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Knowledge and Adoption Levels of Redgram Farmers on Recommended Production Technology in Prakasam District of Andhra Pradesh

O Sarada and G V Suneel kumar
Scientist (TOT), DAATTC, Ongole, Andhra Pradesh

ABSTRACT

The present study was undertaken to find out the farmers' knowledge and adoption levels of Redgram recommended production technology. This investigation was carried out with 120 Redgram farmers selected from twelve villages of Prakasam Dist. It was found that more than half of the farmers were categorized in medium level of knowledge and adoption. Majority of the farmers had correct knowledge on recommended varieties, sowing time, seed rate and spacing, whereas majority of them were with incorrect knowledge on herbicides, seed treatment, fertilizer management and need based pest management. Majority of the Redgram farmers were fully adopting recommended varieties, sowing time, seed rate and spacing. But they were not adopting recommended herbicides and seed treatment. Land holding, trainings undergone, extension participation variables had highly positive and significant correlation with knowledge and adoption levels. The major production constraints expressed by the Redgram farmers were flower drop due continuous dry spells (88.33%), severe incidence of Maruca, Spodoptera and pod fly (80.83%), increased cost of cultivation (75.83%), increased cost of fertilizers and pesticides (73.33%) and low yields due to continuous dry spells (63.33%).

Key words*: Adoption, Knowledge, Production constraints, Relationship*

India's population is expected to touch 1.68 billion by 2030 and the pulse requirement for the year 2030 is projected at 32 million tons with anticipated required annual growth rate of 4.2%. The area, production and productivity of the pulses in the country are 24.0 million hectare, 25.23 million tonnes and 11 q/ha, respectively. Redgram in India is the most important pulse crop which is cultivated in the gross cropped area (3.58 million ha) under pulses providing 20% of the national pulse production. This accounts for 90% of the worlds Redgram production (Nene and Sheila, 1990 and Niranjan *et al.*,1996).The production and productivity of Redgram in our country are 31.58 lakh tonnes and 7.6 q/ha, respectively. In India, Redgram ranks second i.e. next to chickpea among important pulse crops. Redgram is of dietary importance with a seed protein content more than that of other important grain legumes (Nene and Sheila, 1990). In addition to being an important source of human food and animal feed, Redgram also plays an important role in sustaining soil fertility by improving physical properties of soil and fixing atmospheric nitrogen. Being a drought resistant crop, it is suitable for dryland farming and predominantly used as an intercrop with other crops. Redgram is one of the most important legumes grown in Andhra Pradesh with an area of 1.46 lakh ha, 0.85 lakh tonnes production and 585 kg/ha productivity. It is largely grown in Prakasam district of Andhra Pradesh in an area of 55,891 ha. predominantly under rainfed cropping situation. The pulse production in the country can be sustained through productivity growth. The productivity can be increased with the increase of the level of knowledge and adoption of recommended technology. In order to ascertain the extent of recommended technology in Redgram cultivation, the present study was done in Prakasam district of A.P with the following objectives.,

1. To study the knowledge and adoption levels of the farmers on recommended Redgram production technology
2. To study the relationship between socio-economic characteristics of Redgram farmers with their knowledge and adoption levels
3. To elicit the production constraints in Redgram cultivation

MATERIAL AND METHODS

The present study was conducted during 2014 in Prakasam district of Andhra Pradesh. Four mandals *Viz.*, Darsi, Tarlupadu, Bestavaripeta and

Podili were purposively selected as they were pioneering in Redgram area and production. Three villages from each mandal were selected having highest area under Redgram. From each of selected village 10 Redgram farmers were selected randomly to represent the group. Thus a total of 120 Redgram farmers were selected for the study purpose. Knowledge was operationalized as the amount of information and understanding possessed by the Redgram farmers about recommended production technology. Knowledge of the Redgram farmers was tested against eleven items related to recommended production technology. Adoption was operationalized for the purpose of investigation as practicing the recommended production technology by the respondents. Production technologies recommended by Acharya N. G. Ranga Agricultural University were included in the study to assess the knowledge and to measure the extent of adoption. The data on knowledge and adoption levels were collected from the sample of Redgram farmers through personal interview technique by using the pre-tested schedule. Respondents were categorized in to 3 categories i.e., low, medium and high based on their knowledge and adoption scores using mean and standard deviation as a measure of check. Simple correlation was worked out to find out relationship between knowledge, adoption levels with selected independent variables. To analyze the constraints faced by Redgram farmers, open ended questions were used and based on the frequency and percentages major constraints were identified.

RESULTS AND DISCUSSION

Overall Knowledge level of Redgram farmers with respect to recommended production technology

The overall knowledge scores presented in Table 1 reveal that almost sixty per cent of the Redgram farmers possessed medium (57.50%) overall knowledge and the remaining farmers possessed low (31.67%) and high (10.83%) knowledge levels with respect to recommended Redgram production technology.

Knowledge level of Redgram farmers on recommended production practices

Item analysis of knowledge of individual recommended practice by the Redgram farmers was presented in Table 2. Almost ninety seven (96.67%) of the Redgram farmers had correct knowledge with respect to varieties suitable to their situation. Majority of the farmers had correct knowledge about sowing time (93.33%), seed rate and spacing (88.33%), inter cultivation (81.67%) and using manures (68.33%). This might be due to more contact of the farmers with extension officials, their participation in training programmes and mass media use. Whereas almost eighty seven percent of the farmers had incorrect knowledge on herbicides followed by seed treatment, intercropping (85.83%), recommended fertilizer dose (84.17%), time of fertilizer application (80.00%) and need based pest management (78.33%). The reasons for incorrect knowledge on seed treatment was due to farmers had a belief that they were getting treated seed from Department of Agriculture and other agencies.

Overall adoption of Redgram farmers on recommended production technology:

Data relating to the categorization of respondents based on their adoption score on recommended Redgram technologies was presented in Table 3. The findings indicated that more than fifty per cent (55.00%) of the Redgram farmers were categorized in the group of medium adoption whereas remaining farmers were distributed in low (32.50%) and high (12.50%) categories of adoption level. This trend of Redgram farmers mainly due to awareness about the recommended practices like suitable varieties, seed rate and spacing and timely inter cultivation.

Adoption level of Redgram farmers on recommended production practices

From table 4 it could be inferred that cent percent of the Redgram farmers were fully adopting and sowing time followed by varieties (96.67%) seed rate & spacing (85.00%) and inter cultivation (60.83%). This is mainly because of their correct knowledge on these aspects. Majority of the Redgram farmers were partially adopting recommended time of fertilizer application (76.67%), need based pest management (72.50%), recommended dose of fertilizers (70.83%) and manure use (65.83%).The reason for partial adoption of recommended dose of chemical fertilizer were mostly attributed by the farmers to the lack

Table 1. Overall Knowledge level of Redgram farmers on recommended package of practices.

N=120

Category	Frequency	Percentage
Low	38	31.67
Medium	69	57.50
High	13	10.83
Total	120	100.00

Table 2. Knowledge levels of Red gram farmers on recommended package of practices.

N=120

S.No	Package of practices recommended	Knowledge			
		CK		ICK	
		Frq	%	Frq	%
1	Varieties	116	96.67	4	3.33
2	Sowing time	112	93.33	8	6.67
3	Seed rate and spacing	106	88.33	14	11.67
4	Seed treatment	17	14.17	103	85.83
5	Use of manures	82	68.33	38	31.67
6	Fertilizer management				
i.	Dose as per the recommendation	19	15.83	101	84.17
ii.	Time of application	24	20.00	96	80.00
7	Weed managementInter cultivation	98	81.67	22	18.33
iii	Herbicides	16	13.33	104	86.67
8	Inter cropping	17	14.16	103	85.83
9	Need based pest management	26	21.67	94	78.33

CK- Correct Knowledge ICK- Incorrect Knowledge Frq- Frequency

of knowledge and high risk involved in Redgram crop cultivation under rainfed situation. Similar results were reported by Dwivedi *et al* (2011) with respect to adoption of need based pest management. Majority of the farmers were not adopting seed treatment (93.33%) in Redgram cultivation due to lack of knowledge about advantage of seed treatment and non availability of bio-fungicides and Rhizobium culture followed by usage of herbicides (79.17%) and intercrops (65.84%). It is because of lack of knowledge about losses in productivity due to weed problem in Redgram crop.

Relationship between socio-economic characteristics of Redgram farmers with their knowledge and adoption levels

Perusal of Table 5 indicates that land holding, trainings undergone, extension participation and innovativeness were the variables positively significantly associated with the knowledge levels of the farmers at 1% level. This may be because these are the crucial factors facilitating for the knowledge gain of the farmers. Greater contacts with extension personnel might have motivated the farmers in various ways and they might have gained more knowledge due to the wider exposure, contact and interaction with source of technical information i.e., extension personnel. The findings are in line with Kharatmol (2006), Binkadakatti (2008) and Kirankumar Jadhav and Aski (2014). Further land holding and extension participation were the variables positively significantly related with the adoption levels of the farmers at 1% level of

Table 3. Overall adoption levels of Redgram farmers in respect of recommended production technology.

N=120

Category	Frequency	Percentage
Low	39	32.50
Medium	66	55.00
High	15	12.50
Total	120	100.00

Table 4. Extent of adoption of recommended Redgram cultivation practices.

N=120

S.No	Package of practices recommended	Adoption levels					
		FA		PA		NA	
		Frq	%	Frq	%	Frq	%
1	Varieties	120	100.00	0	0.00	0	0.00
2	Sowing time	120	100.00	0	0.00	0	0.00
3	Seed rate and spacing	102	85.00	18	15.00	0	0.00
4	Seed treatment	0	0.00	8	6.67	112	93.33
5	Use of manures	13	10.80	79	65.83	28	23.33
6	Fertilizer management	11	9.17	85	70.83	24	20.00
i.	Dose as per the recommendation	6	5.00	92	76.67	26	21.67
ii.	Time of application	73	60.83	42	35.00	5	4.17
7	Weed managementInter cultivation	10	8.33	15	12.50	95	79.17
iii	Herbicides	28	23.33	13	10.83	79	65.84
8	Inter cropping	15	12.50	87	72.50	18	15.00
9	Need based pest management						

FA-Fully Adopted PA- Partially Adopted NA-Not adopted Frq- Frequency

Table 5. Relationship between socio-economic characteristics of Redgram farmers with their knowledge and adoption levels. **N=120**

S.No	Socio-economic characteristics	Correlation coefficient (r) with Knowledge	Correlation coefficient (r) with Adoption
1	Age	0.012	0.029
2	Education	0.145	0.051
3	Farming experience	0.107	0.111
4	Land holding	0.526**	0.591**
5	Trainings undergone	0.442**	0.304*
6	Extension participation	0.633**	0.370**
7	Innovativeness	0.438**	0.015
8	Mass media exposure	0.078	0.124
9	Social participation	0.138	0.103
10	Economic motivation	0.126	0.045

* - 5% level of significance, ** - 1% level of significance

Table 6. Production Constraints encountered by Redgram Farmers . N=120

Sl.No	Constraint	Frequency	Per cent
1.	Flower drop due continuous dry spells	106	88.33
2.	Poor seed quality supplied by Govt. agencies	104	86.67
3.	Severe incidence of *Maruca*, Spodoptera and pod fly	97	80.83
4.	Increased cost of cultivation	91	75.83
5.	Increased cost of fertilizers and pesticides	88	73.33
6.	Low yields due to continuous dry spells	76	63.33
7.	Non availability of drought tolerant varieties	71	59.17
8.	Severe wilt problem	68	56.67
9	Non availability of Trichoderma locally	56	46.67

probability whereas, trainings undergone was significantly related at 5% level with the farmers adoption levels.

Production Constraints encountered by Redgram Farmers

The data presented in Table 6 revealed that the flower drop due continuous dry spells (88.33%), poor seed quality supplied by Govt. agencies (86.67%), severe incidence of Maruca, Spodoptera and pod fly (80.83%), increased cost of fertilizers and pesticides (73.33%), low yields due to continuous dry spells (63.33%), non availability of drought tolerant varieties (59.17%), wilt incidence (56.67%), and non availability of *Trichoderma viride* locally (46.67%) were identified as major constraints which cause set back in the expected production. Non-availability of appropriate and quality plant protection chemicals and lack of proper knowledge about seed treatment etc. concerns expressed by the respondents for the problems they are facing.

Thus, the cultivation of Redgram mainly depends upon the management of pests, diseases, timely availability of inputs particularly quality seed material and introduction of improved package of practices which are the major factors for successful production of this crop otherwise they are referred to as main constraints in increasing the productivity .Therefore, for enhancing the production and productivity of Redgram crop, strategy should be made for getting the more and more recommended technology adopted by the farmers.

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