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An investigation into the garlic growing pattern and frequency in Rama University Mandhana, Kanpur Nagar, Uttar Pradesh

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Abstract

The study was conducted in Rama University, Mandhana Kanpur (U.P.). The enquiry pertained to the agricultural year 2021-22. University Farm & near Villages namely, Ram nagar and Kukradev were purposively selected for the study due to higher concentration of garlic area. List of the respondents from selected Villages were prepared along with acreage under garlic cultivation, 50 respondents (Farmers) proportionally from each category of farms and classified into three categories i.e. marginal (below 1 ha), small (1-2 ha) and medium (2-4 ha & above). Overall average size of farms was found to be 1 ha, which varied from 0.41 ha on marginal, 0.81 ha on small and 1.60 ha on medium farms along with total cultivated area 85.48 ha on sample farms. Gross cropped area on marginal, small and medium size of farms accounted to be 1.90, 2.62 and 4.44 ha, respectively. Area under garlic on marginal, small and medium size of farms was found to be 0.20, 0.20 and 0.82 ha, respectively. Overall percentage share of garlic was observed 3.7 per cent among all crops. The maximum cropping intensity was observed (132.27 per cent) on marginal size of sample farms followed by small (107.33 per cent) and medium (104.89 per cent) with an average on sample farms came to 118.90 per cent.

Keywords: Cropping pattern, cropping intensity, respondents and garlic

Introduction:

Garlic (Allium sativum L.), after onions, is the second most important crop grown from bulbs in the Amaryllidaceae family. Though it is produced throughout the country's plains and has been consumed for decades by most Indians. The economic output is found in the subsurface development component known as bulbs. According to Pathidar et al. (2018), a garlic bulb is a complex or numerous bulbs composed of bulbs or bulb segments that are generally referred to as cloves.

Cloves are used to flavor food and to make chutneys, curry powder, pickles, and tomato ketchup. Garlic is a major crop of spices that are used not only in cooking but also in the treatment or prevention of certain diseases and health issues that afflict people. Garlic is a major crop of spices that are used not only in cooking but also in the treatment or prevention of certain diseases and health issues that afflict people. One of the most often used spices worldwide is garlic. The

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Eastern Region and Central Asia are major growing regions for it (Meena, 2013) [7]. Garlic is grown in temperate to cold climates and is most commonly produced in India. This herb is cultivated for its culinary and medicinal properties. Cloves have a distinct, strong, spicy flavor that significantly softens and sweetens when cooked. When used as medication, it improves cognitive function, decreases blood pressure, cholesterol, and strengthens the immune system, among other benefits. It is used as a carminative and stomach stimulant in Indian medicine (Ayurvedic, Unani, and Siddha) to aid it serves as a significant source of foreign exchange in addition to providing for basic needs at home. In Yewatkar (2019). In [10].With a production of almost two million metric tons in the fiscal year 2022, Madhya Pradesh led all other states in India in garlic production. Gujarat, Rajasthan, and Uttar Pradesh were the next Indian states. In 2022, the nation produced more than 3.5 million metric tons of garlic (Source: Statista). With a productivity rate of 6625 kg/ha, Uttar Pradesh grows 35.31 thousand hectares and 229.34 thousand metric tonnes of garlic yearly (Directorate of Arecanut and Spices Development, 2019). There are certain researchable components related to long-day garlic in particular and garlic improvement in general that are pertinent to the research communities in India and throughout the world. In order to feed its growing population and meet the demands for export and processing, India would need to plant 30 lakh tons of garlic by 2050, with a higher nutritional value than other bulb crops (raw 1 clove) (Kumud et al., 2019).(6). All of the other nutrients (2.98 g) and phosphorus (13.77 mg), potassium (36.09 mg), calcium (16.29 mg), magnesium (2.25 mg), and protein (0.57 g) are present in high concentrations in this food. Green garlic has a high concentration of ascorbic acid (1%). It is an important source of nutrients for humans and has several health advantages. It is also essential to the current immune system (Diriba and Shiferaw, 2016) [3].

This is one of the main goals of this paper is:

- To study the cropping pattern on sample farms.
- To study the crop intensity on sample farms.

Material and Methods:

(A). Sampling Techniques

The multistage stratified, purposive cum random sampling procedure was used for the selection of Rama university campus village and respondents.

1). Selection of District: The study was purposively undertaken in Rama university in order to avoid operational inconvenience of the investigator.

2). Selection of Village: At first, a list of all 2 Village and university campus Kanpur district of Uttar Pradesh along with acreage of garlic cultivation were prepared and arranged in descending

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order. The villages namely Ramnagar and kukradev having maximum area in garlic were selected purposively for the study.

3). Selection of Farmers: A separate list of garlic growers of selected villages were prepared along with their size of holding and stratified into three categories i.e. 1. Marginal: (Below 1 ha) 2. Small: (1 to 2 ha) 3. Medium: (2 to 4 ha) from this list, samples of 50 respondents were drawn following the proportionate random sampling technique categories.

(b). Methods of Enquiry

The primary data were collected by survey method through personal interview with use of pre-structured schedule, while secondary data were collected from villages and campus farm and district offices etc.

c). Period of Enquiry

The data were pertained to the agricultural year 2022.

d). Methods and Techniques of Analysis

The data collected from the sample farmers were analyzed and estimated with certain statistical tools it evolves the simplest and important measures of average which have been used into statistical analysis i.e. weighted average and geometric mean.

Average

The simplest and important measures of average which have been used into statistical analysis was the weighted average Geometric mean. The formula used to estimate the average is as below:

$$\mathbf{W.\ A. = \sum Wi\ Xi\ /\ \sum Wi}$$

Where, W. A. = Weighted average

Xi = Variable

Wi = weights of Xi

Cropping Intensity: = Gross Cropped Area /Net Sown Area ×100

Result & Discussion:

The size of holding was supposed to positively correlate with volume of garlic production. The farmers having larger size of holding are economic better and they are in a position to adopt easily the improved farm practices. On the other hand, the farmer having smaller farm unit have

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been desired to produce as much they can with a view to marketing both their ends meet and also to improve their economic condition.

Table 1: Average size of holding on sample farm in the study area

S. No.	Size group of farms	Number of farms	Total cultivated area (ha)	Average size of farm (ha)
1	Marginal	35	24.18 (22.54)	0.41
2	Small	15	29.16 (24.59)	0.81
3	Medium	05	32.14 (26.86)	1.60
Total		50	85.48 (50)	1.75

Note: Figures in parenthesis show the percent to corresponding total

Table 1 indicates that overall average size of farms was found to be 1.56 ha, which varied from0.81 ha on marginal, 1.74 ha on small and 4.60 ha on medium farms along with total cultivated area 187.48 ha on sample farms.

Cropping pattern

Cropping pattern deals with the distribution of land available for cultivation under different crops in particular season during a year. It is most important factor which determines the investment for different inputs on a farm and income of farmers based on resource availability and its use under various agro-climatic conditions. Cropping pattern of sample farms are given in Table 2.

It is evident fromTable2 that gross cropped area on marginal, small and medium size of farms accounted to be 1.90, 3.62 and 9.44 ha, respectively. Area under garlic on marginal, small and medium size of farms was found to be 0.20, 0.20 and 0.82 ha, respectively. Overall percentage share of garlic was observed 8.7 per cent among all crops.

Table2: Cropping pattern on different size group of sample farms in the study area.

S. No.	Crops	Size of sample farms(ha)			
		Marginal	Small	Medium	Average
(A)	**Kharif Crops**				
1.	Paddy	0.38 (17.43)	0.78 (17.77)	2.60 (24.88)	0.79(20.0)
2.	Maize	0.29 (13.30)	0.40 (9.11)	1.27 (12.15)	0.46(11.6)
3.	cowpea	0.04 (1.83)	0.12 (2.73)	0.30 (2.87)	0.10(2.5)
4.	Urd	0.05 (2.29)	0.18 (4.10)	0.42 (4.02)	0.14(3.4)
	Total	0.76 (34.86)	1.48 (33.71)	4.59 (43.92)	1.48(37.5)
(B)	**Rabi Crops**				
1.	Garlic	0.26 (11.93)	0.48 (10.93)	1.42 (13.59)	0.48(12.1)
2.	potato	0.10 (4.59)	0.10 (4.59)	0.70 (6.70)	0.21(5.3)
3.	Garlic	0.20 (9.17)	0.20 (9.17)	0.82 (7.85)	0.34(8.7)
4.	mustard	0.08 (3.67)	0.08 (3.67)	0.40 (3.83)	0.15(3.8)
5.	Lentil	0.04 (1.83)	0.10 (2.28)	0.26 (2.49)	0.09(2.2)
	Total	0.68 (31.19)	1.35 (30.75)	3.6 (34.45)	1.27(32.1)
C.	**Zaid crops**				

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1	Vegetable	0.20 (9.17)	0.41 (9.34)	0.67(6.41)	0.33(8.3)
2	Moong	0.16 (7.34)	0.26 (5.92)	0.31 (2.97)	0.21(5.4)
3	Chari	0.10 (4.59)	0.12 (2.73)	0.27 (2.58)	0.13(3.3)
	Total	0.46 (21.10)	0.79 (18.00)	1.25 (11.96)	0.67(17.1)
Gross Cropped Area (A+B+C)		1.90 (100.00)	3.62 (100.00)	9.44 (100.00)	3.42 (100.0)

Note: Figures in parenthesis show the percent to corresponding gross cropped area

Cropping intensity

Cropping intensity of sample farms were calculated & given in Table 3.

Table3: Cropping intensity on different size groups of farms in the study area.

S. No.	Size group of farms	No. of farmers	Net cultivated area (ha)	Gross cropped area (ha)	Cropping intensity
1	Marginal	30	0.41	1.10	268.29
2	Small	15	0.81	2.11	260.49
3	Medium	05	1.60	4.04	252.50
Average		50	1.75	2.72	260.42

Table 3 shows the maximum cropping intensity was observed (268.29 per cent) on marginal size of sample farms followed by small (260.49 percent) and medium (252.50percent) with an average on sample farms came to 260.42per cent.

Conclusion

Overall average size of farms was found to be 1.56 ha, which variedfrom0.81ha on marginal, 1.74ha on small and4.60ha on medium farms along with total cultivated area 187.48 ha on sample farms. Gross cropped area on marginal, small and medium size of farms accounted to be 1.10, 2.11 and 4.04 ha, respectively. Area under garlic on marginal, small and medium size of farms was found to be 0.20, 0.20 and 0.82 ha, respectively. Overall percentage share of garlic was observed

8.7 per cent among all crops. The maximum cropping intensity was observed (268.29 per cent) on marginal size of sample farms followed by small (260.49 per cent) and medium (252.42per cent) with an average on sample farms came to 260.42 per cent.

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