Volunteer Name: John and Leah Tewksbury
Country: Ethiopia
Country project: Horticultural Crop Production and Sector Support
Host: Melka Abune Aregawi Gedam of Melka Jebdu/Dire Dawa branch of the Sebeta Getesemani Nunnery
Venues: Farm and Classroom
Audience: Nuns and Orphans
Number of people trained/assisted: 25
Date/duration: Dec. 20,2015 – Jan. 1, 2016

1. **Assignment Objectives as in SOW**

- **Objective 1:** A.)Train and innovate modern irrigation technologies. B.)Equip target beneficiaries in skills and techniques on improved irrigated fruit production practices. C.)Demonstrate installation of drip irrigation kits.
- **Objective 2:** A.)Provide training and technical assistance on integrated soil fertility management techniques. B.)Demonstrate the different techniques of improving soil organic matter content.

2. **Achievement of the assignment objectives**

Objective 1:

A.)Conducted training on furrow, sprinkler and drip irrigation technologies.

B.)Taught and demonstrated drip irrigation skills to nuns and orphan girls that will improve vegetable and fruit production.

C.)Conducted hands-on training on installation of drip irrigation kits and acquired 6 new drip irrigation kits from HCS through donation. Conducted training on repair and maintenance of drip irrigation equipment and acquired repair parts from Fair Planet Seeds at Tony Farm through donation.

2. **Achievement of the assignment objectives**

Objective 2:

A.)Provided classroom instruction on soil nutrition, illustrating the life in soil and the need for nutrient cycling. Identified sources of nutrients at the nunnery. Providing training and technical assistance on soil blocking techniques and appropriate seedling soil mix.

B.)Demonstrated construction of a permanent no-till raised bed, emphasizing sheet composting techniques and surface mulching. Conducted hands-on training of legume cover crop direct seeding.

3. Anticipated Impact

Objective 1:

Expected impacts/results: Drip irrigation, if fully implemented, will result in improved crop production by more efficiently getting water to the plants' root system. The drip system will also require less water, with a reduction target of at least 50% in water consumption. The nunnery's new well seems like it will yield plenty of water. But, just because the water is available, doesn't mean it should be wasted or used inefficiently. Using drip irrigation will more efficiently use the water and therefore extend the useful life of the well. Additionally this conservative approach to irrigation will also delay or prevent issues with excessive salinity in the soil.

3. Anticipated Impact

Objective 2:

Expected impacts/results: Adoption of permanent raised beds and sheet composting soil building, along with the elimination of bare soil through mulching, will enhance healthy soil, fertility, yield production, and soil compaction issues. Recognizing and recapturing all nutrients on site and cycling them into food crop areas will further enhance soil fertility and reduce off-farm inputs costs. Implementing soil blocking practices for starting seedlings will yield stronger, healthier transplants that can withstand variable environmental conditions.

4. Recommendations for Host

- Convert farm field to raised beds.
- Install and maintain drip irrigation equipment on new beds.
- Eliminate all bare soil.
- Irrigate crops using recommended amounts and timing.
- Capture all nutrient waste from cow barn.
- Identify and use all sources of nutrients at the nunnery to assist in the production of food.
- Implement soil blocking practices.
- Implement record keeping practices.
- Arrange farm layout to optimize bed space.
- Focus on young fruit tree health.

Impact:

- Concentrated fertility.
- Efficient use of water.
- Reduced soil compaction.
- Improved soil health.
- Improved soil moisture holding capacity.

Recommendation:
Create raised beds through sheet mulching methods.

Impact:

- Efficient use of water.
- Reduced soil erosion from furrow irrigation.
- Improved root access to water.
- Improved control over water usage.
- Improved seed germination and transplant health.

Recommendation:

Install and maintain drip irrigation as new beds are formed.

Merry Christmas!

From: Santa Claus!

Impact:

- Conservation of soil moisture.
- Reduced soil erosion.
- Reduced weed growth.
- Improved absorption of rain water.
- Green manures will fix nitrogen in the soil.

Recommendation:
Eliminate bare soil through the use of mulch and green manures

Impact:

- Reduced water usage and conservation of well water.
- Reduced soil borne disease from over watering.

Recommendation:

Irrigate crops using recommended amounts and timing, based on rainfall amounts.

Impact:

- Reduced nutrient waste.
- Improved soil health through nutrient addition.
- Captured additional moisture from barn washout.

Recommendation:

Capture all nutrient waste from cow barn. Hire labor to move all existing manure to garden area. Direct barn wash waste onto mulch and move to garden area frequently.

Impact:

- Reduced nutrient waste.
- Improved soil health through nutrient addition.
- Reduced cost from off farm nutrient inputs.

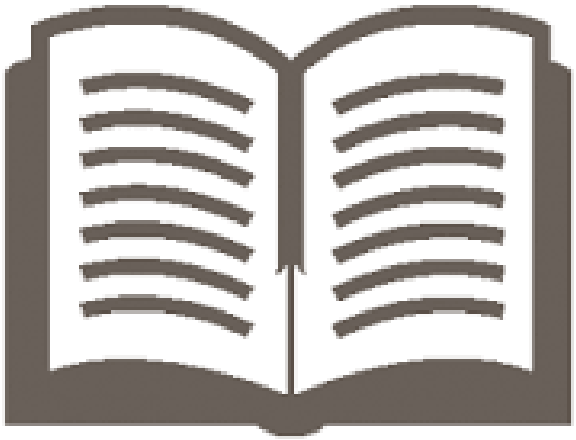
Recommendation:

Identify and use all sources of nutrients at the nunnery to assist in the production of food. Resume composting, recover waste plant debris, ash piles, egg shells, chicken coop waste…

Impact:

- Improved seedling transplant health through controlled environmental conditions and optimal soil composition and moisture.
- Improved transplant success by reduced stress to soil roots.

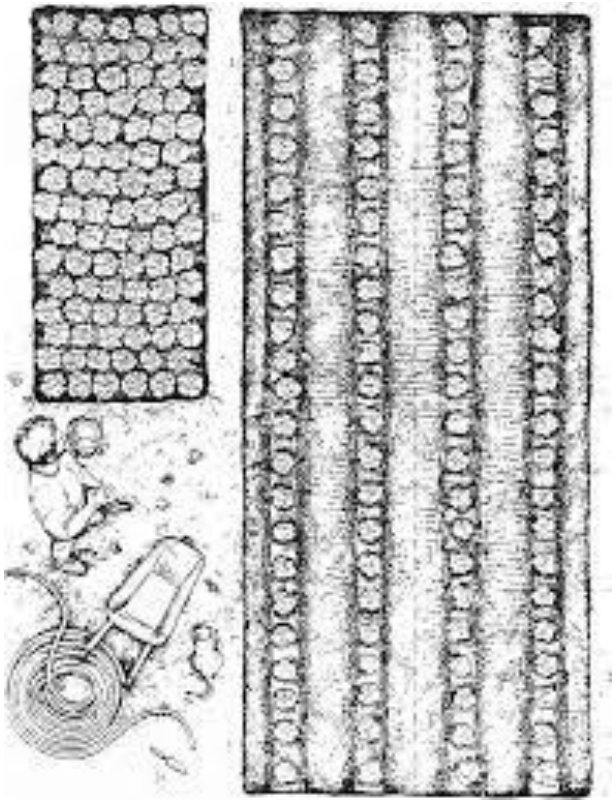
Recommendation:
Implement soil blocking practices.



Recommendation:
Implement record keeping practices.

Impact:

- Improved agricultural knowledge through experience.
- Increased success by reducing repeated failures.
- Improved crop rotation practices.
- Improved continuity of information, which is critical due to frequent staff turnover.



Impact:

- Reduced space needed to grow the same amount of vegetables will allow for more area to grow legume-based cover crops.
- Reduced labor requirements through improved land efficiency.

Recommendation:

Arrange farm layout to optimize bed space.

Impact:

- Improved fruit tree health through better soil.
- Increased fruit tree growth through adequate soil moisture from drip system.
- Reduced soil borne diseases by allowing ground to dry before irrigating.

Recommendation:

Focus on young fruit tree health, by applying manures, mulch and necessary amendments and installing drip irrigation and watering according to schedule.

5. Recommended future volunteer Assistance

- Follow up assignment to troubleshoot problems regarding implementation of recommendations.
- Establish a seedling starting area.
- Advanced training on soil science.
- Vermiculture.
- Humanure and greywater capture.

Bonus pictures…

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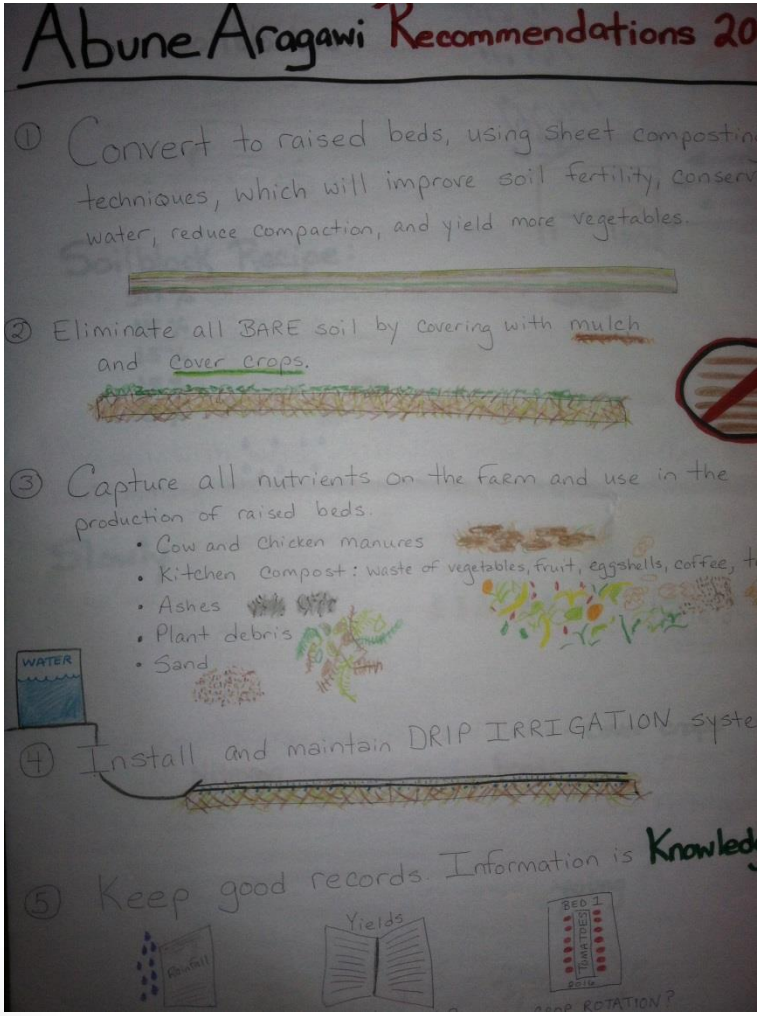

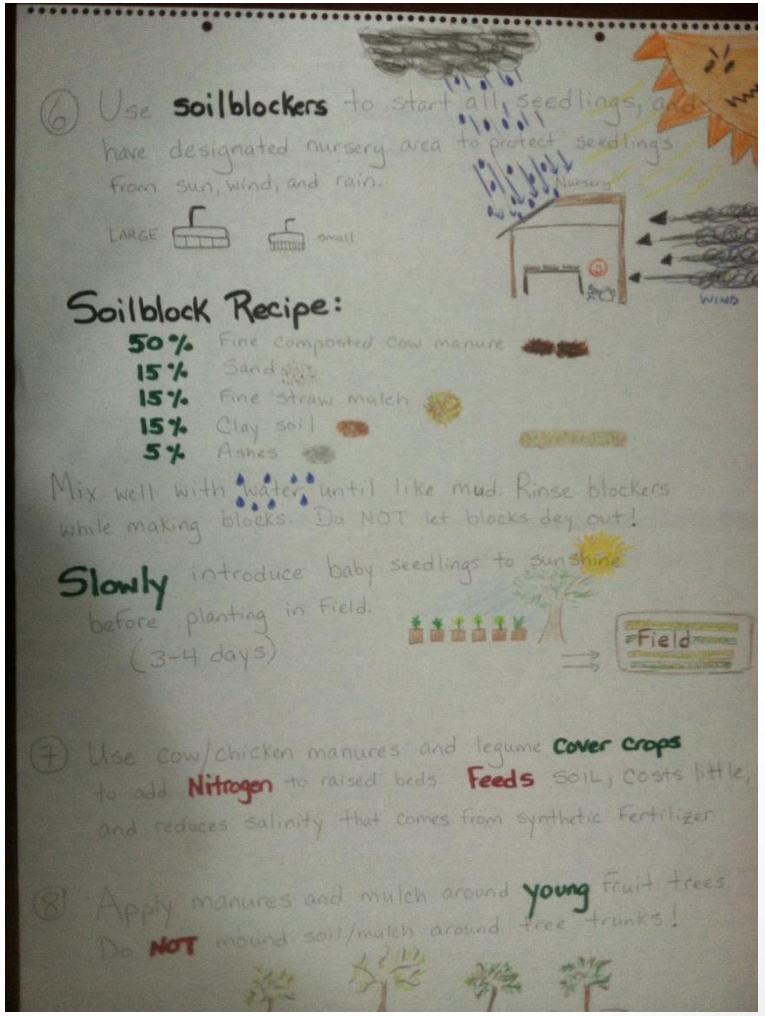

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Thank You!