Using photovoice for a gendered understanding of farmers' knowledge, perception and practice

A Guidebook

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About this Guidebook

Creating an understanding of smallholder agricultural decision making is complex, and especially creating in-depth understanding from **gendered perspectives** around knowledge, perception, and practice. This guidebook informs researchers and practitioners on how to implement a different approach towards understanding male and female farmers' perceptions of agricultural **practices** and subsequent impacts on their household **decisions** and **agency**.

This guide provides an outline of collecting quantitative, qualitative, vocal and visual data using the **Photovoice** method. The flexible nature of the Photovoice method outlined in this guidebook allows researchers to modify the duration and number of meetings depending on the requirement or objective of the study. The intention is that this can be used as a basis for other studies with similar objectives.

This guidebook uses a participatory study undertaken in the communities in the Eastern Gangetic Plains (EGP) of South Asia as a **case study** to explore knowledge, attitude, and practice related to adoption of conservation agriculture-based sustainable intensification (CASI) practices. It incorporates the different steps from preparation to the facilitation of a weeds photo diary study using the Photovoice method. The methodology in this guide were piloted with farmers practicing CASI in communities across Bangladesh, India, and Nepal.

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Introduction to the Study Context

SRFSI Project

The SRFSI project is a collaborative research for development initiative that aims to increase the **productivity**, **profitability** and **sustainability** of farming systems through Conservation Agriculture based Sustainable Intensification (CASI). SRFSI is implemented in the Eastern Gangetic Plains (EGP) across Bangladesh, India and Nepal.

Part of SRFSIs research agenda includes increasing our **understanding of farmers' knowledge, perception, and practices of conservation agriculture**. This includes a sub-project focused on **Weeds and Gender** in CASI systems with the objective to document both male and female farmers' experiences with changing weed dynamics when CASI is implemented and analyze its implications for **equitable** intensification in the EGP.


(Photo: Conor Ashleigh)

PRINCIPLES OF CASI

(CONSERVATION AGRICULTURE BASED SUSTAINABLE INTENSIFICATION)

PRINCIPLE 1: REDUCING TILLAGE

Tillage can damage the soil over the long term, reducing your future harvests. By not tilling, you can save time, money, water, natural resources and prevent future crisis.

PRINCIPLE 2: RETAINING CROP RESIDUE

Crop residues can help feed your soil, just like fertilizers. It will help keep your soil healthy, moist and productive.

PRINCIPLE 3: DIVERSIFYING CROPS

Farms stay healthy and productive when soils grow different crops. Different plants use different components of the soil, ensuring that your soil stays healthy.

What is CASI?

Conservation Agriculture based Sustainable Intensification (CASI) is defined as a set of on-farm and supporting service practices that aim to increase efficient use of resources whilst improving farm household profitability, commonly through minimized soil disturbance, crop diversification, rational input use and better soil and water management supported by relevant input provision and marketing arrangements and reside management. This is implemented through three interrelated principles:

- Reduced Tillage;
- Retaining Crop Residue; and
- Diversifying Crops.

Gendered Research Gap

CASI has demonstrated benefits, increased yields, decreased production costs, increased net returns, and decreased water, energy and labour requirements in the EGP (Gathala *et al.*, 2020), but uptake remains limited. One of the issues commonly reported by farmers in a CASI system is weed management (Bajwa, 2014). This therefore requires enhanced research to further our current understanding on the impact of weed management on household decision-making.

Weeding is a manual task typically performed by women, and the switch to herbicides can have a significant impact on the overall workload. Herbicide spraying is considered a male task and requires less labour requirement overall, indicating an opportunity for both male and female household members to partake in other activities, potentially additional income-generating work (Kaumbutho *et al.*, 2017). However, current literature focuses more on the plot level agronomic trials, which lacks evidence on the gendered impacts on the roles and responsibilities and does not provide an understanding of changes between male and female household heads once the decision to adopt CASI has taken place.

(Photo: Conor Ashleigh)

Introduction to the Study Context

The Participatory Action Research Approach was developed by Carline C. Wang and Mary Ann Burris in early 1990s to identify, represent, and enhance their community through specific photographic techniques (Burris and Wang, 1997).

Photovoice seeks to:

- Enable people to record and reflect their experiences and community's strengths and concerns;
- Promote crucial dialogue and knowledge about important issues through group discussions of photographs; and
- Influence policy makers and advocate for change

The Photovoice method facilitates the engagement of individuals ***who usually do not have a say in decisions*** despite those decisions directly impacting their livelihoods. This methodology deepens the understanding of explored issues and promotes critical dialogue and knowledge through photographs and community discussions to eventually influence policy makers.


(Photo: Conor Ashleigh)

(Photo: Conor Ashleigh)

The Photovoice Method

In an effort to reduce existing male bias in participatory research, the photovoice method stemmed from three frameworks, empowerment education for critical consciousness, feminist theory and documentary photography (Sutton- Brown, 2014). It can be a powerful tool for vulnerable populations as it is a visual aid that does not require the ability to read or write. In addition, this approach elucidates a deeper, insider perspective that researchers may not achieve otherwise.

The process often involves participants actively engaging in the research process by providing a visual representation of their everyday experiences (foster- Fishman *et al.,* 2005). They can present their perspectives through photographs, and often craft captions or narratives to accompany their photos. Photographs can be displayed and discussed in a community setting to raise awareness, promote dialogue and catalyze change.

Photo diary: Step by Step Process

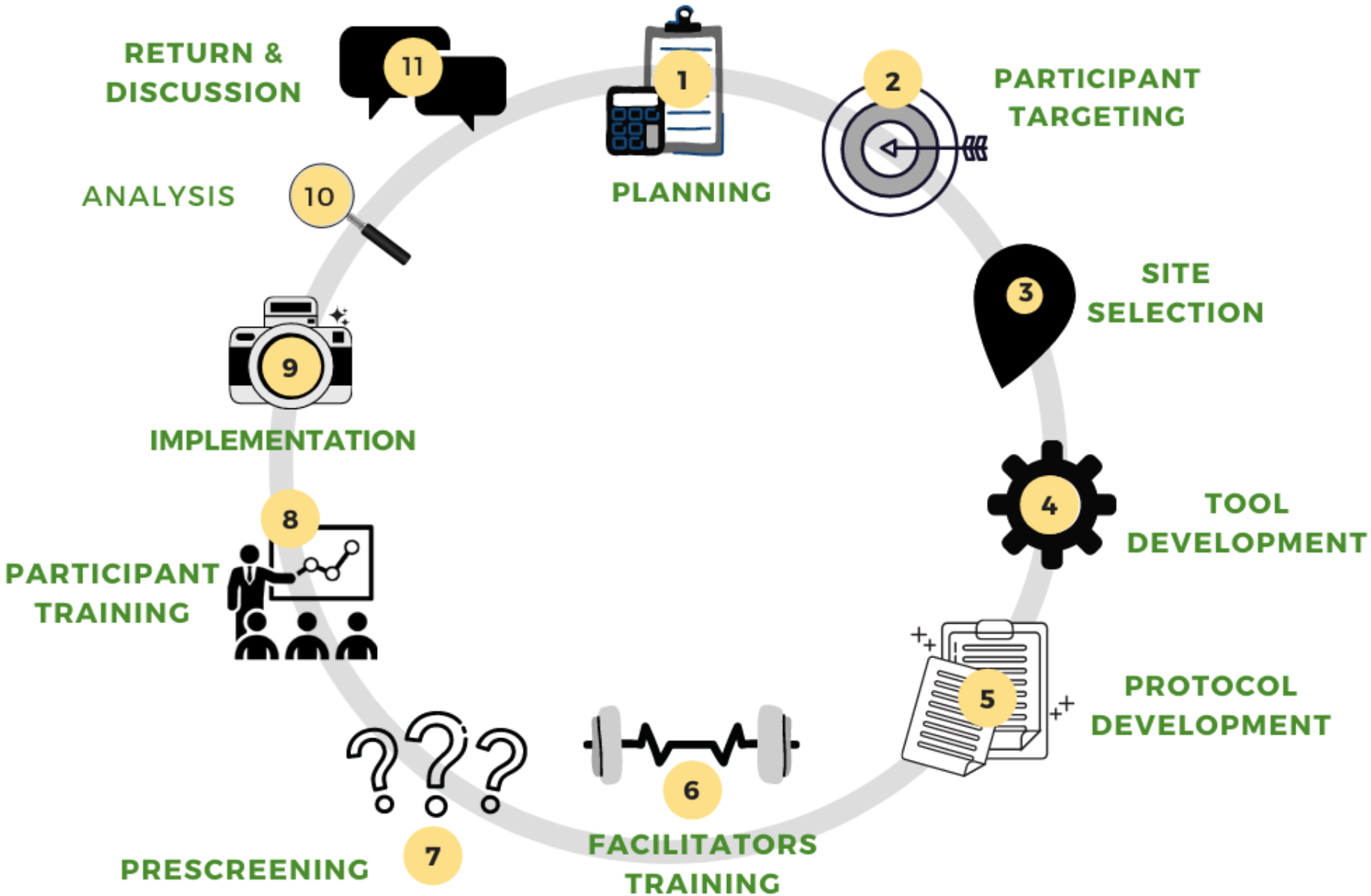
Using this guidebook:

Green pertains to ***theory***

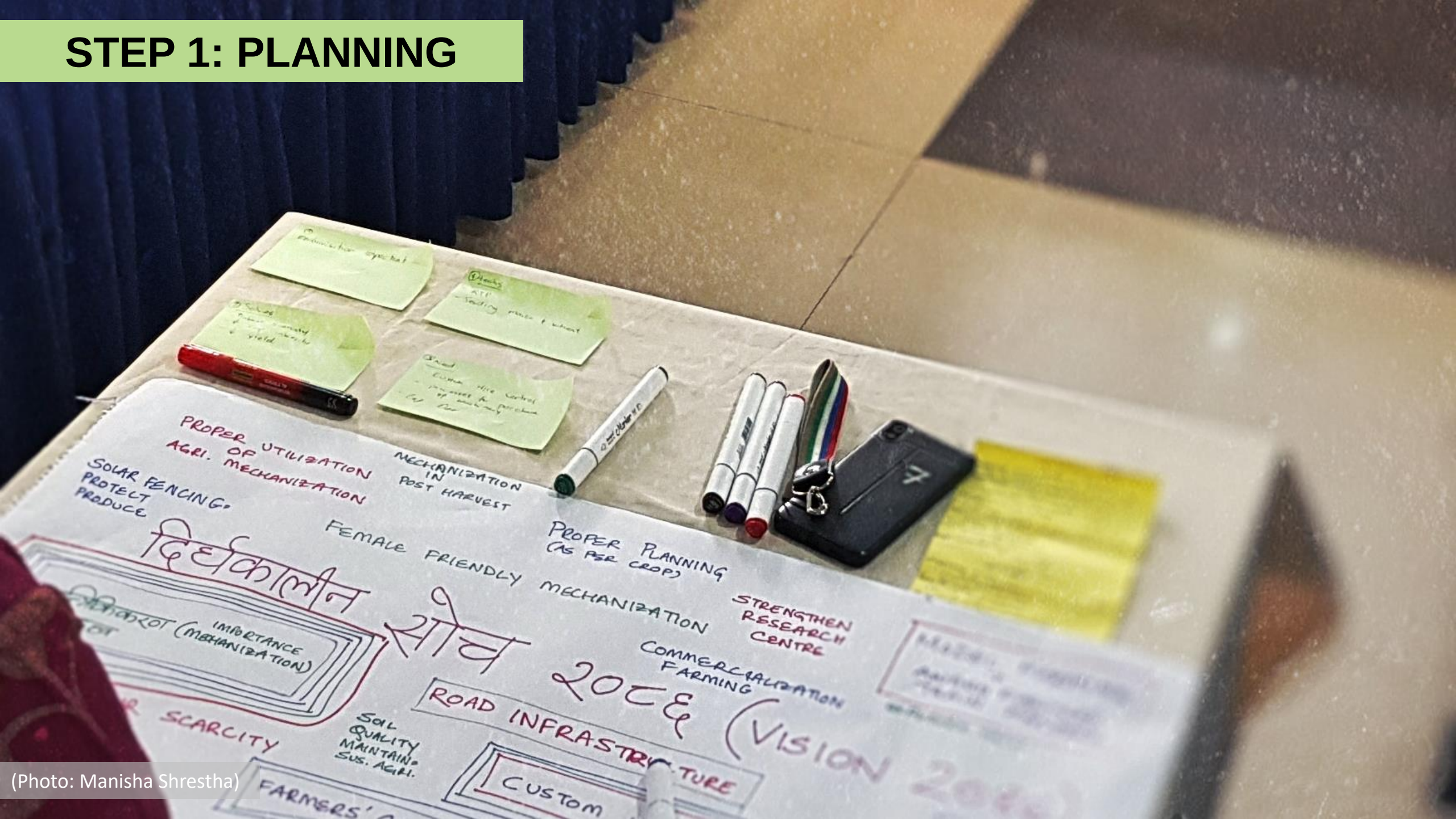
Yellow pertains to ***examples from our case study***

PHOTODIARY

STEP BY STEP PROCESS



STEP 1: PLANNING



(Photo: Manisha Shrestha)

Step 1: Planning

Planning process is an integral step to ***set objectives, formulate research questions***, and to ensure that there is a ***framework*** for the team to work within. The first action, therefore, is to define the study objective and research questions. The objectives will help guide the researchers and facilitators throughout the study and mobilize resources efficiently. We suggest the use of a template that workshops the study objectives and research questions, workshopped with your project team.

(Photo: Manisha Shrestha)

Template filled with case study example from our CASI study

Objective	To compare male and female farmers' knowledge and perception of, and participation in, zero tillage production systems.	
Research Questions	1.	How do weed knowledge and identification skills differ between decision making spouses?
	2.	How do roles, time contribution, and responsibilities change when a household implements CASI compared to a conventional (tillage) production system?
	3.	How do the decision-making spouses experience and appreciate changes in their livelihoods due to the implementation of the CASI production system?

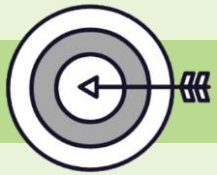
Planning : Things to remember

- Research objectives should be planned and discussed prior to undertaking a participatory study using the Photovoice method.
- This step is important in ensuring that Photovoice is the correct tool to examine the research objectives, and within that, how each research question can be answered.
- It will also ensure that data collected relate to objective and research questions to reduce time wastage in the collection, cleaning, and analysis.
- A maximum of four research questions is recommended to ensure that each question can be adequately addressed without making the later implements too lengthy or complicated.

(Photos: Manisha Shrestha)

STEP 2: PARTICIPANT TARGETING

(Photo: Conor Ashleigh)



Step 2: Participant Targeting

After working with your research team to narrow your research questions, the next important step is to clarify who will help you answer them. This is done through establishing a set of criteria for someone to be involved in the study and matching it with the targeted tools. This involves a number of activities including sourcing eligible candidates, screening them, explaining the study and their expected roles during the study period. For longer diary studies that require time and dedication from participants, it can be tough to keep the participants committed throughout the entire duration and you may need to provide an incentive to keep them engaged in the study.

Planning **: Things to remember**

- Be as specific as possible, with the people who will best be able to help answer your research question
- Specify specific experiences or attributes that are easily categorised
- If you go too narrow, you may not be able to find respondents, so think about what is and is not a requirement to implement the study
- Don't waste time by making screening process lengthy before getting to the questions that eliminate most people.
- This may take longer than expected but it is crucial to identify right participants to avoid drop outs and the research results are only good if the participants involved are good.
- Make sure participants know the expectations for the study and that they are available throughout the duration.

Our selection criteria

- Must have, or intend to have, at least one ZT planted plot as part of the upcoming planting season.
- Selected plots should be accessible by both members of the household independently.
- Both household heads must participate in weed management tasks, such as managing or personally implementing weeding activities on some part of their farm (does not need to be the ZT plot), or any action related to the weeding of the farm.
- Complete the Prescreen process to ensure eligibility to participate in the study. (Refer to Appendix 1 for prescreen form and Appendix 2 for instructions).
- Must be able to commit their time for the duration of the study (4-5 weeks).
- Must provide consent for participation in the study and use of photographs.

STEP 3: SITE SELECTION

(Photo: Manisha Shrestha)

Step 3 : Site Selection

Defining where to implement it is crucial to ensuring the ability of the study to answer the proposed research objectives and questions. The more specific one can be here, the more likely a robust set of research findings can be made and relied on. It is important to remember that with this method, the number of respondents is limited due to time and financial constraints, and hence, usually, a counterfactual is not sought. Note that site selection should come early in the planning process to ensure the technical and social feasibility of the planned study.

Key considerations:

- How many respondents a facilitator can manage on one working day
- Logistics of implementation in multiple locations
- Participants time availability
- Characteristics of participants and/or participant households and their expected aggregation in sufficient quantitate

Site Selection **: Things to remember**

- You should select locations where you expect there is sufficient respondents that meet your selection criteria.
- The logistical realities of collection in multiple locations needs to be considered as part of site selection. This may involve checking with potential enumerators for on-the-ground realities.

(Photo: Manisha Shrestha)

(Photo: Conor Ashleigh)

Our location criteria

- For our study, our sites were selected based on where we could find sufficient ZT adopters that would fit our criteria, while maintaining a balance of two different crops to be investigated.
- At least five farming households that meet our participant criteria in a community; and
- Two separate communities in each site for comparisons in that geography; and
- Local facilitator with prior community engagement in both communities to ensure contextualization and fluency in the local language, and consistency of data collection; and
- Crop focused community selection (defined either as maize or wheat systems depending on the location).

STEP 4: TOOL DEVELOPMENT

(Photo: Manisha Shrestha)

Step 4: Tool Development

Developing quality tools that is used to collect data is one of the most crucial steps to ensuring data and analytical validity. Two separate questionnaires are usually designed, one to prescreen participants and one to collect data. This process includes:

[1] Deciding on how to implement the survey (i.e. software or hardcopy medium)

In today's context, digital data collection has become the norm, which is also helpful when collecting multiple types of data that are linked together (e.g. visual, voice, categorical and numerical). It also allows for regular monitoring, amendments and corrections. There are multiple options available to do this, many of them free. Using digital data collection methods also helps reduce data cleaning times due to consistent skip logics.

[2] Designing the questionnaire

It is important to ensure that questions are as simple as possible, to avoid confusion, particularly if multiple enumerators will be collecting data. This can either be a structured or a semi-structured questionnaire depending on the research questions. The best way to do this is to brainstorm in a group what data is required to answer the stated research questions, and then workshop how those data are interrelated and can be interpreted to answer the research questions.

[3] Formulating questions and structuring the flow and logic of questions

Developing the tool includes formulating the questions, any skip logics, and restrictions and uploading it into a useable form for the facilitators to implement with. Form must indicate which questions require single or multiple answers to avoid confusion.

Key considerations when designing the questions:

1. What is your research trying to answer?
2. What do you want to do with the study (e.g., compare, quantify, qualify)?
3. What data is required to answer the research question?
4. Unit for data collection?

(Photo: Manisha Shrestha)

Examples for different Data types - Kobo Collect

For our study, we used the humanitarian response on the Kobo server, using Kobo Collect. In our questionnaire, we included questions that would allow facilitators to upload photos, audio recordings, and responses in one form.

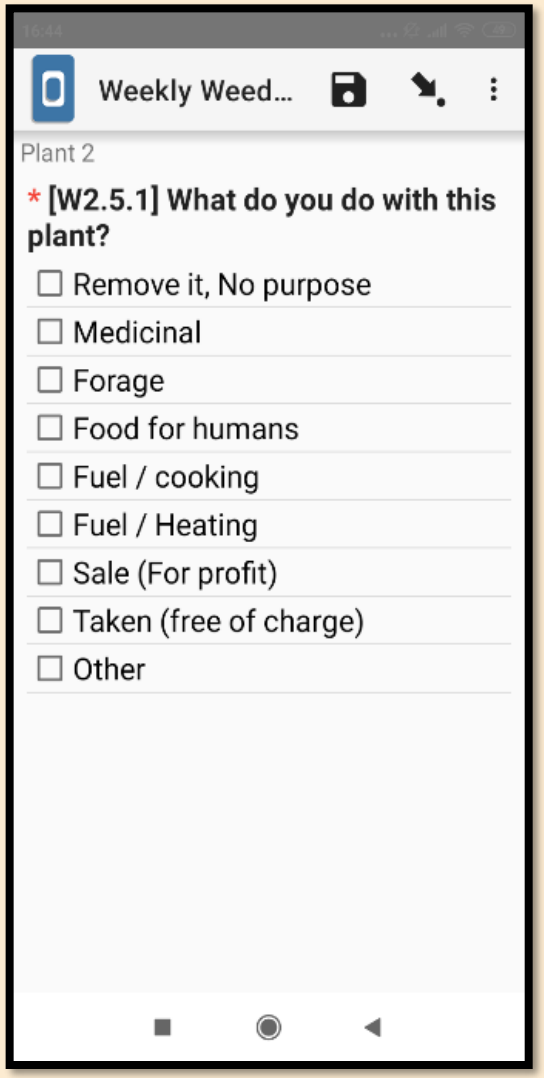
Forms were shared with the project team and facilitators to ensure context suitability. Based on the feedback provided by the team, the survey forms were translated into the local language, where required, to ensure correct interpretation of the questions and guidelines.

Our forms can be accessed at:

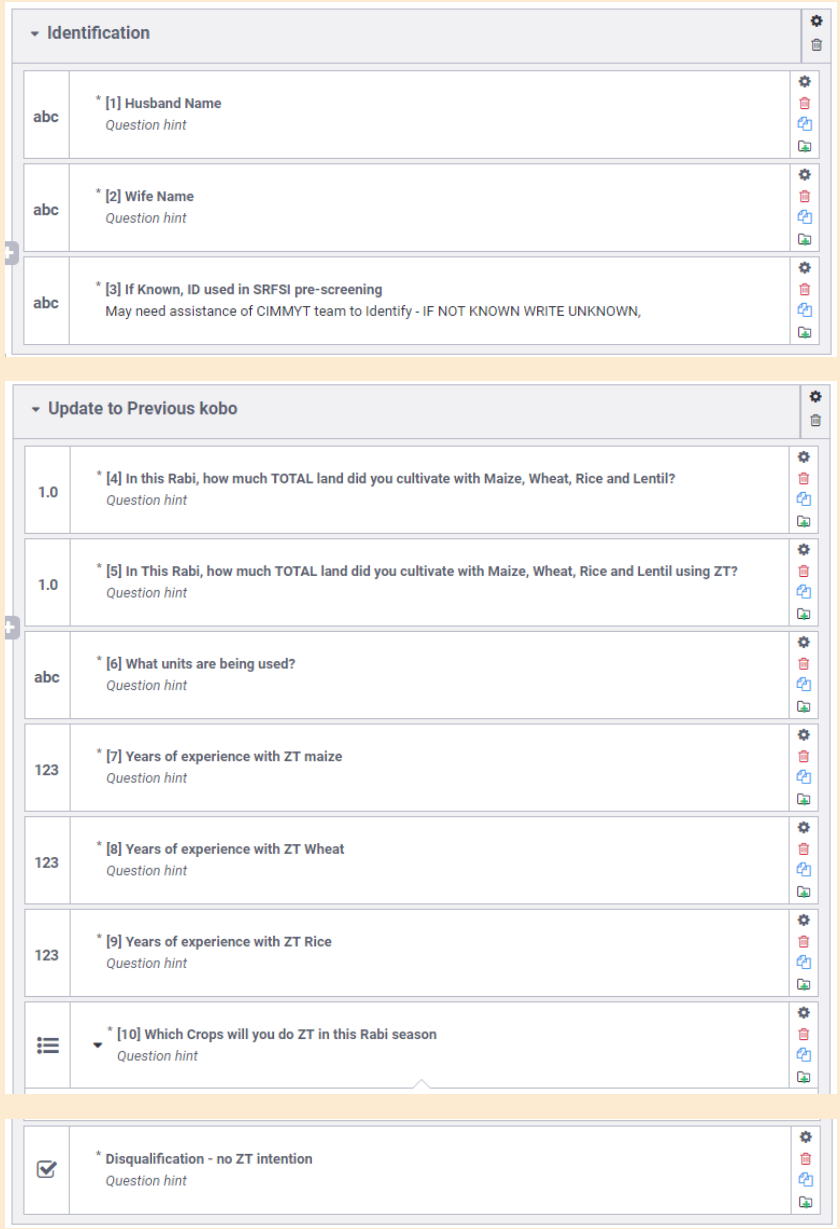
Visual Data

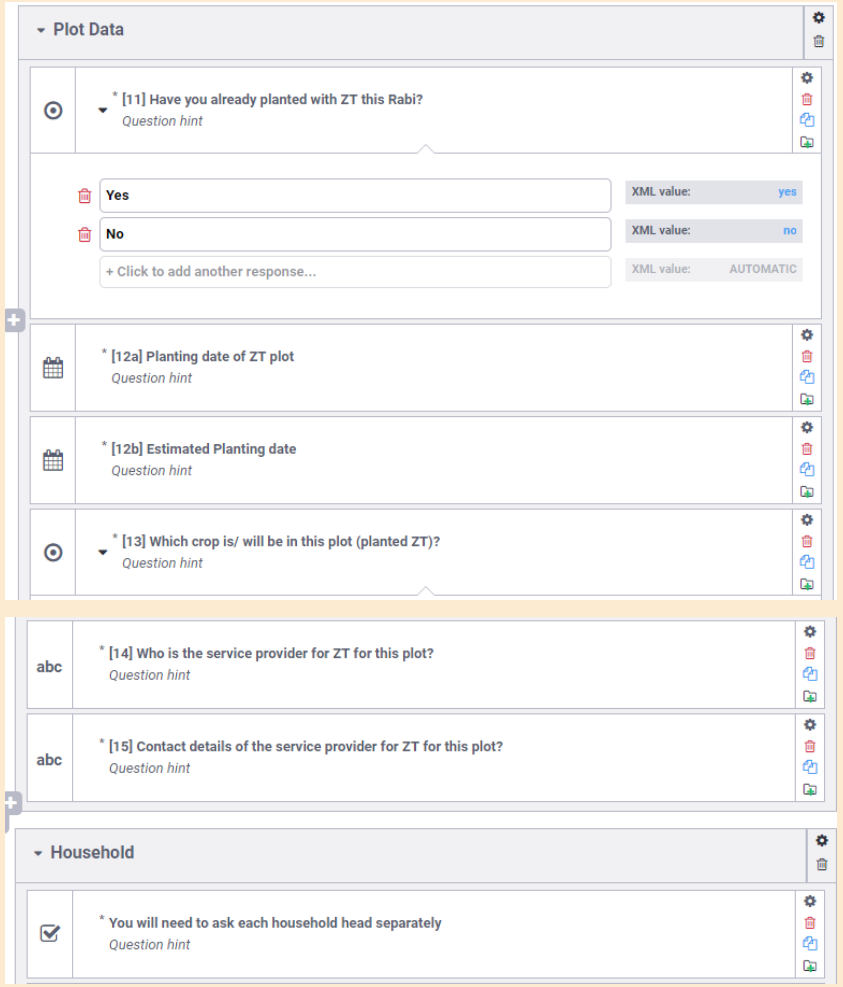
Voice Data

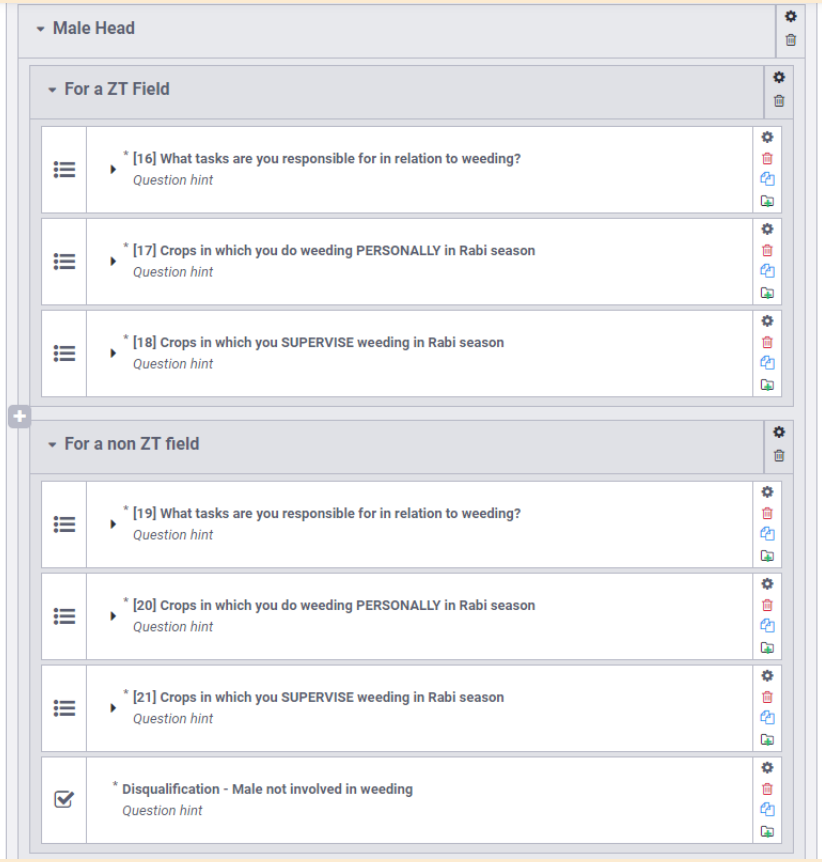
Categorical Data



Pre-screening Tool







Pre-screening Tool

- Female Head
  - For a ZT field
    - * [22] What tasks are you responsible for in relation to weeding?
      Question hint
    - * [23] Crops in which you do weeding PERSONALLY in Rabi season
      Question hint
    - * [24] Crops in which you SUPERVISE weeding in Rabi season
      Question hint
  - For a Non-ZT Field
    - * [25] What tasks are you responsible for in relation to weeding?
      Question hint
    - * [26] Crops in which you do weeding PERSONALLY in Rabi season
      Question hint
    - * [27] Crops in which you SUPERVISE weeding in Rabi season
      Question hint
- * Disqualification - Female not involved in weeding
  Question hint
- * END of Interview - No need to continue
  Question hint

- Field Check
  - * You will now need to move to the Field
    Question hint
- Photo
  - * [28] Photo of ZT Plot
    Same location each week.
  - * [29] Photo of inter row
    Same location each week.
- Area
  - * [30] Record location of ZT Plot (corner 1)
    Must stand in ZT plot
  - * Move to next corner
    Question hint
  - * [31] Record location of ZT Plot (corner 2)
    Question hint
  - * Move to next corner
    Question hint
  - * [32] Record location of ZT Plot (corner 3)
    Question hint
  - * Move to next corner
    Question hint
  - * [33] Record location of ZT Plot (corner 4)
    Question hint
  - * [34] Farmer estimated size of Plot
    Question hint

- abc [35] Unit of measurement used
  Question hint
- Finalization
  - abc * [36] New WG Household ID
    e.g. N3/ C5 / B4
  - abc * [37] Contact number (Husband)
    Question hint
  - abc * [38] Contact number (Wife)
    Question hint
- abc [39] Any other notes or comments?
  Question hint

Structure of our weekly data collection form

[1] Identification

This module identifies the characteristics of the data collected (e.g. farmer, enumerator and week)

Additionally, this module allows the respondent to upload photos to validate their presence in the field and ensure accuracy and authenticity of provided data.

[2] Weeding Tasks

This module collects information for the preceding seven days regarding respondent engagement in weed-related tasks, herbicide application, and the selected ZT plot, as well as comparisons on what would have been if the practice had not changed to ZT.

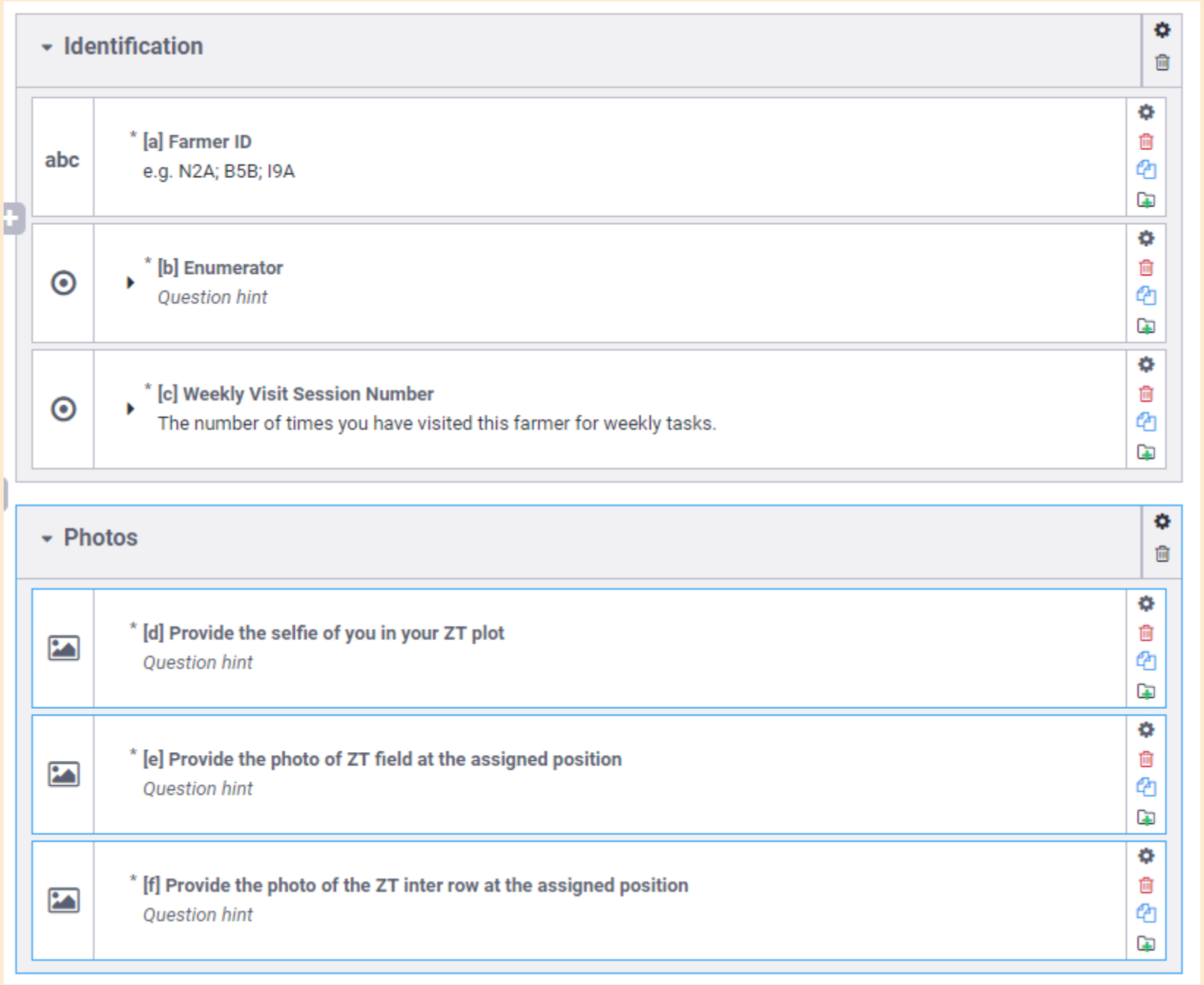
[3] Weed Collection

This module collects information on weeds collected in the ZT plot and asks regarding its use, management, and occurrence compared to a non-ZT plot.

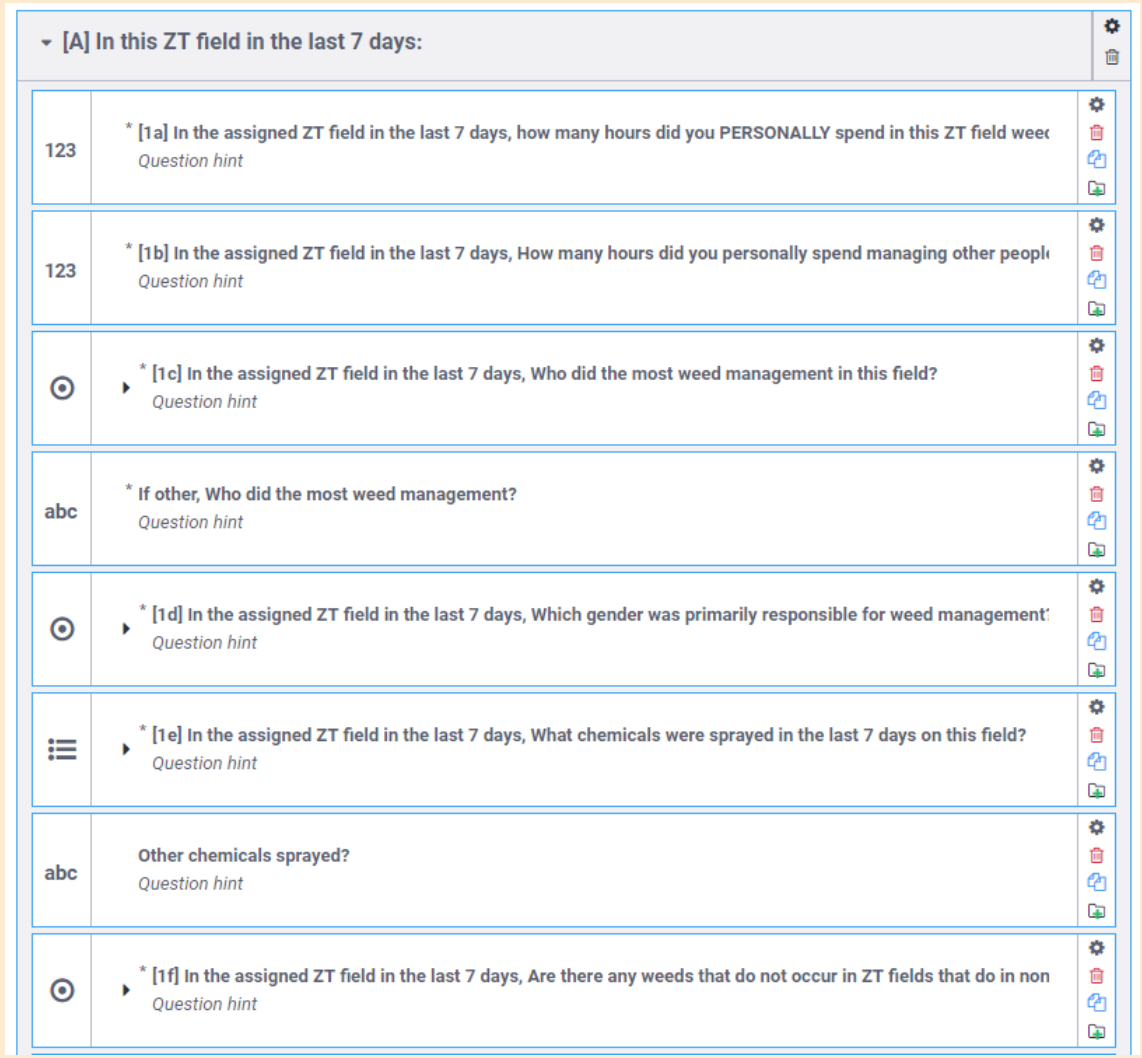
[4] Most Significant Change due to CASI

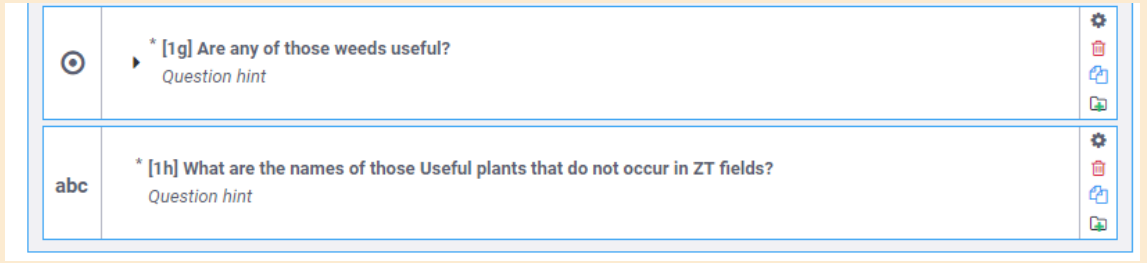
Collect information on the significant changes experienced by each respondent after switching to CASI. This information is collected only on Weeks 3 and 5.

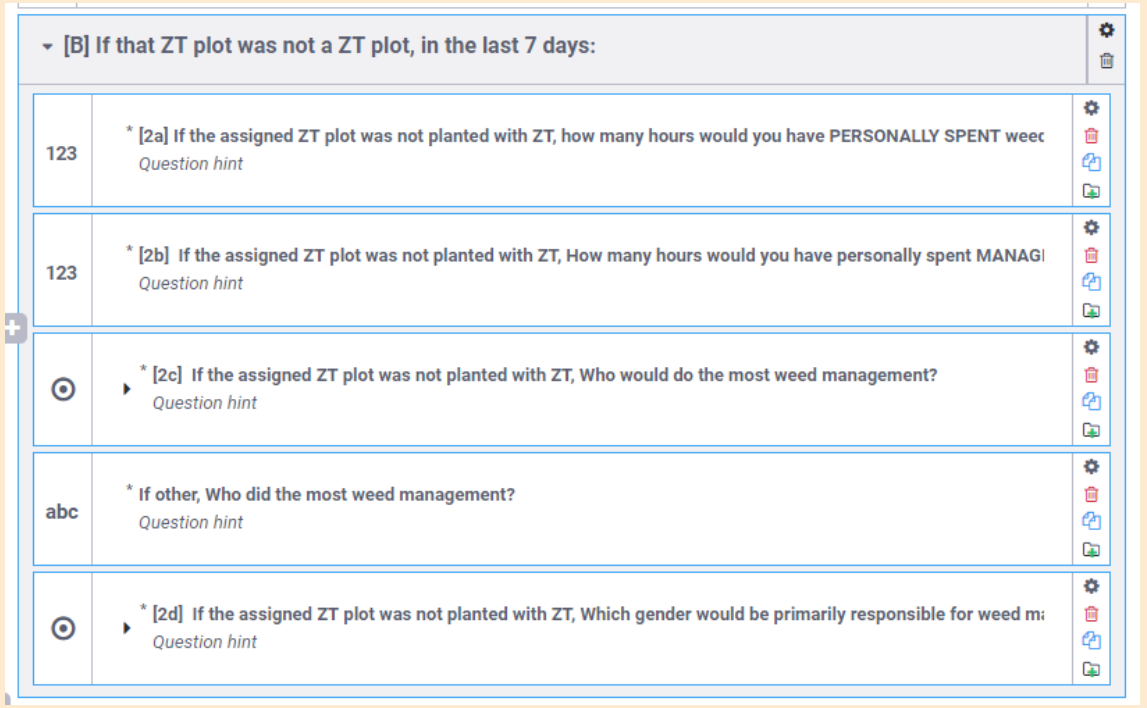
Module 1: Identification



Module 1: Weeding Tasks







Module 3:Weed Collection

* Now, we will ask you about the plants you found in your ZT plot
Question hint

* We only want plants from the assigned ZT plot
Question hint

123 * [3] How many Individual plants did you identify and remove?
Question hint

* Please rank the top 3 most important plants you found?
Question hint

Plant 1

* [W1.1] Photo of Plant 1 on scale
Question hint

* [W1.2] Do you know the local name of this plant?
Question hint

abc **Verification**
Question hint

abc * [W1.2.1] What is the name of this plant?
Question hint

* [W1.3] Is this plant new because of ZT?
Question hint

* [W1.4] Is this plant now more common/abundant because of ZT?
Question hint

* [W1.5] Does it require special or individual management?
Question hint

* [W1.5.1] What do you do with this plant?
Question hint

abc * [W1.5.2] If other, what do you do with it?
Question hint

* [W1.5.3] Who is primarily responsible for the special management of this weed?
Question hint

abc * [W1.6] Anything you want to say about this plant?
Question hint

Non Priority Photos

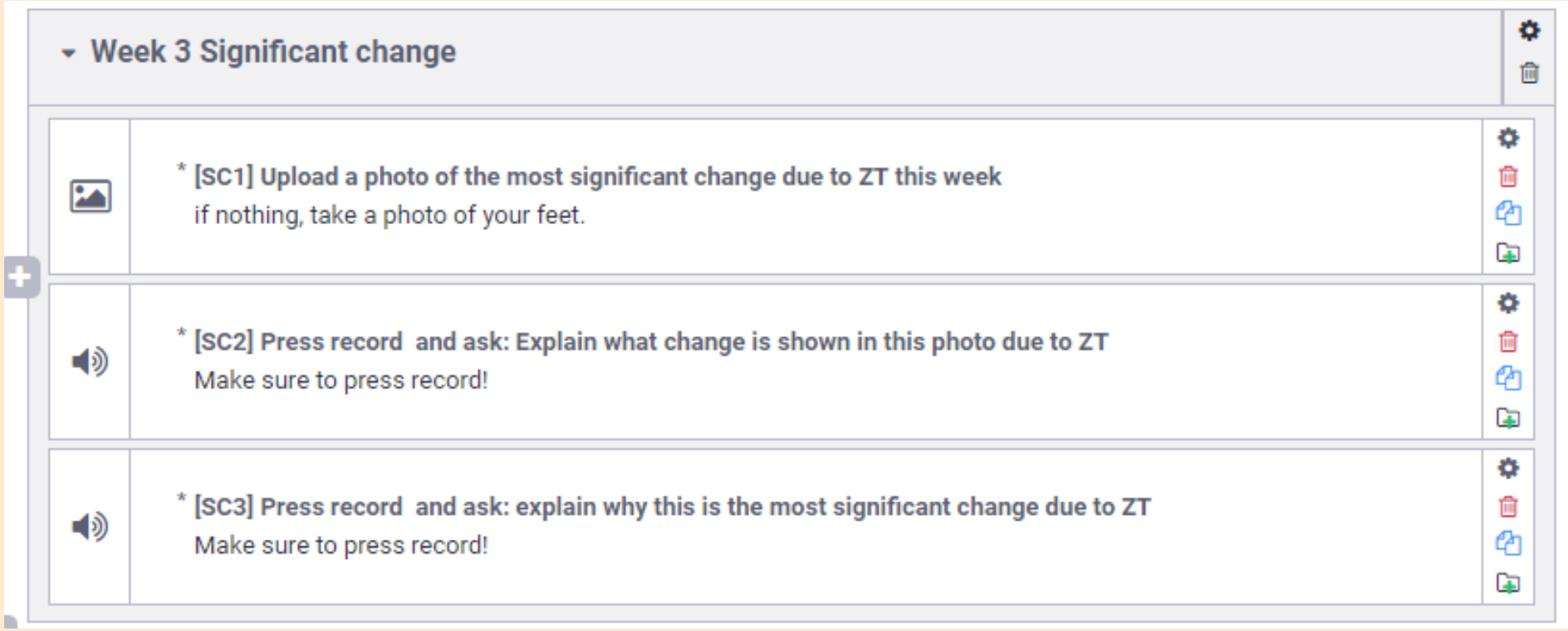
* Photo 4
Question hint

* Photo 5
Question hint

* Photo 6
Question hint

Additional Photos to a maximum of 15

* Photo 15
Question hint


Week 3 Significant change
* [SC1] Upload a photo of the most significant change due to ZT this week
if nothing, take a photo of your feet.
* [SC2] Press record and ask: Explain what change is shown in this photo due to ZT
Make sure to press record!
* [SC3] Press record and ask: explain why this is the most significant change due to ZT
Make sure to press record!

Special Emphasis – Significant Change

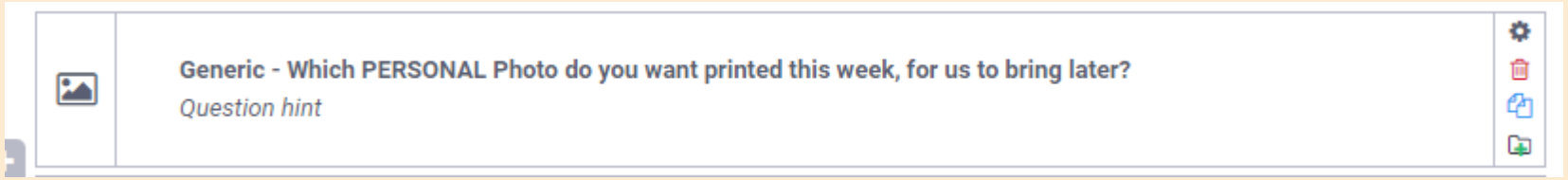
This module allows for data collection periodically but not weekly. This enables a deeper delve into specific areas of interest and allows participants to photograph overall change experienced due to an intervention during the duration of the project. This component is akin to “handing over the stick” to the community to present their perspectives through photographs. Participants provide their own narratives to explain what the photograph represents to them and describe how they perceive it. It is intentionally open-ended.

For our study, we wanted to investigate the change that has occurred in their life due to the system's transition from conventional and zero tillage cultivation practice. To do this, an additional module was implemented in Weeks 3 and 5. A few additional questions were added to the KOBO form during the 3rd and 5th week of the visit to ensure tasks are conducted in the above-mentioned weeks only in addition to the regular data collection. Participants’ response was recorded in the KOBO form. Protocols to implement this task is outlined in Handout 3.

Things to remember:

- This additional task will only be conducted on 3rd and 5th week on the same day as the weekly activity.
- Ensure the audio recording is audible and concise. Allow for participants to complete their response before asking additional questions or clarifications.

(Photo: Manisha Shrestha)



N.B. Our repayment for time taken to respondents was to print and provide one photo of their choosing each week for their own purposes.

STEP 5: PROTOCOL DEVELOPMENT

(Photo: Manisha Shrestha)

Step 5: Protocol Development

A set of clear protocols help guide facilitators in their tasks and ensure consistency across all facilitators and locations of implementation. This then enables ‘like-for-like’ analysis of collected data and cross-locational analysis. This should usually be drafted prior to training but then discussed and adapted with facilitators.

It is important to be as specific as possible when developing protocols. Some elements may be crucial. For example, if exploring differences in knowledge based on gender, it may be that the protocols state that activities may need to be done separately.

Protocols are best translated to a local language, where required, to provide the correct interpretation of the questions and guidelines.


(Photo: Conor Ashleigh)

Our Weekly Protocols

1. The Day Before Data Collection

Protocols for Facilitators

1. Call each participant the day before to ensure farmers can visit their ZT plot on data collection day.
2. Inform them of the time and place that you will present them with the phone. Be as flexible as possible, as they are providing their time for free.
3. Ensure mobile phones are fully charged and ready to use.
4. Keep all the materials required for the weekly task ready in the provided backpack.

2. Data Collection Day

Protocols for Facilitators

1. Arrive on time.
2. Provide phone and weed collection bags to each participant.
3. Answer any questions participants may have.
4. Establish a time to return to discuss, collect data and phones.
5. Remind participants to perform field tasks separately.
6. Remind participants of the process to be followed and any criteria.

Protocols for Participants

1. Travel to the plot independently of your spouse.
2. On arrival at the ZT plot, take three photos – a selfie, a field photo location and an interrow (as per training)
3. Spend a maximum of 15 minutes in your ZT field to identify each different type of weeds that you did not plant.
4. Collect each **different type** of weeds at the root level ensuring that plants collected are not the same; try to get as much root as possible 9as per training).
5. Place all plants collected in the cloth bag provided.
6. In weeks 3 and 5: You may take a photo of tasks that have changed personally for you specifically due to CASI. There is no right or wrong answer to this.
7. Take any fun photos during the day that you want. You can select one photo each week to be printed which will be provided upon completion of the study.

Our Weekly Protocols

3. On Return

Protocols for Facilitators – the following should be done with each spouse independently!

1. Ask participants to take out all collected weeds from the bag and spread them on the floor.

2. Participants should be asked to select **top three most important weeds** to photograph and discuss, based on how influential it is to them. Take a picture of each weed on the standard scale following the instructions provided in Appendix 6.

3. Fill the 'Weekly Weeds Diary' Kobo form following the guidelines provided in KOBO instruction guide (Appendix 5).

4. Photograph additional weeds collected at the end of the KOBO form. The form allows to upload up to 15 photos.

5. Obtain all phones and equipment provided to them.

6. Thank them for their time and inform them that this same task will continue for the next five consecutive weeks.

4. On Return to Base

Protocols for Facilitators

1. Ensure all KOBO forms are correctly filled with corresponding weed photos.

2. Upload all forms collected to the server

3. Ensure all phones are changed for future use

4. Inform project contact about progress, issues encountered in data collection, any breaches of protocol, equipment breakage or loss, etc.

(Photo: Manisha Shrestha)

Things to remember:

- The KOBO form must be filled with each participant separately to ensure that the responses do not get influenced by the other household head.
- The same ZT field must be used each week. Ensure that the day of the visit is the same each week for 5 weeks
- The KOBO form must be completed for each household before the end of the workday
- Check to ensure the plants are photographed correctly
- Check to ensure the standard scale template is filled out correctly as mentioned
- Remember to collect all the phones and other items in the checklist.

STEP 6: FACILITATORS TRAINING

(Photo: Conor Ashleigh)

Step 6: Facilitators Training

- Training facilitators provides them with theoretical and practical guidance to implement the study is a must to maintain the quality and standards of the study in different regions. Training will help orient facilitators on methodology, principles, and guidelines to be followed during the implementation phase. The contents should be mostly focused on acquainting the facilitators with the forms, protocols, and their roles during the implementation of the study.

- Trainings should include practical sessions, demonstrations, and role play to provide facilitators an opportunity to practice and simulate the tasks assigned. Role play allows facilitators to pilot the forms and contextualize them. It is important to provide space for feedback and clarifications to ensure facilitators can interpret and implement the protocols as they were designed. This may also lead to alternations to the procedures and/or tools.

Materials Required

- ❖ Laptop and projector
- ❖ Flip chart, stand, and markers
- ❖ A camera, case, and charging cables for each participant
- ❖ Cards/sticky notes
- ❖ Notebooks and pen for each participant
- ❖ A printed manual for each participant
- ❖ A field plot for practical sessions


(Photo: Manisha Shrestha)

Our Training Program

Facilitator training was conducted in Cooch Behar due to its proximity to selected study sites and prior local partner engagement for logistical support. A two-day training was conducted for the facilitators to familiarize with the photo voice process and understand their roles as facilitators. Training followed introduction and explanation of tasks outlined in the protocols and included practice sessions. Facilitators were also trained on using KOBO to collect data and included mock sessions. Feedback from the facilitators were incorporated into the protocols and KOBO questionnaires to reflect location specific nuances. Once finalized, the KOBO form was translated into local language, where requested, to ensure correct interpretation of the questions and guidelines. At the end of the training, each facilitator received the required materials to implement the photovoice study in respective locations.

Schedule for Facilitator Training:

- Welcome
- Getting acquainted
- Ground rules
- Expectations
- Aims and objectives of the training
- The basics of photography
- How to fill up the kobo form
- Ethical considerations: consent forms
- Practical demonstrations

Things to remember:

- Identifying the facilitators and finalization of tools and protocols are key steps that should be completed for training the facilitators.
- Training materials and logistical considerations for the facilitators must be distributed at the training.
- Select a training venue such that there is a place to practice photography out in the field. The field should provide a variety of possibilities for pictures.
- Discuss the protocols with the facilitators and provide space for clarifications if required.
- Identify and resolve any issues or concerns before moving forward with the study through discussions.
- Collect feedback from the facilitators to incorporate any nuances and translate if necessary, to ease the implementation process.

(Photo: Manisha Shrestha)

By the completion of training, facilitators should:

- Understand the process and rationale of the methodology.
- Identify households for the study and ensure they fit into the eligibility to administer the study in each location.
- Identify and communicate any technical or logistical issues in conducting Photovoice process. Contact immediately if lost/stolen/damaged.
- Uphold ethical principles during and beyond the implementation process.
- Share the collected data with the team by uploading once you get internet access.
- Ensure consent forms are read aloud before asking for signature

Step 7: Prescreening

Prescreening is an important step to make sure that participants match the inclusion criteria, as well as collect basic information that can be used to contextualize results. Prescreening should be part of the training package and worked though with facilitators to reduce any ambiguity. This should be conducted before obtaining consent for the study to determine the initial eligibility and interest to participate in the study. Prescreening can be done in multiple ways through interaction with the individuals either through phone or in-person.

Things to remember:

- If participants are hesitant to participate and commit their time, then seek other households. Do not force participants or provide false hope to incentivize participation.
- To avoid drop out, ensure participants are ready to commit their time for the entire duration of the study.
- Only collect information that determines the individual's eligibility and is not directly related to the study which should be done after obtaining consent only.
- Ensure Consent forms are signed once participants are prescreened
- Discuss how the data collected will be stored and specify the facilitators' whether they would retain or destroy the data collected which relates to ineligible respondents.

(Photo: Manisha Shrestha)

Step 8: Participant Training

Participant training is an extremely important part of the implementation of the photovoice method. The aim of participant training is to develop the capacity and motivate the participants to provide their time and accurate responses. This is a collaborative approach between the participant's and facilitators to build rapport and clarify the steps such that participants are aware of their roles and the tasks they need to complete. The training can be conducted in a communal space which is safe and where individuals from all parts of the village can access easily. Call one day before and confirm the time with participants for photovoice training.

Be patient since the participants may require extra time to learn using the camera and taking pictures. Inform participants that the phone/camera is for official use only. And that they should not allow anyone else to photograph using it. Share the tips on how to take care of the camera/phone. Once all participants have familiarized themselves with taking photographs. Set a day to visit the village in consultation with the participants. The farmers should be asked to pick a day that allows the facilitator to visit each household throughout the day without barring them from engaging in their daily activities.

Things to remember:

- ❖ Provide space to ask questions and listen without judgement or influence.
- ❖ Explain that phones should be kept away from children and placed around the neck.

(Photo: Conor Ashleigh)

(Photo: Conor Ashleigh)

Farmer Training Introduction to Photovoice

1. Display a variety of photos on a surface, ensuring it is visible to all the participants.
2. Ask everyone to pick a photo of their liking. Allow everyone to take their time to ensure everyone has a selected a photo.
3. The facilitator should also select a photo once all the participants have selected their photos
4. Ask each participant to introduce themselves and describe the photo explain the reason for choosing the photo.
5. The facilitator should also describe and explain the photo along with their introduction.
6. Explain that each photo may hold a different meaning to someone based on their own perspective.
7. Explain the research objective of the study and provide time to ask any questions and clarifications.

Learning to Take a Photo

1. Provide a phone to each participant during the training. Ask them to use the lanyard to hang the phone around the neck.
2. Ask all participants to take a few sample photos. They can take a selfie, take a group photo or take a photo of an object.
3. Ask each participant to choose one photo and describe the contents of the photo.
4. Provide feedback to ensure everyone is able to take photo properly.
5. Travel to a nearby field with the participants and demonstrate how to take three photos—selfie, field photo location, interrow. Ask permission from the landowner to avoid any conflict.
6. Ask each participant to take the same three photos—selfie, field photo location, interrow—as demonstrated. Assist any participant, if required.
7. Now ask each participant to collect any plant found in an empty plot. The participants must pluck the whole plant without damaging the root. Ask permission from the landowner to avoid any conflict.
8. Travel back to the training location, ensuring each participant has taken three photos as instructed and collected a plant each.
9. Check that each participant has taken each photo correctly. Provide feedback to each participant to ensure they can correctly take all three photos independently.
10. Ask each participant to display the plants they have collected and check to ensure the roots are intact.

(Photo: Manisha Shrestha)

Training - Things to remember:

- Participants should be explained that they will have to take photos separately. They should not ask their spouse to take a photo on their behalf.
- The training needs to be conducted in separate group for males and females since their learning skills might differ. Call one day before and confirm time with participants for photovoice training.
- Be patient since the farmers may require extra time to learn.
- Provide space to ask questions and listens without judgement or influence.
- Ensure training takes place in a safe space. Try to find communal spaces where individuals from all parts of the village can access easily.
- Inform participants that the phone is for official use only. Participants should not allow anyone else to photograph using the phone provided.
- Explain that phones should be kept away from children and placed around the neck.

(Photo: Conor Ashleigh)

Step 9: Implementation

While researchers may feel that all tasks have been completed once training is complete, a photovoice study requires them to continuously be in touch with the facilitators to understand how the actual implementation is ongoing. Communication with facilitators is integral not only for collection but understanding in later analysis the reasons behind specific topics. It is always good to have a system where the facilitators can share the collected information, and the researchers have access to real-time data. Regular monitoring of the shared information ensures that the research team is always aware of the progress and quality of data. An integral step is also to provide feedback to the facilitators, which ensures the consistency and quality of data collected. Moreover, this also motivates the facilitators to improvise their tasks.

Things to remember:

- Researchers' must always be ready to listen and adapt to mitigate the issues that may occur during implementation.
- Encourage the facilitators to follow the protocols and guidelines as shared during the training.
- Remind and ensure that the facilitators share the collected information after completion of the tasks and once connected with internet access.
- Assign a person to regularly monitor the received data and ensure that the protocols are being followed and anticipated responses are recorded.
- Encourage the facilitators to seek clarifications if they do not understand what the next steps should be.
- Continuously seek feedback on confusions with the protocols or tools used.

Reflections on implementation

During the implementation of the photo diary, facilitators were encouraged to visit the community after the selection of participants to remind them about their visit once it is past two weeks of planting ZT crops. Building rapport was not an issue as the facilitators were already familiar with the community; they were assigned to implement the study. The facilitators were encouraged to share the visit schedule for different communities such that the two nodes were visited on two different days of the week. This enabled the team to understand when the data will be shared and helped in allocating their time for monitoring the data. As the study was done in three different sites with different languages, different members were assigned who would be regularly monitoring data, providing feedback, and resolving any other issues encountered during the implementation. They also provided continuous support and clarifications to the facilitators' queries if any happened to occur during implementation. Although the protocol was to visit the specific households on the same day, there were some cases where the visit was done on some other day of the same week due to some unavoidable circumstances. Some adaptations were made for specific circumstances without breaching the protocols of the study but adhering to the needs of the participants. This highlights the need for flexibility where the provision will not be detrimental to the quality of collected data.


(Photo: Conor Ashleigh)

Checklist
Materials Required

Provided to Facilitators

- Mobile Phones with Chargers
- Multi-board to facilitate charging of multiple phones
- Standard Scale for weed photography
- Consent Forms
- KOBO Forms installed on each device
- Cloth bags for weed collection
- Phone Covers with lanyard and a soft cloth
- Backpacks for facilitators
- Notebooks and Pens
- Training Manuals

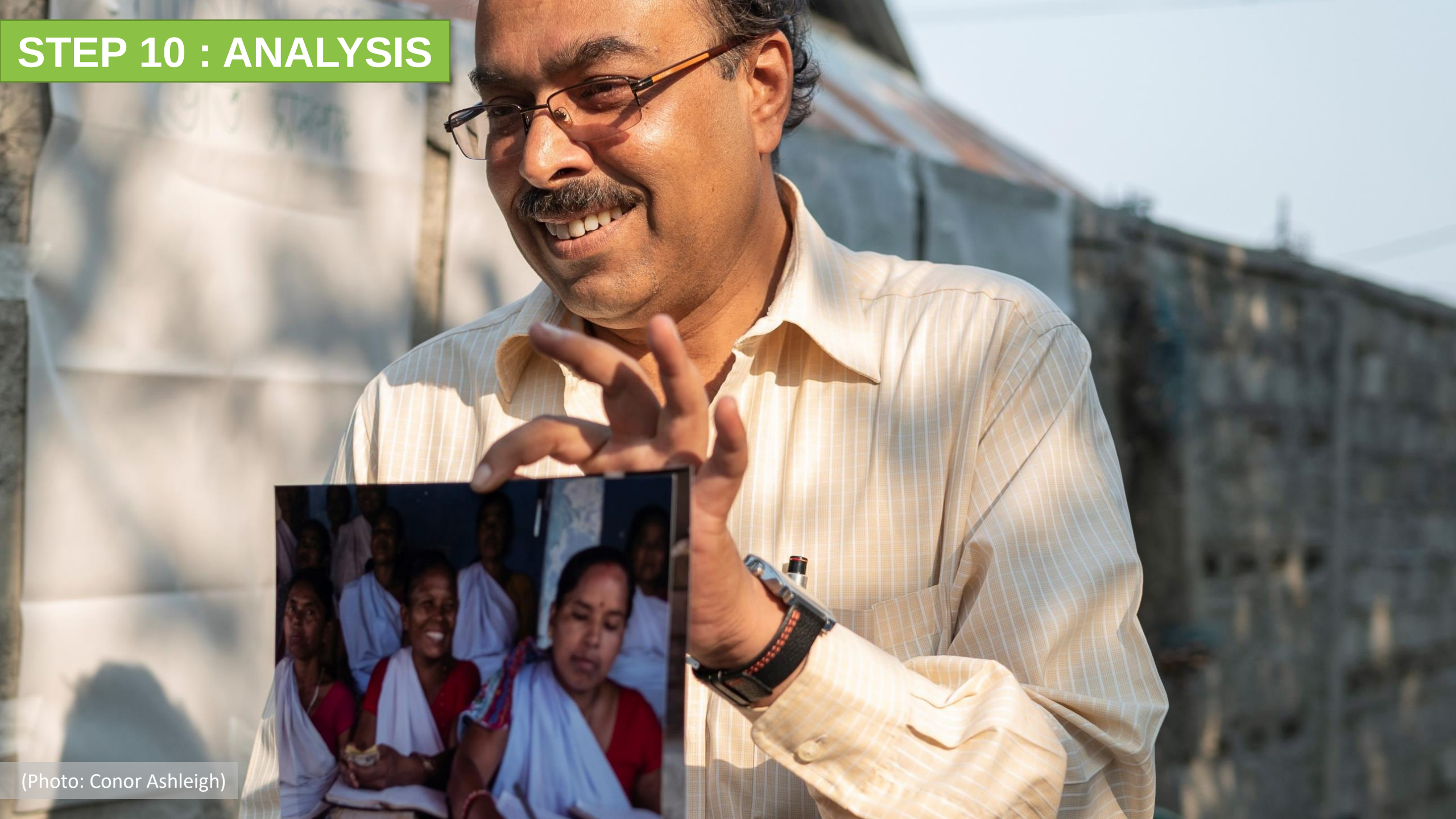
Required for Pre-screening and Consent

- Prescreening Data
- General Information of Participants
- Protocols being followed
- Consent forms obtained
- Consistency in the day of visit
- Quality of photographs
- Data accuracy
- Timely upload of collected information
- Recordings are audible for MSC task
- Keep track of defaulters

Given to each participant each week

- Mobile Phones with Chargers
- Multi-board to facilitate charging of multiple phones
- Standard Scale for weed photography
- Consent Forms
- KOBO Forms installed on each device
- Cloth bags for weed collection
- Phone Covers with lanyard and a soft cloth
- Backpacks for facilitators
- Notebooks and Pens
- Training Manuals

STEP 10 : ANALYSIS



(Photo: Conor Ashleigh)

Step 10: Analysis

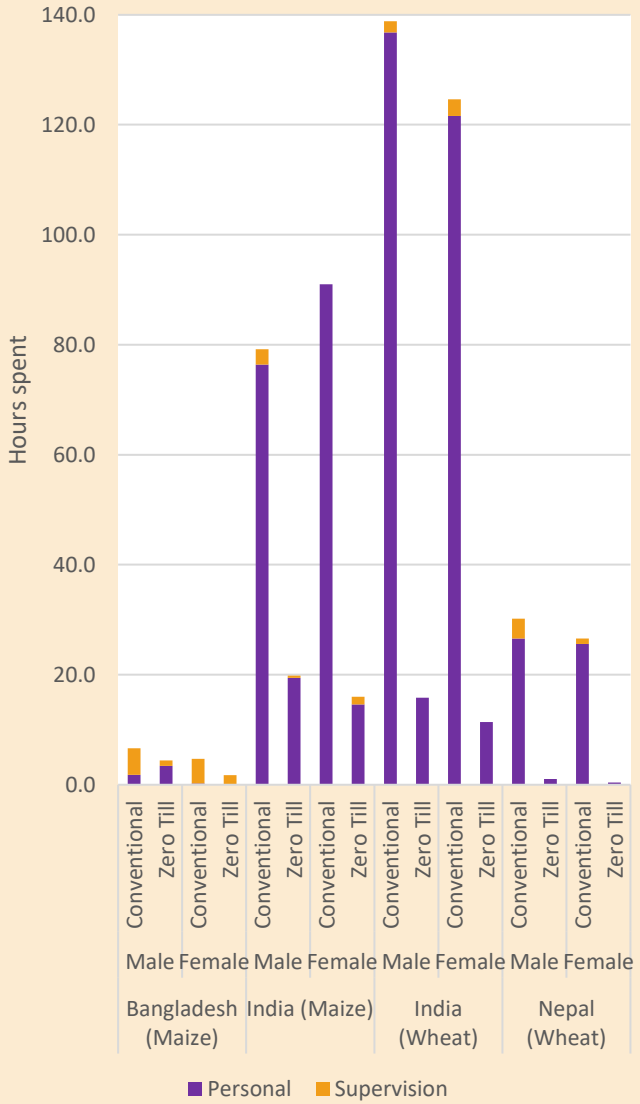
The analysis of collected data will depend on the data you have collected, but is likely to include summary statistics, visual interpretation, quantitative data and qualitative data. IF you have voice data you will need to transcribe and thematically analyze. If you have visual data, you will need someone to critically thematically tag visual elements. If you have visual data to cross reference, you may need the help of experts in a piratically field to verify.


(Photo: Manisha Shrestha)

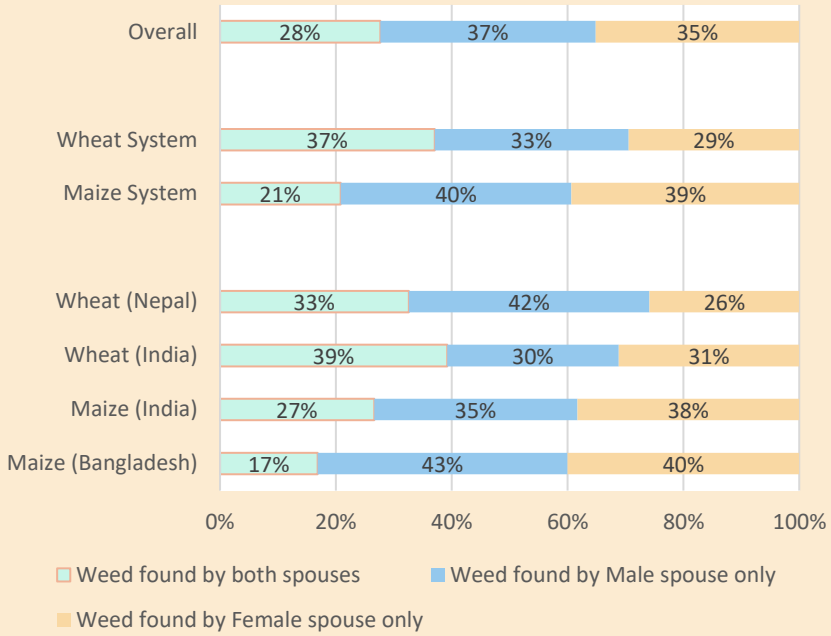
For our study, we:

- Used Microsoft Excel for quantitative data
- Used Dedoose for thematic coding of qualitative data, after undergoing transcriptions.
- Used three local agronomists to cross-validate weed identification knowledge
- Visually themed photographs provided by participants.

Example Analysis Outputs



"Females were more likely to respond that they spent increased time with children and had additional time for household chores through adopting ZT ("I want my child to do well in future; may be a doctor or an engineer. So I take care of them"). Female respondents across all three countries had also diversified their livelihood portfolio by rearing livestock, while Male respondents were more likely to find office jobs, or dedicate more time to alternative business firms."



Gendered Trend	Scientific name	Local name(s)	Common Name
Increased incidence of male identification	Oxalis Corniculata	Shushani / Teenpatti	Creeping wood sorrel
	Oryza Sativa	Dhan	Rice
	Xanthium Strumariu	Okra	Rough cocklebur
	Ammania Bacifera	Dadmari	Monarch redstem
	Lindernia Antipoda	Aswani	Sparrow lindernia
	Chenopodium Album	Bethe/ Bathuwa	White goosefoot
Increased incidence of female identification	Cyperus Iria	Motha	Rice flatsedge
	Polygonum Plebeium	Charaidengi	Common knotweed
	Euphorbia Prostrata	Ketha/ Chanchi	Prostrate sandmat
	Echinochloa Colona	Shyama	Jungle rice
	Spilanthes Acmella	Teprai	Paracress

Example Analysis Outputs

Example photo data

1. Selfie photos
2. Weed photo
3. Interrow
4. MSC photo with explanation

"Because of ZT farming, I save lot of time so I am doing mushroom farming with this time. It is more convenient now and doing mushroom farming helps me to meet the household and kid demands."

Step 11: Return and Discussion

Once the data is collected, cleaned, and analyzed by the project team, it is crucial to return to the sites and engage in a community discussion. This allows the team to validate findings and collect any additional information to supplement the study. At the same time, this provides a space for respondents to discuss and explain their own photographs and responses. This can be done in multiple ways at the household level or community level disaggregating into smaller groups depending on the research activities. An exhibition of photographs, along with a focused group discussion, can be conducted. Photographs can be printed and displayed in a communal space, and a discussion can take place to engage respondents and other community members to share their experiences. The photographs act as a visual stimulus to start discussions. They can be conducted at the household level or separately with men and women to discuss commonalities or differences in their perceptions. Participants should be informed about the process, and discussion should be planned to keep the community members' schedules in mind.

Things to remember:

- Qualitative research requires return to discuss to help interpretations as mostly the data set is small.

- The audience during this step can be anyone depending on the research objectives. The researcher may choose to get back only to the participants or involve others in the community to understand the broader context.

(Photo: Conor Ashleigh)

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APPENDICES

(Photo: Conor Ashleigh)

a) Appendix 1: Consent Forms

Weeds and Gender Photo Diary: Informed Consent Form

Dear Participant,

You are being invited to participate in our Photo Diary study in the Weeds and Gender component of the Sustainable and Resilient Farming Systems Intensification in the Eastern Indo-Gangetic Plain (SRFSI) project led by the International Maize and Wheat Improvement Centre (CIMMYT, Nepal).

This component seeks to explore farmers' knowledge, attitudes and practices related to weed management, particularly relating to household labour allocation and household decision making around the implementation of CASI practices. It will yield valuable insights for the extended partner network involved in Sustainable and Resilient Farming Systems Intensification in the Eastern Indo-Gangetic Plain (SRFSI) project and targeted advice to input dealers and CASI farmers on how to effectively and efficiently manage weed competition. This study is being undertaken for 4-5 weeks during 2019-2020 Rabi season in existing SRFSI sites in Nepal, India and Bangladesh.

We are adopting a qualitative research approach, including photography, to capture participants' individual perspectives and lived experiences. The results of the activities will be shared in a multimedia story with some excerpts also shared on CIMMYT's social media accounts. Participants will have final approval over which results are shared and in what form. All efforts will be used to maintain confidentiality and anonymity when results are shared with broader audiences. Data may be shared with other CIMMYT researchers that are part of this research study. However, we are committed to ensuring absolute confidentiality.

Participation will involve a photography training, photography exercise, group discussions and interviews that take place during December 2019 and January 2020 once a week. It is voluntary and you may ask any questions and take time to consider before making a decision about your participation. If you choose to participate, you have the right to stop or withdraw from the project at any time without any risk to yourself. If this occurs, you are free to choose between destroying your contributions to the study or releasing them for use without your participation.

Your signature below indicates that you understand the above stated purpose of the project, the agenda and your right to withdraw from participation.
I, _____, understand the above terms of reference and give my consent to participate in Weeds and Gender Photo Diary.

Signature: _____ Date: _____

Parent or guardian's signature (if under 18): _____ Date: _____

*If you have any questions, please contact b.brown@cgiar.org; CIMMYT Office, Nepal +977-1-5525490

Weeds and Gender Photo Diary: Photography Release Form

I, _____, give permission for the representatives and employees of the International Maize and Wheat Improvement Centre (CIMMYT, Nepal) to use my photographs developed for their Weeds and Gender project. They are free to use the photographs for research, display or promotional purposes in print and/or electronically.

Signature: _____ Date: _____

Parent or guardian's signature (if under 18): _____ Date: _____

*If you have any questions, please contact b.brown@cgiar.org; CIMMYT Office, Nepal +977-1-5525490

Weeds and Gender Photo Diary: Photography Consent Form

Photo Diary is a research component of Weeds and Gender project led by the International Maize and Wheat Improvement Centre (CIMMYT, Nepal). This component seeks to explore farmers' knowledge, attitudes and practices related to weed management, particularly relating to household labour allocation and household decision making around the implementation of CASI practices. It will yield valuable insights for the extended partner network involved in Sustainable and Resilient Farming Systems Intensification in the Eastern Indo-Gangetic Plain (SRFSI) project and targeted advice to input dealers and CASI farmers on how to effectively and efficiently manage weed competition. This study will be undertaken for 4-5 weeks during 2019-2020 Rabi season in existing SRFSI sites in Nepal, India and Bangladesh.

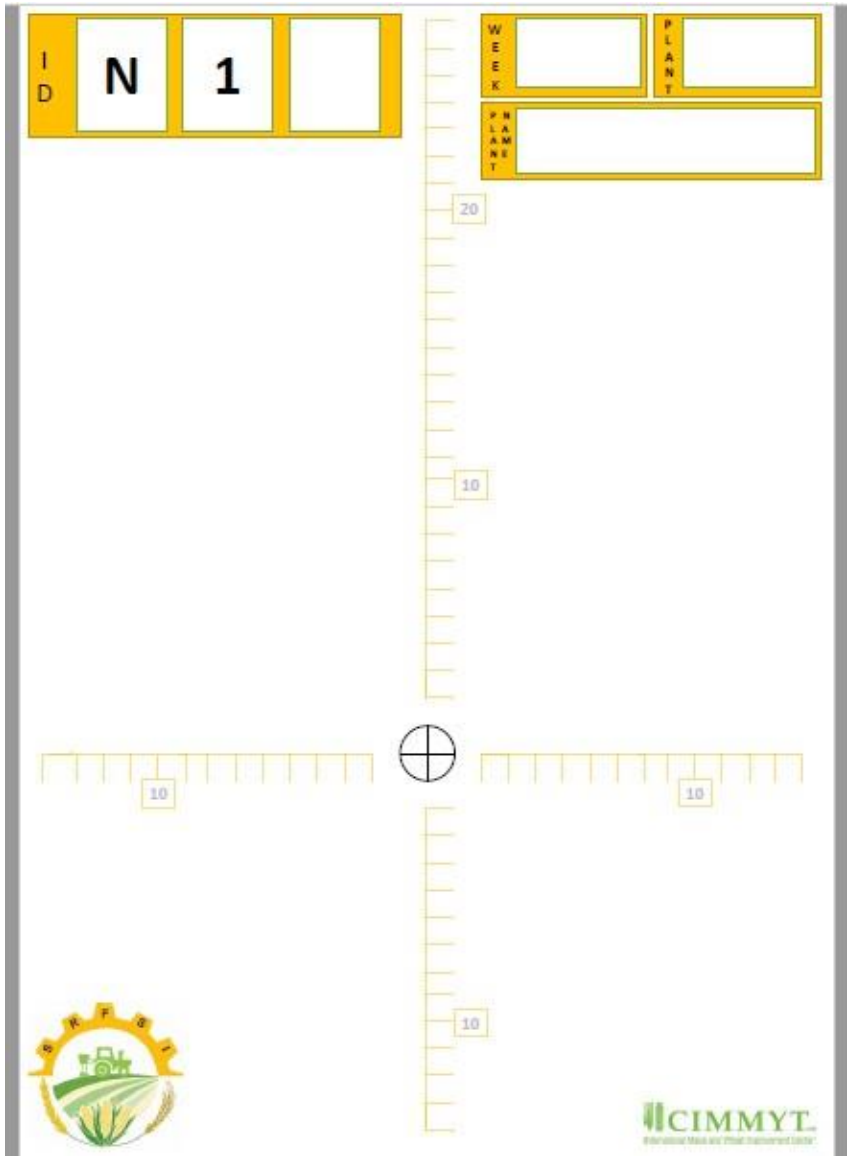
I, _____, understand that photos of me and/or my likeness may be used in a public setting and displayed indefinitely for the Weeds and Gender project. I give permission for the representatives and employees of CIMMYT to use my likeness for research, display or promotional purposes in print and/or electronically.

Signature: _____ Date: _____

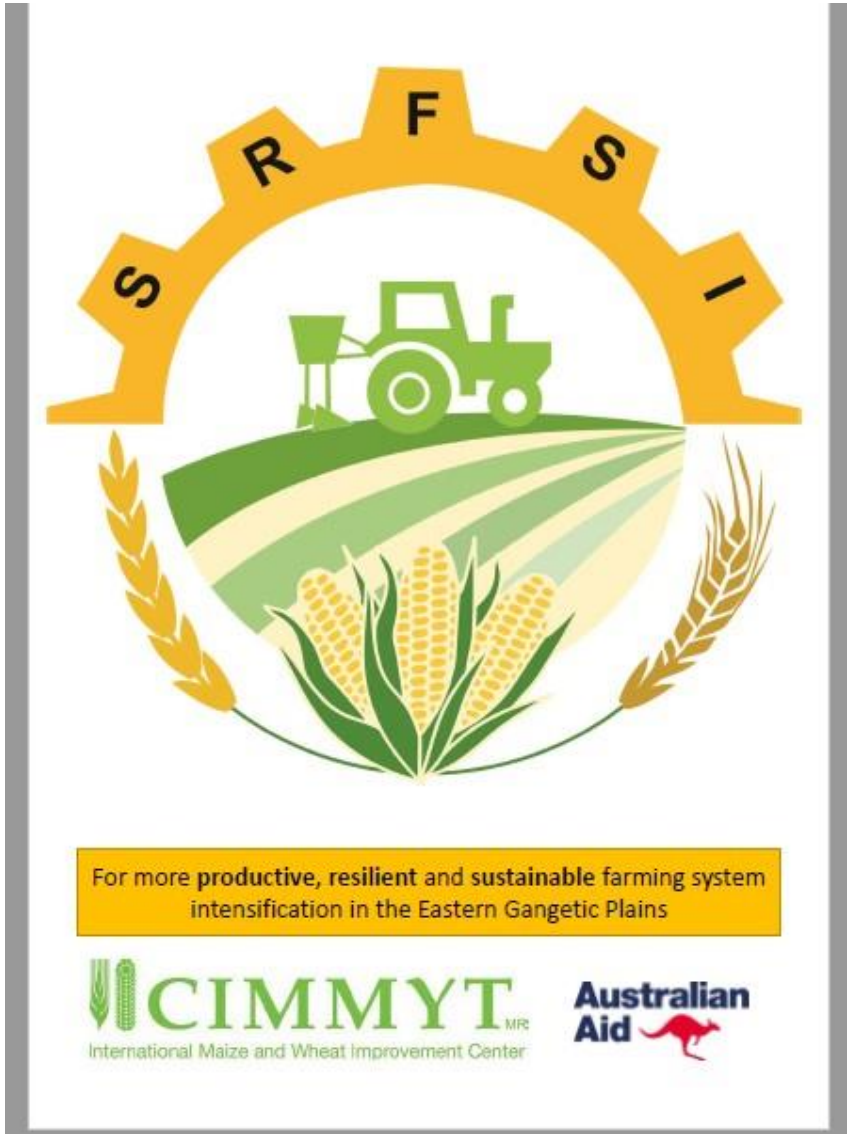
Parent or guardian's signature (if under 18): _____ Date: _____

*If you have any questions, please contact b.brown@cgiar.org, CIMMYT Office, Nepal +977-1-5525490

b) Appendix 2: Standard Scale Template



Front



Back

c) Appendix 3: How to Photograph Weeds- Dos and Don'ts

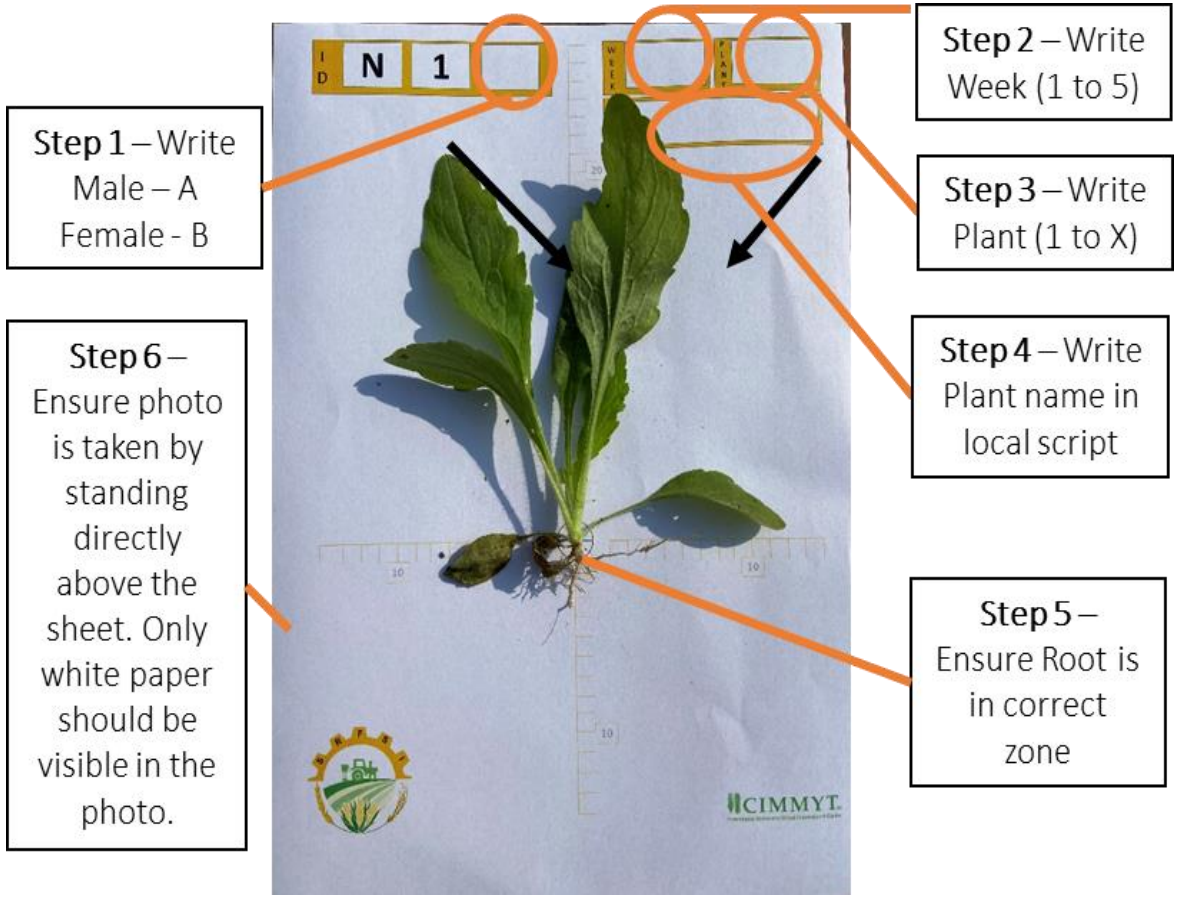
Don'ts
How not to take photographs of weed

The plant is placed incorrectly. Ensure the root is placed on the circle

Information regarding the participants and plant is not visible. Ensure the entire sheet is visible

The photo is taken at an angle. Ensure you are standing directly above the sheet when taking a photo

Dos
How to take photographs of weed



CIMMYT

International Maize and Wheat Improvement Center

Towards Equitable and Sustainable Intensification Weeds & Gender

Australian Government

Australian Centre for International Agricultural Research

Australian Government

Department of Foreign Affairs and Trade

Australian Aid