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A study on socio-economic characteristics of linseed growers in Kalyana Karnataka region

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Abstract

The study aims to assess the socio-economic status and also focus on land holding and cropping pattern of linseed cultivators in the Bidar and Ballari districts of Kalyana Karnataka Region in Karnataka state. The study has used both primary and secondary data for the study and it was conducted during 2022-2023. Multiple random sampling techniques was adopted in the study and total of 120 respondents are selected in the study area. Tabular analysis was used to describe the findings to get meaningful insights. The findings show that, the socio-economic characteristics of the respondent farmers revealed that most farmers were in the age group of 31-40 years and belonged to nuclear families. The average family size was moderate, with less than 4 members being common. In terms of educational status, the farmers had primary education, while a notable portion had minimal schooling. The majority of the farmers had between 10 to 20 years of farming experience, indicating a substantial level of practical knowledge in agricultural practices such as linseed cultivation. Landholdings in Bidar and Ballari districts across two cropping systems: Cropping System I (CS - I) and Cropping System II (CS - II). In Bidar district, the average dry land area under cultivation in CS - I was 6.31 acres, while it was 5.43 acres in case of CS - II. In case of cropping pattern the findings shows that, the Gross cropped area with 640.66 acres in Bidar district and contributing 374.73 acres in Ballari district. The net sown area was recorded 436.52 area in Bidar district and 251.97 area in Ballari district. Indicating a cropping intensity of 147.48 per cent, this demonstrated efficient land use with multiple crops grown annually in the study area.

Keywords: Linseed, socio. economic, land use, cropping pattern

1. Introduction

India is one of the major oilseeds growers and also the importer of edible oils. India is heavily dependent on imports to meet its edible oil requirements and is the largest importer of vegetable oils in the world next to China and USA. Among all imported edible oils, share of palm oil is about 57 per cent followed by soybean oil with a share of 29 per cent and sunflower accounts for 14 per cent. Import growth in respect of edible oils during the last decades is about 174 per cent. India imported a total of 14.19 million tonnes of vegetable oils amounted to Rs. 1,56,800 crore during 2021-22. The per capita consumption of edible oils was 15.80 kg per person per annum in 2012-13 increased to 19.70 kg per person per annum in 2022-23 (Anon., 2023)^[5]. In India, the Agriculture sector provides livelihood support to about 42.3 per cent of population and it accounts for 18.2 per cent share in the country's GDP basket at current prices. This sector has been witnessing the robust growth with an average annual growth rate of 4.6 per cent over last six years. In the year 2022-23, food grain production was recorded an all time hit high of 329.7 million tonnes and oil seeds production has reached 41.1 million tonnes (Anon., 2022a)^[3].

Linseed is the second most important *Rabi* oilseed crop of India and stands next to rapeseed – mustard in area of cultivation and production. In India, linseed is grown mostly

under rainfed (63%), Utera, where Linseed is sown in standing rice crop as relay crop during September month (25%) and irrigated (17%) situations under input starved conditions in most of the linseed producing states. About 20% of the total linseed oil produced in India is used by farmers for oil and other culinary purposes while the rest about 80% is used in industries for the manufacture of paints, varnish, oil cloth, linoleum, printing ink, etc. (Anon.,2024)^[6].

Linum usitatissimum L. commonly known as linseed or flax seed is an ancient oilseed and fiber crop belongs to linaceae family. It is extensively grown in different parts of the countries especially in the temperate zone and tropical zones. In every part of the plant has specific economic importance. Flax seed is also one of the richest dietary sources of α -linolenic acid (ALA) and is a good source of soluble fiber for human consumption (Cunnane *et al.*, 1993)^[7].

In India, linseed is cultivated in an area of 1.70 lakh ha with a production of 1.0 lakh tonnes (Anon., 2019)^[1] and a productivity of 865 kg/ha (Anon., 2021a)^[2]. Globally, India ranks third in area after Canada and Kazakhstan which is almost equivalent whereas in production it occupies fourth place after Canada, China and Kazakhstan. India contributes about 14.88 per cent and 6.57 per cent to world's area and production, respectively.

In India, major part of linseed growing area lies with Madhya Pradesh, Himachal Pradesh, Chhattisgarh, Uttar Pradesh, Maharashtra, Bihar, Odisha, Jharkhand, Karnataka and Assam accounting for more than 97 per cent of the total area. Although, the area is reducing its contribution towards socio-economic improvement especially in small and large farmers, there is a phenomenal improvement in productivity in the states like Rajasthan (1066 kg/ha), Bihar (948 kg/ha) and Nagaland (903 kg/ha) (Anon., 2021a) [2]. In Karnataka area under linseed is 1303 ha and production is 1277 tonnes with a productivity of 654 kg/ha. This witness that in spite of lesser proportion among oil seeds, linseed area provides a livelihood for majority its growing areas. In Kalyan Karnataka region, Bidar and Ballari districts are major linseed growing districts. Bidar district stands first in terms of area with 9.60 ha and production of 7.2 tons followed by Ballari district with an area of 8.66 ha and production of 5.67 tons. (Anon., 2022b) [4].

2. Methodology

The multi-stage random sampling technique was adopted in designing sampling frame for the study. In the first stage, Bidar and Ballari districts were selected based on the highest area under linseed crop in Kalyana-Karnataka region. Similarly, in the second stage two taluks from each district were selected based on the potentiality and highest area under linseed crop in the district. In the third stage, 30 farmers from each taluka were selected randomly in view of spread out of linseed growers in different villages.

Further, while selecting the villages in the selected taluks for identifying the potentiality as well as concentration of linseed growers, experiences of the officers of agriculture at district/ taluk level along with those of experts of processing units were taken by consultation. Thus, total sample farmers were 120 respondents constituting 60 sample respondents from each district. Each district further constitutes 30 respondents from selected taluks.

In the study area, major cropping systems were identified and two only important cropping systems from each district were selected for the study. The details are briefly presented for better understanding.

In Bidar district, five distinct cropping systems are practiced with linseed as an intercrop. The first system involves sorghum intercropped with linseed, while the second combines chickpea with linseed. In the third system, mustard is grown alongside linseed, and in the fourth, safflower is paired with linseed. The fifth system in Bidar district features lentil intercropped with linseed.

In Ballari district, similar cropping systems are adopted but with slight variations. The first system, like in Bidar, includes sorghum and linseed, and the second also pairs chickpea with linseed. However, in Ballari, the third system incorporates safflower with linseed, while the fourth combines lentil with linseed. The fifth system here consists of mustard intercropped with linseed. The major cropping systems were selected for the area study. Finally, the cropping systems such as sorghum with linseed and chickpea with linseed were selected for the further study.

3. Results and Discussion

3.1 Socio Economic characteristics of Linseed growers

The overall socio-economic features including, type of

family, family size, literacy level, age, size of land holdings, livestock details and cropping pattern were studied for comprehension. It has been observed from the table 1 the age distribution of farmers' reveals distinct patterns between Bidar and Ballari districts. In case of Bidar district, about 26.67 per cent of farmers belong to age group below 30 years, while in Ballari it was only 16.67 per cent. The majority of respondents in both districts were found to be between 31 to 40 years, accounting for 38.33 per cent in Bidar district and 35.00 per cent in Ballari district. Farmers aged between 41 to 50 years accounted 21.67 per cent in Bidar and 20.00 per cent in case of Ballari and in Bidar district the age group above 50 years was 13.33 per cent of farmers whereas in Ballari districts, it was 28.33 per cent of farmers. The average age of farmers were found higher in Ballari district with 42.35 compared to Bidar district has 38.68. This data indicated that Ballari has an experienced farming population compared to Bidar.

The study on type of family revealed that in Bidar about 45.00 per cent of farmers live in joint families whereas in Ballari it was only 28.33 per cent. On the other hand, nuclear families were more prevalent in Bidar with 55.00 per cent of farmers and a significantly higher in Ballari with 71.67 per cent. The data indicated that there is a higher tendency towards nuclear family structures in Ballari compared to Bidar.

In Bidar district, majority of farmers (46.66%) had medium-sized families with 4 to 6 members, followed by 31.66 per cent of farmers with small families (less than 4 members), and 21.66 per cent with large families (more than 6 members). In contrast, Ballari district had a higher proportion of farmers with small families, comprising 55.00 per cent of the sample, while 30.00 per cent of the farmers had medium-sized families and 15.00 per cent had large families. The average family size in Ballari was 5.58 members. When combining the data from both districts, small families were the most common, followed by medium-sized families and large families.

The educational status of farmers varied between the two districts. In Bidar, 15.00 per cent of the farmers were illiterate, 38.33 per cent had completed primary education, 35.00 per cent had secondary education, and 11.67 per cent had a degree or higher. In Ballari, a higher percentage of farmers (21.66%) were illiterate, followed by 43.34 per cent who had completed primary education, 15.00 per cent with secondary education and 20.00 per cent holding a degree or higher. These results highlight that while primary education was the most common level of educational attainment, a significant portion of farmers, particularly in Ballari, had only basic education.

In terms of farming experience, 45.00 per cent of farmers in Bidar had less than 10 years of farming experience, while 36.66 per cent had 10 to 20 years of experience. The average farming experience in Bidar was 8.88 years. In Ballari, 31.67 per cent of farmers had less than 10 years of farming experience, 56.66 per cent had 10 to 20 years of experience and 11.67 per cent had greater than 20 years of experience. The average farming experience in Ballari was slightly higher at 9.72 years. Which indicate that most farmers fell into the 10 to 20 years of experience category, with a smaller proportion having greater than 20 years of experience.

In summary, the socio-economic characteristics of the respondent farmers revealed that most farmers were in the age group of 31-40 years and belonged to nuclear families. The average family size was moderate, with less than 4 members being common. In terms of educational status, the farmers had primary education, while a notable portion had minimal schooling. The majority of the farmers had between 10 to 20 years of farming experience, indicating a substantial level of practical knowledge in agricultural practices such as linseed cultivation. Similar results were reported by Meenakshi (2019) [8].

Table 1: Socio-economic characteristics of sample farmers

Sl. No.	Particulars	Bidar (n=60)		Ballari (n=60)	
		No. of farmers	%	No. of farmers	%
I. Age group					
a.	< 30 years	16	26.67	10	16.67
b.	Between 31-40 years	23	38.33	21	35.00
c.	Between 41-50 years	13	21.67	12	20.00
d.	> 50 years	08	13.33	17	28.33
	Average age (years)	38.68	-	42.35	-
II. Type of family					
a.	Joint	27	45.00	17	28.33
b.	Nuclear	33	55.00	43	71.67
III. Size of the family					
a.	Small (<4 members)	19	31.67	33	55.00
b.	Medium (4-6 members)	28	46.67	18	30.00
c.	Large (>6 members)	13	21.67	09	15.00
	Average members	4.38	-	5.58	-
IV. Educational status					
a.	Illiterate	09	15.00	13	21.67
b.	Primary	23	38.33	26	43.33
c.	Secondary	21	35.00	09	15.00
d.	Degree and above	07	11.67	12	20.00
V. Farming experience					
a.	<10 years	27	45.00	19	31.67
b.	10 to 20 years	22	36.67	34	56.67
c.	> 20 years	11	18.33	07	11.67
	Average experience	8.88	-	9.72	-

3.2 Economic status of linseed growers

The economic status of linseed growers in Bidar and Ballari districts, revealed that 23.33 per cent of growers in Bidar and 18.33 per cent in Ballari earned less than ₹1 lakh annually. The most common income range was from ₹1.1 lakh to ₹2 lakh, with 38.33 per cent of growers in Bidar and 36.67 per cent in Ballari. Further, about 21.67 per cent of growers in Bidar and 30.00 per cent in Ballari district reported annual income ranging from ₹2.1 lakh to ₹4 lakh, while a smaller proportion was observed in the annual income earned more than ₹4 lakh with about 16.67 per cent in Bidar and 15.00 per cent in Ballari districts. The average income of linseed growers was ₹1,23,429 in Bidar and slightly higher in Ballari at ₹1,27,653. These results indicated that most of the linseed grower’s fall under the annual income range from ₹1.1 lakh to ₹2 lakh annually. (Table 2).

Table 2: Economic status of linseed growers

Sl. No.	Annual income (₹)	Bidar (n=60)		Ballari (n=60)	
		Number	Per cent	Number	Per cent
1	< 1.00 lakh	14	23.33	11	18.33
2	1.1 to 2 lakh	23	38.33	22	36.67
3	2.1 to 4 lakh	13	21.67	18	30.00
4	>4.00 lakh	10	16.67	9	15.00
Average income		1,23,429		1,27,653	

3.3 Livestock possession of respondent farmers

Table 3 shows that the livestock possession among respondent farmers in Bidar and Ballari districts. The findings revealed the distinct preferences and distributions. With 70 per cent of the farmers have own bullocks in Bidar district, while in Ballari it was found to be above 88.33 per cent of farmers own 109 bullocks. Overall, the farmers across study area own bullocks making them the most commonly owned livestock animals. In Bidar, about 51.67 per cent of farmers owned 41 cows while in Ballari district above 78.33 per cent owns cows.

Goats and sheep are the least commonly owned livestock with only 18.33 per cent of farmers in both districts. This distribution indicated that bullocks and cows are the primary livestock in the study area particularly ownership was higher in Ballari district. The lower ownership rates for buffaloes, goats and sheep suggest their secondary role in farming compared to the more commonly owned bullocks and cows. Overall, the data reflects a strong reliance on bullocks and cows for agricultural activities with regional differences in livestock ownership. The findings revealed that bullocks are the most commonly owned livestock across both district.

Buffalo ownership is less common with only 26.67 per cent of farmers owning buffaloes on overall basis whereas Bidar district having a slightly higher percentage than Ballari district. Goats and sheep are the least commonly owned with just 18.33 per cent of farmers in both districts owning them. This distribution suggested that bullocks are essential to carry out agricultural activities in study district particularly in Ballari. The lower ownership rates for buffaloes and goats/sheep may reflect their secondary role in farming compared to bullocks and cows. In general livestock ownership patterns indicated a reliance on bullocks and cows for farming with prominence of these animals.

Poultry ownership is less common with only 23.33 per cent of farmers owning in the study area whereas Ballari district having a slightly higher percentage than Bidar district. Poultry are the least commonly owned by the farmers in both districts. This distribution suggested that poultry are also essential to improve subsidiary income particularly in Bidar. The lower ownership rates for buffaloes and goats/sheep have reflected their secondary role in farming compared to bullocks and cows. Similar results were reported by Meenakshi (2019) [8].

Table 3: Livestock possession of respondent farmers

Sl. No.	Particulars	Bidar (n=60)			Ballari (n=60)		
		No. of animals	No. of farmers	%	No. of animals	No. of farmers	%
1	Bullock	82	42	70.00	109	53	88.33
2	Cow	41	31	51.67	53	47	78.33
3	Buffalo	25	16	26.67	18	13	21.67
4	Goat/ Sheep	38	11	18.33	24	11	18.33
5	Poultry	24	10	16.67	18	14	23.33

3.4 Land holding pattern in the study area

The data presented in Table 4 revealed landholdings in Bidar and Ballari districts across two cropping systems: Cropping System I (CS - I) and Cropping System II (CS - II). In Bidar district, the average dryland area under cultivation in CS - I was 6.31 acres, while it was 5.43 acres in case of CS - II. Similarly, in Ballari district, the dryland area in CS - I was 5.97 acres, whereas area was 5.31 acres in CS - II.

In case of irrigated land, in Bidar district it has found to be increase from 0.81 acres in CS - I to 1.06 acres in CS - II, indicating an expansion of irrigated cultivation over period of time. In Ballari district, the irrigated land area was higher in both cropping systems, it was found that, about 1.57 acres in CS - I and slightly decreasing to 1.32 acres in CS - II.

The total operational holding followed a similar pattern, with Bidar district having 7.27 acres in CS - I, which reduced to 4.19 acres in CS - II, while in Ballari district, it decreased from 7.20 acres in CS - I to 4.11 acres in CS - II.

Overall, both districts experienced larger areas of cultivated and owned land in CS - I compared to CS - II. While Ballari had more irrigated land than Bidar in both cropping systems, there was a notable decline in total owned land between the two cropping systems in both districts. Similar results were reported by Vijaykumar (2016)^[9].

Table 4: Land holding pattern in the study area (acre)

Sl. No.	Particulars	Bidar (n=60)		Ballari (n=60)	
		CS - I	CS - II	CS - I	CS - II
1	Dryland	6.31	5.43	5.97	5.31
2	Irrigated	0.81	1.06	1.57	1.32
Total operational holding		7.27	4.19	7.20	4.11

Note: CS - I = Sorghum + Linseed
CS - II = Chickpea + Linseed

3.5 Cropping pattern identified by sample respondents in rabi season

Table 5 presented the cropping patterns based on the cropping systems followed by the farmers, highlighting the varied use of land across different crops during the *kharif* and *Rabi* seasons. In the *rabi* season, the primary crop was sorghum plus linseed, covering 19.72 per cent in CS - I and 20.91 per cent in CS - II. Chickpea plus linseed accounted for 7.53 per cent in CS - II (48.25 acres) and 6.18 per cent in CS - I, while safflower covered 4.61 per cent in CS - I and 5.66 per cent in CS - II. *Rabi* crops constituted 31.86 per cent of the total cropped area. In *kharif* crops covered 68.13 in Bidar district and 67.24 per cent in Ballari district. Gross cropped area with 640.66 acres in Bidar district and contributing 374.73 acres in Ballari district. The net sown area was recorded 436.52 area in Bidar district and 251.97 area in Ballari district. indicating a cropping intensity of 147.48 per cent, which demonstrated efficient land use with

multiple crops grown annually. Ballari exhibited a slightly higher cropping intensity of 148.66 per cent compared to 146.76 per cent in Bidar, reflecting more intensive cropping practices.

The data indicated that both regions maintained a diverse cropping system, with a slight dominance of *kharif* crops over *rabi* crops. The cropping intensity suggested efficient land utilization, with multiple crops grown on the same land within a year, reflecting intensive agricultural practices in both cropping systems. The higher cropping intensity in CS - II indicated a more intensive use of agricultural land compared to CS - I.

Table 5: Cropping pattern identified by sample respondents in *rabi* season

Particulars	Bidar (n=60)		Ballari (n=60)	
	Area (Acre)	%	Area (Acre)	%
I. Rabi				
A Sorghum + Linseed (CS - I)	126.35	19.72	23.16	6.18
B Chickpea + Linseed (CS - II)	48.25	7.53	78.36	20.91
C Safflower	29.54	4.61	21.24	5.66
Sub total	204.14	31.86	122.76	32.75
II. Kharif crops				
Gross cropped area (I+II)	640.66	100	374.99	100
Net sown area	436.52	-	252.23	-
Cropping intensity (%)	146.76	-	148.66	-

Note: CS - I = Sorghum + Linseed, CS - II = Chickpea + Linseed

4. Conclusion

The study reveals that farmers in Bidar tend to be younger with an average age of 38.68 years compared to 42.35 years in Ballari. Ballari has a higher prevalence of nuclear families (71.67%) and smaller family sizes, while Bidar shows a higher percentage of joint families (45.00%) and medium-sized families. The overall data indicates moderate family sizes with an average of 4.98 members and a stronger inclination towards nuclear family structures in Ballari. Majority of the farmers belong to age group of 31-40 years they fall under nuclear families with an average size of less than four members. Primary education is the most common level of education (40.84%) and the majority have 10-20 years of farming experience. Overall, farmers in Ballari tend to have slightly higher education levels and more farming experience compared to those in Bidar. The cropping patterns in Bidar and Ballari reveal a diverse use of land across *kharif* and *rabi* seasons. Sorghum with linseed is the primary *rabi* crop in Bidar district also grow chickpea with linseed. The cropped area is 640.66 acres with a net sown area of 436.52 acres reflecting a cropping intensity of 146.52% indicating efficient land use in bidar district and similarly, in Ballari district gross cropped area is 374.99 area with a net sown area of 251.97 area reflecting a

cropping intensity of 148.72%. Ballari exhibits a slightly higher cropping intensity (148.72%) than Bidar (146.72%), this study suggest to adopt more intensive agricultural practices.

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