**Stepwise Conditional Complete Instructions: For Crop Insurance Simulation App**

*International Rice Research Institute (IRRI)*

**Name of app: Crop Insurance Game**

*Audio notification: Welcome to crop insurance game. This game will provide details of how an insurance works in real farming context according to the different farm decisions and weather conditions.*

1. **After Login (Name and contact number will be collected here)**
2. **Options to select GP, Block, District Names (drop down Menu) and enter villages name**
3. **A Notification will Appear (*Notifications can appear on screen and/or audio instructions can be given*)**

*Notification 1*: You will have Rs.20000 in your wallet (b/h).

*Audio*: You will get an endowment of Rs. 20,000 at the beginning of the 1st season in this game. In the following seasons, your wallet depends on the revenue earned from the previous season, that is, left out balance in the wallet plus the revenue earned in the last season. In case if you run out of the budget in any season, you can avail loan from bank with an interest rate of 10%, but needs to be paid back.

*Audio Notification 2*: Since the resources/wallet budget is limited, it needs to be allocated for different purposes. In this game, you can choose to allocate the endowment money among health and school expenditures (fixed 2000 Rs. per family) and purchasing crop insurance (premium amount of ------Rs.). Remaining budget will be used for crop management such as field preparations, seeds, fertilizers, and other inputs, etc. or set aside some amount as savings. Consider you are cultivating rice in 1 acre of land and please take the decisions accordingly.

*Note*: *premium amount varies with district.*

1. **Resource allocation (School and health, and crop investment)**

* *Two entries/options need to be provided* : 1) schooling and health - Yes/No; 2) Crop Insurance – Yes/No.
* Need to click on OK button.

1. **Dash board Activities**

*Season begins*

* Choose the variety: two options
  + 1) Drought or Flood Tolerant Rice Variety (e.g. Swarna-sub1, Sahbhagi dhan)
  + 2) Normal variety
* In the background Field preparation and related activities should run through
* Based on probability of prevented sowing (PS), outcome of the drought should occur immediately after the field preparation in accordance with district-level data of PS risk. Two options of PS risk:
  + 1. If prevented sowing occurs (drought), a pop up should appear telling: *'Unfortunately, you faced drought and unable to cultivate in this season’*. Then **GO TO** **BASIS RISK STEP**.
  + No risk faced, pop up appear, *'Fortunately, you received a good weather for your crop establishment.’* GO TO NEXT STEP

1. **Crop establishment**

* An option to choose crop establishment method: transplanting or broadcasting
* Navigate through rice production stages (germination, flowering, panicle initiation, mature stages: changes in 30 days interval)
* Go through management practices like weeding, pest and disease management, fertilizer application, etc. (refer RCM recommendation page)
* Need to click on OK button for fertilizer application, spraying chemicals and weeding (refer RCM recommendation page for timing).
* RISK: Based on probability of drought and flood in MS/ES, outcome of the mid and end season risks (flood or drought) should appear in accordance with the district level data. Randomly assign the flood and drought to any of the 130 days crop life cycle period. Three options
  + (i) If farmer faced drought (low intensity), a pop up should appear telling that ‘*'Unfortunately, you faced drought, and lost half of your rice yield in this season’.* Then **GO TO** **BASIS RISK STEP**.
  + (ii) If farmer faced drought (high intensity), a pop up should appear telling that ‘*'Unfortunately, you faced severe drought, and lost your rice yield completely in this season’.* Then **GO TO** **BASIS RISK STEP**.
  + (iii) If farmer faced flood (low intensity), a pop up should appear telling that ‘*'Unfortunately, you faced flood, and lost half of your rice yield in this season’.* Then **GO TO** **BASIS RISK STEP**.
  + (iv) If farmer faced flood (high intensity), a pop up should appear telling that ‘*'Unfortunately, you faced severe flood, and lost your rice yield completely in this season’.* Then **GO TO** **BASIS RISK STEP**.
  + (v) No drought/flood risk - farmer did not face any risk, GO TO NEXT STEP.

*NOTE 1: Low intensity drought (10 days drought, show the calendar days with transition of days). First 2-3 days field completely dry, 4th and 5th day field show small cracks. 6th to 8th crack widens, 8th to 10th day crops started showing burnt tips, rolled leaves. Rain comes on 11th days. 50% rice yield loss. Remaining plants continue to grow, but low vigor. Go to NEXT STEP.*

*NOTE 2: High intensity drought (14 days): First 2-3 days field completely dry, 4th and 5th day field show small cracks. 6th to 8th crack widens, 8th to 10th day crops started showing burnt tips, rolled leaves.11th to 14th day, all fields burnt appear. Complete loss of crop. If complete loss -* **GO TO** **BASIS RISK STEP**

*NOTE 3: Low intensity flood (7 days flood, show the calendar days with transition of days). First day water came to field, increase level in 2nd and 3rd day. 4th and 5th day flood water remains stagnant. 6th and 7th decreasing. Flood over. 50% loss. Remaining plants continue to grow. GO TO NEXT STEP.*

*NOTE 4: High intensity flood (12 days): First 3 or 4 days flood increases. 4th to 8th day flood remains stagnant. 9th to 12th slowly decreasing. Flood over. Complete loss of crop. If complete loss -* **GO TO** **BASIS RISK STEP**

1. **Post-Harvest**

* Farmer has two options of harvesting types:
  + 1) using Machine, and
  + 2) Manually
* Navigate through the rice harvesting according to choice (if mechanical use combined harvester; if manual use laborers harvesting using sickle. Manual harvesting keep the bundle of rice harvest in the field itself).

1. If manual harvesting, two options:
   * Rainfall risk: based on probability of post harvest loss (PHL), outcomes of post-harvest risks should appear as per the district level data. A pop up should appear telling that, ‘*'Unfortunately, you faced rain after your harvest which was kept on field for drying and faced 30% loss’.*  Then **GO TO** **BASIS RISK STEP**.
   * No risk, THEN GO TO NEXT STEP
2. Mechanical harvesting: No risk, THEN GO TO NEXT STEP.
3. **Basis Risk**

* AUDIO NOTIFICATION should appear explaining what is basis risk:
  + If a GP is notified as “loss” and a farmer in that GP also undergoes “loss”, then it is a “No Basis Risk” case. The farmer will receive the claim amount and revenue is calculated accordingly.
  + If a GP is notified as “No loss” but a farmer in that GP undergoes “loss”, then it is “Unfavorable Basis Risk” case. The farmer does not receive the claim amount and revenue is calculated accordingly.
  + If a GP is notified as “loss” but a farmer in that GP have undergoes “No loss”, it is “Favorable Basis Risk” case. Then farmer receives the claim amount and revenue is calculated accordingly.
* Run Basis risk according to the probability (30%)

1. **Claim Settlement**

* Depending on occurrence/not occurrence of risk types and basis risk, payoff should appear here (refer Payoff matrix).

1. **If crop insurance is not taken**

* Then run through all these process except Basis Risk Section.
* If loss occurs and if insurance is not taken, then payoffs should be in negative (as provided in the payoff matrix).
* Endowment Balance: Depending on the payoff, final endowment amount should be shown for the next season.
* If endowment becomes zero, then there will be an option to avail credit (Yes/No).
* If yes, an option to enter amount of credit. Pop up/audio instructions about interest rate and pay off deducting the credit and interest rate after that season.
* Next seasons. Repeat the process

1. **SEASON 2 TO 10**

WALLET: Calculate the wallet amount based on the use of money for different purposes and then revenue generated in the last season. If the total endowment is less than Rs. 16000, a pop up offering credit appears.

* + ‘*'Unfortunately, your wallet is low to run your expenditures in this season. We offer you a loan to make the wallet Rs. 20000, but you will have to pay back with an interest rate of 10%. Do you want LOAN?*  Then option to choose YES/NO.
  + IF YES, show the loan amount (20000 – (the balance from last season)).
  + IF NO, show the budget available in the wallet.

**REPEAT STEPS 4 TO 11**.

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**At the end of the SEASON 10, Game will be over.**

A pop up appears with an audio: ‘*You have successfully completed 10 seasons. CONGRATULATIONS. We end the game now. Below are your 10 season revenues with your decision on insurance’.*

(pop up in tabular form as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Season | Weather Risk  (Yes/No) | Insurance  (Yes/No) | Revenue | Additional revenue if insurance |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |
| 7 |  |  |  |  |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |