

PROJECT DESCRIPTION NO. 4

COMPARISON OF WEED AND CROP GROWTH TO SYNTHETIC AND ORGANIC MULCHES

Organic mulches are well documented in their use for improving crop growth and suppressing weeds. Many times we assume that all organic mulches provide the same level of performance regardless of texture and source of the organic material. Research has documented that many tree and shrub species produce toxin in their leaves that can be leached out by rainfall or fog mist and suppress plants growing at their base. Colored synthetic mulches have also been shown to improve crop growth by warming the soil and highly reflective mulches can reduce insect damage.

PURPOSE: To quantify the response of weeds and crops to organic and synthetic mulches.

PROCEDURE: The experimental site will be rototilled before planting and fertilized with 5 pounds of ____-____-____ on to entire experimental area that is 6 ft. X 36 ft... There will be 6 plots with treatment 1 repeated twice, see plot map for details. There will be 5 mulch treatments consisting of the following mulches:

Mulch Treatment	Rate of application in pounds/acre	Amount for 36 ft ² in pounds
1. No mulch	-----	-----
2. Woven Black plastic mulch	-----	-----
3. Ironwood (<i>Casuarina equisetifolia</i>)	8,000 = 4 tons	6.6
4. Christmas berry (<i>Schinus terebinthifolius</i>)	8,000 = 4 tons	6.6
5. Coconut palm fronds	8,000 = 4 tons	6.6

All mulches must be applied on an equal dry weight basis. Students can collect their mulch from areas around the Magoon facility, Ironwood mulch will be provided, and place them in the drying ovens in the Magoon lunch room. Students must decide how they want to prepare the mulch prior to placement on experimental plots. Take photos of the final mulch placement system.

Before the mulches are placed indicator crops must be planted. Spread 30 grams of annual rye grass onto each 6 x 6 ft. plot area and rake in lightly, prior to planting soybeans and transplants. Plant soybean seed in rows spaced 4 inches apart and place 3 seed per hole. Count the number of seed and use the same amount for each treatment. It is important to use the same amount of seeds in each treatment so that accurate seed germination counts can be obtained as a response to the different mulches. In a other rows plant zucchini and corn transplants spaced 4 inches apart within the row. At 2 weeks after planting replace and dead zucchini and count and thin the remaining soybean plants to 1 strong plant per hole. Fresh weights of weeds will be collected for ½ meter and crop fresh weights will be obtained for 3-5 representative plants.

Plot map.

Treatment plots are 6 x 6 ft.

Mulch treatments					
3	2	1	4	5	1
Transplanted CORN					
TRANSPLANTED ZUCCHINI					
DIRECT SEED SOYBEAN					
Indicator crops for each cover crop/tillage treatment					

PROCEDURES AND ACTIVITIES FOR COMPARING MULCHES #4

LAB #	DATE	DESCRIPTION OF ACTIVITIES
1	8/23	
2	8/30	
3	9/06	Start transplants of corn and zucchini. Collect plant tissue and place in drying ovens at Magoon lunch room
4	9/13	
5	9/20	
6	09/27	Apply annual rye grass seeds to individual treatment plots and rake in. Record images of planting and application of mulches.
7	10/04	
8	10/11	Photos of plots
9	10/18	
10	10/25	Photos of plots, count germinated seedlings of soybeans and thin.
11	11/01	
12	11/08	Photos of plots
13	11/15	1. Take data to include weed and indicator crop fresh weight prep for dry wts. 2. Take photos of all aspects
	11/22	No lab
14	11/29	Record dry wts. and discuss results
15	12/06	Written reports and oral presentations due
16	12/13	