



## **Farmers Perception and Awareness about Agriculture Insurance Scheme – A Study of Hamirpur District in Himachal Pradesh**

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*Received 30 April 2022; Revised 07 February 2023; Accepted 09 February 2023*

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### **SUMMARY**

In the Global Hunger Index 2021, India ranks 101<sup>st</sup> among the 116 countries, with almost one-third of all undernourished children living in the country. Instability in production, market and other risks make agriculture a riskier enterprise, affecting farmers' income and therefore food security. So, the *Pradhan Mantri Fasal Bima Yojana (PMFBY)* was introduced by the government to alleviate crop uncertainties in the interest of the country's farmers and to safeguard them from the risky nature of farming, as part of the "One Nation-One Plan. The findings of this study highlight that overall, 51.16 per cent of beneficiaries and 13.16 per cent non-beneficiaries were significantly aware of *PMFBY*. The least per cent of beneficiaries and non-beneficiaries were aware of the risk covered under the scheme (51.64%) and procedure for insuring crops (14.97%) respectively. Regarding the overall awareness level towards the *PMFBY*, it was found that among the beneficiaries, maximum respondents were significantly aware (51.10%), followed by unaware (29.99%) and then moderately aware (18.88%). On the contrary, it was reported that the maximum number of non-beneficiaries were unaware (64.93%), followed by moderately aware (31.18%) and then significantly aware (13.26 %). PLUM (Polytomous Universal Model) method was used to analyze the relationship between perceptions of farmers and adoption of *PMFBY*. It was observed that there exists significant relationships, for both beneficiaries and non-beneficiaries. The parameter estimates showed that *PMFBY* acts as "a safeguard against production losses" and it has a significant, positive and highest impact (101.39 times) on the adoption of the scheme among beneficiaries and perception "Farmers' friendly procedure in buying crop insurance" has shown a significant and most positive effect (28.70 times) on adoption in non-beneficiaries. Such crop insurance schemes are way more beneficial to the farmers to prevent them from huge losses. So there is an urgent need to make people aware of the scheme and help them take the benefits by spreading awareness among them. Farmers should be made aware Regarding the agencies involved, crops and risks covered, the procedure of insuring crops, premium to be paid, source of the required information and so on in order to make *PMFBY* a success.

*Keywords:* Crop insurance, *PMFBY*, Perception, PLUM model, regression, beneficiaries, non-beneficiaries.

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### **1. INTRODUCTION**

Agriculture being the main stay of Indian economy, contributes about 18.8 per cent of Indian GDP (Economic Survey, 2020) and provides livelihood to approximately 65 per cent of the country's population (Vani, 2019). However, Indian agriculture has a slew of issues, one of which being the farmers' exposure to excessive risk and uncertainties related to production, financial, climate and personal aspects (USDA, 2020). Agriculture is sometimes described as the "Monsoon Gamble" as monsoon compounds to the risk appetite of agriculture, which employs 58 percent of India's population (India Brand Equity Foundation (IBEF) 2021). Rainfed agriculture's dominance and other

variables have a significant impact on productivity and profitability (Nagesh, 2019). It is a risky endeavor due to production instability and market vulnerabilities (Gulati *et al.* 2018). Therefore, in agriculture one of the main concerns of farmers is risk management (Kumar *et al.*, 2020). Crop insurance becomes a strategy for farmers to safeguard themselves from these uncertainties. It is a complementary institutional instrument that farmers can employ to mitigate financial losses triggered by several natural calamities that damage and destroy crops (Prasad, 2018). It helps to spread out the crop damage over time and place, prompting farmers to expand their agricultural investments (Jain, 2020). It covers farmers' crop-producing investments leading to increased agricultural production. It is thought to be

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the only way for farmers to protect themselves against output risks (Raju and Ramesh chand, 2008). It is linked to negative repercussions caused by biological variables, adverse climatic circumstances, other risks, all of which are beyond the control of farmers (Mani *et al.*, 2012). Various schemes were launched for insurance over years such as the National Agriculture Insurance Scheme (1999), the Farm Insurance Scheme (2003), the Weather-Based Crop Insurance Scheme (2007) etc. These Insurance schemes have undergone numerous changes to deliver better results in terms of claims, premium prices, and other considerations (Gulati *et al.* 2018). “Despite technological and economic developments, the condition of farmers appears to be insecure due to natural calamities and price volatility,” according to the National Agriculture Policy (Government of India, 2020). In plenty of other instances, unfavourable circumstances have always been one of the elements contributing to farmer suicides, which are currently reaching alarming proportions (Raju and Ramesh chand, 2008). Keeping facts in view, government of India launched *Pradhan Mantri Fasal Bima Yojna* on 13<sup>th</sup> January 2016 to mitigate risks and uncertainties of farming along with stabilization of farmer income with low premium rates for kharif crops (2.0 %), rabi crops (1.5 %) and commercial crops (5.0 %) of the sum of amount insured (Ghanghas, 2018; Rai, 2019; Sundarand Ramakrishna, 2013; Rajaram and Chetana, 2016). In its first tenure, the Government of India launched this scheme. For the fiscal year 2016-17, the initiative was given an initial budget of Rs 5,500 crores. Similarly, in the years 2017-18, 2018-19 and 2019-20, the government allotted Rs. 9,000 crores, Rs. 13,000 crores and Rs. 14,000 crores for the scheme, respectively (Singh and Singh, 2019). The scheme was mandatory for farmers who sought a loan from any financial source and voluntary for loanee farmers, and it became optional for loanee farmers from kharif 2020 (Tiwari *et al.* 2020). Indrajeet (2016) in his research on *PMFBY* has highlighted the need of crop insurance as a measure to mitigate the risk of yield loss by the farmers in the country. The perks of *PMFBY* have been emphasized by the author in light of premium rate, insurance coverage, and post-harvest losses.

Himachal Pradesh faces crop failures every year due to the tough geography and natural occurrences and being a part of the state Hamirpur district faces the same. As a result, crop insurance benefits farmers

by protecting them against production losses. Keeping these considerations in mind except for Kinnaur and Lahaul & Spiti, the *Pradhan Mantri Fasal Bima Yojana* was launched in kharif 2016, in ten districts including the Hamirpur across the state (Kalia *et al.*, 2018). Perception is the process of recognizing and interpreting sensory stimuli and how we respond to the information (Duhan, 2017). This research is an attempt to study the extent of awareness of farmers in Hamirpur district of Himachal Pradesh about *Pradhan Mantri Fasal Bima Yojana (PMFBY)*.

## 2. MATERIALS AND METHODS

The study was conducted in the Hamirpur district of Himachal Pradesh, as it has higher number of people with insured crops. The mixed sampling technique was used for selecting the sample. The Hamirpur district of Himachal Pradesh was selected via purposive sampling (Non-Probability Sampling). In Hamirpur district, multistage random sampling technique (Probability sampling technique) was used. In the first stage, two blocks, out of the six blocks were randomly selected and in second stage, out of the blocks, four villages from each block were selected. Further, in the third stage, sixty beneficiaries and sixty non beneficiaries were selected randomly. Multistage random sampling is used only for the selection of the ultimate respondents i.e., beneficiaries and non-beneficiaries. But the parameters were estimated by using simple random sampling. Therefore, the weights due to multistage random sampling were not utilized and also the ordinal logistic model was independent of weights. For this study, the sampling frame was a list of beneficiaries (KCC holders) available with the State Agriculture department, which was used for selecting the ultimate sampling unit. Farmers who took the insurance (under the *Pradhan Mantri Fasal Bima Yojana*) were categorized as beneficiaries, while those who did not, were labeled as non-beneficiaries. After that, the insured farmers (Beneficiaries) were divided into two groups: claimants and non-claimants. Claimants were those who received compensation during crop loss, whereas non-claimants were those who did not receive any compensation during the crop damage period. Both primary and secondary data were collected for the study period (December 2020 to April 2021) from the selected respondents. Primary data were collected through a well-designed schedule consisting of each and every question which needs answer from the respondents.

These schedules were filled by personal interview method and using google forms from the selected respondents. The primary data includes the household information on parameters like socio-economic profile, land utilization pattern, level of awareness of sampled farmers, factor affecting adoption of PMFBY, whereas, secondary data were collected from the Directorate of Agriculture, Block Level Agriculture Departments, Agriculture Insurance company and Nodal Bank Agencies responsible for *PMFBY*. All the schedules were filled and later the primary as well as secondary data collected was analyzed using various tools for fulfilling the objectives.

### 2.1 Socioeconomic analysis of sampled households

This analysis was carried out to estimate the socio-economic and demographic profile of beneficiaries and non-beneficiaries in the study area. The results are given in averages, percentages and indices. The literacy index was calculated by using the formula:

$$\text{Literacy Rate (\%)} = \frac{\text{Total number of literate persons}}{\text{Total population} - \text{Population below 5 years}} \times 100$$

$$\text{Dependency ratio w.r.t. average size of family} = \frac{\text{No. of dependents in a family}}{\text{Average size of family}}$$

### 2.2 Ordinal regression

Ordinal regression is also known as cumulative odds ordinal logistic regression with proportional odds was employed to test the stated hypothesis. Adoption of PMFBY is a dependent variable while perceptions of farmers are independent variables. The SPSS ordinal regression technique has been used in the present study which is often known as PLUM (Polytomous Universal Model) a general linear model extension for ordinal categorical data (Pankaj and Gangadharan, 2017; Das and Kushwaha, 2013).

### 2.3 Defining the model

Ho: There is no significant relationship between perceptions of farmers and adoption of PMFBY

H1: There is a significant relationship between perceptions of farmers and adoption of PMFBY

### 2.4 Parameter estimates

The independent variables of the model were expressed on the five-point Likert's scale (Dawes, 2008; Colman *et al.*, 1997; Chang, 1994) which is coded as 1=strongly disagree, 2=Disagree, 3=neither agree nor disagree, 4=Agree, 5=strongly agree. The square of

the coefficient to its standard error is known as the Wald statistic (Basu *et al.*, 2017; Ghosh *et al.*, 2016; Pregibon, 1981; Basu *et al.*, 2016). A more meaningful interpretation is in terms of odds, which are obtained by taking the antilog of the various slope coefficients. It shows that what times a particular variable affects the adoption of PMFBY by keeping other variables constant. The ordinal logistic model for independent variables is given by

$$L_i = \ln(P_i/1-P_i) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

Where,

$P_i$  = Probability of farmer's adoption of PMFBY

$1-P_i$  = Probability of not adopting PMFBY

$\beta_0$  = Intercept

$\beta_i$  (1, 2, 3,.....13) = Regression coefficients,

$X_i$  (1, 2, 3,.....13) = Independent variables

$X_1$  = Need of PMFBY

$X_2$  = Facilities under PMFBY are sufficient

$X_3$  = PMFBY improve economic conditions of farmers

$X_4$  = Premium paid under PMFBY is bearable

$X_5$  = Proper coordination of farmers and implementing agencies

$X_6$  = Farmers friendly procedure in buying crop insurance

$X_7$  = Crop insurance is a money loss

$X_8$  = Time of compensation payment is inappropriate in PMFBY

$X_9$  = Effect on the adoption of the scheme among farmers if others are taking insurance in the area

$X_{10}$  = PMFBY acts as safeguard against production losses

$X_{11}$  = PMFBY mitigates the risk of adverse climatic condition

$X_{12}$  = PMFBY enhances the performance of farm operations

$X_{13}$  = Claim paid is sufficient

$u_i$  = Error term

$Li$  = Log of odds ratio

The logistic regression model's coefficients explain how much the logit changes as a function of the predictor variables values (Hermosilla *et al.*, 2021; Coughenour *et al.*, 2016).

### 3. RESULTS AND DISCUSSION

*Pradhan Mantri Fasal Bima Yojana (PMFBY)*, an insurance scheme, serves as a financial instrument to mitigate the impact of a loss in agricultural income by figuring in a huge number of unknowns that affect farmers' crop yields (Lakshamanan and Ashok, 2019). Recognizing the value of crop insurance as an alternative tool for farmers to manage risk and uncertainty, farmers' perception towards *PMFBY* was studied. The research was conducted to determine how well-insured and uninsured farmers were aware of the program.

### 4. FARMER'S PERCEPTIONS TOWARD *PMFBY*

#### 4.1 Socio economic status of the farming community

*PMFBY* acts as a safeguard against risk and uncertainty in the agriculture sector. It manages crop loss challenges and lowers the burden on the farming community. In an effort to ascertain how the initiative has affected farmers' livelihoods, an assessment of the socioeconomic parameters of sampled farmers has been made. The socioeconomic and demographic structure of the sample households will be analyzed in order to provide insight on the livelihood of both beneficiaries and non-beneficiaries. The average family size was computed and it was almost similar in case of beneficiaries (5.40) and non-beneficiaries (5.08). The overall level 95.84 percent of persons were literate among beneficiaries and 93.47 per cent persons were literate among non-beneficiaries in the study area. The higher literacy rates show that the awareness and adoption level should be more among the people in the study area. The overall dependency ratio with respect to family size was 0.32 in case of beneficiaries while 0.33 in case of non-beneficiaries. In both farm categories, the dependency ratio shows that on average,

one worker supports less than one family member. The engagement of beneficiaries (2.28) was more in agriculture as compared to non-beneficiaries (1.92). As beneficiaries were more involved in agriculture, they opted for the *PMFBY* for insuring their crop. Moreover, the beneficiaries were having more landholding (1.07 ha) as well as cultivated land (0.85 ha) than the landholding (0.96 ha) and cultivated area (0.69 ha) with the non-beneficiaries. It clearly suggests that the population having more landholding are more involved in agriculture and would surely adopt actively such crop insurance schemes. Further, it can be observed that on an average, 1.01 of beneficiaries and 1.23 of non-beneficiaries were engaged in the service sector. A very less number of beneficiaries and non-beneficiaries were engaged in business activities.

**Table 1.** Socio-economic parameters in the study area

Particulars	Beneficiaries	Non- Beneficiaries
1. Average size of family (Number)	5.40	5.08
2. Literacy rate (%)	95.84	93.47
3. Dependency ratio w.r.t. family size	0.32	0.33
<b>Occupational structure</b>		
1. Agriculture	2.28	1.92
2. Service	1.01	1.23
3. Business	0.34	0.25
<b>Size of holding</b>		
1. Cultivated land (ha)	0.85	0.69
2. Total holding (ha)	1.07	0.96

#### 4.2 Level of awareness of farmers towards *PMFBY*

Table 2 depicts the level of awareness of the scheme among both categories of farmers, the beneficiaries and non - beneficiaries. Banks and the agricultural department were the main sources of information for respondents about *PMFBY*. Most of the insured farmers were those who have taken KCC (Kisan Credit Card) loans because this scheme was compulsory for loanee farmers before 2019-20. It was found that level of awareness regarding the scheme was very low in the case of non-beneficiaries as compared to beneficiaries (Sundarand Ramakrishnan, 2013). It was observed that 91.60 percent of beneficiaries were aware of the *Pradhan Mantri Fasal Bima Yojana* while only 44.82 percent of non-beneficiaries were aware of the scheme. These findings are in agreement with the results of Nain *et al.*, 2017; Ghanghas, 2018; Shinde *et al.*, 2019

**Table 2.** Awareness level of respondents about *PMFBY* (per cent)

Statements	Beneficiaries			Non-Beneficiaries
	Claim-holders	Non-claim holders	Overall	
Do you aware regarding <i>PMFBY</i>	100.00	88.8	91.60	44.82
Regarding the agencies implementing the <i>PMFBY</i>	86.71	73.26	76.62	36.59
Crop covered under the <i>PMFBY</i>	93.38	68.82	74.96	38.26
Sources helping in getting information regarding the scheme	80.04	62.16	66.63	16.63
Whether this scheme can help in increase of production	86.71	62.16	68.29	16.63
About farmers having their land can get the benefit of <i>PMFBY</i>	80.04	71.04	73.29	34.92
Premium to be paid	93.38	68.82	74.96	21.62
Procedure for insuring crops	80.04	59.94	64.96	14.97
Regarding agency paying compensation	86.71	53.28	61.63	23.28
Risk covered under scheme	80.04	42.18	51.64	24.95
Reporting period of crop loss for claim is within 14 days	86.71	46.62	56.64	18.30
In case of crop loss farmers can report to the concerned patwari/ bank	93.38	51.06	61.64	23.29

and on contrary to Kumbalep and Devaraju, 2018. This was a major reason for the non-adoption of the scheme among non-beneficiaries. Additionally, among the beneficiaries, there were 88.8 per cent of non – claim holders who were aware of the *PMFBY*.

It is worth noting that 8.5 percent of non-credit holders (beneficiaries) who took KCC had no idea their crops were insured because they were not intimated by banks about their compulsory enrolment in *PMFBY* before 2020. Further, it was found that beneficiary farmers who have received claims during the loss of crop were more aware regarding different aspects of the scheme than non - claim holders such as the number of crops covered, agencies implementing the scheme, premium rates and procedure for receiving claims etc. The results also revealed that 74.96 percent of beneficiaries were aware of the amount of premium they were paying for their insured crops whereas, 25.04 percent were not. On the other hand, most non-beneficiaries (78.83%) were unaware of the premium amounts set by the government for specific crops. Procedural formalities were known to 64.96 per cent of the insured farmers and 35.04 per cent were unaware of them because they have taken a KCC loan so they were automatically registered under this scheme and not intimated by banks regarding their enrolment under the scheme. While non-beneficiaries were least aware of procedural formalities to the tune of 14.97 per cent and the majority of them reported that they faced procedural formalities in buying insurance since they have not taken KCC loan.

The Awareness of farmers on risk coverage was quite significant regarding crop coverage under post-harvest losses, various risks covered; fourteen days after harvest of the crop come under a time limit for post-harvest loss. Similar findings were reported earlier (Rao, 2020; Venkataramireddy and Naik, 2020; Ghanghas, 2018; Jain, 2020). The maximum number of beneficiaries (76.62 %) and comparatively lower (36.59 %) of non-beneficiaries were aware of the agencies implementing the *PMFBY*. More claim-holders (86.71%) were aware regarding insurance agencies and bank branches involved in *PMFBY* for seeking compensation under the scheme than non-claim holders (53.28 %). Nearly 80.04, 42.18 and 24.95 per cent of farmers were familiar with the various risks covered under the scheme in claim-holders, non-claim holders and non-beneficiaries respectively. Most of the claim-holders among beneficiaries were aware of the procedure for filing a claim during a period of crop loss as compared to non-claim holders and non-beneficiaries.

**Table 3.** Overall awareness level of respondents about *PMFBY* (per cent)

Particulars	Beneficiaries			Non-Beneficiaries
	Claim-holders	Non-claim holders	Overall	
Aware	60.03	42.18	51.10	13.26
Moderately aware	13.34	24.42	18.88	31.18
Unaware	26.68	33.30	29.99	64.93

Overall awareness level of respondents was calculated combining data from respondents in three categories i.e. significantly aware, moderately aware and unaware. At the overall level, 51.10 percent of insured farmers were aware of the scheme, 18.88 percent were moderately aware and 29.99 percent were unaware of different modalities of *PMFBY*. These results were on contrary to the findings of Shinde *et al.*, 2019; Jain, 2020; Venkataramireddy and Naik, 2020. This suggests that the majority of insured farmers were well-informed about the scheme. In the case of non-insured farmers, the majority of farmers were unaware (64.93%) followed by moderately aware (31.18%) and significantly aware (13.26%) regarding the *PMFBY* which is quite obvious as non-beneficiaries have low accessibility to credit and minimum contacts with agricultural extension agents. Similar results were reported by Rao, 2020.

#### 4.3 Farmer's perception affecting adoption of *PMFBY* among beneficiaries and non-beneficiaries

The model fit for the hypothesis was evaluated using the chi-square statistic. A significant chi-square in a good fitting model allows the null hypothesis to be rejected. The chi-square statistics were significant as shown in Table 4 i.e. farmer perceptions have a significant impact on the adoption of *PMFBY*, among the beneficiaries. The goodness-of-fit for the hypothesis was analyzed using the Pearson and Deviance goodness-of-fit measure. In a well-fitted model, the significance level was large. Table 4 demonstrated that the deviation goodness-of-fit metrics have substantial and insignificant values for the hypothesis, indicating

that the hypothesis was well-supported. It shows that the farmers' perceptions have a quite significant impact on the adoption of *PMFBY* among the beneficiaries. All the factors taken to govern perception that are need of the scheme, facilities under the scheme, premium paid etc. are affecting the adoption.

Similar to the case of the beneficiaries, the ordinal regression was run for the information provided by non-beneficiaries. Here also, output of test resulted in a significant chi-square that allows the null hypothesis to be rejected. The chi-square statistics were significant as shown in Table 5 i.e. again for non-beneficiaries, the farmer perceptions have a significant impact on the adoption of *PMFBY*. The hypothesis is supported by the table 5, since the associated chi-square statistics in model fitting information are significant at  $p < .01$ . However, deviance goodness-of-fit measurements for the hypothesis have substantial and insignificant values, providing additional support for the hypothesis. Further, the table 6 discusses the various parameters on which the information from both beneficiaries and non – beneficiaries was taken and PLUM model was run to compute the parameter estimates. This shows that which parameter has what impact on the adoption of the *PMFBY* scheme. Moreover, the parameters also show that how much the logit changes as a function of the predictor variables values.

The Polytomous Universal Model (PLUM) for ordinal regression was used to study the effect of farmers' perceptions on the adoption of *Pradhan Mantri Fasal Bima Yojana (PMFBY)*. Parameter estimates of the Polytomous universal model (PLUM) have been shown in Table 6. It was found that the need

**Table 4.** Polytomous Universal Model (PLUM) for ordinal regression fitting information for beneficiaries

Model	Model Fitting Information				Goodness - of- Fit			
	-2 Log Likelihood	Chi-Square	df	Sig.		Chi-Square	df	Sig.
Intercept Only	547.07	-	-	-	Pearson	105.58	36	0.00
Final	269.81	277.25	12	0.00	Deviance	90.06	36	1.00

**Table 5.** Polytomous Universal Model (PLUM) for ordinal regression fitting information for non-beneficiaries

Model	Model Fitting Information				Goodness -of- Fit			
	-2 Log Likelihood	Chi-Square	df	Sig.		Chi-Square	Df	Sig.
Intercept Only	335.04	-	-	-	Pearson	94.21	36	0.00
Final	264.04	71.00	12	0.00	Deviance	90.10	36	1.00

**Table 6.** Parameter estimates of PLUM regression model (Beneficiaries and Non- Beneficiaries)

Farmers Variable	Beneficiaries				Non- Beneficiaries			
	Estimate (B)	Wald	Df	Exponential Value Exp (B)	Estimate (B)	Wald	Df	Exponential Value Exp (B)
Need of <i>PMFBY</i>	1.95* (0.36)	90.39	1	89.12	1.13* (0.35)	10.47	1	13.80
Facilities under <i>PMFBY</i> are sufficient	1.69* (0.34)	24.39	1	49.31	0.94* (0.35)	7.08	1	8.71
<i>PMFBY</i> improve economic conditions of farmers	1.44* (0.33)	18.24	1	27.79	0.62*** (0.35)	3.16	1	4.25
Premium paid under <i>PMFBY</i> is bearable	0.62*** (0.33)	3.44	1	0.23	0.07 (0.36)	0.04	1	1.19
Proper coordination of farmers and implementing agencies	1.69* (0.34)	24.35	1	50.00	-0.30 (0.36)	0.70	1	0.50
Farmers friendly procedure in buying crop insurance	0.23 (0.33)	0.50	1	0.57	1.45* (0.35)	17.20	1	28.70
Crop insurance is a money loss	-0.72** (0.34)	4.56	1	0.18	0.22 (0.35)	0.37	1	1.65
Time of compensation payment is inappropriate in <i>PMFBY</i>	-0.18 (0.33)	0.29	1	0.65	0.08 (0.35)	0.05	1	1.20
Effect on the adoption of the scheme among farmers if others are taking insurance in the area	1.61* (0.34)	22.29	1	41.02	1.11** (0.35)	9.92	1	12.88
<i>PMFBY</i> acts as safeguard against production losses	2.00* (0.34)	33.45	1	101.39	0.22 (0.36)	0.37	1	1.65
<i>PMFBY</i> mitigates the risk of adverse climatic condition	1.81* (0.34)	27.83	1	65.61	0.95* (0.35)	7.30	1	8.99
<i>PMFBY</i> enhances the performance of farm operations	1.40* (0.34)	32.01	1	25.11	-0.49 (0.36)	1.91	1	0.32
Claim paid is sufficient	0	-	0	1.00	0	-	1	1.00

\*, \*\*, \*\*\* represents 1, 5, 10 per cent level of significance respectively

Figures in parenthesis are standard error

for *PMFBY* has a positive and significant impact on the adoption of the scheme and has 89.12 times more impact on the adoption of the scheme by keeping other perceptions constant. Similarly, facilities under *PMFBY* are sufficient and *PMFBY* improves the economic conditions of farmers has also shown a positive and significant effect on scheme adoption by 49.31 and 27.79 times, respectively. *PMFBY* acts as a safeguard against production losses has shown significant, positive and highest impact on the adoption of the scheme. It shows that farmers want to adopt insurance to protect their crops and minimize their risks. Whereas variables such as crop insurance is a money loss and time of compensation payment is inappropriate in *PMFBY* have shown negative and non-significant impact on the adoption of *PMFBY* by 0.18 and 0.65 times.

Non-beneficiaries have slightly different perceptions about the scheme i.e. *PMFBY*. The various perceptions of non-beneficiaries affecting adoption are

presented in Table 6. The Polytomous Universal Model (PLUM) for ordinal regression has been used to study the impact of farmers' perceptions on the adoption of *Pradhan Mantri Fasal Bima Yojana (PMFBY)*. The need for *PMFBY* has shown positive and significant impact and has 13.80 times more impact as compared to other perceptions on the adoption of *PMFBY*. Similarly, facilities under *PMFBY* are sufficient and *PMFBY* improves the economic conditions of farmers have shown positive and significant estimates of 0.94 and 0.62 respectively. Farmer's friendly procedure in buying crop insurance has shown significant, positive and highest impact on the adoption of the scheme as reported by non-beneficiaries. This was because procedural formalities in buying crop insurance were a major problem faced by non-insured farmers in the adoption of *PMFBY*. Effect on adoption rate if other farmers are taking insurance in the area and *PMFBY* mitigates the risk of the adverse climatic condition has also shown positive and significant effect on

adoption of the scheme. However, proper coordination of farmers and implementing agencies and *PMFBY* enhances the performance of farm operations has shown a negative impact on the adoption of *PMFBY* among non-beneficiaries.

*So, based on the study some policy suggestions can be recommended:*

Since there are not many farmers who are aware of the programme and those who are aware of it do not fully comprehend the situation, raising awareness among them should be the government's top goal. Government-appointed scheme-promoting personnel are needed to raise awareness. Additionally, frequent awareness events should be held at the local or panchayat level. The plan should be implemented at the local level. As this is the closest level of coverage for farmers, insurance units should be created at the Panchayat level. Additionally, local oversight of insurance companies is necessary to ensure proper operation. Government funding for setting up camps should be increased, and these awareness camps should also be frequently observed to make sure that farmers are adequately informed. Farmers shouldn't have to deal with a lot of paperwork to obtain crop insurance; instead, they should be covered in these camps. The farmers' community and *PMFBY* stakeholders should be made more aware of the programme so they may better grasp it as a whole. For the farmers to better apply the recommended package of crop cultivation methods and to guarantee timely loan repayment, the crop loan should be closely monitored by the respective bank/insurance agency personnel. The government ought to promptly release claim money to the insurance firms. Claims should be paid out promptly. The process for obtaining claims for losses should be automated for farmers, just as premium deduction. Every year, the government should present a single, consistent programme to avoid confusing farmers with several titles for the same advantages.

## 5. CONCLUSION

An effective crop insurance policy is critical for compensating farmers for income losses caused by natural and man-made calamities, as well as financing agricultural inputs. Crop insurance is crucial for farmers' protection, which in turn, helps the agriculture industry grow and enhance the economy. With cheap premium rates and a large range of insurance crops,

the scheme undoubtedly helps farmers. It also includes coverage for post-harvest losses that were not covered in the previous programs. Comparison research reveals that *PMFBY* is unquestionably a superior crop insurance program than previously (Rathore, 2017). However, in a country like India, creating and implementing a scheme like *PMFBY* is not the ultimate goal in terms of the country's farmers' well-being. The scheme's benefits will only be realized if it is implemented successfully. Existing and previously undiscovered issues in agriculture, such as faulty land distribution, poor land records, and corruption in claim settlement, are some of the well-known hurdles that have existed for a long time and would obstruct the scheme's consistent execution. As a result, the government must closely supervise and manage the scheme to ensure that farmers from all regions are benefited from it. Good awareness creation and providing crop insurance at their familiar places like gram panchayat, credit cooperative societies and post offices will increase the percentage of farmers using crop insurance. Early notification of crop insurance purchase dates to farmers using media such as television, radio, and road shows will aid in raising awareness. Crop insurance indemnity levels should be increased to encourage more farmers to get it. The level of farmer awareness of *PMFBY* was investigated, and it was discovered that the majority of beneficiaries (91.60 %) were significantly aware of the scheme, whereas non-beneficiaries' awareness was as low as 44.82 percent.

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