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Impact of National Agricultural Insurance Scheme (NAIS) on Maize Farming In Mahaboobnagar District of Telangana

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ABSTRACT

National Agricultural Insurance Scheme (NAIS) serves as an effective institutional mechanism to cope with production risks. The study has assessed the impact of NAIS on maize farming in Mahaboobnagar district of Telangana. It has a special influence on the utilization of high value inputs, which in turn has contributed towards enhancing returns from farming. It can be observed that insured farmers have invested more on hired human, machine and bullock labour, seeds, manures, fertilizers, plant protection chemicals, etc. than non-insured farmers mainly because of guaranteed compensation from NAIS.

Key words: Maize, National Agricultural Insurance Scheme (NAIS), Telangana.

INTRODUCTION

The idea of crop insurance in India was conceptualized as far back as 1920, when S. Chakravarti proposed an agricultural insurance scheme based on rainfall approach (Vyas and Singh, 2006). In 1979, with the recommendations of Dhandekar Committee, the General Insurance Corporation implemented the Pilot Crop Insurance Scheme based on homogenous area approach. Following this, another scheme called 'Comprehensive Crop Insurance Scheme (CCIS)' was implemented in 1985. This scheme was further modified and implemented throughout the country as National Agricultural Insurance Scheme (NAIS) in 1999. Agriculture Insurance Company of India Ltd. (AICL) has been managing and implementing this crop insurance scheme in India since April 2003. Unlike earlier insurance schemes which were restricted to the loanee farmers only, NAIS is available to both loanee and non-loanee farmers. Against this background it was felt that there is need to study the impact of NAIS. Further, it is presumed that there would be significant difference in productivity and input use on maize farms.

A study by Horowitz and Lichtenberg (1993) found that in the US Midwest, crop insurance exerts considerable influence on maize farmers' chemical use decisions. Those purchasing insurance applies significantly more nitrogen per acre (19%), spend more on pesticides (21%), and treats more acreage with both herbicides and insecticides (7% and 63%) than those not purchasing insurance. These results suggest that both fertilizer and pesticides may be risk-increasing inputs. Mishra (1994) observed that insured households invest more on agricultural inputs leading to higher output and income per unit of land. Olubiyo *et al.* (2009) found that the sampled farmers differ in their use of farm resources and the level of output produced. A higher proportion of insured farmers adopted improved farming practices and were more commercially oriented. The insured farmers ventured into more risky enterprises and released a greater proportion of their output to the market for sale. However, contrary to expectations, uninsured farmers were found to be more productive and efficient in their resource use than the insured farmers. Jayakumara and Kumar (2012) found that the crop insurance scheme has led to the use of high-value inputs like seed, fertilizer and plant.

protection chemicals. The insured farmers have realized more returns than their non-insured counterparts. Jaun (2015) predicted that if monitoring is effective, then insured farmers will use more inputs than their uninsured counterparts. Using data from corn farmers in Philippines, he found that indeed insured farmers used more chemicals during the growing season than uninsured farmers.

The above review of literature reveals that the agricultural insurance is one method by which the insured farmers can invest more in production and use more inputs. Most of the insured farmers were realized more returns than non-insured farmers.

MATERIALS AND METHODS

Mahaboobnagar district of Telangana state was purposively selected for the present study as this region receives low rainfall and mostly drought prone area. It has also remained on the forefront in deriving benefits of National Agricultural Insurance Scheme (NAIS) in Telangana state. The present study was based entirely on primary data which

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was collected from both insured and non-insured farmers i.e, 60 each thus 120 total sample farmers. The primary data regarding input use and cost of cultivation was collected through survey method by interviewing both the insured and non-insured farmers using specially designed pre-tested schedule. Simple averages and percentages were used to arrive valid results and conclusions.

Results and Discussion

Input utilization on maize crop grown by sample farmers

A comparative picture of input-use on insured and non-insured maize farms revealed that, it was more on insured maize farms than on non-insured maize farms. It was observed from Table 1 that on an average the utilization of inputs like human labour, bullockpower, machine power, fertilizers and plant protection chemicals were found to be higher on insured maize farms than non-insured maize farms as they were assured of protection through insurance. The seed rate remained to be same on both insured and non-insured maize farms because the seed was bought from the retailer which is sold in the form of 10 kg packets that is recommended per acre. These results were in conformity with the results of Rathore *et al.* (2011) that use of inputs such as human and bullock labour, seed, manures, fertilizers, pesticides, etc. were found significantly higher on insured farms than on non-insured farms.

Cost of cultivation of maize on sample insured and non-insured farms

The profitability of any enterprise depends upon costs and returns. Usually, in any economic study, the total costs are discussed under two heads, *viz*., variable costs and fixed costs. In general, variable costs alone are reckoned to be the cost of cultivation by farming community ignoring the fixed costs.

In economic analysis of any business enterprise, fixed costs are also taken into account to arrive at total costs and compute profits. Variable costs include expenses on labour employed to perform different cultural practices and also expenses incurred on material inputs such as seeds, manures, green leaf manures, fertilizers, plant protection chemicals etc. and it also includes interest on working capital. The fixed costs are depreciation on working assets, interest on fixed capital, land revenue, rent on owned land etc.

On an average, the total cost of cultivation per hectare on maize farms of both insured and non-insured farmers was `73105.1 and `67654.5 respectively. The break-up of the total costs into variable and fixed costs indicated that the variable costs were 44857.4 (61.4%) and `40932.8

Table 1: Input use level of sample farmers on insured and non-insured maize farms per hectare.

Particulars	Insured	Non-insured
Human labour (Man days)	57.40	53.90
Bullock power (Cattle pair days)	6.40	6.20
Machine power (Hours)	7.90	5.00
Seed (Kg)	25.00	25.00
Farm yard manure (tonnes)	10.77	9.40
Fertilizers (Kg)	585.38	500.00
Plant protection chemicals (litres)	1.47	1.40

Table 2: Cost of cultivation of maize farms of insured and non-insured farmers (in ` / ha).

Particulars	Insured farms		Non-insured farms	
	Amount (`/ha)	Per cent (%)	Amount (`/ha)	Per cent (%)
Variable cost				
Human labour	11249.9	15.4	11239.5	16.6
Bullock labour	8562.5	11.7	8270.8	12.2
Machine power	4750.0	6.5	3000.0	4.4
Seed	3600.0	4.9	3600.0	5.3
FYM	6449.9	8.8	5574.9	8.2
Fertilizers	7970.0	10.9	7029.9	10.4
Plant protection chemicals	434.4	0.6	386.8	0.6
Transportation and other miscellaneous costs	902.1	1.2	752.9	1.1
Interest on working capital @ 7%	938.6	1.3	1077.6	1.6
Subtotal of Variable costs (I)	44857.4	61.4	40932.8	60.5
Fixed costs				
Land revenue	100.0	0.1	100.0	0.1
Rental value of owned land	25125.0	34.4	25041.6	37.0
Depreciation	500.9	0.7	322.2	0.5
Interest on fixed capital @10%	2521.8	3.4	1257.8	1.9
Subtotal of Fixed costs (II)	28247.7	38.6	26721.7	39.5
Total cost of cultivation (I+II)	73105.1	100.0	67654.5	100.0

(60.5%), while the fixed costs were `28247.7 (38.6%) and `26721.7 (39.5%) on insured and non-insured maize farms respectively.

A glance at Table 2 reveals that out of total cost incurred in the cultivation of maize by insured farmers, the variable costs constitute about `44857.4 (61.4)%) out of which human labour amounted `11249.9 (15.4%), followed by bullock labour ` 8562.5 (11.7%), fertilizers ` 7970.0 (10.9%) and FYM ` 6449.9 (8.8%). Expenditure on seeds, machine power, plant protection chemicals and miscellaneous costs were ` 3600 (4.9%), ` 4750.0 (6.5%), ` 434.4 (0.6%) and ` 902.1 (1.2%) respectively. Interest on working capital was ` 938.6 (1.3%).

Fixed costs constitute about ` 28247.7 (38.6%) of the total cost. Rental value of owned land constitute about ` 25125.0 (34.4%) and remaining is constituted by land revenue, depreciation on implements and farm buildings and interest on fixed capital which accounts for `100.0 (0.1%), `500.9 (0.7%) and `2521.8 (3.4%) respectively.

In case of non-insured farmers the variable costs constitute about `40932.8 (60.5%) out of which human labour constitute about `11239.5 (16.6%) followed by bullock labour `8270.8 (12.2%), fertilizers `7029.9 (10.4%) and FYM `5574.9 (8.2%). Expenditure on seeds, machine power, plant protection chemicals, irrigation, electricity and miscellaneous costs were `3600.0 (5.3%), `3000.0 (4.4%), `386.8 (0.6%) and `752.9 (1.1%) respectively. Interest on working capital was `1077.6 (1.6%). Fixed costs constitute about `26721.7 (39.5%) of the total cost. Rental value of owned land constitute about `25041.6 (37.0%) and remaining is constituted by land revenue, depreciation on implements and farm buildings and interest on fixed capital which accounts for `100.0 (0.1%), `322.2 (0.5%), `1257.8 (1.9%) respectively.

The above results are indicating that the cost of cultivation of maize was higher on sample insured farms than on non-insured farms. The cost of cultivation has increased with increasing farm-size both on insured and non-insured farmers. The average variable cost, average fixed cost and total cost were all found higher on insured farms than non-insured farms. This shows that the insured farmers had invested more on hired labour, bullock power machine labour, manures, fertilizers, plant protection chemicals than non-insured farmers.

Cost of cultivation of maize farms according to cost concepts

It was noticed from Table 3 that commercial cost of cultivation (Cost C) was higher on insured maize farms `73105.1 as compared to non-insured maize farms `67654.5. Cost B also followed the same trend being higher on insured farms than on non-insured farms. The higher value of cost A_1, on insured maize farms (`39102.4) than on non-insured maize farms (`35050.9) was due to more expenditure on green manure seed, fertilizers and plant protection chemicals.

Cost B was also higher owing to higher rental value of the owned land and interest on fixed capital. The variation between Cost B and Cost C on insured and non-insured maize farms could be attributed to imputed value of family labour. The cost of production of insured maize was worked out to be `994.2 per quintal while it was `983.1 per quintal for non-insured maize. With above information it can be concluded that commercial cost of cultivation (Cost C) was higher on insured maize farms compared to non-insured maize farms. This is because of higher expenditure on critical inputs like seed, fertilizers, etc. by insured farmers as they were assured of compensation when crop fails due to natural disasters.

Table 3: Cost of cultivation of maize farms according to cost concepts.

Cost concepts	Insured farm (`/ ha)	Non-insured farm (`/ ha)
Cost A_1	39102.4	35050.9
Cost A_2	39102.4	35050.9
Cost B	66749.1	61350.4
Cost C	73105.1	67654.5
Cost of production (`/qtl)	994.2	983.1

Table 4: Farm income measures of selected maize farms of sample farmers (`/ha).

Particulars	Insured farm	Non-insu -red farm
Yield (q/ha)	73.5	68.7
Market price (/q)	1200.0	1200.0
Gross return	88200.0	82440.0
Total cost	73105.1	67654.5
Net return	15094.9	14785.5
Return per rupee spent	1.21	1.22
Farm business income	49097.6	47389.1
Family labour income	21575.9	21089.6
Farm investment income	42616.7	41085.0

Farm income measures of selected maize farms of sample farmers

The details of physical output and returns per hectare realized by sample pooled farmers from insured and non-insured maize cultivation are presented in Table 4. On an average, the yield of main product per hectare was 73.5 and 68.7 quintals on insured and non-insured maize farms respectively. The insured and non-insured maize farmers realized a gross income of `88200.0 and `82440.0 per hectare respectively. The net income realized was `15094.9 and `14785.5 respectively. The gross income was more by `5760.0 on insured maize farms over non-insured maize farms. This makes it obvious that the insured maize farms were efficient in miaze production compared to non-insured maize farms.

Farm business income is a measure which indicates the returns for owned resources like land, labour and capital. It was `49097.6 and `47389.1 on insured and non-insured maize farms respectively. Insured maize farmers derived more family labour income amounting to `21575.9 as against `21089.6 by non- insured farmers. Farm investment income is a measure which indicates the returns to fixed capital. It was `42616.7 and ` 41085.0 per hectare on insured and non- insured maize farms respectively. Insured maize farmers were able to secure `1.21 per every rupee of expenditure while non-insured maize farmers realized `1.22.

Conclusion

The study has found that net income was higher on insured maize farms than non-insured maize farms because of higher use of inputs like human and bullock labour, seed, manures, fertilizers, pesticides, etc. was higher on insured farms than on non-insured maize farms. It is evident that insured farmers are ready to invest more on hired human, machine and bullock labour, seeds, manures, fertilizers, plant protection chemicals, etc. than non-insured farmers mainly because of guaranteed compensation from NAIS. Hence maize being one of the major crop of Telangana State mostly occupying significant area during kharif season, the government may further extend benefits of crop insurance to this crop growers for making investment towards recommended inputs and realize higher yields and income.

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