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Socio - Economic Psychological Profile of Redgram (*Cajanus cajan* L. Mill sp.) Growers and Perceived Constraints and Suggestions for Application of Production Technologies

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A B S T R A C T

The research study was conducted in Bidar district of Karnataka with the objectives of finding the socio, economic and psychological profile of Redgram growers and the constraints they faced in application of recommended technologies of farm universities to increase the productivity to meet the increasing demand for pluses in India. The study found that the Redgram growers had low social, psychological and economic profile, which inhibited them to apply the recommended technologies of farm universities to the full extent. The extent of application of production technologies was 60.20 percent. The remaining technologies were either partially applied or not applied. The perceived constraints of the growers were many among them, the most severe one was less remunerative price as the market price was highly fluctuating and coupled with, the support price announced by the Government was meager and was not procuring all the quantity grain, secondly there was high labour wages and their scarcity to undertake the timely production operations, likewise the three other constraints were ranked. There is need to address the constraints with appropriate technical, behavioral and policy interventions by the developmental agencies.

Introduction

The Redgram crop (*Cajanus cajan* L. Millsp.) is a protein rich pulse food, consumed in the form of split dal. In Karnataka State of Indian union, it was being grown in an area of 7.70L. ha area with production of 3.50Mt. with average productivity of 4.82q/ha (GoK, 2015). India was importing pulses to address the hungry and malnutrition, the average grain productivity was 7.60 q/ha, with per capita availability of 19.9 kgs/year (Agripedia 2011) which was insufficient to meet the recommended nutritional demand. Majority of

Indians are vegetarians and on an average they consume 70 to 80 grams of pulses per day. There is a potential scope to increase the productivity from 7.60 to 15.0 and more q/ha provided the farmers apply the recommended technology of farm universities. In the process of application, the farmers undergo socio, economic and psychological constraints, which required to be studied. Since it is dry land crop requires its own adaphic and climatic conditions for increased productivity with quality grains, The North-East Karnataka region, the Kalaburgi and Bidar districts are called as "Pulse bowl of Karnataka". Large number of farmers are cultivating in wider spread area. Keeping these in view, the study was conducted during 2017-18 in Bidar district of Karnataka during 2017-18.

Statement of the problem; the reviews revealed that the farmers' socio economic level was low and many of them were living below the poverty line in Northern Karnataka state, where the large area and production of Redgram is coming up. The farmers were getting low grain yield per unit area and not fetching the remunerative price in the market and earning marginal profits.

There is potential scope to double the grain yield productivity provided essential extension and support services are extended timely to them, further, to increase the production of the crop the social, economic and psychological orientations to purchase the inputs of production and managing the crop play key role in the production process.

With this backdrop, the research questions set were ; what extent they had, social, economic and psychological attributes for application of recommend technologies released by the farm Universities?. And what were their perceived constraints to apply the technologies and their feedback suggestions to improve the technology performance, based on their farming experiences? These need to be investigated to find answers, this would help in developing an strategic action plan and to frame policies to increase the grain yield productivity and profits to the farmers.

The objectives of the study were, to delineate the socio, economic and psychological attributes of Redgram growers and to list the perceived constraints and suggestions in application of recommended technologies.

Materials and Methods

The study was conducted in Bidar district of Karnataka State, which consists of five taluks, from these three taluks namely Aurad, Bhalki and Basavakalyan were selected by considering the large area under Redgram cultivation. The sample size was 120. The respondents were selected by random sampling procedure.

The Research design adopted was *Ex-post facto* research, exploratory type was used (Kerlinger, 1973).

The Socio, economic and psychological variables for the study were; Education, Land holding, Farming experience, Incentives received from Govt., Social participation, Innovative proneness, scientific orientation and Income level of respondents. These were measured by adopting the procedure suggested by the authors, with slight modifications wherever necessary.

Each independent variable was measured as per the procedure outlined by the authors. The procedure was assigning nominal score to the items listed under each variable on a three point continuum of "agree, dis-agree and neutral" and also seeking dichotomous responses for the questions asked. A nominal score '2' for Yes and '1' for No, were awarded and measured.

Sl. No.	Variables	Empirical measurement
	A. Social	
1.	Education	Procedure followed by Shashidhara (2003).
2	Land holding	Procedure followed by Maraddi (2006) with slight modifications.
3	Farming experience	Procedure followed by Binkadkatti (2008)
4.	Incentives received from Govt.	Consisted of close and open end type with Face validity content items.
5	Social participation	Scale developed by Saravanakumar (1996) with slight modifications.
	B. Psychological	
6	Innovative proneness	Scale developed by Feaster (1968).
7	Scientific orientation	Scale developed by Supe (1969) with slight modifications.
	C. Economic	
8	Income level	Procedure followed by Prakash (2000).

The score obtained by the respondents, against the maximum score possible was calculated and hierarchically categorized as high, medium and low. In some variables actual information expressed by the respondents was recorded (Education and Income level). An Alternate hypothesis was set; there would be low socio, economic and psychological level of attributes of respondents for full application of production technologies .

The data were collected and analysed by developing interview schedule and data collection considering the objectives of the study a structured interview schedule was prepared by seeking advice of experts and was pre-tested in non-sample area and modifications were incorporated. An apparent of content validity of all the items was ensured before the interview schedule was finalised. The data were collected from the selected respondents visiting the villages of the Bidar district during 2017-18. The interview schedule was administered to the respondents and oral information and opinion expressed by oral and from memory was documented. The visual observations were made accordingly. While collecting information care was taken to avoid onlookers' influence and group pressure on the respondent to ensure pertinent information. The Participatory Rural Appraisal tools such as Focus Group Discussions and Transact walk were also used to supplement the data wherever required. The secondary sources reports and records were referred from the developmental departments. The Statistical tools and tests used for data analysis were frequency, percentage, mean, standard deviation were used.

Results and Discussion

The respondent's social profile

Education level

Nearly quarter per cent of respondents were illiterates and followed by one fourth of them had high school level of education remaining small percent of them were distributed from primary up to graduation level (Table-1). It is to infer that, the illiterates did not utilize the print media (leaflets, folders, newspapers,

magazines etc.) for application of production technologies available in the farm universities.

Land holding

Majority of the respondents (54%) had medium size land holding s ranging from 5 to 10 acres of dry land (Table-1). There was ample scope to apply the production technologies including farm mechanization.

Farming experience

The table-1 reveals that many of the respondents (47.0%) had long farming experience even more than 30 years (Table-1). The longer experience more the exposure to modern technologies much access to the farm university technologies can be expected change in their traditional farming.

Extent of benefits received: The respondents had availed benefits such as crop insurance, free inputs and subsidized implements, seeds, fertilizers, plant protection chemicals, etc, from the Department of Agriculture, Govt. of Karnataka through its gross feeder institute Raitha Samparka Kendras. Majority of the respondents (55%) had availed to the extent of Rs. 1000 to 5000 during 2016-17 (Table-1). This implies that the farmers had applied recommended technologies to some extent as provided inputs were subjected to recommendations of the farm universities. Social participation: Majority of the respondents (54%) had medium level of social participation. The respondents had participated in local institutions either as a member or office bearer in the institutes such as farmers association, commodity associations, grama panchayats, SHGs, cooperatives etc. When they participate in the institutions they expose to the different programs, technologies related to Redgram production run by government and NGOs. Especially the extension programs organized by farm Universities and the Karnataka State Department of Agriculture which will enable them to apply the production technologies for increased production.

Psychological variables

This include, innovative proneness and Scientific orientation. The overall level was low. This implies that the respondents believed in traditional superstitions, traditions, and customs and lacked innovativeness, scientific orientation and lead to less management orientation of the crop. Further this inhibits them to invest and to lean and apply the new farm innovations. Scientific orientation: The data in Table-1 reveals that, majority of the Redgram growers had medium scientific orientation whereas, one third of them and few of them had low and high level of scientific orientation respectively.

Economic: income level

It includes farm power, material possession, type of house and annual income level. The overall farm economic level was low. Majority of them were living below poverty line (Table-3). This should and had been hindering factor in procurement of inputs and application of recommended technologies. The overall social, psychological and economic was profile was low.

Perceived constraints as perceived by the respondents expressed for gaps in application of technologies

The table-5 reveals about the constraints in application of production technologies, these constraints have been ranked. The market price fluctuation is severe constraint and low support price from the Government, followed by high wages and timely non-availability of

labour to undertake the timely production operations to double the yield and income of the growers. Likewise eight other constraints have been ranked.

Technical constraints

Non-availability of timely expertise advisory services and less competency of field extension personnel to advise the growers. Less competent in diagnosis facilities, on the spot solution providers Wondangbeni (2010) and Rajashekhar (2009). Perceived Suggestions by the respondents: Supply of good quality of inputs at right time through Government institution and private agencies. Construction of warehouse facilities created nearby, storage facility helps them to store and hold the produce during market glut and enable the farmers to fetch better price. Provide water conservation technologies those are helpful during uncertainty and uneven distribution of rainfall. Providing timely technical guidance, regarding recommended seed rate, seed treatment and application of pesticides & fertilizer by the experts. Establishment of rural markets at nearby places.

Table.1 Social profile of Redgram growers (n=120)

Sl. No	Characteristics	Category	Frequency	%	Mean	SD
Social						
1	Education	Illiterate	27	22.50	2.04	1.76
		Primary school	13	11.00		
		Middle school	21	17.50		
		High school	24	20.00		
		Diploma/ ITI	15	12.00		
		Pre university	13	11.00		
		Graduate	7	6.00		
		Total	**120**	**100.00**		
2	Land holding (acres)	Marginal farmers	10	8.00	8.18	4.84
		Small farmers	40	33.00		
		Medium farmers	65	55.00		
		Big farmers	5	4.00		
		Total	**120**	**100.00**		
3	Farming experience (years)	Less (< 2)	25	21.00	9.54	12.82
		Moderate (3 to 10 years)	39	32.00		
		Long (>10 years)	56	47.00		
		Total	**120**	**100.00**		
4	Extent of benefits received (Rs./anum)	<1000 Rs.	30	25.00	1.39	0.85
		1000-5000 Rs.	40	33.00		
		5000-10000 Rs.	10	8.00		
		>10000 Rs.	5	4.00		
		Not received	35	29.00		
		Total	**120**	**100.00**		
5	Social participation	Low	34	28.50	0.86	0.66
		Medium	65	54.00		
		High	21	17.50		
		Total	**120**	**100.00**		

Table.2 Psychological profile of Redgram growers (n=120)

Sl. No	Characteristics	Category	Frequency	%	Mean	SD
Social						
6	Innovative proneness	Low	27	23.00	19.6	1.67
		Medium	53	44.00		
		High	40	33.00		
		Total	**120**	**100.00**		
7	Scientific orientation	Low	39	32.00	9.33	1.86
		Medium	62	52.00		
		High	19	16.00		
		Total	**120**	**100.00**		
		1000-5000 Rs.	40	33.00		
		5000-10000 Rs.	10	8.00		
		>10000 Rs.	5	4.00		
		Not received	35	29.00		
		Total	**120**	**100.00**		

Table. 3 Income level profile of Redgram growers (n=120)

Sl. No	Indicators	Components	Frequency	%	Level
1	Farm power	Wooden plough	63	52.50	Low
		Iron plough	65	54.00	
		Seed drill	45	37.50	
		Tiller	08	7.00	
		Sprayer	60	50.00	
		Tractor	12	10.00	
2	Material possession	Radio	25	21.00	Low
		Television	104	87.00	
		Cycle	78	65.00	
		Pump set	30	25.00	
		Two wheeler	48	40.00	
		Four wheeler	06	5.00	
3	House type	Mud walled thatched	57	47.50	Less furnished
		Brick walled tiled	47	39.00	
		Concrete house	10	8.00	
		Concrete double storied	06	5.00	
4	Annual income (Rs.)	Below poverty line (2.50lakhs)	104	87.00	Low
		Above poverty line (2.50 to 6.0 lakhs)	14	11.50	
		Creamy layer (>10.0 lakhs)	02	1.50	

Mean = 11.04; SD = 3.93; Inference: The overall income level was low

With this, low overall social, psychological and economic profile, all the respondents had applied the recommended technologies to the extent of 66.20 percent and remaining either partial and not applied (Table-4 and Fig 2). To provide high grain yielding and pest resistance varieties of pod borer and wilt disease resistance varieties. Provide timely credit from cooperative societies and nationalized banks to purchase the inputs and resource management.

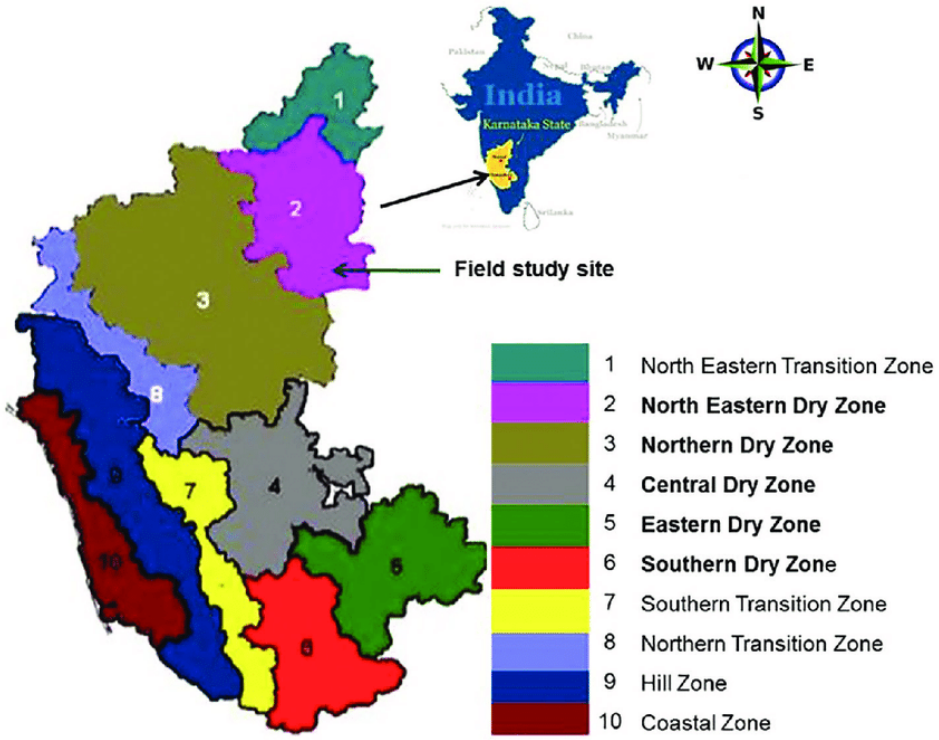
Table.4 Technology Practice-wise application gaps in Redgram cultivation (n=120)

Sl.No	Cultivation Practices	Full application (%)	Partial application (%)	No application (%)
1	Preparatory tillage (Deep ploughing and pulverising the soil)	120 (100.00)	0.00	0.00
2	Recommended varieties (Hyd-3C, TTB-7, ICP-7035, BRG-1,2,4,5.	102 (85.00)	0.00	18 (15.00)
3	Sowing time	96(80.00)	0.00	24 (20.00)
4	FYM/Compost application (3tons/ha with Trichoderma).	38 (32.00)	50(42.00)	32(26.00)
5	Seed rate (15kgs/ha)	43 (36.00)	77 (64.00)*	0.00
6	Seed treatment (Sodium molybdate with melted jiggery solution & biofertilisers, Rhizobium and PSB).	43 (30.00)	0.00	77 (70.00)
7	Spacing (60x20cm)	28 (23.00)	0.00	92 (77.00)
8	Transplanting (Dibbling)	22 (18.00)	0.00	98 (82.00)
9	Use of Fertilizers (25-50-25kg NPK/ha)	0.00	115 (96.00)	5 (4.00)
10	Irrigation (protective irrigation twice flower and pod stages)	28 (23.00)	0.00	92 (77.00)
11	Nipping operation	30 (25.00)	0.00	90 (75.00)
12	Herbicides application (Pendimethalin 1day after sowing)	16 (13.00)	0.00	104(87.00)
13	Plant protection measures (IPM)	6 (5.00)	65 (54.00)	49 (41.00)
14	Harvesting & Threshing using small machines (Tools and Small machines)	98 (82.00)	10 (8.00)	12 (10.00)
Total responses		670	317	693
Score (continuum) assigned		3	2	1
% Application		**60.20**	**19.00**	**20.80**

*Applied more than the recommended (6 to 10kgs/ac)

Table.5 Constraints in application of recommended good agricultural practices of Redgram cultivation as perceived by the respondents (n=120)

Sl. No.	Constraints	F	%
	A. Input constraints		
1	High wages & timely non-availability labourers	78	65.00
2	Lack of financial assistance in time from government during droughts and floods.	72	60.00
3	Non-availability of good quality of inputs timely at affordable price in the market	72	60.00
	B. Management constraints		
4	Inadequate protective irrigation facility during critical sages of the crop growth.	65	54.16
5	High incidence of pests and diseases & its high management (Chemicals).	55	45.83
	C. Technical constraints		
6	Lack of timely advisory services; technical guidance from the developmental agencies right from seed to harvest.	15	12.50
	D. Marketing constraints		
7	Market price fluctuation and low support price from Govt.	95	79.16
8	Distant location of Market places to transport extra cost.	69	57.50
9	Middlemen involvement at the market centres	30	25.00
10	No ideal storage facility nearby places	27	22.50



Source: Census India 2011

Figure.1 Research study area

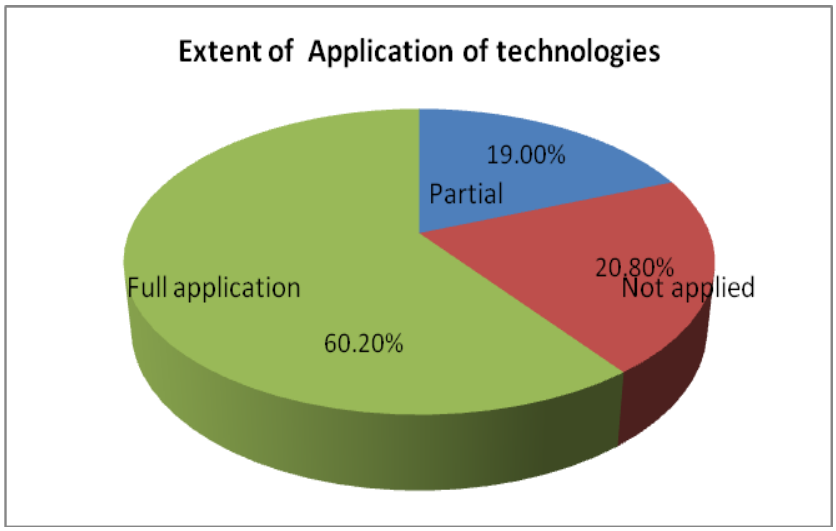


Figure.2 Extent of technological application, Redgram cultivation practices

To conclude, the study found that the Redgram growers had low social, psychological and economic profile, which inhibited them to apply the recommended technologies of farm universities. The extents of application was 60.20 percent. The perceived constraints of the growers were many among them, the most severe one was not getting remunerative price as the market price as there was high fluctuation market price coupled with, the support price announced by the Government was meager and not procuring all the quantity, secondly there was high labour wages and their scarcity to undertake the timely production operations, likewise the three other constraints were ranked.

Implications of the study being, effective of utilisation of scientific expertise from the nearby formal extension feeder institutes located at gross root level, such as Krishi Vigyan Kendras at gross root level for conducting regular off- campus training for the farmers. Organising Farmers' Field Schools at cluster village centres. Enabling the field staff to spend more time in advisory services from Raith Samparka Kendras. Formation of Farmer Produce Organisations and organising the extension programs through them would ensure better participation of growers in the extension activities and programs. Strengthening informal service providers, encouraging progressive farmers as parallel extension workers, inclusion of input and the private extension agencies in to the National extension main stream for diffusion of farm technologies go long way to reduce the gap in application of improved technologies.

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