

Performance Analysis of National Agricultural Insurance Scheme (NAIS) and Pradhan Mantri Fasal Bima Yojna (PMFBY)

Vikas Kumar

ICAR- National Institute of Agricultural Economics and Policy Research, Pusa, New Delhi, India

*Corresponding author: vikas.kumar1@icar.gov.in

Received: 09-10-2020

Revised: 20-11-2020

Accepted: 12-12-2020

ABSTRACT

An effective crop insurance system is crucial in cushioning income losses for farmers, financing inputs for agricultural production, and increasing access to agricultural credit to boost agricultural productivity. Annual average farmers registered under NAIS (2000-01 to 2015-16) were 169.53 lakhs, while under PMFBY (2016-17-2019-20) that were quite higher that is 425.16 lakhs. The annual area insured under NAIS was 244.82 lakh hectares while under PMFBY, it was 491.48 lakh hectares. The annual sum insured under NAIS was ₹ 29219.05 crores, while this is in PMFBY was ₹ 193006.30 crores annually. The annual average farmers benefitted under NAIS and PMFBY were 53.16 lakhs (29.88% of total registered farmers) and 147.33 lakhs (32.67% of total registered farmers). The claims premium ratio was found as 4.26 under NAIS and 4.59 under PMFBY. It suggested by spending one rupee under PMFBY, farmers have received the claims or 4.59 rupees. The sum insured to farmers premium ratio was 38.70 under NAIS and 51.57 under PMFBY suggests there is higher sum insured under PMFBY with given rupees. It is visible that the performance of PMFBY is higher over NAIS in terms of farmers insured, area covered, claims reported and paid. By creating the awareness and timely payment of claims, the coverage of PMFBY can be improved further.

Keywords: Crop Insurance, NAIS, PMFBY, Annual Performance, Features

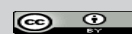
The insurance in the agricultural production and society in general is indirect economic protection of life and property from the adverse effects of natural forces and accidents. Insurance promotes agricultural production by making the entrepreneurial activities of farmers more stable and more certain. Insurance reduces the uncertainty of farmers and the need to create individual savings accounts or funds, given that the need for cash reserves is reduced (Raulston et al., 2010). In most countries, private crop insurance is not sustainable without state subsidies (Skees et al., 1999), although their amount is constantly increasing. Having in mind global importance of food production, crop insurance is widely subsidized

by governments of both developed and emerging countries.

In India crop insurance has a great role to play in managing risks in Indian agriculture sector. Though management of risk in agriculture is one of the priorities for government of India and policy makers, unfortunately, the progress of agricultural insurance in the country over the year is not up to the

How to cite this article: Kumar, V. (2020). Performance Analysis of National Agricultural Insurance Scheme (NAIS) and Pradhan Mantri Fasal Bima Yojna (PMFBY). *Agro Economist - An International Journal*, 7(2): 145-152.

Source of Support: None; **Conflict of Interest:** None



mark to protect the Indian farmers, especially small and marginal farmers. According to the National Agriculture Policy 2000, "Despite technological and economic advancements, the condition of farmers continues to be unstable due to natural calamities and price fluctuations". In some extreme cases, these unfavorable events become one of the factors leading to farmer's suicides which are now assuming serious proportions (Raju and Chand, 2007). In developing countries, crop insurance is one of the many tools governments use to smooth farm incomes, in addition to policy mechanisms such as quotas, minimum support prices, input subsidies, and low interest agricultural loans, among others (Stutley, 2010).

To cover the risk which may occur in future, there is need to some provision and crop insurance is only mechanism available to safeguard against production risk in agriculture. For fulfilling this need, Government of India has introducing various schemes of crop insurance. Since the year 1999-2000, National Agricultural Insurance Scheme has been launched by National Agricultural Insurance Scheme Corporation of India and from *Kharif* 2016, NAIS was taken over by new scheme as Pradhan Mantri Fasal Bima Yojna (PMFBY). This research paper has made attempt to study the growth of National Agricultural Insurance Scheme and Pradhan Mantri Fasal Bima Yojna (PMFBY).

MATERIALS AND METHODS

The performance analysis is mostly depended on secondary data collected from PMFBY website, and other literature. For NAIS, the data were collected from *Rabi* 1999-2000 – 2015-16 and for PMFBY, the data were collected from *Kharif* 2016 to 2019-20. The annual performance was analyzed and financial ratios were calculated to develop the comparison effective.

RESULTS AND DISCUSSION

National Agriculture Insurance Scheme

Government of India in co-ordination with General Insurance Corporation of India (GIC) had introduced scheme called the National Agricultural Insurance Scheme (NAIS) or Rashtriya Krishi Bima Yojana which commenced from *Rabi* season 1999-2000 and

from April 2003, Agricultural Insurance Company of India Ltd. (AICIL) took over the implementation of the NAIS.

Salient Features of the NAIS

- ♦ *Crops covered:* all food grains, oilseeds, & annual horticultural/commercial crops as sugarcane, potato, cotton, ginger, onion, turmeric, chilies, coriander, cumin, jute, tapioca, banana, & pineapple etc.
- ♦ Scheme is available to both borrower and non-borrower farmers.
- ♦ The scheme is operated on area approach for widespread calamities and individual approach for localized calamities such as hailstorm, landslide, cyclone, flood etc.
- ♦ Small and marginal farmers entitled to subsidy of 50 percent of premium charged to be shared equally between central Government and State Government. The subsidy on premium has gradually been phased out and left with 10 per cent subsidy to small and marginal farmers.
- ♦ *Optional scheme:* Because at initial stage this scheme is on compulsory basis for non-loaner farmers now it made optional for both non-loaner and loaner farmers.
- ♦ *Area approach:* The scheme operates on "Area Approach" i.e. if the observed seasonal area yield per hectare of the insured crop for the defined insurance unit falls below a specific threshold yield, all insured farmers growing that crop in the defined area will receive the same claim payment. The defined area may be a Gram Panchayat, Mandal, Hobli, Circle, Phirka, Block Taluka etc.

The premium rates applicable on the sum insured are presented in Table 1.

Important features and working procedure of PMFBY scheme

The important features and working features of schemes are given below.

Coverage of Farmers/Crops

The Scheme covers all "Food & Oilseeds crops"

and “Annual Commercial/Horticultural Crops” for which past yield data is available. All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for coverage (Table 2).

Risks Covered/ Exclusions

Prevented Sowing/Planting/Germination Risk covered

Insured area is prevented from sowing/ planting/ germination due to deficit rainfall or adverse seasonal/ weather conditions.

Standing Crop (Sowing to Harvesting)

Comprehensive risk insurance is provided to cover yield losses due to non-preventable risks, viz. Drought, Dry spell, Flood, Inundation, widespread Pests and Disease attack, Landslides, Fire due to natural causes, Lightning, Storm, Hailstorm and Cyclone.

Post-Harvest Losses

Coverage is available only up to a maximum period of two weeks from harvesting, for those crops which

are required to be dried in cut and spread / small bundled condition in the field after harvesting against specific perils of Hailstorm, Cyclone, Cyclonic rains and Unseasonal rains.

Localized Calamities

Loss/damage to notified insured crops resulting from occurrence of identified localized risks of Hailstorm, Landslide, Inundation, Cloud burst and Natural fire due to lightening affecting isolated farms in the notified area.

Add-on coverage for crop loss due to attack by wild animals

The States may consider providing add-on coverage for crop loss due to attack by wild animals wherever the risk is perceived to be substantial and is identifiable.

Increased Farmer Awareness

To increase the farmer coverage under this PMFBY scheme, efforts are made to create farmer awareness by using various marketing techniques so that maximum number of farmers can enroll and avail benefits of the scheme.

Table 1: The premium rates for different crops in NAIS

Season	Crops	Premium Rates
<i>Kharif</i>	Bajara & Oilseeds	3.5% of sum insured or actuarial rate whichever is less.
	Other Kharif crops	2.5% of sum insured or actuarial rate whichever is less.
<i>Rabi</i>	Wheat	1.5% of sum insured or actuarial rate whichever is less.
	Other <i>Rabi</i> crops	2% of sum insured or actuarial rate whichever is less.
<i>Kharif + Rabi</i>	Annual Commercial/Horticultural crops	Actuarial rate

Table 2: Crops covered and premium rates

Season	Crops	Maximum Premium payable by farmer
<i>Kharif</i>	All food grain and Oilseeds crops (all Cereals, Millets, Pulses and Oilseeds crops)	2.0% of SI or Actuarial rate, whichever is less
<i>Rabi</i>	All food grain and Oilseeds crops (all Cereals, Millets, Pulses and oilseeds)	1.5% of SI or Actuarial rate, whichever is less
<i>Kharif and Rabi</i>	Annual Commercial/ Annual Horticultural crops	5% of SI or Actuarial rate, whichever is less
	Perennial horticultural crops (pilot basis)	5% of SI or Actuarial rate, whichever is less

Claims Process

The PMFBY scheme operates on an area based approach process and the lowest level of notified area is called the Insurance Unit (IU). If 'Actual Yield' per hectare of insured crop for the insurance unit (calculated on basis of requisite number of CCEs) in insured season, falls short of specified 'Threshold Yield' (TY), all insured farmers growing that crop in the defined area are deemed to have suffered shortfall of similar magnitude in yield. PMFBY seeks to provide coverage against such contingency.

Area approach

The scheme also operates on "Area Approach" i.e. if the observed seasonal area yield per hectare of the insured crop for the defined insurance unit falls below a specific threshold yield, all insured farmers growing that crop in the defined area will receive the same claim payment.

Comparison between the two schemes

The important points for comparison between the two schemes are presented in Table 3. Both the schemes covered all regions, crops and all types of farmers. The area approach was used in both schemes. The premium rates were made simple in PMFBY as one common premium rate for one season and 5% for horticultural crops. While in NAIS, for horticultural crops, actuarial rates were applied, making it more difficult for convincing. In PMFBY,

insurance cover was also provided for post harvest losses (Table 3).

Number of Farmers registered, area and sum insured and premium shared under NAIS

The total farmers registered under NAIS since its inception from 2000-01 to 2015-16 were 2712.55 lakhs, total area insured 3917.18 lakh hectares, total sum insured ₹ 467504.76 crores, total premium shared by farmers ₹ 11999.28 crores and total premium collected ₹ 14116.92 crores (Table 4).

Claims reported and claims paid, number of benefitted farmers and financial ratios under NAIS

The total claims paid under NAIS were ₹ 56007.68 crores, total benefitted farmers 850.52 lakhs, percentage of farmers received claims 31.35 percent, claims to farmers premium is found as 4.26 and sum insured to farmers premium was found as 38.70 (Table 5).

Number of Farmers registered, area and sum insured and premium shared under PMFBY

The total farmers registered under PMFBY since its inception from 2016-17 to 2019-20 were 1700.62 lakhs, total area insured 1965.91 lakh hectares, total Sum insured ₹ 772025.21 crores, total premium shared by farmers ₹ 14689.45 crores and total premium collected ₹ 89638.60 crores (Table 6).

Table 3: Points of comparison between NAIS and PMFBY on the basis of features

Points for comparison	NAIS	PMFBY
Crops covered, including horticultural crops	All	All
Farmers covered including tenants, sharecroppers	All	All
Area and individual approach	Both	Both
<i>Kharif</i> premium (percent of sum insured)	For Bajra and oilseeds: 3.5% or actuarial rate, which ever is less, For other crops: 2.5 %	2 Percent for all crops
<i>Rabi</i> Premium	1.5% for wheat and 2% for other or actuarial rate whichever is less.	1.5% for all <i>rabi</i> crops
Horticultural crops	Actuarial rate	5%
Premium subsidy	10% of premium for small and marginal farmers	—
Risk covered	All weather risks	All weather risks
Post-harvest losses covered	No	Yes

Table 4: Number of farmers, area insured, sum insured and premium shared under NAIS

Years	Number of Farmers covered (in Lakhs)	Area Insured (In Lakh ha)	Sum Insured (₹ Crores)	Farmers' Premium (₹ Crores)	State Govt. Premium (Share) (₹ Crores)	GoI Premium (Share) (₹ Crores)	Gross Premium (₹ Crores)
2000-01	110.81	171.12	8862.48	182.66	28.65	28.65	239.95
2001-02	106.52	160.34	8999.97	236.37	27.70	27.70	291.77
2002-03	120.96	195.70	11269.24	312.38	25.80	25.80	363.97
2003-04	123.92	188.24	11163.62	316.70	15.34	15.34	347.39
2004-05	162.18	296.17	16944.82	510.58	12.11	12.11	534.80
2005-06	167.22	277.49	18590.76	529.11	12.83	12.83	554.77
2006-07	179.12	273.05	21301.58	572.24	23.62	14.31	610.17
2007-08	184.43	281.42	24474.61	638.38	27.75	16.91	683.03
2008-09	192.03	264.94	26814.78	701.54	84.89	21.23	807.66
2009-10	239.34	336.70	38624.21	1022.47	101.14	30.95	1154.55
2010-11	176.50	240.48	34721.45	880.36	110.18	29.42	1019.95
2011-12	167.94	233.86	34771.04	856.51	90.17	25.34	972.03
2012-13	167.91	243.85	42909.15	1041.65	254.46	30.24	1326.35
2013-14	137.20	207.08	41554.15	1025.21	220.37	29.61	1275.19
2014-15	167.38	207.70	45880.82	1154.31	204.85	38.94	1398.10
2015-16	309.08	339.05	80622.09	2018.81	376.79	141.64	2537.24
Total	2712.55	3917.18	467504.76	11999.28	1616.64	501.00	14116.92
Annual average	169.53	244.82	29219.05	749.96	101.04	31.31	882.31

Source: Department of Agriculture, Cooperation & Farmers Welfare, MoA & FW, GoI and Agricultural Statistics at a glance 2019, GoI.

Table 5: Claims, Number of farmers benefitted and financial ratio under NAIS

Years	Claims Reported (₹ Crores)	Claims Paid (₹ Crores)	Number of Farmers Benefitted (Lakhs)	Percentage of farmers received claims	Claims paid to farmers premium ratio	Claims paid to gross premium ratio	Sum insured to farmers premium ratio	Sum insured to Gross Premium ratio
2000-01	1289.66	1289.66	42.17	38.06	7.06	5.37	48.52	36.94
2001-02	558.29	558.29	21.95	20.61	2.36	1.91	38.08	30.85
2002-03	2012.94	2012.94	52.24	43.19	6.44	5.53	36.08	30.96
2003-04	1149.79	1149.79	38.10	30.75	3.63	3.31	35.25	32.14
2004-05	1198.92	1198.92	34.48	21.26	2.35	2.24	33.19	31.68
2005-06	1424.75	1424.75	36.68	21.94	2.69	2.57	35.14	33.51
2006-07	2292.19	2292.19	45.23	25.25	4.01	3.76	37.22	34.91
2007-08	1725.54	1725.54	31.71	17.19	2.70	2.53	38.34	35.83
2008-09	3887.62	3887.62	61.99	32.28	5.54	4.81	38.22	33.20
2009-10	5118.11	5118.11	90.12	37.65	5.01	4.43	37.78	33.45
2010-11	2299.71	2299.71	33.92	19.22	2.61	2.25	39.44	34.04
2011-12	2208.99	2208.17	31.32	18.65	2.58	2.27	40.60	35.77
2012-13	4896.88	4886.86	44.68	26.61	4.69	3.68	41.19	32.35
2013-14	4323.62	4322.60	38.09	27.76	4.22	3.39	40.53	32.59
2014-15	4288.02	4281.83	64.12	38.31	3.71	3.06	39.75	32.82
2015-16	17557.79	17350.70	183.74	59.45	8.59	6.84	39.94	31.78
Total	56232.82	56007.68	850.52	31.35				
Annual average	3514.55	3500.48	53.16	29.88	4.26	3.62	38.70	33.30

Source: Department of Agriculture, Cooperation & Farmers Welfare, MoA & FW, GoI and Agricultural Statistics at a glance 2019, GoI.

Table 6: Number of farmers, area insured, sum insured and premium shared under PMFBY

Year	Total farmers insured, in lakhs	Total Sum Insured ₹ Crore	Area insured, lakh Hectares	Total Farmers Share in Premium, ₹ Crore	State govt share in premium, ₹ Crore	Central govt share in premium, ₹ Crore	Total premium ₹ Crore
2016-17	562.72	194538.74	553.66	3812.34	8309.44	8121.36	20243.15
2017-18	507.74	191786.48	494.65	3935.96	9560.05	9490.38	22986.39
2018-19	349.33	201771.38	475.26	3670.61	9651.17	9283.71	22605.49
2019-20	280.83	183928.61	442.34	3270.54	10587.39	9945.65	23803.57
Total	1700.62	772025.21	1965.91	14689.45	38108.05	36841.10	89638.60
Annual average	425.16	193006.30	491.48	3672.36	9527.01	9210.28	22409.65

Source: Department of Agriculture, Cooperation & Farmers Welfare, MoA & FW, GoI and Agricultural Statistics at a glance 2019, GoI.

Table 7: Claims, Number of farmers benefitted and financial ratio under PMFBY

Year	Total claims reported, ₹ Crores	Total claims paid, ₹ Crores	Total no of farmers benefitted, lakhs	Benefitted farmers of total registered farmers (%)	Claims paid to farmers premium ratio	Claims paid to gross premium ratio	Sum insured to farmers premium ratio	Sum insured to Gross Premium ratio
2016-17	15115.98	15109.77	131.80	23.42	3.96	0.75	51.03	9.61
2017-18	20050.94	19943.71	159.04	31.32	5.07	0.87	48.73	8.34
2018-19	19919.44	17359.21	151.14	43.27	4.73	0.77	54.97	8.93
Total	55086.36	52412.69	441.98	*	*	*	*	*
Annual average	18362.12	17470.9	147.3267	32.67	4.59	0.79	51.57	8.96

Source: Department of Agriculture, Cooperation & Farmers Welfare, MoA & FW, GoI and Agricultural Statistics at a glance 2019, GoI; * Figures for the years are being finalized.

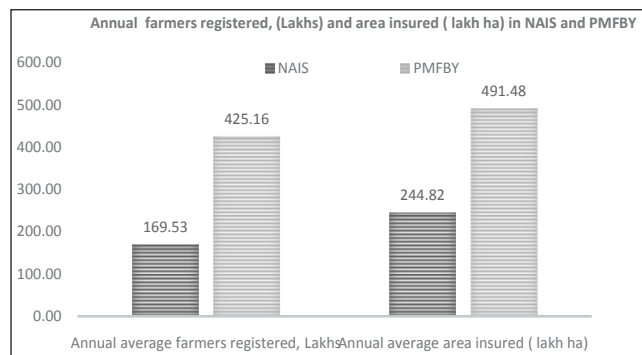
Claims reported and claims paid, number of benefitted farmers and financial ratios under PMFBY

From 2016-17 to 2019-20, the total claims paid under PMFBY were ₹ 52412.69 crores, total benefitted farmers 441.14 lakhs (who received claims), percentage of farmers received claims 32.67 percent, claims to farmers premium is found as 4.59 and sum insured to farmers premium was found as 51.57 (Table 7).

Comparison of Annual performance of NAIS and PMFBY

The average annual performance of NAIS and PMFBY schemes is presented in table 8. Annual

average farmers registered under NAIS (2000-01 to 2015-16) were 169.53 lakhs, while under PMFBY (2016-17- 2019-20) were quite higher that is 425.16 lakhs (Fig. 1).


Fig. 1: Annual Farmers registered and Area insured under NAIS and PMFBY

The annual area insured under NAIS was 244.82 lakh hectares while under PMFBY 491.48 lakh hectares. The annual sum insured under NAIS was ₹ 29219.05 crores, while this in PMFBY was ₹ 193006.30 crores annually. The annual premium shared by farmers under NAIS was ₹ 749.96 crores while this for PMFBY was ₹ 3672.36 crores annually. The annual claims reported and claims paid under NAIS were ₹ 3514.55 crores and ₹ 3500.48 crores respectively. While under PMFBY (2016-17 to 2018-19), annual claims reported and claims paid were quite high, that is ₹ 18362.12 crores and ₹ 17470.90 crores respectively (Fig. 2).

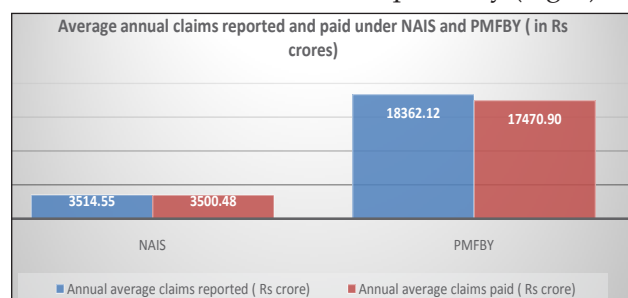


Fig. 2: Annual claims reported and Claims paid under NAIS and PMFBY

The annual average farmers benefitted under NAIS and PMFBY were 53.16 lakhs and 147.33 lakhs. The annual average percent of farmers who received claims (or benefitted) were 29.88 % under NAIS and 32.67 % under PMFBY (Fig. 3).

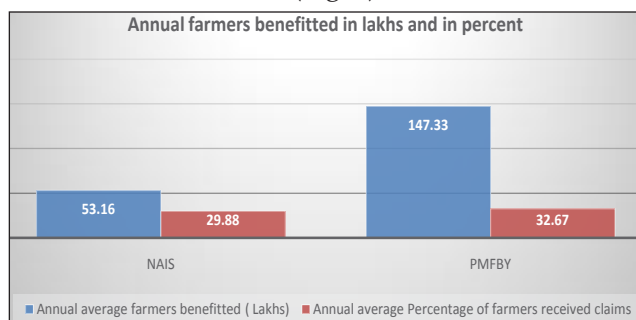


Fig. 3: Annual farmers benefitted under NAIS and PMFBY

The claim to premium ratio was found as 4.26 under NAIS and 4.59 under PMFBY. It suggested by spending one rupee under PMFBY, farmers have received the claims or 4.59 rupees. The claims paid to gross premium ratio was found as 3.62 under NAIS and 0.79 under PMFBY. The sum insured to farmers premium ratio was 38.70 under NAIS and 51.57 under PMFBY suggests there is higher

sum insured under PMFBY with given rupees. The sum insured to gross premium ratio under NAIS was 33.30 and under PMFBY 8.96. It suggested that government shared higher part of premium under PMFBY scheme than in NAIS (Fig. 4).

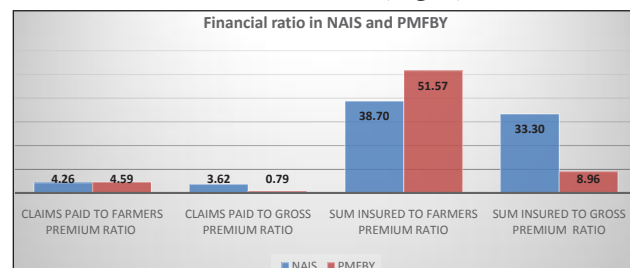


Fig. 4: Comparison of different financial ratios under NAIS and PMFBY

Table 8: Annual comparison of NAIS and PMFBY

Particulars	NAIS	PMFBY
Annual average farmers registered, Lakhs	169.53	425.16*
Annual average area insured (lakh ha)	244.82	491.48*
Annual average Sum Insured (₹ crores)	29219.05	193006.30*
Annual average premium paid by Farmers (₹ Crore)	749.96	3672.36*
Annual average State Govt. Premium Share (in ₹ crore)	101.04	9527.01*
Annual average Central govt Premium share (₹s Crore)	31.31	9210.28*
Annual average gross premium collected (₹ crore)	882.31	22409.65*
Annual average claims reported (₹ crore)	3514.55	18362.12#
Annual average claims paid (₹ crore)	3500.48	17470.90#
Annual average farmers benefitted (Lakhs)	53.16	147.33#
Annual average Percentage of farmers received claims	29.88	32.67#
Claims paid to farmers premium ratio	4.26	4.59#
Claims paid to gross premium ratio	3.62	0.79#
Sum insured to farmers premium ratio	38.70	51.57#
Sum insured to Gross Premium ratio	33.30	8.96#

CONCLUSION

An effective crop insurance system is crucial in cushioning income losses for farmers, financing inputs for agricultural production, and increasing access to agricultural credit to boost agricultural productivity. Both the scheme of National Agricultural Insurance scheme (NAIS) and Pradhan Mantri Fasal Bima Yojna (PMFBY) have successfully increased the awareness of farmers for insurance. Both the schemes have increased the coverage of insured area and added the number of farmers insured. But, it is visible the performance of PMFBY is higher over NAIS in terms of farmers insured, area covered, claims reported and paid. The PMFBY takes care of systemic or covariate risks associated with widespread vagaries of weather as well as idiosyncratic losses. No scheme previously has offered such a comprehensive protection (Ghosh 2019). By creating the awareness and timely payment of claims, the coverage of PMFBY can be improved further. The litmus test of any crop insurance program is quick assessment of crop damages and payment of claims into farmers' accounts directly, (Gulati *et al.* 2018).

REFERENCES

- Ghosh, K.R. 2019. Performance evaluation of Pradhan Mantri Fasal Bima Yojana (PMFBY). "Uptake and Willingness-To-Pay". Center for Management in Agriculture (CMA) Indian Institute of Management Ahmedabad (IIMA). Final Report.
- Gulati, A., Terway, P. and Siraj, H. 2018. Crop Insurance in India: Key Issues and Way Forward. Indian Council for Research on International Economic Relations. *Working paper* 352; pp. 1-51.
- Mahul, O. and Stutley, C.J. 2010. Government Support to Agricultural Insurance Challenges and Options for Developing Countries, the World Bank. Washington DC.
- Raju, S.S. and Chand, R. 2007. Progress and Problems in Agricultural Insurance in India, *Economic and Political Weekly*, pp. 1905-1908.
- Raulston, J.M., Richardson, J.W., Outlaw, J.L. and Knappek, G.M. 2010. Does Crop Insurance Reduce the Need for Cash Reserves in Savings Accounts?. Paper presented at the SAEA Annual Meeting, Orlando, FL.
- Skees, J., Hazell, P. and Miranda, M. 1999. New Approaches to Crop Yield Insurance in Developing Countries. EPTD Discussion Paper 55. International Food Policy Research Institute, Washington, DC.