneficiaries and recommended quantity of bio-fertilizer was adopted by 80.00 per cent of the beneficiaries. In fact, bio-fertilizer packages are provided free of cost by the government. It will make it easier for beneficiaries to adopt the practices [5].

Spacing and sowing

The mean adoption percentage of spacing and sowing was (82.08 per cent). Recommended spacing for ragi was adopted by (80.00 per cent) of the beneficiaries. This may be due to the maintenance of the optimum plant population to obtain higher yields under rainfed conditions. Majority of the beneficiaries had high knowledge on the recommended spacing this would have enabled them to adopt the practice. Majority of the beneficiaries (84.16 per cent) adopted recommended sowing depth while planting. This may be due to the fact that sowing at a certain depth will induce germination at a rapid rate under deficient moisture conditions [6].

Nutrient management

The mean adoption percentage under nutrient management is (55.41 per cent). Among the sub-items under nutrient management, application of recommended quantity of NPK fertilizer (40:20:0 kg/ha) and recommended split doses of fertilizer were adopted by 60.83 percent and 50.00 per cent of beneficiaries respectively. This may be attributed to the adequate knowledge for the beneficiaries about the use of NPK fertilizers in split doses.

Integrated weed management

The mean percentage of adoption under integrated weed management was 52.70 per cent approximately three-fourth (74.16 per cent) of the beneficiaries reported that first-hand weeding and second- hand weeding (65.83 per cent) were performed on a regular basis. Manual weeding has been adopted by most of the beneficiaries, as it is a simple and traditional method. Recommended pre-emergence and post-emergence herbicide application was adopted by 39.16 per cent and 31.66 per cent. Lack of knowledge and high herbicide cost may be the reason for a

low degree of adoption and farmers may have assumed that the application of herbicide will damage the entire plant and trigger environmental damage.

Pest management

The mean percentage score for adoption of plant protection measures were 45.41 per cent. Among the sub-items, recommended pesticide was adopted by 45.00 per cent of the beneficiaries and recommended quantity of pesticide was adopted by 40.83 per cent of the beneficiaries. Lack of guidance on plant protection measures, high pesticide costs, high labour costs and lack of availability of skilled labor may be the possible reasons for the non-adoption of pest management practices.

Disease management

The mean percentage score for adoption of disease management were 48.74 per cent. Among the sub-items of disease management, recommended quantity of fungicide was 45.83 percent. High chemicals costs and lack of knowledge of the application of fungicides may leads to non-adoption [7].

Harvesting

Majority of the beneficiaries (76.66 per cent) harvest the crop at correct time. This may be due to the fact that farmers are well aware of harvesting the crop at the appropriate time in order to minimize the deterioration which inhibits the yield level.

Constraints experienced by the ATMA beneficiaries in the adoption of ragi cultivation practices

While the cultivation practices of ragi are economical, there were constraints that prevent their wider adoption. This section examines the constraints that beneficiaries perceived in the adoption of recommended ragi cultivation practices are discussed in (Table 3).

Table 3 Constraints experienced by ATMA beneficiaries in the adoption of ragi cultivation practices (n=120)

Constraints	No. of beneficiaries	Percent
Non-availability of inputs	79	65.83
Labour scarcity	102	85.00
Low price of the product	94	78.33
High cost of inputs	85	70.83
Non-availability of credit on time	72	60.00
Non-availability of information in proper time	62	51.60
Lack of extension services	68	56.66
Middle man interaction	57	47.50
Inadequate transport issue	42	35.00
Delayed repayment	49	40.83

Constraints

The (Table 3) clearly indicates that labour scarcity (85.00 per cent) of beneficiaries have been identified as the major constraint. The availability of agricultural labourers were declining dramatically in the study area, as most of the labour force shifted to urban areas for higher wages. Ragi crops are generally grown in the entire study area during the rainfed season. During this time, farmers in the area needed more labour to carry out their operation. Most untrained farmers are demanding higher wages independently and do not carry out all the farm operations in time, have more

leisure time during their work so that some of them hire worker outside the area to carry out the operation. Low price of the product were found to be second major constraints faced by 78.33 per cent of the beneficiaries. Drastic increase in production in the study area has reduced the price of the product [8]. This may be the reason for the lower price of the product.

High cost of inputs was considered to be the third constraint faced by 70.83 per cent of the beneficiaries. This could be due to price fluctuations in seeds, fertilizers, and pesticides every year. Inputs are not available in the demanded quantity on the local market. It could have forced producers to purchase larger quantities, resulting in high input costs. As majority of the beneficiaries belonged to the category of small and marginal farmers, they were not willing to spend more money on inputs. As a result, this may be considered as a major constraint. Non availability of inputs was considered to be fourth constraint was faced by 65.83 per cent of the beneficiaries. Planning and storing of grain as seed for the next season has not been properly carried out and buffer stocks are not regularly maintained in agricultural depots, which may also be a reason for the limitation mentioned above.

Non- availability of credit on time was considered to be the fifth major constraint faced by 60.00 per cent of the beneficiaries. This may be due to the need for initial investment in the cultivation of ragi crops, farmers need credit. Absence of financial institutions such as agricultural bank, cooperative society, etc., and could not acquire loans from banks due to rigid rules and time-consuming processes. They could not borrow money from lenders due to higher interest rates. As a result, this could be considered as a major constraint.

Lack of extension services were considered to be sixth major constraint faced by 56.66 per cent of the beneficiaries. Reason for this constraint is that it may not be possible to visit all farmers individually due to overload of work and inadequate staff members of State Department of Agriculture. Hence the beneficiaries reported this as a constraint. Non availability of information in proper time was considered to be the seventh major constraint with

51.60 per cent of the beneficiaries. The beneficiaries expressed that the extension officials did not provide appropriate help in time. Therefore, most of the beneficiaries depend on input dealers to obtain basic information about pesticides and fertilizers and most of them obtaining inaccurate information about the crop might cause enormous loss in production [9]. This may be the explanation for the above limitation.

Middle man interactions were reported by 47.50 per cent of the beneficiaries. Regarding price fixation it is most often decided by commission agents. They set very low price without considering cultivation cost and the grading process. Hence, the farmers reported this as one of the major constraints.

Delay repayment was considered to be the ninth major constraints faced by (40.83 per cent). Farmers sells their produce to local traders they often may withhold the payment and therefore could not plan any further activities. Hence, the farmers reported this as one of the constraints. The tenth major constraint faced by 35.00 per cent of the beneficiaries was inadequate transport issue. Farmers with limited farm size face this problem because they produce only minimum quantity and could not arrange transport facility exclusively in rural area [10]. In certain cases, commission agent or contractor often receive additional charges for their transportation to the target destination.

CONCLUSION

From the study it could be concluded that majority of the ATMA beneficiaries had medium level of adoption on recommended ragi cultivation practices. The local extension functionaries and scientists should take appropriate promotional strategies like conducting a greater number of trainings, campaigns, providing printed materials, etc., so as to ensure maximum adoption. The important constraints expressed by the beneficiaries were labour scarcity, low price to the product, high cost of inputs and non-availability of inputs. The concerned authorities may take necessary steps to eliminate these constraints in order to increase their adoption level.

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