

PROJECT DESCRIPTION NO. 3

Determine the most effective duration of pre-plant tarping for weed control in vegetable gardens.

Tarping, in an agricultural setting, generally refers to the use of plastic films or woven synthetic fabrics to cover the soil and kill weeds with either elevated temperatures, light exclusion or both. When clear plastic is used for tarping, moistened soil is heated to high temperatures that can kill weeds, diseases and nematodes and is often called solarization. Woven black plastic kills weeds by blocking sunlight when weed seeds germinate and try to grow. Plastic mats and films are expensive to use for large scale organic farms and can pose a problem for disposal after the crop is harvested. Using a combination of Pre-plant stimulation of weed seedling growth followed by short-term coverage with a tarp can provide enough weed control for short cycle vegetable crop production.

In this project, weed seeds are stimulated to grow with rototilling and the application of fertilizer and irrigation. Weed seedlings will be covered for 1, 2 & 3 weeks prior to transplanting to determine the most effective duration for weed reduction during the crop production phase.

PURPOSE: To determine the response of weeds and transplanted vegetable to 1, 2 & 3 weeks of soil tarping prior to planting.

PROCEDURE: Apply calcium nitrate (15.5-0-0) to the entire plot area that is 12 ft. x 14 ft. in size (168 ft²). Apply enough fertilizer to achieve a nitrogen rate of 100 lbs. /a (2.5 lb). Rototill and then rake the surface to remove stones and prepare a smooth soil surface. Evenly apply .25 lb. (114 grams) of annual rye grass to serve as the weedy grass and lightly rake it in. Cover the 3 week tarping plot with the black plastic woven weed mat and secure it to the soil with landscape staples. Cover the entire area with bird netting and turn on the irrigation. After 1 week, apply the 2 week tarping treatment and after 2 weeks apply the 1 week tarping treatment. Four weeks after the start of the lab remove all tarps and plant the vegetable crops.

All indicator crops will be transplanted and include: pak choi cabbage, soy beans, sweet corn and zucchini squash. Plant 100 cells of each crop and then select the most uniform size for each treatment. Transplants should be 8 inches apart within the row and 1.5 feet apart between the rows. Data to be taken will include crop fresh weights as well as fresh weight of weeds from a 1/4 square meter (area measurement device provided.). Your notes should include ratings of crop of growth vigor, weed emergence and other events that impact growth (possibly insect attack) of crops and weeds. You should also note of % ground cover by weeds at various times, notes should also describe predominant weed species in each plot. You should take photos of all aspects of the experiment.

Plot map for treatments.

2 week	1 week
3 week	No cover
Plots = 6 ft. wide 7 ft long	

Crop planting order for each plot

corn
soybean
zucchini
Pak choi

Rows 7-foot long

PROCEDURES TARPING FOR WEED CONTROL IN VEGTABLE CROP # 3

LAB #	DATE	DESCRIPTION OF ACTIVITES
1	8/24	
2	8/31	Rototill, fertilize, then seed with annual ryegrass and apply 3 week tarp treatment.
3	9/07	Apply 2 week tarp treatment. Start transplants of sweet corn, soybeans, and zucchini. Plant 100 cells of each crop.
4	9/14	Apply 1 week tarp treatment and start transplants of pak choi, 100 cells
5	9/21	Remove tarps and plant vegetables. Take photos of all activities
6	9/23	Photos of plots
7	09/28	Photos of plots
8	10/05	Photos of plots, harvest pak choi and record fresh weight.
9	10/12	Photos of plots
10	10/19	Photos of plots.
11	10/26	Photos of plots
12	11/02	Photos of plots
13	11/09	Photos of plots
14	11/16	Take data to include weed and indicator crop fresh weight. Take photos.
15	11/23	Prep data and slides for PowerPoint presentations
16	11/30	Rehearse oral presentations
17	12/07	Oral presentations and written reports due