Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2582-2845.8524

ISSN: 2582 – 2845

Ind. J. Pure App. Biosci. (2021) *9*(1), 429-435

Indian Journal of Pure & Applied Biosciences

Peer-Reviewed, Refereed, Open Access Journal

Research Article

An Assessment of Pradhan Mantri Fasal Bima Yojana Crop Insurance Scheme in Srikakulam District of Andhra Pradesh

Kuna Sowjanya* and Ramchandra

[*]Msc (Ag) Economics,

Sam Higginbottom University of Agriculture, Technology, and Sciences (SHUATS), Allahabad

*Corresponding Author E-mail: sowji.kuna@gmail.com

Received: 2.12.2020 | Revised: 30.12.2020 | Accepted: 11.01.2021

ABSTRACT

The present study entitled "An Assessment of Pradhan Mantri Fasal Bima Yojana Crop Insurance Scheme in Srikakulam district of Andhra Pradesh" was conducted in the year 2019-2020. The study made use of a multi-stage sampling and random sampling technique to select 120 farmers among selected villages. Data for the selected study were collected with the aid of well-structured questionnaires. Data collected were analyzed using the tabulated method along with the required statistical tool. The net income obtained by the insured farmers is more compared to the non- insured farmers. The analysis of cost of cultivation of the crops indicated that the Cost of cultivation is more in case of insured farmers than non-insured farmers as the interest on the working capital is more in case of non-insured farmers. The net income and inputs used is the most discriminating factors between Insured and non- Insured farmers. The technical efficiency of the Insured farmers is more than the Non-Insured farmers.

Keywords: *Farmers, Crops, Agriculture, Population*

INTRODUCTION

Indian agriculture is important as it nourishes an estimated 1.3 billion population of the country and is also burdened with the responsibility of providing livelihoods to 60 percent of the people. Agriculture has been the main occupation for nearly 48.9 percent of the rural population of the country. Agricultural production therefore is inherently a risky business and farmers face a variety of weather, pest, disease, input supply and market related risks. Considering this, Government of India had introduced a Comprehensive Crop Insurance Scheme (CCIS) in 1985 and later, a National Agricultural Insurance Scheme (NAIS) in 1999-2000. Under NIAS, the insurance premium rates were 1.5% to 3.5% of the total sum assured for food crops like pulses, oilseed, cereals, etc. The NIAS later was converted into MNIAS i.e., Modified NIAS. Narendra Modi led National Democratic Alliance government had announced a crop insurance scheme named Pradhan Mantri Fasal Bima Yojana (PMFBY).

Cite this article: Sowjanya, K., & Ramchandra (2021). An Assessment of Pradhan Mantri Fasal Bima Yojana Crop Insurance Scheme in Srikakulam district of Andhra Pradesh, *Ind. J. Pure App.Biosci. 9*(1), 429-435. doi: http://dx.doi.org/10.18782/2582-2845.8524

Under the new scheme being implemented from Kharif season of 2016, the premium paid by farmers had been reduced to 2% of the insured value for the more rain dependent kharif crop and 1.5% for the rabi season, compared with 3.5-8% charged for the two earlier schemes National Agricultural Insurance Scheme (NAIS) and Modified National Agricultural Insurance Scheme (MNAIS). In the case of horticultural crops, farmers' premium burden will be 5% of the sum assured or 50% of the total premium. As compared to previous crop insurance schemes, PMFBY holds a special place due to its wide coverage and for the innovativeness of its designs. The present study is an attempt to analyze the impact of PMFBY crop insurance on yield and income stability of farming community.

MATERIALS AND METHODS

This study was conducted in Srikakulam district of Andhra Pradesh. Srikakulam district was selected purposively for the present study. The district has a considerable tribal population. A random sampling method was adopted in the selection of blocks, villages, and farmers. Srikakulam comprises of 38 blocks among 2 blocks were selected i.e Etcherla and Amadalavalasa were selected. A list of 6 villages were selected randomly among 20 insured farmers and 20 non-insured farmers were randomly selected from each village. The data was collected from all 120 farmers. Paddy crop was selected which is major crop under PMFBY in Srikakulam district. The primary data was collected from both insured and non-insured farmers through survey method by interviewing schedule. The banks involved in extending crop loans and crop insurance scheme acting as the nodal agencies were selected for identifying the insured farmers. Simultaneously non-insured farmers growing the same crops were also selected at random. Secondary data was collected from various sources of the annual reports of the PMFBY in AIC and government of Andhra Pradesh agriculture joint director office and other sources like respective journals. For evaluating the objectives of the study, the data collected was analyzed by using the techniques of tabular analysis, cost concepts, income measures and multiple linear regression equation model.

RESULTS AND DISCUSSIONS

To analyze the impact of crop insurance on yield and income stability of farming communities

Credit sources of sample farmers

S.NO	Source of credit	Insured	Source of credit	Non-insured
1	Andhra Pradesh gramena Vikas bank	15 (25)	Traders	11 (18.33)
2	State Bank of India	11 (18.33)	Money lenders	19 (31.67)
3	Andhra Bank	21 (35)	Land lords	16 (26.67)
4	Andhra Pradesh cooperative bank	13 (21.67)	Neighbor's	9 (15)
5			Relatives	5 (8.33)
	Total	60 (100)		60 (100)

Credit plays an important role in agriculture. It is observed that more access to credit, leads to more investment in farming and adoption of modern technologies. Main sources of credit for the farmers include both institutional and non-institutional organizations. Table reveals that about 35 percent of insured farmers have taken credit from Andhra bank, 25 percent from Deccan Grameen bank, 21.67 percent from the Andhra Pradesh cooperative bank and about 18.33 percent from State bank of Hyderabad. Whereas, non-insured farmers availed loans mostly from the non-institutional agencies i.e., about 31.67 percent farmers have taken credit from the money lenders, 26.67 percent from landlords, 18.33 percent from traders, 15 percent from neighbors and 8.33 percent from Relatives.

Asset structure of sample insured farmers

SNO	Particulars	Per farm	Per hectare
I	**Marginal farmers**		
1	Value of land	240000 (92.9)	300000 (92.9)
2	Value of farm buildings	11666.6 (4.5)	14583.3 (4.5)
3	Value of farm implements and machinery	2326.3 (0.9)	2907.9 (0.9)
4	Value of livestock	4444.4 (1.7)	5555.5 (1.7)
	TOTAL	258437.4 (100.00)	323047.0 (100.00)
II	**Small farmers**		
1	Value of land	489796 (90.2)	324368 (90.2)
2	Value of farm buildings	11763.7 (2.2)	7790.5 (2.2)
3	Value of farm implements and machinery	20191.0 (3.7)	13371.5 (3.7)
4	Value of livestock	21047.1 (3.9)	13938.5 (3.9)
	TOTAL	542798.0 (100.00)	359469.0 (100.00)
III	**Large farmers**		
1	Value of land	1020000 (75.9)	425000 (75.9)
2	Value of farm buildings	14499.8 (1.1)	6041.6 (1.1)
3	Value of farm implements and machinery	291240.0 (21.6)	121350.0 (21.6)
4	Value of livestock	18799.9 (1.4)	7833.3 (1.4)
	TOTAL	1344540 (100.00)	560225.0 (100.00)

The value of land was 489796 (90.2%) per farm and 324368 (90.2%) per hectare for small farmers. Coming to the value of farm buildings it was 11763.7(2.2%) per farm and 7790.5 (2.2 %) per hectare for small farmers. The value of livestock was 21047.1 (3.9%) per farm and 13938.5 (3.9%) per hectare for small farmers. The value of farm implements and machinery was 20191.0 (3.7%) per farm and 13371.5 (3.7%) per hectare for small farmers. The value of land was 1020000 (75.9%) per farm and 425000 (75.9%) per hectare for large farmers. Coming to the value of farm buildings it was 14499.8 (1.1%) per farm and 6041.6 (1.1%) per hectare for large farmers. The value of livestock was 18799.9 (1.4%) per farm and7833.3 (1.4%) per hectare for large farmers. The value of farm implements and machinery was 291240.0 (21.6%) perform and 121350.0 (21.6%) per hectare for large farmers. The total value of assets owned by insured farms has increased with increase in farm-size. The value of land was contributing for a major portion of the total value of assets and it was increasing with farm-size. The value of livestock was more on small farms clearly indicating their more dependence on livestock as compared to other two farm groups. The value of farm implements and machinery owned by insured farmers also followed the same trend. Whereas the value of farm buildings owned by sample farmers has decreased with increase in farm-size.

Asset structure of non-insured farmers

SNO	Particulars	Per farm	Per hectare
I	**Marginal farmers**		
1	Value of land	240000 (95.2)	300000 (95.2)
2	Value of farm buildings	6881.6 (2.7)	8602.1 (2.7)
3	Value of farm implements and machinery	3391.6 (1.4)	4239.5 (1.4)
4	Value of livestock	1720.4 (0.7)	2150.5 (0.7)
	TOTAL	251993.7 (100.00)	314992.0 (100.00)
II	**Small farmers**		
1	Value of land	557647.0 (90.3)	357466.0 (90.3)
2	Value of farm buildings	15389.2 (2.5)	9864.9 (2.5)
3	Value of farm implements and machinery	17525.7 (2.8)	11234.4 (2.8)
4	Value of livestock	26872.7 (4.4)	17226.1 (4.4)
	TOTAL	617435.0 (100.00)	395791.0 (100.00)
III	**Large farmers**		
1	Value of land	810000 (67.02)	337500 (67.02)

2	Value of farm buildings	14482.5 (1.20)	6034.4 (1.20)
3	Value of farm implements and machinery	334138.0 (27.64)	139224.1 (27.64)
4	Value of livestock	50068.8 (4.14)	20862.0 (4.14)
	TOTAL	1478689 (100.00)	616120.5 (100.00)

It was observed from Table 4.3.2. that the land value constitutes a major item of the total assets. The value of land was 240000 (95.2%) per farm and 300000 (95.2%) per hectare for marginal farmers. Coming to the value of farm buildings it was 6881.6 (2.7%) per farm and 8602.1 (2.7%) per hectare for marginal farmers. The value of livestock owned by marginal farmers was 1720.4 (0.7%) per farm and 2150.5 (0.7%) per hectare. The value of farm implements and machinery was 3391.6 (1.3%) per farm and 4239.5 (1.3%) per hectare for marginal farmers.

The value of land was 557647.0 (90.3%) per farm and 357466.0 (90.3%) per hectare for small farmers. Coming to the value of farm buildings it was 15389.2 (2.5%) per farm and 9864.9 (2.5%) per hectare for small farmers. The value of livestock was 26872.7 (4.4%) per farm and 17226.1 (4.4%) per hectare for small farmers. The value of farm implements and machinery was 17525.7 (2.8%) per farm and 11234.4 (2.8%) per hectare for small farmers.

The value of land was 810000 (67.02%) per farm and 337500 (67.02%) per hectare for large farmers. Coming to the value of farm buildings it was 14482.5 (1.20%) per farm and 6034.4 (1.20%) per hectare for large farmers. The value of livestock was 50068.8 (4.14%) per farm and 20862.0 (4.14%) per hectare for large farmers. The value of farm implements and machinery was 334138.0 (27.64%) per farm and 139224.0 (27.64%) per hectare for large farmers.

On non-insured farms also the value of the land was contributing for a major portion of the total value of assets and it was increasing with farm-size. The value of livestock was more on small farms clearly indicating their more dependence on them for additional income.

COST AND RETURNS OF INSURED AND NON-INSURED FARMERS:

S.No	Particulars	Insured farmers	Non-insured Farmers
I	**Operational cost**		
1	Human labour	13634.26 (31.99)	13973.70 (30.7)
2	Bullock labour /Machine labour	2733.50 (6.41)	2694.2 (5.94)
3	Seed	1892.05 (4.44)	1811.20 (3.99)
4	Farmyard Manure	1881.33 (4.41)	1412.45 (3.11)
5	Fertilizer	3306.49 (7.76)	2687.68 (5.92)
6	Plant protection chemical	1363.25 (3.20)	1296.40 (2.86)
7	Irrigation	222 (0.52)	264 (0.58)
8	Interest on working capital	2628.45 (6.17)	7966 (17.55)
Total operational costs		27661.33 (64.91)	32105.63 (70.73)
II	**Fixedcosts (FC)**		
1	Rental value of owned land	12646.94 (29.68)	11290.41 (24.87)
2	Land revenue	159.02 (0.37)	182.38 (0.40)
3	Depreciation	882.56 (2.07)	768.28 (1.69)

4	Interest on fixed capital (other than land)	1265.25 (2.97)	1042.22 (2.30)
	Total fixed costs (TFC)	14953.77 (35.09)	13283.29 (29.27)
III	**Total costs (TC)**	42615.1 (100)	45388.92 (100)

The total costs incurred for the cultivation of the paddy for one season i.e., Kharif season, by taking loan from the bank or credit by both the insured and non –insured farmers are presented in the table 4.

The glance at the table reveal that out of the total costs incurred in the cultivation of paddy by the insured farmers, operational costs contributed about 64.91 per cent out of which human labour constituted about 31.99 per cent, followed by expenditure on machinery and bullock labour with 6.49 per cent. Expenditure on seeds, manures and fertilizers, plant protection chemicals andirrigation incurred about 4.44, 4.41, 7.76, 3.20 and 0.52 per cent respectively and interest on working capital incurred is 6.17 per cent. Fixed costs constitute about 35.09 per cent of the total costs rent paid for rent paid for the owned land constitute about 29.68 per cent, and the remaining is constituted by land revenue, depreciation on implements and farm buildings and interest on the fixed capital which constitute about 0.37, 2.07 and 2.97 per cent respectively. In case of non-insured farmers, the operational costs constitute about 70.73 per cent, out of which human labour constitute about 30.79 per cent, followed by the interest paid on the working capital which is 17.55 per cent, remaining machinery, FYM, fertilizers, plant protection chemicals, irrigation, seed occupy about 5.94, 3.11, 5.92, 2.86, 0.58, and 3.99 per cent respectively.

Fixed costs constitute about 35.09 per cent of the total costs rent paid for rent paid for the owned land constitute about 29.68 per cent, and the remaining is constituted by land revenue, depreciation on implements and farm buildings and interest on the fixed capital which constitute about 0.37, 2.07 and 2.97 per cent respectively. In case of non-insured farmers, the operational costs constitute about 70.73 per cent, out of which human labour constitute about 30.79 per cent, followed by the interest paid on the working capital which is 17.55 per cent, remaining machinery, FYM, fertilizers, plant protection chemicals, irrigation, seed occupy about 5.94, 3.11, 5.92, 2.86, 0.58, and 3.99 per cent respectively. Fixed costs constitute about 29.27 per cent out of which 24.87 per cent constitute the rent paid for the Owned land, followed by interest on the fixed capital, depreciation on the implements and machinery, land revenue which constitute about 2.30, 1.69 and 0.40 per cent respectively.

S.NO	Particulars	Variable	Coefficient	Standard error
1	Intercept	b0	16.500	5.360
2	Human labour (man days)	X1	-0.004 NS	0.050
3	Machine power (hours)	X2	0.007 NS	0.228
4	Seed (kg)	X3	-0.650 NS	0.460
5	Fertilizers (kg)	X4	0.075*	0.004
6	Pesticides (litres)	X5	0.440**	0.188
7	Dummy variable	X6	1.056***	0.548

Estimation of multiple linear regression equation model of insured and non-insured paddy farms R2= 0.82 ***Significant at 10 percent level ** Significant at 5 percent level * Significant at 1 percent level NS: Non-Significant

To assess the impact of agricultural insurance on yields of major crops the multiple linear regression analysis was carried out using a dummy variable. The results of multiple linear regression analysis of sample paddy farms were presented in Table 4.3.9. The coefficient of multiple determination (R2=0.82) indicates that about 82 percent of the variation in paddy yield was explained by the explanatory variables included in the model viz., human labour, machine power, seed, fertilizer and pesticides.

The regression coefficient of human labour (X1) was found to be statistically non-significant with negative sign (-0.004). It was not significantly contributing to increase in the yield and implies that its use was irrational and beyond the point of optimum use.

The regression coefficient of machine power (X2) was also found to be statistically non-significant with positive sign (0.007). It was also not significantly contributing to increasing the yield. This might be due to the fact that the farmers have already applied the input to a point beyond which the additional input will not contribute additional yield significantly.

The regression coefficient of seed (X3) was found to be statistically non-significant with negative sign (-0.650). It was not significantly contributing to increase in the yield and implies that its use was irrational and beyond the point of optimum use.

The regression coefficients of fertilizers (X4) and pesticides (X5) were found to be significant with positive signs. This indicates that everyone's kg increase in fertilizer and every one litre increase in application of pesticides from the mean level will increase the paddy yield by 0.075 and 0.44 quintals respectively. provided other factors are kept constant.

The coefficient of dummy variable (X6) was found to be significant with positive sign. The sign of the coefficient obtained in the analysis is positive, thereby showing that the insured paddy farmers realize 1.056 quintals more yield as compared to the non-insured paddy farmers.

CONCLUSION

Srikakulam district is subjected to frequent floods and crop insurance will take care of vulnerable and extreme poor. But in reality, the crop insurance is setting to the needs of large farmers to a great extent, small farmers even though they were aware of crop insurance, they are not willing to pay premium of crop insurance on voluntary basis. Since crop insurance was linked to crop loans, many small and marginal farmers could not participate in the crop insurance scheme because a majority of these farms have poor access to institutional credit. Only 45 percent of non-insured farmers are aware of the crop insurance. The study indicated that availing credit linked crop insurance is profitable as it acts as a security against the crop losses. Invest on farm input of the insured farmers was more than the non-insured farmers. The net income obtained by the insured farmers is more than the non-insured farmers. There was a positive growth rate with respect to number of farmers covered under PMFBY scheme, area insured, gross premium and net premium during 2017-2019.Risk bearing capacity is high in insured farmers while comparing with non-insured farmers.

REFERENCES

Srinivasulu, M. (2015). Agriculture Crop Insurance Policies in India–A Study on Pradhan Manthri Fasal Bima Yojana (PMFBY) in Telangana State. *IJIRMPS-International Journal of Innovative Research in Engineering & Multidisciplinary Physical Sciences*, *3*(5).

Singhal, P., & Mittal, V. (2017). PMFBY-A Financial Inclusion Initiate for Farmers' Development. *International Journal of Business Ethics in Developing Economies*, *6*(2).