



## **Constraint Analysis of Drum Seeder Technology in Paddy Cultivation in North Coastal Zone of Andhra Pradesh**

**P Venkata Rao, S Neelaveni, P B Pradeep kumar and P Punna Rao**

Department of Agricultural Extension, Agricultural College, Naira, Andhra Pradesh

### **ABSTRACT**

The major component of agriculture in Andhra Pradesh particularly North Coastal Zone is paddy cultivation (63 per cent of total cultivated area). Transplanting is the most common and conventional method of crop establishment under low land and rain fed situations which is labour intensive and expensive. Direct sowing of paddy with sprouted seed in puddle fields by using an eight row drum seeder at 20cm row spacing is an alternate method of paddy cultivation which reduce the cost of cultivation, drudgery and proved to be good method under late sown conditions. Hence an effort was made with an objective to study adoption level of drum seeder technology in north coastal zone of Andhra Pradesh and to know the constraints in adoption of the drum seeder technology. Ex-post facto research design was used with a sample size of 100 paddy cultivated farmers who were adopting drum seeder technology. 58.00 per cent of the farmers had a medium level of adoption of drum seeder technology in paddy cultivation followed by high (28%) and low (14%) even though its recent inception. It might be due to the attributes of drum seeder technology relative advantage in terms of low cost, labour saving, easy operation, less seed rate, no nursery management and time saving and easy to carry besides compatibility, observability, trial ability and predictability. The correlation analysis revealed that extension contact, achievement motivation, innovativeness, information seeking behavior, education, irrigation facility and risk taking ability were significantly related to the adoption of drum seeder technology at 5% level of probability. The constraint analysis revealed that sudden occurrence of the rain (100%), low lying situation (97%), high weed infestation (91%), bird damage at the time of sowing (80%), maintenance of spacing plant to plant (80%), irrigation management at early stages (74%) dropping of more seeds at a point (71%). It is the dire necessity of wide spread of the drum seeder technology through implementation of Front Line Demonstrations and trainings to the farmers by extension wing of Agricultural University and Department of Agriculture in Andhra Pradesh to cope with the vulnerability in cost of cultivation including scarcity of labour which provide sustainable livelihood to the small and marginal farmers.

**Key words :** Analysis, Drum seeder, Paddy cultivation.

Sustainable development in rural areas is possible through the means of sustainable livelihoods particularly agriculture and allied activities. The major component of agriculture in Andhra Pradesh particularly North Coastal zone is paddy cultivation (63 per cent of total cultivated area).

Transplanting is the most common and conventional method of crop establishment under low land and rain fed situations which is high labour intensive and high operational cost. Late sowing with over aged seedlings, is another common phenomena in north coastal districts of AP. In recent years nearly 20,000 ha paddy cultivation is under direct sowing method through broadcasting which causes uneven plant stand with high weed infestation causes low yields and less returns. There is a dire need of alternative method for paddy

cultivations to cope with the vulnerability in cost of cultivation including scarcity of labour

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 and good method under late sowing conditions. The drum seeder technology is the best alternate method for paddy cultivation which is proven through Front Line Demonstrations conducted by the District Agricultural Advisory and Transfer of Technology Centres (DAATTC) of Srikakulam, Vizianagaram and Vishakhapatnam districts with an increase in yield 9.32 per cent and Cost-Benefit ratio of 1:2.25 against 1:1.62 (control). In this context the present study was conducted with an objective of studying adoption level of drum

seeder technology in paddy cultivation in North Coastal Zone of Andhra Pradesh and to know the constraints in adoption of the drum seeder technology

### MATERIAL AND METHODS

The study was conducted with ex-post facto research design by selecting adoption of drum seeder technology as dependent variable and Age, Education, Farming experience, Farm size, Irrigation, Information seeking behavior, Extension contact, Innovativeness, Risk taking ability and Achievement motivation as independent variables and adoption of drum seeder technology as dependant variable. Five mandals where the drum seeder paddy cultivation is under progress purposively selected were namely Etcherla, Santhabommali of srikakulam and Gantyada and Mentada of Vizianagaram and anakapalle mandal of Vishakhapatnam districts of north coastal zone of A.P. Four villages from each mandal were selected purposively where the drum seeder paddy cultivation is under progress. 5 farmers who were practicing drum seeder paddy cultivation from each village were selected. Thus the total number of respondents for the study were 100.

The interview schedule was developed for the study in consultation with the experts in research as well as in extension on attributes and practical components of drum seeder technology in paddy cultivation to know the adoption level and to elicit constraints in drum seeder technology. The statistical tools Arithmetic Mean, Percentage, Standard Deviation and correlation analysis were used.

### RESULTS AND DISCUSSION

It can be gleaned from the table1 that 58.00 per cent of the famers were had medium level of adoption of drum seeder technology in

paddy cultivation followed by high(28%) and low(14%) . The meager percentage of high level of adoption is might be due to the recent inception (2006-07) of this technology.the medium level of adoption is might be due to dissemination of technology in medium range and farmer to farmer extension is to be improved to increase adoption rate. The attributes might be favoured for adoption of drum seeder technology were relative advantage in terms of low cost technology, labour saving, easy operation, less seed rate required, time saving and easy to carry besides compatibility, observability, trial ability and predictability (Visalakshi and Sireesha 2013).

The table 2 revealed that extension contact, achievement motivation ,innovativeness, information seeking behavior, education ,risk taking ability and irrigation were significantly related to the adoption of drum seeder technology at 5% level of probability. Extension agency is one of the best reliable and accessible sources of information and contact with them to be in touch with the latest agricultural technologies. Farmers with more achievement motivation had a strong desire to have higher yields and low cost of cultivation. Innovativeness is associated with the individual's earliness in use of new practices. Irrigation with drainage facilities is ananother important factor in adoption of drum seeder technology (Ganesh kumar *et al.*, 2013). Education is significantly related as it is proportionately related to gain knowledge and adoption of new useful technologies. Respondents had risk taking ability to get wind fall profits.

Constraints analysed to formulating extension strategies for improving adoption of drum seeder technology in paddy cultivation

It can be Perused from the table 3 that sudden occurrence of the rain causes runoff of Sprouted seeds and uneven plant stand (100%). Low lying situation is not suitable for drum seeder paddy

Table 1. Distribution of respondents according to level of adoption.

S.No	Level of adoption	Frequency	N=100	
			Percentage	
1	Low	14	14.00	
2	Medium	58	58.00	
3	High	28	28.00	
Mean:21.20			S.D=2.64	

Table 2. Relationship between selected profile characteristics of the farmers and their adoption.

No.	Profile characteristic	Correlation Coefficient
X1	Age	0.258
X2	Education	0.612*
X3	Farming experience	0.356
X4	Farm size	0.087
X5	Irrigation	0.659*
X6	Information seeking behavior	0.562*
X7	Extension contact	0.708*
X8	Innovativeness	0.625*
X9	Risk taking ability	0.567*
X10	Achievement motivation	0.704*

\*significant at 5% probability

Table 3. The constraints as perceived by the respondent farmers.

		N=100
S.No.	Constraint	Frequency & Percentage
1	Not suitable for low lying( water stagnated ) situation	97.00
2	Sudden occurrence of rain at the time of sowing.	100.00
3	Bird damage at the time of sowing	80.00
4	Dropping of more no. of sprouted seed at a place through holes	71.00
5	Maintenance of spacing between plant to plant is difficult	80.00
6	Weed infestation is high	91.00
7	Irrigation management during initial stage is difficult	74.00
8	Non availability of drum seeders in the market	60.00
9	Non availability of cono-weeders in the market	72.00
10	Non availability of skilled labour	69.00

cultivation(97%) these constraints may be reduced by forming the drainage channel around the bunds and four way channels from mid point. High weed infestation as drying and wetting condition and thin film of water at initial stages (91%) some times it leads to neglect the crop. It has to be addressed by popularization of use of pre as well as post emergence herbicides through organization of training programmes and method demonstrations. Maintenance of spacing plant to plant (80%) Dropping of more seeds at a point(71%) can be tackled by perfect leveling of field, filling of drums up to 2/3<sup>rd</sup> and closing of holes based on seed size of the variety. It can be improved by conducting

more no. of method demonstrations by the extension agencies ( Pottappa et al., 2014).

Bird damage at the time of sowing(80%), irrigation management at early stages(74%) due to lack of water control structures, non availability of cono weeders (72%),dropping of more seeds at a point(71%), non availability of skilled labour (69%)and non availability of drum seeder in the market(60%) were the major constraints in the adoption of drum seeder technology .Trainings may be arranged to the available labour to be used in pulling of drum seeder to improve the labour efficiency and it will provide livelihood to the labour.

Department of Agriculture may arrange more subsidy and supply of Drum seeders and cono-

weeders to increase the adoption of drum seeder technology. Most of the farmers are economically backward (Sangeeta and Motilal Nehru 2010) so special credit facilities may be arranged for high adoption of drum seeder technology. Frequent training programmes and on farm demonstration may be organized. Experts should visit the farmers fields frequently to find out the draw backs and to suggest remedial measures. Irrigation facilities should be improved. Assistance should be given for digging wells and installing pump sets for controlled irrigation. Field drainage channels should be made along the field bunds

### Conclusions:

There is need of wide spread of information on the drum seeder technology through implementation of front line demonstrations and trainings to the farmers by extension wing of Agricultural University and Department of Agriculture. Department of Agriculture may make arrangement for supply of sufficient number of drum seeders as well as cono weeders. The drum seeder technology will become sustainable livelihood to the small and medium farmers to cope

with the vulnerability in cost of cultivation including scarcity of labour which provide sustainable livelihood to small and marginal farmers

### LITERATURE CITED

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