

**Climate Smart
Agriculture (CSA)
Technology**

Farmer's Guide



Alternate Wetting Drying



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About the project

<https://cop.sac.org.bd/about-c-suces/>

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Cover Image Source

Title: AWD for Rice field
Source/credit: Flickr/International Rice Research Institute (IRRI)

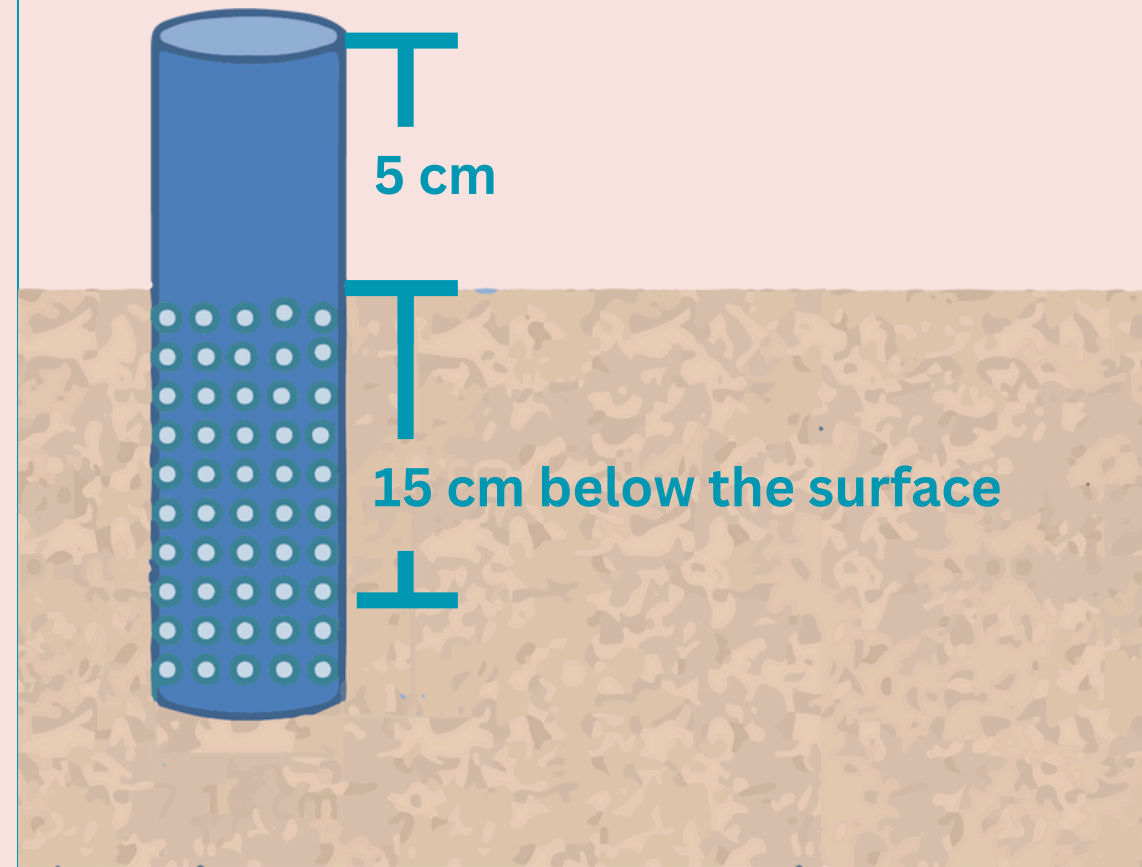
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What?

Alternate Wetting and Drying (AWD) is a water-saving Climate Smart Agriculture (CSA) technology designed specifically for rice cultivation. Unlike traditional methods that maintain continuous flooding in rice fields, AWD introduces a strategic alternation between flooded and non-flooded conditions. By allowing the field to periodically dry out before re-irrigation, AWD optimizes water usage and contributes to sustainable farming practices.

Why?

- AWD is easy to use with the existing rice-cultivation system. It helps reduce water usage and the strain on shrinking water resources while maintaining the optimum soil moisture. AWD technology promotes environmental sustainability by cutting down on the gases that contribute to climate change.
- **Saves Water, Time and Money**



Where can you apply?

AWD is suited for regions with reliable access to water for reflooding after dry periods.

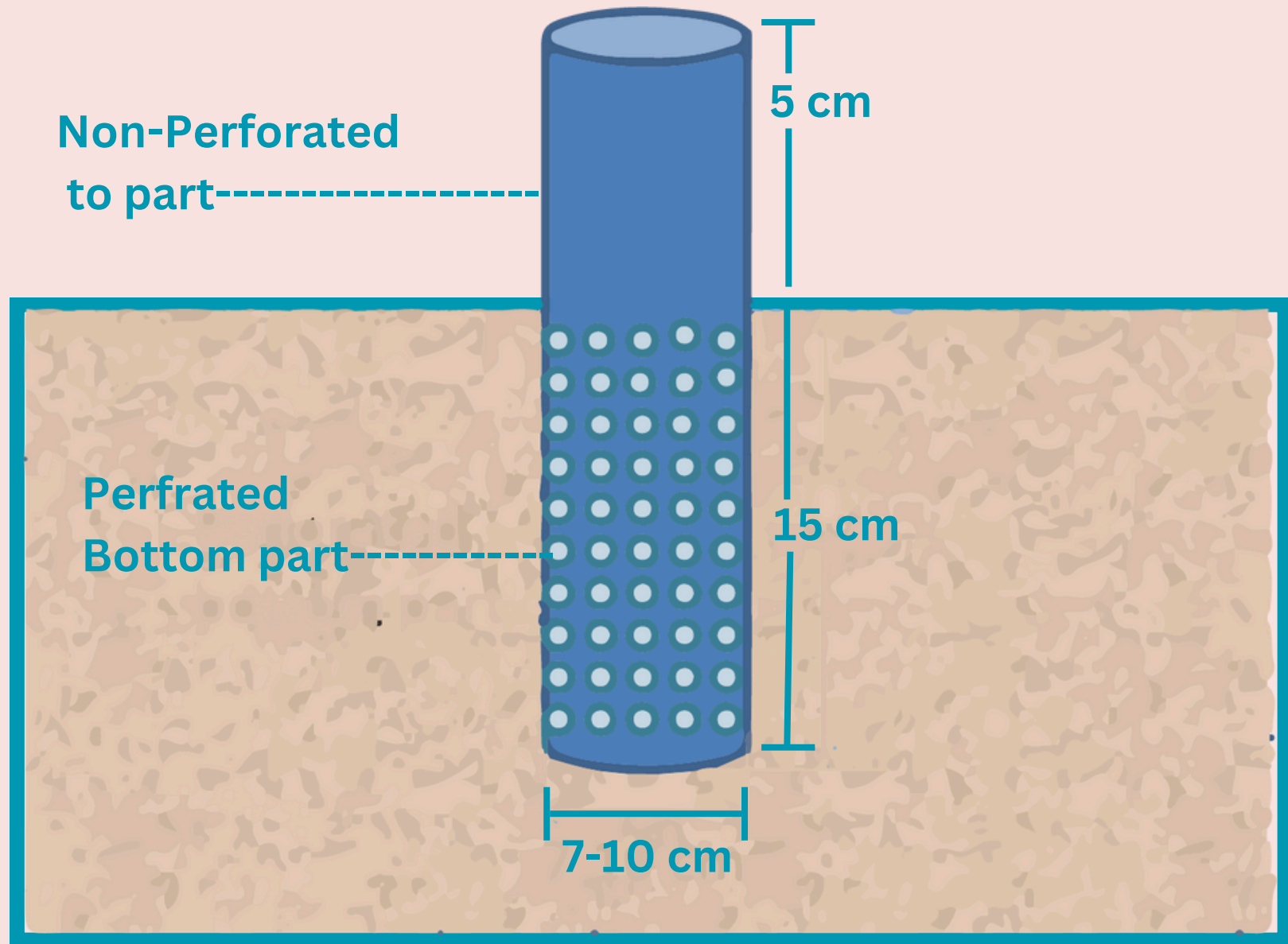
- Careful consideration of local water availability and climatic conditions is crucial when determining the suitability of AWD adoption.
- It is not feasible in areas prone to heavy rainfall, where excess water cannot be drained.
- Other management practices including fertilizer application will remain similar to traditional rice cultivation practices.
- One can apply AWD in “Paddy cultivation”
 - Rainfed
 - Irrigated (Flood irrigation / keep standing water)

Note: AWD should not be applied in **saline paddy fields**.



Title: AWD for Rice field

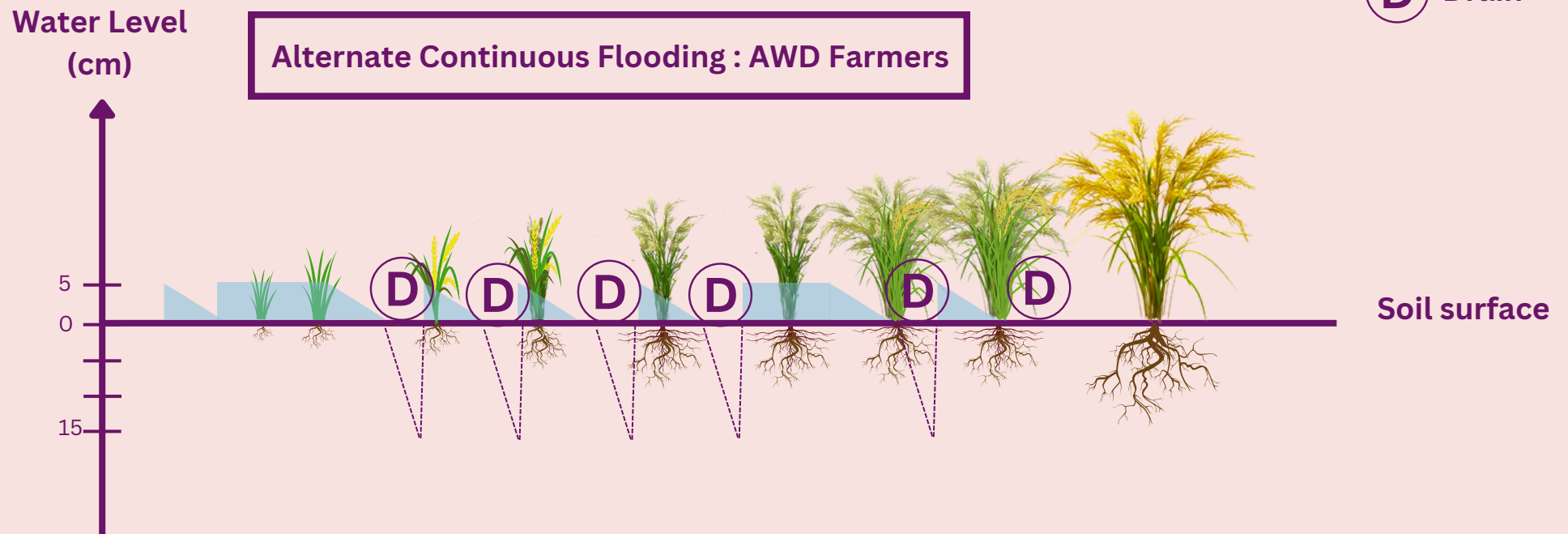
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AWD Water tube and setup



Ⓓ Drain



Example of water management of Non-AWD farmers and AWD farmers



Main Components

- **Field Water Tubes:** These are the primary tools used to monitor the water level in the field. They are usually made of Polyvinyl chloride (PVC)or bamboo and have holes drilled along their sides. They are installed vertically in the soil, with a portion protruding above the surface for easy observation. They help farmers determine when it's time to irrigate or allow the field to dry out.
- **Perforations:** Field water tubes need to have holes drilled along their sides to allow water to flow in and out. These perforations are essential for accurately measuring the water level inside the tube and determining the need for irrigation.
- **Installation Tools:** Basic tools such as hammers and drills are required to install the field water tubes in the soil. Careful installation ensures that the tubes are securely placed and positioned correctly for accurate water level monitoring.
- **Proper Placement:** Field water tubes should be strategically placed across the field to provide representative measurements of the water level. They are usually located in accessible areas close to field boundaries or bunds, making it convenient for farmers to monitor the water depth.
- **Monitoring and Maintenance:** Farmers need to check the water level inside the tubes regularly and irrigate or allow drying based on the observed water depth. Maintenance tasks such as clearing any blockages in the perforations are necessary to ensure accurate measurements.

Title: AWD Tube preparation

Source/credit: Flickr/International Rice Research Institute (IRRI)

Suitable Crop

While AWD technique is primarily developed for rice cultivation, it can also be adapted for some other crops that tolerate intermittent flooding and drying conditions.

Suitable Slopes

It is ideal in areas with flat to gentle slopes that prevent water runoff and erosion. Steep slopes can lead to soil erosion, where water washes away the topsoil, or waterlogging, where water accumulates at the bottom of the slope.

Suitable Soil

The suitability of soil for AWD technology depends on its capacity to retain water, its drainage characteristics, and its ability to support plant growth under fluctuating moisture conditions. AWD is suitable for loamy, silty, clay loam, and well-drained.

Suitable Irrigation Type

- **Reliable and Consistent Supply:** The irrigation source should provide a reliable and consistent water supply throughout the cropping season. Fluctuations in water availability, especially during the drying cycles, can cause significant stress to the crop and affect yield.
- **Quality and Purity:** The water should be free from contaminants that could harm crop growth or soil health. Contaminated water with pollutants or salinity may negatively impact AWD effectiveness.
- **Compatibility with Soil and Crop Needs:** The amount of irrigation should be compatible with the soil type and crop requirements in the area. Waterlogging or excessive moisture can lead to soil degradation and negatively impact crop health.
- **Management and Distribution:** The irrigation source should be easily accessible to the farmer. Adequate infrastructure for water delivery, such as canals or irrigation systems are important for successful AWD implementation. Finally, effective management and regulation of irrigation water resources are important for ensuring equitable distribution and minimizing water wastage.



Remember !

- Pay attention to control weeds
 - During land preparation
 - Before starting AWD (2 weeks from the establishment)
- Apply fertilizer when soil is moist
- Adaptive management is essential for maximizing the benefits of AWD while minimizing potential challenges.
- Farmers must diligently monitor the water depth using the field water tubes and initiate irrigation when the water level reaches the specified threshold.
- Weed control, field leveling, and continuous monitoring are integral to the successful implementation of AWD practices.

Title: AWD Tube

Source/credit: Flickr/International Rice Research Institute (IRRI)

Activity Time

Activity 01 : Picture your farm

- Try drawing your farm (Need not be perfect) using simple lines, Curves or shapes.
- Try giving a name to your farm as you recognise it based on its size, location or may be based on directions it is facing.
- Write or draw crop names as plan.
- Try pasting a picture/photo if you are not willing to draw at all.

Activity 03 : Evaluate CSA methods

- Try evaluating adopted CSA methods and keep a track over the year.
- Try keeping as per your real experience.
- Ask Facilitator to guide if you are not able to see significant impact on your farming practice.

All activities would be performed with the help of facilitators.

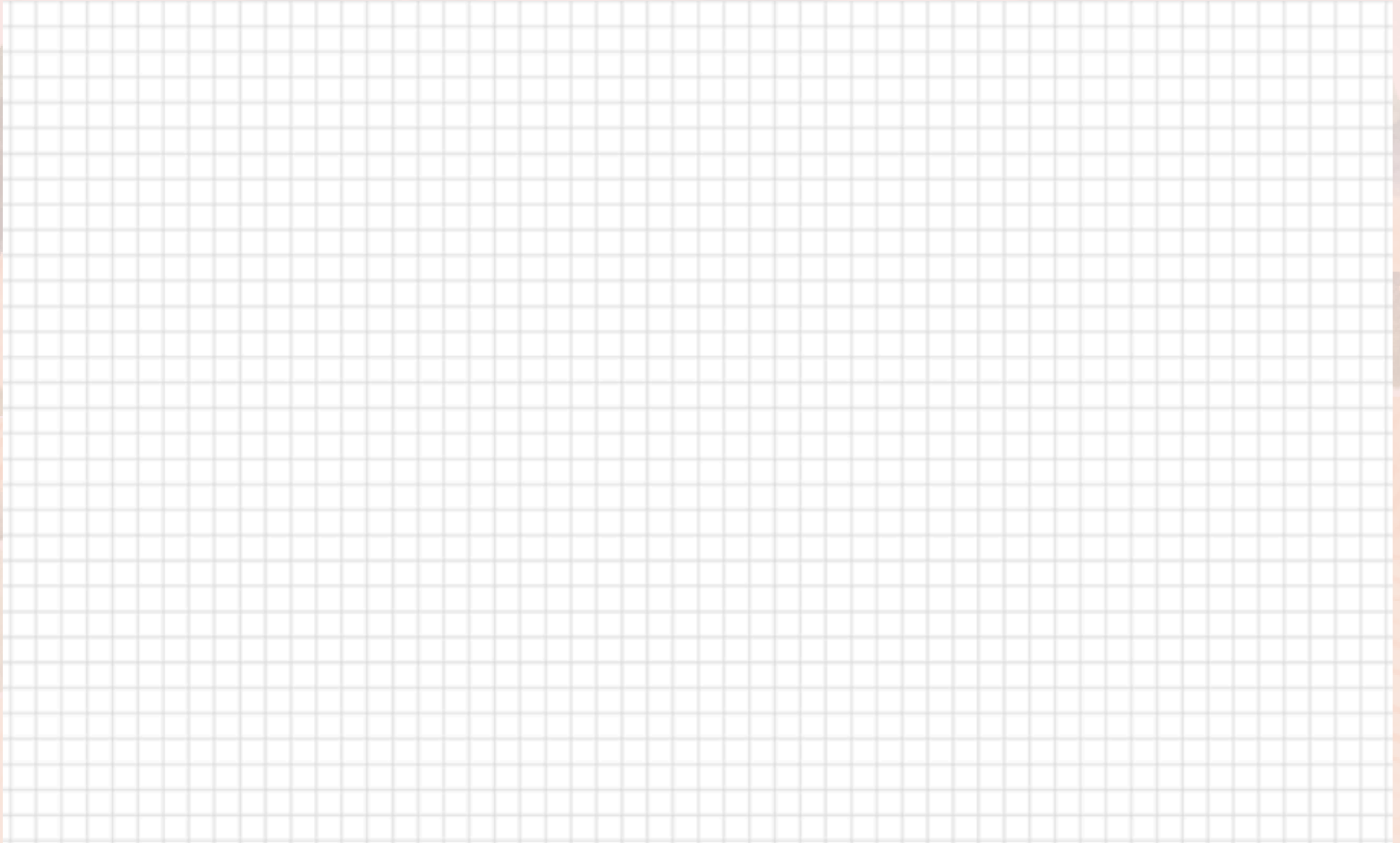
Activity 02 : Create your farm profile

- Try Filling information of your farm.
- Take help of your facilitator if you can not fill it on your own.
- Try discussing it with other farmers in farmer group.
- Try to learn more about farm profile.

Activity 04: Feedback form

- Give feedback as it will help your facilitator to help and improve your learning.
- Discuss it with other farmers and learn about their experience as well.
- Ask questions and take help of your facilitator, when you need.

Activity 01 : Picture your farm (Current conditions)



Activity 02: Create your farm profile

• Farm type	
• Terrain	
• Area	
• Aspect (Farm facing direction)	
• Physical features	
• Soil Type	
<ul style="list-style-type: none"> • Inputs needed <ul style="list-style-type: none"> ◦ Labor ◦ Machinery ◦ Water ◦ electricity ◦ fertilizer ◦ pumps 	
• Temperature Range (By month)	
• Precipitation Range (By month)	
• Commonly grown crops	
• Natural challenges <small>(climate, pests, invasive species-weeds)</small>	
• Any CSA methods in use	

Activity 03 : Evaluate CSA methods

(Post-implementation)



Decreased



No impact



Partially Increased



Significantly Increased

Resources and indicators

• EASE OF TECHNOLOGY USAGE

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• CROP PRODUCTION



• CROP QUALITY



• OCCURRENCE OF PEST



• OCCURRENCE OF WEEDS



• WATER REQUIRED



• FERTILIZER REQUIRED



• LABOR REQUIRED



• INCOME



• WORKLOAD



• FREE TIME AVAILABLE



• USAGE OF CSA METHODS IN FUTURE



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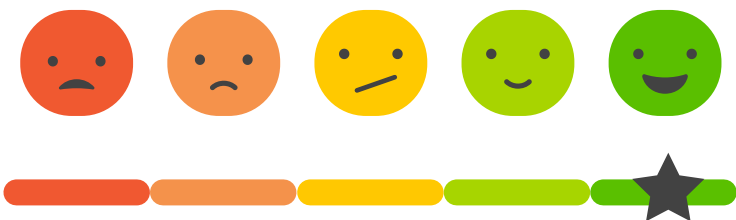
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Activity 04 : Feedback form



Experience scale

Do you have any question/Suggestion?

Fill the feedback form below at end of your training by marking it like this. 😊👍 that is closer to your experience.

1. What do you like the most about this guide?

2. Is there anything that you want to suggest for improvement?

3. Do you have any suggestions for facilitator?

4. How useful are these sessions for you for your farm?



5. How engaging are these sessions?



6. How likely are you to recommend CSA methods to other farmers?



[illegible]



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using your phone anytime or click
the link for more information.



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