

Report III

**Perspectives of key stakeholders on the Crop Cutting Experiment
(CCE) Protocol developed by the Government of Karnataka**

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Objective

Understanding and analysis of stakeholder's perspectives on the 2017 crop-cutting experiment (CCE) protocol developed by the Government of Karnataka for the conduct of CCEs.

Background

The Pradhan Mantri Fasal Bima Yojana (PMFBY) is a multi-peril national level crop insurance scheme that was launched by the Government of India on 13th January 2016. PMFBY operates on an 'Area Approach basis' i.e., defined areas for each notified crop for widespread calamities with the assumption that all the insured farmers, within a Unit of Insurance, to be defined as notified area for a crop, face similar risk exposures, incur to a large extent, identical cost of production per hectare, earn comparable farm income per hectare, and experience similar extent of crop loss due to the occurrence of an insured peril¹. Till date, the PMFBY scheme has completed two years and two cycles (Kharif and Rabi) and now the scheme is in its third year. However, several issues have been raised across the nation regarding the effectiveness and efficiency of this scheme. One of the main issues has been the conduct of CCE's and the role of technology to assess actual crop yield and associated losses for different crops across different seasons.

Evolution in the usage of technologies in CCE's as part of PMFBY implementation in Karnataka.

The adoption and usage of innovative technologies such as Remote Sensing Technology (RST), Drones, GIS and Smart Phones is an important feature of PMFBY. It has been reasonably proven that satellite imagery can help in demarcating the cropped areas into clusters on the basis of crop health. This can help in 'smart sampling' of CCEs. While an Insurance Unit with heterogeneous crop health may need the standard sample of 4 CCEs per Village / Gram Panchayat, more homogenous Insurance Units may need a lesser sample size, say 2 CCEs. This can help in minimizing the total CCEs needed by about 30-40%. In some instances, the area insured is much more than the total sown area of the crop resulting in reduction of sum insured and consequently reduction in claims of farmers. RST/ satellite imagery can also be

¹ PMFBY Operational Guidelines, Government of India, Ministry of Agriculture and Farmer's Welfare, 2016

used to minimize these sort of area discrepancies. Currently research is also ongoing to establish a strong correlation between yield estimates predicted by RST/satellite image based computational models and actual yield estimates through CCEs. In the long term, State Govt's and Insurance companies may use these models to directly estimate crop yields at the Insurance Unit level, subject to both parties being satisfied about the prediction accuracy to service the claims.

Apart from the above technologies, there is also an increased applicability of Information and Communications Technology (ICT) tools within the PMFBY framework. ICT tools is used for farmer enrollment, database management of historical crop yield and integration with land records, loss assessment and claims settlement. Smart phones with mobile app is being aggressively promoted for capturing images, location of the CCEs and for online transmission of CCE data to a centralized server – all of which is leading to faster compilation of data and quick verification and settlement of claims.

Evolution in the usage of Technology in CCE's in Karnataka State:

Kharif 2016	Rabi 2016	Kharif 2017	Rabi 2017 & Beyond
<p>CCE Generation: Integrated with the Bhoomi digitized land records for randomizing the survey no's/plots.</p> <p>Procurement of requisite number of smart phones and developed a mobile application for conduct of CCE's.</p> <p>Training of Master</p>	<p>All the CCE's were conducted using only the mobile app. (100%)</p> <p>In association with Mahalanobis National Crop Forecast Center, CCE's were planned in Mysore district using satellite images on a</p>	<p>The mobile app has been modified to accurately capture the yield levels for both single and multi-picking crops.</p>	<p>An OTP feature has also been added to authenticate the yield data by the insurance company representative witnessing the CCE in the field. Features for raising relevant objections is also provided in the app.</p> <p>The usage of Satellite Imagery / Remote Sensing data is planned to be piloted in Karnataka in the following phased manner:</p> <p>1) Step 1: Satellite data to be used to finalize only those survey numbers/plots that</p>

<p>trainers, Primary workers was completed. Field functionaries were trained using a test App.</p> <p>Status of CCE's: Totally 84752 CCE's were planned. Of this approx. 60% of the CCE's were conducted manually and the remaining 40% using the mobile app.</p>	<p>pilot basis – Selection of areas in accordance with crop density (High, medium, low)</p>		<p>have actually grown that particular crop within a specific Insurance Unit. From within this pool, survey numbers/plots are randomly assigned for conducting CCE's. This would help in randomization among only those survey numbers which have actually grown the crop during that season thus optimizing the process.</p> <p>2) Step 2: After step 1, to intelligently select the 4 survey numbers for CCE's within a GP based on actual crop condition [high/medium/low - with appropriate weightage assigned] to ensure that CCE's accurately represent the crop yield within that specific IU. Helps in reducing the basis risk.</p> <p>3) Step 3: Use Direct Yield Estimation models (For a few major crops such as Paddy, Cotton, Tur in Kharif and Jowar in Rabi in a few select districts) after</p>
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			thorough validation with manual CCE data (Target is 95% accuracy) – Has the potential for reducing errors and overall time taken for conducting CCE's (impacts both CCE quality and timeliness)
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One of the impediments towards faster insurance payout to the farmers was that the CCE results were contested by insurance companies at the time of claims settlement. To address this issue, the Department of Agriculture, developed the CCE protocol during Kharif 2017. The CCE protocol was developed in consultation with the other two key stakeholders – Directorate of Economics and Statistics (DES) and Insurance companies.

CCE Protocol & Provisions for Objections²

The following are the various steps to be followed as part of the CCE protocol

STEP 1: Web Application / Viewing of completed Form 1 (F1)

The Insurance Company (IC) can view all the completed Form 1's uploaded by the Primary Workers and have the option to object on the following two grounds:

1. The survey nos./sub survey nos. are not selected as per the circular of DES
2. Blank Fields in Form 1.

IC has 3 days' time from the date of uploading of Form 1 for raising any objections. CCE's for which objections have been raised will be referred to Deputy Commissioner (DC) and the DC can sustain or overrule the objection. In case the DC sustains the objection a fresh collection of data for Form 1 will need to be conducted by the Primary Worker (PW).

STEP 2: Status of CCE based on the probable harvest date

² CCE Protocol & Provisions for Objections, Department of Agriculture, Karnataka, July 2017

The IC using this option can know the probable date of harvest for each of the planned CCE's and accordingly decide whether to participate in the CCE or not. If the IC decides to participate in the CCE, they have to assign an Insurance Agent (IA). The software will not allow the number of days between the Form 1 submission date and Form 2 date to be less than 7 days. Since the harvest is done by the farmer there is a possibility of change in the harvest date. Under such circumstances the primary worker can change the date of harvest through the mobile app and the same shall be available to the IC in the web portal. The change is allowed only up to 48 hours from the planned probable harvest date and after that it will not be allowed by the system.

STEP 3: Usage of Mobile App while co-witnessing the CCE's:

After completion of CCE, the PW will enter the yield data and saves the details in his mobile app. If any supervisor has been assigned to that CCE then PW will also record his comments. If IC has assigned any agent to that CCE then app will ask whether the IA is present or absent. If the PW say he is present then the app will ask whether IA has any objection to the CCE conducted. If the IA indicates 'No' then it will ask for the OTP and then save the date. If the IA indicates 'Yes' i.e., then he has option to choose from the following list of objections:

1. Plot is not selected as per procedure i.e., start with south west corner.
2. Measurement of the plots i.e., Length & Breadth is not done properly.
3. Procedures are not followed properly for plot of irregular shape.
4. The proper crop ratios are not followed while conducting the experiment in the intercrop plot.
5. Plot size measured and marked wrongly.
6. Measuring tapes are not used for measurement of plot.
7. Weighing scale not used for measurement.
8. Proper weights not used for weighing.
9. The crop in the selected CCE plot has been harvested partially / fully.
10. Crop harvested (CCE) before the maturity/ripe.
11. The nature of produce weighed in a CCE after harvest is not as per guidelines.
12. Difference between weighed yield data and recorded data.
13. The allocated primary worker not present during CCE.

14. The yield was forcibly recorded.

Then the IA will put his OTP and saves the data. The status of the CCEs i.e., objected or not objected and if objected what is the reason for objection will be sent to the server through SMS. This data once uploaded will be available in the web portal for all the users.

STEP 4: Mobile app for IA for recording the CCE details

A separate mobile app has also been provided to the IA in case the IA needs to provide supporting data substantiating the case for which they have raised an objection. The IC will ask the IA to take the required photo and videos through mobile app only. The mobile app will allow to capture four photos and four videos by the IA. After capturing the photos and videos, if the IA has any objection then he has the following options:

1. The objection has been recorded in the PW mobile and authenticated by OTP. Then no option of raising objection in the mobile app will be allowed.
2. Not allowed to enter the OTP and objections by the PW.
 - a. If this option is selected then all the objection of PW mobile app will be available for IA for raising objection.
 - b. He will select the objection and save.

The mobile app shall be used by the IA who has been authorized by IC for witnessing the CCE's. It shall be the responsibility of the IA to capture relevant events or incidents on photos or video which can prove before DC. If photo/video doesn't show the proof the objections may be overruled by DC's.

STEP 5: Viewing of completed CCE Form 2

All the CCE's completed till date can be viewed by the IC. Against each of the CCE's IC can also view whether any objection has been raised by other parties – since option has been provided for both District Statistical Officers and DES to raise any objections.

STEP 6: Raising of objections when the CCE's are not co-witnessed by the IA.

The IC can view all the completed Form 2 data and have the option object on the following grounds:

1. Video/Photos shows that instead of measuring tape, nonstandard measuring device is used.
2. Video/Photos shows that proper weights are not used while measuring the weight.
3. The plot size measured is not in conformity with the plot as per DES guidelines.
4. The nature of produce weighed in a CCE after harvest is not as per guidelines.
5. Abnormal higher yield recorded.

IC will have 3 days' time from the date of upload of Form 2 details for raising any of the objections. This option will be available only when the IC has not assigned any IA to witness the CCE. If assigned, then objection has to be raised through the mobile app only and if IA fails to witness the CCE after assigning then IC loses the chance of raising any objection. However, before the date of CCE the IC can unassign the already assigned CCE in case the IA is not in a position to witness the CCE.

STEP 7: Time and mechanism for other stakeholders to object to CCE data

The DSO's can object to a CCE within 7 days from the day on which the experiment was carried out. The DSO will use the web interface for raising their objections with reasons. If DSOs raise no objections, it would be presumed that they are satisfied with the crop cutting experiment. The Director of DES is also allowed to raise objections within 15 days from the date of carrying out any CCE.

STEP 8: Role of Deputy Commissioner in resolving CCE objections:

The web interface of the CCE application would facilitate the DCs to review all the objections raised and the DC can decide whether to cancel the CCE and ask for another alternate CCE to be carried out. It was also decided that a SMS would be sent to the DC each time an objection

is raised in respect to a CCE. The DC would decide on the objections as early as possible and ensure that the hearing of objections should be fast enough. Once DC decides on objections through hearing, no other authority like DSO, Director, DES will be allowed to raise any further objections on that CCE. Needless to say, the DSO & DES can represent themselves in front of DC at the time of hearing objections even if they have not raised the objections. The DC will have an upper limit of 21 days from the date of original CCE to hear any objections or earlier so as to ensure that alternate survey numbers are available for conducting CCE's in case the DC decides to reject the experiment.

Perspective on CCE Protocol from Insurance Companies

The plan of CCE experiments is already shared with the IC much before the commencement of the CCE for a specific GP. Most of the PW's adhere to the random survey numbers that are generated by the mobile app and ascertain if - 1) The notified crop is actually sown and 2) The exact crop sown area and 3) Probable Harvest date (All the details required for Form 1). However, sometimes in large GP's having several survey numbers, when a very faraway plot gets randomly selected by the mobile app, a few PW's choose to enter "notified crop is not sown in that survey number" and then move to the next randomly generated survey number till such time the app gives them a survey number which is in close proximity. The 3-day time limit is more than sufficient to raise any objections with regard to Form 1 information. The dashboard gets regularly updated on the *Samarakshane* portal for all insurance companies to view and monitor. It is a best practice to monitor this data on a daily basis (as they are being uploaded) and approve/reject accordingly. The IC we interviewed was comfortable being complaint with the 3-day rule for filing Form 1 objections and did not see any major challenges associated with it. According to the IC representative we interviewed, out of the total Form-1 uploaded, on an average only 1% of these were objected by him and the rest are approved. The main reasons for Form-1 objections are – 1) Different crop is sown 2) Pictures of the plot are not very clear and 3) Inconsistency in Survey numbers.

According to him, almost 30 to 40% of the probable harvest dates eventually get changed by the farmer. Of course, most of them are due to legitimate reasons such as – 1) Heavy torrential rain 2) Need to dry the crops at a different date and 3) potential insect attack 4) Price of the crops

The frequent changes made to the harvest date isn't a big challenge to the IC. They are able to manage this with their manpower on the ground. They have outsourced the job of co-witnessing the CCE's to a third party – *Krishicare*. Infact, they even recommended and modified the “48 hour clause of locking the change in harvest date”. If the IC is okay, then they can provide an OTP to the PW who can then unlock the app and change the harvest date to the one preferred by the farmer. From the past 2 seasons, the number of plots chosen in Form 1 remain the same as the ones in which the CCE's are conducted (Form 2). Hence, Random plots are not chosen for CCE's from a larger pool of Form-1 plots. But randomness helps to reduce moral hazard, provides a back up if the farmer decides to change the crop after Form1 data has been registered and provides PW's with replacement options to conduct CCE's as well. His recommendation was that a minimum of “3” plots should be entered in Form 1 for every 1 plot chosen for CCE in Form 2. As mentioned before, the IC has engaged a third party – *Krishicare* to co-witness the CCE's on behalf of the insurance companies. They have about 2 to 3 people deputed per taluk at the time of CCE's and around 20 to 25 people assigned for every district. Almost 50 to 70% of the CCE's are co-witnessed by the IC. The number of objections raised while co-witnessing the CCE's are next to nothing. According to him, there was only one single case of objection raised last season when the CCE was co-witnessed. The main reason behind this is due to the regular training provided to both the PW's and the agents in terms of how CCE's are conducted. In fact, there have been several occasions where the agents have also guided and helped the PW's on how to conduct the CCE's correctly. So, the whole process of CCE's has become a collaborative effort between the PW and the agent. “Premature harvesting of crop” was that lone case in which objection was raised. The various options provided for raising CCE objections in the mobile app are well thought off. No additional options are required. Option 9 and 10 in the CCE protocol are the most frequently used options for raising objections while co-witnessing the CCE. He also opined that Insurance agents have hardly ever used the app provided to them to record data that is required to substantiate their objection. In fact, he had even forgotten that such an app existed, since there has been no need for that at least as far the IC he worked for was concerned.

The number of objections raised while not-witnessing CCE's is obviously higher when compared with while witnessing CCE's. According to him, these are also around 1 to 2% of the total CCE's that were not co-witnessed. The typical reasons for raising these are – 1) When abnormally higher yield is recorded. However, as an IC best practice, he tends to raise a few more

objections intentionally just to ensure that the agents and the PW's are alert and know that the IC is overseeing all the data. It serves as a good check and balance. It also ensures that the PW and agent do not collude together to state wrong facts. There have been a few cases where agents have remotely provided the OTP to the PW over the phone and the PW has independently carried out the CCE, although the agent has entered it as having co-witnessed the CCE. Again, the 3-day limit is not a challenge and can be adhered to. Except the new IC's, most experienced IC's are comfortable with the CCE protocol and follow it in a similar way.

DSO's and DES also raise objections to the CCE's but very rarely. They are more focused on the prevented sowing situation. Initially the DC was more biased towards the PW. They were very authoritarian in nature. However, with the time this has changed. The DC's have realized that if they unnecessarily probe the CCE data then it results in further delays that only hurts the farmer more than the IC. Now, they work towards quickly resolving the issues amicably. In fact, on several occasions they have taken stringent action against non-performing PW's as well.

The app is very robust and works well. The app functionalities with regard to the multi-picking option has also been resolved. Training to agents on how to oversee CCE's and usage of the app is usually on the job. Primary workers are also well trained. Most of them have been around for the last 3 cycles and since the introduction of the scheme. Continuous training on the mobile app for new PW's is important. Most of the hiccups emerge when PW's are not well trained on how to use the app. This results in wrong data entry and hence raising of objections by IC's which in turn leads to delay in the settlement of claims.

The one improvement area is with regard to ensuring that the crop for which insurance is taken is the same as the crop that has been sown by the farmer. According to IC's, there have been cases where the insured area is 10 times more than the sown area...which leads to 10% Area Discrepancy Factor and hence resulting in unnecessarily lesser claims payout even for the genuine farmers who have actually sown that crop. One way to ensure this check, would be to link the "seeds procurement data" at the RSK to the survey number and check it with the crop that has been insured for the same survey number. Only if the seeds tally with the crop sown for the same survey number then the claims payout should happen.

Perspective on CCE Protocol from Department of Agriculture

According to the officials from Department of Agriculture, it was the raising of several objections to CCE data by insurance companies at the time of claims settlement that led to the development of the CCE protocol. According to them, Karnataka is the first state to have formulated such a detailed CCE protocol. This CCE protocol can definitely serve as a role model for other states. The CCE protocol was developed based on inputs received from both DES and insurance companies. It was an outcome of a collaborative effort by all the key stakeholders. The CCE protocol was primarily needed for three reasons – 1) Objections to the recorded crop yield needs to be made at the time of CCE itself 2) There has to be a minimum time gap that needs to be mandated between Form 1 and Form 2 data collection and 3) create awareness on how to use the CCE mobile app. Also, prior to the protocol, very few CCE's were being witnessed by the IC representatives and hence this had led to a lot of mistrust and lack of transparency with regard to the CCE data. It was felt that a lot of the objections were raised since a formal agreement was lacking between the key stakeholders. As mentioned earlier, the CCE protocol also incorporated feedback from key stakeholders. One such recommendation made by IC's was the usage of an OTP authentication for signing off the CCE data by the IC representatives. The CCE protocol was rolled out from the Kharif 2017 season and since then the number of objections raised by IC's have significantly come down. They attributed the rolling out of the CCE protocol as the main reason behind the reduction in the number of objections by IC's. The officials that we spoke to instead highlighted other related issues such as most of the objections being raised by IC's is focused on the Threshold / Historical Yield provided by the Department at the time of bidding and its inconsistency when compared with the archival data maintained by DES. Another issue raised by the Department officials is regarding the lack of manpower especially primary workers to conduct CCE's, especially for multi-picking crops. Despite this manpower crunch, about 90% of the CCE's are conducted as per the experiment plan shared by DES. The DC's are playing a very critical role by immediately resolving any pending disputes regarding CCE data. With 100% CCE's being conducted using the mobile app, the quality and reliability of crop yield data has significantly improved. As per the department officials, any issue/objection regarding recording of CCE data using the

mobile app is mostly coming from inexperienced IC's are yet to fully familiarize themselves with the CCE protocol. The Department officials we spoke to strongly recommended that "smart sampling" of CCE plots using remote sensing / satellite data should be employed at the earliest as it will help reduce the burden of PW's who are carrying on the CCE's on the field. They also acknowledged that "farm-level" crop sown data is still a challenge resulting in very high area discrepancy factor (ADF) being used during the computation of the claim amount. They suggested that the Bhoomi data should also include the farm level data based on crop survey's to be undertaken during every season.

Annexure

Short semi-structured interviews were conducted with the following actors to get specific information about the CCE Protocol.

Department of Agriculture

1. What were the issues in CCEs that led to the formulation of the CCE protocol in Kharif 2017?
2. Have other states formulated a CCE protocol as well or is Karnataka the only state to do so?
3. After the implementation of the CCE protocol, have the objections from IC's with regard to the CCE's reduced to a certain extent?
4. Do you feel that if the issues have reduced, to what extent can you attribute this to the CCE protocol? What are the other possible reasons?
5. Have the manpower requirements changed considerably due to the formulation of the CCE protocol? Are these changes for the better or for worse?
6. Is training being provided to the primary workers regarding the CCE protocol?
7. Were any other stakeholders consulted for the formulation of the CCE protocol?
8. Is the data about CCE's (Form 1 and 2) being uploaded properly on the portal and within the given timelines?
9. What has been your experience with regard to the role of the DC in resolving issues with regard to the CCE's? Are there any improvements that you would like to suggest?
10. Do DSO's and Director, DES also raise objections to the CCE's? Your experience with regard to that?
11. How does the new method of sampling CCE plots (as per CCE protocol) vary from the older method of sampling?
12. Is the new method of sampling being followed? If so what has been the impact of such method?
13. Has the quality of data improved after introducing the CCE protocol?
14. Are any other institutional changes required for the implementation of the CCE protocol?

15. Has the implementation of CCE protocol led to the faster processing of claims? If yes, why?
16. It has been more than a year since the CCE protocol was introduced. What are the challenges in following the protocol from the department perspective?
17. How can the CCE protocol be further improved or streamlined?

Insurance companies

1. What has been your experience with regard to the survey numbers randomly being selected by the mobile app for selecting the plots?
2. What is your opinion about the three-day limit imposed on Insurance companies for raising objections (regarding Form 1 details)? Both the benefits as well as the ills
3. Are insurance companies following the three-day rule for filing the objections? Any challenges faced?
4. What are the challenges encountered while filing objections to form 1 using the Samarakshane portal? Approximately, what is the percentage of objections raised with regard to Form 1 data?
5. Is it good that insurance companies can now view CCE information on the Samrakshane portal?
6. Does the probable harvest date entered in Form 1 change frequently? How does it impact the IC's plans for co-witnessing the CCE's?
7. What has been your experience with regard to the survey numbers being randomly selected by the mobile app for conducting the CCE's?
8. What are the challenges you face in assigning agents / supervisors to co-witness the CCE's? Approximately, what is the percentage of CCE's that is co-witnessed?
9. Are your agents raising objections to CCE's using the mobile app? If so what is the most frequently raised objection? Has this changed over time?
10. Are the various "options" provided by the CCE mobile app for objecting to the CCE enough? What additional options can be provided?

11. What are the challenges faced while raising the objections using the CCE app?
Approximately, what is the percentage of CCE's that have been objected?
12. What has been your experience with regard to the app provided to agents to record data (videos and photos) to substantiate the objection? Any issues faced while using this app?
13. Are the agents substantiating their CCE objections by recording additional data?
What is the percentage of this?
14. What is the most frequent mode for raising objections? i.e. while witnessing CCE's or not witnessing CCE's
15. Are the various "options" provided by the CCE mobile app for objecting to the CCE enough? What additional options can be provided?
16. What is your opinion about the three-day limit imposed on Insurance companies for raising objections (regarding Form 2 details)? Both the benefits as well as the ills
17. Are insurance companies following the three-day rule for filing the objections?
Any challenges faced?
18. Do you see a wide variation among insurance companies in the implementation of the CCE protocol?
19. Do DSO's and Director, DES also raise objections to the CCE's? Your experience with regard to that?
20. What has been your experience with regard to the role of the DC in resolving issues with regard to the CCE's? Are there any improvements that you would like to suggest?
21. Have there been complaints raised with regard to the software / mobile app (Ex. generating OTP, recording data etc) . Do you suggest any changes that can be followed for the smoother function of the app?
22. Are you aware of any form of training that is provided to insurance Company agents for raising CCE objections?
23. Is there any variation among companies in their compliance of the CCE protocol?