Workshop in Highlands - Alicho woreda - 07/08/26 - 08/08/26

CROSSROADS team present: Awdenegest Moges, Wolde Mekuria, Getahun Yakob, Grant Campbell, Dominik Bittner, Jo Smith



(Korch in the rainy season)

Workshop Plan

- 07/08/26 – field training in making vermicompost, seed treatment, application of vermicompost (>30 people); Demonstration of App to district level agricultural experts and development agents (DAs) and model farmers (~10 people). Dominik and Grant to set up soil health and biodiversity tests (while workshop going on).

- 08/08/26 – Introduction to CROSSROADS, the team, explanation of aims and how vermicomposting uses underutilised plants to improve soils, the importance of soil health tests to allow farmers to assess for themselves the value of a particular plant or practice to soil health, and the importance of biodiversity to soil health. Introduction to Dominik and Grant. Dominik to demonstrate soil health tests. Grant to demonstrate biodiversity tests.

Observations:

The workshop was filmed to produce an educational documentary. While the film will be a great resource, the filming interfered significantly with the flow of the workshop with participants experiencing frequent stopping to wait for filming (Figure 1).



Figure 1 – Film-making during the workshop

Vermicomposting and seed treatment talk

Getahun introduced himself and the project. He talked through vermicomposting and seed treatment posters (Figure 2). Participants were very engaged.



Figure 2 – Presentation of vermicomposting and seed treatment posters

Comments from participants:

Vermicomposting

- Korch is important – easy-to-grow tree that does not cause problems with the crop (unlike eucalyptus).
- Vermicomposting currently requires plastic to line the compost bin – financial support is needed to purchase these materials *(Q. Could vermicomposting be done using a pit instead? A. Need to keep termites / ants / predators away from worms and need to raise the bed to allow mixing without back strain. Possible other option – use double layer of local wood / bamboo and line with clay / baked dry] before use).*
- One participant had started to use vermicomposting, and commented that it was good, but the plastic tore and so they have stopped.

Seed treatment

- Does the seed treatment only work for these species? (A: Seed treatments are specific to species).
- Would like to see more East African Juniper as it is resistant to termites and so better for building than other woods.
- It takes a long time to grow – so why should we plant it as we do not see the benefits ourselves? (A: plant for next generation)
- Koso is another important tree that would benefit from help to increase germination (medicinal).

Vermicomposting demonstration

Yared (DA) demonstrated production of vermicompost with 1 bucket of red worms, a sack of manure, a sack of Korch leaves and water (Figure 3). This was done in plastic lined containers off the ground to avoid predation of worms.

Comments from participants:

- Many different types of organic materials can be added (eg Acacia) – but not eucalyptus.
- Participants are producing vermicompost and selling for 5000 birr / 500 kg. Also now does not use inorganic fertiliser (only vermicompost). (*Suggestion: Do a cost / benefit analysis to determine what price of fertilise needs to be to make economically viable given the cost of plastic, frequency of replacement and value of vermicompost / amount produced*).



Figure 3 – Demonstration of vermicomposting

Vermicomposting trials

Participants were given the opportunity to tour the trials of using vermicompost to grow Ye Habesha Gomen (Ethiopian cabbage) (Figure 4). The trials are still in the early stages, so differences in Gomen growth are not yet evident. Tarekegn Tefera (CEARI) explained the reasons for the trials and the potential benefits to the Gomen. The trials on the locally underutilised crop, Ater (field pea), using rhizobial inoculation were also presented to participants.



Figure 4 – Vermicomposting trial on Ye Habesha Gomen (Ethiopian cabbage)

Demonstration of App

Dominik and Wolde demonstrated the developed App to ~10 DAs and model farmers (Figure 5). Observations from participants were as follows.



Figure 5 – Demonstration of App to district advisers and model farmers

- The App is likely to be most useful to DAs as they have phones, internet connection and advise farmers.
- It will be particularly useful if site specific information can be downloaded from the internet - not only data, but also information relevant to the location (eg species that could be used to make vermicompost, details about manures, application rates etc) – this would save DAs effort in finding information from different sources.
- DAs cannot work 1:1 with all farmers as this would take too much time. If the system helped them to quickly produce results and make them available, this would be very useful.
- Farmers change crops grown and chemicals used according to market conditions. More information to plan choice and position of crops would help support decisions.
- DAs were very interested in the App, as they asked DB on the second day when they would be able to get it.
- The farmers are very goal-driven: one response from a model farmer (Abdel Fata) – “We are fine with doing soil health tests and adding information as long as we get something useful out of it”
- Some children on farms were observed using smartphones. This could allow the app used directly by farmers.

Soil health demonstration

Dominik set up two blocks of soil to allow one to be tested while infiltration was underway (Figure 6). Dominik and Wolde demonstrated the tests to ~30 farmers.

1. Infiltration test – this was very slow so had to be started first. However, filled up with rain before we could show farmers the results.

Learning 1: Infiltration test is not useful in rainy season.

2. Soil colour test – Soil under Enset was noticeably more darkish/brownish then the others – even when wet.
3. Penetration test – it was clear to see that penetration was easier in the Enset and Korch than barley.
4. Soil fauna – samples from barley and enset fields were passed around to farmers who were keen to comment. Understanding of the value of the soil fauna was strong.
5. Soil smell – samples from barley and enset fields were passed around to farmers who were again very keen to comment. Clear positive reaction to the enset field.
6. Vess test. Not much interaction. Difference not very clear in rainy season.

Learning 2: Vess test not very easy to do in rainy season.

7. Slakes test – this was demonstrated inside to avoid rain. Farmers were very engaged and clearly observed the more rapid breakdown in the barley than the enset. The understanding gained from this test was strong.

Learning 3: Make sure to clearly communicate and emphasize use of the most productive (enset) and least productive (barley) areas to provide a scale that will allow the health of soil from other areas to be understood (as well as for use in the App).



Figure 6 – Demonstration of simple tests of soil health

Biodiversity demonstration

Grant had set up pitfall traps and pan traps the day before demonstrating on 8th. Grant and Awde demonstrated the tests to ~30 farmers (Figure 7).



Figure 7 – Demonstration of simple tests for functional biodiversity

Learning 1: Pan traps can be suspended from a single cane between two wigwams – this was a much quicker way to set them up. Pan traps were covered with a roof made of bamboo canes thatched with grass to prevent pans filling with rainwater (Figure 7).

Learning 2: There were issues with flooding of pitfall traps. Put pitfall traps on higher ground / make sure the area has a channel to prevent flooding (Figure 8).



Figure 8 –Flooding of pitfall traps after heavy rainfall

Participants were very engaged with the idea, but not sure if they understood the point of the biodiversity tests. As the trays were passed around, they commented on the type of insects, but did not seem to understand what that meant.

Learning 3: Start off demonstration explaining the purpose (Figure 9). *"There are many different bugs on the farms. Some are decomposers and so help the soil to take in organic matter. Some are pollinators and so help the crops to produce more seed and fruits. But some are pests that eat crops. Others are predators that eat the pests. The balance between these different bugs affects soil and crop health, and so also crop production."*

"These tests use different solutions to try and find out how many bugs there are in the different groups (decomposers, pollinators, pests and predators)."

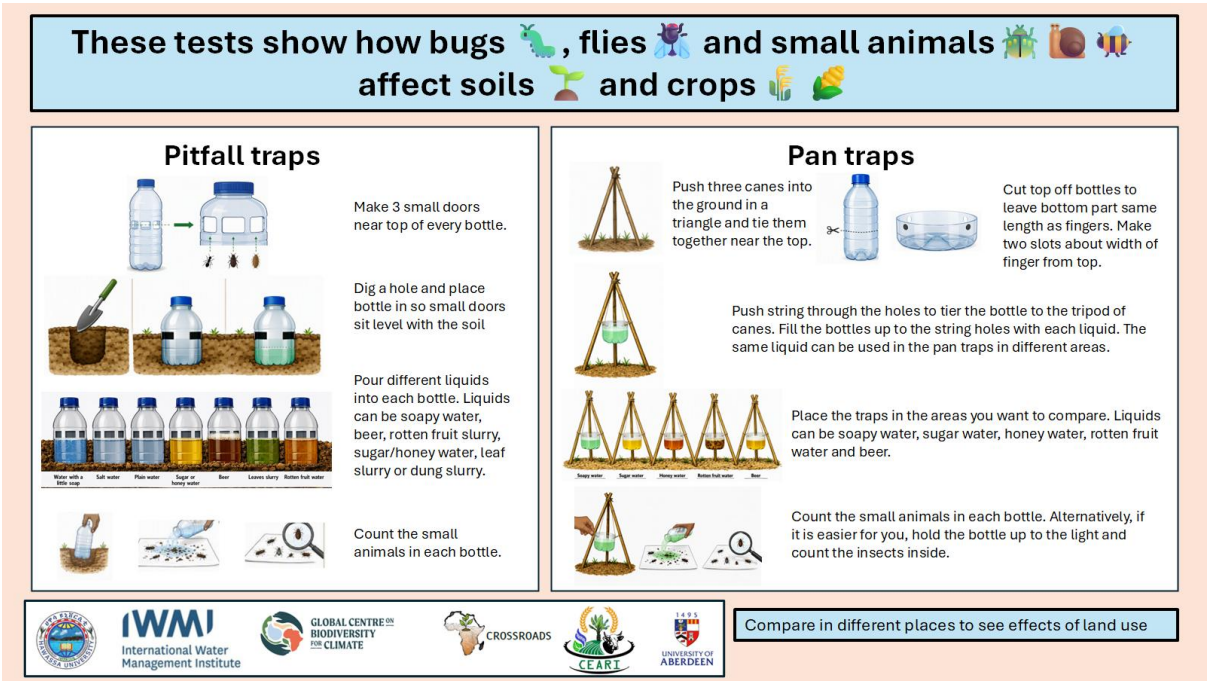
"In the pitfall traps, decomposers like to eat organic matter, so are likely to be attracted to a slurry of dung; pests eat leaves and fruit, and so are likely to be attracted to a slurry of leaves or a slurry of fruit (mango); predators want energy, so are likely to be attracted

to a sugar solution or a honey. Soapy water and salt solution are likely to catch everything equally."

"In the pan traps, flying pollinators are likely to be attracted to sugar or honey, flying pests are likely to be attracted to the mango. Soapy water and salt solution are likely to catch everything equally."

"By counting the number of bugs in each trap, we can see how likely the system is to maintain a healthy soil with high production of crops."

Note – tests will be further developed by Grant, working at Hawassa University during August 2026 (Figure 9).



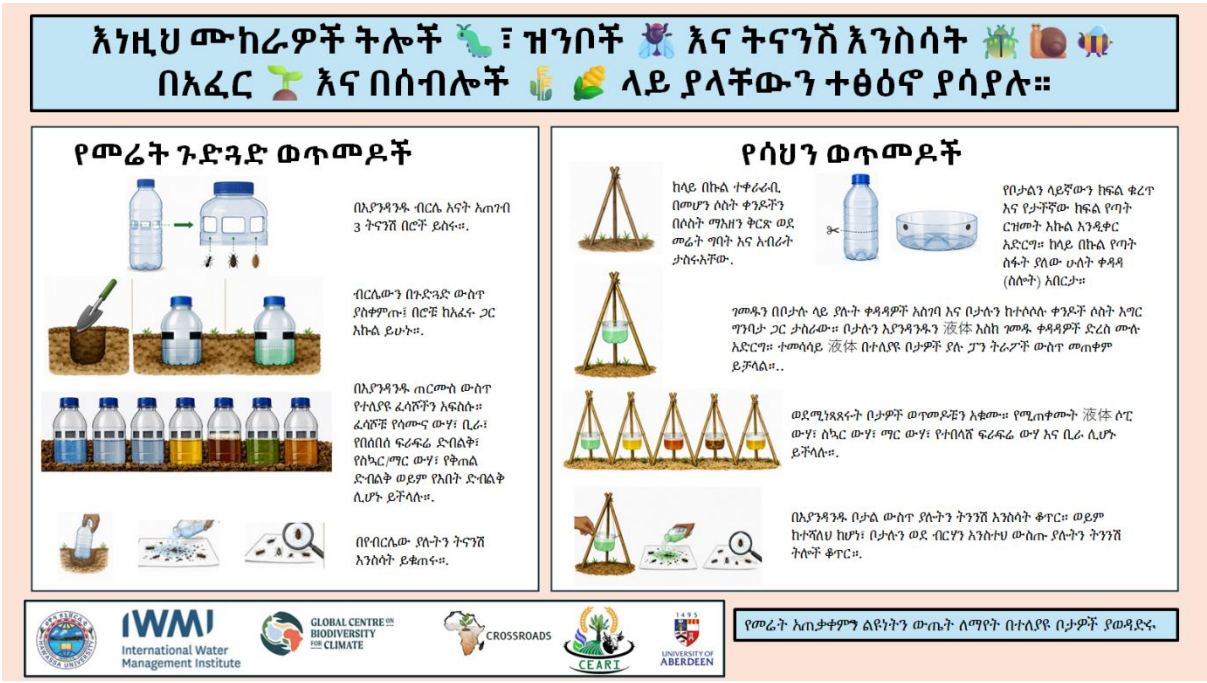


Figure 9 –English and Amharic versions of the biodiversity test information sheet