

ACTION PLAN LCF

ACCION FRATERNA

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PART I MODUS OPERANDI

1. WHERE

First we need to establish WHERE we will work.

1.1.1. VILLAGE SELECTION

The area team decides and presents to management which villages will be entered to conduct the LCF project. Best is to select villages where AF has a good communication with farmers and cooperation will be easy.

1.1.2. INTRODUCTION OF THE PROJECT TO THE STAKEHOLDERS

LCF is a new concept. A simple meet and talk in the village will not be enough to explain all the details connected to this project but it is important to introduce the program in a proper way. In the villages where the SA project is running farmers should easily come forward as a group.

First introduce the basic concepts of the formation of a group and give an overview of SA practices before explaining LCF. As introduction we try to convey three messages

- What is the concept of a farmer group
- What is SA
- What is LCF

In the village we gather a group of farmers who show interest to move away from Mainstream Agriculture (MA) to SA. In case there is already a group work with these farmers; new people can of course join.

According to the needs these introductions can happen in one time or at different periods depending on the situation (time for meeting, size of the group, interest span of the people, ...).

1.1.2.1. INTRODUCTION OF THE CONCEPT OF A FARMER GROUP

Staff from the SA team will enter the village and establish contacts with the local known person, these can be staff, old employees or others. Main point is to get an idea of the village's attitude and the possibility to take up LCF. If a large enough group can be composed the staff can go over to introduce the concept of the Farmer Group.

Points to mention

- Trainings and Meetings
 - If groups are established AF will conduct regular trainings/meetings
- Aim of the group
 - To learn new agricultural practices
 - Implement these practices
 - Share knowledge and ideas
- Advantages of being in a group
 - Tackling of problems together
 - Possibility of agricultural inputs and appliances
- Possibility of savings
 - Opening of joint bank account
- How should the group behave
 - Open to any new members
 - Genuine interest should be there from the members, we do not force anyone to take part in meetings/trainings but we like to see some commitment to join meetings, be active members and take up practices
 - Strong groups can ask for more formal rules, like compulsory saving, member fee, ...

Other programs/ tasks/ etc... with regard to farmer groups come under the work of AF. Main point is that there should be a (farmer) group in the village that has a more or less stable membership with whom staff can interact over a longer period of time

1.1.2.2. INTRODUCTION OF SA PRACTICES

A second portion that is usually intertwined with the introduction of a Farmer Group is the introduction of the SA practices. Here the staff member discusses the practices which AF recommends as well as the problems of Mainstream Agriculture.

Again AF has a experience in these matters and these points should be considered as given facts.

Points to mention

- The economic condition of farmers
 - Heavy expenditures, benefits for the big companies
- Consequences of MA and chemical fertilizers, pesticides and weedicides
 - Degradation of environment
 - Erosion
 - Health problems, food poisoning
- SA to counter this
 - Local resources
 - Different methods
- Results of SA
 - Decrease in input, increase in output
 - In balance with environment
- How trainings and meetings will take place
 - Farmer Field Schools (FFS)

1.1.2.3. INTRODUCTION OF LCF

Last part of the introduction is LCF. Here the emphasis should be put on the concepts of climate change, how pollution causes it, the solutions and how LCF works.

Points to mention

- How pollution is caused
 - What are GHG, what is carbon

Climate Change వాతావరణం మార్పు

- Human activities cause pollution



- కాలుష్యానికి కారణం మానవులు చేసే పనులు

This pollution produces
GREENHOUSE GASSES
or CARBON

ఈ కాలుష్యం వలన ఉత్పత్తి అయ్యేది కర్బనమూ
లేక భూమిలో నుండి వెలువడే విషవాయువు



- How this causes climate change

- What are the consequences

This creates Global Climate Change



ప్రపంచ వాతావరణం మార్పుకు ఈ ఉత్పత్తి కారణం

- **GHG** causes Global Climate Change resulting in severe changes in weather patterns
- గాలిలో కలుగు పరిణామాల ద్వారా ఎక్కడెక్కడో ప్రపంచ వాతావరణం మార్పు. భూమిలో నుండి వెలువడే విషవాయువులు దీనికి కారణాలు



- We must stop pollution

STOP GREEN HOUSE GASSES

భూమి నుండి వెలువడే విషవాయువులను ఆపండి

- In order to **control** this climate change People are trying to **STOP GREEN HOUSE GASSES**
- భూమి నుండి వెలువడే విషవాయువులను ఆపడానికి, వాతావవరణంలో జరిగే మార్పును ప్రజలు ఒక క్రమపద్ధతిలో తక్కువ చేయాలి



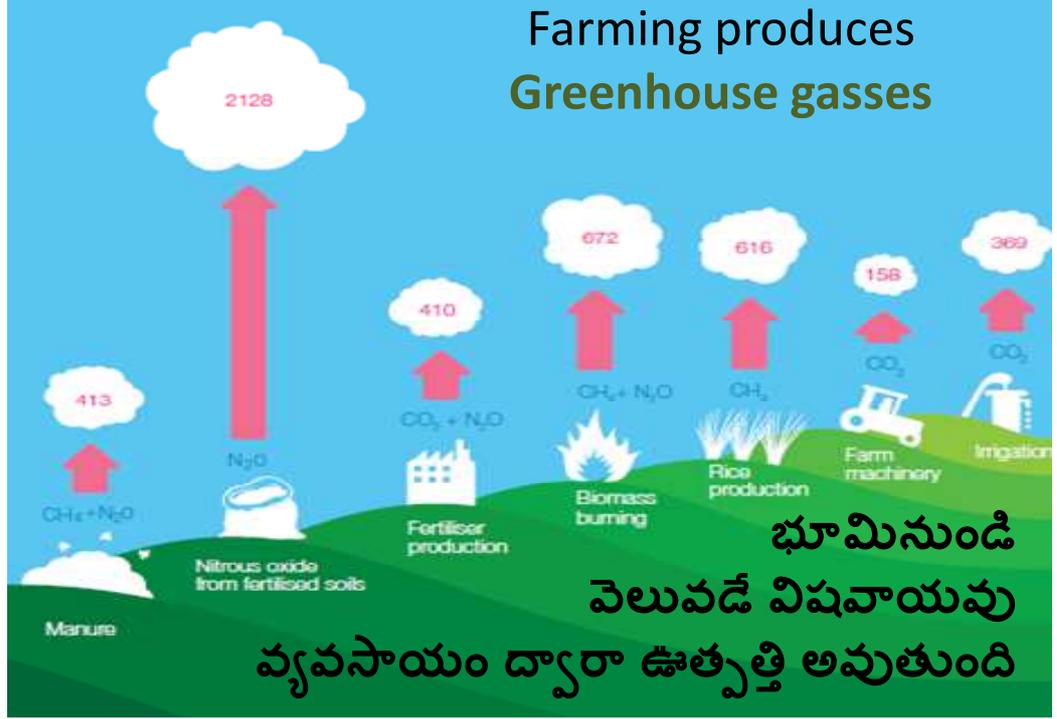
- What is the link between GHG and farming

What is the RELATION between **GREENHOUSE GASSES** and Farming?

వ్యవసాయానికి భూమి నుండి వెలువడే విషవాయువులకు మధ్య గల సంబంధం ఏమిటి?

- Just as any other human activity farming activity produces **GREENHOUSE GASSES**
ప్రజలు ఇప్పుడు చేస్తున్న కార్యక్రమాలు అనగా వ్యవసాయ కార్యక్రమాల ద్వారా ఉత్పత్తి అయ్యే భూమిద్వారా వెలువడే విషవాయువు
- Chemical fertilizers, irrigation, release **GREENHOUSE GASSES** in the air
రసాయనిక ఏరువుల ద్వారా, ఎక్కువగా నీటిని నిలువ చేయడం ద్వారా భూమి నుండి విషవాయువు గాలిలోకి విడుదల అవుతుంది

- How does farming produce GHG



- What is LCF
 - Basically SA

What is Low Carbon Farming?

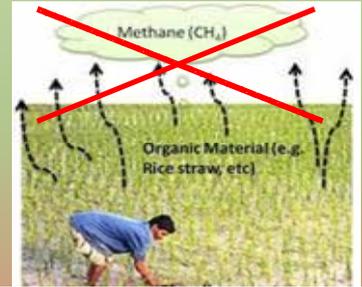
మిత కర్బన వ్యవసాయం అంటే ఏమిటి?

- Different practices can be used to **stop** GHG in farming
- వ్యవసాయంలో ఇతర పద్ధతులను వాడుతూ భూమినుండి వెలువడే విషవాయువులను **ఆపాలి**.
- This is called **Low Carbon Farming**
- దీనినే మితకర్బన వ్యవసాయం అంటారు.
- Most of these practices are the same as **Sustainable Agriculture** practices
- ఎక్కువగా మితకర్బన వ్యవసాయ పద్ధతులు సుస్థిరవ్యవసాయ పద్ధతులు ఒకేరకంగా ఉంటాయి.

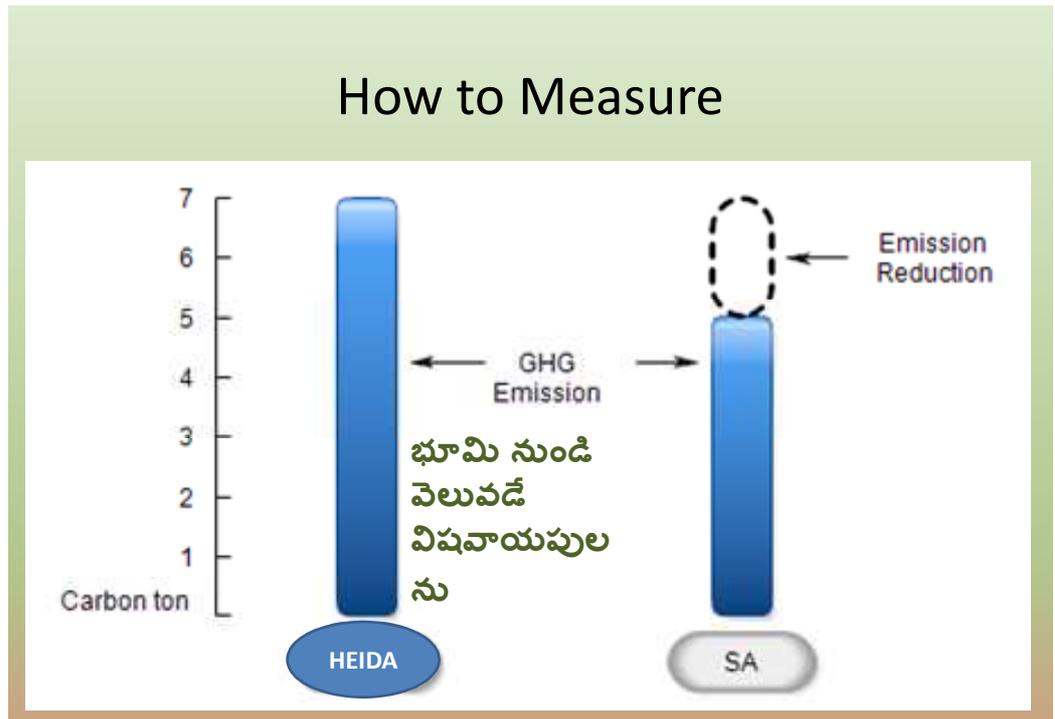


- Reduce/ no use of chemical fertilizers
- రసాయనిక ఎరువులను వాడరాదు /తక్కువ
- Increase natural fertilizers
- సేంద్రీయ ఎరువులను పెంచాలి. (ప్రకృతి వనరులు)
 - Compost కుళ్ళిన ఎరువులు
 - Jeevamrutha జీవామృతం
 - FYM దిబ్బ ఎరువు
 - Green Manure పచ్చిరొట్టె ఎరువులు
- Mixed Cropping మిశ్రమ పంటలు
 - Increases soil fertility భూసారాన్ని పెంచాలి.
- SRI శ్రీ వరి పద్ధతి.
 - Decrease water usage in Paddy వరిలో నీటి వాడకాన్ని తగ్గించాలి.

= Reduce greenhouse gasses
 = భూమి నుండి వెలువడే విషవాయువులను తక్కువ



- Not producing the GHG



- How to do LCF

- o Data and land registration

1. We COLLECT FAMILY DATA

1. కుటుంబ వివరాలు సేకరిస్తాము.



2. FIELDS get REGISTERED 2. భూమి రిజిస్టర్ చేసుకొని ఉండాలి.



012 024 TVenkatasivappa

Land ID: 2488
S. No: 152.8; Acres: 2.99
Village: Buchepalli
GP: Mandalapalli
Taluk/Mandalam: Gorantla
Baseline not conducted

Image © 2011 GeoEye
© 2011 Google

- Uptake of SA practices

3. USE SA PRACTICES

3. సుస్థిర వ్యవసాయ పద్ధతులను వాడాలి.



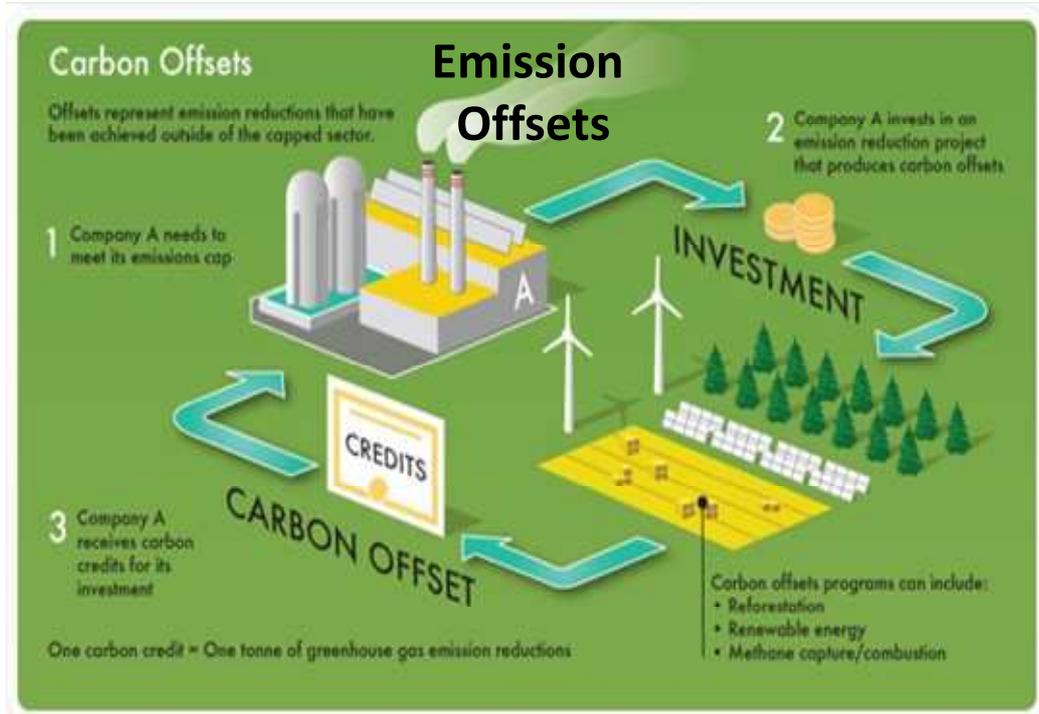
- Diary

4. Maintain Diaries
4. దినచర్య పుస్తకాలను రాయాలి



SEEDS LCF Farmer Diary 2013- 2014 పెన్స్ LCF పుస్తకం దినచర్య 2013 - 2014		LCF GROUNDNUT DIARY వేరుకనగే ఖాత కర్చన వ్యవసాయం	
Farmer Code / వైపు కోడ్			
Farmer Name / వైపు పేరు			
Village / గ్రామం			
Gram Panchayat / గ్రామ పంచాయతీ			
Mandal / మండలం			
Land I.D. / భూండ్ల I.D. నెంబర్		Survey Number / పేర్ల నెంబర్	
Main Crop / ప్రధాన పంట			
Crop & Seed Variety / పంట మరియు వేరుకనగే వేరియెటీ			
LCF Acres / LCF ఎకరాలు			
Sowing Date / వేరుకనగే తేదీ			

- Possibility of selling of saved carbon



- Carbon Market
 - What is the Carbon Market
 - The Carbon Market
 - What benefits are there/ refer to the biogas

This is just an introduction and only will pass on a general idea of what LCF is and of what it is constituted. Numerous FFS need to be organised to impart a general orientation on climate change, carbon offsetting and SA practices. This needs to be complimented with thousands of one to one contacts till the vocabulary enters the popular vernacular of farmer families.

2. WHO

Second step is to establish with WHO we will be working.

If farmers are ready to take up LCF then the process of data collection can begin. Easiest is when this happens at a central point in the village where all the farmers come to share their particulars. An initial list made of the farmers can serve as a reference point. This is only the first round of data collection and focuses on the family and their living conditions. Best case scenario is when all villagers come and share their household details but mostly only the people who want to take up LCF (or Biogas) will share their details.

2.1. FAMILY DATA COLLECTION

Data required for the data collection starts with the family data

- The FCN standardised survey format
(<http://www.fairclimate.com/library/docs/6/111214%20Common%20Family%20Survey%20Format.pdf>)

- A copy of the passbook or other legal papers of the land
 - This can be a paper copy or a digital one.
- A (digital) photo of the family

All data must be entered in the database before the next round of data collection can start.

Once entered Lists will be available to record the plot details

2.1.1. RECHECK ALL OLD ENTRIES

Because there is a great amount of data that already had been entered we need to recheck all old entries with the fresh data. Different ways of checking if a family has already been recorded are:

- Identical Ration Card numbers, Voter ID, bank account,
- Name of the HoH, names of relatives

In case of doubt physical verification must happen in the village.

2.1.2. DOUBLE DATA

Rechecking of the data brought up double entries in the database. Here one of the entries must be deleted before proceeding.

2.1.3. ENTERING DATA

Data should be entered by the staff who has collected the data to minimise mistakes. This way mistakes in data will be easy to track back to responsible person and personal training can be given for optimal data recording

If this is not possible for various reasons the Data Entry Person must have regular on-field experience and go back to the field to check up on data collection in case of doubts

New data from the survey can be added as New or added to the already entered data once the old entries are checked.

2.1.4. SOME TIPS FOR CORRECT DATA ENTRY.

CORRECT SPELLING OF NAMES

Write the first letter of every name in the name with capital

Write the initial with capital, put dot "." and leave 1 space

examples

- M. Peddakka, S. Peddamma, D. Peddappa, K. Peddanna
- ⇔ Pedda Obulesu, Pedda Narayanna, Pedda Narasimhulu
- V. Lakshmi, S. Lakshamma, M. Lakshanna
- ⇔ T. Lakshmi Devi, R. Lakshmi Narasamma
- Venkatarayudu, T. Venkateswarlu, Venkatswamy, Venkatnarayanna,
- Krishna Reddy, S. Venkat Reddy, Pedda Reddy,

- Veenu Gopal
- Gopal Chowdary

VOTERID

Write only numbers and letters

Do not leave space

Don not write “-“ or “/”

examples

- AP123456789
- DGN1234567

NREGA CARD

Write the full number, not just the last 6 numbers

RATION CARD

Use capitals

Do not leave space

- WAP123456789123
- WAP12345610A123

LAND

In **Survey Number** use “-“ or “/”, do not use “.”

Use capitals

- 45-B
- 258-2C/P

In **Acreage** use “.”, do not use “-“

Use “5” as the last number if the acreage is written with $\frac{1}{2}$

- 6.37
- 4.23 $\frac{1}{2}$ → 4.235

ANIMALS

If there are other animals but no name is given do not add the number

WOOD

Amount kg/month

On average the number should be between 100 kg and 300 kg

If family has other ways of cooking (LPG) it can be lower than 100 kg

- Between 1 and 15 → it will probably be bundles of wood.
 - Multiply into 20
- Over a 1000 → it might be a year supply
 - Divide by 12

Cost

If Family collects cost is zero, only when family buys add cost

Write kg/month

Average price of firewood is

COOKING HOURS

Between 2 and 4 hours is reasonable do not go higher than 6 even if more is written

3. WHERE

Once the families are clearly recorded we must now establish on which plots the practices happen. In AF's case a lot of land has already been recorded with GPS and carefully going through the data could save a lot of working time in the field.

We NEED the passbooks before we visit the field. Passbook or any other document the farmer has that is proof of ownership is a non-negotiable. Auditing will check the passbooks to see if farmers are the rightful owners of the land.

3.1. CHECK OLD RECORDS FOR GPS READINGS AND SURVEY NUMBERS OF PASSBOOKS AND CROSSCHECK

We must see if the farmers that are doing the practices this year have already recorded their lands in the previous years. This will involve the following steps and will be parallel with the registration of the new plots.

1. Make print outs of the plots in the villages
2. Make village maps of the plots so that plots can easily be identified
3. In case it is clear that a plot has been delineated staff can go over for checking all details for plot committing with the copy print out of the plot

3.2. RECORDING WITH GPS

Once you have recorded all the Landholding details collected during the initial Farmer family survey, you are ready to take the GPS coordinates (latitude and longitude readings) of every corner of each polygon that comprises a Landholding.

To make a list of all the plots in the village choose the Taluk/Mandalam, Gram Panchayat and Village using the dropdown lists and generate a Working List which shows the Survey Numbers and Database Acres of each

Landholding of each Farmer in the Village. A unique Land ID has been generated for each of these Landholdings by Tristle® LCF Monitoring Solution.

The Participating Farmers should already have marked each polygon corner of their Landholding with bond stones. Only when the bond stones have been placed GPS readings can be taken up. Village Volunteers should have been trained to take GPS coordinates using the Garmin eTrex® Handheld Instruments.

This Working List will be used when your Field Staff and Volunteers actually take GPS Coordinates. Make sure that each Garmin eTrex® Handheld Instrument has a unique identifying number – an “Instrument Number”. They will write down the Waypoint Serial Number of the first reading that the Handheld Instrument displays and the last Serial

The Participating Farmers should already have marked each polygon corner of their Landholding with bond stones. Bond stones should be placed at the corners and bends of the land.

Sometimes difficulties arise where to place Bond Stones. We will try to capture the whole land, including tree patches owned by the farmer on the plot. However it is better to leave out disturbances that are not farmed at all

DATABASE ACRES

The term “Database Acres” needs some explanation. This is the figure that the Farmer would have said the area was, during the initial survey. They may be right or wrong. Tristle® LCF Monitoring Solution will go by a digital calculation of the exact area within each polygon’s coordinates – “Calculated Acres”. As you continue using the Solution, you will find that these “Database Acres” figures will be replaced by “Calculated Acres” till, finally, you will have only the actual area found in the field.

PLOT EXAMPLES

3.3. HOW TO RECORD PLOTS WIT GPS INSTRUMENT

- ◆ After switching on the Garmin eTrex® Handheld Instrument, wait for at least 6-7 satellites to be recognised. This may take a few minutes.
- ◆ Go to the Menu screen by clicking on the top right button at the side of the Handheld Instrument.
- ◆ Hold the Handheld Instrument exactly over the first bond stone – i.e. the first corner of the polygon that you are recording.
- ◆ Press the bottom button on the left side of the Handheld Instrument to go to the Menu screen.
- ◆ Select “Mark” on this Menu by moving the highlighted cursor up and down using the navigation buttons (top and second buttons on the left side of the Handheld Instrument)
- ◆ Click on “Mark”. The waypoint serial number will be shown within a flag. Note down this waypoint serial number in the first column of your printed Working List. You will also see the coordinates at the bottom. These need not be written down since the Handheld Instrument will store them for you.
- ◆ Click on the bottom button on the left side of the Handheld Instrument to record the first set of coordinates.
- ◆ Without switching off the Handheld Instrument, take it over the next bond stone – i.e. the next corner of the polygon. Click on “Mark”. Once again, click on the bottom button on the left side of the Handheld Instrument to record the second set of coordinates.

- ◆ Write down the very last waypoint serial number of the coordinates recorded over the very last bond stone, in the second column of the printed Working List. (please do not write down the “in between” waypoint serial numbers)
- ◆ Without switching off the Handheld Instrument, repeat the above 9 steps for each Landholding in the village.

NOTE: Every bond stone should get a GPS waypoint but not every GPS waypoint should have a bond stone, some fields will require more waypoints than there are bond stones.

Do not take readings without stones



Figure 1: Plot with Waypoints

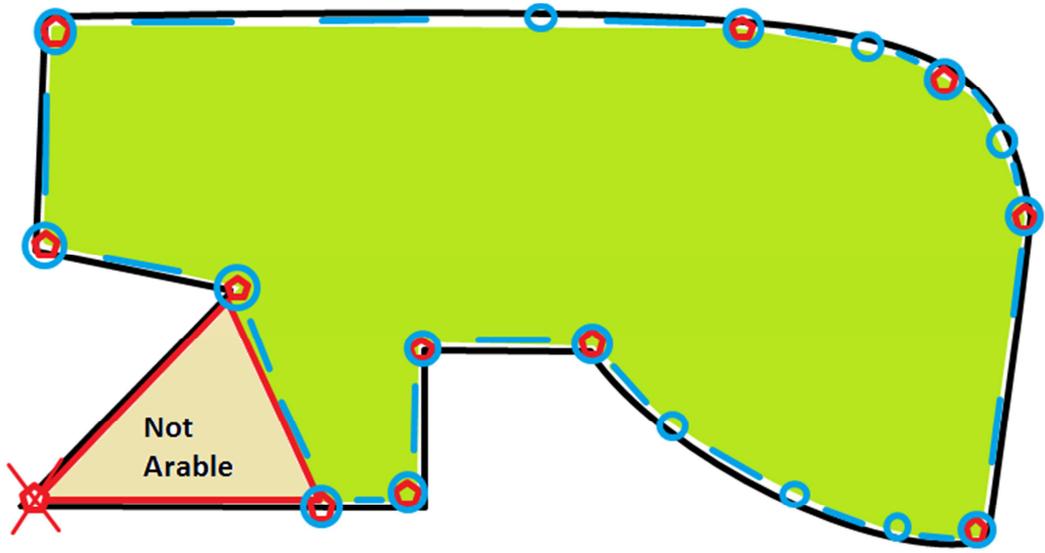


Figure 2: Plot with Waypoints

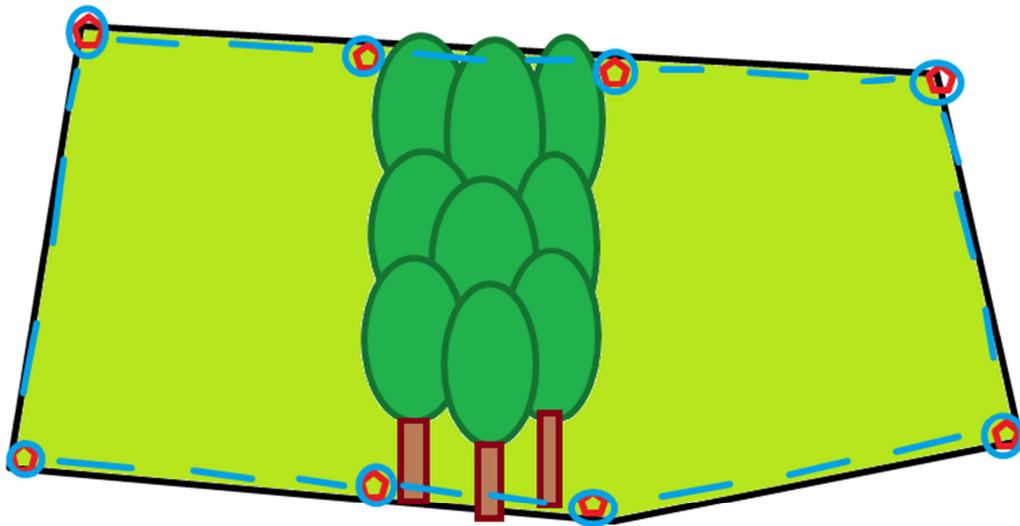


Figure 3: Plot with disturbances

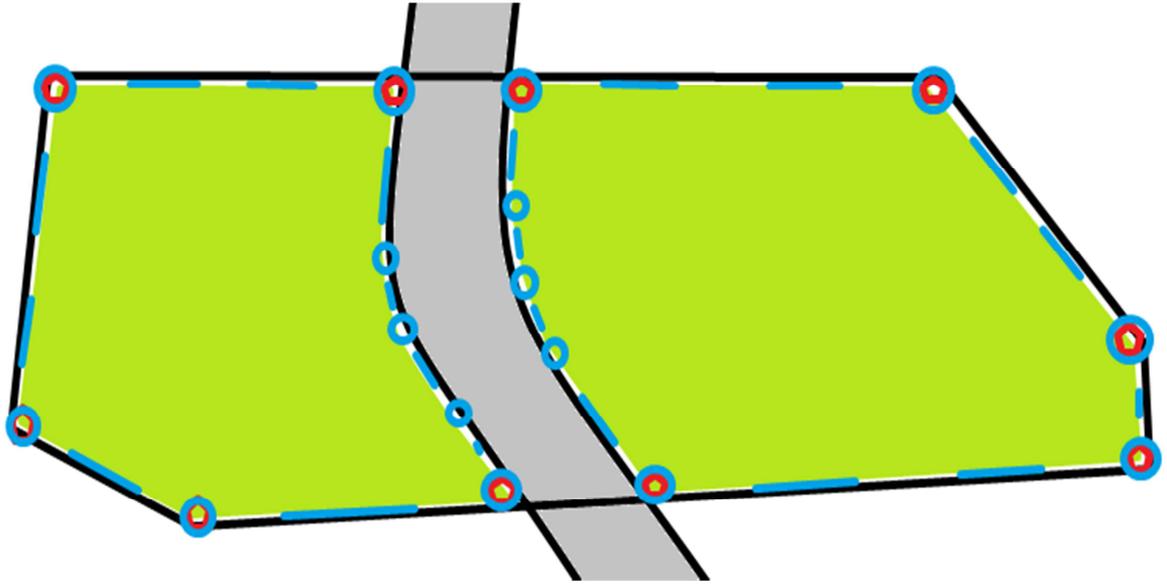


Figure 4: Plot with disturbances

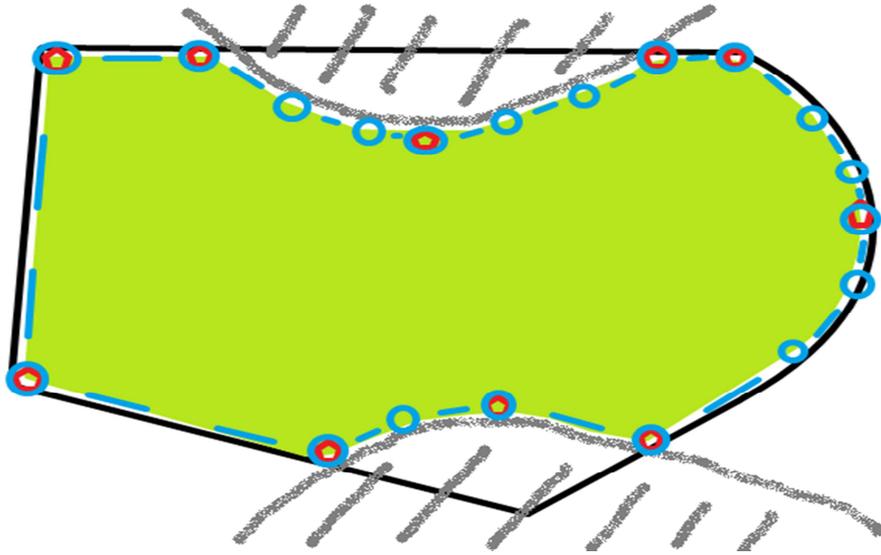


Figure 5: Plot with Disturbances

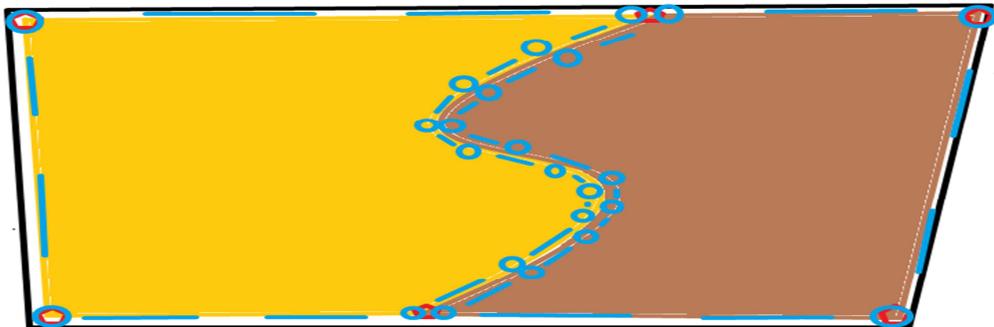


Figure 6: Plot with different soils



Figure 7: Single plot that is always split up

3.4. IMPORT WAY POINTS

The person who will be entering the data must have regular on-field experience. Only through various site visits he/she will gain the knowledge to solve various problems such as overlaps, miss readings and other doubts that will naturally arise.

There are 2 ways by which you could import the GPS Coordinates captured in your Handheld Instruments into Tristle® Polygon Recorder.

§ While the first is far simpler and easier, it will work only if you have a compatible Instrument. For the moment, the Tristle® team has implemented it only for Garmin instruments.

§ The second method is time tested for over 5 years and may be used in cases where a direct import does not work.

IMPORT FROM GARMIN ETREX

- Turn on your computer and connect the Garmin eTrex® Handheld Instrument via a Com port. Make sure that the batteries are fully charged since the Instrument has to stay connected for quite a while.
- If you are on a terminal PC that is connected to the Server via Remote Desktop Connection, you have to first follow the below steps:
 - Click on the *Options* button in the Remote Desktop Connection dialog box.
 - Click on the Local Resources tab and then on the *More* button in the Local devices and resources section.
 - Check the Serial ports checkbox in the next dialog box and click OK.
 - Click on the *Connect* button.
- Open Tristle® Polygon Recorder, click on the Import Waypoints tab and choose “From Garmin eTrex®”.

- An “Import GPS Coordinates from Garmin eTrex®” window will pop up and try to connect to your Handheld Instrument.
- 5. The left panel will show all the Waypoint Coordinates that are stored in the Handheld Instrument:
Waypoint Latitude Longitude
- Your Field Staff and Volunteers would have entered “Reading From” and “Reading To” in their “GPS Reading” Working Lists. These refer to “Waypoint” in the left panel.
- In the right panel, type in the first Land ID that you find into the “Choose Land ID” text box. Make sure there are no mistakes or typos.
- The moment you type in a valid Land ID, the Farmer Code & Name and Database Acres will be displayed. If you type in a Land ID which has already been converted into a Discrete Plot, you will get an error message that says “Committed”. Similarly, if you type in a Land ID that does not exist in the database, you will get an error message saying “Invalid Land ID”
- Look at the Left Panel and your Working List and type in the “Waypoints From” and “To” text boxes.
- Click on the *Show* button.
- Tristle® Polygon Recorder will determine all the shapes that joining these dots could plausibly produce. However, if a Landholding has too many waypoints, Tristle® Polygon Recorder will give up! You will get an error message that says: “Unable to generate a valid shape. Import and correct using the Edit Discrete Plots feature.”
- Click on any one of the probable shapes to be shown a preview.
- When you are satisfied that this is the one which properly represents the actual shape in the field, click OK .
- You will get a “GPS Coordinates Imported” message box. Click OK .
- The rows that were used will disappear from the left panel. Continue this process till all the Waypoints in the Handheld Instrument are consumed.

Important! Waypoints will not automatically be deleted from the Garmin eTrex® Handheld Instrument – this has to be done manually.

IMPORT FROM EXCEL

This is a more time tested and proven method of importing Waypoints into Tristle® Polygon Recorder. This is quite a good idea because it stores all the original readings. To prepare the Excel file follow the next steps

- When your Field Staff and Volunteers bring in the Garmin eTrex® Handheld Instruments after recording coordinates of Landholdings, the Instruments and GPS Readings Working List will be in front of you.
- Turn on your computer and connect the Handheld Instrument to it
- Open the GPSbabel ® GPS software and select for
- Input Device and Garmin Serial/USB protocol.
- Device name: COM1
- Translation Options: Waypoints
- Output: File Format GPX XML
- File name: double click select place for saving and give name (eg. M5)
- Press Apply
- Open an empty Excel file and drag the newly created file in the excel file
- Press yes > select As a Read only workbook > press Yes
- Select Column N, O, P (Latitude Longitude and waypoint) and copy paste into a new excel sheet and
- On sheet 2 two of the newly created excel file put the headers
- LandID Waypoint Latitude Longitude

- Bring the respective columns from the first sheet into the correct columns of the second sheet
- Use the data from the field to see which LandID corresponds with which waypoints and enter those LandIDs in the first column
- Save the file as 97-2003 workbook.

IMPORTING INTO TRISTLE POLYGON RECORDER

- Click on the **Import from Excel** tab in Tristle® LCF Monitoring Solution to be shown a dialog box asking you to select the MS Excel® File to import.
- Click on the **Browse** button and select the file that you have just saved. If there are more than one Worksheet in that file, you will be asked to choose the one you want to import (sheet 2).
- If you want to Auto sort the waypoints and allow Tristle® LCF Monitoring Solution to guess the consecutiveness of the polygon corners, then click on the **Auto Sort Waypoints** checkbox. If, on the other hand, you are absolutely certain that your Field Staff and Volunteers have taken the readings in proper order, one after the other, then uncheck this feature.
- Click on the **OK** button and you will be taken to the Edit mode of Tristle® LCF Monitoring Solution.
- If there is even a single Landholding whose GPS Coordinate(s) falls outside the License Area of the Solution, Tristle® Polygon Recorder will reject the entire MS Excel® file with a “License Violation!” message. You will then have to manually delete all those readings from the MS Excel® file and retry.

3.5. DEFINE WATER SOURCES

Water Sources are defined in chosen Villages.

Several Participating Farmers would have access to more than 4 months of water from their own open or bore well, a neighbour’s bore well, or a small pond created by a check dam, or a stream/river, or irrigation tank or wherever. This information is vital to plan a sustainable agriculture activity that needs a little watering – e.g. proper composting, raising a kitchen garden, etc.

You may begin by recording just the Water Source Type and Owner. Select the Water Source Type from the dropdown list and type in the Owner’s name.

Later, after visiting the field, you can Edit to add the Summer Water Level, Winter Water Level, HP of the Pump set used (if any), Latitude and Longitude. This last is important if you want to link particular Discrete Plots to the Water Source and generate Map Reports using Tristle® Polygon Recorder.

After Water Sources in a particular village are all recorded, Landholdings in that village can be “attached” to them. However, if a Water Source needs to be attached to a Landholding from an adjacent village, this cannot be done. So sometimes it will be necessary to record the same Water Source twice.

When you record the GPS Coordinates of the Water Source and generate a Map in Tristle® Polygon Recorder, the exact distance, is calculated from the Water Source to each Discrete Plot that you attached it to. This Distance is automatically attributed by Tristle® LCF Monitoring Solution to the Discrete Plot.

ATTACH WATER SOURCE TO A DISCRETE PLOT

If the Landholding has been converted to a Discrete Plot by recording the GPS Coordinates of it’s corners, and Calculated Acres are shown, you will get an additional option to attach a Water Source to that Discrete Plot.

However, this will happen only if a Water Source has already been defined in that village.

Warning! Once again, please bear in mind that once a Discrete Plot is selected for LCF Practices it can no longer be edited. So please do record Water Sources in the Village, and attach Discrete Plots to them before you select the Plot.

TANK

Take the point where the tank is irrigated to the fields. Record summer and winter water levels.



Figure 11: Tank Irrigation Points

Owner can be the group (committee, village organisation ...) who controls the irrigation.

BORE WELL

Take the point at the place where water is pumped up, sometimes this is some distance from the field

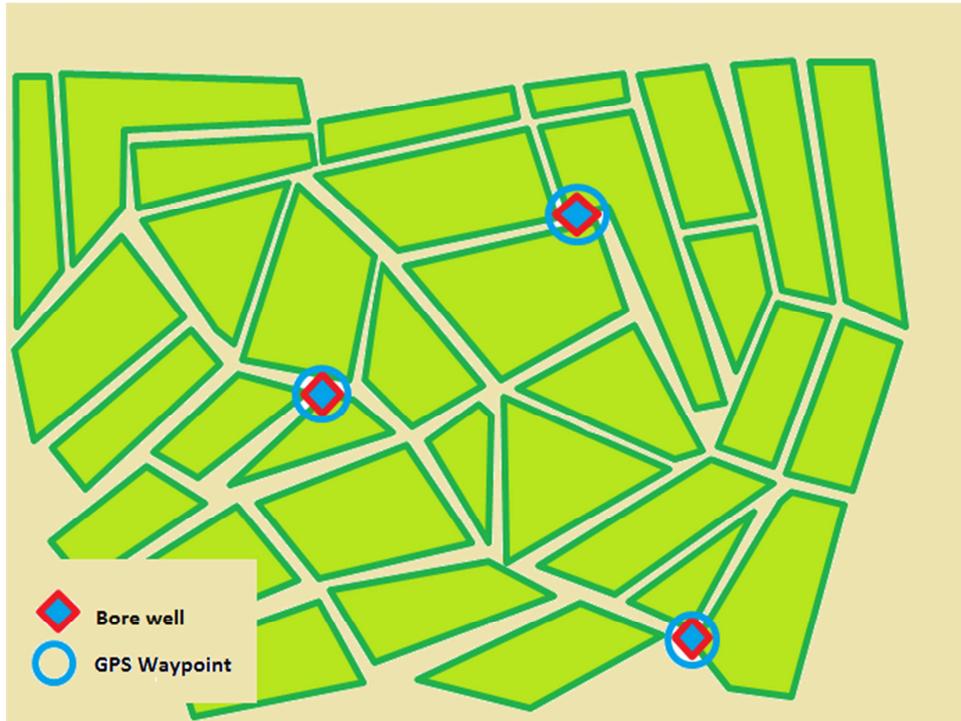


Figure 18: Bore Well

Record HP of the pump

3.6. ENTER BASELINE TREES

The number, age, number of branches, breast level girth (BLG) and height of trees already existing on Landholdings, before the start of the LCF Project, is needed to calculate the Baseline Carbon Stock in the project area. Tristle® LCF Monitoring Solution does this through a screen where information on Baseline Trees is recorded.

Trees included for measuring should be taller than 1.5m and with the breast level girth (BLG) above 15cm; in arid zones, where trees grow slowly, the minimum BLG can be as small as 8 cm.

If the Administrator has assigned you permission for more than one Taluk/Mandalam, then you will get the Taluk/Mandalam dropdown list. Otherwise, the Solution will ask you to choose a Gram Panchayat and then a Village.

You will be shown a screen listing of all the Landholdings, against each Participating Farmer in the chosen village. Besides showing some static information on each Landholding, the number of Baseline Trees already recorded, if any, will also be shown.

Click on the *Enter Baseline* button next to a Landholding to add or modify Tree species on the chosen Landholding. You will be taken to another screen listing all the Tree species that are already recorded for that Landholding.

Click on the *Add a Species* button to be taken to yet another Screen where you can use the dropdown list to select the Species. Record the number of Trees, their average Age, No. of Branches, average Height, average Breast Level Girth (BLG), and Location.

Please make sure to record Height and BLG in centimetres (cms) and not any other unit. It may be a good idea to provide your Field Staff/Volunteers with a printed chart with the conversions from feet to centimetres and inches to centimetres.

If there are NO TREES on that particular Landholding, choose "NO TREES FOUND" from the dropdown list, and record the number, age, height and girth as "0".

This screen does not have an *Edit* button to correct what is entered. Simply click on the *Delete* button and rerecord the information once again.

If you do record Baseline Trees to a Landholding where "NO TREES FOUND" has been wrongly recorded, this entry will disappear the moment you record even a single Species under that Landholding.

You can record the same species more than once. E.g. if there already 20 Mango trees of 10 years age recorded, you can once again record another set of 10 Mango trees that are 5 years old. If you are really fastidious about the data, you could even record every single Mango tree on a plot of land as a separate record! This is sometimes needed in a scientific study and calculation.

MEASURING TREES

Girth: See Fig 17 for places where to measure BLG. The girth should be taken by putting the measuring tape around the stem of the tree

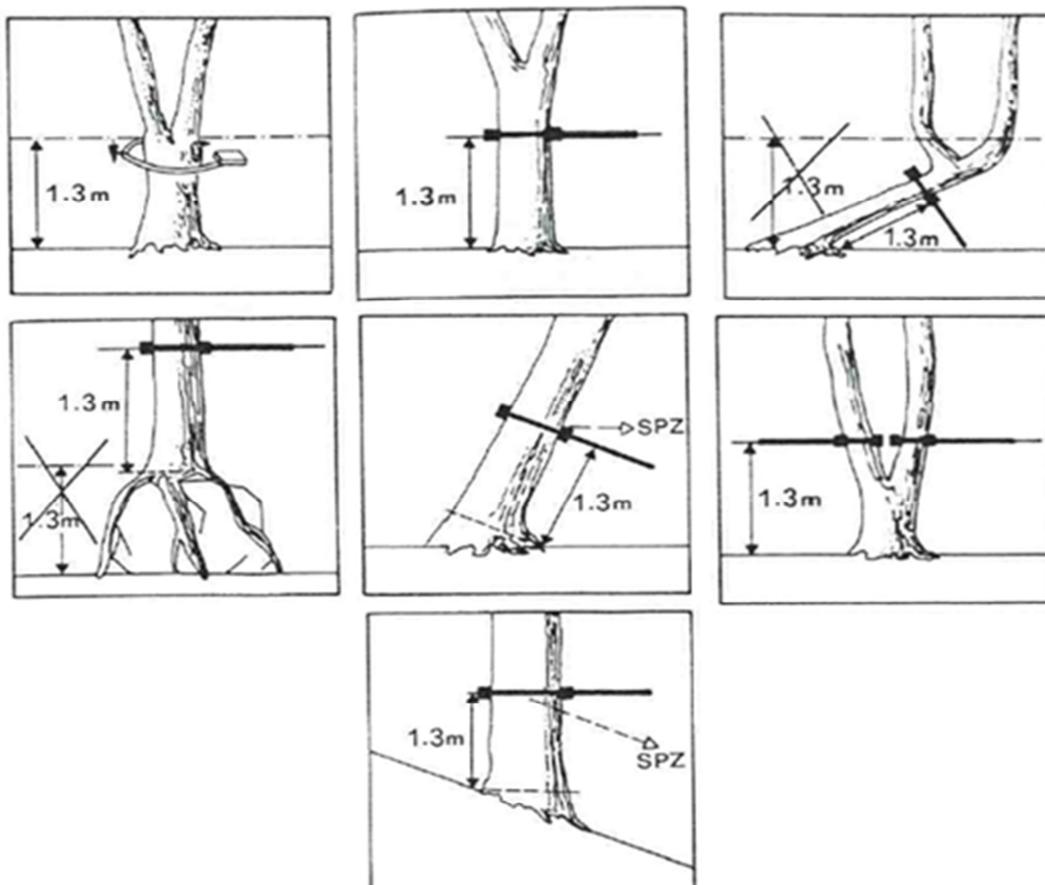


Figure17: Measuring Girth

Height: There are different ways to measure the height of a tree but the method with the thumb up is easy and gives a pretty correct measurement.

1. Stretch your arm out and close one eye. Cover the tree with your thumb up whereby the top of your finger covers the top of the tree and the underside of your fist the base of the tree.



Figure 9: Measuring Height of a Tree

2. Tilt your hand while holding the underside of the fist at the base of the tree. Place an object or person at point of the top of your thumb

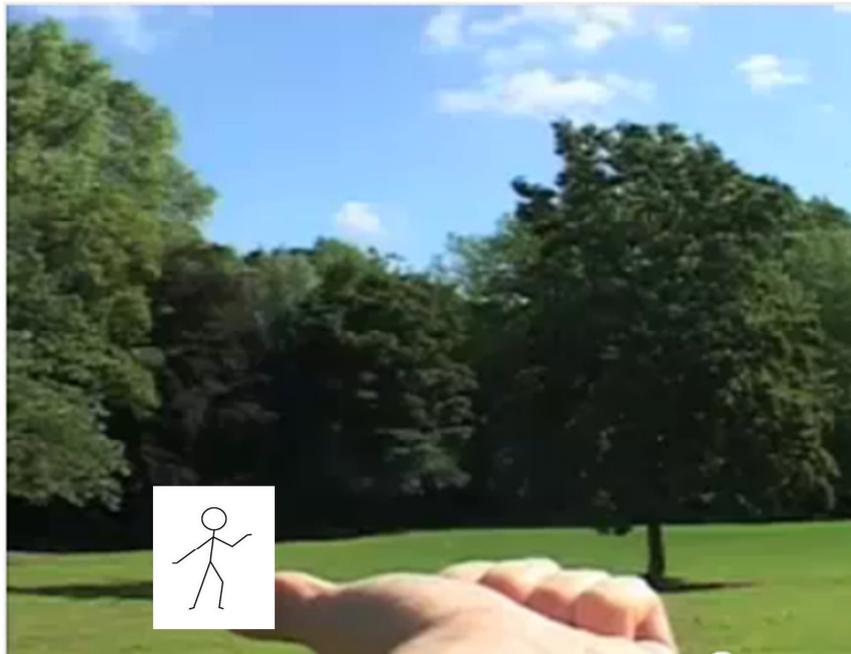


Figure 10: Measuring the height of a Tree

3. The distance between the person and the tree will be the height of the tree

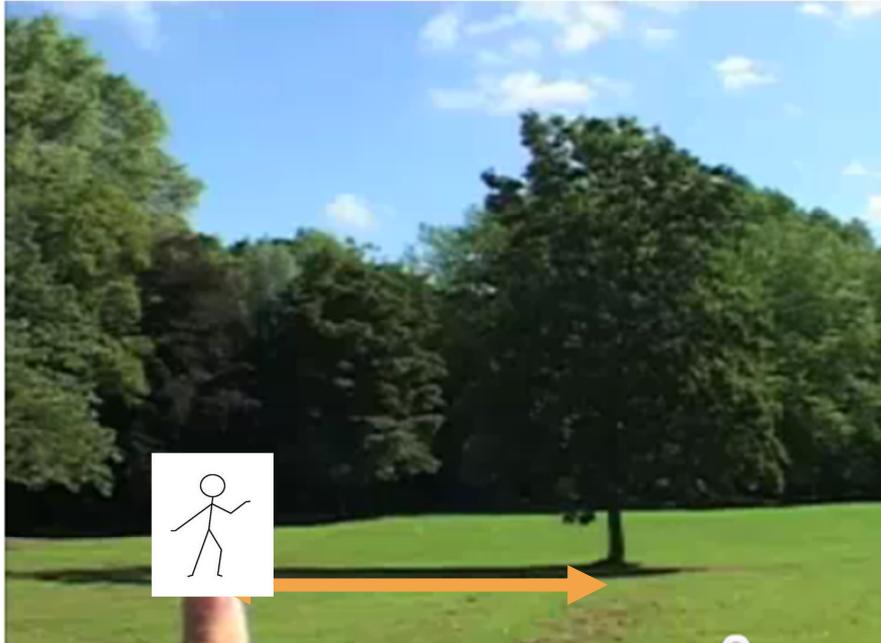


Figure 11: Measuring the height of a Tree

3.7. ENTER LAND TITLES

Land Titles need to be recorded to generate Carbon Contracts. These are legal authorisations given by each Participating Farmer to the Participant NGO, so that you can aggregate all the GHG emission reductions that are generated through Sustainable Agriculture practices undertaken on individual Discrete Plots belonging to thousands of Participating Farmers, and sell them to a Carbon Investor through an Offer Sheet.

You will be shown a screen listing of all the Landholdings, against each Participating Farmer, in the chosen village.

Fill in the Title Acres (i.e. the area shown in the Title Deed), Name of the Title Holder, Relationship of the Title Holder to the Participating Farmer, and Title Document Type. Click on the *Update* button at the bottom of the screen when you have finished entering all the data.

3.8. COMMITTED FIELDS

Before a plot can get practices registered it needs to be committed. But before committing an intensive recheck needs to be done of each discrete plot. One needs to check if all the details are correct.

- Farmer
- Title holder
- Approximate size and shape to see how the land size corresponds to title deed
- Survey number
- Land ID
- Gradient
- Bunding
- Grazing
- Soil type

- Irrigation
- Tree species
- Title deed

This is done by taking a copy of the plot to the village and revisiting the site. In case of changes one needs to note this down on the paper so that it can be corrected before committing. After rectifying all mistakes we can commit the plots in the Tristle® Polygon Recorder.

4. WHAT

What is happening in the plots? We need to know exactly what is happening in our working area before we can establish what the correct approach is.

In order to calibrate with LCF we need to record a set of data on the MA practices of the farmers. Then we will need to tell them what to change and adapt to SA practices.

4.1. BASELINE STUDY MAINSTREAM AGRICULTURE

For each crop we want take up we need to establish the MA practices of each specific crop for each season. By using the Questionnaires provided by the FCN Tech Team (contact Drishya FCN-EDF) and

FARM CHARACTERIZATION QUESTIONNAIRE SURVEY GUIDELINES

Farm characterization survey is a questionnaire survey conducted specific to crop and season in the NGO operational area to understand and parameterize the average mainstream agriculture practices and system of the region. The questionnaire survey needs to be carefully administered to elucidate the most representative as well as comprehensive parameterization of the agriculture of the region. The average levels of the main parameters elucidated by these surveys will be represented and implemented as a treatment in the Reference Plot (Mainstream Agriculture Reference Plot). It is therefore necessary that the survey is completely representative and defensible.

Study and Translate Questionnaire Format: Study the questionnaire template provided and discuss with your team. Make appropriate changes and communicate to us before translating the format into your local language. It is necessary that all the footnotes, albeit repetitive, be retained to provide as much clarity as possible for the staff who will administer the survey.

Selecting the Farmer: It must be noted that although there will be variation from one farmer to another for any given parameter; it is also true that there will be a range or threshold within which the parameters vary. The farmer sampling (Selecting the representative farmer) becomes the most critical part of the entire exercise.

Parameter Variability: The survey should also represent the variability across the entire region where the NGO is currently undertaking LCF and also the area where extension is planned for the next 5 years or more.

Covering the NGO Operational Area: NGO Operational area is not the one limited area which they are currently working on or implementing LCF. Instead it is the total area they want to expand their Sustainable Agriculture Promotion Program or LCF in the years to come. We do not want to change the Mainstream Agricultural parameters (Baseline) very often and we don't want to represent only a limited area of operation. Hence it is recommended to cover a good expanse and sample villages appropriately.

Number of Villages to be sampled: Select about 10% of the total number of villages where you are currently implementing LCF and planning expansion. (E.g., if you are planning to expand LCF to 100 villages, we recommend sampling at least 15 villages.)

Additionally, select 5 villages outside NGO Operational area where your organization is yet to penetrate into the communities. Also select villages where already you have a strong footing but not LCF villages yet. Obviously LCF villages will be the third category. It is advisable to get a good spatial distribution (of the entire category) and biased to location or access.

SACRED is working in 30 villages currently and planning to expand to about 130-150 villages by the year 2017. The categories of villages selected is as follows
Total number of villages = **150 villages**
10% of the total villages under LCF (which are currently under LCF) = **15 villages**
5% villages with NGO influence but NOT LCF villages yet = 5
5% villages with NO NGO influence – these must be completely far from NGO influence but within the territory under study. = **5 villages**
Total number of villages to be sampled = **25 villages**

Sampling Farmers: In each village, *randomly* select at least 5 Mainstream Farmer. It is essential that we carefully pick, without bias the Mainstream farmers than sampling small farmers who already are much below the PoP levels. Also to cover the Large farmers we should make sure that we have a proportional amount of these people. For distribution of lands see Mandal wise, Category wise Land Holdings 2005 Census below

Note the criteria of how we define the HEIDA farmer. We do not want to interview the farmer who applies fertilizer occasionally! Instead we need a general representative farmer who can fit into HEIDA category.

Data Entry: The questionnaire data has to be entered in an MA Excel data base which will be provided. Tech Team will help in each of these steps closely and please consult or get back to us if there are ANY doubts.

Validation: After data entry, the Tech Team will analyze the data and come up with average levels and proportions of different activities and application rates. This will be communicated in a very simple format and we need a quick validation on those patterns and statistics. There will be a general proportion and way of agriculture in a region which a local knowledgeable farmer or expert can validate and say it is representing the general mainstream situation. The Summary conclusions of the survey should sync with those ground realities.

This study is specific to crop-season and region. If there is any major difference/deviation from these general averages, the surveys may have to be expanded. For example, if the survey has been done for Summer Crop, the exercise has to be repeated for Kharif and Rabi.

4.2. WRITING POPS

When MA practices have been recorded a Package of Practices for SA has to be written down. The SA PoP will serve as the guideline for the farmers for their practices in the field. They need to reflect the spirit of SA as well as have an eye for potential GHG reductions. PoPs should be made up by staff and stakeholders to be representative.

Each crop needs to get its own specific PoP with some common details.

- Area of practice (1 Acre commonly)

- Field Preparation
- Sowing
 - Number of seeds
 - Seed treatments
 - Sowing
- Cropping pattern
 - Distances, lanes,
- Fertilizers
 - Preparations
 - Timing and quantities
- Pest controls
 - Preparations
 - Timing and quantities
- Weeding
- Irrigation

4.3. IMPARTING POPS

The PoPs have to be shared, explained and demonstrated to the farmers through meetings and trainings. The subject of the training should be closely related to the ongoing practices in the field. Eg. seed treatment training has to be given just before the sowing begins.

5. HOW MUCH

Last step is establishing the proof chain. We need to make sure that we can substantiate the work in the field. For that a series of steps need to be undertaken that guarantee a possible sale of carbon credits. Most of these steps have been done already

- Family data recorded
- A recognisable delineated plot
- Plot data recorded
- Committed plot in the solution

Once that is done these committed plots can receive a diary

5.1. DIARIES

Designing of the diaries happens in cooperation with the FCN tech team.

The diaries will be kept up to date by volunteers in the village.

The following instructions can be given to the staff and volunteers

1. Explaining LCF
 - See pamphlet
2. Explanation Diary Why
 - The Diary is part of the evidence presented to the Validator/Verifier (see 6)
 - What is written in the diary will act as the basis on which your Emission Reductions will be calculated to see how much Green House Gasses you have saved.
3. Explaining the Practices

- Repeat the necessary SA practices to be taken up
- 4. Go over all the points and see what needs to be filled in and how
 - Basic
 - Farmer details
 - ploughing
 - Input of nutrients (what makes the crop grow)
 - Pesticides (to protect the crop)
 - Weeding
 - Harvest
 - Differences Groundnut
 - Intercrops
 - Harvest of intercrops
 - Differences Paddy
 - Nursery details
 - Transplantation
 - Irrigation
- 5. Practical Training
 - Bring volunteers to the board and let him fill in parts of the diary as a group exercise
- 6. How to do it in the village
 - A list will be given with the details of the plots village wise.
 - Volunteers still will need to verify if the plot is being used (not waste land, other crop planted,....)
 - The volunteers will keep the diaries in his/her care
 - A weekly day has to be given to our staff member when the diaries will be filled in
 - We know not all the farmers can come on the same day to the house of the volunteer but once a week the diaries have to be updated
 - All Plots with diary must be visited to make sure
 - It is the correct farmer/ plot/ crop
 - Help out in case of problems (eg. pests)
 - Staff will regularly visit the villages
 - To help clear doubts
 - To take up random checks of plots
 - in the meanwhile please contact our staff in case of problems

6. AUDITING

The Claim Validation is to be carried out through the following steps:

- **Desktop Review** of available project documents and monitoring solution at Participant NGO level
 - Demographic Survey Data
 - Plot Information
 - Land Titles
 - Sustainable Agriculture Package of Practices (SA PoP)
 - Plot Diaries
 - Data from Plot Diaries archived in the Tristle[®] LCF Monitoring Solution
 - Minutes of Meetings/ Trainings held for farmers, staff, volunteers

- **Stratified Random Sampling** : The project area is to be stratified based on salient features of the project activity such as crop(s) wise, soil type, SA POP, Plot size, etc.
- Selected Plot Visits and Verification of
 - Plot Boundaries, are Bond Stones or some other markers present at Plot Corners?
 - Are GPS Coordinates of the Plot matching the Coordinates recorded in the Tristle[®] LCF Monitoring Solution?
 - Plot Shape
 - Plot Ownership : Legal Title
 - Plot Baseline : Soil Type, Irrigation Source, Contour Bunding, Tree Baseline
- Verification of implementation of SA Practices
 - Plot Diary
 - Follow up interview with Participating Farmer, if present
- Resolution of the identified corrective action requests (CARs), clarification requests (CL) and forward action requests (FARs) if any, followed by the issuance of the final Report.

Sl. No.	Checklist question
	1. Project Participants
1.	1.1 Is the implementing NGO, a Project Participant and the Carbon Aggregator for the project activity?
	2. Duration of the project activity/crediting period
2.	2.1 Is the starting date of implementation (or real action began that resulted in changes to the emissions reductions) been adequately justified for the cropping season considered for emission reduction calculations?
3.	2.2 Have the cropping seasons been clearly defined?
4.	3. Location of the project
5.	3.1 Has the location and geographical boundary of the project been defined?
6.	3.2 Have the Mandals/ Gram Panchayats/Villages, for the selected cropping season been defined
	4. Data on Families and Irrefutably Delineated Discrete Plots by Participating Farmers.
7.	4.1 Has a full family survey of all Participating Farmers been recorded and archived?
8.	4.2 Have all Landholdings of a Participating Farmer been delineated and mapped using GIS Software?
9.	4.3. Does each discrete area of land have a unique identification or Unique Land ID number?
10.	4.4 Has the Plot ID been identified to the End User irrefutably?
11.	4.5 Are there Bond Stones or other markers to define the plot boundaries?
12.	4.6 Are the GPS Coordinates of the field matching with the recorded GPS Coordinates
13.	4.7 Is the plot shape matching with that in the Monitoring solution?
14.	4.8 Has the Plot Baseline Information been recorded and archived correctly?
15.	4.9 Have details of the legal title of the land, land tenure and rights to issued VERs been ascertained for the project activity?
	5. Technical description of the project activity
16.	5.1 Have main crop(s) of the region been identified for SA practices?

17.	5.2 Has a SA PoP been developed for all selected Main crop(s)?
18.	5.3 Were all the primary stakeholders involved in preparation of SA PoP?
19.	5.4 Does the SA PoP adequately cover all activities occurring during the crop season?
20.	5.5 Are the parameters in the Plot Diary adequately reflecting the SA PoP?
21.	5.6 Have Plots where a Participating Farmer has implemented SA Practices been selected for a particular cropping season?
22.	5.7 Have Plot Diaries been maintained for all Selected Plots?
	6. Set up SA Extension Services at each Participant NGOs, with SA Extension Workers, Field Workers and Village Monitors to impart SA knowledge and maintain Plot Diaries.
23.	6.1 Is the operational and management structure of the NGO adequate to monitor and implement the project activity?
24.	6.2 Has the NGO set up SA Extension Services, with Extension Workers, Field Staff and Village Level Monitors?
25.	6.3 Have training programmes and workshops been conducted to impart SA knowledge to the farmers?
26.	6.4 Have a sufficient number of Village Monitors been identified and trained in the maintenance of Plot Dairies?

GLOSSARY

HoH	Head of Household
LCF	Low Carbon Farming
MA	Mainstream Agriculture
SA	Sustainable Agriculture