

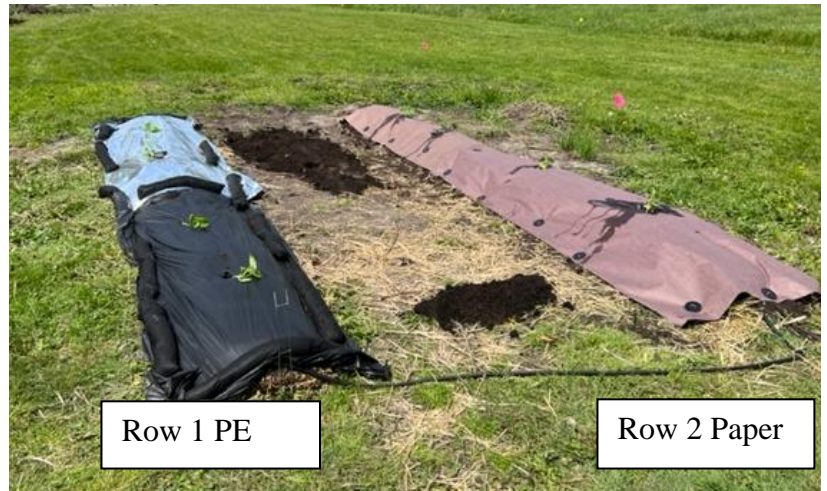
# After Harvest Review and Evaluation of 2022

## No-Till/Sheet Mulch Squash Patch

*DISCLAIMER: This project is meant as a demonstration using sheet mulch and weed suppression methods in the home garden and is not intended as a research project or experiment and does not strictly adhere to WSU Citizen Science guidelines. It should be viewed as a demonstration and inquiry with anecdotal results. Materials and techniques were based on WSU and Extension Service research modified to fit this demonstration, Dave Keller MG-2013 October 2021.*

For the 2022 growing season, this demonstration garden was moved to the area just west of the Pollinator Garden and north of the main Vegetable Garden. In years past, this area had been used for dropping off garden debris prior to composting, pit composting (a common method at the time) storing bulk compost and wood chips and occasionally planted in corn or pumpkins. No crops were planted during 2020 or 2021. This area was also covered by standing water for several weeks following the spring 2022 flood. The project was designed to demonstrate use of a variety of sheet mulches as well as several methods for weed suppression.

On June 1, two 16 foot raised beds were built using straw and compost, one covered with a readily available commercial polyethylene (PE) and one with paper sheet mulch. The PE bed was covered in half- black PE and half in silver PE. The second 16 ft. bed was covered in half “Weed Guard Plus” and half in “Weed Guard Red”.



- Squash row #1
  - Broad fork preparation
  - 3-4 inch layer of straw
  - 3-4 layer of compost
  - Emitter line
  - Black PE sheet mulch

- Silver PE sheet mulch
- Compost filled tubes made of light-weight weed barrier sewn into a 36 inch long tube formed around a 3 inch pipe for



ease of filling were used to hold down PE sheet mulch without burying the edge or using staples.

I also prepared 4 areas for bean towers using 2x2 ft. pieces of planter paper and compost. Towers were set up and planted on the same date as the squash.

All areas were planted on June 17 with “Fortex” beans, “Delicata” and “Red Kuri” squash. (An earlier planting of Spaghetti and Red Kuri did not survive unexpected low temperatures).

Four methods of weed suppression/soil preparation were used around the squash beds:

- Black plastic with weed barrier
- Summer cover crop
- Cardboard and arborist wood chips
- Arborist wood chips

Harvesting began on August 14 with produce going to the Ferndale Food Bank. Fresh squash were sent a few at a time along with a WSU handout on how to use winter squash. All squash were removed on September 14 and cured in the greenhouse at the Hovander Demonstration Greenhouse.



Sept 14

Twelve to fourteen squash per trip continue to be sent to the Food Bank. In all, approximately 150 squash were harvested from eight plants conservatively weighing about 300-400 lbs. Exact

numbers are uncertain as squash would occasionally disappear from the garden, especially the Red Kuri.

## **Evaluation**

### **Beans:**

The bean towers use about 1 sq ft of garden space providing 4 row feet of planting area. The prepared area of 2 sq ft was also surrounded with chopped hay and or comfrey to suppress weeds and grass. The prepared area of 2 sq ft quickly proved insufficient as grass out competed the beans. Although a few pounds of beans were harvested it is clear that new beds need to be more carefully prepared especially in grassy areas.

### **Plastic weed suppression demo:**

Between the beans and the No. 1 Squash bed, I installed a weed suppression demonstration consisting of a double layer of 3.5 mil black plastic which was then covered with commercial weed block to protect from UV degradation.

At the end of the project no discernible plant growth was found under the plastic with what appears to be complete weed suppression. Soil temperatures were not taken to prevent puncturing the plastic layers, but it can be reasonably assumed from prior demos that soil temperatures spiked early in the trial but were moderated once the area was covered in squash vines. Both layers of plastic and weed block remain serviceable and can be reused once cleaned.



## Squash Bed No. 1:

Both squash beds were established first using a broad fork to loosen the soil. Followed by:

- 3-4 inch layer of straw
- 3-4 inch layer of compost
- ½ inch Emitter line
- Black PE sheet mulch
- Silver PE sheet mulch



Black plastic mulch was used as it is the most common and versatile of plastic sheet mulches. The Silver plastic was used as it has been shown to help reduce insect damage.

In a trial to determine if preserving these thin plastics is possible, the edges were not buried but rather held down using compost filled tubes or “socks” made of landscape fabric. Tubes were designed around a 3 in PVC pipe to aid in filling.

This system of plastic held by “socks” proved quite successful. The only weed growth occurred at the edges of the mulch. The plastic itself was removed intact and will be reused once cleaned. This reuse of plastic sheet mulch in this manner is a viable option in a home garden.



## Summer Cover Crop:

The area between the two squash beds was prepared by “scalping” the area and removing large weeds. A layer of compost was put down, followed by red and white clover as a cover crop. This crop was quickly over shadowed by the squash vines resulting in a low growth rate for the clovers



with some weed suppression. The vegetation in this area did not seem to affect the squash production.

### Squash Bed No. 2:

Squash Bed No. 2 was assembled in the same manner as No. 1 substituting paper mulch for plastic

- Broad fork
- 3-4 inch layer of straw
- 3-4 layer of compost
- ½ inch Emitter line
- *Weed Guard Plus* paper weed barrier
- *Weed Guard Red* (ph adjusted to slow decomposition)
- Modified landscape staples used as hold-downs



Past use has shown that burying any part of the paper mulch will cause it to rapidly decompose and fall apart. To prevent this, I modified landscape staples with a small piece of plastic added for greater surface area to hold the paper. When disassembled the plastic had not degraded and had minimal effect on the paper.



While paper mulch is not as robust as the

PE films it does a very good job of suppressing weeds, and while it does tend to be more fragile and sustain more damage than the PE film, it is much easier to dispose of in a compost pile without the worry of trying to dispose of plastic



and should be considered for single season use.

### **Cardboard and arborist chips:**

The area west of the beds consisted of a single layer of heavy cardboard and a 10-12 layer of coarse arborist chips. At time of harvest, portions of the cardboard were still in tact and weed growth within the pile was minimal.



### **Arborist chips:**

A 10-12 in. layer of arborist chips was laid north of the paper mulch demonstration. The only weed growth noted was in the space at the edge of the paper and where the paper had been damaged. Minimal vegetative growth of note was found in the wood chips themselves.



### **Irrigation:**

At the start of planting a ½ in. drip line with emitters spaced at 9 inches was laid under the mulch for watering the squash, both lines were attached to a ½ in. header line from the water source. The Bean towers were watered from a ½ in. main tubing line with ¼ in. emitter line, emitters at 6 in. spacing, encircling the towers. Water was set on a timer to water 20 minutes every two days. This frequency and duration was selected as the plants were initially 4-6 inches above native soil. No problems were found or adjustments made for the growing period.



### **Fertilizer:**

Granular fertilizer was added at the time of planting followed by a single application of liquid fertilizer 3 weeks later. While this straw/compost arrangement resembles a “straw bale” garden its shallow nature allows the plants to

grow into native soil reducing the amount of inputs required for a more traditional “straw bale” garden.

**Conclusion:**

- **Project targets home gardens**
- **PE mulches can be reused if protected from damage on installation.**
- **Paper remains the best alternative to plastic in the garden.**
- **Drip irrigation works well when integrated at the planting of time.**
- **Weed suppression must consistently block light.**