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**Volunteer Name: Julie Miranda Longland**

**Country: Ethiopia**

**Country project: ET-58 Integrated Pest Management (IPM) in Agriculture**

**Host: Ethiopian Catholic Church – Social Development Coordination Office of Harar (ECC-SCDOH), Formerly known as Hararghe Catholic Secretariat (HCS)**



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### Venues:

Tulo Woreda - Kire Kufis Kebele

Tulo Woreda - Burka Kebele

Tulo Woreda Agriculture Office in Hirna

Odalbultum Woreda Agriculture Office in Bedessa

Odalbultum Woreda - Oda Biyo Kebele

Odalbultum Woreda - Seke-Riga Kebele

West Hararghe Zonal Agriculture Office in

Chiro/Asebe Teferi



**Audience: Farmers, Woreda Agriculture Experts,  
Zonal Agriculture Experts**

**Number of people trained/assisted: 163**

**Date/duration: October 2 – 18, 2015**

**Others: Resilience through Enhanced Adaptation,  
Action-Learning, and Partnerships (REAAP)**



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## 1. Assignment Objectives as in SOW

- Provide training and directly technical assistance on integrated pest management (IPM) techniques and practices.
- Identify and document the major pests and its management technique
- Make recommendations of possible solutions that suited to the identified pests and agro-ecology





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## 2. Achievement of the assignment objectives

- Training was provided on IPM techniques and practices to 163 farmers and agriculture experts.
- Major pests identified in the field currently: stalk borer, cutworm, anthracnose, and smuts
- Recommendations made to fit with current resources available to farmers



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### 3. Recommendations to the host with regards to the assignment

- If farmers are going to harvest crops before maturity to feed livestock, they can make better decisions of which plants to cut.
- Use homemade pesticides as a safer and cheaper alternative to purchasing manufactured chemical pesticides.
- Save vegetable seed as an alternative to when seed is not available or too expensive to purchase.





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### 3. Recommendations continued...

- Farmers should practice better weed control, crop rotation/intercropping, and removal of previous crop residues to reduce incidences of stalk borer, cutworm, anthracnose, and smuts.
- Farmers should make observations to determine pest present in the field and practice good sanitation to reduce the spread.
- Distribute handout to agriculture experts and farmers.



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## 4. Anticipated Impact

- In general, reduction in insect and disease pressures and competition with weeds in the field → increased crop health and improved yields for farmers
- Saving seed and preparing homemade pesticides → alternatives to purchasing these products or going without when they are not available (resilience)
- Training and handout for agriculture experts → spread of information on IPM to farmers



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**Homemade pesticides continued...**



**Garlic Spray**

- Finely chop 3 bulbs of garlic.
- Mix chopped garlic into 10 L of water.\*
- Spray, or store solution up to 2 weeks. The effects last 1-3 days.
- Note: Garlic as a crop can also help reduce pests in a field so plant it when intercropping or as a border.

\*These are suggested concentrations only. Farmers can decide if they need to increase or reduce the concentration.

For the homemade pesticides above, farmers should practice in a small area and wait to see if there is any damage from the spray solution. Recommendations for spraying include:

- Avoid spraying when it is very hot and sunny. Spray early in the morning or later in the evening.
- Shake the homemade pesticide frequently before and during application.
- Apply to crop with good coverage, including spraying undersides of leaves.



If you do not have a sprayer, you can poke several small holes in the cap of a water bottle, screwing on the cap, and pressing to spray.

**Recommendations for Pest Problems Observed in West Hararghe, Ethiopia, October 2015.**



**Stalk Borer**

- Burrows into whorls, stem, and ears
- Management options include:
  - o Crop rotation or intercropping
  - o Plow crop residues and good sanitation
  - o Break in season for 2 months
  - o Plant resistant varieties
  - o Following the label, spray an insecticide, particularly after weed control.
  - o Within the first 6 weeks of planting, pull out plants with dead hearts and destroy them.



**Outworm**

- Active at night and out seedlings at ground level
- Management options include:
  - o Control weeds several weeks before planting
  - o Plow crop residues and weeds.
  - o Following the label, spray an insecticide at planting in the row or banded.



**Anthracnose**

- Causes seedling rot, foliar symptoms, stalk rot, and seed mold (visible as dark brown or black)

Handout for Knowledge Sharing by Julie Miranda Langford USAID Farmer-to-Farmer Program/Catholic Relief Services (CRS) West Hararghe, Ethiopia, October 2015

**Integrated Pest Management (IPM)**  
A sustainable approach to managing pests

**Why practice IPM?**

- Stop pest problems from developing or getting worse
- Maintain a balance by not allowing a pest to dominate and also encouraging natural enemies.
- Using multiple control tactics at the right times saves money.
- Promotes a healthy environment.

**IPM Approach**

- Identification of the problem
- Monitoring in the field
- Choosing management activities

Identification and monitoring start with making good observations. These can include:

- Condition of the plants
  - o Insects, disease, or weeds
  - o Are they still present?
- Type of damage
  - o Where in the plant?
  - o Where in the field?
  - o Is it the crop as a whole vs. a single plant?
- Weather conditions
- Condition of the soil
- Conditions at the edge of field or in neighbor's fields

IPM uses multiple control tactics to manage pest problems. These include cultural, physical, biological, and chemical controls.

**Cultural Controls**

- Using resistant, tolerant, or clean seed.
- Crop rotation or intercropping
- Shifting the time of planting or time of harvesting
- Pruning, thinning, or fertilizing crops

**Physical Controls**

- Tillage/plowing to turn over soil and crop residues
- Manual weeding or hand pulling weeds
- Using physical barriers (e.g. screens) or trapping

**Biological Controls**

- Promoting beneficial insects and natural enemies
- Using biological control agents (e.g. fungi or bacteria that attack insects)

**Chemical Controls**

- Pesticides are only one tool in managing pest problems and should be used in combination with the other control tactics.
- If possible, choose spraying pesticides to a targeted area (e.g. only affected plants or only where pest is) rather than broadcasted over the entire field.
- Consider using "softer" pesticides like selective pesticides or oils/soaps

Homemade pesticides. Many pesticides can be expensive and difficult to obtain. Here are some examples of pesticides you can make at home, are safe to use, and can be effective against soft-bodied insects (e.g. aphids).



**Soap Spray**

- Grate 1 bar of soap into 4 L of water.
- Simmer for 10 minutes, cool, and then store.
- Mix 1 part of soap solution: 100 parts water.\*



**Tomato Leaf Spray**

- Choose healthy tomato leaves and chop them finely.
- Soak 1 part chopped leaves: 2 parts of water.
- Strain to remove leaves from water.
- Mix 1 part leaf solution: 2 parts water.\*



**Recommendations for Pest Problems Observed continued...**

- Anthracnose fungus transported by rain but can also infect plant after being damaged by stalk borers
- Management options include:
  - o Crop rotation or intercropping
  - o Control weeds
  - o Cleaning the field of residues and weeds at the end of harvest and beginning of season
  - o Use resistant varieties



**Pea/Bean**

- Allow the pods to ripen, dry, and turn brown on the plant.
- Strip the pods and dry for 2 weeks.
- Shell and store the dried seed.



**Tomato**

- Scoop out seeds and gel of ripe fruit, and put in a jar with clean water.
- Stir the jar 2 times/day.
- The mixture should ferment, and the seeds should sink in 5 days or less.
- Pour off the liquid, gently rinse the remaining seed, and spread the seed to dry.



**Smut**

- Can infect ears, stalk
- Management options include:
  - o Following the label, treat seed with a fungicide.
  - o Use disease-free seeds.
  - o Crop rotation or intercropping
  - o Removing infected parts (e.g. smutted heads), placing them in a bag to not spread further, and burning them.



**Pumpkin/Squash**

- Harvest fruit and store unopened for 20 days.
- Remove seeds and ferment following the same instructions as for tomato above.
- Gently rub the seed underwater to clean.
- Spread the seed to dry.

Saving Seed. Farmers in West Hararghe can save seed if obtaining new seeds every year is difficult. Here are some examples of vegetable seed that is relatively easy to save.



**Pepper**

- Allow pepper fruit to ripen on plant and wait until it starts to wrinkle.
- Harvest fruit, remove seeds, and spread the seed to dry.

Store seeds in labeled paper envelopes for ventilation. Stored seeds need to be kept dry, under moderate temperatures, and out of direct sunlight. If storing seeds for a long time, check periodically on conditions and remove any bad seeds.



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## 5. Recommended future volunteer assistance

Technical assistance for early season pest problems in the area,  
i.e. March-April

\*Translator from Addis Ababa and coordinator to travel with  
volunteer from CRS



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***Thank You!***