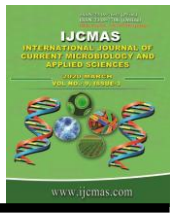
Int.J.Curr.Microbiol.App.Sci (2020) *9*(3): 2387-2393

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 3 (2020)**
Journal homepage: http://www.ijcmas.com



Original Research Article https://doi.org/10.20546/ijcmas.2020.903.272

Socio-economic Characteristics with Constraints Opined by the Respondents under Soybean based Cropping Systems in North- Eastern Karnataka, India

N. Vijaykumar[1*] and Suresh S. Patil[2]

[1]Livestock Research and Information Centre (Deoni), Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka, India
[2]Department of Agricultural Economics, College of Agriculture, Kalaburagi, University of Agricultural Sciences, Raichur, Karnataka, India

**Corresponding author*

Keywords

Soybean, Cropping system, Constraint, Cost of cultivation, Marketing

Article Info

Accepted:
15 February 2020
Available Online:
10 March 2020

A B S T R A C T

The present study was under taken in North-Eastern region of Karnataka under that, Bidar and Kalaburagi district have selected. To analyse the resource use efficiency of soybean based cropping systems. Multi-stage random sampling technique was followed to choose the sample. In the first stage, two districts were selected based on the highest area under soybean crop in the North-Eastern Karnataka. In the second stage, two talukas from the selected districts were chosen based on the highest area under soybean based cropping system. Similarly, two villages from each talukas were selected based on the same criterion. Finally, 20 farmers from each village were chosen randomly. Thus, in all 160 farmers were selected representing 80 farmers from each district. The tabular presentation was followed to study the socio-economic characteristics of different size groups of sample farmers such as size of holding, cropping pattern, cropping systems, costs and returns. Further the data were elicited through opinion survey from the sample farmers. With regard to constraints faced by them the data were compared and contrasted with the help of averages and percentages. The average age of the sample respondents was 43, 45, 41, 44 and 43 years, respectively in CS-I, CS-II, CS-III, CS-IV and overall cropping system. The literacy percentage was highest in CS-I followed by CS-IV, CS-II and CS-III respectively. The major constraints faced by the sample farmers were climate variation, labour availability, marketing and finance followed by non-availability of quality seeds and price fluctuation were the other major constraints encountered by the farmers.

Introduction

Soybean (*Glycine max*) is a species of legume native to East Asia, it is an important global crop widely grown for its edible bean which has numerous uses. Soybean meal is a significant and cheap source of protein for animal feeds. Soybean is known as the "Golden bean" and "Miracle crop" etc., because of its several uses. It is an excellent source of protein and oil. It contains about 40 per cent of good quality protein. Besides

utilization of soybean as vegetable, it is also used in oil industry where it occupies first place in the world oil production. Soybean based food products are also suitable to diabetic patients as they contain less carbohydrates and low cholesterol. Therefore, it is one of the most economical protein sources in the world. It is a versatile crop with innumerable possibilities of improving agriculture and supporting farming industry (Ankita Parekh *et al.,* 2012). India ranked fifth after USA, both in area (11.604 million hectare) and production (8.569 million MT) in the world during 2015-16 (Ministry of Agriculture, Government of India). The area under the crop in the Karnataka state during 2015-16 was 113 thousand hectare, the production was 97 thousand tons and productivity was 852 kg/ha. It is a major oilseed crop in the world covering 91.29 million hectare under oilseed crops and contributing around 57 per cent (220.81MT) of the total oilseed production (390.39 MT) during 2010-11, which makes it as the leading oilseed crop in the world. Major soybean producing countries are United States (83.2 MT), Brazil (72.0 MT), Argentina (48 MT), China (13.5 MT) and India (12.55 MT). These countries contribute more than 90 per cent of global soybean production. The average worldwide yield for soybean crop in 2015 was 2.5 tons per hectare (Agricultural Statistics at a Glance, 2011). India ranked fifth both in area (11.604 million hectare) and production (8.569 million MT) in the world during 2015-16 (Ministry of Agriculture, Government of India.). In India, Madhya Pradesh is the major producer of soybean, which accounts for 58 per cent of the countries production (6.67 MT), followed by Maharashtra (4.32 MT), Rajasthan (1.12 MT) and Karnataka (0.15 MT). The area under the crop in the Karnataka state during 2010-11 was 113 thousand hectare, the production was 97 thousand tons and productivity was 852 kg/ha. During same period productivity in Andhra Pradesh was highest (1278 kg/ha) and Madhya Pradesh with 1021 kg per hectare yield was at second position. Average productivity of India was 1235 Kg per hectare. To the edible oil pool, Soybean has attained a prominent position in India's agro-economy with 12 per cent contribution.

Soybean based cropping systems

Efficient cropping systems for a particular farm depend on farm resources, farm enterprises and farm technology because farm is an organized economical unit. The farm resources include land, labour, water, capital and infrastructure. When land is limited intensive cropping is adapted to fully utilize available water and labour. In agriculture, management practices were usually developed for individual crop. However, farmers are cultivating different crops in different seasons based on their adaptability to a particular season, domestic needs and profitability. Such a package of management practices for all crops leads to efficient use of costly inputs, besides reduction in production cost. For instance, residual effect of manures and fertilizers applied and nitrogen fixed can considerably bring down the production cost if all the crops are considered than individual crops. In this context, cropping system approach is gaining importance. Collectively, adoption of dynamic cropping systems would be expected to result in more sustainable crop production systems over time. Dynamic cropping systems can potentially make better use of water and soil nutrient requirements and enhance soil–crop production system resilience in the face of climatic risk. By considering producer goals and the externalities influencing agriculture, dynamic cropping systems can be developed to optimize such issues as crop yield and quality; net enterprise return; pest (both insect and plant) management; soil, water, and air quality; and resource conservation. Such

systems may lead to the development of dynamic agricultural systems that are economically viable, socially acceptable, and environmentally sustainable. Soybean based cropping systems are important for sustaining agricultural production. Sustainability aims at balanced use of all available resources to achieve maximum production with minimum exploitation of natural resources. Soybean based cropping system were followed in North-Eastern Karnataka. In North-Eastern region especially in Bidar and Kalaburagi districts, most of the farmers are growing soybean because of suitability of climatic factors viz., rainfall, temperature, sunshine, humidity and soil type and it is an important pulse as well as oilseed crop in the North-Eastern region.

Materials and Methods

Multistage random sampling technique was followed to choose the sample. In the first stage, two districts were selected based on the highest area under soybean crop in the North-Eastern Karnataka. In the second stage, two talukas from the selected districts were chosen based on the highest area under soybean based cropping system. Similarly, two villages from each talukas were selected based on the same criterion.

Finally, 20 farmers from each village were chosen randomly. Thus, in all 160 farmers were selected representing 80 farmers from each district. It was observed that, the area under jowar, greengram, tur, blackgram, bengalgram was more in Bidar and Kalaburagi districts respectively compared to other crops.

In four talukas selected for the study, soybean occupies major crop as an intercrop in the study area. Preliminary visits to the Bidar and Kalaburagi districts indicated that, soybean was grown as inter crop along with, sorghum and greengram. The following four major cropping systems were identified in the study area. These were selected based on per cent farmers practicing in the study area and the cropping system are as follows:

Cropping system-I (CS-I) = Soybean + Redgram
Cropping system-II (CS-II) = Soybean + Jowar
Cropping system-III (CS-III) = Soybean + Bajra
Cropping system-IV (CS-IV) = Soybean sole crop

The tabular presentation was followed to study the socio-economic characteristics of different size groups of sample farmers such as size of holding, cropping pattern, cropping systems, costs and returns. Further the data were elicited through opinion survey from the sample farmers. With regard to constraints faced by them the data were compared and contrasted with the help of averages and percentages.

Results and Discussion

The information on socio-economic characteristics of the sample respondents is presented in Table 1. which revealed that, majority of the respondents belong to middle age group in all the selected soybean based cropping systems. The average age of the sample respondents was 43, 45, 41, 44 and 43 years in cropping system-I (soybean + redgram), cropping system-II (soybean + jowar), cropping system-III (soybean + bajra), cropping system-IV (soybean sole crop) and overall respectively. The family composition of sample respondents in the study area revealed that the proportion of children per family was more compared to adults in all the cropping systems, constituting 55.34, 55.03, 53.07, 47.11 and 53.23 per cent respectively in CS-I, CS-II, CS-III, CS-IV and overall.

Table.1 Socio-economic characteristics of sample respondents

(N=160)

Sl. No.	Particulars	Units	Cropping Systems				
			CS-I	CS-II	CS-III	CS-IV	Overall
1.	**Average age**	Yrs	43	45	41	44	**43**
2.	**Family size**						
	i. Male	Nos	1.75 (22.79)	1.62 (23.34)	1.58 (23.69)	1.72 (26.83)	**1.67 (24.10)**
	ii. Female	Nos	1.68 (21.88)	1.64 (23.63)	1.55 (23.24)	1.67 (26.05)	**1.64 (23.67)**
	iii. Children	Nos	4.25 (55.34)	3.68 (53.03)	3.54 (53.07)	3.02 (47.11)	**3.62 (53.23)**
	Total	Nos	7.68	6.94	6.67	6.41	**6.93**
3.	**Engaged in agriculture**						
	a. Male	Nos	1.67 (53.35)	1.20 (48.97)	1.35 (50.75)	1.02 (49.75)	**1.31 (50.97)**
	b. Female	Nos	1.46 (46.65)	1.25 (51.02)	1.31 (49.24)	1.03 (50.24)	**1.26 (49.02)**
	Total	Nos	3.13	2.45	2.66	2.05	**2.57**
4.	**Education level**						
	a. Illiterate	Nos	10 (25.00)	12 (30.00)	10 (25.00)	12 (30.00)	**44 (27.50)**
	b. Primary	Nos	09 (22.50)	10 (25.00)	08 (20.00)	10 (25.00)	**37 (23.12)**
	c. High school	Nos	10 (25.00)	08 (20.00)	12 (30.00)	07 (17.50)	**37 (23.12)**
	d. PUC and above	Nos	11 (27.50)	10 (25.00)	10 (25.00)	11 (27.50)	**42 (26.25)**
	Total		40	40	40	40	**160**
5.	**Average size of holding**						
	i. Rainfed	Ha	6.65 (83.75)	6.15 (85.42)	4.85 (75.20)	5.55 (92.04)	**5.80 (84.06)**
	ii. Irrigated	Ha	1.29 (16.25)	1.05 (14.58)	1.60 (24.80)	0.48 (7.96)	**1.10 (15.94)**
	Total	**Ha**	**7.94**	**7.20**	**6.45**	**6.03**	**6.90**

Note: Figures in parentheses indicate percentage to respective total

CS-I = Soybean + Redgram
CS-II = Soybean + Jowar
CS-III = Soybean + Bajra
CS-IV = Soybean sole crop

Table.2 Constraints opined by the respondents under soybean based cropping systems

Sl. no.	Particulars	CS-I (n=40)	Rank	CS-II (n=40)	Rank	CS-III (n=40)	Rank	CS-IV (n=40)	Rank	Overall (n=160)	Rank
1.	Soil fertility	35 (86.70)	IV	31 (78.45)	VI	37 (91.25)	**I**	31 (78.68)	V	34 (83.77)	IV
2.	Climate variation	39 (97.18)	**I**	39 (98.17)	**I**	35 (86.75)	**II**	38 (95.79)	**I**	38 (94.47)	**I**
3.	Seeds availability	34 85.24	VI	19 (48.68)	X	31 (78.45)	VIII	30 (75.17)	VIII	29 (71.88)	VIII
4.	Seeds quality	33 (82.45)	VII	33 (81.78)	IV	33 (81.45)	VI	27 (68.74)	IX	31 (78.60)	VII
5.	Fertilizer availability	06 (14.67)	XI	07 (16.48)	XI	06 (14.78)	XI	07 (18.47)	XI	06 (16.10)	XI
6.	Plant protection	26 65.38	IX	23 (58.48)	IX	21 (51.75)	X	27 (68.47)	X	24 (61.02)	X
7.	Labour availability	39 (96.75)	**II**	33 (82.24)	III	33 (83.45)	IV	34 (84.75)	III	35 (86.79)	**II**
8.	Finance	35 (86.72)	III	31 (76.48)	VII	34 (86.14)	III	31 (78.21)	VII	33 (81.87)	V
9.	Price	31 (78.34)	VIII	32 (80.98)	V	31 (78.73)	VII	32 (80.75)	IV	32 (79.70)	VI
10.	Cost of cultivation	19 (46.85)	X	37 (67.85)	VIII	31 (76.45)	IX	31 (78.46)	VI	27 (67.40)	IX
11.	Marketing	35 (86.47)	V	33 (83.14)	**II**	33 (81.68)	V	34 (85.42)	**II**	34 (84.17)	**III**

The proportion of male accounted for 22.79, 23.34, 23.69, 26.83 and 24.10 per cent respectively in CS-I, CS-II, CS-III, CS-IV and overall. Average family size was 7.68, 6.94, 6.67, 6.41 and 6.93 in CS-I, CS-II, CS-III, CS-IV and overall respectively. The occupational pattern of the sample respondents revealed that the male family members constituted higher proportion in the agriculture which accounted for 53.35 per cent, 48.97 per cent, 50.75 per cent, 49.75 per cent and 50.97 per cent in CS-I, CS-II, CS-III, CS-IV and overall respectively. Literate sample respondents possessed education ranging from primary to PUC and above level. In CS-I, 22.50 per cent had primary school education, 25.00 per cent had high school education, 27.50 per cent had PUC and above level education and 25.00 per cent of them were illiterate. In CS-II, 25.00 per cent had primary school education, 20.00 per cent had high school education, 25.00 per cent had PUC and above and 30.00 per cent of them were illiterate. In CS-III, 20.00 per cent had primary school education 30.00 per cent had high school education and 25.00 per cent of

them are illiterate. The findings were in accordance with findings of (Tanveer Ahmed., 2006).In CS-IV, 25 per cent had primary school, 17.50 per cent had high school, and 27.50 per cent had PUC and above level and 30 per cent of them are illiterate. As far as pattern of land holding was concerned, about 83.75 per cent, 85.42 per cent, 75.20 per cent, 92.04 per cent and 84.06 per cent of cultivable land was under rainfed condition and proportion of irrigated land was 16.25 per cent, 14.58 per cent, 24.80 per cent and 7.96 per cent, 15.94 per cent under CS-I, CS-II, CS-III and overall respectively. Incidentally irrigated land was not found in case of CS-IV category. It was observed that most of the sample respondents were fall under middle age group. This had relative influence innovative and timely decisions in adoption of new technology and enhances their farm income. With regard to education level of the sample respondents, it was noticed that 27.50 per cent of the farmers were illiterates. This indicated that, literacy level in the study area was higher as compared to state level average. To take care of the illiterates, there is need for the extension agencies to educate the respondents regarding recent developments and technologies in agriculture and other enterprises to increase their level of income and productivity on the farm. Occupational pattern of the sample respondents revealed that, the participation of adults of male respondents in agriculture was more (50.97%), compared to female respondents (49.02%) which was quite obvious in paternal females. The study also revealed that, the main income of the sample respondents was from agriculture. The size of land holding among the sample respondents the major proportion of land holding was under rainfed condition ranges between 75.20 to 92.04 per cent with an average of 84.06 per cent. In other words, all the sample respondents were rainfed respondents. The study revealed that the majority of the sample respondents had medium to large size landholdings.

Constraints associated with soybean based cropping systems

The constraints associated with soybean based cropping systems in the study area are shown in Table 2. Based on the percentage of farmers expressing the problems in the study area is listed under the constraint category.

With respect to cropping system-I, among the constraints highest was climate variation (97.18%) followed by labour availability (96.75%), finance (86.72%), soil fertility (86.70%) and marketing (86.47%). With regard to cropping system-II, among the constraints the highest was climate variation (98.17%) followed by marketing (83.14%), labour availability (82.24%), seed quality (81.78%) and price (80.98%). With respect to cropping system-III, among the constraints the highest was soil fertility (91.25%) followed by climate variation (86.75%), finance (86.14%), labour availability (83.45%) and marketing (81.68%). With respect to cropping system-IV, among the constraints the highest was climate variation (95.79%) followed by marketing (85.42%), labour availability (84.75%), price (80.75%), soil fertility (78.68%). In the study area, most of the sample farmers of soybean based cropping systems encountered with constraints (Ranked-I) like climate variation affecting the crop production, which were beyond the control of farmers. To overcome this problem many of the farmers have opted for crop insurance which is applicable only in the case of crop loan borrowers from institutional agencies. However, there is a need to cover even non-borrower farmers and also who are not aware of this scheme. Similar results were reported while studying soybean by Basavaraj and Kunnal (2002). In all the soybean based cropping systems, most

of the farmers opined that higher wage rate, shortage of labour, marketing and recommended cropping sequences were the production problems (Ranked-II and III). Hence, there is a need to educate farmers on cropping sequences, which were remunerative and suitable for that region to increase the yield levels. In the study area, farmers were facing the problem of scarcity of labour for proper management of cropping systems.

References

Agricultural Statistics at a Glance, 2011. Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi.

Basavaraj, K. and Kunnal, L. B., 2002, Constraints in production, marketing and processing of soybean. *Rural India*., 65(4): 68-71.

Dupare B.U., S.D. Billore, O.P. Joshi., 2010, Farmer's problems associated with cultivation of soybean in Madhya Pradesh, *India. J. Agric. Sci. Tech*., 4(6): 71-78.

Godwin, A.A., R.F. Djomo and S.A. Okpachu, 2011, Evaluating the constraints and opportunities of maize production in the west region of Cameroon for sustainable development. *J. Sustainable .Dev. Africa*., 15(13): 189-191.

Gopala, Y. M., B. Krishnamurthy and T. P. Bharathkumar., 2012, Production, marketing and storage constraints of maize growers in Chickaballapur district of Karnataka. *Res. J. Agric. Sci*., 12(3):12-15.

Narayanmoorthy, A., 2000, Farmer's education and productivity of crops. A new approach. *Indian J. Agric Econ*., 55(3): 512-518.

Ramesh, P. and Konareddy, 2003, Agricultural research prioritization for agro climatic zones 1, 2 and 3 of Karnataka. *M. Sc. (Agri.) Thesis, Uni. of Agric. Sci., Dharwad.*

Tanveer Ahmed., 2006, An economic analysis of paddy based farming systems in southern Karnataka – A case study of Mandya district. *M.Sc (Agri.) Thesis, (Unpublished) Univ. of Agric. Sci., Dharwad.*

Umesh, P. and Jemkar, K., 2007, Constraints in adoption of recommended paddy cultivation technology in Anand district of Gujrat. *Indian Farming*., 58(12): 22-28.

How to cite this article:

Vijaykumar, N. and Suresh S. Patil. 2020. Socio-economic Characteristics with Constraints Opined by the Respondents under Soybean based Cropping Systems in North- Eastern Karnataka, India. *Int.J.Curr.Microbiol.App.Sci.* 9(03): 2387-2393.
doi: https://doi.org/10.20546/ijcmas.2020.903.272