CHAPTER 6: DATA INTERPRETATION, FINDINGS, AND ANALYSIS

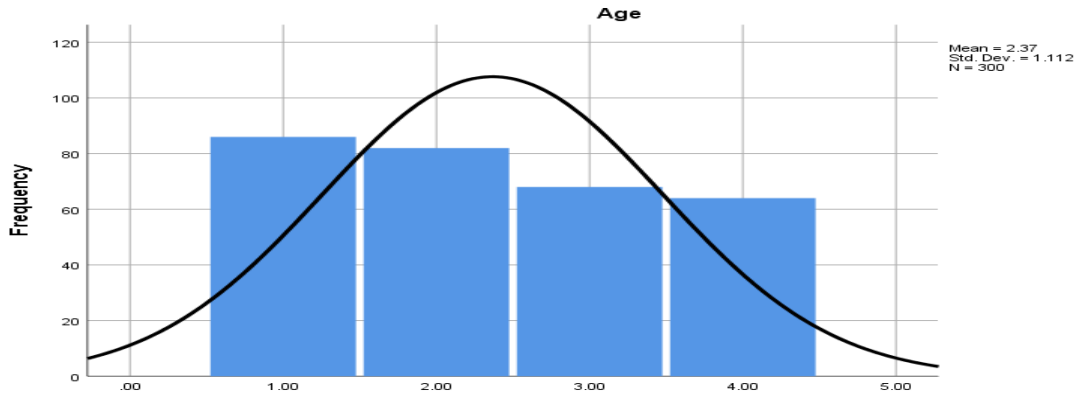
6.1 FARMER'S RESPONSE

6.1.1 Demographic Response of Farmers

1. Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20- 30 years	86	28.7	28.7	28.7
	31-40 years	82	27.3	27.3	56.0
	41-50 years	68	22.7	22.7	78.7
	> 50 years	64	21.3	21.3	100.0
	Total	300	100.0	100.0	

Table 6.1: Age



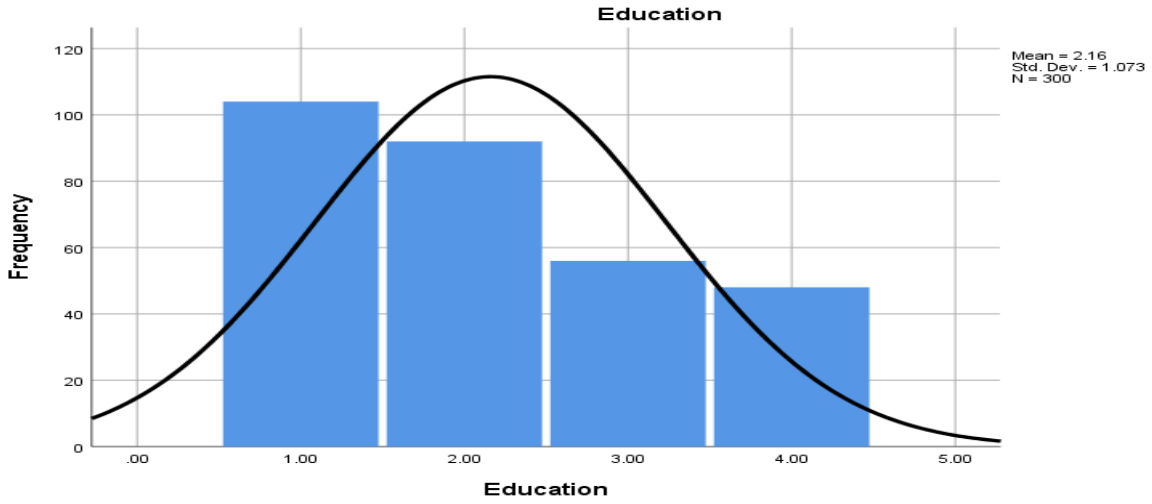
Graph 6.1: Age

The main purpose of taking this variable was to know the age group of farmers involved in farming. According to the analysis and information in the graph and table above, the sample data pertains to 300 respondents. Regarding "*Age*," it was found that 64 (21.3%) respondents stated that they were > 50 years old, 68 (22.6%) respondents said they were between 20 and 30 years old, and 82 (27.3%) respondents said they were between 31 and 40 years old. The statistical test for the various statements was performed. The observations state that for the statement "*Age*" the Mean is 2.37 and SD is 1.1 and the t is 36.8 which states a significant relationship and is valid.

2. Education

Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uneducated	104	34.7	34.7	34.7
	8th pass	92	30.7	30.7	65.3
	10th pass	56	18.7	18.7	84.0
	12th pass & above	48	16.0	16.0	100.0
	Total	300	100.0	100.0	

Table 6.2: Education



Graph 6.2: Education

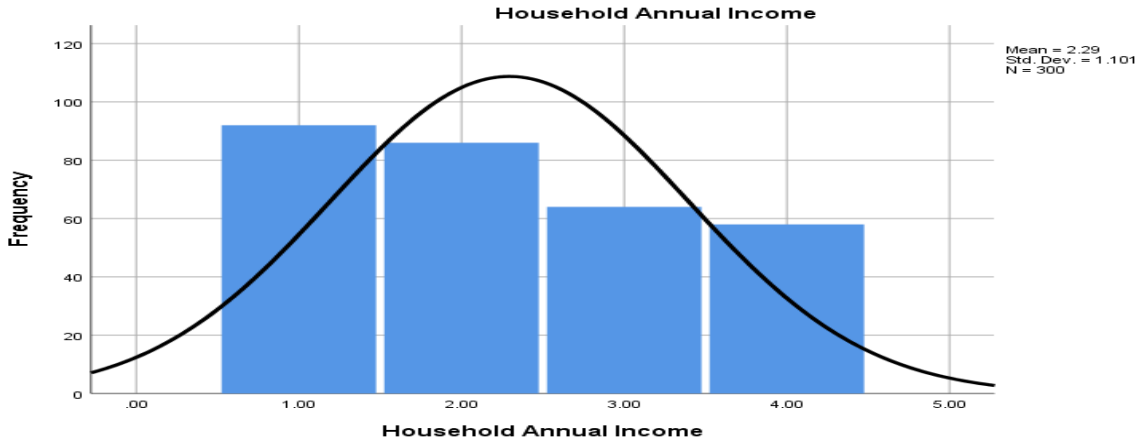
The main purpose of choosing this variable is to know how educated the respondent i.e., the farmer is. According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. Regarding "*Education*," it was found that 104 respondents—or 34.6%—responded that they were uneducated, 92—or 30.6%—responded that they had completed eighth grade, 56—or 18.6%—responded that they had completed tenth grade, and 48—or 16%—responded that they had completed twelve grades or higher.

The statistical test for the various statements was performed. The observations states that for the statement "*Education*" the Mean is 2.16 and the SD is 1.07 and the t is 34.8 which states a significant relationship and is valid.

3. **Household Annual Income**

Household Annual Income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 2.5 lakhs	92	30.7	30.7	30.7
	2.5 lakhs to 5 Lakhs	86	28.7	28.7	59.3
	5 lakhs to 15 lakhs	64	21.3	21.3	80.7
	> 15 lakhs	58	19.3	19.3	100.0
	Total	300	100.0	100.0	

Table 6.3: Household Annual Income



Graph 6.3: Household Annual Income

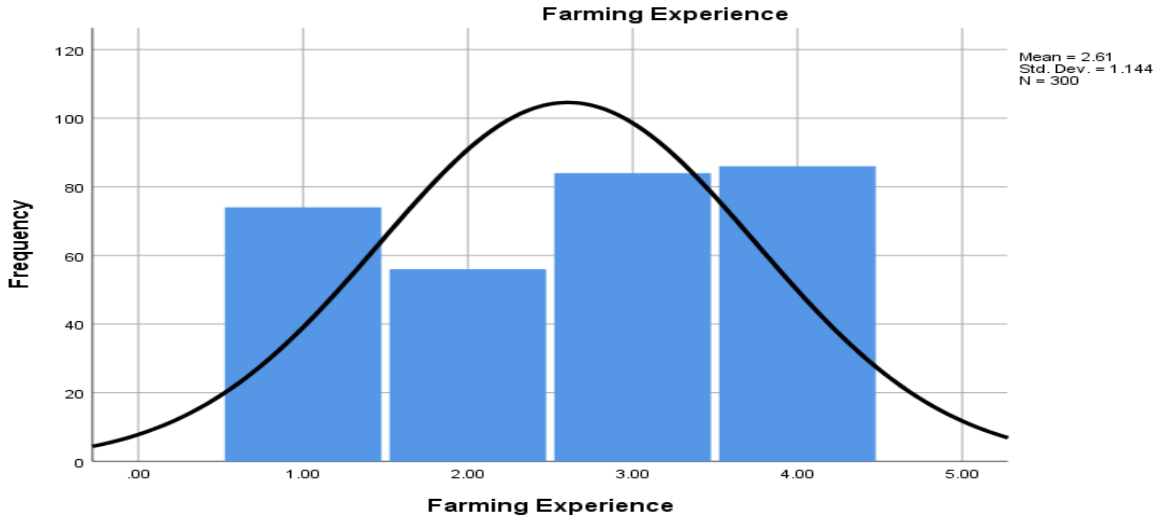
The main purpose of choosing this variable is to know the financial condition of the respondent. The sample data is said to concern 300 respondents based on the analysis and information provided in the graph and tables above. For "*Household Annual Income*," it was found that 58 respondents (19.3%) responded > 15 lakhs, while 64 respondents (21.3%) responded between 5 lakhs and 15 lakhs, and 92 respondents (30.6%) responded between 2.5 lakhs and 5 lakhs.

The statistical test for the various statements was performed. The observations state that for the statement "*Household Annual Income*" the Mean is 2.2 and the SD is 1.10 and the t is 36.09 which states a significant relationship and is valid.

4. **Farming Experience**

Farming Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1 years	74	24.7	24.7	24.7
	2 – 3 years	56	18.7	18.7	43.3
	4 to 6 years	84	28.0	28.0	71.3
	> 6 years	86	28.7	28.7	100.0
	Total	300	100.0	100.0	

Table 6.4: Farming Experience



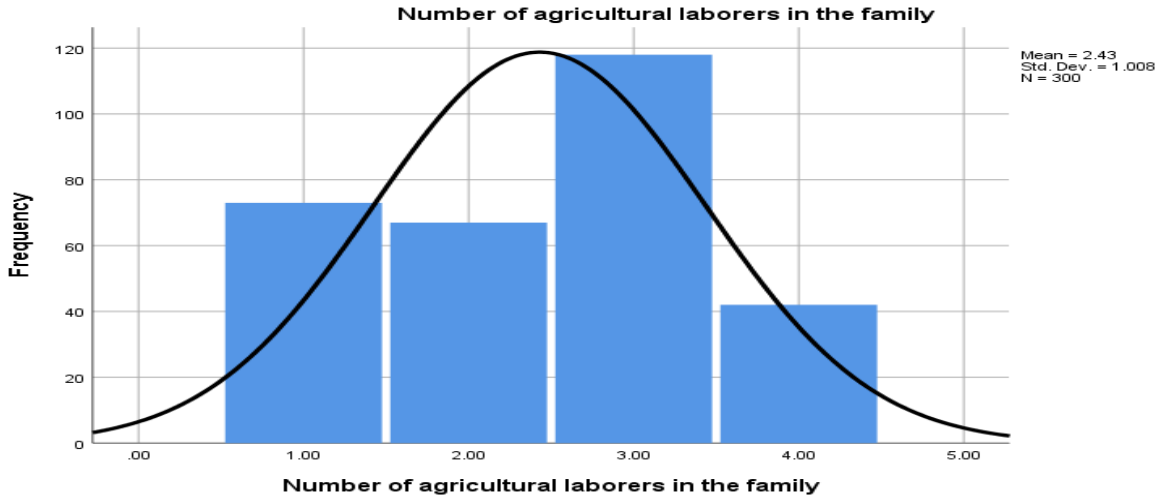
Graph 6.4: Farming Experience

This variable was chosen to understand how experienced the respondent is. From the analysis and the details mentioned in the above graph/ tables and it states that the sample data is concerned about 300 respondents. In this it was observed about - "*Farming Experience*" 74(24.6%) respondents responded < 1 years, 56(18.6%) respondents responded 2 – 3 years and 84(28%) respondents responded 4 to 6 years whereas 86(28.6%) respondents responded > 6 years. The statistical test for the various statements was performed. The observations states that for the statement "*Farming Experience*" the Mean is 2.6 and the SD is 1.1 and the t is 39.4 which states a significant relationship and is valid.

5. **Number of agricultural laborers in the family**

Number of agricultural laborers in the family					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	73	24.3	24.3	24.3
	2	67	22.3	22.3	46.7
	3	118	39.3	39.3	86.0
	3+	42	14.0	14.0	100.0
	Total	300	100.0	100.0	

Table 6.5: Number of agricultural laborers in the family



Graph 6.5 Number of agricultural laborers in the family

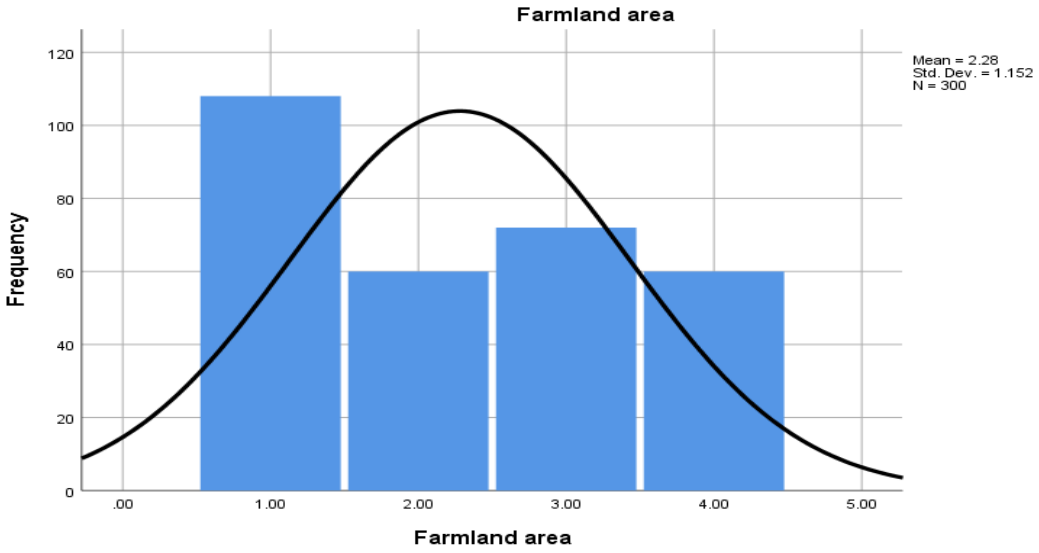
The purpose of this variable is to know how many family members are involved in farming. According to the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. Regarding "*Number of agricultural labourers in the family*," it was found that 73 (24.3%), 67 (22.3%), and 118 (39.3%) of the respondents gave a 1, 2, or 3 responses, respectively, while 42 (14%), gave a 3+ response.

The statistical test for the various statements was performed. The observations states that for the statement "*Number of agricultural laborers in the family*" the Mean is 2.43 and the SD is 1.0075 and the t is 41.7 which states a significant relationship and is valid.

6. Farmland Area

Farmland Area					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 2.5 acre	108	36.0	36.0	36.0
	2.5 to 5 acres	60	20.0	20.0	56.0
	6 to 10 acres	72	24.0	24.0	80.0
	> 10 acres	60	20.0	20.0	100.0
	Total	300	100.0	100.0	

Table 6.6: Farmland Area



Graph 6.6: Farmland Area

The purpose of this variable is to know how big or small farmer.

According to the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. When asked about "*Farmland area*," 108 (36%) respondents said they had less than 2.5 acres of land, 60 (20%) said they had between 2.5 and 5 acres, and 72 (24%) said they had between 6 and 10 acres, while 60 (20%) said they had more than 10 acres.

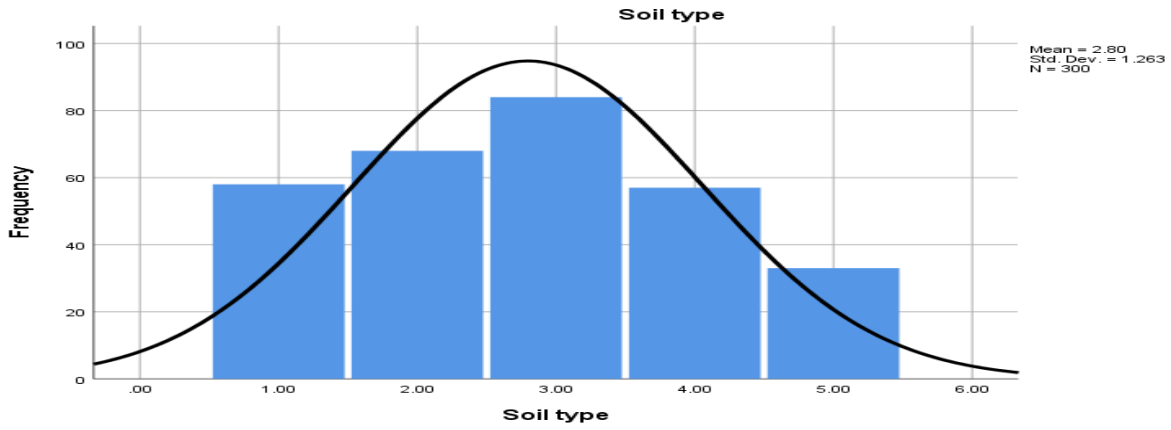
The statistical test for the various statements was performed. The observations state that for the statement "*Farmland area*" the Mean is 2.28 and the SD is 1.15 and the t is 34.2 which states a significant relationship and is valid.

6.1.2 Behavioral Information of Farmers

7. Soil Type

Soil Type					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	58	19.3	19.3	19.3
	Not Important	68	22.7	22.7	42.0
	Neutral	84	28.0	28.0	70.0
	Somewhat Important	57	19.0	19.0	89.0
	Very important	33	11.0	11.0	100.0
	Total	300	100.0	100.0	

Table 6.7: Soil Type



Graph 6.7: Soil Type

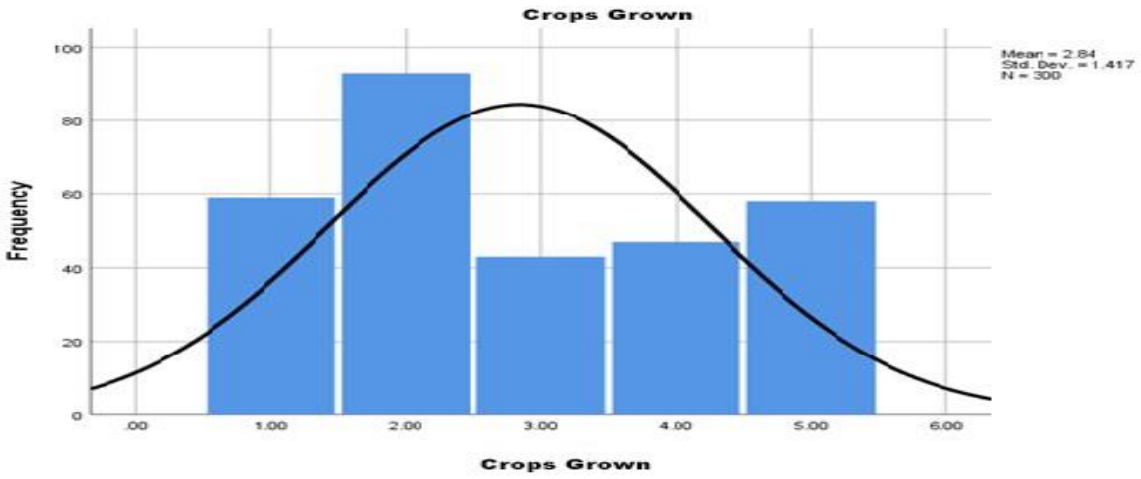
The main purpose of taking this variable is to know the preference of farmer for opting chemical fertilizers. According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted in this regarding the "*Soil type*" 58 people (19.3%) responded. Not very Important was the response of 68 (22.6%) respondents. Not Important was the response of 84 (28%), Neutral was the response of 57 (19%), Somewhat Important was the response of 57 (19%), and Very Important was the response of 33 (11%).

The statistical test for the various statements was performed. The observations states that for the statement "*Soil type*" the Mean is 2.7 and the SD is 1.2 and the t is 38.3 which states a significant relationship and is valid.

8. **Crops Grown**

Crops Grown					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	59	19.7	19.7	19.7
	Not Important	93	31.0	31.0	50.7
	Neutral	43	14.3	14.3	65.0
	Somewhat Important	47	15.7	15.7	80.7
	Very important	58	19.3	19.3	100.0
	Total	300	100.0	100.0	

Table 6.8: Crops Grown



Graph 6.8: Crops Grown

The main purpose of taking this variable is to know the types of crops grown which helps the farmer while going for chemical fertilizers. 300 respondents are included in the sample data, according to the analysis and information provided in the graph and tables above. In this, it was noted that "Crops grown." 59 (18.4%) people responded. Not very important was the response of 93 (31% of respondents), followed by Not Important, Neutral, 47 (15.6%), Somewhat

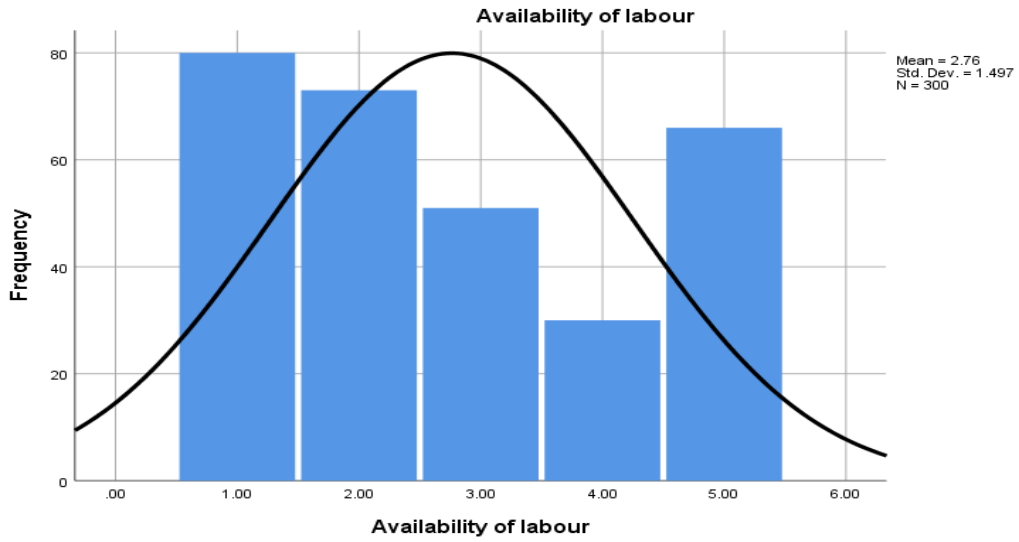
Important, and Extremely Important responses from 47 (15.6%) and 58 (19.3%) of respondents.

The statistical test for the various statements was performed. The observations states that for the statement "*Crops grown*" the Mean is 2.84 and the SD is 1.4 and the t is 34.7 which states a significant relationship and is valid.

9. **Availability of Labour**

Availability of Labour					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	80	26.7	26.7	26.7
	Not Important	73	24.3	24.3	51.0
	Neutral	51	17.0	17.0	68.0
	Somewhat Important	30	10.0	10.0	78.0
	Very important	66	22.0	22.0	100.0
	Total	300	100.0	100.0	

Table 6.9: Availability of Labour



Graph 6.9: Availability of Labour

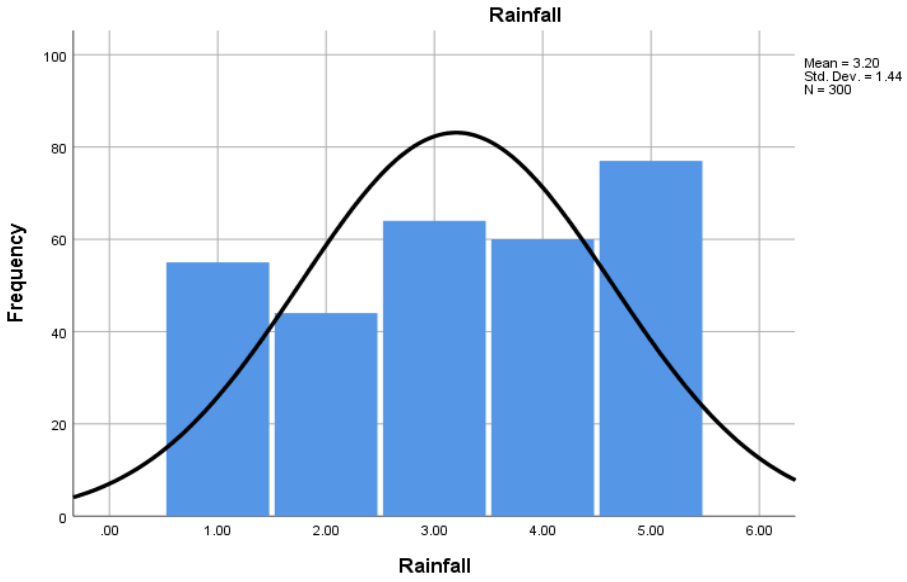
This variable was taken to understand the farm strength of farmer. According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted in this regarding "*Availability of labour*." 80 people (or 26.6%) responded. Not at all Important: 73 (24.3%) respondents said as much, Neutral: 51 (17%) respondents said as much, Somewhat Important: 30 (10%) respondents said as much, and Extremely Important: 66 (22%).

The statistical test for the various statements was performed. The observations states that for the statement "*Availability of labour*" the Mean is 2.7 and the SD is 1.4 and the t is 31.9 which states a significant relationship and is valid.

10. **Rainfall**

Rainfall					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	55	18.3	18.3	18.3
	Not Important	44	14.7	14.7	33.0
	Neutral	64	21.3	21.3	54.3
	Somewhat Important	60	20.0	20.0	74.3
	Very important	77	25.7	25.7	100.0
	Total	300	100.0	100.0	

Table 6.10: Rainfall



Graph 6.10: Rainfall

As farming is dependent on this variable, so it was required to understand the respondents input while going for chemical fertilizers, as it influences the buying behaviour of farmers.

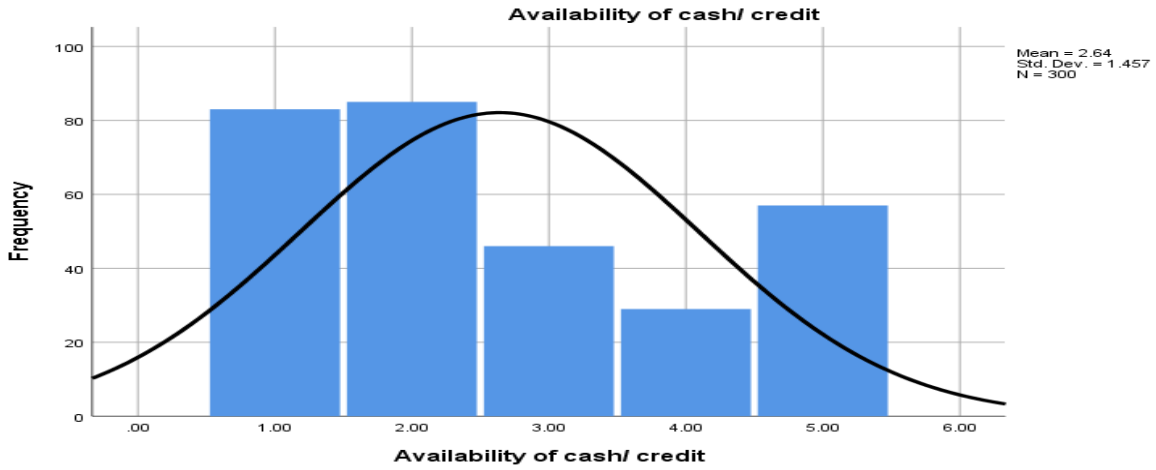
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted about "*Rainfall*" in this. It was not very essential to 55 respondents (18.3%), not important to 44 respondents (14.6%), neutral to 64 respondents (21.3%), somewhat important to 60 respondents (20%), and extremely important to 77 respondents (25.6%).

The statistical test for the various statements was performed. The observations states that for the statement "*Rainfall*" the Mean is 3.2 and the SD is 1.4 and the t is 38.4 which states a significant relationship and is valid.

11. Availability of cash/ credit

Availability of cash/ credit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	83	27.7	27.7	27.7
	Not Important	85	28.3	28.3	56.0
	Neutral	46	15.3	15.3	71.3
	Somewhat Important	29	9.7	9.7	81.0
	Very important	57	19.0	19.0	100.0
	Total	300	100.0	100.0	

Table 6.11: Availability of cash/ credit



Graph 6.11: Availability of cash/ credit

This variable is very much important as without sufficient funds, chemical fertilizer purchase is very difficult, and study of this variable helps in understanding the buying behaviour of farmers on cash/credit.

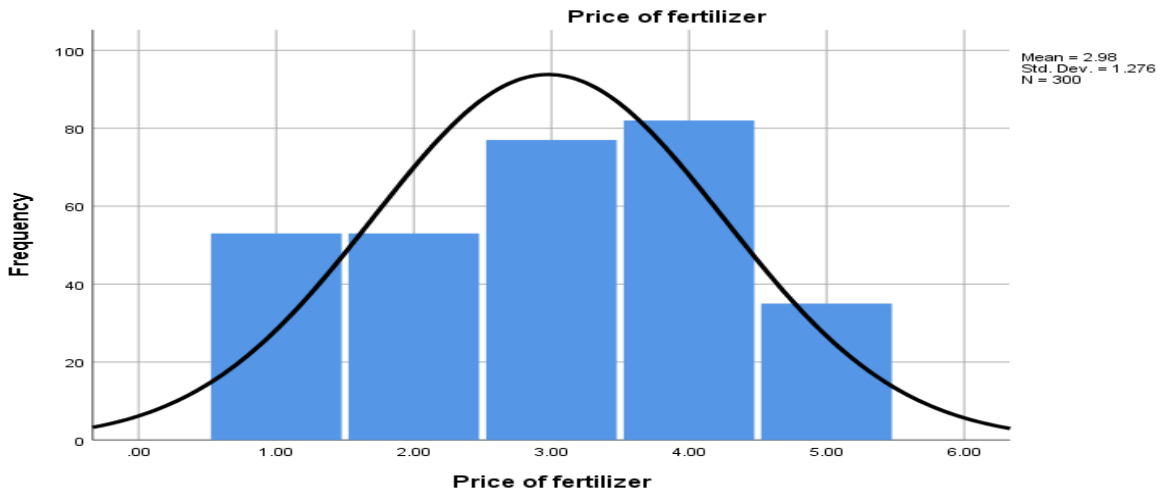
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This revealed information regarding "*Availability of cash/credit*." 57 (19%) respondents said it was extremely important, followed by 57 (19%) respondents who said it was somewhat significant. 57 (19%) respondents said it was very important, followed by 57 (19%) respondents who said it was not very essential.

The statistical test for the various statements was performed. The observations states that for the statement "*Availability of cash/ credit*" the Mean is 2.64 and the SD is 1.4 and the t is 31.3 which states a significant relationship and is valid.

12. **Price of fertilizer**

Price of fertilizer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	53	17.7	17.7	17.7
	Not Important	53	17.7	17.7	35.3
	Neutral	77	25.7	25.7	61.0
	Somewhat Important	82	27.3	27.3	88.3
	Very important	35	11.7	11.7	100.0
	Total	300	100.0	100.0	

Table 6.12: Price of fertilizer



Graph 6.12: Price of fertilizer

The price of fertilizer plays important role while buying chemical fertilizers, so this variable was taken for the study. According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, the "*Price of Fertilizer*" was noted. 53 people (17.6%) responded. Not very Important, 53 (17.6%) respondents said, "Not

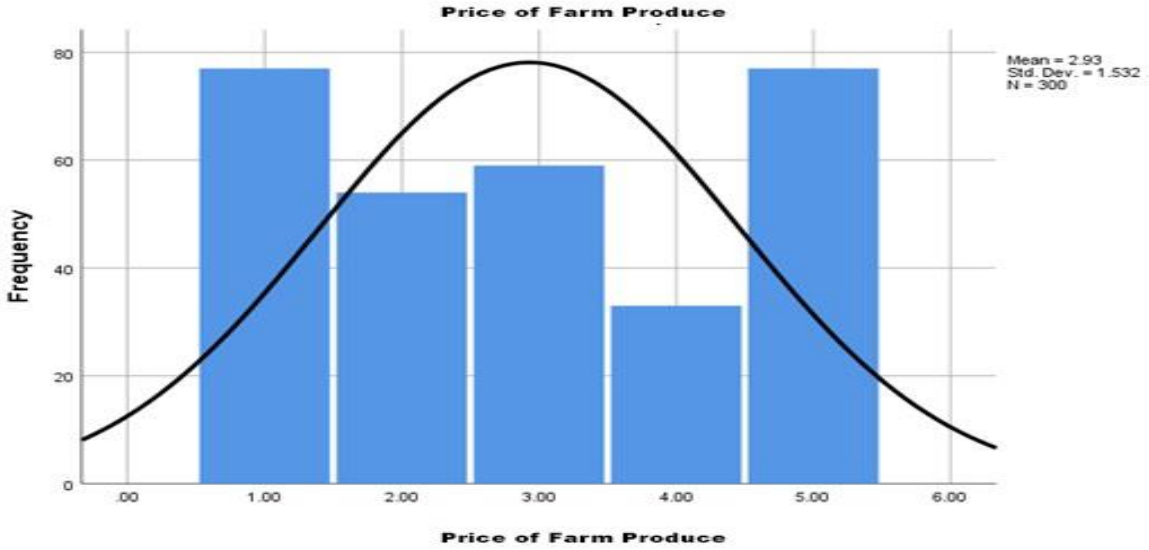
Important," "Not Important," "Neutral," "82 (27.3%), "Somewhat Important," and "Very Important," 35 (11.6%) respondents said.

The statistical test for the various statements was performed. The observations states that for the statement "*Price of fertilizer*" the Mean is 2.9 and the SD is 1.2 and the t is 40.4 which states a significant relationship and is valid.

13. **Price of farm produce**

Price of farm produce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	77	25.7	25.7	25.7
	Not Important	54	18.0	18.0	43.7
	Neutral	59	19.7	19.7	63.3
	Somewhat Important	33	11.0	11.0	74.3
	Very important	77	25.7	25.7	100.0
	Total	300	100.0	100.0	

Table 6.13: Price of farm produce



Graph 6.13: Price of farm produce

Government announces Minimum Support Price (MSP), of kharif and rabi crops, farmer consider probable crop yield, it's value which helps in deciding the quantity of chemical fertilizer. So, this variable was taken for the study.

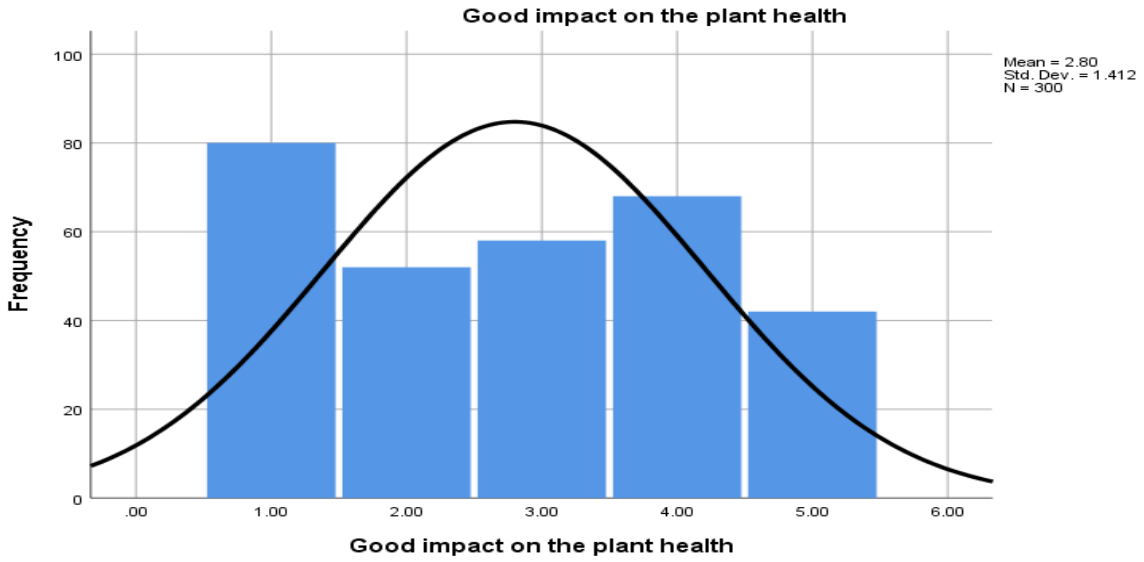
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This observation relates to "*Price of Farm Produce*." 33 (11%) respondents said it was somewhat important, 54 (18%) respondents said it was not important, 59 (19.6%) respondents said it was not significant, and 77 (25.6%) respondents said it was extremely important.

The statistical test for the various statements was performed. The observations states that for the statement "*Price of farm produce*" the Mean is 2.93 and the SD is 1.5 and the t is 33.1 which states a significant relationship and is valid.

14. Good impact on the plant health

Good impact on the plant health					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	80	26.7	26.7	26.7
	Not Important	52	17.3	17.3	44.0
	Neutral	58	19.3	19.3	63.3
	Somewhat Important	68	22.7	22.7	86.0
	Very important	42	14.0	14.0	100.0
	Total	300	100.0	100.0	

Table 6.14: Good impact on the plant health



Graph 6.14: Good impact on the plant health

Chemical fertilizers play important role in crop growth and development of crops. So, this variable helps in deciding how important it is for the respondent to go for chemical fertilizer.

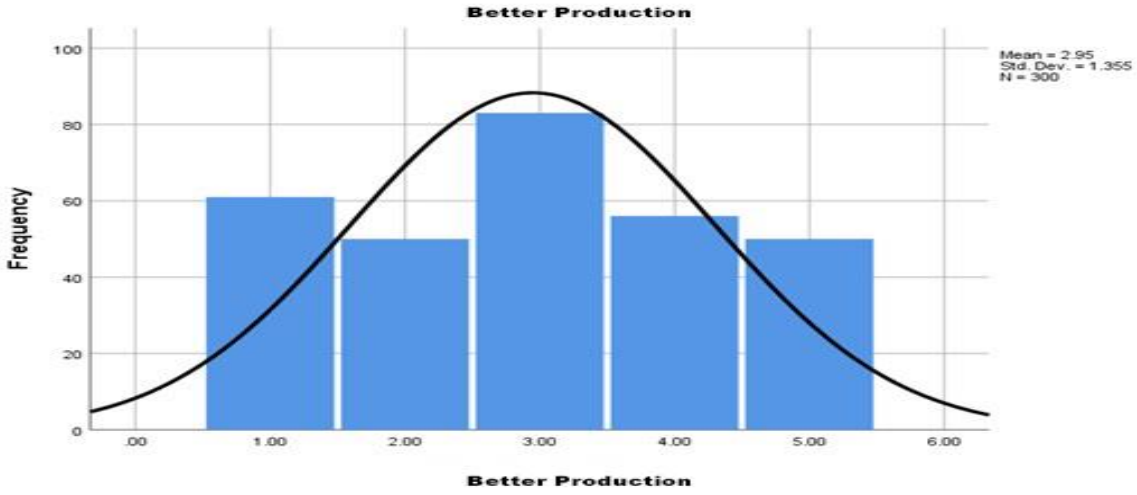
From the analysis and the details mentioned in the above graph/ tables and it states that the sample data is concerned about 300 respondents. In this it was observed about - "*Good impact on the plant health*" 80(26.6%) respondents responded Not very Important, 52(17.3%) respondents responded Not Important, 58(19.3%) respondents responded Neutral, and 68(22.6%) respondents responded Somewhat Important, and 42(14%) respondents responded Very important.

The statistical test for the various statements was performed. The observations states that for the statement "*Good impact on the plant health*" the Mean is 2.8 and the SD is 1.4 and the t is 34.3 which states a significant relationship and is valid.

15. **Better production**

Better production					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	61	20.3	20.3	20.3
	Not Important	50	16.7	16.7	37.0
	Neutral	83	27.7	27.7	64.7
	Somewhat Important	56	18.7	18.7	83.3
	Very important	50	16.7	16.7	100.0
	Total	300	100.0	100.0	

Table 6.15: Better production



Graph 6.15: Better production

Respondents main aim is to produce better yield, chemical fertilizers play important role in it.

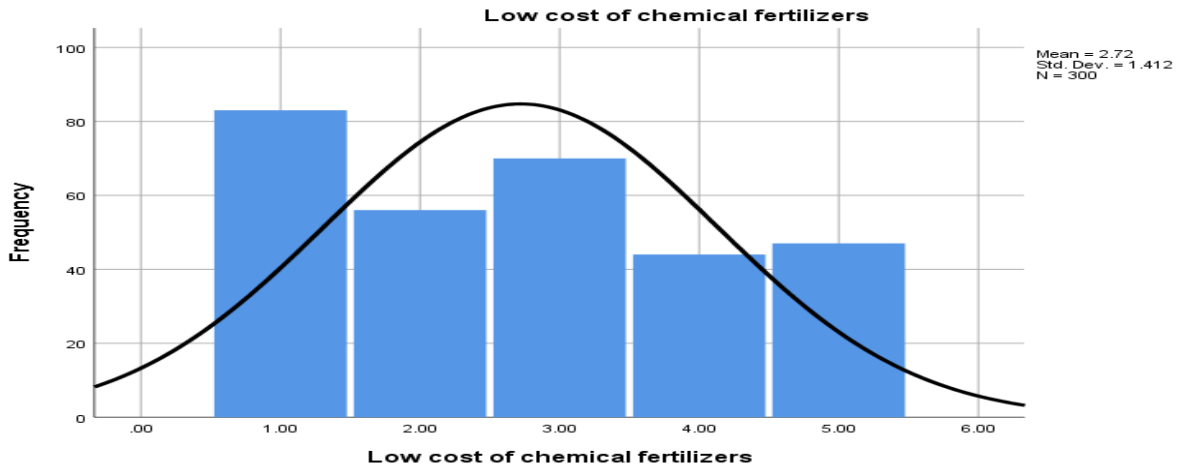
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This led to the observation of "*Better production.*" 50 (16.6%) respondents said it was not important, 61 (20.3%) respondents said it was not important, 83 (27.6%) said it was neutral, 56 (18.6%) said it was somewhat important, and 50 (16.6%) said it was extremely important.

The statistical test for the various statements was performed. The observations states that for the statement "*Better production*" the Mean is 2.9 and the SD is 1.3 and the t is 37.6 which states a significant relationship and is valid.

16. **Low cost of chemical fertilizers**

Low cost of chemical fertilizers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	83	27.7	27.7	27.7
	Not Important	56	18.7	18.7	46.3
	Neutral	70	23.3	23.3	69.7
	Somewhat Important	44	14.7	14.7	84.3
	Very important	47	15.7	15.7	100.0
	Total	300	100.0	100.0	

Table 6.16: Low cost of chemical fertilizers



Graph 6.16: Low cost of chemical fertilizers

This variable helps in understanding how cost of chemical fertilizer effects the buying behaviour of the respondents.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Low cost of chemical fertilisers*" was noted. Among the respondents, 83 (27.6%) said it was not very important, 56 (18.6%) said it was not important,

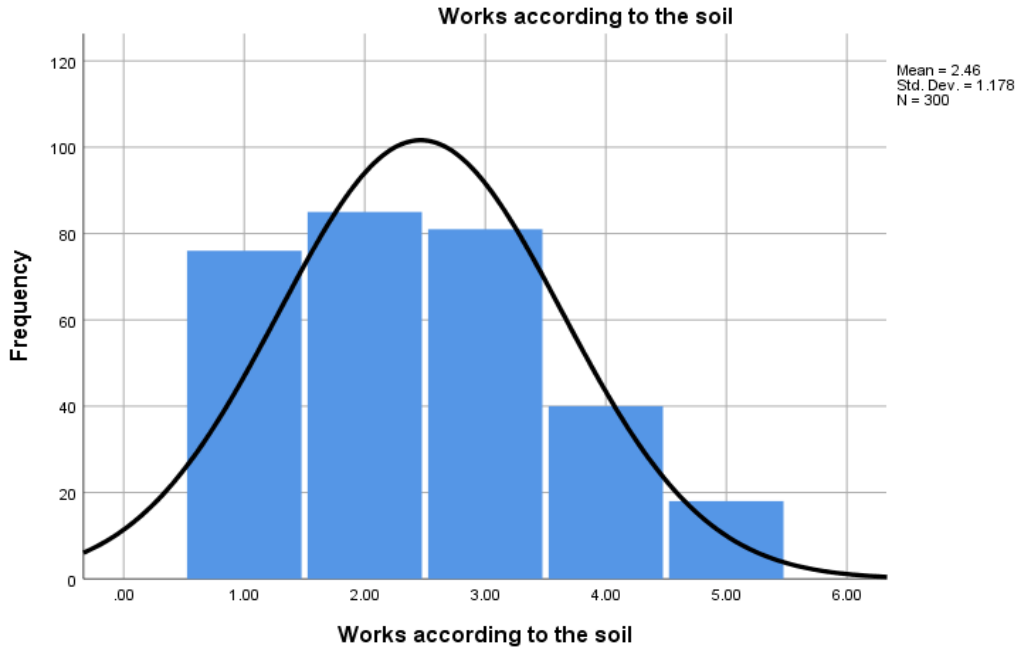
70 (23.3%) said it was neutral, 44 (14.6%) said it was somewhat significant, and 47 (15.6%) said it was extremely important.

The statistical test for the various statements was performed. The observations states that for the statement "*Low cost of chemical fertilizers*" the Mean is 2.72 and the SD is 1.4 and the t is 33.3 which states a significant relationship and is valid.

17. **Works according to the soil**

Works according to the soil					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	76	25.3	25.3	25.3
	Not Important	85	28.3	28.3	53.7
	Neutral	81	27.0	27.0	80.7
	Somewhat Important	40	13.3	13.3	94.0
	Very important	18	6.0	6.0	100.0
	Total	300	100.0	100.0	

Table 6.17: Works according to the soil



Graph 6.17: ***Works according to the soil***

Purchase behaviour of chemical fertilizers is influenced by the soil health of the farm. Therefor this variable was taken for the study.

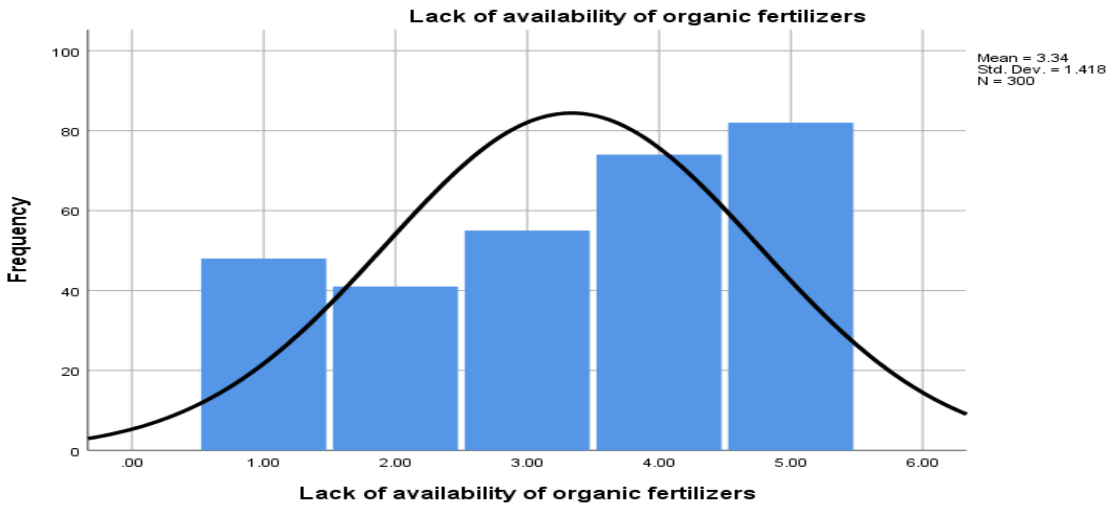
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. The phrase "*Works according to the soil*" was noted in this. In response, 76 (25.3%) responders Not at all Important: 85 respondents (28%), Not Important: 81 respondents (27%), Neutral: 81 respondents (27%), Somewhat Important: 40 respondents (13.3%), and Very Important: 18 respondents (6%).

The statistical test for the various statements was performed. The observations states that for the statement "*Works according to the soil*" the Mean is 2.4 and the SD is 1.1 and the t is 36.2 which states a significant relationship and is valid.

18. **Lack of availability of organic fertilizers**

Lack of availability of organic fertilizers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	48	16.0	16.0	16.0
	Not Important	41	13.7	13.7	29.7
	Neutral	55	18.3	18.3	48.0
	Somewhat Important	74	24.7	24.7	72.7
	Very important	82	27.3	27.3	100.0
	Total	300	100.0	100.0	

Table 6.18: Lack of availability of organic fertilizers



Graph 6.18: Lack of availability of organic fertilizers

Farmers have mix preference while opting for fertilizers, whether it is organic or inorganic (chemical). So, this variable was chosen for the study to know how it influence the respondent for using the chemical fertilizers.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Lack of availability of organic fertilisers*" was noted. 48 (16%) respondents said it was not important, 41 (13.6%) said it was not important, 55 (18.3%) said it was neutral, 74 (24.6%) said it was somewhat important, and 82 (27.3%) said it was extremely essential.

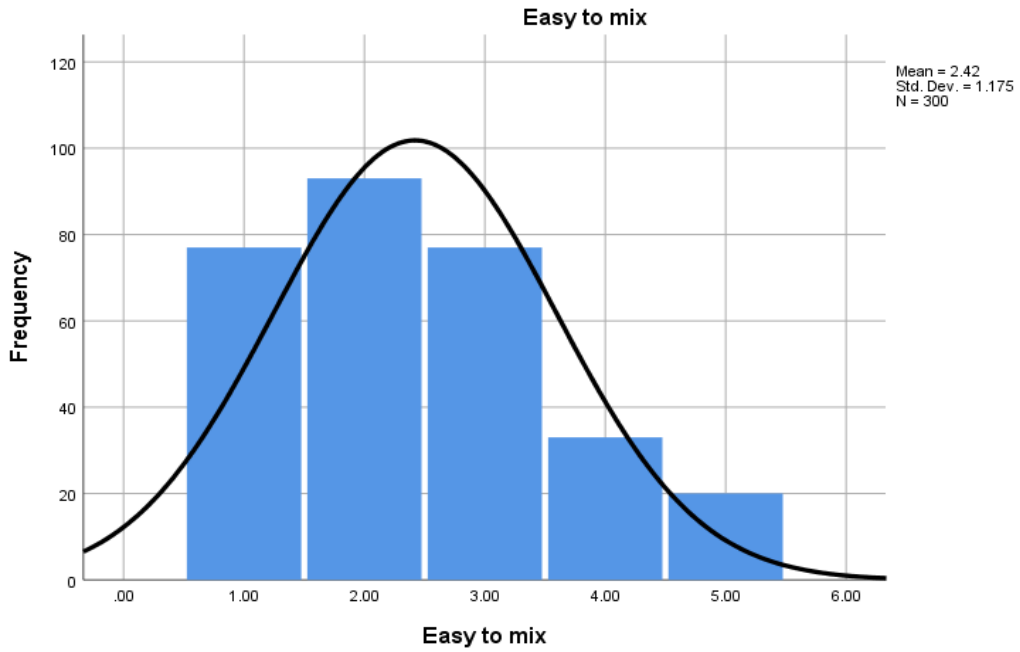
The statistical test for the various statements was performed. The observations states that for the statement "*Lack of availability of organic fertilizers*" the Mean is 3.3 and the SD is 1.4 and the t is 40.7 which states a significant relationship and is valid.

***19.* Easy to mix.**

Easy to mix					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	77	25.7	25.7	25.7
	Not Important	93	31.0	31.0	56.7
	Neutral	77	25.7	25.7	82.3

	Somewhat Important	33	11.0	11.0	93.3
	Very important	20	6.7	6.7	100.0
	Total	300	100.0	100.0	

Table 6.19: Easy to mix.



Graph 6.19: Easy to mix.

As chemical fertilizers are easy to mix and handle, which effects the buying behaviour of the respondents. So, this variable was taken for the study.

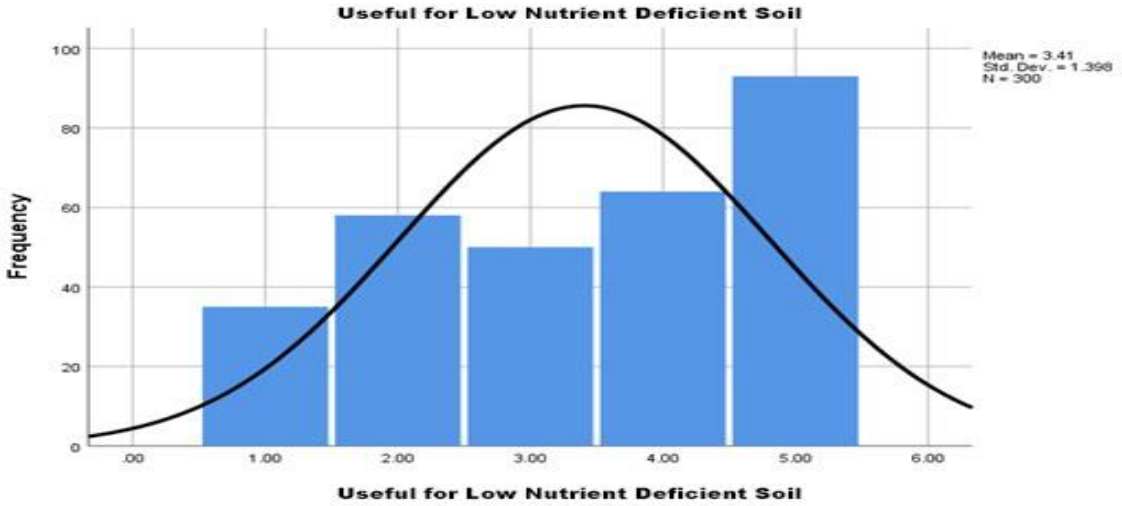
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This was noted as being "*Easy to mix*." 77 (25.6%) people gave an answer. 93 (31% of respondents) said it was not very important, 77 (25.6%) said it was not important, 33 (11%) said it was somewhat important, and 20 (6.6%) said it was extremely essential.

The statistical test for the various statements was performed. The observations states that for the statement "*Easy to mix*" the Mean is 2.42 and the SD is 1.1 and the t is 35.6 which states a significant relationship and is valid.

20. **Useful for low Nutrient deficient soil**

Useful for low Nutrient deficient soil					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	35	11.7	11.7	11.7
	Not Important	58	19.3	19.3	31.0
	Neutral	50	16.7	16.7	47.7
	Somewhat Important	64	21.3	21.3	69.0
	Very important	93	31.0	31.0	100.0
	Total	300	100.0	100.0	

Table 6.20: Useful for low Nutrient deficient soil



Graph 6.20: Useful for low Nutrient deficient soil

Chemical fertilizers are required to correct the nutrient deficiency of soil on immediate basis, so this variable helps in knowing how important it for the respondents is.

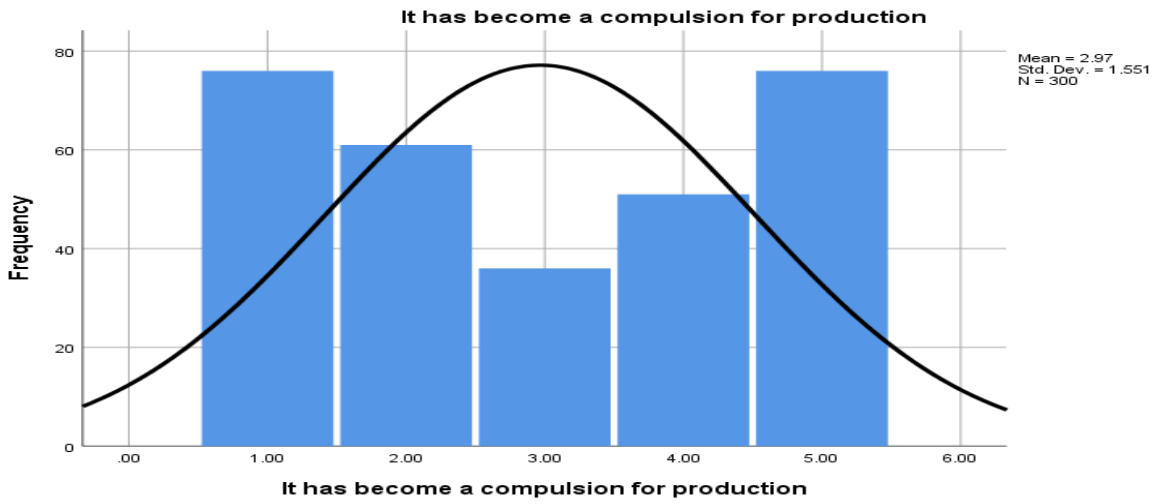
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted that this was "*Useful for low nutrient deficient soil*." 35 people (11.6%) responded. Not very Important, 58 (19.3%), Not Important, Neutral, 50 (16.6%), Somewhat Important, 64 (21.13333333333%), and Extremely Important, 93 (31%), were the responses from the respondents.

The statistical test for the various statements was performed. The observations states that for the statement "*Useful for Low Nutrient Deficient Soil*" the Mean is 3.40 and the SD is 1.39 and the t is 42.2 which states a significant relationship and is valid.

21. **It has become a compulsion for production.**

It has become a compulsion for production					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very Important	76	25.3	25.3	25.3
	Not Important	61	20.3	20.3	45.7
	Neutral	36	12.0	12.0	57.7
	Somewhat Important	51	17.0	17.0	74.7
	Very important	76	25.3	25.3	100.0
	Total	300	100.0	100.0	

Table6. 21: It has become a compulsion for production



Graph 6.21: It has become a compulsion for production.

The main purpose of taking this variable was to know the need of chemical fertilizers of the respondents.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted that "*It has become a compulsion for production*" in

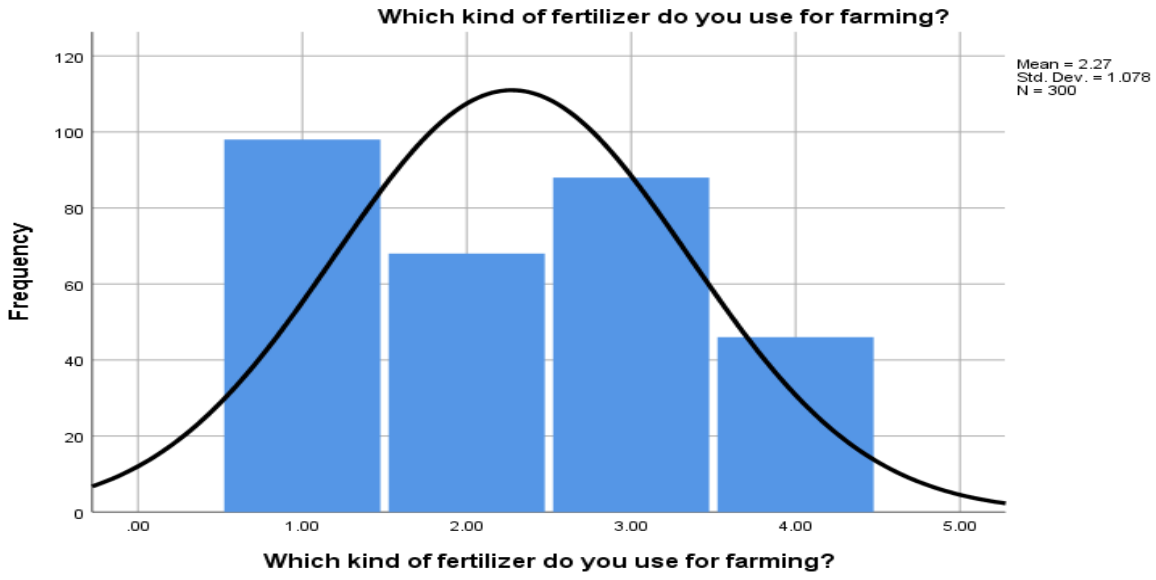
this. In response, 76 (25.3%) responders Not at all Important: 61 (20.3%) respondents said as much, Not Important: 36 (12%) respondents said as much, Neutral: 51 (17%) respondents said as much, and Extremely Important: 76 (25.3%).

The statistical test for the various statements was performed. The observations states that for the statement "*It has become a compulsion for production*" the Mean is 2.9 and the SD is 1.5 and the t is 33.1 which states a significant relationship and is valid.

22. Which kind of fertilizer do you use for farming?

Which kind of fertilizer do you use for farming?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Organic fertilizer	98	32.7	32.7	32.7
	Chemical fertilizer	68	22.7	22.7	55.3
	Both Organic & Chemical fertilizer	88	29.3	29.3	84.7
	Can't Say	46	15.3	15.3	100.0
	Total	300	100.0	100.0	

Table 6.22: Which kind of fertilizer do you use for farming?



Graph 6.22: Which kind of fertilizer do you use for farming?

This variable was used to know the usage of organic, chemical, or both type of fertilizer by the respondents.

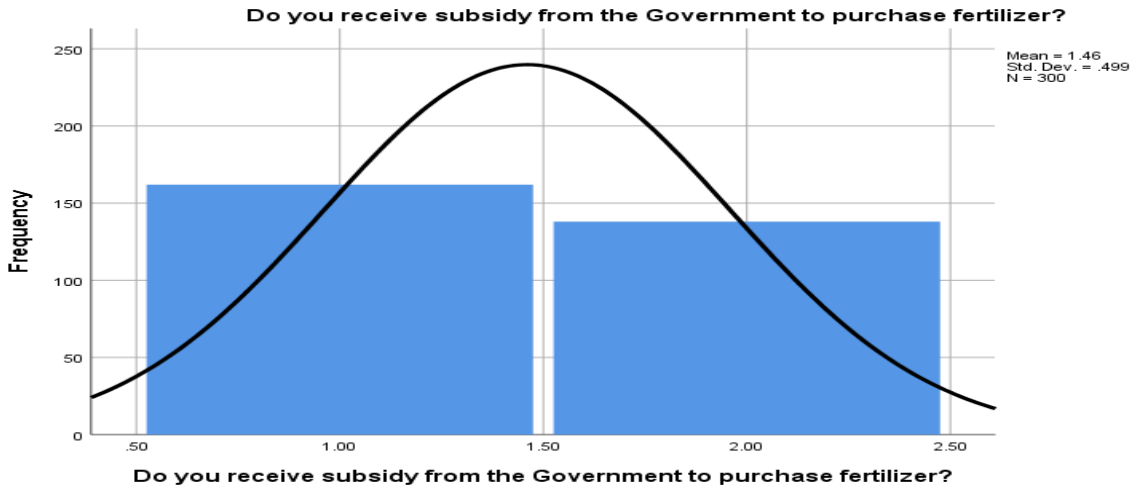
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. *Which kind of fertiliser do you use for farming?* was asked in this. 98 (32.6%) people responded. 46 (15.3%) respondents said they couldn't say, followed by 68 (22.6%) who said chemical fertiliser, 88 (29.3%) who said both organic and chemical fertiliser, and 68 (22.6%) who said organic fertiliser.

The statistical test for the various statements was performed. The observations states that for the statement "*Which kind of fertilizer do you use for farming?*" the Mean is 2.2 and the SD is 1.07 and the t is 36.5 which states a significant relationship and is valid.

***23.* Do you receive subsidy from the Government to purchase fertilizer?**

Do you receive subsidy from the Government to purchase fertilizer?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	162	54.0	54.0	54.0
	NO	138	46.0	46.0	100.0
	Total	300	100.0	100.0	

Table 6.23: Do you receive subsidy from the Government to purchase fertilizer?



Graph 6.23: Do you receive subsidy from the Government to purchase fertilizer?

This variable was taken to know whether the respondent is aware of government subsidy to purchase fertilizer and whether the respondent is receiving it or not.

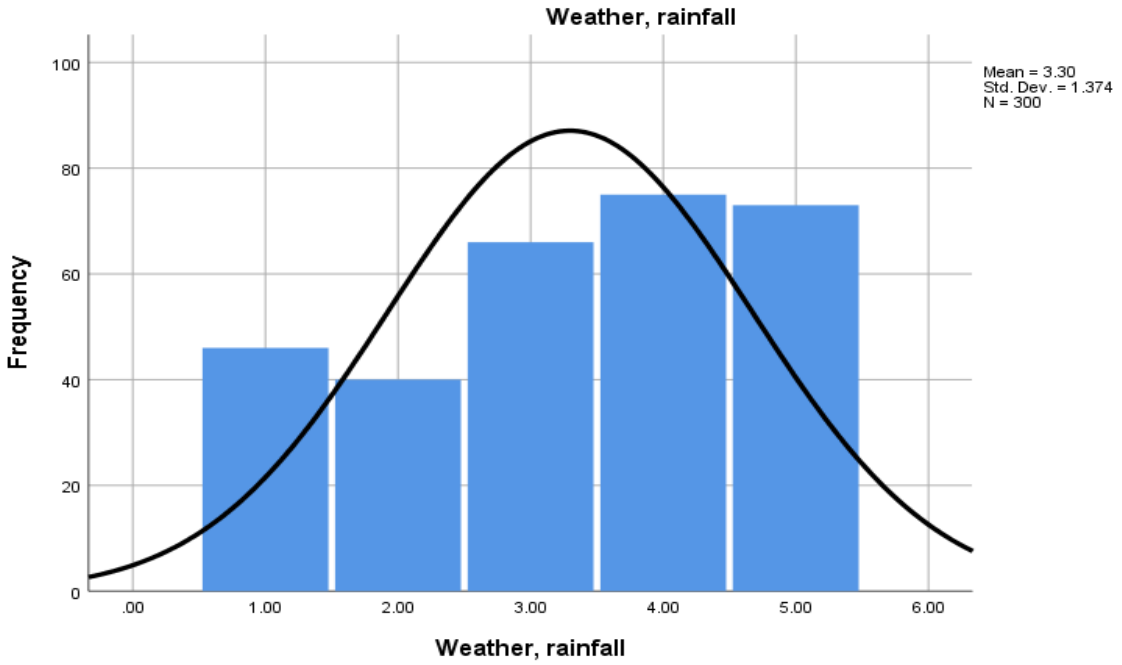
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, it was asked, "*Do you receive subsidy from the Government to purchase fertilizer?*" 162 respondents (54%) chose "yes," while 138 respondents (46%) chose "no."

The statistical test for the various statements was performed. The observations states that for the statement "*Do you receive subsidy from the Government to purchase fertilizer?*" the Mean is 1.46 and the SD is 0.49and the t is 50.65 which states a significant relationship and is valid.

24. Weather, rainfall

Weather, rainfall					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	46	15.3	15.3	15.3
	Disagree	40	13.3	13.3	28.7
	Neutral	66	22.0	22.0	50.7
	Agree	75	25.0	25.0	75.7
	Strongly Agree	73	24.3	24.3	100.0
	Total	300	100.0	100.0	

Table 6.24: Weather, rainfall



Graph 6.24: Weather, rainfall

Weather and especially rainfall influences usage of fertilizer, therefore this variable was taken for the study.

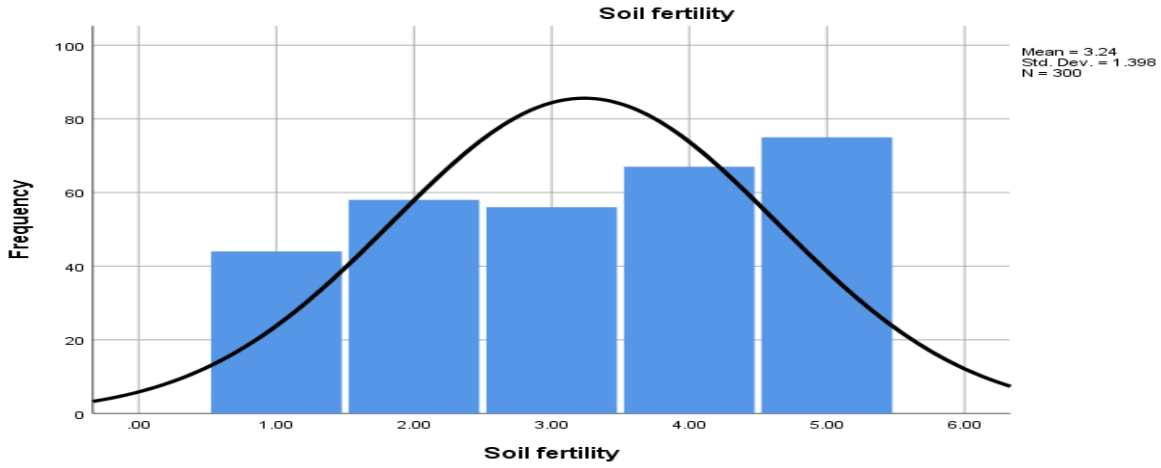
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted in this that "*Weather, rainfall*" A total of 75 (25%) respondents responded Agree, and 73 (24.3%) respondents responded Strongly Agree, whereas 40 (13.3%) respondents responded Disagree and 46 (15.3%) respondents responded Extremely Disagree.

The statistical test for the various statements was performed. The observations states that for the statement "*Weather, rainfall*" the Mean is 3.2 and the SD is 1.3 and the t is 41.5 which states a significant relationship and is valid.

25. Soil fertility

Soil fertility					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	44	14.7	14.7	14.7
	Disagree	58	19.3	19.3	34.0
	Neutral	56	18.7	18.7	52.7
	Agree	67	22.3	22.3	75.0
	Strongly Agree	75	25.0	25.0	100.0
	Total	300	100.0	100.0	

Table 6.25: Soil fertility



Graph 6.25: Soil fertility

This variable plays an important role in deciding purchase of various fertilizers, like organic, chemicals fertilizers, growth hormones, etc. Therefore, this variable was taken for the study.

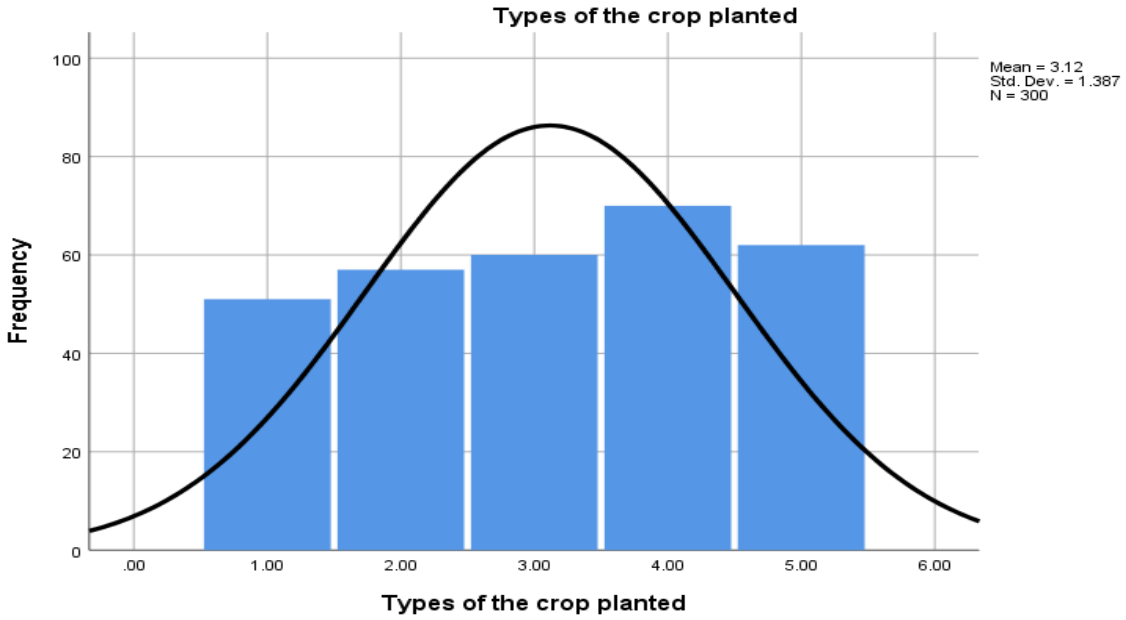
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This observation relates to "*Soil fertility*." When asked, 44 (14.6%) respondents said they strongly disagreed, 58 (19.3%) said they disagreed, 56 (18.6%) said they were neutral, 67 (22.3%) said they agreed, and 75 (25%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Soil fertility*" the Mean is 3.2 and the SD is 1.3 and the t is 40.1 which states a significant relationship and is valid.

26. **Types of the crop planted.**

Types of the crop planted					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	51	17.0	17.0	17.0
	Disagree	57	19.0	19.0	36.0
	Neutral	60	20.0	20.0	56.0
	Agree	70	23.3	23.3	79.3
	Strongly Agree	62	20.7	20.7	100.0
	Total	300	100.0	100.0	

Table 6.26: Types of the crop planted.



Graph 6.26: Types of the crop planted.

The main purpose of taking this variable was to know how types of crops (cereals, oil seeds, and pulses, etc) planted influence the respondents while buying the fertilizers.

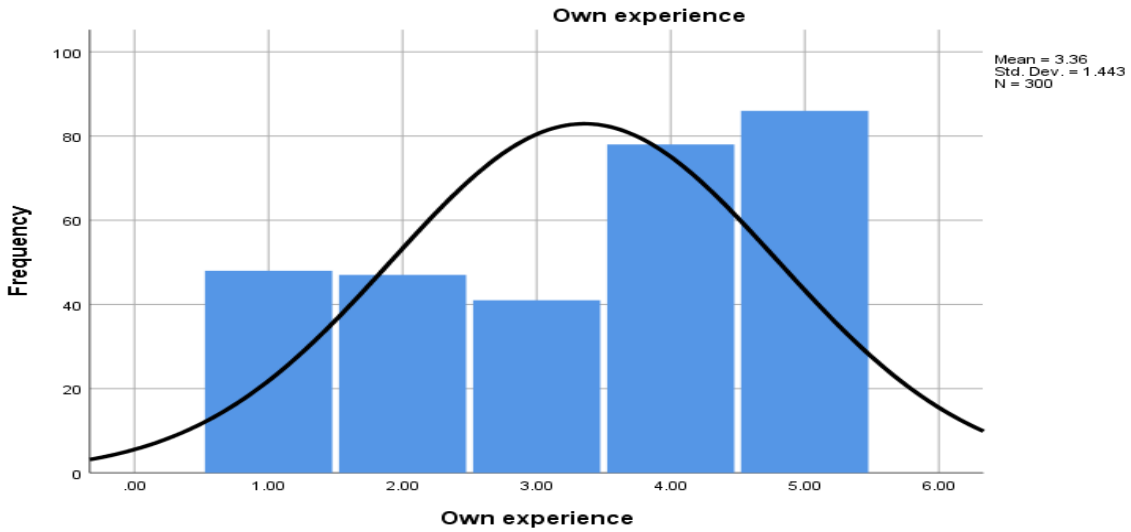
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Types of the Crop Planted*" was noticed. Among the respondents, 51 (17%) said they strongly disagreed, 57 (19%) said they disagreed, 60 (20%) said they were neutral, 70 (23.3%) said they agreed, and 62 (20.6) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Types of the crops planted*" the Mean is 3.1 and the SD is 1.3 and the t is 38.9 which states a significant relationship and is valid.

27. Own experience

Own experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Growth and/or density of seedlings	48	16.0	16.0	16.0
	Disagree	47	15.7	15.7	31.7
	Neutral	41	13.7	13.7	45.3
	Agree	78	26.0	26.0	71.3
	Strongly Agree	86	28.7	28.7	100.0
	Total	300	100.0	100.0	

Table 6.27: Own experience



Graph 6.27: Own experience

Respondents purchases various fertilizers (organic, chemicals and growth hormones, etc.) based on their previous experience, therefore this variable was taken for the study.

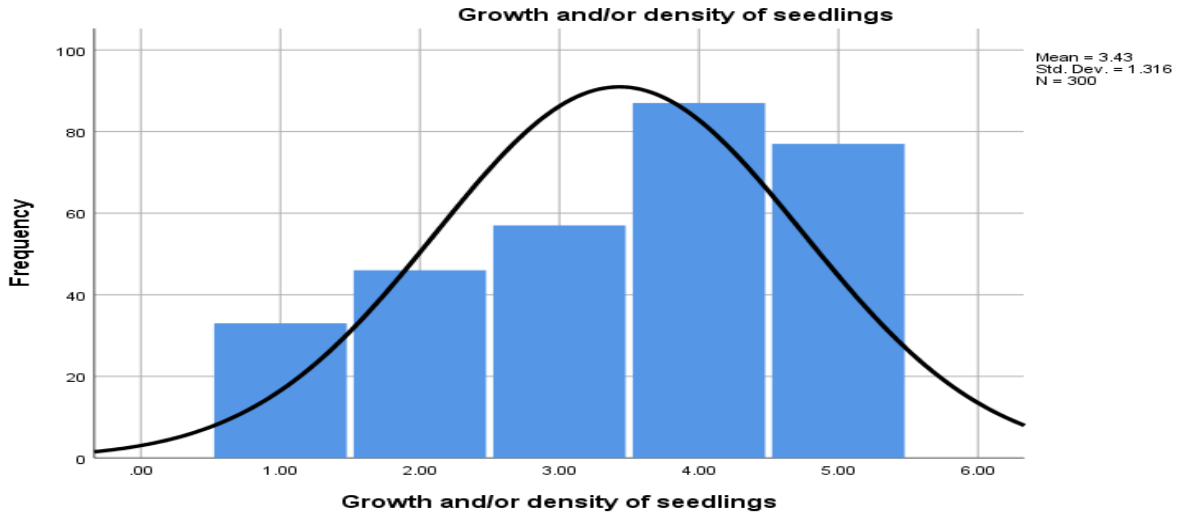
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This observation was made regarding "*Own experience*." 48 (15%) people answered. 47 (15.6%) respondents disagreed with the growth and/or density of seedlings, 41 (13.6%) respondents were neutral, 78 (26%) respondents agreed, and 86 (28.6%) respondents strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Own experience*" the Mean is 3.3 and the SD is 1.4 and the t is 40.2 which states a significant relationship and is valid.

28. **Growth and/or density of seedlings**

Growth and/or density of seedlings					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	33	11.0	11.0	11.0
	Disagree	46	15.3	15.3	26.3
	Neutral	57	19.0	19.0	45.3
	Agree	87	29.0	29.0	74.3
	Strongly Agree	77	25.7	25.7	100.0
	Total	300	100.0	100.0	

Table 6.28: Growth and/or density of seedlings



Graph 6.28: Growth and/or density of seedlings

Number of plants per acre and their growth also decides the quantity of various fertilizers., therefore this variable was taken for the study.

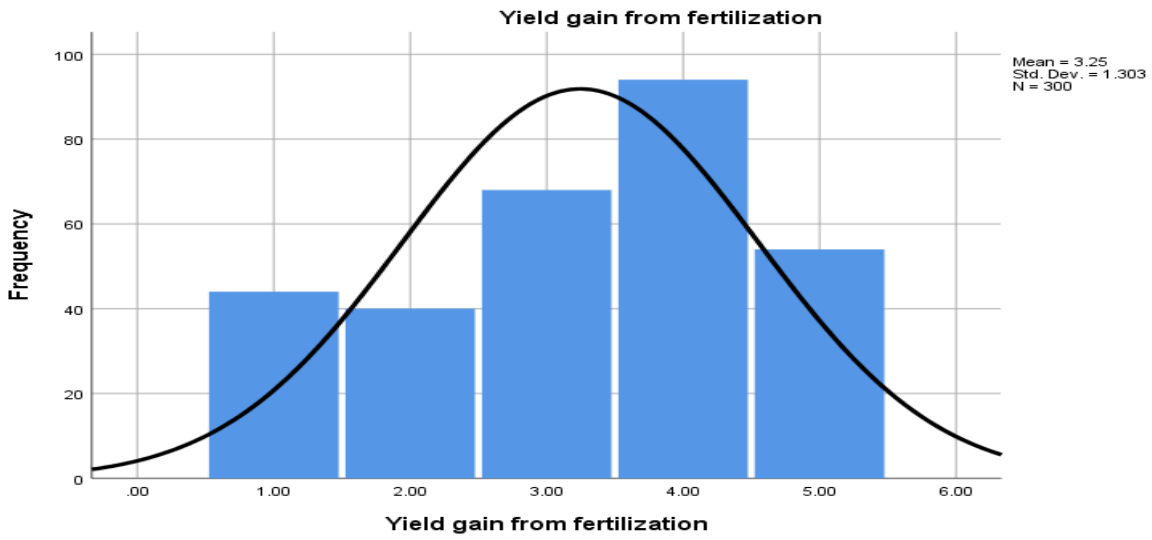
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Growth and/or density of seedlings*" was noted. 33 (11%) respondents indicated a strong disagreement, 46 (15.3%) indicated a disagreement, 57 (19%) indicated a neutral opinion, 87 (29%) indicated an agreement, and 77 (25.6%) indicated a strong agreement.

The statistical test for the various statements was performed. The observations states that for the statement "*Growth and/or density of seedlings*" the Mean is 3.43 and the SD is 1.3 and the t is 45.1 which states a significant relationship and is valid.

29. Yield gain from fertilization

Yield gain from fertilization					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	44	14.7	14.7	14.7
	Disagree	40	13.3	13.3	28.0
	Neutral	68	22.7	22.7	50.7
	Agree	94	31.3	31.3	82.0
	Strongly Agree	54	18.0	18.0	100.0
	Total	300	100.0	100.0	

Table 6.29: Yield gain from fertilization



Graph 6.29: Yield gain from fertilization

To obtain targeted yield and its good quality, a mix of chemical and organic fertilizers are required. So, this helps the respondents in buying the various fertilizers.

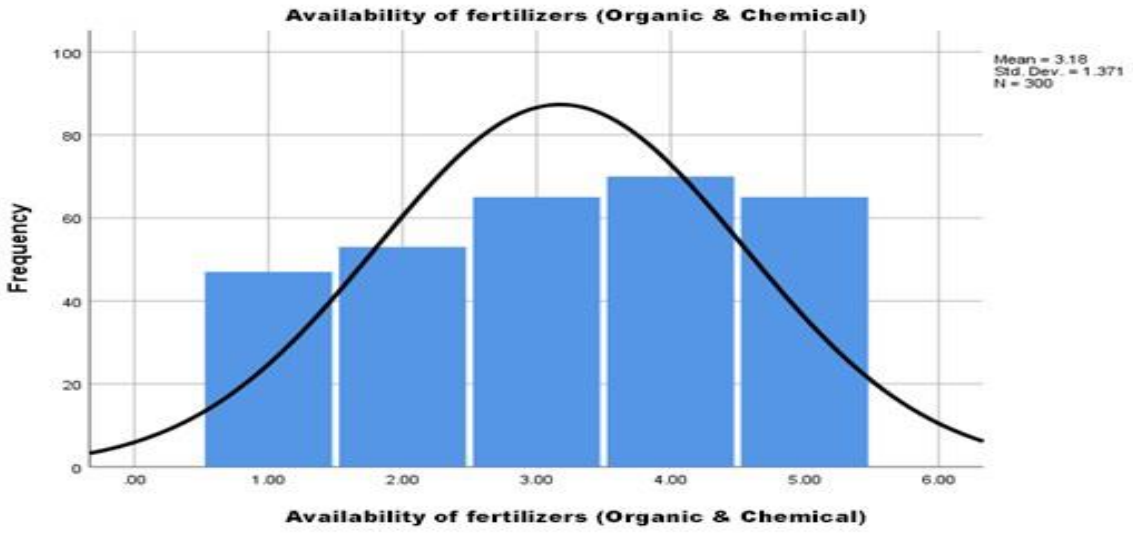
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Yield gain from fertilization*" was noticed. Among the responses, 44 (14.6%) chose "Strongly Disagree," 40 (13.3%) chose "Disagree," 68 (22.6%) chose "Neutral," 94 (31.3%) chose "Agree," and 54 (18%) chose "Strongly Agree."

The statistical test for the various statements was performed. The observations states that for the statement "*Yield gain from fertilization*" the Mean is 3.2 and the SD is 1.3 and the t is 43.1 which states a significant relationship and is valid.

***30.* Availability of fertilizers (Organic & Chemical)**

Availability of fertilizers (Organic & Chemical)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	47	15.7	15.7	15.7
	Disagree	53	17.7	17.7	33.3
	Neutral	65	21.7	21.7	55.0
	Agree	70	23.3	23.3	78.3
	Strongly Agree	65	21.7	21.7	100.0
	Total	300	100.0	100.0	

Table 6.30: Availability of fertilizers (Organic & Chemical)



Graph 6.30: Availability of fertilizers (Organic & Chemical)

Purchases of required quantity is decided by the availability of fertilizers in the market and the available quantity with farmers. Therefor this variable was taken for the study.

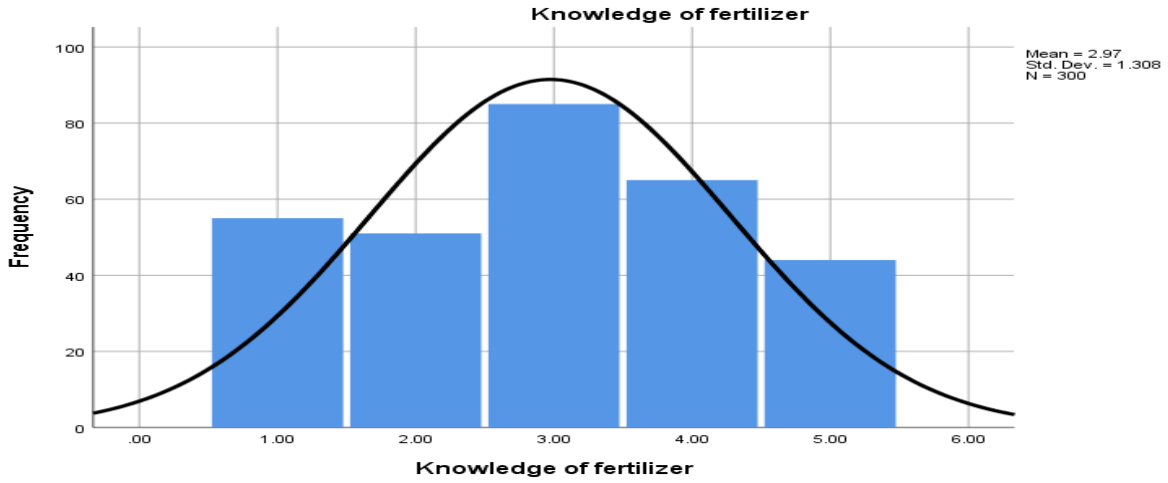
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted in this regarding "*Availability of fertilizers (Organic & Chemical)*" 65 respondents (21.6%), 65 respondents (21.6%), 47 respondents (15.6%), 53 respondents (17.6%), 47 respondents (15.6%), 65 respondents (21.6%), 70 respondents (23.3%), and 47 respondents (15.6%) responded Very Agree.

The statistical test for the various statements was performed. The observations states that for the statement "*Availability of fertilizer (organic & chemical)*" the Mean is 3.1 and the SD is 1.3 and the t is 40.1 which states a significant relationship and is valid.

31. **Knowledge of fertilizer**

Knowledge of fertilizer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	55	18.3	18.3	18.3
	Disagree	51	17.0	17.0	35.3
	Neutral	85	28.3	28.3	63.7
	Agree	65	21.7	21.7	85.3
	Strongly Agree	44	14.7	14.7	100.0
	Total	300	100.0	100.0	

Table 6.31: Knowledge of fertilizer



Graph 6.31: Knowledge of fertilizer

Certainly, this variable influences the respondent's buying behaviour of various fertilizers, so this variable was taken into the consideration for the study.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. It was noted in this that "*Knowledge of fertiliser*" 55 respondents,

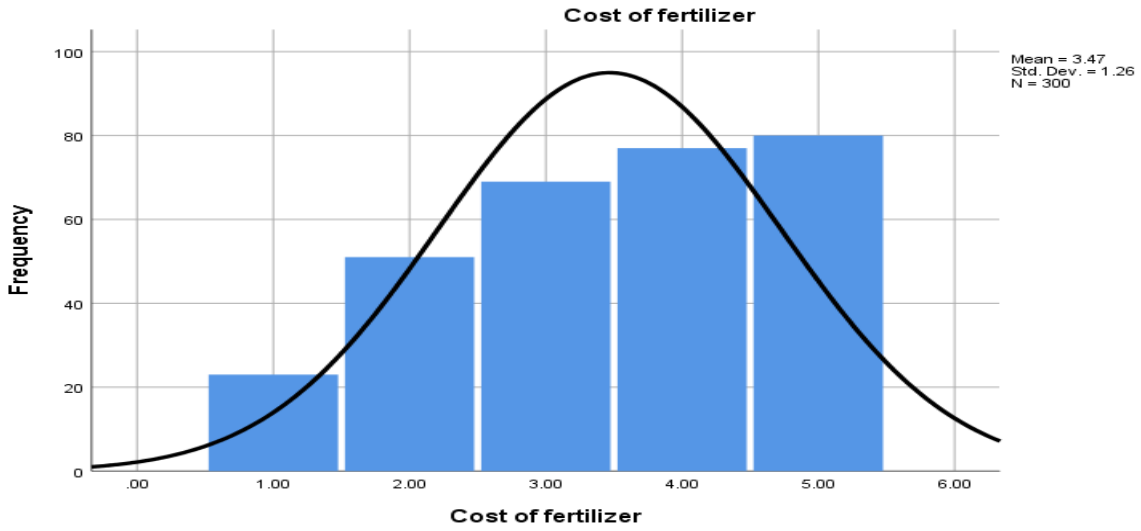
or 18.3%, gave a strong response. Disagree, 51 (17%) respondents said they disagreed, 85 (28.3%) said they were neutral, 65 (21.6%) said they agreed, and 44 (14.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Knowledge of fertilizer*" the Mean is 2.9 and the SD is 1.3 and the t is 39.3 which states a significant relationship and is valid.

32. **Cost of fertilizer**

Cost of fertilizer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	7.7	7.7	7.7
	Disagree	51	17.0	17.0	24.7
	Neutral	69	23.0	23.0	47.7
	Agree	77	25.7	25.7	73.3
	Strongly Agree	80	26.7	26.7	100.0
	Total	300	100.0	100.0	

Table 6.32: Cost of fertilizer



Graph 6.32: Cost of fertilizer

This variable is one the major factors which decides the purchased of various fertilizers. Therefor this variable was important for the study.

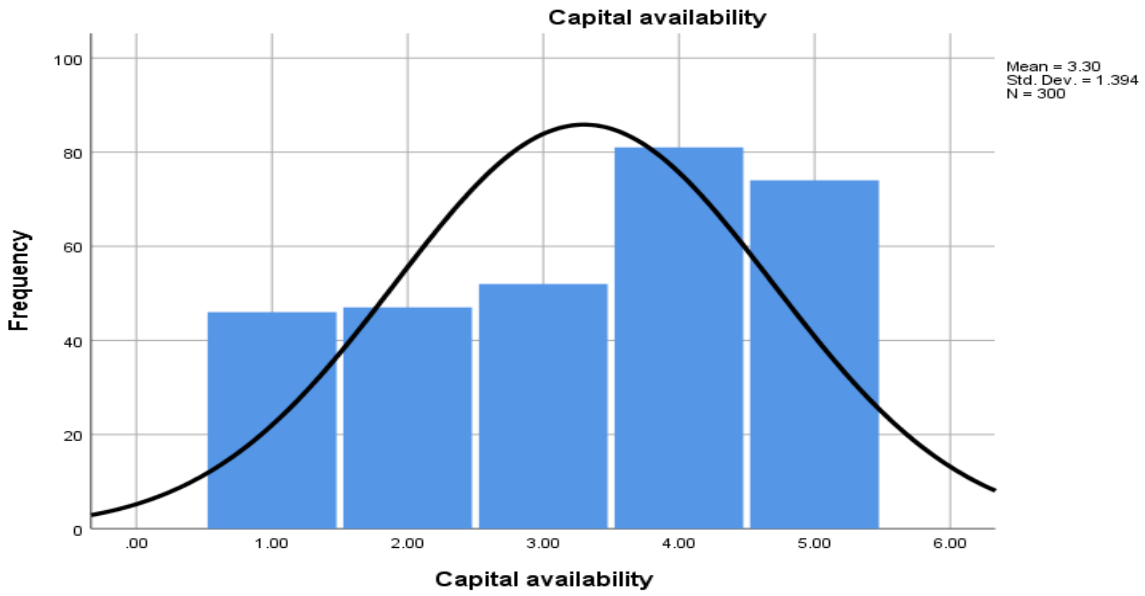
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This observation relates to the "*Cost of Fertilizer*." 23 (7.6%) responders gave a Strong response. 51 (17%) respondents said they disagreed, 69 (23%) said they were neutral, 77 (25.6%) said they agreed, and 80 (26.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Cost of fertilizer*" the Mean is 3.4 and the SD is 1.2 and the t is 47.6 which states a significant relationship and is valid.

33. **Capital availability.**

Capital availability					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	46	15.3	15.3	15.3
	Disagree	47	15.7	15.7	31.0
	Neutral	52	17.3	17.3	48.3
	Agree	81	27.0	27.0	75.3
	Strongly Agree	74	24.7	24.7	100.0
	Total	300	100.0	100.0	

Table 6.33: Capital availability



Graph 6.33: Capital availability

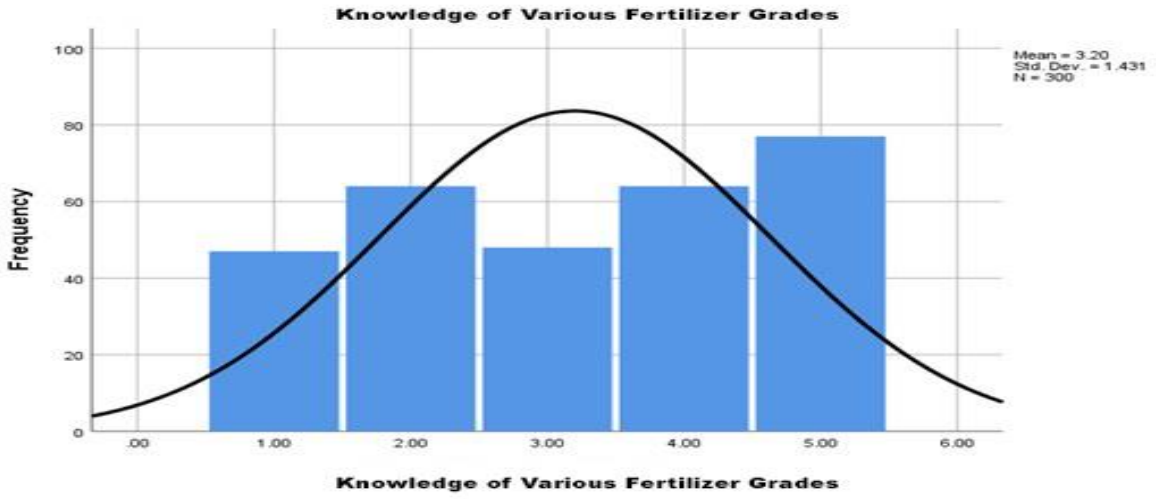
This variable helps in buying various fertilizers. According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This revealed something on "*Capital availability*." In the survey, 46 respondents (15.3%) chose "Strongly Disagree," 47 respondents (15.6%) "Disagree," 52 respondents (17.3%) "Neutral," 81 respondents (27%) "Agree," and 74 respondents (24.6%) "Strongly Agree."

The statistical test for the various statements was performed. The observations states that for the statement "*Capital availability*" the Mean is 3.3 and the SD is 1.3 and the t is 41.0 which states a significant relationship and is valid.

34. **Knowledge of Various Fertilizer Grades**

Knowledge of Various Fertilizer Grades					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	47	15.7	15.7	15.7
	Disagree	64	21.3	21.3	37.0
	Neutral	48	16.0	16.0	53.0
	Agree	64	21.3	21.3	74.3
	Strongly Agree	77	25.7	25.7	100.0
	Total	300	100.0	100.0	

Table 6.34: Knowledge of Various Fertilizer Grades



Graph 6.34: Knowledge of Various Fertilizer Grades

This variable plays always an important role while buying various fertilizers grades.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Knowledge of Various Fertilizer Grades*" was observed. Among the respondents, 47 (15.6%) said they strongly disagreed, 64 (21.3%) said they disagreed, 48 (16%) said they were neutral, 64 (21.3%) said they agreed, and 77 (25.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Knowledge of various fertilizer grades*" the Mean is 3.2 and the SD is 1.4 and the t is 38.7 which states a significant relationship and is valid.

35. **Knowledge Of Correct Price of Fertilizer Grades**

Knowledge Of Correct Price of Fertilizer Grades					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	38	12.7	12.7	12.7
	Disagree	37	12.3	12.3	25.0
	Neutral	47	15.7	15.7	40.7
	Agree	94	31.3	31.3	72.0
	Strongly Agree	84	28.0	28.0	100.0
	Total	300	100.0	100.0	

Table 6.35: Knowledge of Correct Price of Fertilizer Grades

Graph 6.35: Knowledge of Correct Price of Fertilizer Grades

This variable plays always an important role while buying various fertilizers grades.

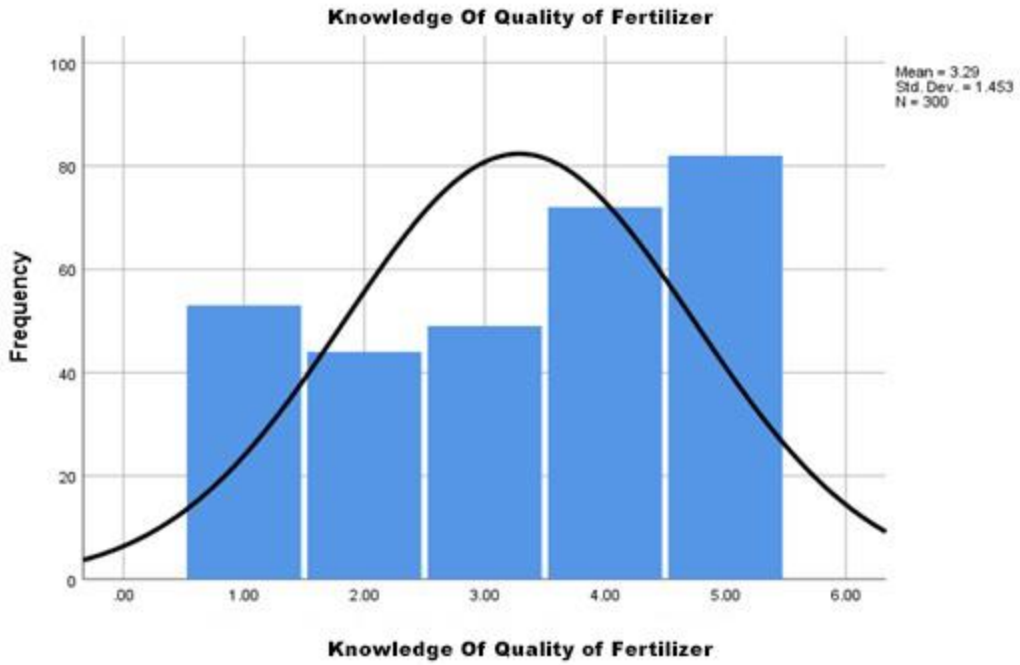
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. *Knowledge of correct price of fertiliser grades* was noted in this. 47 respondents (15.6%) reacted neutrally, 37 respondents (12.3%) disagreed, 38 respondents (12.6%) strongly disagreed, 94 respondents (31.3%) agreed, and 84 respondents (28% strongly agreed).

The statistical test for the various statements was performed. The observations states that for the statement "*Knowledge of correct price of fertilizer grades*" the Mean is 3.4 and the SD is 1.3 and the t is 44.8 which states a significant relationship and is valid.

36. **Knowledge Of Quality of Fertilizer**

Knowledge Of Quality of Fertilizer					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	53	17.7	17.7	17.7
	Disagree	44	14.7	14.7	32.3
	Neutral	49	16.3	16.3	48.7
	Agree	72	24.0	24.0	72.7
	Strongly Agree	82	27.3	27.3	100.0
	Total	300	100.0	100.0	

Table 6.36: Knowledge of Quality of Fertilizer



Graph 6.36: Knowledge of Quality of Fertilizer

This variable plays always an important role while buying various fertilizers grades.

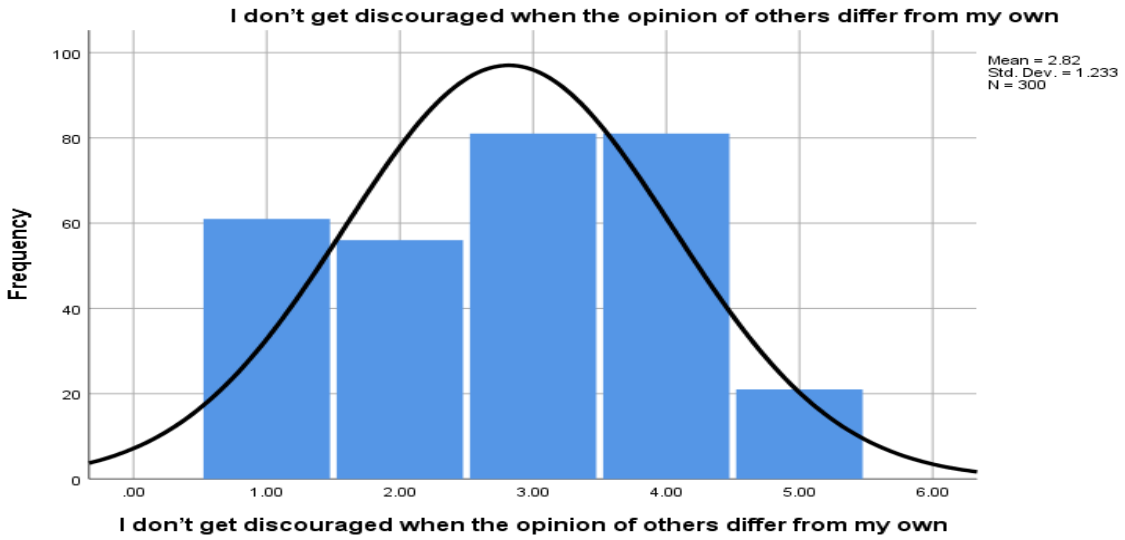
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. "*Knowledge of quality of fertilizers*," was noted in this. 53 respondents (17.6%) responded "Strongly Disagree," 44 respondents (14.6%") "Disagree," 49 respondents (16.3%") "Neutral," 72 respondents (24%) "Agree," and 82 respondents (27.3%) "Strongly Agree."

The statistical test for the various statements was performed. The observations states that for the statement "*Knowledge of quality of fertilizers*" the Mean is 3.2 and the SD is 1.4 and the t is 39.1which states a significant relationship and is valid.

37. I don't get discouraged when the opinion of others differs from my own.

I don't get discouraged when the opinion of others differs from my own					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	61	20.3	20.3	20.3
	Disagree	56	18.7	18.7	39.0
	Neutral	81	27.0	27.0	66.0
	Agree	81	27.0	27.0	93.0
	Strongly Agree	21	7.0	7.0	100.0
	Total	300	100.0	100.0	

Table 6.37: I don't get discouraged when the opinion of others differs from my own.



Graph 6.37: I don't get discouraged when the opinion of others differs from my own.

This variable helps in understanding the behaviour of the respondent whether he/she is influenced by others' perception/opinion.

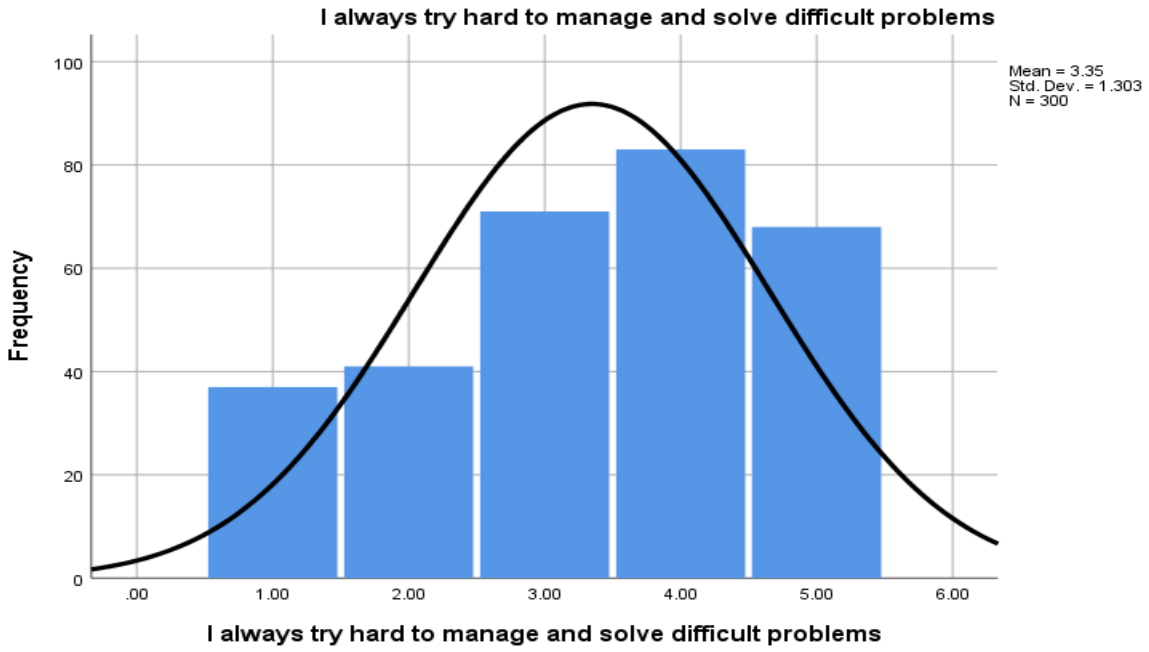
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. *I don't get discouraged when the opinion of others differs from my own*, it was noted in this. 61 (20.3%) respondents said they strongly disagreed, 56 (18.6%) said they disagreed, 81 (27%) said they were neutral, 81 (27%) said they agreed, and 21 (7%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*I don't get discouraged when the opinion of others differ from my own*" the Mean is 2.8 and the SD is 1.2 and the t is 39.5 which states a significant relationship and is valid.

38. **I always try hard to manage and solve difficult problems.**

I always try hard to manage and solve difficult problems					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	37	12.3	12.3	12.3
	Disagree	41	13.7	13.7	26.0
	Neutral	71	23.7	23.7	49.7
	Agree	83	27.7	27.7	77.3
	Strongly Agree	68	22.7	22.7	100.0
	Total	300	100.0	100.0	

Table 6.38: I always try hard to manage and solve difficult problems.



Graph 6.38: I always try hard to manage and solve difficult problems.

This variable was taken to know the efforts taken by the respondents, especially when any difficult situation occurs such as shortage of particular fertilizer and his/her interest to switch over other similar fertilizers.

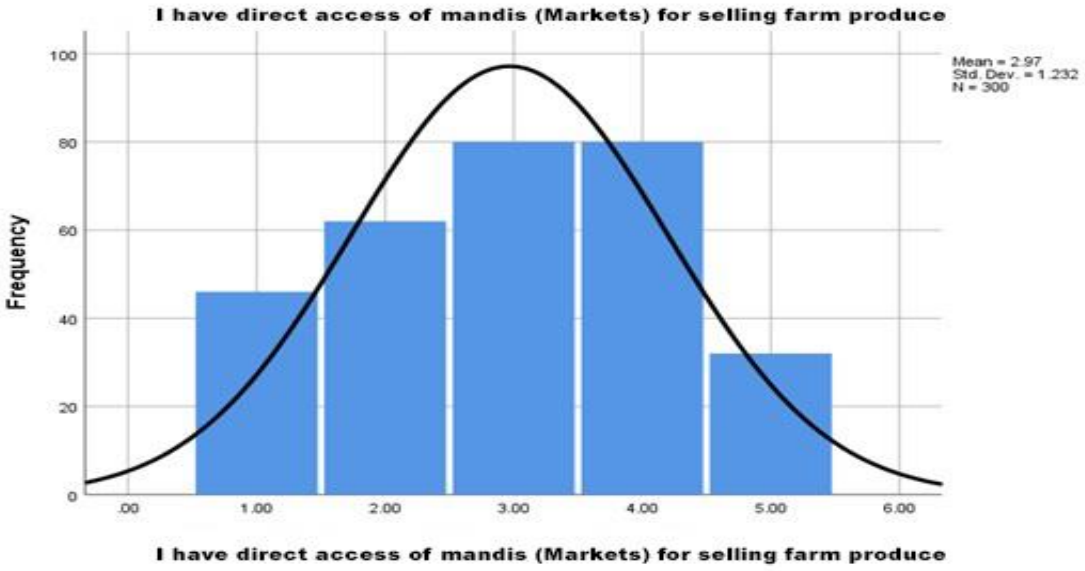
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. "*I always try hard to manage and solve difficult problems,*" was noted in this. Among the respondents, 37 (12.3%) said they strongly disagreed, 41 (13.6%) said they disagreed, 71 (23.6%) said they were neutral, 83 (27.5%) said they agreed, and 68 (22.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*I always try hard to manage and solve difficult problems*" the Mean is 3.3 and the SD is 1.3 and the t is 44.4 which states a significant relationship and is valid.

39. **I have direct access of mandis (Markets) for selling farm produce.**

I have direct access of mandis (Markets) for selling farm produce					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	46	15.3	15.3	15.3
	Disagree	62	20.7	20.7	36.0
	Neutral	80	26.7	26.7	62.7
	Agree	80	26.7	26.7	89.3
	Strongly Agree	32	10.7	10.7	100.0
	Total	300	100.0	100.0	

Table 6.39: I have direct access of mandis (Markets) for selling farm produce.



Graph 6.39: I have direct access of mandis (Markets) for selling farm produce.

This variable was taken to know the respondent's exposure to the markets.

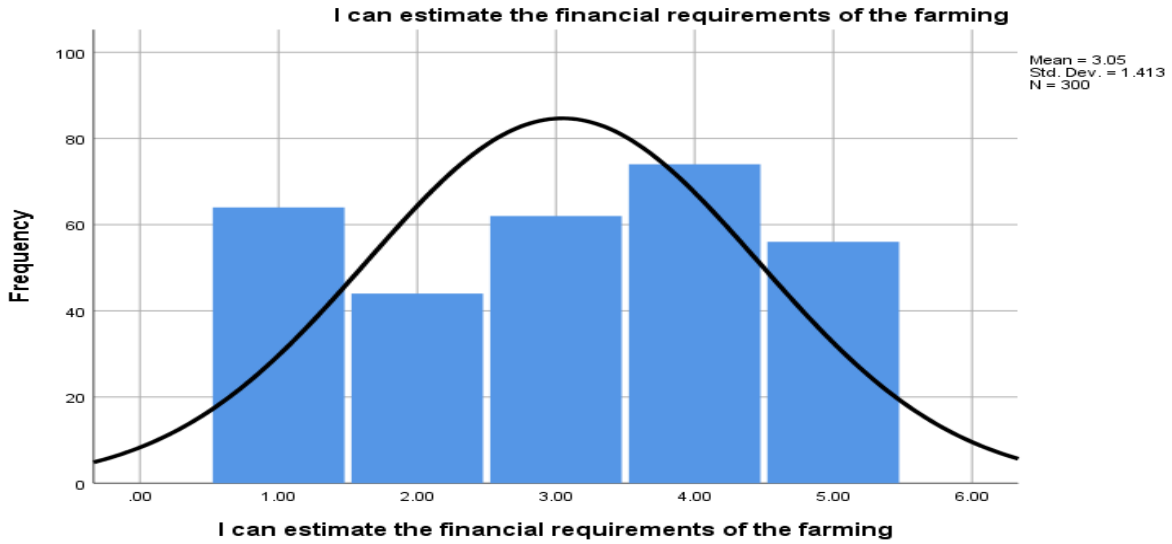
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. *I have direct access of mandis (market) for selling farm produce*, it was noted in this. 46 (15.3%) responders gave a Strong response. Disagree, 62 (20.6%) respondents said they disagreed, 80 (26.6%) said they were neutral, 80 (26.6%) said they agreed, and 32 (10.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*I have direct access of mandis (market) for selling farm produce*" the Mean is 2.9 and the SD is 1.2 and the t is 41.7 which states a significant relationship and is valid.

40. **I can estimate the financial requirements of the farming.**

I can estimate the financial requirements of the farming					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	64	21.3	21.3	21.3
	Disagree	44	14.7	14.7	36.0
	Neutral	62	20.7	20.7	56.7
	Agree	74	24.7	24.7	81.3
	Strongly Agree	56	18.7	18.7	100.0
	Total	300	100.0	100.0	

Table 6.40: I can estimate the financial requirements of the farming.



Graph 6.40: I can estimate the financial requirements of the farming.

This variable is taken to know how careful the respondent is while estimating his farm expenses.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. "*I can estimate the financial requirements of the farming,*" was said in relation to this. 64 (21.3%) responders gave a strong response. Disagree: 44 respondents (14.6%) said they did, Neutral: 62 respondents (20.6%), Agree: 74 respondents (24.6%), and Definitely Agree: 56 respondents (18.6%).

The statistical test for the various statements was performed. The observations states that for the statement "*I can estimate the financial requirements of the farming*" the Mean is 3.04 and the SD is 1.4 and the t is 37.3 which states a significant relationship and is valid.

41. Are Fertilizers easily available for you due to the NBS policy?

Are Fertilizers easily available for you due to the NBS policy?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	84	28.0	28.0	28.0
	Agree	48	16.0	16.0	44.0
	Neutral	56	18.7	18.7	62.7
	Disagree	48	16.0	16.0	78.7
	Strongly Disagree	64	21.3	21.3	100.0
	Total	300	100.0	100.0	

Table 6.41: Are Fertilizers easily available for you due to the NBS policy?

Graph 6.41: Are Fertilizers easily available for you due to the NBS policy?

Fertilizers are key inputs and availability impacts its usage, therefor this variable was taken to know whether NBS Policy has helped the availability of fertilizers.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This raised the question, "*Are fertilizers easily available for you due to NBS policy?*" A total of 84 (28%) respondents indicated a strong agreement,

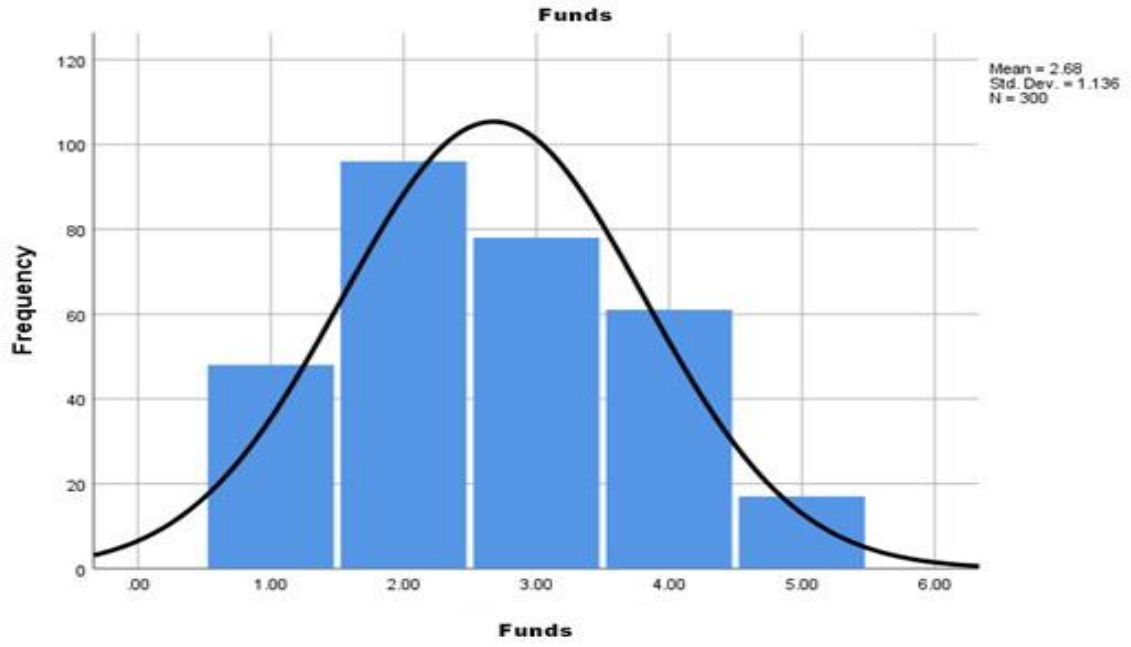
followed by 48 (16%) agreeing, 56 (18.6%) saying they were neutral, 48 (16%) disagreeing, and 64 (21.3%) strongly disagreeing.

The statistical test for the various statements was performed. The observations states that for the statement "*Are fertilizers easily available for you due to the NBS policy?*" the Mean is 2.8 and the SD is 1.5 and the t is 32.8 which states a significant relationship and is valid.

42. Funds

Funds					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	48	16.0	16.0	16.0
	Disagree	96	32.0	32.0	48.0
	Neutral	78	26.0	26.0	74.0
	Agree	61	20.3	20.3	94.3
	Strongly Agree	17	5.7	5.7	100.0
	Total	300	100.0	100.0	

Table 6.42: Funds



Graph 6.42: Funds

This variable plays an important role in fertilizer purchases; therefore, it is taken for the study.

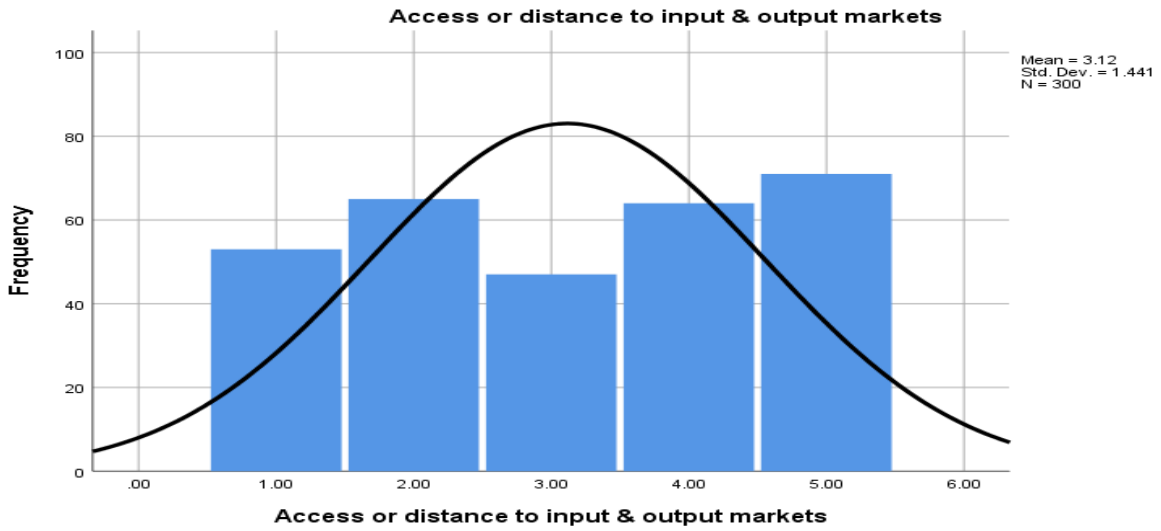
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Funds*" was seen. 48 (16%) respondents gave a strong response. 96 (32% of respondents) said they disagreed, 78 (26%) said they were neutral, 61 (20.3%) said they agreed, and 17 (5.6%) said they strongly agreed.

The statistical test for the various statements was performed. The observations states that for the statement "*Funds*" the Mean is 2.6 and the SD is 1.1 and the t is 40.8 which states a significant relationship and is valid.

43. Access or distance to input & output markets.

Access or distance to input & output markets					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	53	17.7	17.7	17.7
	Disagree	65	21.7	21.7	39.3
	Neutral	47	15.7	15.7	55.0
	Agree	64	21.3	21.3	76.3
	Strongly Agree	71	23.7	23.7	100.0
	Total	300	100.0	100.0	

Table 6.43: Access or distance to input & output markets.



Graph 6.43: Access or distance to input & output markets.

Closeness to fertilizer shops for purchase of fertilizers and selling of farm yield to mandis, always have been helpful to the respondents, therefor this variable was taken for the study.

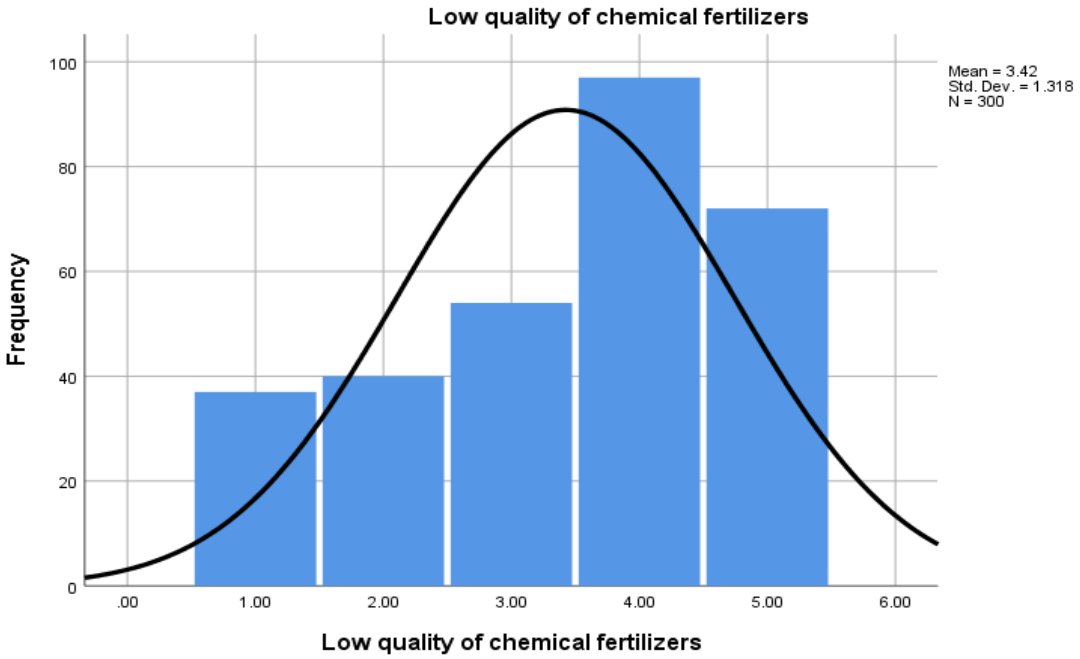
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This revealed information regarding "*Access or distance to input and output markets.*" 53 respondents (17.6%) responded "Strongly Disagree," 65 respondents (21.6%), "Disagree," 47 respondents (15.6%), "Neutral," 64 respondents (21.3%), "Agree," and 71 respondents (23.6%) "Strongly Agree."

The statistical test for the various statements was performed. The observations states that for the statement "*Access or distance to input & output markets*" the Mean is 3.1 and the SD is 1.4 and the t is 37.4 which states a significant relationship and is valid.

44. **Low quality of chemical fertilizers**

Low quality of chemical fertilizers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	37	12.3	12.3	12.3
	Disagree	40	13.3	13.3	25.7
	Neutral	54	18.0	18.0	43.7
	Agree	97	32.3	32.3	76.0
	Strongly Agree	72	24.0	24.0	100.0
	Total	300	100.0	100.0	

Table 6.44: Low quality of chemical fertilizers



Graph 6.44: Low quality of chemical fertilizers

Good quality of fertilizers is always preferred; however, this variable was taken for study whether this has any effect on respondents buying.

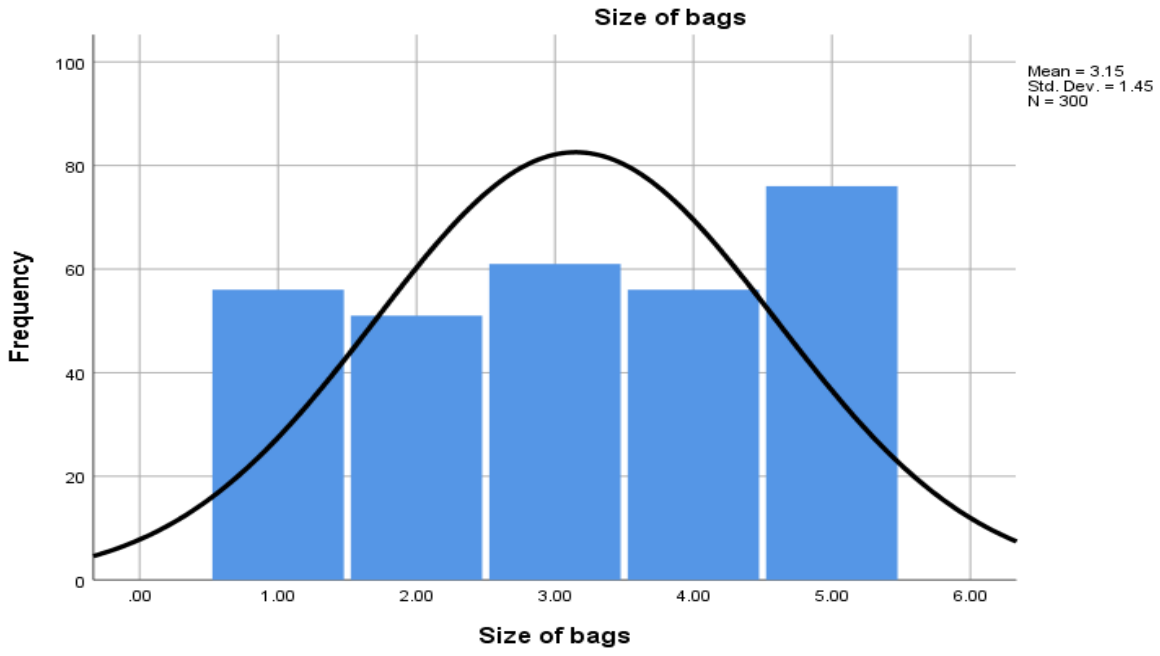
According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. In this, "*Low quality of chemical fertilisers*" was noted. A total of 97 respondents (32.3%), including 72 (24%) who responded Strongly Agree, agreed with the statement, compared to 37 (12.3%) who strongly disagreed, 40 (13.3%) who disagreed, 54 (18%) who responded neutrally, and 40 (13.3%) who disagreed.

The statistical test for the various statements was performed using SPSS. The observations states that for the statement "*Low quality of chemical fertilizers*" the Mean is 3.4 and the SD is 1.3 and the t is 44.9 which states a significant relationship and is valid.

45. **Size of bags**

Size of bags					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	56	18.7	18.7	18.7
	Disagree	51	17.0	17.0	35.7
	Neutral	61	20.3	20.3	56.0
	Agree	56	18.7	18.7	74.7
	Strongly Agree	76	25.3	25.3	100.0
	Total	300	100.0	100.0	

Table 6.45: Size of bags



Graph 6.45: Size of bags

This variable was taken for study only to know the convenience of farmers while making decision for purchases and further handling.

According on the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This observation relates to "*Size of Bags*." 56 respondents (or 18.6%) replied Strongly Disagree, 51 respondents (or 17%) responded Disagree, 61

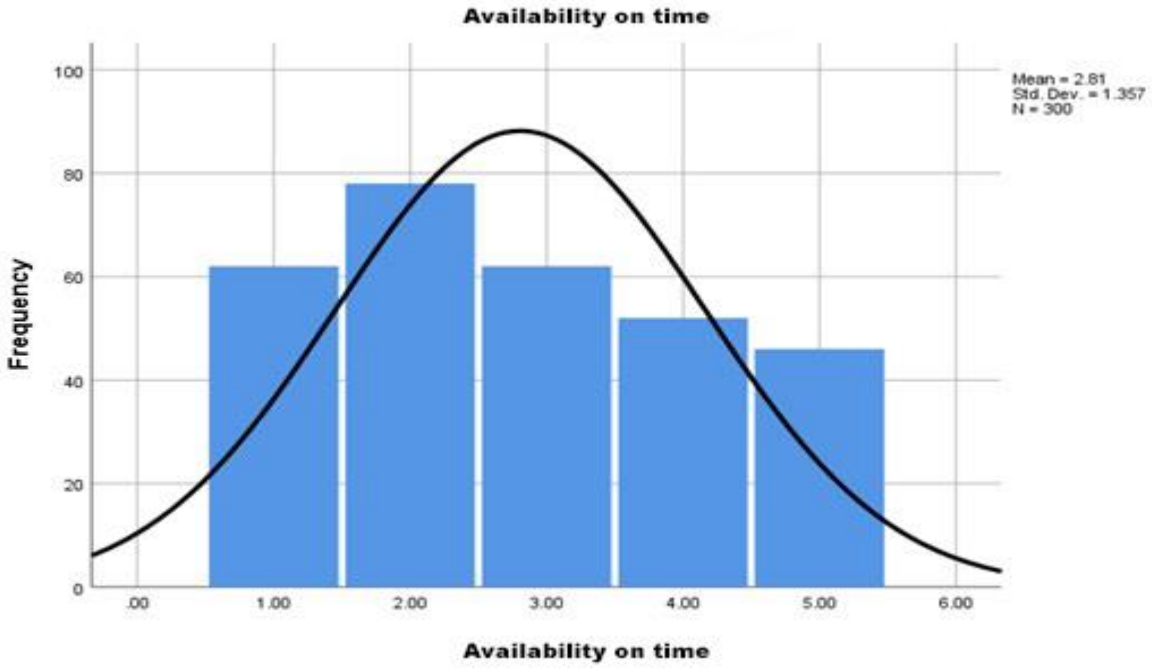
respondents (or 20.3%) responded Neutral, 56 respondents (or 18.6%) responded Agree, and 76 respondents (or 25.3%) responded Strongly Agree.

The statistical test for the various statements was performed using SPSS. The observations states that for the statement "*Size of bags*" the Mean is 3.15 and the SD is 1.4 and the t is 37.6 which states a significant relationship and is valid.

46. **Availability on time**

Availability on time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	62	20.7	20.7	20.7
	Disagree	78	26.0	26.0	46.7
	Neutral	62	20.7	20.7	67.3
	Agree	52	17.3	17.3	84.7
	Strongly Agree	46	15.3	15.3	100.0
	Total	300	100.0	100.0	

Table 6.46: Availability on time



Graph 6.46: Availability on time

This variable is one of the important one in decision-making of buying by the respondents.

According to the analysis and information in the graph and tables above, the sample data pertains to 300 respondents. This revealed information regarding "*Availability on time*." 62 (20.6%) respondents said they strongly disagreed, 78 (26%) said they disagreed, 62 (20.6%) said they were neutral, 52 (17.3%) said they agreed, and 46 (15.3%) said they strongly agreed.

The statistical test for the various statements was performed. The observations state that for the statement "*Availability on time*" the Mean is 2.8 and the SD is 1.3 and the t is 35.81 which states a significant relationship and is valid.

6.2 FERTILIZER INDUSTRY OFFICERS RESPONSE

6.2.1 Demographic Response of Fertilizer Industry Officers

1. Designation

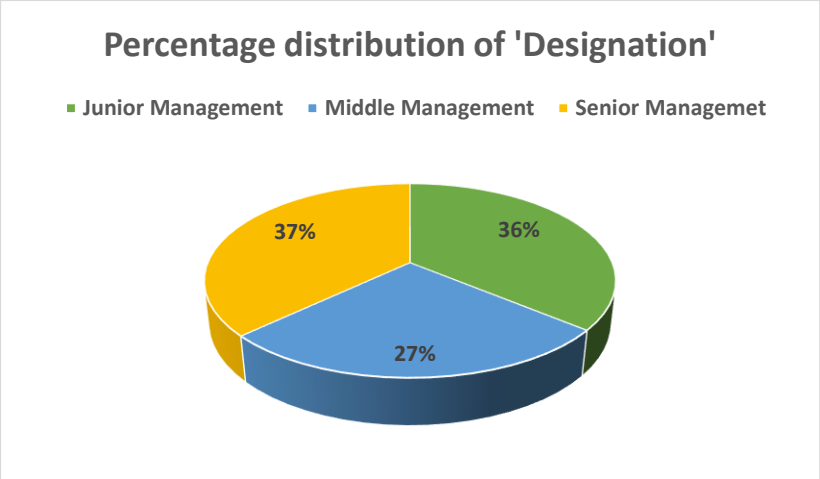


Chart 6.1: Percentage distribution of 'Designation'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. Senior Management employees make up most of the share (37%). Junior Management, with a 36% share, is the second-largest group. The lowest percentage of employees is in middle management (27%).

2. Qualification

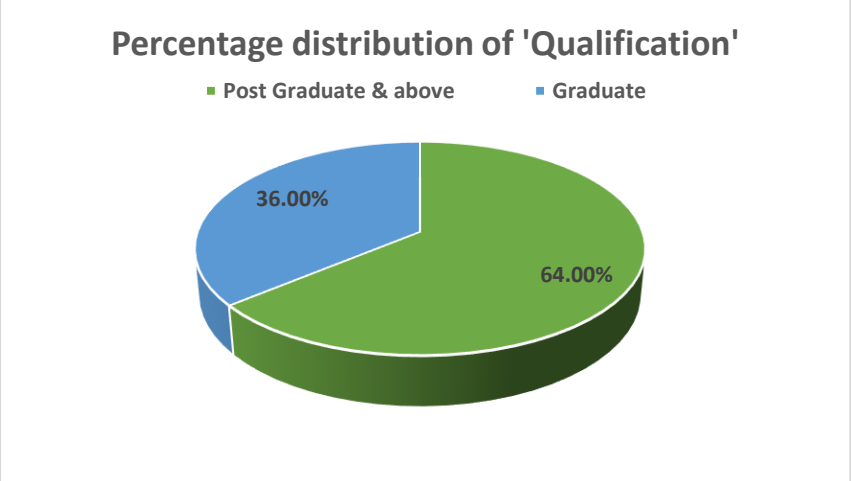


Chart 6.2: Percentage distribution of 'Qualification'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. This information can be interpreted as follows, the majority of employees, 64%, have a post-graduate qualification or above. The remaining employees, 36%, have a graduate qualification.

3. **Experience**

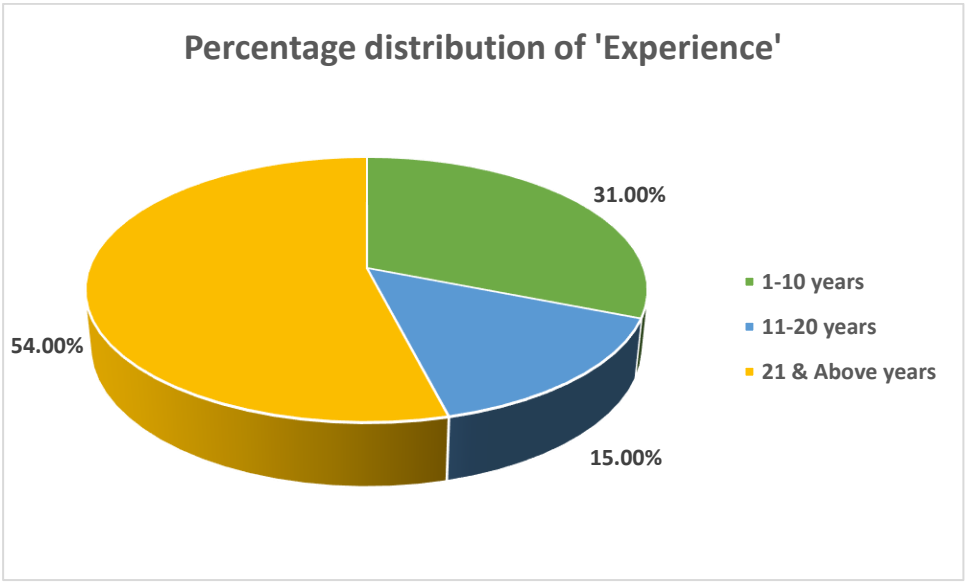


Chart 6.3: Percentage distribution of 'Experience'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. This information can be interpreted as follows; most of employees (54%), have 21 or more years of experience. Whereas 31% of employees have between 1-10 years of experience, and 15% have between 11-20 years of experience.

4. Experience of Working in Indian States

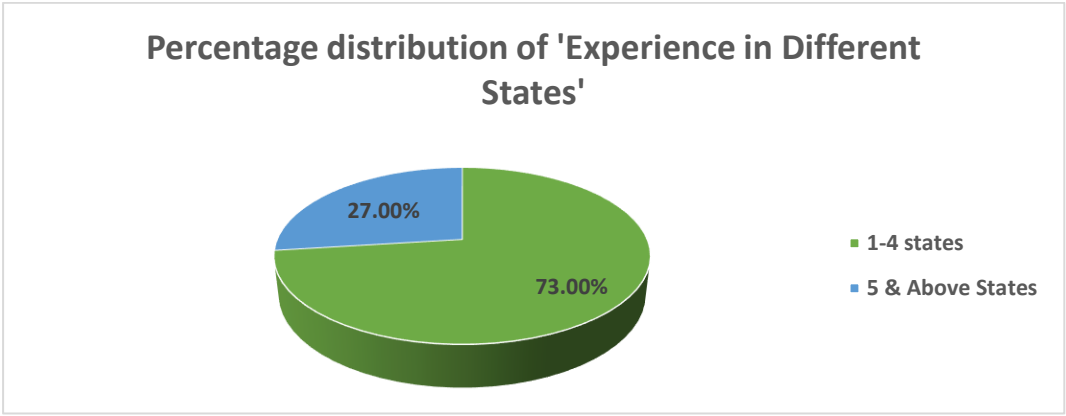


Chart 6.4: Percentage distribution of 'Experience in Different States'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. These findings can be interpreted as follows; majority of employees, 73%, have experience of working in 1-4 different states. 27% of employees have experience of working in 5 or more different states.

6.2.2 Behavioral Information of Fertilizer Industry Officers

5. According to you what is the usage pattern of Urea and Non-Urea fertilizers by farmers after the introduction of NBS policy.

The majority of Senior management and middle management officers are of the opinion that the usage of Urea post NBS policy has increased indiscriminately. Due to anomaly in MRP of Urea and Non-Urea fertilizer under the NBS regime, farmers have biased preference towards use of Urea compared to non-Urea fertilizers. The indiscriminate usage of Urea has deteriorated the soil parameters of our country. NPK ratio at time of introduction of NBS was 4.7: 2.3: 1 (FY 2010-11) and now it is 7.7:3.1:1 (FY 2021-22). Consumption of Urea to has increased from 281.12 lakh MT to 341.80 lakh MT, whereas that of DAP/NPKS is stagnant and revolves in range of 90.00 to 110 Lakh MT.

According to very Senior Management officers it is pointed out that due to high cost of raw material (Natural Gas) for production of Urea and that most of the Urea plants in India are more than 20 years old, their cost of production varies, therefore GoI had kept Urea out of the gambit of NBS, therefore creating abnormality in cost of Urea & Non-Urea products, which changes the usage pattern.

6. Your comments on the affordability of fertilizers (Urea, DAP, MOP and NPK grades) by farmers due to the NBS policy.

Almost all the respondents are of the same view that objective of NBS policy was for promoting balanced use of fertilizers and making fertilizer affordable to the farmers and thereby making ample availability & reducing the subsidy burden on GoI. Earlier subsidy on fertilizers was passed on as difference between MRP and cost of production. However, under NBS regime the subsidy was linked with nutrient present in the fertilizer and was limited to N, P, K, S, Zn & Boron only and industry was free to fix the price of non-Urea fertilizers. The MRP of Urea was also capped by GoI to less than Rs 300 per 50 kg bag. This created an anomaly which made Urea quite affordable compared to non-Urea fertilizers which were 4 times the price of Urea.

The cost of non-Urea fertilizer increased substantially for the farmers post NBS regime for e.g.: MRP of DAP was Rs. 600 per bag (incl. of taxes), which got increased to Rs. 1350 per 50 kg bag. The price of urea was same whereas the price of DAP got increased. Prices of other NPK grades also got increased around 4 times and revolving around DAP prices.

7. How NBS has impacted production, import and consumption pattern of fertilizers in India?

According to the respondents NBS has a significant impact on consumption of fertilizers in India. As per the respondents, having experience of working in fertilizer industry for more than 20 years, were able to explain how the scenario has changed pre and post NBS when it comes to production, import and consumption.

Urea: During 2010-11, Urea production was 218.73 Lakh MT, which increased to 250.76 Lakh MT in 2021-22 and registered a 14.64 per cent of growth. Low price of Urea favored demand at farmer's level. Urea imports during 2010-11 were 66.10 Lakh MT, which increased to 91.36 Lakh MT in 2021-22 and registered 38.21 per cent of growth. The sales of urea in the year 2010-11 was 281.13 Lakh MT which increased by 21.80 per cent in the year 2021-22 with 431.80 Lakh Mt.

DAP: In the year 2010-11, the production of DAP was 35.41 Lakh MT, with an increase of 19.22 percent in the year 2021-22. On the other hand, the imports of DAP decreased in the year 2021-22 if compared to pre NBS 2010-11, i.e., from 74.11 Lakh MT to 54. 62 Lakh MT. Sales have also reduced by 14.70 per cent i.e., from 108.70 Lakh MT during 2010-11 to 92.72 Lakh MT in 2021-22. Import of DAP is made to fill the gap between production and requirements, which varies from time to time.

Make in India program of Government of India has encouraged the SSP units for higher production. During 2010-11 the production was 37.13 Lakh MT, which has increased to 53.51 Lakh Mt, as registered a growth of 44.13 per cent.

8. What has been the post effect of NBS policy on overall agriculture sector?

Response of many senior management and middle management officers can be summarised below:

Post NBS, availability of fertilizers has increased significantly. Earlier, pre NBS despite ample availability of fertilizers, farmers were facing difficulty in purchasing fertilizers. Rampant

hoarding of fertilizer stocks and creating artificial shortage and over charging on MRP was high during pre NBS era.

Since implementation of NBS several upgrades/modifications have been made for increased transparency in stocks, mode of disbursement of subsidy to manufacturers and increased availability of fertilizers to farmers.

NBS policy was implemented in phased manner:

1st phase: FMS (Fertilizer Monitoring system) online module was introduced and subsidy disbursement to fertilizer manufacturer was done on receipt of fertilizers in particular state. The receipt was further confirmed by issuance of proforma B1 (Quantity Certificate) & proforma B2 (Quality Certificate) issued by State Director of Agriculture. Thus, with this objective confirmation of receipt of stocks was guaranteed.

2nd phase: A new online module mfms (modified fertilizer management system) was introduced in 2014-15 where fertilizer receipt up to retailer level was monitored. This assured that fertilizers were received up to retailer level. There by analysis of stocks up to village level was established.

3rd phase: In 2017-18 mfms module was phased out for new module ifms (integrated fertilizer management system) for implementation of DBT (Direct Benefit Transfer). Here subsidy disbursement was solely based on actual purchase of fertilizers by farmers. The actual purchase was monitored by PoS machine in which farmers had to authenticate the purchase through Aadhaar card and their fingerprint. This established transparency and tracking actual purchase of fertilizer. It also helped to understand the purchase pattern by farmers and whether any fertilizer is not diverted for non-agriculture use.

9. How NBS has helped fertilizer companies in subsidy disbursement?

All senior, middle, and junior management respondents are of the same view that during Pre NBS, the subsidy was announced on quarterly basis on the product made by the companies which was then certified by auditors and submitted to DoF. However, the process was time taking and subsidy bills remained unpaid, and backlog of 1-2 years was there.

Post NBS the time taken for disbursement of subsidy has reduced significantly, however these changes took place in phased manner. Initially, on receipt of fertilizer in mfms module and submission of Proforma B1, the fertilizer companies were eligible for freight subsidy. After

submission of Proforma B2 the fertilizer companies were eligible for fertilizer subsidy for a particular month. However, this process used to consume 4-6 months.

Under the DBT module, the working capital requirement of fertilizer companies reduced significantly. In place of monthly claims of fertilizer subsidy, the companies are now eligible for weekly claim generation. This helped the fertilizer companies reducing the period of subsidy claims.

10. Your comments on the overall MRP of fertilizers post NBS Policy.

According to most of the respondents, except Urea post NBS, the MRP of fertilizer (DAP, NPK grades, AS), has increased substantially. Fertilizers which were available at Rs 9000 increased to Rs 24000 PMT. Thus, the cost of agro- inputs for the farmers has increased significantly. However, this has helped GoI in reducing subsidy burden compared to pre NBS.

Post NBS, as subsidy was linked to individual nutrient present in fertilizer, the fertilizer companies were not shielded against fluctuations in international prices of raw materials and finished fertilizers. Lacuna in NBS policy was reveled in Post Covid era, during which international prices of raw materials and finished goods increased to their ever-highest levels. The situation was further worsened due to Russia-Ukraine war. To protect the interest of farmers, GoI was compelled to give huge subsidy on fertilizers.

6.3 FERTILIZER DISTRIBUTORS/RETAILERS RESPONSE

6.3.1 Demographic Information of Fertilizer Distributors/Retailers.

1. Number of years in Business

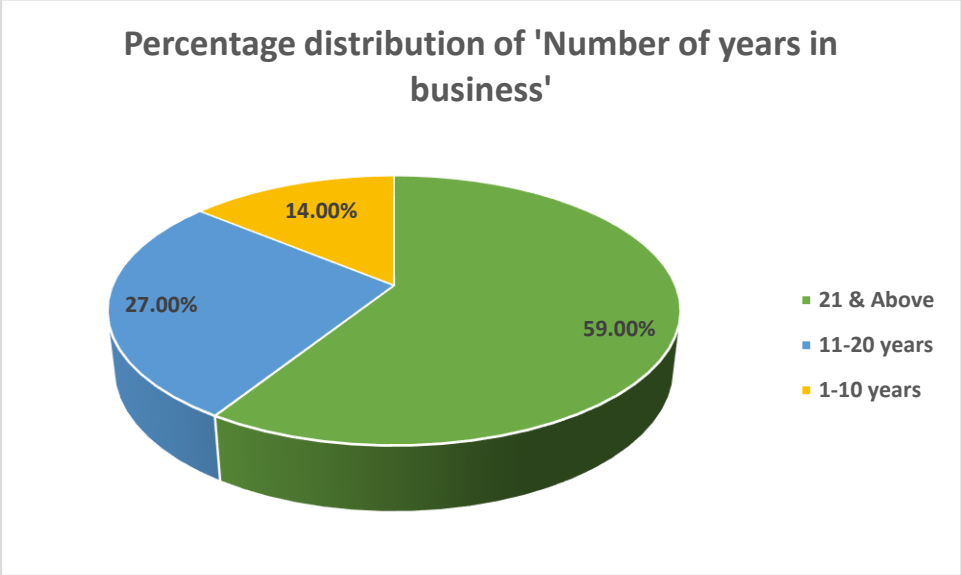


Chart 6.5: Percentage distribution of 'Number of years in business'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. These findings can be interpreted as follows; majority of businesses, 59%, have been in operation for 21 years or more. 27% of businesses have been operating for between 11-20 years.14% of businesses have been operating for 1-10 years.

2. Experience in Dealing in Different States.

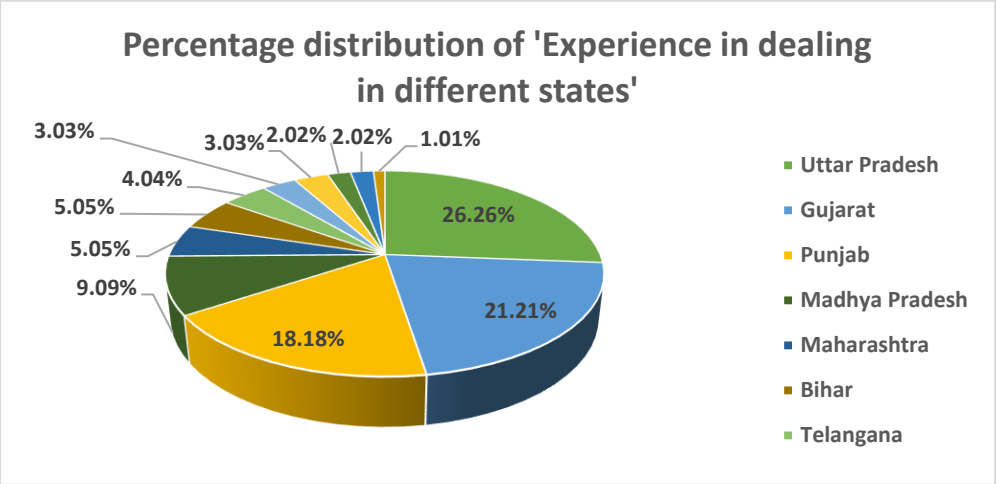


Chart 6.6: Percentage distribution of 'Experience in dealing in different states.'

According to the analysis and information in the chart above, the sample data pertains to 100 respondents. Most of the distributors/retailers were from Uttar Pradesh (26.26%), followed by Gujarat (21.21%) and Punjab (18.18%). The remaining states account for less than 10% each, with Telangana and Karnataka being the only ones with more than 3%.

6.3.2 Behavioral Information of Distributors/Retailers.

3. Your comment on availability of fertilizer during seasonal month after introduction of NBS policy.

According to majority of respondents, availability has increased, however due to acute demand during seasonal months shortages of some of the fertilizers grade in pockets were observed, but its temporary. Overall availability of urea has increased.

4. Return on investment after introduction of NBS policy.

Most of the distributors have expressed that their return on investment in fertilizer business has reduced. For example, at the time of introduction of NBS Policy, distributors used to get Rs. 400 – 450 per MT as margin on DAP, when investment was Rs. 12,000 per MT, but now MRP has increased to Rs. 27,000 per MT and the margin is Rs. 480 per MT only. Similar is the case of other NPK grades. Rs. 50 on account of the retailer's acknowledgement has been withdrawn.

Compliances have increased and to track the movement of fertilizers on a daily basis, services of a computer literate person is required, and distributors are bound to pay from Rs. 10,000 to Rs. 25,000 per month on account of hiring such services.

5. Overall impact of NBS policy on your business.

The majority of the respondents are of the opinion that after introduction of NBS policy, the demand and availability of urea has increased. However, in the last decade DAP shortage in few pockets of various states were felt during seasonal months.

Wherever supply of DAP and NPK grades are there during peak requirements of seasonal months, their sales has increased. Frequent changes in MRP of phosphatic fertilizers, at times affected initial demand from farmers level, and sales through PoS machine reduced slow generation of bills due to internet connectivity issues. Post NBS compliances have increased, tracking of fertilizer movement from placing orders to sales up to farmer's level invites personal attention and sparing more time.

During 2021-22, for the first time MRP of NPK grades were fixed more than DAP i.e., DAP at Rs. 1200 per 50 kg bag and NPK grades maximum up to Rs. 1470 per 50 kg bag. As a result of that demand of DAP has increased and dealers and retailers faced issues in clearing NPK stocks. In fact DAP has become cheaper product in P & K group of fertilizers.