

# An Assessment of Availability and Use of Chemical Fertilizers for Farming Community in Tehsil Phalia, District Mandi Bahauddin–Pakistan

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## ABSTRACT

Fertilizers play an important role in the maintenance of soil fertility in modern agriculture. A study was conducted to estimate the use of fertilizers by farmers to different crops. The information related to the availability, process, distance to travel for the purchasing of fertilizer, types of fertilizers, and recommended doses were also collected. The study revealed that high prices of fertilizers, lack of irrigation water, lack of knowledge and paucity of funds were the main reasons in non-adoption of recommended dose of fertilizers.

**Key Words:** Fertilizers; Farming community

## INTRODUCTION

Fertility of soil is one of the most important requirements for plant growth and development. After cultivating different crops on the same soil a time comes when the soil fails to maintain its standard of productivity due to loss and weakness of some essential elements of soil. In the past, the farmers used to keep their soils fallow for a long time so that it restores its fertility and standard of production could be maintained. Farm yard manure has been used by the farmers for the restoration of the fertility of soil, but it is lengthy process and availability of farm yard manure has also become a problem.

The chemical fertilizers due to the quick action and rapid availability of needed nutrients have got an important position among the practices needed for the enhancement of crop production. There are a number of nutrients, which become quickly available by the use of chemical fertilizers. Nitrogen, phosphorus and potash are the most important ones for the soil of our country. It is the event of some satisfaction for us that our farming community has realized the importance of use of chemical fertilizers.

The importance of fertilizer is quite evident for maintaining the fertility of soil and getting an increased production. Non-adoption of recommended doses of fertilizers by the farmers is, however, a problem. Athar (1982) concluded that main reasons for this in the non-adoption of recommended doses of fertilizers as stated by the farmers were: high prices of fertilizers, lack of irrigation water, lack of knowledge and paucity of funds. Majority of the farmers were unaware of the recommended time and methods of application. Availability of irrigation water and funds were important consideration for the use of fertilizer

by the majority of farmers (Bahadur, 1980). In order to get the objectives of increasing agricultural production it is very important firstly that required quantity of fertilizer is easily available to farming community and secondly the recommended dose of fertilizer, is applied at the proper time and interval.

The main objective of this study was to find out the extent of availability of chemical fertilizers for the farming community, determine the extent to which farmers use fertilizers, determine the difficulties faced by the farmers in the procurement of fertilizers and to formulate suggestions to improve the availability and the use of chemical fertilizers among the farmers.

## MATERIALS AND METHODS

Phalia Tehsil consists of 55 union councils out of which two union councils namely Helan and Jano Chak were selected randomly as representative sample. Four villages were selected from each union council. From each village 25 farmers were taken randomly as the respondents for the study. The total number of respondents came to be 200. In order to collect the needed information in the light of formulated objectives, an interview schedule was prepared and tested on farmers in order to determine its availability and workability. After pre-testing the interview schedule was finalized after making certain changes in its form and contents, then each respondent was interviewed.

Although the interview schedule was constructed in English yet the researcher had to collect information in local language i.e. Punjabi keeping in view the educational level of the respondents. The data collected with the help of interview schedule was subjected to Fisher's analysis of variance technique and LSD test at 5% probability level to

compare the differences among treatments means (Steel & Torrie, 1984).

## RESULTS AND DISCUSSION

According to the findings of the study, 43.5% of their respondents possessed land holding ranging from 12-1/2 to 25 acres and 36.5% owned land up to 12-1/2 acres only. However the remaining 20% of the respondents possessed land holding above 25 acres.

**Tenure system and major crops.** Type of tenure means the manner and conditions of holding a property or the status of the person in relation to the property. Majority (88%) of the respondents were owner cultivators, while tenants and owner-cum-tenants were a few in number i.e., 6% in each case. The overwhelming majority of the respondents were owner cultivators.

The area under major crops i.e. wheat, rice, and sugarcane was also calculated in the study area, which described that two to four acres of rice was grown by comparatively higher percentage of respondents while more than 10 acres of wheat and 1-2 acres of sugarcane were cultivated by 44.5% of respondents in higher among wheat and sugarcane growers.

**Use of fertilizer.** In order to get maximum and immediate benefits from the use of these fertilizers, it is required to use the recommended fertilizer, in recommended dose and at recommended time. The data concerning the different aspects of fertilizer have been presented in Table I to VI.

Table I indicates awareness of farmers about different fertilizers and their use in the last season. In a previous study, Alam (1972) concluded that 90% of the respondents were aware of ammonium nitrate but in this study only 24.5% were aware of ammonium nitrate. So, this indicates that in the surveyed area there is need to improve extension services and to make the farmers aware of the use of ammonium nitrate. Table II indicated that urea Nitrophos and D.A.P. were the main fertilizers used by the respondents. It was found that 58, 94.5 and 47% of the respondents applied fertilizers below the recommended doses for rice, wheat and sugarcane, respectively (Table III). Gill (1981) found out that 95% of the respondents used less than recommended dose of fertilizers. The time of application of fertilizers for different crops has been presented in Table IV. Most of the respondents applied fertilizers for rice, wheat and sugarcane at the time of seed bed preparation. In case of wheat, overwhelming majority (90%) of the respondents applied fertilizer with first irrigation. It was found that only 26% of the respondents could get chemical fertilizers at the fixed rate (Table V). The data revealed that 100% respondents were used to get fertilizer from the private sources (Table VI). All other sources such as commission agents and Agricultural Development Commission (ADC) depots and other governmental organizations are non-functional and were found not working in the study area.

**Table I. Respondents awareness about and chemical fertilizers used last season**

Fertilizers	Awareness No. (%)	Used last season, No. (%)
Urea	200 (100)	200 (100)
Nitrophos	20 (10)	200 (100)
D.A.P	200 (100)	200 (100)
Ammonium Sulphate	20 (10)	-
Ammonium Nitrate	49 (24.5)	-
Potassium Sulphate	10 (5)	25 (12.5)
Single Super Phosphate	22 (11)	-

**Table II. Types of chemical fertilizer applied to rice, wheat and sugarcane by the respondents**

Name of Fertilizers	Rice No. (%)	Wheat No. (%)	Sugarcane No. (%)
Urea	198 (99)	199 (99.5)	199 (99.5)
Nitrophos	108 (54)	131 (65.5)	156 (78)
D.A.P	105 (52.5)	118 (59)	103 (51.5)
Ammonium Sulphate	-	-	-
Ammonium Nitrate	-	-	-
Single Sup. Phosp.	-	-	-
Tripple Sup. Phosp.	-	-	-
Potassium Sulphate	-	-	-

**Table III. Dose of fertilizers applied by the respondents in rice crop**

Dose	Rice No. (%)	Wheat No. (%)	Sugarcane No. (%)
Below recommended	116 (58)	189 (94.5)	94 (47)
Recommended	76 (38)	9 (4.5)	6 (3)
Over recommended	8 (4)	2 (1)	-
Total	200 (100)	200 (100)	200 (100)

**Table IV. Time of application of fertilizers to rice, wheat and sugarcane**

Time of App. of Fertilizers	Rice No. (%)	Wheat No. (%)	Sugarcane No. (%)
Seed bed preparation	189 (94.5)	200 (100)	200 (100)
1 <sup>st</sup> irrigation	61 (30.5)	180 (90)	11 (5.5)
2 <sup>nd</sup> irrigation	104 (52)	33 (16.5)	94 (47)
3 <sup>rd</sup> irrigation	18 (9)	13 (6.5)	57 (28.5)
4 <sup>th</sup> irrigation	6 (3)	3 (1.5)	99 (49.5)

**Table V. Availability of fertilizers at the Price fixed by the Government**

Responses	No. of Respondents	Percentage
Available at fixed price	52	26
Not available at fixed price	148	74
Total	200	100

**Table VI. Sources of getting fertilizers by the respondents**

No. of Sources	No. of Respondents	Percentage
*(A.D.C.) Depot	0	0
Private shop	200	100
Commission agent	0	0
Cooperative society	0	0
Total	200	100

\*Agricultural Development Commission Depots

The data presented in the above table VII indicate that 5% respondents had to travel 9-12 kilometers for the purchase of fertilizers, while 47.5% had to travel only 1-3 km. Out of the remaining respondents, 20% had to travel 6-9 Km and 28.5% reported a distance of 3-6 Km. Table IX indicates that non-availability of fertilizer in time was reported to be the main difficulty by 28.5% respondents and 13% pointed out the fertilizer less in weight was available. Table X deals with the suggestions of respondents to improve the availability and use to chemical fertilizers. All the respondents suggested for the establishment of agencies in village, whereas 6.5% suggested that Agricultural Extension Department should guide the farmers regarding the obtaining and use of chemical fertilizers. While 7% and 40% respondents suggested that transportation facilities should be available and prices of fertilizers should be decreased.

**Table VII. Distance of fertilizer sale point from residents of respondents**

Categories (Distance in Km)	No. of Respondents	Percentage
1-3	93	47.5
3-6	57	28.5
6-9	40	20
9-12	10	5
Total	200	100

**Table VIII. Difficulties faced by the respondents in obtaining chemical fertilizers**

Difficulties	No. of Respondents	Percentage
Non availability of fertilizer in time	57	28.5
Less in weight	26	13.0

**Table IX. Suggestions given by the respondents to improve the availability and use of chemical fertilizers**

Suggestions	No. of Respondents	Percentage
Agency in village	200	100
Guidance by Agricultural Extension Department to farmers regarding use of Fertilizers	13	6.5
Availability of transportation Facilities	14	7.0
Decrease in the prices of fertilizers	80	40

## CONCLUSION

It is concluded from the above findings that urea, Nitrophos and DAP were the most popular fertilizers among the farming community in the study area. Where as potassium sulphate was also more popular among them as compared to other ones and most of the farmers used the fertilizers which were known to them and did not use the fertilizers about which they were unaware. Majority of the farmers used below recommended doses of fertilizers for rice, wheat and sugarcane crops. Most of the farmers

applied fertilizer at the time of 2<sup>nd</sup> irrigation in case of rice, at the time of 1<sup>st</sup> irrigation in case of wheat and at the time of 4<sup>th</sup> irrigation incase of sugarcane in addition to the fertilizers applied at the time of seed bed preparation. The difficulties faced by the farmers in obtaining the fertilizers were: non-availability of fertilizer in time and lesser weight of fertilizer bags.

## SUGGESTIONS

On the basis of conclusions drawn from the study, following suggestions are offered for making optimum use of fertilizers in order to get increase production.

1. The majority of the farmers are unaware of recommended dose, time of application and method of application of the fertilizers. The extension staff should give more emphasis to educate the farming community about the recommended doses, time and method of application to every crop.
2. High price of fertilizers is one of the hindrance in the use of recommended doses of fertilizers by the farmers. Government should make such policies so that fertilizer industry can manufacture fertilizer at low cost. Thus ultimately it will give a big push to our economy, due to increase in agricultural productively by the use of recommended doses of fertilizers, which are not applied due to high prices.
3. Storage of fertilizer must be neat the railway stations or main roads which would help to increase the distribution.
4. In order to make availability of fertilizer at proper time to the door step of farmers, it is suggested that a net work of metallic road should be spread all over the country and all villages should be connected with main roads for proper transportation of fertilizer.
5. Most of the farmers indicate that fertilizer bags are under weight and not properly sealed. So it is suggested that strict administrative action should be taken against these defaulters and their license should be cancelled.

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