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# DISTRIBUTION OF FARMERS USING DIFFERENT BRANDS OF FERTILIZERS, TYPES AND NUTRIENT GRADES OF FERTILIZERS AND MARKETING CONSTRAINTS OF WATER-SOLUBLE FERTILIZERS IN EAST GODAVARI DISTRICT OF ANDHRA PRADESH

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## ABSTRACT

The study was undertaken in one district *i.e.,* East Godavari district of Andhra Pradesh. Andhra Pradesh state was chosen as the locale of the study, as the state ranks second in consumption of water-soluble fertilizers in India. East Godavari extends over an area of 12,805 square kilometer. It is predominantly an agricultural district and it contributes over 10 per cent of food production in Andhra Pradesh. The study was conducted on the crops which were using water soluble fertilizers to know the usage pattern and its scope for marketing of water soluble fertilizers. The selected crops were Paddy, a field crop; Banana and Mango, a plantation crops; and Chilli, a commercial crop, as they have the largest area under cultivation in East Godavari districts. 4 mandals *viz.,* Ambajepeta mandal, Kunavaram mandal, Tuni mandal, Athreyapuram mandal were selected purposively for the study as they have the highest acreage of the above-mentioned crops and where farmers were using WSF and liquid fertilizers. The selected villages were Pasupalli, Nedhunuru, Kunavaram, Pochavaram, Lolla Athreyapuram, Tuni and Dondavaka villages. The study is based on both primary and secondary data. The primary data needed for the study has been collected from 120 sample population selected purposive cum simple random sampling technique from selected district, duly categorised into 80 farmers (10 farmers from each of 8 villages), 40 dealers (10 dealers each of 4 mandals*).* The secondary data pertaining to area of above-mentioned crops was obtained from the agriculture department of erstwhile East Godavari district. Most of the farmers were facing a constraint of having poor knowledge on how to prepare the solutions and cost of the water-soluble fertilizers. A few farmers also complained about insufficient water for usage as water is sufficient enough for cultivation in study area and non-availability of WSF. Factors dealers considered while recommending WSFs were based on the quality of fertilizers. Major influential factor on farmers while purchasing WSFs were sales promotional activities. Major constraint for dealers during selling of WSFs was lack of government support on subsidizing the WSFs.

**KEYWORDS:** WSF-Water soluble fertilizers, Market constraints, Usage pattern, farmers.

## INTRODUCTION

Before green revolution first fertilizer industry was established in 1906 as a single super phosphate (SSP) manufacturing unit having 6000 MT annual capacity near Ranipet. After that The Fertilizer and Chemicals Travancore of India Ltd. (Fact) at cochin in Kerala and fertilizers corporation of India (FCI) in Sindri in Bihar (now Jharkhand) were established in forties and fifties. Green revolution took place in India in the 1960s and this increased the use of fertiliser in the country.

Fertilizer industry is highly regulated and monitored by government in India. The cost of production of fertilizer is higher than the price of the fertilizer. The gap between the cost of production and the price at which it is sold is reimbursed by government in the form of subsidies. Under Nutrient Based Subsidy (NBS), the subsidy given to the companies is fixed annually on the basis of its nutrients content (*i.e.,* Nitrogen, Phosphate, Potash and Sulphur) on per kg basis which is converted into subsidy per tonne depending upon the nutrient content in each grade of the fertilizers. These rates are determined taking into account the international and domestic prices of P and K fertilizers, exchange rate, inventory level in the country. During 2020-21 FY, the central subsidy on urea is 94,947 Crores and 38,917 Crores for Nutrient based subsidies. Therefore, the total subsidies on all fertilizers given by central government are 1,33,947 Crores. (Source: The Fertilizer Association of India). Under nutrient based subsidy scheme 22 grades of decontrolled fertilizers namely DAP, MAP, TSP, DAP Lite, MOP, SSP, Ammonium Sulphate etc. and 15 grades of complex fertilizers are present. Additional subsidy is also provided on the fertilizers that are fortified with secondary and micro nutrients such as Boron (B) and Molybdenum (Mo) as per the FCO.

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WSF are fertilizers that can easily dissolve in water and nutrient uptake efficiency is high in water soluble fertilizers as compared to traditional fertilizers. So, with WSF it is very easy to make nutrients easily available for plants and we can give controlled amount of nutrient precisely to crops in a given time period. Again, WSF are of two types -1.) Dry water-soluble fertilizers and 2.) Liquid fertilizers. Dry water-soluble fertilizers occupy major part of market share in WSF. WSF has a market value of USD 6.8 billion in 2019and is expected to increase at a CAGR of 7.3 per cent from 2020 to 2026.

Liquid water-soluble fertilizers are easy to apply as they are applied in liquid state or through foliar applications. They can easily blend with plant protection chemical and we can use them in mid -season of the crop. But water insoluble fertilizers are less costly than dry water soluble and liquid fertilizers. In India WSF are mainly used in horticulture crops and now a days we can see penetration of water-soluble fertilizers usage into few cash crops like Cotton. And they are majorly used in ornamental nursery plants.

## MATERIAL AND METHODS

The Andhra Pradesh state was chosen as the locale of the study, as the state ranks second in consumption of water-soluble fertilizers in India. Second stage of sampling pertains to the selection of district in Andhra Pradesh. East Godavari district is selected from Andhra Pradesh East Godavari is predominantly an agricultural district.

First crop that is considered is paddy as it is the major agriculture crop that is cultivated in East Godavari district. Then from horticulture segment, plantation segment and commercial crop segment banana, mango and chilly crops are considered respectively as they have the largest area under cultivation in East Godavari districts. Ambajepeta mandal is selected randomly for paddy crop farmers as researcher hails from same mandal. Kunavaram mandal is selected for chilly farmers as it is 4$^{th}$ largest gross cropped area with 115 hectares (2021-22) and stands first place in drip irrigation. Tuni mandal is selected for mango farmers as it stands first place in gross cropped area with 2101 hectares (2021-22). Athreyapuram mandal is selected for Banana farmers as it stands first place in Gross cropped area with 1556 hectares (2021-22). Villages are selected randomly from each mandal. Pasupalle and Mukkamala are selected from Ambajepeta mandal. Kunavaram village and Pochavaram village are selected from Kunavram Mandal. Lolla and Athreyapuram village are selected from Athreyapuram mandal. Tuni and Dondavaka villages are selected from Tuni mandal. 10 Farmers from each village are selected randomly. 20 from each mandal, totally 80 farmers data is collected from 4 mandals, 10 dealers are selected randomly from the respective mandal. (40 dealers from 4 mandals). Thus, making a sample size of 40.

**Objectives**

**A) Distribution of Brand of fertilizer and Type of fertilizers and Nutrient grades that are used by farmers in the given study area**

**B) To study marketing constraints of WSF**

## RESULTS AND DISCUSSION

**A) Distribution of Brand of fertilizer and Type of fertilizers and Nutrient grades that are used by farmers in the given study area**

**Brand of the fertilizer**

The data regarding the brand of the fertilizer of sample farmers in farming were collected and divided into 5 groups *viz*., Nagarjuna fertilizers, IFFCO, Gromor, Coromandel, Multiplex.

As shown in the above Table 1, 12 per cent of farmers were using IFFCO fertilizers which are particularly liquid urea bottles, 32.5 per cent of farmers were using Nagarjuna fertilizers, Gromor and coromandel fertilizers were used by 13.75 per cent farmers each, 15 per cent of farmers were using multiplex fertilizer. Here most of the farmers are using Nagarjuna fertilizers with 32.5 per cent. And least number of farmers are multiplex with using percentage of 15 per cent.

**Table 1. Brand of fertilizer**

| Brand of the fertilizer | Frequency | Percentage |
|---|---|---|
| IFFCO | 20 | 25.00 |
| Nagarjuna | 26 | 32.50 |
| Gromor | 11 | 13.75 |
| Coromandel | 11 | 13.75 |
| Multiplex | 12 | 15.00 |
| **Total** | **80** | **100.00** |

**Type of fertilizer**

The data regarding the type of fertilizer of sample farmers in farming were collected and divided into 2 groups *viz*., Liquid fertilizers and granular type of fertilizers.

As shown in the above Table 2, 25 per cent of farmers are using liquid fertilizer and 75 per cent of

**Table 2. Type of fertilizer**

| Method of Irrigation | Frequency | Percentage |
|---|---|---|
| Liquid water-soluble fertilizers | 20 | 25% |
| Dry water-soluble fertilizers | 60 | **75%** |
| **Total** | 80 | 100 |

farmers are using granular fertilizers. Here in the sample most number of fertilizers are using granular fertilizers.

**Nutrient grades used by farmers**

The data regarding the nutrient grade of sample farmers in farming were collected and divided into 5 types. There are 5 different types of fertilizers used by sample farmers they are Liquid urea, 19-19-19, 20-20-20, 13-0-45,13-0-46. Only paddy farmers are using liquid urea bottles. 19-19-19 nutrient grade is used by chilly and banana farmers. 20-20-20 fertilizer is used by chilly and banana. 13-0-45 is used by Banana farmers, 13-0-46 is used by mango farmers.

**B) To study marketing constraints of WSF**

**To study the marketing constraints faced by dealers while selling WSF**

Few particulars that are considered to determine the marketing constraints faced by dealers while selling WSF are lack of promotional activities, availability of WSF, No support from the government, Subsidy on regular fertilizers, poor acceptance, Farmers affordability, Economical unviability.

**Table 3. Nutrient grades used by farmers**

| | Paddy | Chili | Banana | Mango |
|---|---|---|---|---|
| Liquid Urea | ■ | | | |
| 19-19-19 | | ■ | ■ | |
| 20-20-20 | | ■ | ■ | |
| 13-0-45 | | | | ■ |
| 13-0-46 | | | ■ | |

Information was collected from sample and for the analysis three-point scale was taken. 3,2,1 are the scores and they are taken against agree, dis agree, don't know, respectively.

The details of the constraints faced by dealers while marketing WSF are collected from a sample of 40 dealers and analysed the collected data by using Likert scale technique and the results are provided in the below Table 4.

From Table 4 it is analysed that the major constraint faced by the dealers was no support from the Govt. and subsidy on regular fertilizers with the highest mean scores of 1.85 and 1.8 respectively. And least constraints faced by the dealers are famers affordability and economical unviability of WSF with the least mean scores of 2.275 and 1.5 respectively. The major constraint for marketing

**Table 4. To study the marketing constraints faced by dealers while selling WSF**

| S. No. | Constraints | Major constraint | | Minor constraint | | Not a constraint | | Total score | Mean score | Rank |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NR | S | NR | S | NR | S | | | |
| 1 | Poor support from government on WSF | 10 | 30 | 14 | 28 | 16 | 16 | 174 | 1.85 | 1 |
| 2 | Subsidy on regular fertilizers | 4 | 12 | 24 | 48 | 12 | 12 | 72 | 1.8 | 2 |
| 3 | Lack of promotions on WSF | 12 | 36 | 7 | 14 | 21 | 21 | 71 | 1.775 | 3 |
| 4 | Poor acceptance of WSF | 28 | 84 | 9 | 18 | 3 | 3 | 105 | 2.625 | 4 |
| 5 | Availability of WSF | 24 | 72 | 13 | 26 | 3 | 3 | 101 | 2.525 | 5 |
| 6 | Farmers can't afford WSF | 19 | 57 | 13 | 26 | 8 | 8 | 91 | 2.275 | 6 |
| 7 | WSF are economically unviable to farmers | 3 | 9 | 14 | 28 | 23 | 23 | 60 | 1.5 | 7 |

WSF is poor support from government regarding WSF and subsidy on regular fertilizers. The minor constraint regarding marketing is economical in viability to farmers.

Most of the farmers are using Nagarjuna fertilizers with 32.5 per cent. And least number of farmers are multiplex with using percentage of 15 per cent. Only 25 per cent of farmers are using liquid fertilizer and 75 per cent of farmers are using granular fertilizers.

The major constraint faced by the dealers in marketing of water soluble fertilizers is no support from the Govt. and subsidy on regular fertilizers with the highest mean scores of 1.85 and 1.8 respectively. And least constraints faced by the dealers are famers affordability and economical unviability of WSF with the least mean scores of 2.275 and 1.5 respectively.

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