

CBI Uganda Climate-Smart Coffee Project

Farmer Training Module – Trenches (Soil & Water Conservation)

Regions: Buganda (Robusta) • Western (Arabica)

Delivered by: extension agents, lead/peer farmers, or SME trainers/agronomists

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CBI



Transforming Trade Together

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A. Module Snapshot

Item	Detail
Practice	Trenching: Digging of water channels or ditches, often following the contour of a slope, for soil and water conservation. Trenches play a vital role in capturing rainwater aiding soil water penetration / retention, reducing topsoil surface runoff, and reducing soil erosion.
Core message	By capturing rain water and aiding penetration/retention, Trenching provides climate-resilience and prevents financial loss by trapping valuable water and nutrients in the soil before they wash away. When heavy rains come, they wash away fertile soil, which feeds the coffee tree. The rains wash away the farmer's investment in fertilisers, any available nutrients and future crop yield potential, representing a missed income opportunity. By digging ditches that force rainfall deep into the ground, this liquid wealth preserves vital soil nutrients into a bankable asset that sustains coffee yields and farm profitability during dry spells.
Session length	2 hours in the field, at a real coffee garden on a slope with an A-FRAME.
Deliverer	Agronomist, Extension agent, lead/peer farmer, or SME trainer.
Materials	1. An A-frame and a hoe/spade for digging. 2. Pegs sharpened at one side only 3. Illustrated Trenches poster (two farmers after the rain). 4. The Uganda Sustainable Coffee Toolkit Chart 16b (Protect and Preserve your Soils), and Chart 11b (Business Case). 5. Flip chart or paper with markers or pens. 6. Examples of trench stabilizers like, vetivar grass, Napier stems etc.
Key visual	Stand the group on a slope between a garden with contour trenches with healthy moist soil and one without trenches where the topsoil has been washed away after the last heavy rain. And/ or use the Trenches poster to illustrate best practice versus doing nothing.
Commitment	Work with the community influencers to drive commitment.

B. Introduction / Overview

When we invest in climate-smart coffee, everyone wins.

- For farmers, it stops missed income by locking in soil moisture and nutrients and boosting productivity.
- For SMEs and exporters, it secures a loyal, climate-resilient supply chain with predictable volumes and high-quality beans.
- For international buyers, it guarantees a reliable stream of fully traceable, EU-compliant coffee that meets consumer demand.

True sustainability means connecting the farmer's profitability directly to the security of the global market.

This training module focuses on trenches for soil and water conservation, one of the most income-relevant and climate-smart practices a farmer can adopt.

- Contour trenches slow rainwater runoff so it sinks into the ground instead of carrying topsoil and nutrients away. They give a dual benefit:
 - in heavy rain, they stop erosion, and in dry spells,
 - They hold moisture in the soil, so the coffee stays productive and yields hold steady.
- The excavated soil is used to build a small ridge (bund) that strengthens the trench, and the practice complements other soil protection and conservation practices, such as mulching and manure and compost application

This training content is aligned with the Uganda Sustainable Coffee Toolkit and charts and the MAAIF Robusta and Arabica Technical Handbooks.

Note for facilitators — lead with income and protecting the land, not engineering

- Lead with contour trenches → soil and water stay in the garden → steadier, higher yields in both heavy rain and drought → farmer income.
- These are the benefits that drive a farmer's decision. Open every session with these.
- Then bring in: the how-to detail — contour line, spacing by slope, the bund, infiltration pits, as supporting points, not the opening. Counter the “no time / too much work” objection early with the missed-income and group-digging answer.
- Keep the language visual; the poster carries the technical list.

This training module has been designed with a “missed income” framework. The missed income concept was co-created with coffee farmers, where farmers revealed that their primary motivations are concrete household goals like school fees and financial independence. While farmers traditionally viewed trenching as too much work for an unclear benefit, reframing it around how much money they quietly lose each season and summing up all the years they've been growing coffee— as topsoil and yields wash down the slope every heavy rain — triggered a powerful shift from apathy to urgency. Grounded in behavioural economics and Social and Behaviour Change (SBC) principles, this approach leverages loss aversion: the reality that people are twice as motivated to avoid a loss as they are to achieve a gain. By framing eroding land as “income walking off the farm,” the training makes the invisible, cumulative cost of inaction feel immediate, personal, and emotionally proximate, capturing farmers' attention far better than standard agronomic best practices.

Farmer Spotlight — [Name], [Village, Subcounty, District]

- What this farmer did: [contour trenches dug, spacing by slope, combined with mulch/manure]
- Result: [soil held after heavy rain, moisture kept in dry spell, yield change]
- SME homework: Identify one local soil-and-water-conservation champion.
- Prepare a one-page spotlight (photo + 3 sentences) to share during training. Optional, but significantly boosts credibility.

C. Facilitator session plan: the 5-part arc (2 hours)

Part 1: Reflect (10 min)

Stand the group between a garden with trenches that has a visibly healthy rich and moist soil and a bare garden that has lost its topsoil after the last heavy rain and visibly looks dry. And/ or or hold up the Trenches illustrated poster and the comparison between the two farmers examples.

Let farmers answer first; do not correct yet.

Ask

What differences did you notice between the two farmers' gardens when the rain fell?

- Who do you think harvested more, and why?
- After a heavy rain, whose garden keeps its soil — and whose soil ends up down the slope?
- In a dry spell, whose soil stays moist for longer?
- In your village, whose land holds its soil season after season — and what do they do?

Peer-farmer version (If the session is facilitated by a lead farmer)

- Open with your own story.
- Show your own slope before and after you dug trenches, and how your soil and yields changed after the rains.

Part 2: Discussion benefits, myths & gender (20 min)

Ask

- What have you heard about trenching?
- What stops you from digging trenches?

Let the myths come out — especially “I don't have time/ it's too much work” — then answer each one a farmer raises, by name. (Full responses in the Annex.)

Then state the poster's benefits plainly:

- Prevents soil erosion by slowing down rainwater runoff.
- Holds rainwater, keeping the soil moist for longer.
- Improves soil fertility by retaining nutrients.
- Reduces drought effects like dry soil, wilting of coffee trees, pests and diseases
- Increases yields.

Gender triggers

Ask the group questions first, then reinforce:

- For the men here:
 - What would it mean to protect your land as an asset — soil that stays put, and steadier yields through both heavy rain and drought?
- For the women here:
 - When topsoil washes away, what happens to the family's harvest and income?
 - What would soil that stays moist through the dry season mean for your coffee and your work?
- Add youth
 - When topsoil washes away, what happens to your harvest and income?

Reinforce after the group responds

- Men: a protected land asset, steadier and higher yields, less risk from heavy rain and drought, a farm that holds its soil.
- Women: topsoil and water that stay on the farm → consistent harvests and protected family income; less stress in dry spells.
- Youth: yield stability in dry seasons, improved quality, reduced risk of poor harvests, less risk from heavy rain and drought, a farm that holds its soil.

Part 3: Missed-income comparison (15 min)

Hold up the Trenches illustrated poster and walk through the two farmers' experiences — one who dug trenches and "kept my soils from running and increased the yields," and one who "didn't have time" and watched "the soil go with my yields."

Simple math

1 acre of coffee = 450 trees

For each ecological zone, we anticipate 2 seasons.

- Season 1 = 2 Kgs per tree
- Season 2 = 5 kgs per tree

If a farmer has 2 acres

Their average income is (Number of trees x average kgs per tree x Price per kg) x 2 acres

- $(450 \times 3.5 \times 12000) \times 2 = \text{UGX } 37,800,000$
- Net income will be average income less farm expenses and this varies from farm to farm.

Ask the farmers

- Who has 2 acres?
- How much are they making at the end of every season?
- How much money are they leaving on the table? Each year
- How much have they left on the table for a 10 year period?

Engage them in discussion

- What is their 10-year plan
- Will they be able to achieve it with their current income?
- What do they need to do to achieve their plans?

Then the poster's link question and the goal question.

Ask

- In this situation, what will the bad farmer lose? What is each farmer going to do next?
- If trenches kept your soil and water in the garden and steadied your harvest, what is the one thing that extra income would go toward?

Part 4: Demonstrate + practise (30 min)

Before demonstrating

Ask

- Which way does the water run on your land, and where does the soil end up after a heavy rain?

Let farmers point out the slope and the erosion first, then confirm or supplement.

State the rules aloud first (Annex 1): dig along the contour (not up and down), space trenches by slope steepness (closer on steeper slopes), and put the soil on the lower side as a bund.

Demonstrate in the garden, narrating each step:

- a. Set the contour line across the slope using an A-frame or rope method, mark it with pegs and string (a level line, not up and down).
- b. Dig the trench along the marked contour line.
- c. Use the soil from the trench to build a small ridge (bund) on the lower side.
- d. Space trenches by slope — closer together on steeper slopes, wider on gentle ones. Mention that the distance is guided by the speed of water i.e. for flat land, less trenches and steep slopes require more trenches.
- e. On flat land, dig infiltration pits between the rows to trap water instead.
- f. Where practical, connect a trench to an existing road diversion channel to capture that water in the garden.
- g. Combine with grass strips for best results.

Farmers practise in pairs/small groups: each group sets one contour line with the A-frame/rope and digs a short length of trench with its bund.

Agent checks 3 points and corrects kindly:

- Is the line on the contour (level across the slope, not up and down)?
- Is the soil built into a ridge (bund) on the lower side?
- Is the spacing right for how steep the slope is?

Common mistakes to watch:

- digging up-and-down the slope;
- no grass bunds on the lower side;
- trenches too far apart on a steep slope;
- not maintaining depth as soil deposits.

Note: Peer/farmer version: demonstrate on the champion's own slope, showing how the trenches held the soil and water after the last rains and what it did for the harvest.

Part 5: Commit + agree monitoring (15 min)

This is a distinct step, not part of the demonstration. Every farmer leaves with a specific commitment.

- Each farmer states (or writes): how many metres/lines of contour trench they will dig, on which plot/ slope, and by what date — before the rains; and who they will dig with (group/ neighbours).
- Agree as a group: who will ask “who has dug their trenches?”
- The facilitator records commitments and sets the follow-up date.

Bonus session: Questions and Answers (20 min)

In this session, the farmers can engage with the facilitators with their questions about any other CSC practices.

End of Session: “When your soil is washed away, you lose money. Keep your soil, and it keeps your harvest.”

Annexes

1. Technical must-knows (MAAIF-aligned)

Remember the line: “On the contour → spoil to the lower side as a bund → closer on steeper slopes → dig before the rains → keep it clear and deep.”

Must-know	Rule of thumb	Visual / demo cue
Purpose	Trap and sink rainwater, retain soil moisture, retain nutrients, and prevent topsoil erosion — a dual benefit for both heavy rain and dry spells.	Compare a trenched slope vs. an eroded bare one after rain.
Layout	Dig along the contour (a level line across the slope), not up and down. Set the line with an A-frame or rope method.	Demonstrate the A-frame/rope and mark the line with pegs and string.
The bund	Use the excavated soil to build a small ridge (bund) on the lower side of the trench.	Show the spoil piled and shaped on the downhill side.
Spacing	Space trenches by slope steepness — closer together on steeper slopes, wider on gentle ones. Note: Agronomist/Extension Agent to confirm spacing for local slopes and soils.	Pace the spacing on the actual slope.
Flat land	On flat land, dig infiltration pits between the rows to trap water instead of contour trenches.	Show where a pit would go between rows.
Connect & combine	Where practical, connect trenches to an existing road diversion channel to capture that water. Combine with terraces, grass strips, cut-off drains, mulching and manure.	Point out a road channel or grass strip nearby.
Maintain	Routinely monitor and remove deposited soil to maintain depth.	Check an older trench to show how it silts up.
Soil type	On sandy soils, trenches can collapse — reinforce with grass strips, space closer, and shape stable sides. Note: Refer difficult sandy-soil sites to the agronomist.	Show a reinforced edge/ grass strip.
What NOT to do	Don't dig up-and-down the slope (that speeds erosion). Don't skip the bund. Don't space too wide on steep land. Don't let trenches silt up.	Show an up-and-down channel eroding, then the corrected contour line.
Note: Always check with the latest recommendations by MAAIF or NaCORI for trench spacing and dimensions.		

Best-practice tip

Trenches work best as part of a package: dig them before the rains, build the bund, then mulch and feed the soil with manure. Families or neighbours digging together get the lines done quickly and on the contour. This is the picture the poster's successful farmer shows: soil kept, water held, yields up.

2. Commitment & follow-up

Commitment is a distinct step in the session (Part 5). During this engagement, utilize community structures, i.e., lead farmers, group leaders, internal inspectors, extension farmers, and cooperative agents to get commitments from the farmers.

Follow-up visit checklist (after the rains)

- Have the pledged trenches been dug?
- Are they on the contour (level across the slope, not up and down)?
- Is there a bund (ridge) with planted grasses on the lower side?
- Is the spacing right for the slope's steepness?
- Did the trenches hold soil and water after the last rain?
- Any myths or barriers encountered (e.g. "no time", sandy soil collapse)?
- Next follow-up date agreed?

3. Reinforcement kit

Trenches illustrative story poster or video

Trenched slope ✓	Bare slope ✗
Rainwater slowed and sank in; topsoil stays	Rainwater races off; topsoil washes down the slope
Soil stays moist longer; it maintains nutrients and water during dry spells	Land dries out fast; it suffers in drought
Nutrients retained; fertility protected	Nutrients lost; unfertile soil; more fertiliser needed
Rich, moist soil with steady/ increasing yields	"The soil went with my yields" — falling harvests
A protected, productive land asset	An eroding, declining one

Poster integration tip: Use together with the Mulching and Manure Application illustrated posters to show how the three practices complement each other in protecting soil, boosting yield, and increasing income. Use alongside the Uganda Sustainable Coffee Toolkit Charts.

Note: Confirm seasonal variations in the relevant district as timing differs in the different agroecological coffee-growing zones across Uganda.

4. Trainer preparation notes

This section is trainer preparation material — not plenary content.

Study Annex 4 before your session so you can answer objections confidently as they arise in Parts 1-2 — especially the “no time / too much work” objection. This content is best covered in a Trainer-of-Trainers (ToT) session, not read aloud to farmers.

4.1. Barrier and enabler responses (COM-B framework)

The COM-B framework organises barriers into three domains:

- Motivation: beliefs about whether trenching is worth it (no time, unclear short-term benefit, peer pressure).
- Capability: knowledge and skill (setting the contour line, spacing, the bund, and maintenance).
- Opportunity: labour, tools (A-frame/ rope), and slope/ soil conditions.

Barrier (what farmers say)	COM-B domain	Facilitator response
“I don’t have time/ it’s too much work.”	Capability / Opportunity	Dig as a group before the rains — families or neighbours digging together finish the lines fast. Start with the steepest, most eroding part; one line at a time. The labour is once; the soil and water it saves come back every season.
“I don’t see a short-term benefit.”	Motivation	You see it at the very first heavy rain — the soil and water stay in your garden instead of running off — and again in the first dry spell, when your soil stays rich and moist. Point to a trenched garden after rain on the Trenches illustrated poster.
“Sandy soils can’t hold trenches/ they collapse.”	Capability	Reinforce the sides with grass strips, space the trenches closer, and shape stable edges. Combine with bunds and mulch. Refer difficult sites to the agronomist for spacing and reinforcement.
“I don’t know the correct spacing or how to set the line.”	Capability	Use the A-frame or rope to find the contour — a level line across the slope. Closer on steeper slopes, wider on gentle ones. We mark and dig one together in the demo.
“My land is flat — I don’t need trenches.”	Motivation / Capability	On flat land, dig infiltration pits between the rows instead — they trap rainwater and sink it into the soil for the dry season.
“My neighbours don’t dig trenches.”	Motivation	Look at whose garden kept its soil and yields after the last heavy rain, and whose was washed away. And/ or refer to the Trenches illustrated poster. Promote the trenching as a climate-smart best practice to follow — and it protects your land’s value.

Note: Consider a dedicated Trainer of Trainers (ToT) session to build agents’ confidence in handling barriers and objections. Agents who have practised responses out loud perform significantly better in the field than those who have only read a table.

4.3. Adaptation and gender notes

Reinforce after the participatory questions in Part 2, don't deliver as statements.

Group	Triggers to use
Men	A protected land asset that holds its value; gives steadier, higher yields; is less at risk from heavy rain and drought; a farm that visibly demonstrates rich and healthy soil.
Women	Topsoil and water that stay on the farm, consistent harvests and protected family income, soil that stays moist through the dry season, less stress.
Youth	Paid group digging work; framing soil-and-water conservation as modern, Climate-Smart, and environmental protection; the long-term value of well-kept land.

5. Facilitator self-check + M&E

5.1. Facilitator self-check (after each session)

Question	✓ / ✗
Did I open from the two gardens/ the farmers' own words, not a lecture?	
Did farmers talk more than I did in Parts 1-2?	
Did I answer every myth a farmer raised — especially “no time” — by name?	
Did I run the interactive income calculation with a lead farmer?	
Did I make the missed income concrete (washed-away yield + extra fertiliser)?	
Did I set a contour line with the A-frame/rope and dig, not just describe it?	
Did I ask farmers where the water runs and the soil goes before listing rules?	
Did every farmer practise setting a line and digging a length of trench?	
Did I use gender-specific trigger questions (not just statements)?	
Did each farmer commit (metres/lines, plot, date)?	
Did I record commitments and agree on the VSLA check-in + follow-up date?	

3 or fewer ticks → review the session plan before the next training.

5.2. Adoption indicators (for SME M&E)

Indicator	Lead or Lag?
Number of farmers attending the session	Lead
Number of farmers making a specific commitment	Lead
% of farmers who have dug pledged trenches at follow-up	Lag
Quality at follow-up (on contour, bund present, grass planting, correct spacing)	Lag
Number digging as a group / forming digging days	Lag
Soil/water condition after rain (trenched vs. bare, same slope)	Lag
Trenches maintained (silt cleared, depth kept) at follow-up	Lag

Lead versus Lag indicators

- Lead indicators: reach and intention are immediate (lead indicators).
- Lag indicators: digging uptake, quality, maintenance, and soil/ water condition show real behaviour change; weight lag indicators more heavily when assessing module effectiveness in the pilot.