



Research Article

ADOPTION OF RECOMMENDED PRACTICES OF DRUM SEEDER TECHNOLOGY IN PADDY IN NORTH COASTAL ANDHRA PRADESH

CHINNAM NAIDU D.^{*1}, LAKSHMANA K.² AND KIRANMAI K.¹

¹ICAR-Krishi Vigyan Kendra, Amadalavalasa, Srikakulam, 532185, Acharya N. G. Ranga Agricultural University, Lam, 522034, Andhra Pradesh, India

²Senior Scientist & Coordinator, DATTC, Vizianagaram, Acharya N. G. Ranga Agricultural University, Lam, 522034, Andhra Pradesh, India

*Corresponding Author: Email - daattcvzm1998@gmail.com

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Abstract: Dissemination of labour saving and cost reduction technology in rice cultivation was the need of the hour in view of labour shortage and increasing cost of cultivation. In view of increased labour demand, cost and climatic resiliency, paddy cultivation with drum seeder technology as a method of increasing yield and reduce cost of cultivation was found successful in many countries and major rice growing tracts in India as well. Technology has been promoted in Srikakulam district of Andhra Pradesh since one decade the horizontal expansion of the technology was not up to the expectations. Hence present study was taken up with the main objective of identifying and analyzing the adoption of recommended package of practices by the farmers who are practicing drum seeder technology and to recognize the constraints in adoption of the recommended package under drum seeder technology. The study was conducted in 2015 with a sample of Sixty (60) drum seeder practicing farmers across the Srikakulam district of Andhra Pradesh.

Keywords: Paddy cultivation, Drum seeder, Adoption

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Introduction

Transplanting of paddy is the most common and conventional method of crop establishment under low land and rainfed situations which is high labour intensive and expensive. Direct sowing of paddy with sprouted seed in puddled fields by using an eight-row drum seeder at 20cm row spacing is an alternate method of paddy cultivation which reduces the cost of cultivation, drudgery and proven to be good method under late sown conditions. With this background in mind the present study was undertaken with the objective to study the extent of adoption of drum seeder technology and traditional to identify the major constraints in adoption of drum seeder technology in Srikakulam district [1].

Material and Methods

The drum seeder technology on farm demonstration was conducted up to 2015. The demonstration was conducted by involving the Agricultural Officers of State Department of Agriculture who played a facilitative role in identifying innovative farmers and monitoring of the drum seeder fields along with Scientists of Krishi Vignan Kendra. All drum seeder technology practices were recommended for adoption in the farmer's field. The demonstrations were conducted in thirteen mandals of Srikakulam. A sample of 60 farmers from 13 mandals was selected. Ex post facto research design was followed. Data was collected with the help of a structured interview schedule. The constraints in adoption of drum seeder technology were found out with open ended questionnaire.

Results and Discussion

The results of the study are presented in Table 1 and Table 2. Content analysis of the adoption of recommended package of practices by the respondents in drum seeder technology is presented in Table 1 and distribution of respondents based on adoption of recommended practices is depicted in Table 2. The recommended practices of drum seeder technology includes recommended seed rate, seed treatment, seed soaking, sowing of sprouted seed, levelling plank day before sowing, draining out the field before sowing, application of pre emergence

herbicide @ 3-5DAS, application of post emergence herbicide @ 20-25DAS, weeding with cono weeder, fertilizer application, keep field moist up to 30 days, maintaining ID condition up to PI stage, and pest & disease management

Table-1 Overall Adoption of drum seeder technology, (N=60)

SN	Category	No. of respondents frequency	Frequency %
1	Low	11	18.33
2	Medium	15	25.00
3	High	34	56.67

The results indicated that Majority of the farmers are high rate of adoption (56.67%) followed by medium 25.00% and low 18.33%. It indicates that most of the farmers (56.67%) adopt the whole package of practices of the drum seeder technology as per the recommendations of the scientists of KVK and Department of agriculture. High rate of adoption is with reference to the component practices of the technology adopted by the farmers and low rates of adoption refers to the partial adoption of the technology.

As per the component wise analysis of adoption of the practices of drum seeder technology, more than 80% of the farmers adopt seed rate, sowing of seed for 24 hours and sprouting of the seed for another 24 hours as these practices are most crucial and farmers felt that these practices contribute for more yield advantages. More than 50% of the farmers have adopted levelling of the field, pre and post emergence herbicide application. The farmers felt that weed is the major problem in management of rice under direct sown conditions with drum seeder. Most of the farmers (68.33%) adopted the fertilizer application with slight deviation from the recommended practices of the technology whereas most of the farmers (56.67%) not able to adopt the seed treatment because of complexity in practice as soaked seed is to be sown in the field.

Table-2 Content analysis of adoption of package of practices in Drum seeder technology in Paddy, (n=60)

Recommended practice	Extent of Adoption					
	FA		PA		NA	
Seed and sowing	F	%	F	%	F	%
Seed treatment	11	18.33	15	25	34	56.67
Seed rate 12-15kg/ac	48	80	12	20	0	0
Seed soaking 24 hr	56	93.33	4	6.67	0	0
Seed sprouting 24 hrs	48	80	12	20	0	0
Field preparation						
Leveling plank day before sowing	34	56.67	21	35	5	8.33
Leveling	32	53.33	28	46.67	0	0
Draining out the field before sowing	32	53.33	28	46.67	0	0
Weeding		0		0		0
Application of pre-emergence herbicide Pyrazosulfuron 3-5 DAS recommended	35	58.33	10	16.67	15	25
Application of post emergence herbicide 20-25 DAS	35	58.33	14	23.33	11	18.33
Weeding with cono weeder	7	11.67	21	35	32	53.33
Fertilizer application	19	31.67	41	68.33	0	0
Irrigation and water management		0		0		0
Keep field moist up to 10 days	39	65	21	35	0	0
ID condition up to PI stage	14	23.33	36	60	10	16.67
Pest and disease management	29	48.33	19	31.67	12	20
	31	52.2619	20	32.74	9	15

FA - Fully adopted, PA - Partially adopted, NA - Not adopted, F - Frequency, % - Percentage

Table-3 Relative importance of recommended practices under drum seeder technology in paddy as perceived by the farmers

SN	Practice	N=60		Ranking Farmers
		F	%	
1	Field preparation & Leveling	55	91.67	1
2	Seed treatment before sowing	21	35.00	12
3	Sowing of sprouted seed	47	78.33	5
4	Sowing sprouted seed in line with drum seeder	31	51.67	9
5	Running cono weeder between rows for weeding at 20 DAS and 35 DAS	45	75.00	6
6	Pre emergence application of herbicide	52	88.33	2
7	Post emergence application of herbicides at 20-25 DAS	49	81.67	3
8	Gap filling at 20 DAS	23	38.33	11
9	Fertilizer application at basal as per schedule	34	56.67	7
10	Water management up to 20 days	48	80.00	4
11	Water management throughout crop growth	32	53.33	8
12	Plant protection	30	50	10

Content analysis of the package of practices on drum seeder technology shows that more than 80% of the farmers adopt recommended seed rate, soaking of seed for 24 hours and sprouting of the seed as the practices are most crucial and farmers felt that the practices contribute for higher yields. More than 50% of the farmers also adopt leveling of the fields, pre and post emergence herbicide application. The farmers felt that management of weeds is the major problem in paddy cultivated under direct sown conditions with drum seeder technology.

Table-4 Constraints in adoption of drum seeder technology, (N = 60)

Constraints	No.	Frequency
Availability of drum seeders	25	41.67
Seed soaking and sprouting	7	11.67
Poor germination in saline soils	15	25.00
Lack of information on tech. Know-how	12	20.00
Field preparation and leveling	15	25.00
Too complex technology to adopt	6	10.00
Need more technical support	13	21.67
Gap filling is difficult	11	18.33
More weeds /weed management	41	68.33
Cono weeding difficult in clay soils	34	56.67
Non-availability of cono weeders	25	41.67
Difficulty in attaining uniform maturity	12	20.00
Providing alleyway at every 16 rows	5	8.33
Difficulty in removing weeds close to the plant	24	40.00
Damage to conoweeder while in operation		0.00
Water management ID condition during initial stages	16	26.67
Damage due to birds at germination stage	7	11.67
Unforeseen rains immediately after sowing in kharif	11	18.33

Most of the farmers (68.33%) adopted the fertilizer application with little deviation from the recommended practices of the technology whereas most of the farmers

(56.67%) are not able to adopt the seed treatment because of complexity of the practice as soaked seed is to be sown in the field. Among the recommended practices of the technology the practices were rank ordered as per the relative importance as felt by the farmers. Among the practices, field preparation and levelling the field was rated important by 91.67% of the farmers followed by pre-emergence application of herbicide 88.35%; post emergence application of herbicide 81.67% and water management up to 20 days 80.00%. Farmers perceived that these practices contributed for higher yields.

Results from the table 4 shows that mostly weeds and weed management was the major constraint in the adoption of drum seeder technology in paddy and followed by difficulty in running cono weeder, non availability of cono weeder and drum seeder, difficulty in removing weeds adjacent to the plants etc.

Conclusion

The results indicate that the farmers adopt the drum seeder technology as it is a cost and labour-saving technology for paddy farmers. Further, as per the feedback of the farmers crop came to harvest 4-5 days early in direct sown situation.

Application of research: This technology is also suitable for adaption under peak labour demand. As per the requirement by the farmer the state department of agriculture should keep a greater number of drums seeders and cono weeders available to the farmers.

Research Category: Seeder technology

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***Principal Investigator or Chairperson of research: Dr Chinnam Naidu D.**

University: Acharya N. G. Ranga Agricultural University, Lam, 522034

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Sample Collection: ICAR-Krishi Vigyan Kendra, Amadalavalasa, 532185

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Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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