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Constraints experienced and suggestions offered by the farmers in adoption of sustainable practices in Redgram based farming system

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Abstract

The present study was conducted in Kalaburagi district of North Eastern Karnataka, during the year 2018-19. Kalaburagi district was purposively selected because the district is the pulse bowl of the state with highest area. The study was conducted in eight villages selected from four talukas of Kalaburagi district which included 30 farmers from each selected village thus making a sample of 240 farmers using random sampling method. Ex-post-facto research design was employed for conducting study. Data was collected by using a detailed interview schedule employing personal interview method and analyzed using frequency and percentage. Results indicated that, high wages & non-availability of labourers, high cost of chemical fertilizers, high cost of plant protection chemicals, lack of non-availability of pheromone traps and bio-agents, non-availability of credit in time, lack of remunerative prices and inadequate quantity of procurement through government agencies were major constraints faced by the farmers. Organize more number of large scale demonstrations on IPM practices viz., pheromone traps, nylon mesh, trap crops etc, specialized capacity building programmes right from production to marketing, reduce labour problem by providing mechanized agricultural equipments and provide pest and disease resistant varieties through Karnataka State Seed Corporation and Agriculture Research Station were important suggestions to overcome/minimize the constraints in sustainable practices of Redgram based farming system.

Keywords: Adoption, Constraints, Redgram, Suggestions, Sustainable Practices

Introduction

Redgram (*Cajanus cajan* (L) mill.sp.) is commonly known as arhar, pigeonpea, tur, togari, gango pea and no eye pea. It is an important and old crop of the country. It is the second most important pulse crop only after chickpea. Redgram is an important pulse crop grown in the tropics and subtropics. It finds important place in farming systems adopted by small holding peasants in large number of developing countries. Redgram is considered to be origin of peninsular India. It is a short annual crop in India and as a perennial in many other countries, where pods are harvested at regular interval. The crop has deep root system and hence highly drought tolerant. It is a protein rich staple food contains about 22.30 per cent protein, which is almost three times that of cereals. Redgram supplies a major share of protein, requirement of vegetarian population of the country. Redgram is mainly consumed in the form of split pulse as Dal, which is an essential supplement of cereal based diet (Nene and Sheila, 1990) [5].

India is the largest producer, consumer and importer of Redgram in the world. India occupies 79.00 per cent of world Redgram area and accounts for 67.00 per cent of world production of Redgram. In India, Redgram occupies an area of 4.44 million hectares and production of about 4.28 million tonnes, having a productivity of 967 kg/ha. It is mainly grown in Maharashtra, Karnataka, Madhya Pradesh, Telangana, Uttar Pradesh and Andhra Pradesh. Maharashtra (1.24 million hectares) is the leading producer of Redgram followed by Madhya Pradesh (0.64 million hectares). In Karnataka, Redgram is largely grown in northern parts, especially in Kalaburagi district and is called as pulse bowl of Karnataka. 'Kalaburagi Tur Dal' received Geographical Indication (GI) Tag (No. 593) from government of India during the year 2019. The state occupies an area of about 8.85 lakh hectares with the production of 7.62 lakh tonnes, having an average productivity of 861 kg/ha. Kalaburagi has an area of about 3.28 lakh hectares with production of 3.77 lakh tonnes and a productivity of 1209 kg/ha (Anonymous, 2017) [1].

Sustainable practice encompasses the elements of productivity, profitability, health safety and the environment. Thus, sustainable practice is the need of the hour because of the urgency to develop farming techniques, which are sustainable from environments, Production and

socio-economic point of view. There is now an urgent demand for creative and innovative conservation and production practices that would provide farmers with economically viable and environmentally sound alternatives in their agricultural production systems (Desai and Pujari, 2007) [2]. Sustainable farming is gaining momentum in India because it is adoptable and eco-friendly. Growing awareness of consumers to use safe and healthy food and need to address less effect of chemicals in agriculture production, restoration of soil health and fertility has played a key role in the emergence of sustainable agriculture sector since last two decades. Hence, it is evident that Redgram crop command greater importance for attaining a better position in the world market, which would inturn contribute to our national income. At the same time, it is observed that sustainable practices in Redgram based farming system is not adopted by the farmers upto the extent for production due to some constraints *i.e.*, production, technical, financial and marketing constraints. Therefore, study was conducted to identify the constraints faced by the farmers in adoption of sustainable practices in Redgram based farming system and to seek their suggestions to overcome the constraints.

Materials and Methods

The research study was conducted in Kalaburagi district of Karnataka state during the year 2018-19. Kalaburagi district was purposively selected because the district is the pulse bowl of the state with highest area. Out of seven talukas from the Kalaburagi district four talukas were selected purposively based on highest area under Redgram cultivation. The talukas selected for the study were Aland, Chittapur, Jewargi and Kalaburagi. A list of villages where Redgram is grown as principal crop is prepared in consultation with the officials of Department of Agriculture. Two villages from each talukas were selected based on maximum area under Redgram cultivation. The villages selected for the study were Madan Hipperga and Naronia from Aland taluka, Kalggi and Dandothi from Chittapur taluka, Yedrami and Nelogi from Jewargi taluka and Kamalapur and Srinivas Saradagi from Kalaburagi taluka. Thus a total of eight villages were selected from four talukas. Considering all the farmers in the selected villages, the criteria for selection of farmer as a respondent is that, he should successfully cultivate Redgram crop. Along with Redgram one or the other intercrops and enterprises like dairy (minimum two milch animals), sheep/goat farming (minimum of four sheep's/goat/unit), poultry rearing *etc.* From the each selected village, a separate list of Redgram based farmers was prepared in consultation with officials of Department of Agriculture. From the list prepared, 30 farmers were selected randomly by using simple random sampling technique. Thus, the study sample comprised of 240 respondents. Ex-post-facto research design was employed for conducting the study. Data was collected by using a detailed interview schedule employing personal interview method. The farmers were asked to mention the constraints faced by them in adoption of sustainable practices in Redgram based farming system. The constraints expressed by them were noted and were categorized in four groups namely; production constraints, technical constraints, financial constraints and marketing constraints. Based on the frequencies and intensity each particular constraint was converted in percentage. At the same time suggestions of the farmers were also collected to minimize the constraints. Frequency and percentage were used to analyze the data to draw the meaningful conclusion.

Results and Discussion

Constraints faced by the farmers in adoption of sustainable practices in Redgram based farming system

Constraints faced by the farmers in adoption of sustainable practices in Redgram based farming system are grouped into four categories like production constraints, technical constraints, financial constraints and marketing constraints. Based on the frequencies each constraint was converted in percentage and presented in Table 1.

With respect to production constraints, majority (80.41%) of the farmers faced problem of high wages & non-availability of labourers, this may be due to impact of migration and most of the young generation gets engaged in non-agricultural operations leading to reduce of labour force in the villages, which in turn creates a scarcity of labour, when there is a scarcity of labour, obviously they demand for high wages. Further, majority (67.08%) of the farmers expressed high cost of chemical fertilizers. The cost of fertilizer might not correspond with the profit they obtain by selling their produce resulting many expressing it as a constraint. The need to purchase fertilizers is time bound and due to steep demand for it at a time, the market might not be able to respond equally resulting in shortage or non-availability of it. Over half (56.25%) of the farmers faced problem in high cost of plant protection chemicals in the market, most of the plant protection chemicals required for Redgram and other cash crops are priced high resulting in 56.25 per cent expressing the high cost of plant protection chemicals as the constraint. Nearly half (48.33%) of the farmers faced problem in non-availability of required quantity of FYM. This might be due to gradual reduction in the livestock numbers kept by farm households could be the reason for non-availability of FYM. Less than one third (30.83%) of the farmers faced problem in non-receipt of timely rainfall. This might be due to the scarcity of water for agricultural purpose in rainfed situation. Among the technical constraints, over half (53.33%) of the farmers faced problem with respect to lack of non-availability of pheromone traps and bio-agents. This might be due to the situation of lack of knowledge brings to focus that farmers were not aware of pheromone traps were to buy it from and how to use it. Hence the departments should take all most care to design appropriate skill training, exposure visits and demonstrations. One third (42.91%) of the farmers faced problem in erratic supply of electricity, because at the village level the electricity is not provided continuously and there is a fluctuation in the voltage power. Over one third (35.41%) of the farmers faced problem in lack of mechanization of farm. This might be due to the farmer don't have the knowledge regarding mechanization of farm because medium extension orientation might be the problem. 31.67 per cent of the farmers faced problem of lack of knowledge regarding sustainable cultivation practices, because most of the farmers are high school level educated and they do not know the recommended practices of Redgram crop cultivation. 28.75 per cent of farmers faced problem lack of knowledge regarding pest and disease control in case of pod borer and sterility mosaic disease. Most of them expressed pod borer was a serious pest, once it occurs it is very difficult to control resulting in heavy loss of yield. Sterility mosaic is also one of the major disease in Redgram if it occurs in Redgram there is no flower or pod formation no yield at all. Hence before occurring itself the crop should be protected. However farmers usually might not take such precautionary measures and also they might not be aware of it. Even the extension system should be oriented to educate farmers in this direction.

In case of financial constraints, one third (42.50%) of the farmers faced problem of non-availability of credit in time followed by 36.25 per cent inadequate quantity of credit, higher interest rate 34.12 per cent and insufficient repayment time 27.92 per cent. The reasons might be due to the practice of different components in Redgram based farming system required lot of financial investments, which might not be possible to invest by the farmers. Further, the financial institutions procedures for lending money might be cumbersome and time consuming. The rate of interest might have acted as a barrier for the farmers to avail credit from non institutional sources in the absence of institutional finance. Regarding marketing constraints, majority (75.41%) of the farmers faced problem of lack of remunerative prices. It is because of various factors such as distress sale due to immediate need of money. Majority (61.67%) of the farmers faced problem inadequate quantity of procurement through government agencies this is because the government is

procuring the minimum quantity of Redgram produce there should be increase in the quantity of the procurement so that the farmers would get the better price through government procurement centres. Over one third (44.58%) of the farmers faced problem delayed cash payment by APMC. This is because the APMC do not give the cash in the hands of farmers instead they credit the cash into the farmer's account it takes long time to credit the money by APMC. Over one third (37.50%) of the farmers faced problem no facility of rural godowns as there was no proper store room for storing of their produce. This compelled them to sell their produce without giving them chance to wait for better price. Only 11.25 per cent of the farmers faced problem high transportation charges. This might be due to increased price of the fuel and also due to poor condition of roads which made the vehicle owners to demand high price.

The findings are in line with the findings of Tanweer Ahmed (2019)^[7].

Table 1: Constraints faced by the farmers in adoption of sustainable practices in Redgram based farming system (n=240)

Sl. No.	Constraints	Frequency	Percentage
I.	Production		
1.	High wages & non-availability of labourers	193	80.41
2.	High cost of chemical fertilizers	161	67.08
3.	High cost of plant protection chemicals	135	56.25
4.	Non availability of required quantity of FYM	116	48.33
5.	Non receipt of timely rainfall	74	30.83
II.	Technical		
1.	Lack of non-availability of pheromone traps and bio-agents	128	53.33
2.	Erratic supply of electricity	103	42.91
3.	Lack of mechanization of farm	85	35.41
4.	Lack of knowledge regarding sustainable practices	76	31.67
5.	Lack of knowledge regarding pest and disease control	69	28.75
III.	Financial		
1.	Non-availability of credit in time	102	42.50
2.	Inadequate quantity of credit	87	36.25
3.	Higher interest rate	82	34.12
4.	Insufficient repayment time	67	27.92
IV.	Marketing		
1.	Lack of remunerative prices	181	75.41
2.	Inadequate quantity of procurement through government agencies	148	61.67
3.	Delayed cash payment by APMC	107	44.58
4.	No facility of rural godowns	90	37.50
5.	High transportation charges	27	11.25

Suggestions as expressed by the farmers in Redgram based farming system

The results from the Table 2 indicated that majority (81.25%) of the farmers suggested to organize more number of large scale demonstrations on IPM practices of Redgram because most of the farmers are not adopting the IPM practices like crop rotation, light traps, pheromone traps HaNPV and neem oil *etc.*

Majority (75.41%) of the farmers suggested for specialized capacity building programmes right from production to marketing because most of the farmers are illiterate and below high school level education so capacity building programmes should be conducted in the villages.

Majority (68.33%) of the farmers suggested to reduce labour problem by providing mechanized agricultural equipments because nowadays most of the youths are migrating to urban cities and there is a lot of shortage of labours in the village levels the labours available in the villages are demanding for high wage rates for working in the field. Therefore most of the farmers suggested for providing mechanized agricultural equipments to reduce the labour problems.

Majority (63.33%) of the farmers expressed the need for pest and disease resistant varieties. This may be due to high cost of plant protection measures and the deadly disease like sterility mosaic disease spread the disease within a short period of time and there is no flower or pod formation in the Redgram crop.

More than half (53.33%) of the farmers expressed the adequate supply of organic manure from development departments because most of farmers are facing the problems of organic manures so that government should provide the organic manures to the farmers.

Nearly half 49.17 per cent of the farmers expressed to provide credit at low rate of interest because money is the main source to buy inputs. It is difficult to get money at lower rate of interest at the time of need.

Over one third 43.75 per cent of the farmers expressed that quantity of Redgram procurement should be more by the government agencies because most of the farmers are selling their Redgram produce to APMCs and co-operative societies in which it is restricted to procure ten quintals of Redgram per

farmer only but medium farmers (5.01 to 25.00 acres) and big farmers (above 25.00 acres) are facing more problems regarding selling their Redgram produce. So the farmers expressed to increase the procurement of Redgram produce by the government agencies.

Over one third (38.33%) of the farmers expressed the payments of procurements made should be paid by

procurement centres so that it will be easy to credit to the farmers because most of the farmers are not getting the credit amount at the time of requirement but they are being credited after a long time gap. So they suggested that the payments of procurements should be paid by procurement centres only.

The findings of the results are similar to the findings of Maraddi (2006)^[4].

Table 2: Suggestions as expressed by the farmers in Redgram based farming system (n=240)

Sl. No.	Suggestions	Frequency	Percentage
1.	Organize more number of large scale demonstrations on IPM practices viz., pheromone traps, nylon mesh, trap crops etc	195	81.25
2.	Specialized capacity building programmes right from production to marketing	181	75.41
3.	Reduce labour problem by providing mechanized agricultural equipments	164	68.33
4.	Provide pest and disease resistant varieties through Karnataka State Seed Corporation and agriculture Research Station	152	63.33
5.	Adequate supply of organic manure from development departments	128	53.33
6.	Provide credit at low rate of interest	118	49.17
7.	Quantity of Redgram procurement should be more by the government agencies	105	43.75
8.	The payments of procurements made should be paid by procurement centres so that it will be easy credit to farmers in time	92	38.33

Conclusion

It can be concluded that major constraints experienced by the farmers in adoption of sustainable practices in Redgram based farming system were high wages & non-availability of labourers, high cost of chemical fertilizers, high cost of plant protection chemicals, lack of non-availability of pheromone traps and bio-agents, lack of remunerative prices and inadequate quantity of procurement through government agencies were major constraints faced by the farmers. Organize more number of large scale demonstrations on IPM practices viz., pheromone traps, nylon mesh, trap crops etc, specialized capacity building programmes right from production to marketing, and reduce labour problem by providing mechanized agricultural equipments were important suggestions to overcome/minimize the constraints in adoption of sustainable practices in Redgram based farming system. Hence Agricultural Universities and State Department of Agriculture should provide proper scientific and technical guidance regarding sustainable practices in Redgram based farming system through trainings under different human resource development programmes at block as well as village level. Integrated pest and disease management measures should be undertaken by the farmers and accordingly extension agency should give more emphasis on this aspect. Demonstrations regarding plant protection measures should be undertaken by extension agencies.

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