

Agronomy 526 Homework

Due: 3/31/22

1. The following data are from an experiment designed to evaluate four weed control strategies for establishing alfalfa. The four treatments were: 1) imazethapyr, 2) sethoxdim, 3) control, and 4) oat companion crop. The experimental design was a RCBD with four replications. The experiment was conducted at two locations. Seasonal alfalfa yields (kg DM / ha) were determined in the establishment year (1996) and the year following establishment (1997).

Location	Treatment	Replication / Year							
		1		2		3		4	
		1996	1997	1996	1997	1996	1997	1996	1997
1	1	6408	9011	5314	8347	9039	9014	8163	8786
1	2	7756	9533	9418	10154	8382	9333	9137	8435
1	3	10017	9172	10814	7170	8846	6780	8782	8094
1	4	10701	8867	11007	7737	12699	7109	12328	8106
2	1	8221	9524	6978	6413	6221	8136	7302	7216
2	2	10419	8466	7786	6921	7276	8008	8739	6881
2	3	10791	8966	8476	7819	8337	6580	7691	7092
2	4	9712	7745	8978	8471	10059	7614	8563	6714

- a. Write the linear additive model and expected mean squares for the experiment.
- b. Perform the analysis of variance.
- c. Use contrasts where appropriate to compare treatment effects.
- d. Compare treatments using an LSD.
- e. Interpret the results making sure to explain any interactions.
- f. What is a potential problem when analyzing experiments such as this where multiple observations (years) are made on the same experimental unit (plot) and what can you do to avoid it?

* turn in your SAS program as well as output