A CRITICAL STUDY ON AVAILABILITY OF AGRICULTURAL INPUTS WITH THE AGRI INPUT DEALERS OF NAGARKARNOOL AND WANAPARTHY DISTRICTS OF TELANGANA STATE, INDIA

ABSTRACT

Biggest discovery in the history of humanity was agriculture for basic livelihood of people to sustain this biggest development the quality supply of agricultural inputs to the farming community is essential because agriculture is the primary source of livelihood for about 58% of India's population. Gross Value Added by agriculture, forestry, and fishing was estimated at Rs. 19.48 lakh crore (US$ 276.37 billion) in FY20. Share of agriculture and allied sectors in gross value added (GVA) of India at current prices stood at 20.2 % in FY20. (Source: National Statistical Office (NSO). Seeds are critical to successful crop production and inevitably, farm productivity and profitability. Fertilizer supplies nutrients to the soil that are essential for growth. Crop protection chemicals control weed species, harmful insects and plant diseases that affect crops. Technical knowledge and Machinery enhance human labor effectiveness and increase farm productivity. Farm information helps the farmer to identify efficiencies that lead to higher productivity and profitability through achieving cost minimization and profit maximization. The study was carried out in the districts of Nagarkurnool and Wanaparthy of Telangana. A total of 60 input dealers were selected from the two districts based on Simple random sampling method. majority of the input dealers deal with medium range of agricultural inputs (55.00 per cent) Input dealers are dealing with combination of agricultural inputs and also various groups of plant protection chemicals based on their chemical classification are noticed to be sold by the input dealers during the study.

Key words: Agri input dealer, Agri-inputs, Crop protection, Herbicides. Crop productivity.

1.INTRODUCTION

India is the seventh largest country in the world with a geographical area of 3.287 million sq. km. It is the second most populous country with a population of 2.717 trillion (World Bank report, 2018). All this population has to get its food from only 60.45% of the above-mentioned land area i.e., 1.79 million sq. Km (World Bank report, 2016). Though agriculture contributes to the livelihood of more than sixty percent of the Indian population and majority of the rural population being involved in this vocation, ensuring food security becomes a challenging task, especially with increased nutritional intake, greater urbanization and declining cultivable area. The arable land which was 0.34 ha/person in 1951 is estimated to become 0.07 ha/person by 2030 (FICCI report, 2015). More production from less land is possible only with the combination of quality inputs and improved farm practices.

Agricultural inputs are those resources that are used in farm production such as chemicals, equipment, feed, seed, energy and information related to farm. Agricultural inputs are at the heart of rural marketing and rural development (Singh, 2004). Agriculture inputs are essential for growth of both agriculture sector and farmers income in many ways. Seeds are critical to successful crop production and inevitably, farm productivity and profitability. Fertilizer supplies nutrients to the soil that are essential for growth. Crop protection chemicals control weed species, harmful insects and plant diseases that affect crops. Technical knowledge and Machinery enhance human labor effectiveness and increase farm productivity. Farm information helps the farmer to identify efficiencies that lead to higher productivity and profitability by lowering input costs and optimizing fertilizer use.

Agricultural input dealers are those people who supply the inputs required for farming. They are involved in extension and advisory services in most parts of the country. While the input dealers deal with more or less similar products all over the country, the situation is quite different when it comes to Sikkim. The tiny Himalayan state as a part of its "Organic Mission" took measures to supply farmers with organic seeds. *The Sikkim Agricultural, Horticultural Inputs and Livestock Feed Regulation Act* passed in 2014, prohibits the import of any chemical inputs for agriculture and horticulture and as such constitutes a total ban on the sale and use of chemical pesticides in the state. The state trains its farmers in preparation of organic manures, compost etc., and the input dealers of the state therefore deal only with organic inputs and do not indulge in the sale of any synthetic inputs. Meti (2013) revealed that organic and inorganic fertilizers along with different types of seeds were sold by 80% of the dealers and around 60% of the dealers were dealing with various kinds of plant protection chemicals and only 20% of the respondents were dealing with farm implements.

At present there are 7.15 lakh practicing input dealers in the country operating from all the states (www.farmer.gov.in). Large number of input dealers being concentrated in Maharashtra, there are input dealers in almost all corners of the country. Most dealers in the state of Telangana are concentrated in the district of Khammam, followed by Karimnagar and Adilabad districts and very few dealers are located in Hyderabad which is the capital city of the state.

Input dealers are the first contact point to the farmers to whom they go for agricultural inputs and farm advisory information. The various inputs available with input dealers are usually based on the needs of farmers of that particular region. In order to know the various agricultural inputs dealt by the input dealers in Telangana state, an attempt has been made to conduct study on the same. The major limitation of this study is that it was conducted in only 2 districts which limit its generalization.

2.MATERIALS AND METHODS

2.1 Methods

The research design selected for the study was Ex-post facto based on the phenomenon to be studied. An ex-post facto research is something in which the events take prior to undertaking the investigation. These studies ensure availability of data when sufficient time has elapsed for the variables to produce effects.

2.2 Questionnaire and Measurement

In order to study the various inputs available with the agricultural input dealers, an interview schedule was prepared which included the list of all possible agricultural inputs that would be dealt by the input dealers which were taken from literature review and various possible sources. The input dealers were asked to respond yes/no regarding the inputs available with them. The obtained data was analyzed using frequency and percentage. The respondents were further categorized into low, medium and high categories based on mean and standard deviation.

2.3 Sample and Procedure

The study was carried out in the districts of Nagarkurnool and Wanaparthy of Telangana state which were part of the Mahabubnagar district prior to re-organisation of districts in the state in the year 2020. A total of 60 input dealers were selected from the two districts based on Simple random sampling method. Out of the total respondents 30 were from Nagarkurnool district and other 30 were from Wanaparthy district.

Table1. Selection of input dealers

S. No	District	No of dealers
1	Nagarkurnool	30
2	Wanaparthy	30
	Total	60

3.RESULT AND DISCUSSION

3.1 Various inputs available with the input dealers

3.1.1 Seeds

The findings from the Table 2 reveal that, while there are different types of seeds available, 96.66% of the input dealers dealt with cereal seeds, 95% dealt with oil seeds, 93.33% of the input dealers dealt with pulse seeds and vegetable seeds were available with 75% of the dealers. None of the dealers dealt with ornamental seeds. The reason for this might be that farmers in the study area mostly cultivate cereal crops like paddy, Jowar, Bajra, Maize, Ragi, Pulses like Red gram, oil seeds like Ground nut, Castor, Cotton and other vegetable crops. Hence the input dealers usually sell those seeds in their input shops.

Table 2: Distribution of input dealers according to the types of seeds available with them

S.NO	Category	Frequency*	Percentage
1	Cereal seeds	58	96.66
2	Pulse seeds	56	93.33
3	Oil seeds	57	95
4	Vegetable seeds	45	75
5	Ornamental seeds	0	0

(*multiple responses are recorded)

3.1.2 Insecticides

The findings on the available insecticides are presented in the Table 3. The insecticides are further divided into different groups based on their chemical classification. Among organophosphates, Monocrotophos and Chlorpyrifos are available with 100% of the input dealers; Malathion and Acephate are available with 90% of the input dealers. Phorate is dealt by 88.33% of the input dealers and Dichlorvos by 85% of theinput dealers. Quinalphos is found to be sold by 80% of the input dealers and

65% deal with Methyl Parathion. Dimethoate, Methyl demeton, Phosalone is available with 50%, 45% and 41.66% of the input dealers respectively. Profenofos is available with only 40% of theinput dealers. Among Carbamates, 63.33% of the input dealers deal with Carbosulfan and Thiodicarb is available with only 15% of the input dealers. Among insectides belonging to Neo nicotinoid group, Imidachloprid and Acetamiprid are available with 96.66% and 93.33% of the input dealers respectively. Only 28.33% deal with Thiomethaxam. Among Phenyl pyrazoles, Fipronil is available with all the respondents (100%)

Table 3: Distribution of input dealers according to the different types of insecticides available with them

S.No	Category	Frequency*	Percentage
1	Organophosphates		
A	Malathion	54	90
B	Methyl parathion	39	65
C	Dichlorvos	51	85
D	Quinalphos	48	80
E	Phosalone	25	41.66
F	Monochrotophos	60	100
G	Chloropyrifos	60	100
H	Methyl demeton	27	45
I	Dimethoate	30	50
J	Profenofos	24	40
K	Acephate	54	90

L	Phorate	53	88.33
2	Carbamates		
A	Carbosulfan	38	63.33
B	Thiodicarb	9	15
3	Neonicotinoides		
A	Imidachloprid	58	96.66
B	Acetamiprid	56	93.33
C	Thiomethoxam	17	28.33
4	Phenyl pyrazoles		
A	Fipronil	60	100

(*Multiple responses are recorded)

3.1.3 Herbicides

The Herbicide groups presented in Table 4 are selected based on their chemical classification for the purpose of study which gave the following findings. Among Phenyl Carboxylic group, 2,4-Dichlorophenoxyacetic acid (2,4-D) was studied and it is found that 2,4-D was available with 78.33% of the input dealers. Among Dinitroanilines, four herbicides are selected for the purpose of study and it is observed that Pendimethalin is available with 91.66% of the input dealers followed by Trifluralin, Fluchloralin and Isopropalin with 30%, 25% and 23.33% of the input dealers respectively. Atrazine which belonged to the Triazine group is available with 90% of the respondents. Among urea compounds, 18.33% of the input dealers deal with Diuron. Monuron and Isoproturon are available with 8.33%each of the input dealers. The Thiocarbamate group of herbicides are available with very few input dealers. The data revealed that 3.33% of the input dealers deal with Thiobencarb and only 1.33% deal with Butylate.

Among the group of Acid amides, Butachlor is dealt by 93.33% of the input dealers and Alachlor is dealt by 16.66% of the input dealers. Regarding various Bipyridilium group of herbicides available with the input dealers, Paraquat constitute 68.33% and Diquat constitute 18.33%

Table 4: Distribution of input dealers according to the different types of herbicides available with them

S.No	Category	Frequency*	Percentage
1	Phenoxy Carboxylic		
A	2, 4, D	47	78.33
2	Dinitroaniline		
A	Fluchloralin	15	25
B	Isopropalin	14	23.33
C	Pendimethalin	55	91.66
D	Trifluralin	18	30
3	Triazines		
a	Atrazine	54	90
4	Urea compounds		
a	Diuron	11	18.33
b	Monuron	5	8.33
c	Isoproturon	5	8.33

5	Thiocarbamate		
a	Butylate	1	1.66
b	Thiobencarb	2	3.33
6	Acid amide		
a	Alachlor	10	16.66
b	Butachlor	56	93.33
7.	Bipyridilium		
a	Diquat	11	18.33
b	Paraquat	41	68.33

(* Multiple responses are recorded)

3.1.4 Fungicides

The following fungicide groups presented in the Table 5, are selected based on their chemical classification for the purpose of the study. The findings reveal that among Benzimidazole group, Carbendazim and Thiophanate methyl are studied and it is found that Carbendazim is available with 100% and Thiophanate methyl is available with 11.66% of the input dealers. Among Carboximides, Carboxin is available with 31.66% of the input dealers and Oxycarboxin is available with 10% of the input dealers. It is found that Triazole group of fungicides are available with majority of the input dealers among which Hexaconazole constitute 100%, Tricyclazole constitute 98.33% and Propiconazole constitute 96.66%. Among Strobilurin group of fungicides, Azoxystrobin is available with 88.33% of the input dealers.

Table 5: Distribution of input dealers according to the different types of fungicides available with them

S.No	NAME OF FUNGICIDE	Frequency*	Percentage

1	Benzimidazoles		
A	Carbendazim	60	100
B	Thiophanate methyl	7	11.66
2	Carboximides		
A	Carboxin	19	31.66
B	Oxycarboxin	6	10
3	Triazoles		
A	Tricyclazole	59	98.33
B	Hexaconazole	60	100
C	Propiconazole	58	96.66
4	Strobilurins		
A	Azoxystrobin	53	88.33

(*Multiple responses are recorded)

3.1.5 Acaricides

The findings from the Table 6, reveals that sulphur is available with majority (86.66%) of the input dealers and Dicofol is available with 18.33% of the input dealers. The possible reason might be Spider mites being a major concern in the vegetable crops of the study area.

Table 6: Distribution of input dealers according to the different types of acaricides available with them

S.No	NAME OF THE ACARICIDE	Frequency*	Percentage

1	Sulphur	52	86.66
2	Dicofol	11	18.33

(*multiple responses are recorded)

3.1.6 Rodenticides

The findings from the Table 7, reveals that that Zinc phosphide is available with majority (90%) of the input dealers and Aluminium phosphide, Bromodiolone is available with 61.66% and 3.33% of the input dealers respectively. Paddy and Groundnut being cultivated in the area, rats and bandicoots are rodents of major concern to the farmers here. Hence input dealers in the study area deal with the rodenticides in their shops according to the farmer's demand.

Table 7: Distribution of input dealers according to the different types of rodenticides available with them

S.No	Rodenticide	Frequency*	Percentage
1	Zinc phosphide	54	90
2	Aluminium phosphide	37	61.66
3	Bromodioline	2	3.33

(*multiple responses are recorded)

3.1.7 Insect traps

The findings from the Table 8, reveals that among various types of insect traps, yellow sticky traps are available with 15% and Blue sticky traps with 11.66% of the input dealers. None of the input dealers are found to deal with Pheromone traps and light traps. The possible reason might be vegetables and cotton being largely grown in the study area. Yellow sticky traps are used to control whiteflies, aphids, thrips, scales and life miners while blue sticky traps are used for the control of thrips in those crops.

Table 8: Distribution of respondents according to the different types of Insect traps available with them

S.No	Category	Frequency*	Percentage
1	Yellow sticky traps	9	15
2	Blue sticky traps	7	11.66
3	Pheromone traps	0	0
4	Light traps	0	0

(*multiple responses are recorded)

3.1.8 Farm implements

From Table 9, it is clear that, input dealers deal only with sprayers among various farm implements studied. 53.33% of the input dealers deal with hand sprayers, 48.33% each with knapsack and power sprayers and 16.66% deal with foot sprayers. The reason for this is can be stated as presence of separate shops in the study area which exclusively sell farm implements and machineries. Also, Primary agricultural cooperative credit societies (PACCS) hire the implements and machinery needed to the farmers.

Table 9: Distribution of the input dealers according to the different types of farm implements available with them

S. No	Category	Frequency*	Percentage
1	Seeders	0	0
2	Sprayers		
a	Hand sprayer	32	53.33
b	Foot sprayer	10	16.66

c	Knapsack sprayer	29	48.33
d	Power sprayer	29	48.33
3	Ploughs	0	0
4	Rotavators	0	0
5	Hand implements	0	0
6	Weeders	0	0
7	Intercultivators	0	0

(*multiple responses are recorded)

3.1.9 Range of agricultural inputs

The findings from Table 10 reveal that majority (65%) of the dealers deal with medium range of inputs, followed by low (18.33%) and high range of inputs (16.67%).

Table 10: Distribution of input dealers based on the range of inputs

n = 60

S.No	Categories	Frequency	Percentage
1	Low	11	18.33
2	Medium	39	65
3	High	10	16.67
	Total	60	100

(Mean-125.45, SD-25.24)

4.CONCLUSION

Based on the findings of the study, it can be concluded that majority of the input dealers deal with medium range of agricultural inputs. Input dealers are dealing with combination of agricultural inputs and also various groups of plant protection chemicals based on their chemical classification are noticed to be sold by the input dealers during the study. Similar findings were reported by Anitha (2005), Kesavchandran *et al.* (2009) and Das and Basu (2012).

5. IMPLICATIONS OF THE STUDY

Plant protection chemicals were found with majority of the input dealers. Insect traps were found to be available with only few of the dealers owing to the reason that farmers in the region do not use them. This suggests the need to encourage physical methods of insect control among the farmers for which awareness campaigns can be conducted.

6. SUGGESTED AREAS FOR FUTURE RESEARCH

1. The investigation was conducted in only two districts of Telangana. Similar studies may be undertaken in other districts so that the inferences can be generalized to a great extent.

2. An exclusive study can be conducted to find out different organic and inorganic agricultural inputs available with the input dealers which helps to know to what extent organic inputs are being preferred and used by the farmers.

7.References

Anonymous (2016). https:// www. worldbank.org/en/publication/wdr.

Anonymous (2018). https:// www. worldbank.org/en/publication/wdr.

Anitha, B.N. (2005). A study on knowledge, attitude and training needs of agricultural input dealers in the eastern dry zone of Karnataka. M.Sc (Ag) thesis, University of Agricultural Sciences, Bangalore, India, 1-60.

Das, A. and Basu, D. (2012). Study of sales and services provided by the farm input retailers of West Bengal. *The Journal of Research ANGRAU*, 40(3): 25-28.

FICCI: (2015). "A report on Indian Agrochemical Industry", November, Pp:1-64.

Kesavachandran, C., Pathak, M.K., Fareed, M., Bihari, V., Mathur, N. and Srivastava, A.K. (2009). Health risks of employees working in pesticide retail shops: An exploratory study. *Indian Journal of Occupational and Environmental Medicine,*13(3): 1212-126.

Kiran, K.U. 2018. Role of Agri input dealers in transfer of technology. M.Sc. (Ag.) Thesis. Acharya N G Ranga Agricultural University, Andhra Pradesh.

Mande, J.V and Darade, N.W. 2011. Training needs of farm input dealers for transfer of agriculture technology. *Journal of Community Mobilization and Sustainable Development*. 6(2): 141-144.

Mandal, B. K., & De, D. (2013). Factors affecting sources of information utilization. *Indian Journal of Extension Education. 49 (1&2)*, 93-95.

MANAGE. (2016). Agricultural advisory services by certified agripreneurs: MANAGE initiative to strengthen private extension services. *Agripreneur: A virtual experience sharing platform, VIII (1)*, 1-4.

Meena, T. 2010. Dealers' perception on pesticide products and promotional activities of Nagarjuna AgriChem Limited in MahabubNagar District of Andhra Pradesh. M.Sc. (ABM) Thesis. Acharya N G Ranga Agricultural University, Hyderabad, India.

Meti, C.B. 2013. Agricultural input dealers and their role in managing soil health. Environment & Ecology. 31 (1A): 216-219.

Singh, S. (2004). Rural Marketing: Focus on Agricultural inputs. *Vikas Publishing House, New Delhi*.