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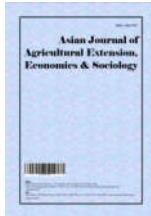
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Problems, Prospects and Policy Recommendations of Crop Insurance Schemes

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This paper discusses the findings of the study in the area of crop insurance. Firstly it studied the problems faced under PMFBY, secondly examines prospects of given scheme. The study was conducted in six districts of Haryana namely, Kaithal, Bhiwani, Karnal, Hisar, Panipat and Fatehabad. The study showed the results of a survey of 240 farmers being carried in June 2018 to September, 2018. Constraints generally faced by the borrower farmers like delay in claim settlement (21.66%), inaccurate yield estimation (20.83%), inadequate implementation (20.00%), lack of awareness about the scheme and exclusion of a malicious damage, theft and grazed and destroyed by domestic animals etc. as 3.33 per cent as major constraints. Majority of non-borrower farmers faced constraints like claim paid for loss assessment (20.83%) as highest per cent, lack of faith in insurance system (19.17%) and inadequate implementation (16.67%).

Keywords: *Crop insurance; problems; prospects; policy; PMFBY; production; risks.*

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1. INTRODUCTION

India sometimes is affected by natural disasters such as floods, droughts, cyclones, storms and earthquakes etc. But mostly by the operation methods, policy, innovative and sustainability tools on integrated frame. All these events severely affect farmers through loss in production and their farm income. With growing commercialization of agriculture, the extent of loss due to unfavourable eventualities is increasing [1-3]. The question is how to protect farmers by minimizing such losses? In recent times, mechanisms like contract farming and futures trading have been established which are expected to provide some assurance by protection loss against price fluctuations directly or indirectly [4-7]. But, agricultural insurance is considered an important one. Agricultural insurance has been in the country since 1972, yet it is beset with several problems such as lack of transparency and non-payment/delayed payment to farmers. Until recently many crop insurance schemes operated in India [8,9]. These schemes met with limited success due to high premium, delay in settlement of claims, which took around 6 to 12 months, inadequate sum insured and their capping premium rates and inadequate government support in the form of premium subsidies had left a vast majority of farmers without any significant insurance coverage [10-12]. The obstacles mentioned above make crop insurance in a straight forward manner nearly unviable. Several solutions have however been suggested to overcome these problems but these solutions have their own problems like low premium create government/agency to be losses; if it would be high, farmers are against and have losses [13,14]. Scheme should be equally balanced in both sides for farmers and government. There are therefore a few crucial choices to be resolved while designing crop insurance.

2. MATERIAL AND METHODS

The primary data pertained to Haryana state only for the Pradhan Mantri Fasal Bima Yojana (PMFBY) which is being implemented in the entire state on cluster approach (as cluster I,II and III) shown in the booklet of notification of PMFBY for *Kharif* 2018 and *Rabi* 2018-19. Primary data was collected during June 2018 to September 2018 through schedule for insured and non-insured farmers. Multistage random sampling technique was used. The selection of districts from each cluster was made on the basis

of irrigation facilities in these districts. These were divided in two groups: group one consists of irrigated district and group two consists of rain-fed districts. Among these two groups, 6 districts were selected on the basis of irrigation facilities; 3 irrigated and 3 rain-fed districts (purposively selected) from the Statistical Abstract of Haryana 2015. Two districts from each cluster (one irrigated and one rain fed) were selected purposively, and from each district, two villages were selected randomly. From the selected villages, a sample of 20 farmers (10 insured and 10 non-insured) from different sizes of holdings was drawn randomly. Total 240 respondent farmers (120 insured and 120 non-insured) were selected for conducting the study. The schedule used for the primary data was different for the insured and non-insured farmers which has been included in. Thus, sample size consisted of one state, three clusters, six districts, twelve villages and 240 respondents.

Sample design- All the farmers who have taken agricultural loan (loanee) from institutional sources and banks/ agencies working under crop insurance schemes in Haryana comprise the universe of the study. Those farmers who have purchased insurance schemes not loan (non-loanee) were also come under universe. As the size of the universe was very large, that is why, it was decided that a sample mechanism would be adopted to collect the data from the respondents. It is a set of questions focused on some specific aspects of a topic or area.

Sampling technique- Multistage random sampling technique was used. In order to understand ground level working of agricultural insurance schemes and insurance products which were recently launched by some private sectors; a case study was conducted in the state of Haryana. This involved survey of farmers who have been covered under PMFBY, called beneficiaries (insured) and a control sample of farmers who were not covered under the crop insurance, called non-beneficiaries (non-insured). The descriptive statistical measures like average, frequency and percentage were used to analyze the given data.

2.1 Selection of Districts

The selection of districts from each cluster was made on the basis of irrigation facilities in these districts. These were divided in two groups: group one consists of irrigated district and group two consists of rain-fed districts. Among these two groups, 6 districts were selected on the basis

of irrigation facilities; 3 irrigated and 3 rain-fed districts (purposively selected) from the Statistical Abstract of Haryana 2015.

From each cluster, the districts selected for the study were (i) Kaithal, Karnal and Panipat, representing irrigated districts; (ii) Bhiwani, Hisar and Fatehabad, representing rain-fed districts. Random sampling was used for the selection of the villages. Then, a complete list of villages from each district was prepared and two villages from each district were selected randomly. Total sample size covered 1 state, 3 clusters, 6 districts, 12 villages and 240 respondent farmers.

3. RESULTS AND DISCUSSION

The Table 1 revealed the problems generally faced by the borrower and non-borrower farmers like delay in claim settlement, inadequate implementation, and inaccurate yield estimation and lack of awareness about the scheme and exclusion of malicious damages etc.

In case of borrower farmer, implementation problem opted by the 24 farmers (20.00%) and non-borrower respondents faced this problem upto 16.67 per cent, respectively. They said that

extension of the Cut off dates which leads to the problem of adverse selection and companies quote high premium rates to cover their losses. Delay in submission of yield data on CCEs to insurance companies' make the settlement of claims to farmers slow or you can say more time will be consumed which results in the reduction in crop yield as shown in given table (21.66 and 20.83%). High actuarial premium rates quoted by the reinsurance companies which results due to the extension of cutoff date.

Borrower farmers were not showing much contraction about awareness problem, because borrowers were much aware about the schemes. Due to the awareness, they reported the insurance procedure. Lack of faith was shown by the non- borrower farmers in the insurance system i.e. 19.17 per cent. They have little knowledge on sum insured, premium rates, etc. Procedure for making the assessment of crop damages at the farm level. So, those farmers get the accurate compensation. Borrower farmers faced this problem to 9.17 per cent and non-borrowers faced up to 8.33 per cent. The new scheme reveals that overall area insured and farmers covered were declined from the Kharif 2016 to Kharif 2018.

Table 1. Problems faced under PMFBY by the respondent farmers

Problems	Borrower farmers (freq.)	Per cent	Non-Borrower farmers (freq.)	Per cent
Inadequate implementation, extension of cutoff date, submission of CCEs data	24	20.00	20	16.67
Lack of awareness/faith in insurance system	4	3.33	23	19.17
Delay in the settlement of claim paid/compensation	26	21.66	25	20.83
High actuarial premium rates, inadequate linkage with digital/mobile technology	9	7.50	1	0.83
Non friendly for farmers but for companies, no accountability for banks and non-issue of cover note etc.	5	4.16.	3	2.50
Multistake holder involvement i.e. farmers, bank, company, govt. and social organizations etc.	4	3.33	7	5.83
Inaccurate yield estimation and time consuming	25	20.83	3	2.50
Lack of trained staff or manpower for CCEs	6	5.00	9	7.50
Company oriented, no accountability for banks/companies,	2	1.67	4	3.33
Faulty system of area coverage, no farm level loss assessment	11	9.17	10	8.33
Exclusion of losses due to domestic/wild animals, malicious damage and theft etc.	4	3.33	15	12.50
Total	120	100	120	100

Note *: Frequency figures are based on 1st preference of the respondent

The exclusion under the scheme are-risks and losses arising out of malicious damage, theft, grazed and destroyed by domestic and wild animals. In non-borrowers' case, they want this type of inclusion of losses (12.50%) so that they were well protected from the other major losses. Borrowers also need that type of inclusion for the safety purpose.

Majority of borrowers and non-borrowers felt that problem was the highly important. They need Claims should be paid as early as possible after loss. Highest per cent count by this problem as 21.66 and 20.83 per cent. It sometimes takes longer time. If there is some delay in compiling and analyzing yield data, the farmer will receive some amount of the claim during the crop season itself, based on weather data.

Under PMFBY, there is no capping on premium rates and sum insured is to be fixed based on the Scale of Finance. With the removal of capping on premium rates, sum insured almost doubled in 2016-17. But even under the new scheme, sum insured is based on scale of finance as assessed by DLTC which covers only cost of cultivation.

3.1 Prospects Related with the Problems Faced by the Farmers

In case of borrower farmer, implementation procedure should be easy and fast having 10.83 per cent and non-borrower (8.33%). Without proper implementation and modern infrastructure, a crop insurance scheme is not sufficiently lucrative for either the farmers or private insurance companies. The scheme can fly very high if the operational guidelines are strictly followed by them.

The table 2 revealed that farmers want the scheme should be voluntary rather than compulsory for the loanee as opted by borrowers (7.50%) and non-borrower (3.33%). A grievance-redressal system will help distress farmers resolve issues regarding the scheme and the provisions for insurance and claim payments. So, 6.67 per cent borrowers opted this for making system accurate. It is crucial to increase the penetration of crop insurance. Mandatory awareness programmes on the benefits of crop insurance must be developed and made available to farmers via radio, word of mouth, campaigns and farmer meetings. A dense

network of linkages between state level committees and district-level committees can facilitate timely implementation. Many state governments have failed to pay the subsidy premiums on time, as paying these premiums eat into their budgets for the sector. This leads to poor implementation. Out of 120 farmers, 13 opted as first preference for the solution in the scheme. Out of 120, 2 borrowers and 3 non-borrowers reported that premium rates for irrigated crops should be different from that of non-irrigated crops so as to encourage participation of farmers with irrigated agriculture. This will lead to larger participation and contribute to greater viability of the scheme. The amount of government subsidy may have to be increased, especially for small and marginal farmers. Proceed towards farm level assessment in case of heavy losses as an alternative to the Homogenous area approach. Individual assessment should be done in case of localized calamities in all areas.

Majority of farmers are in favour of assessment of losses (nearly 17%) should be done at bank level because bank collected the premium. So, it gave compensation to the farmers instead of private companies. Non-borrower said survey team should be built at the village level (8.33%). Surplus premium over and above claims in normal years should be carried forward. Insurance unit size should be small so that losses reflected are closer to the reality ranged between 6-8 per cent. Speedy credit of insurance claims in farmers accounts.

Capped pricing of insurance premiums will discourage insurance companies from accepting high-risk crops and eventually the target of reaching higher penetration will not be achieved. An alternative could be capping the farmers' premium and giving the balance premium as a subsidy. Estimation of losses should be properly handled. Actual premium rates in case of Annual Commercial and Horticulture crops should be capped at 3 per cent. Alternatively, the scheme should be made voluntary for these crops. The inclusion under the scheme are-risks and losses arising out of war and nuclear risks, malicious damage, theft, grazed and destroyed by domestic and wild animals. So, farmers should be highly protected from such type of losses.

Table 2. Prospects of PMFBY for borrower and non-borrower respondent farmers

Prospects	Borrower (frequency level)	Per cent	Non- borrower (frequency level)	Per cent
Implementation procedure simple and quick	13	10.83	10	8.33
Scheme should be voluntary rather than compulsory	9	7.50	4	3.33
Premium rates differential for irrigated and non-irrigated crops	2	1.67	3	2.50
Encourage farmers involvement by making scheme farmers centric; not company's centric	6	5.00	9	7.50
Individual assessment of losses rather than area approach	10	8.33	8	6.67
Loss estimation and compensation be made at bank level	20	16.67	13	10.83
Premium subsidy be made transparent	3	2.50	2	1.67
Survey team for loss assessment at village level	7	5.83	10	8.33
Cover note for insurance be issued	5	4.17	7	5.83
Claims be paid immediately after loss	24	20.00	30	25.00
Multistage holder -innovative farmers, bank, company government, social organizations etc.	4	3.33	11	9.17
More trainings/publicity campaigns be organized	6	5.00	1	0.83
Local people be involved in loss assessment	3	2.50	8	6.67
Structured bema grievance redressal committee be formed and web based digital monitoring system be at place	8	6.67	4	3.33
Total	120	100	120	100

Note *: Frequency figures are based on 1st preference of the respondent

Delay in receipt of yield data and/or funds from states leading to longer settlement periods for claims should be avoided. Implementing agency should strengthen its infrastructure and manpower, including network at district level to have a good reach to the farmers. Central government should take steps to create awareness and bear the publicity expenditure. The entire expenditure on additional CCEs required for lowering the insurance unit to village panchayat should be borne by Government of India. Banks should streamline their functioning and stop perceiving the administrative work involved as additional burden. The service charges payable to banks under the scheme are not commensurate with job involved, and needs to be enhanced. Considering the experience of other countries in using remote sensing applications in crop insurance, and the fairly developed technology used in the country. The claims are to be paid immediately after the losses. Introduce "double-trigger" insurance products, which will mean and early payout, based on the weather index, and the remaining payment based on yield estimation. Even if there is some delay in compiling and analyzing yield

data, the farmer will receive some amount of the claim during the crop season itself, based on weather data.

Private sector participation could lead to greater efficiency in the system through faster settlement of claims and less distortion in allocation of government subsidy. As envisaged in the operational guidelines companies could be allocated states/districts based on tender proceedings for a period up to 3 years. It will induce competitiveness in this sector and this could significantly lower the cost of providing insurance coverage to farmers. Timely farmers' feedback is an essential factor for the success of the scheme.

4. CONCLUSION

Finally it has been found that problems generally faced by the borrower and non-borrower farmers like delay in claim settlement, inadequate implementation, and inaccurate yield estimation and lack of awareness about the scheme and exclusion of malicious damages etc. So, there is a need of Surplus premium over and above claims

in normal years should be carried forward. Assessment of losses should be done as early as possible. These were few recommendation given by the farmers for best implementation and working of given scheme.

4.1 Policy Recommendations

- Scheme should be voluntary rather than compulsory for the loanee farmers. Making crop insurance voluntary to all farmers including loanee farmers, removal of high premium crops, giving flexibility to states to provide customized add on products- are the key changes that needs to be made in Pradhan Mantri FasalBima Yojana (PMFBY).
- The gaps in assessment of crop losses and diversity of crop losses at different levels, inadequate and delayed claim payment by insurance companies in absence of proper investigation procedure, massive profits by insurance companies, coverage only for loanee farmers and poor capacity to deliver i.e. poor efforts by state government and insurance companies to build awareness of farmers and traders etc. are the major constraints that needs to be addressed immediately.
- High actuarial premium rates- all India level (12.6%) were much higher, Gujarat (20.5%), Rajasthan (19.9%) and Maharashtra (18.9%) were observed during kharif 2016 needs to be brought down in future.
- The premium rates for irrigated crops should be different from that of non-irrigated crops so as to encourage participation of farmers with irrigated agriculture. This will lead to larger participation and contribute to greater viability of the scheme.
- Implementation procedure should be easy and quick. Without proper implementation and modern infrastructure, a crop insurance scheme is not sufficiently lucrative for either the farmers or private insurance companies. The scheme can fly very high if the operational guidelines are strictly followed by them.
- by DLTC which covers only cost of cultivation.
- Capped pricing of insurance premiums will discourage insurance companies from accepting high-risk crops and eventually the target of reaching higher penetration will not be achieved. An alternative could be capping the farmers' premium and giving the balance premium as a subsidy.
- It has been suggested further, a premium ceiling for coverage under the scheme (PMFBY), 25 per cent (to be revised every year) if irrigated area within a crop is more than fifty per cent. A premium ceiling at 30 per cent has been suggested if irrigated area within a crop is less than fifty per cent.
- Loss estimation process should be properly handled and be simplified. Actual premium rates in case of Annual Commercial and Horticulture crops should be capped at 3 per cent. Alternatively, the scheme should be made voluntary for these crops.
- The Pradhan Mantri FasalBima Yojana (PMFBY) must undergo a cost benefit audit and be updated from time to time to allow for income stabilization for farmers.
- The inclusion under the scheme are-risks and losses arising out of war and nuclear risks, malicious damage, theft, grazed and destroyed by domestic and wild animals. So, farmers should be highly protected from such type of losses.
- Surplus premium over and above claims in normal years should be carried forward. Insurance unit size should be small so that losses reflected are closer to the reality.
- During loss assessment, local people or panchayat members should be included for better result of losses. Encourage the farmers' involvement by making the scheme farmers centric; not company's centric.
- For the purpose of settlement of claims, feasibility of technology should be assessed e.g. use of Satellite imagery etc. or Panchayat shall be involved in identification of farmers, who have really lost their crops as well as in defining the claim amount.
- There is a need for pro-active role of public sector agencies participation in agricultural insurance. Public and private sector participation could lead to greater efficiency in the system through faster

Under PMFBY, there is no capping on premium rates and sum insured is to be fixed based on the Scale of Finance. With the removal of capping on premium rates, sum insured almost doubled in 2016-17. But even under the new scheme, sum insured is based on scale of finance as assessed

settlement of claims and less distortion in allocation of government subsidy. As envisaged in the operational guidelines companies could be allocated states/districts based on tender proceedings for a period up to 3 years. It will induce competitiveness in this sector and this could significantly lower the cost of providing insurance coverage to farmers. Timely farmers' feedback is an essential factor for the success of the scheme.

- There is problem of assessment of yield and losses which take time for e.g. During Crop Cutting Experiments (CCEs), satellite pictures etc. A suitable uniform mechanism be developing i.e. the process of assessing crop yield required for calculating damages/losses must be through elimination based on weather, other triggers and Crop Cutting Experiments (CCEs) in the affected areas at the village level itself rather than random plot CCEs.
- There should be a national campaign to enhance awareness of agriculture insurance amongst the farmers. Similar to the Jan-Dhan Yojana, campaign should be launched for agriculture insurance and agri-insurance companies should be engaged directly, instead of running the campaign through Banks. Media, NGOs, KVKS, private companies should be involved to execute promotional and reach out campaigns.
- A Toll Free Agri Insurance number (011-2338-1092) should be popularized (as success already seen in Kisan Call Centres). On failure of crop, a farmer may call up this number, and based on his complaint, National Remote Sensing Agency may take satellite pictures of the field and share the same with the district authorities, bank and the concerned company for verification. The claim disbursement may be done within 3 days with the use of this technology system. This system will also help in preventing bogus claims.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Table 3. Clusters of Haryana state

Cluster I (7 districts)	Cluster II (7 districts)	Cluster III (8 districts)
Panchkula	Ambala	Yamuna Nagar
Kurukshetra	Karnal	Panipat
Faridabad	Sonipat	Palwal
Kaithal	Hisar	Rohtak
Sirsa	Jind	Fatehabad
Bhiwani	Mahendergarh	Jhajjar
Rewari	Gurgaon	Mewat
		CharkiDadri

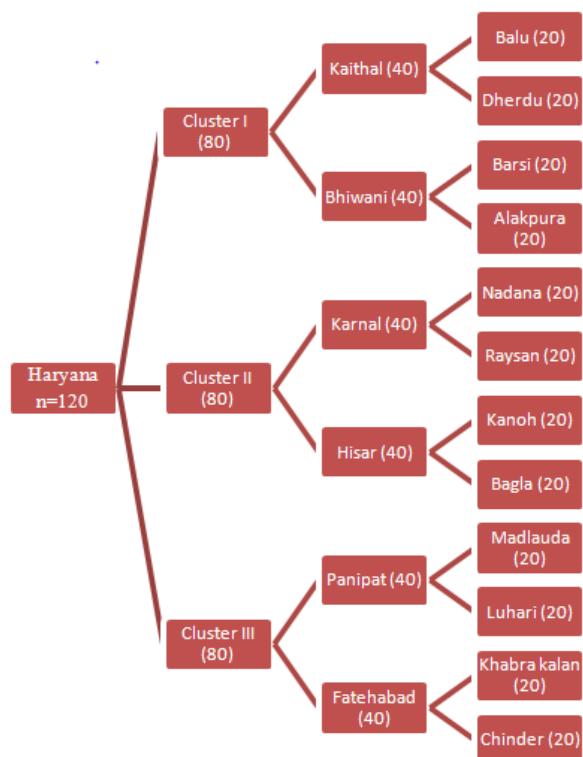


Fig. 1. Selection and distribution of villages

The sample size comprised 240 respondent-farmers i.e.

Each village, total farmers - 20
 Loanee insured - 10
 Non-loanee insured - 10

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