ISSN Print: 2664-844X
ISSN Online: 2664-8458
NAAS Rating (2025): 4.97
IJAFS 2025; 7(8): 471-476
www.agriculturaljournals.com
Received: 21-06-2025
Accepted: 19-07-2025

Akash B Koshti
M.Sc. Scholar, Department of Agricultural Economics, CoA, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Digambar S Perke
Associate Dean and Principle, CoA Dharashiv, VNMKV, Parbhani, Maharashtra, India

Sachin S More
Professor and Head, Department of Agricultural Economics, CoA, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Ranjit V Chavan
Associate Professor, Department of Agricultural Economics, CoA, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Dheeraj T Pathrikar
Assistant Professor, Department of Agricultural Economics, CoA, Parbhani
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Tukaram B Munde
Assistant Professor, Department of Agricultural Economics, CoA, Parbhani
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Shriniwas V Bharati
Assistant Professor, Department of Agricultural Economics, CoA, Parbhani
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Corresponding Author:
Akash B Koshti
M.Sc. Scholar, Department of Agricultural Economics, CoA, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, India

Socio-economic characteristics of brinjal growers in Parbhani district of Maharashtra

Akash B Koshti, Digambar S Perke, Sachin S More, Ranjit V Chavan, Dheeraj T Pathrikar, Tukaram B Munde and Shriniwas V Bharati

DOI: https://www.doi.org/10.33545/2664844X.2025.v7.i8g.645

Abstract
Brinjal (*Solanum melongena L.*) is a vegetable crop in India, especially for small and marginal farmers due to its adaptability and nutritional value. This study, conducted in Parbhani district of Maharashtra during 2024-25, examined the socio-economic characteristics of 90 brinjal growers using a multistage sampling method. Results showed that (92.22%) of the farmers were male and (48.89%) were middle-aged, with (22.22%) being graduates, reflecting an educated and active farming community. About (57.78%) relied solely on agriculture, while others diversified into services or business. Most farmers were semi-medium landholders (2-4 ha), with an average of 0.67 ha under brinjal. The cropping intensity was (152.84%). The study highlights partial mechanization and moderate diversification, indicating scope for improving irrigation and technology use to boost productivity. Strengthening access to farm machinery, improving irrigation facilities, and promoting farmer education and training can significantly enhance the economic outcomes of brinjal cultivation in the region.

Keywords: Cropping intensity, gender, age, education, irrigation, occupation

Introduction
Brinjal (*Solanum melongena L.*), also known as eggplant is one of the most commonly grown and consumed vegetable crops in India and many areas of Asia, Africa, and the Mediterranean. It is part of the Solanaceae family, which includes important crops like tomato, potato, and chili. Brinjal is a warm-season crop that thrives in various agro-climatic conditions, making it a popular choice for small and marginal farmers. It can be grown in open fields, kitchen gardens, and polyhouses throughout the year, ensuring a steady supply and income for farming households. India is among the largest producers of brinjal worldwide, contributing significantly to global production. Major brinjal-producing states in India include West Bengal, Odisha, Bihar, Maharashtra, Andhra Pradesh, and Karnataka, where the crop is cultivated for both home consumption and commercial use. Brinjal fruits vary widely in size, shape, and color. They range from small to large, round to oblong, and come in shades of purple, green, white, or mixed colors, catering to different consumer tastes and regional dishes.

Nutritionally, brinjal is important in a balanced diet. It is low in calories and has no cholesterol, making it a good choice for those trying to manage their weight or follow low-fat diets. It is high in dietary fiber, which helps digestion and supports gut health. Brinjal also provides essential vitamins, including Vitamin C for immune support, Vitamin B6 for brain development and function, and minerals like potassium for regulating blood pressure, along with magnesium, manganese, and folate. One important phytonutrient is nasunin, found in the purple skin of brinjal. This strong antioxidant protects body cells from oxidative stress and damage from free radicals. Because of its low glycemic index and high fiber content, brinjal is often recommended in diabetic-friendly diets, as it helps manage blood sugar levels.

Brinjal has economic importance. It provides income for farmers and contributes to local economies. Brinjal cultivation can offer jobs in rural areas, thus supporting communities. The vegetable is also popular in many cuisines, which boosts demand in markets. Increasing awareness of its health benefits may further enhance its market value.

Material and methods

The current study socio-economic characteristics of brinjal growers in Parbhani district of Maharashtra utilized a multistage sampling method in the selection of district, tehsils, villages, and brinjal farmers. To begin with, Parbhani district was purposively selected based on its significant area of brinjal cultivation. Parbhani and Manwat tehsils were then selected in the second stage based on their leadership role in brinjal production within the district. In the third stage, Three villages were selected from the given tehsils on the basis of the maximum number of farmers cultivating brinjal. From each selected village 15 brinjal growers were purposively selected, 90 brinjal growers were purposively selected to constitute the sample for the study. Tabular presentation, frequency analysis, percentage method were used for data analysis to derive meaningful conclusions.

Results and discussion

General information

The socio-economic characteristics of farmers play a significant role in influencing their production practices, income levels, and marketing decisions. Key factors such as family size, educational attainment, land utilization pattern, and cropping pattern are crucial for understanding the overall framework of brinjal production and marketing. These aspects are discussed in detail in the following section.

Distribution of brinjal growers according to gender

Brinjal cultivation in the study area is predominantly managed by male farmers, while female members often assist in various farm operations such as transplanting, weeding, and harvesting. Although women contribute significantly to labour, decision-making and ownership of land and resources largely remain with men, reflecting existing gender disparities in agriculture. The (table 1) revealed that 92.22 per cent of brinjal growers was male, indicating that vegetable farming, particularly brinjal, is predominantly managed by men in the region. Only 7.78 per cent are female, suggesting lower female participation in agricultural decision-making and field-level operations. The data reflects a gendered division of labor in agriculture, where men tend to dominate cash crop cultivation due to physical labor demands and better access to land and resources.

Table 1: Distribution of brinjal growers according to gender

Sr. No.	Particulars	No.	Average	Percent
1	Male	83	0.92	92.22
2	Female	7	0.08	7.78
	Total	90	1.00	100

Distribution of brinjal growers according to age type

As shown in (table 2) that 48.89 per cent of brinjal growers are middle-aged (40-59 years), followed closely by 42.22 per cent young farmers (19-39 years), while only 8.89 per cent are above 60 years. The dominance of younger and middle-aged farmers indicates an active and potentially innovative agricultural workforce. Younger farmers are generally more receptive to adopting new technologies and sustainable practices. As noted by Sangeetha and Surendran (2015) [8]

Table 2: Distribution of brinjal growers according to age type

Sr. No	Age Type	No.	Average	Percent
1	Young (19-39)	38	0.42	42.22
2	Middle (40-59)	44	0.49	48.89
3	Old (Above 60)	8	0.09	8.89
	Total	90	1.00	100

Distribution of brinjal growers according to education level

Education plays a vital role in shaping the managerial skills and technical knowledge of farmers. The educational background of the selected brinjal growers is detailed in (Table 3)

The education profile of brinjal growers shows that the majority have formal schooling. 24.44 per cent completed higher secondary education (HSC), 22.22 per cent are graduates, and 13.33 per cent have education above graduation. Only 11.11 per cent are illiterate. Higher education levels are positively correlated with better farm management, improved adoption of scientific practices, and informed market decisions. Educated farmers are more likely to maintain farm records, plan input use efficiently, and adopt precision farming tools. They also show greater awareness of pest and disease management, crop diversification, and soil health improvement techniques. Furthermore, educated farmers can effectively interpret weather forecasts, government schemes, and market price trends, thereby reducing risks and maximizing profits.

Table 3: Distribution of brinjal growers according to education level

Sr. No.	Education Level	No.	Average	Percent
1	Illiterates	10	0.11	11.11
2	Primary	9	0.10	10.00
3	Seconday	17	0.19	18.89
4	HSC	22	0.24	24.44
5	Graduation	20	0.22	22.22
6	Above Graduation	12	0.13	13.33
	Total	90	1.00	100

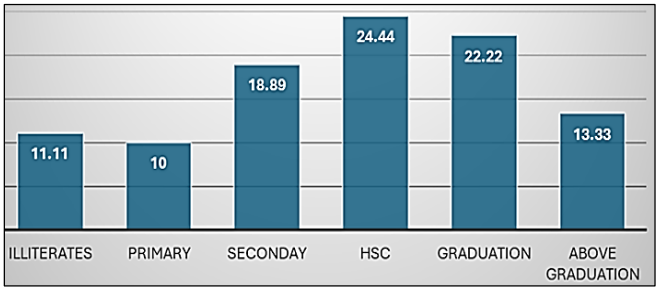

Fig 1: Education status of brinjal selected growers

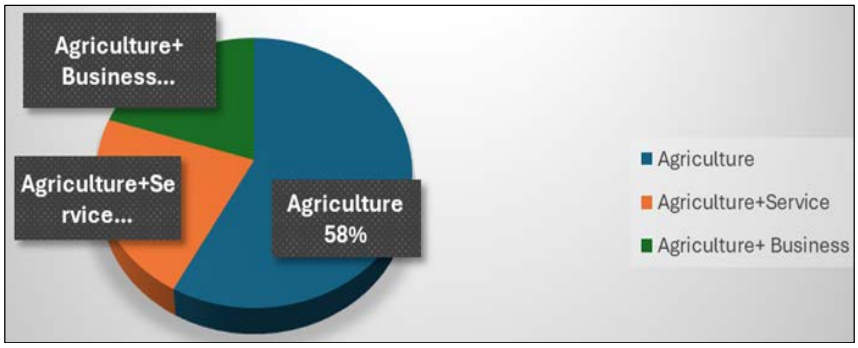

Fig 2: Occupation percentage of selected brinjal growers

This trend indicates a positive shift towards an educated farming community, which can potentially enhance farm efficiency, productivity, and profitability. As noted by Mishra *et al.* (2009) [5]

Distribution of brinjal growers according to occupation

Table 4: Distribution of brinjal growers according to occupation

Sr. No.	Occupation	No.	Average	Percent
1	Agriculture	52	0.58	57.78
2	Agriculture +Service	20	0.22	22.22
3	Agriculture+ Business	18	0.20	20.00
	Total	90	1.00	100

The primary occupation of most growers is agriculture, with vegetable cultivation being their main source of income. Some farmers also engage in allied activities such as dairy farming or wage labor to supplement their earnings. A few households have secondary occupations in services or small businesses. based on the (table 4) 57.78 per cent of the brinjal growers relied exclusively on agriculture as their primary occupation, whereas 22.22 per cent combined farming with service-related work, and 20 per cent were involved in both agriculture and business activities. This pattern demonstrated that, while agriculture remained the foundation of livelihood for most, many farmers opted to diversify their sources of income through non-farm employment. This diversification appeared to be a strategic response to manage financial risks and reduce dependency on a single source of income. Engaging in service or business provided additional income, which helped farmers offset the uncertainties associated with farming, such as fluctuating yields or market prices. These supplementary earnings were often used to invest in farm inputs, improve land productivity, and support the adoption of modern farming practices. As a result, even though off-farm income was not directly related to cultivation, it indirectly contributed to better farm performance. Pingali (2010) [6]

Distribution of brinjal growers according to land holding

Table 5: Distribution of brinjal growers according to land holding

Sr. No.	Particulars	No.	Average	Percent
1	Marginal land (0-1)	8	0.09	8.89
2	Small land (1-2)	25	0.28	27.78
3	Semi medium land (2-4)	29	0.32	32.22
4	Medium land (4-10)	28	0.31	31.11
5	Large land (>10)	0	0.00	0.00
	Total	90	1.00	100

The distribution of landholding showed that 32.22 per cent of the brinjal growers were semi-medium farmers having 2 to 4 hectares of land. This was followed by 31.11 per cent medium farmers with 4 to 10 hectares, and 27.78 per cent small farmers owning 1 to 2 hectares. Only 8.89 per cent were marginal farmers with less than 1 hectare, and no farmers had more than 10 hectares, which meant there were no large-scale farmers in the study area. This showed that small to medium-sized farms were more common for brinjal cultivation.

Farm size affected how farmers used inputs, machinery, and how much they could produce. Medium and semi-medium farmers used their land more efficiently, managed their resources better, and often got higher yields. These farmers had enough land to use modern tools, grow more crops, and earn better incomes. They also had better chances of getting loans and selling their produce in markets.

On the other hand, small and marginal farmers struggled with low land size. They found it harder to buy good quality seeds, fertilizers, or equipment. Their small land size made it tough to use machines or try new farming methods, so they mostly used traditional ways. This limited their production and income. Chand *et al.* (2011) [2]

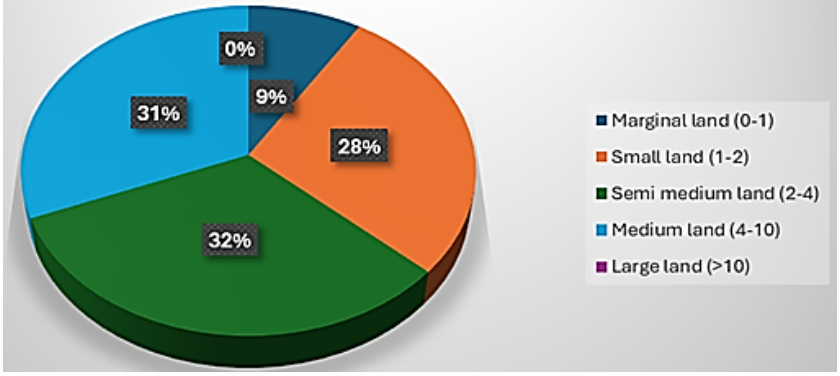

Fig 3: Land holding of selected brinjal growers

Distribution of Brinjal Growers according to Livestocks

Most growers rear livestock such as bullocks, cows, buffaloes, and goats to support their farming activities and household needs. Bullocks are mainly used for ploughing and transportation, while cows and buffaloes provide milk and organic manure. Livestock contributes to both income and farm sustainability. The (table 4.6) show detailed account of livestock ownership among brinjal farmers, highlighting the role of animals in supporting agricultural activities. Out of a total of 248 livestock units, buffaloes made up the largest share at 29.03 per cent, followed closely by bullock pairs at 27.42 per cent and cows at 25.40 per cent. Goats represented a smaller portion, contributing only 18.15 per cent to the total livestock population. The higher numbers of buffaloes and cows indicated the importance of dairy farming in supplementing farm income, while bullocks remained vital for traditional farming practices such as ploughing, transport, and other field operations. This pattern showed that farmers continued to rely on mixed farming systems, where both crop cultivation and livestock rearing played complementary roles in sustaining livelihoods.

Table 6: Distribution of Brinjal Growers according to Livestocks

Sr. No.	Particulars	No.	Average	Percentage
1	Bullock Pair	68	0.76	27.42
2	Cow	63	0.70	25.40
3	Buffalo	72	0.80	29.03
4	Goat	45	0.50	18.15
	Total	248	2.76	100

The relatively low percentage of goats suggested that small ruminant rearing was not a major focus among these brinjal growers, possibly due to space constraints, lack of market access, or cultural preferences. Livestock ownership helped improve farm sustainability by providing organic manure, which reduced dependence on chemical fertilizers, and by generating additional income through milk and animal sales.

Distribution of brinjal growers according to cropping pattern

Table 7: Cropping pattern followed by brinjal growers

Sr. No.	Particulars	Area (Ha)	Percent
A	***Kharif (Ha)***		
1	Soybean	1.12	20.07
2	Pigeon pea	0.02	0.36
3	Cotton	0.8	14.34
4	Green gram	0.14	2.51
5	Black gram	0.13	2.33
6	Sorghum (Kh.)	0.03	0.54
7	Maize (Kh.)	0.04	0.72
Sub Total - I		2.39	40.86
B	***Rabi (Ha)***		
1	Wheat	0.26	4.66
2	Gram	0.65	11.65
3	Sorghum(Rb.)	0.11	1.97
4	Brinjal	0.67	18.36
5	Vegetables	0.06	1.08
Sub Total - II		1.76	37.71
C	***Summer (Ha)***		
1	Vegetables	0.43	7.71
2	Groundnut	0.35	6.27
4	Others	0.11	1.97
Sub Total - III		0.89	15.95
D	***Annual (Ha)***		
1	Sugarcane	0.31	5.56
2	Turmeric	0.23	6.3
3	Others	0.01	0.01
Sub Total - IV		0.55	5.56
Gross cultivated area		5.58	100.00
Net cultivated area		3.65	
Cropping intensity		152.84	

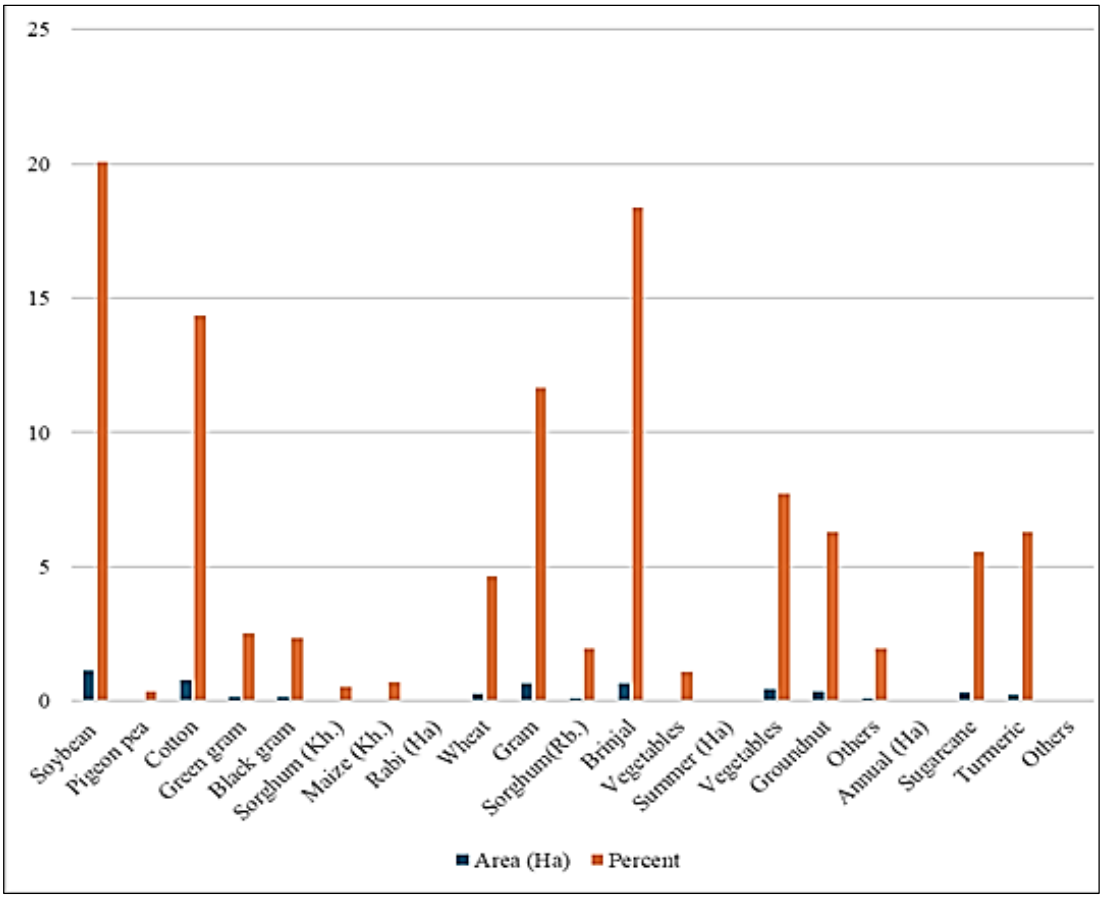

Fig 4: Cropping pattern of brinjal growers

The information compiled in the (table 4.7) revealed that brinjal was mainly cultivated during the rabi season, covering 18.36 per cent of the total cropped area. In contrast, soybean occupied the largest share during the *kharif* season at 20.07 per cent. This seasonal preference showed that farmers selected crops based on climate suitability and market demand. Brinjal, being a labor-intensive and high-value crop, was grown during rabi when water availability and weather conditions were more favorable, while soybean, a rain-fed crop, was preferred in *kharif* to make use of monsoon rains.

The data also showed that the net cultivated area was 3.65 hectares and the gross cultivated area was 5.58 hectares, resulting in a cropping intensity of 152.84 per cent. This clearly indicated the adoption of multiple cropping practices, where farmers cultivated more than one crop on the same land within a year. Such intensive land use suggested that farmers aimed to maximize output and income from limited land resources. This practice also helped in reducing the idle period of land and ensured continuous production.

The average area under brinjal is 0.67 ha per farmer. This suggests that while brinjal is a significant crop, it is not the dominant one in the overall land-use pattern. Farmers likely allocate land to brinjal based on market demand, pest vulnerability, and input costs.

Furthermore, the cropping pattern included a variety of crops such as cereals, pulses, oilseeds, and vegetables, reflecting a well-integrated and diversified farming system. This crop diversity helped in spreading risk, improving food security, and maintaining soil health through crop rotation. As highlighted by Joshi *et al.* (2006) [9].

Farm implements of brinjal growers

Brinjal growers commonly use basic farm implements like hoes, and ploughs for cultivation. Some farmers also use tractors, cultivators, and sprayers, especially in irrigated areas. While small farmers rely on manual tools, larger farmers adopt mechanized equipment to improve efficiency. In the (table 8) presented that brinjal farmers made use of both traditional and modern farming tools. Implements such as hoes 18.85 per cent and harrows 10.38 per cent were frequently used for basic land preparation and weed removal, reflecting continued reliance on conventional practices. At the same time, modern tools like seed drillers 9.70 per cent and drip irrigation sets 10.79 per cent showed that farmers had begun adopting newer technologies to improve sowing precision and water management. These tools helped enhance productivity and reduced the need for intensive manual labor, particularly during critical stages of crop growth.

However, the ownership of heavy machinery such as tractors 3.01 per cent and threshers 1.64 per cent remained quite low. This indicated that either the farmers hired such equipment when needed or operated small landholdings where investing in costly machines was not feasible. Although full mechanization was not seen, the partial adoption of machines helped ensure timely agricultural operations and saved labor costs. Rao (2007) [10]

Table 8: Farm machinery and implements of brinjal growers

Sr. No.	Particulars	No.	Average	Percentage
1	Tractor	22	0.37	3.01
2	Plough	73	1.22	9.97
3	Harrow	76	1.27	10.38
4	Hoe	138	2.30	18.85
5	Harvester	0	0.00	0.00
6	Thresher	12	0.20	1.64
7	Seed Driller	71	1.18	9.70
8	Cultivator	22	0.37	3.01
9	Bullock cart	53	0.88	7.24
10	Drip Set	79	1.32	10.79
11	Electric Pump	66	1.10	9.02
12	Diesel Pump	12	0.20	1.64
13	Duster	0	0.00	0.00
14	Manual sprayer	48	0.80	6.56
15	Power sprayer	60	1.00	8.20
	Total	732	12.2	100

Distribution of fixed assets of brinjal growers

The assets play a vital role in supporting farming operations and enhancing productivity. The value and type of assets vary with the farm size and economic status of the growers. (table 9) indicated that a majority of the brinjal growers owned essential fixed assets that supported their farming and household needs. About 48.13 per cent of the farmers owned a residential house, which served as a basic necessity and a symbol of livelihood stability. Around 40.64 per cent had cattle sheds, reflecting the integration of livestock into their farming system. Only 7.49 per cent of the farmers owned farm houses situated near or on their fields, which were likely used for resting during peak agricultural activities or for storing tools and inputs. These fixed assets showed that farmers invested in permanent infrastructure to support both farming operations and daily life.

Ownership of engine pump houses was reported by only 3.74 per cent of the farmers, suggesting that mechanized irrigation was limited and many growers likely depended on traditional or shared sources of water. The absence of poultry sheds or similar structures further revealed minimal diversification into poultry farming or small livestock rearing. This limited diversification could have been due to lack of capital, technical knowledge, or risk aversion. As highlighted by Jha *et al.* (2006) [4]

Table 9: Distribution of fixed assets

Sr. No.	Particulars	No.	Average	Percentage
1	Residential House	90	1.00	48.13
2	Farm House	14	0.16	7.49
3	Cattle Shed	76	0.84	40.64
4	Poultry shed	0	0.00	0.00
5	Engine Pump House	7	0.08	3.74
	Total	187	2.08	100.00

Conclusion

The study highlights that brinjal cultivation in Parbhani district plays a crucial role in supporting the livelihoods of small and marginal farmers. The majority of growers are middle-aged males with a fair level of education, which positively influences farm management and technology adoption. Despite the dominance of semi-medium and medium landholders, the average area under brinjal remains modest, indicating the need for efficient resource utilization. Livestock rearing is an integral part of the farming system, contributing to both income and sustainability. While there is evidence of gradual mechanization through the use of tools like drip irrigation, access to advanced machinery and irrigation infrastructure remains limited. The cropping pattern, marked by high intensity and seasonal preferences, reflects farmers' efforts to maximize land use. Overall, the conclusion suggest that with enhanced support in mechanization, irrigation facilities, and farmer training, the productivity and economic viability of brinjal farming in the region can be significantly improved.

References

1. Birthal PS, Ali J. Livestock sector in India: Opportunities and challenges for smallholders. Indian Journal of Agricultural Economics. 2005;60(3):512-528.
2. Chand R, Prasanna PAL, Singh A. Farm size and productivity. Economic and Political Weekly. 2011;46(26-27):5-11.
3. Devi BI, Singh R. Gender participation in vegetable cultivation. Indian Journal of Agricultural Economics. 2011;66(3):473-479.
4. Jha D, Kumar P, Vyas VS. Investment in agriculture: Public and private. EPW. 2006;41(26):2737-2748.
5. Mishra AK, *et al*. Education and farm productivity: Evidence from rural India. Journal of Agricultural Economics. 2009;60(1):72-92.
6. Pingali P. Agriculture Renaissance: Making 'Agriculture for Development' work in the 21st Century. Handbook of Agricultural Economics. 2010;4:3867-3894.
7. Rathore S, Jain DK. Gender participation and labor utilization pattern in vegetable cultivation in Rajasthan. International Journal of Agricultural Sciences. 2017;9(10):4021-4024.
8. Sangeetha V, Surendran U. Youth involvement in vegetable farming. Agricultural Reviews. 2015;36(2):148-152.
9. Joshi R, Reingold AL, Menzies D, Pai M. Tuberculosis among health-care workers in low-and middle-income countries: a systematic review. PLoS medicine. 2006 Dec;3(12):e494.
10. Rao RV. Decision making in the manufacturing environment: using graph theory and fuzzy multiple attribute decision making methods. London: Springer London; 2007 Jun 6.