STAT 450

January 9, 2018

**Biosolids Activity 1**

1. Four plant species: ASAG, HECO, KOMA, LITT

Questions:

* Does the plant cover value differ among species?
* Is the plant cover value affected by biosolids treatment?

1. Questions to client:

* Were there any changes to the land over the time the data was collected? Any other factors that would affect independence over time?
  + A control block of land (baseline) – see how it changes over time (changes will not be affected by treatment)
* How do you visually assess the percent cover – is this accurate?
* Do some plant species naturally grow faster than others?
* Are the land blocks significantly different and would that affect the results?

1. Hypothesis:

H0: (µASAG,B - µASAG,C)= (µHECO,B - µHECO,C) = (µKOMA,B - µKOMA,C) = (µLITT,B - µLITT,C)

µi,j = population mean of plant cover value for species *i* and treatment *j*

HA: At least one mean plant cover difference is different among the four species

Response Variable: Plant cover value

Explanatory Variable: Species, Treatment (biosolid vs. control)

Methods: ANOVA (randomized block design) or pairwise t-test

* Factor: Treatment, Levels: 2 (can do t-test)
* Factor: Species, Levels: 4 (cannot do t-test)
* Pairwise t-test – use Bonferroni adjustment to correct for the chance that you will wrongly reject a hypothesis

Data in Table 1 is not sufficient – only has means (not individual data or standard deviations)

1. Plot A: Is there a difference in percent cover between biosolid treatment and no treatment?

Plot B: Does the difference in percent cover before and after treatment vary among the four species?

(same as our hypothesis)

Plot C: Is there a difference in percent cover between the four species?

Plot D: Is there a difference in percent cover between biosolid treatment and no treatment for the species LITT?

1. It would be better to have quantiles (0, 25, 50, 75). It may be sufficient, but more data is better.

MWD = measures quality of soil

4 blocks = block of *land*