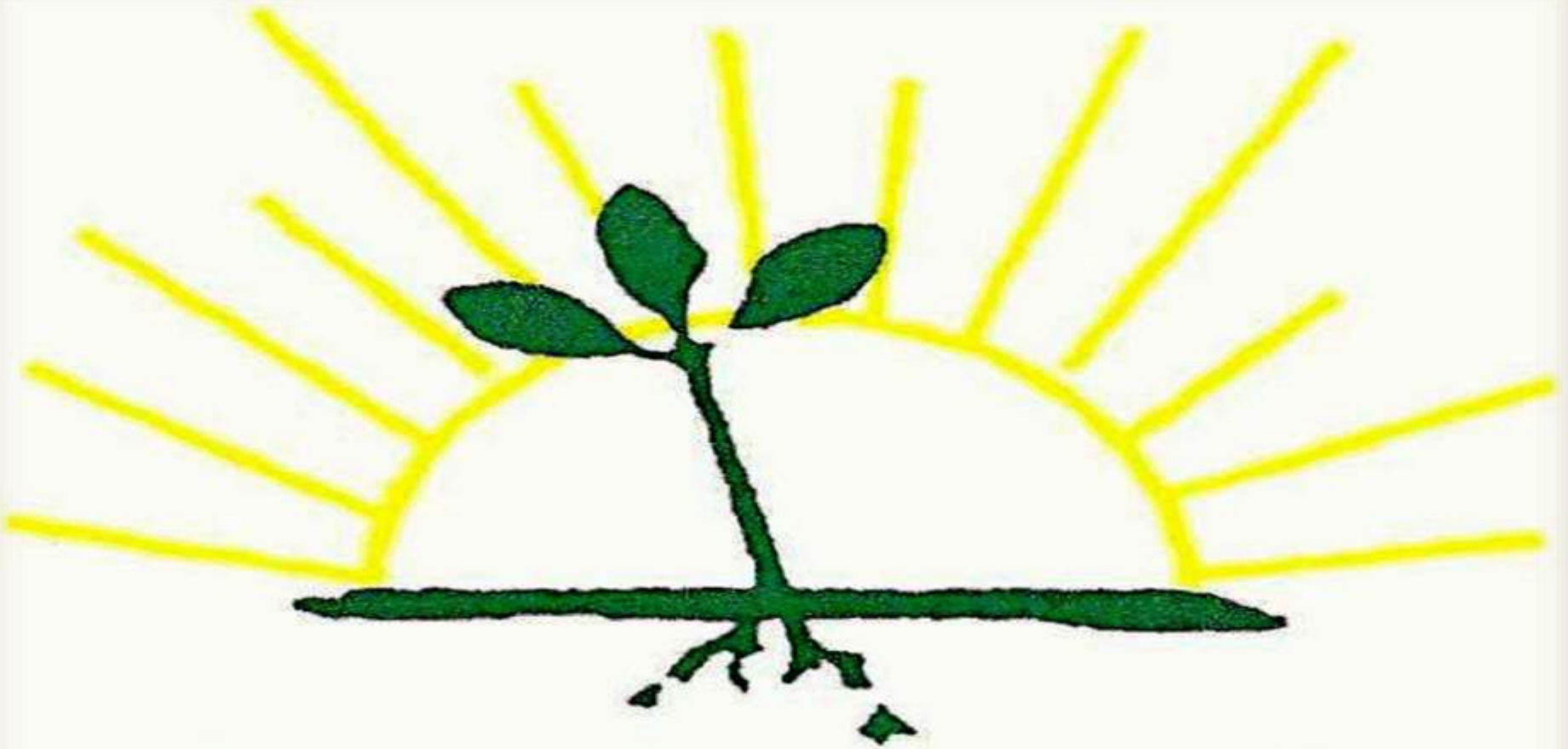


# Heritage Organic Dry Farming



Sumter Cooperative Farm

# **Organic Vegetable Production Using Non-Irrigation Farming Techniques**

Azeez and Fathiyyah Mustafa  
Sumter Co-operatives Farms (SCF) – Organic  
Sumter, South Carolina



# What is Organic Farming?

- The USDA defines Organic farming as “a production system that is managed to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.” More specifically, organic farming entails:
  - Use of cover crops, green manures, animal manures and crop rotations to fertilize the soil, maximize biological activity and maintain long-term soil health.
  - Use of biological control, crop rotations and other techniques to manage weeds, insects and diseases.
  - An emphasis on biodiversity of the agricultural system and the surrounding environment.
  - Reduction of external and off-farm inputs and elimination of synthetic pesticides and fertilizers and other materials.
  - A focus on renewable resources, soil and water conservation, and management practices that restore, maintain and enhance ecological balance.



# Why Non-Irrigation?

- Remember: The water used by plants is almost entirely taken from the soil by the minute root-hairs radiating from the roots.
- Non-Irrigated Plants are:
  - More drought resistant;
  - Have deeper root systems; and
  - Absorb higher levels of trace minerals. (Higher nutrition levels)
- Lower production costs than irrigation.
- Pitfall: It is a most elementary fact of plant physiology that no plant can live and grow unless it has at its disposal a sufficient amount of water. Extreme drought or high temperatures can lead to crop loss.



# Non-Irrigation Farming

- Land Preparation
- Rotations
- Weed Control
- Pest Control
- Seed Saving



# Land Preparation

- Soils – Ensuring healthy soil is imperative to a profitable and successful organic system.
  - SC soils are older and very weathered.
  - 46% of SC soils are classified as Sandy Loams.
  - Sandy Loams contain 10 to 15 percent clay.
    - Clay retains water, gases, and soluble plant-foods, which are important factors in successful agriculture.
    - Soils, in fact, are classified according to the amount of clay that they contain.



SCF - Organic

# FIND YOUR SOIL TYPE



# Land Preparation

- In organic farming systems, the majority of nutrients are supplied from organic matter.
  - Compost
  - Cover Crops (Green Manure)
    - Recover nutrients that would otherwise leach into the subsoil and groundwater
    - Invaluable to organic growers who don't have access to affordable sources of compost and manure.
  - Manures
    - Pigeon Manure - Waiting Periods
      - Corn, Wheat, Peas, or Beans (90 days)
      - Watermelon, Tomatoes and Cantaloupes (120 days)



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# Soil Amendments and Fertility

- In organic farming systems, the majority of nutrients are supplied from organic matter.
  - Compost
  - Cover Crops (Green Manure)
    - Recover nutrients that would otherwise leach into the subsoil and groundwater
    - Invaluable to organic growers who don't have access to affordable sources of compost and manure.
    - Control weeds
    - Habitat for beneficial insects
  - Manures
    - Pigeon Manure - Waiting Periods
      - Corn, Wheat, Peas, or Beans (90 days)
      - Watermelon, Tomatoes and Cantaloupes (120 days)



# EXAMPLE OF GREEN MANURE, COVER CROP AND PRODUCE ALL IN ONE



# EXAMPLE COVER CROP



# EXAMPLE OF MANURE SPREADER



# Deep Plowing

- Deep Plowing for Water Storage

- Water falling upon a soil may descend to great depths, and may be stored in the soil from year to year, subject to the needs of the crop that may be planted.
- Farmers may accelerate this downward descent of water, first and foremost, by plowing at the right time and to the right depth.
- Plowing should be done deeply and thoroughly so that the falling water may immediately be drawn down to the full depth of the loose, spongy, plowed soil, away from the action of the sunshine or winds.
- Moisture thus caught will slowly work its way down into the lower layers of the soil.
- Deep plowing is always recommended for successful non-irrigation.



# EXAMPLE OF FURROWS BEDS



# Rotations

- A well-planned rotation addresses the connections between all factors:
  - Use of Cover Crops to provide fertility, weed control and provide habitat for beneficial insect;
  - Diversity of plant species to encourage natural predators, discourage pest and disease build-up, and minimize economic and environmental risk;
  - Balance between soil conservation and crop production; and
  - Weed control by alternating between warm and cool weather plants and including weed inhibiting plants (such as rye).



# EXAMPLE OF CROP ROTATION





# Weed Control

- Using several organic farming methods, we can significantly reduce the number of weeds in a specific field over a two to three-year period by limiting the germination of weed seeds.
  - Cover crops not only add organic matter into the soil, but also "shade out" weeds.
  - Planning ahead. We often allow seed to germinate and then plow the seedlings. Weeds don't get enough sun to enable them to reach maturity and set seed.
  - Mechanical. Plowing and stirrup hoe.
  - Mulching.



# EXAMPLE OF WEED CONTROL 1



# EXAMPLE OF WEED CONTROL 2



# Mulching – Benefits Plants and Soil

- **Reduces Weed Growth.** (Make sure it is weed-free and applied deep enough -- 2-3 inches).
- **Plants have more roots when mulched.**
- **Moisture Control**
  - Prevents loss of water by evaporation.
  - Prevents crusting of surface improving absorption.
- **Improves Soil Structure**
  - Adds organic materials as it decays.
  - Prevents soil splashing, stopping erosion and minimizing soil-borne diseases.
  - Helps maintain soil temperatures
  - Helps prevent soil compactions



# EXAMPLE OF MULCHING 1





# Pest Control

- Barriers, Traps and Repellents
  - Human Hair
  - Urine
  - Beetle Traps
- Host crops, beneficial insect habitats.
  - The host crops serve as home base for the beneficial insects we periodically release into our fields, and also attract more beneficials over time. The borders serve another extremely important function as "trap crops," distracting pests from our crops by providing them with an alternative food supply.
- Crop rotation.
  - Insects are creatures of habit. If they find a food supply that keeps coming back at the same place and same time each year, you can bet that they'll show up for the feast. Thoughtful crop rotation disrupts this cycle.
- Insecticides approved for use on organic crops.
  - Horticultural oil or vegetable oil mixed with dish detergent.
- **Last but not least...PICK EM OFF!**

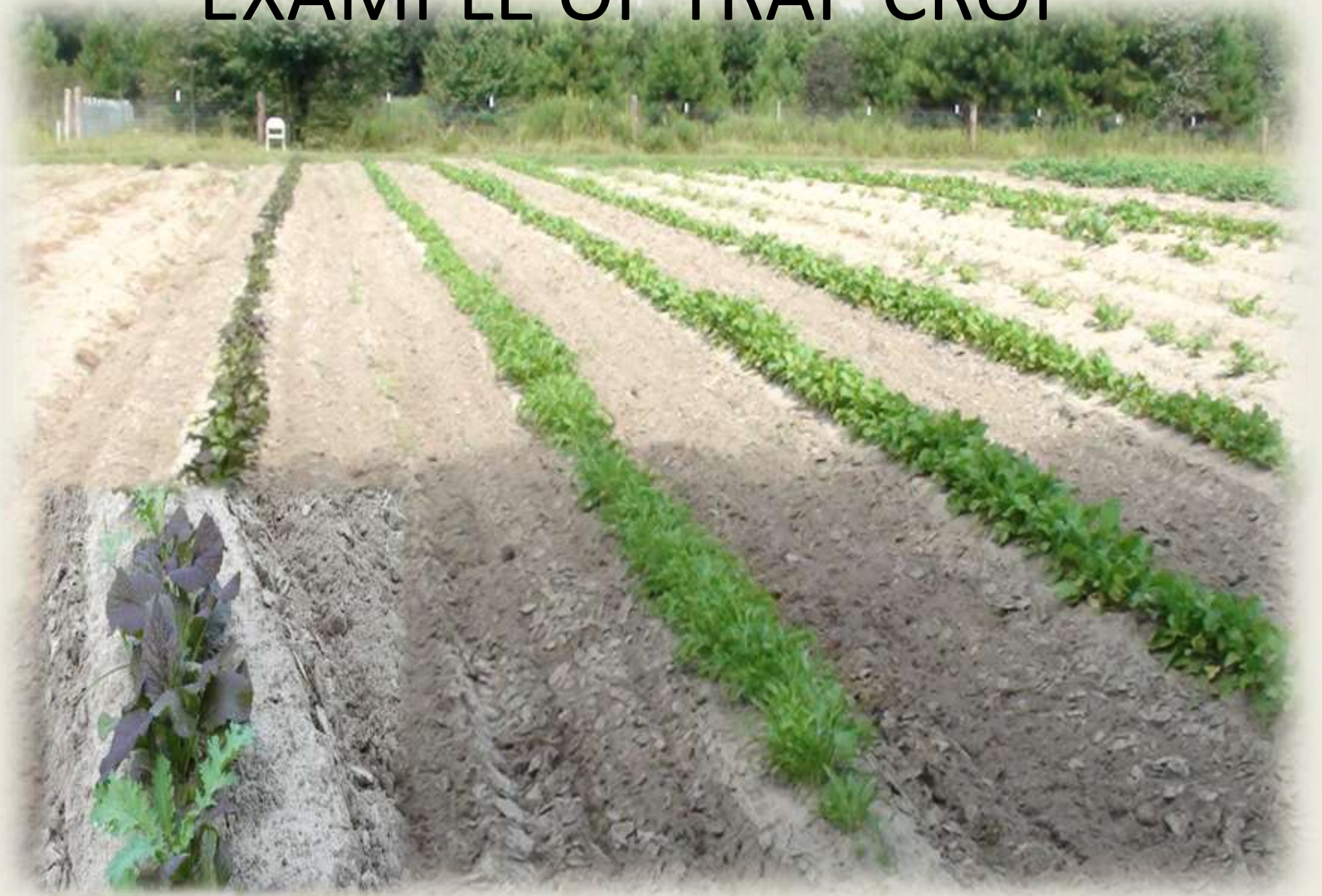


# EXAMPLE OF COMPANION PLANTING





# EXAMPLE OF TRAP CROP



# EXAMPLE OF PEST CONTROL ALTERNATIVE (LAST RESORT OPTIONS)



# SEED SAVING

BY FATHIYYAH MUSTAFA

The art of seed is easy as one two three whereas as plant breeding is working with science. In this workshop we are dealing with seed saving the simple way where anyone can learn how to save a seed. These types of seeds to save come from cherished heirloom vegetables and fruits. Some are self-pollinated and some are open pollinated plants. Self-pollinated plants can pollinate their own blossoms. Open pollinated plants need bees or other insects to do the work for them. Self-pollinated plants include lima beans, snap beans, eggplants, lettuce, peas, peppers and tomatoes. An open-pollinated plant includes beets, broccoli, cabbage, carrots, corn, cucumbers, melons, onions, spinach, squash and turnips.

For either type of crop, isolate plants that you that you plan to collect seeds from since insects still pollinate a small percentage of self-pollinated crops. That way you'll be sure the seed that you harvest is 100% true to type. A light frame covered with fine-mesh netting or screening will do. Just remember that self-pollinated crops can take care of themselves but for open-pollinated crops, you'll need to be the bee.



# HARVESTING SEED (BOK CHOY)



# DRYING WATERMELON SEEDS



# SAVING OKRA SEEDS



# RESTORING HEIRLOOM SEEDS STOCK



August  
2008

Fathigah and Azeez Mustafa  
The couple has been recognized for restoring heirloom varieties of crops that have been thought lost.  
Seen here with an heirloom variety of corn.  
Certified Organic Growers  
Suster, South Carolina

July 2008	September 2008
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
		USDA Farmers Meeting - Arlington, VA - August 5-7				
10	11	12	13	14	15	16
				Tribes of Southern California and American Indian Conference - Tempe, AZ - August 14-15		
17 <small>Marcus Garvey b. 1847</small>	18	19	20	21	22	23
24	25	26	27	28	29	30
31 <small>Penn Aid Grant Payment Deadline</small>			African-American Museum Conference - Chicago, IL - August 27-30			



# Harvesting



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# HARVESTING 2



# EXAMPLE OF SUPER CROPPING 1



# EXAMPLE OF SUPER CROPPING 2



# SPECIAL THANKS



# QUESTIONS

