Flaming and light exclusion duration for suppression of living grass mulch.

No-tillage farming relies on herbicides to kill off living cover crops and weeds so that crop plants can grow with a minimum of interference for growth factors such as light, nutrients and water. In this experiment a solid stand of annual rye grass will be grown with stunting treatments imposed with varying lengths of flaming. Black plastic weed mat will also be used to kill or stunt ground covers by excluding light for various time intervals. Crop growth will be compared in plots where annual ryegrass is stunted with various flaming times and 2 and 1 week of light exclusion with woven black plastic weed mat.

PURPOSE: To determine the response of four plant species to solid stand of annual ryegrass stunted with 4 rates of flaming time and 2 intervals of light exclusion with black plastic weed mat.

PROCEDURE: The plot size of the treatments in this project will be 6 x 6 ft and there will be 6 treatments of with a total area of 216 ft². Prior to rototilling, the mark the test area as 6 ft. wide and 36 ft. long and apply 5.0 pounds of ________ fertilizer. After rototilling setup 6 plots and across all of them evenly broadcast 3 pounds of annual rye grass, rake in and roll for good soil/seed contact. Cover plots with bird netting. After two weeks of growth cover treatment 4 with weed mat and after 3 weeks of growth cover treatment 6 with weed mat. Weed mat will be held in place with metal pins. After 4 weeks of growth use the flaming tool and try to cover the entire plots with hot air for the times listed in the table below. Students will take turns flaming while others keep time and count down the last 10 seconds of flaming.

Treatment	Stunting agent
1. Annual rye grass	20 seconds flaming, grass grows for 4 weeks
2. Annual rye grass	40 seconds flaming, grass grows for 4 weeks
3. Annual rye grass	80 seconds flaming, grass grows for 4 weeks
4 Annual rye grass	1 week cover with weed mat, grass grows for 3 weeks
5. Annual rye grass	2 weeks cover with weed mat, grass grows for 2 weeks
6. Annual rye grass	Untreated stand of rye grass, grass grows for 4 weeks

After flaming is completed, remove weed mat and prepare to plant indicator crops (photos of grass when uncovered). Plant one row of each of the following indicator plant species: Transplanted sweet corn, zucchini and broccoli and direct seeded soybeans in all treatments. Set transplants and seeding holes for soybeans 4 inches apart in rows spaced 1.5 feet apart.

At 1, 2 and 3 weeks after planting, record digital images and visual ratings of cover crop suppression. The rye grass cover and indicator crops should be rated for % of maximum vigor. Six weeks after planting crops, harvest 3-5 representative plants and 1 square foot of rye grass for dry weight accumulation.

Ground cover suppression treatments						
1	2	6	4	3	5	
Transplanted CORN						
TRANSPLANTED ZUCCHINI						
TRANSPLANTED BROCOLI						
DIRECT SEED SOYBEAN						
Indicator crops for each cover crop/tillage treatment						

PROCEDURES AND ACTIVITIES FOR PROJECT # 3

LAB #	DATE	DESCRIPTION OF ACTIVITES	
1	8/23		
2	8/30		
3	9/06	Rototill, fertilize, plant rye grass, roll and cover area with bird netting, then start transplants. Record photos of all procedures.	
4	9/13	Photos of cover crop growth	
5	9/20	Photos of cover crop growth then cover treatment 5 with weed mat.	
6	09/27	Photos of cover crop growth then cover treatment 4 with weed mat.	
7	10/04	Install flaming treatments (#'s 1,2&3), remove weed mat and plant transplants	
8	10/11	Photos of transplants and rye grass recovery then record visual ratings	
9	10/18	Photos of transplants and rye grass recovery then record visual ratings	
10	10/25	Photos of transplants and rye grass recovery then record visual ratings	
11	11/01	Final photos and harvest indicator plants and 1 square foot of rye grass for fresh weights. Place harvested materials in paper bags and place in drying oven at Magoon.	
12	11/08	Record dry weights.	
13	11/15	Discuss data preparation and review digital images	
	11/22	No lab.	
14	11/29	Review data slides for Power Point presentations	
15	12/06	Oral presentations and written reports due	
16	12/13		