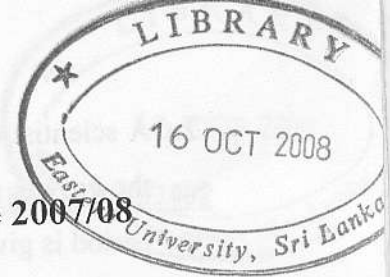


Eastern University, Sri Lanka



Final Year First Semester Examination in Agriculture 2007/08

CSC 4101: Experimental Techniques in Agriculture

Answer all questions

Time allowed: 2 hours

1. The trial was designed to test the effect of four green manure crops on the subsequent production of sugar beets at two levels of nitrogen fertilization. The main plots were to be two levels of nitrogen fertilization applied to the sugar beets at thinning time and replicated three times in a randomized complete block design. Yields of sugar beet following the green manures are given for each subplot and organized for analysis in table.

Kg N/ha	Green manure	Yield (tons/ha)		
		I	II	III
0	Fallow	13.8	13.5	13.2
	Barley	15.5	15.0	15.2
	Vetch	21.0	22.7	22.3
	Barley - Vetch	18.9	18.3	19.6
120	Fallow	19.3	18.0	20.5
	Barley	22.2	24.2	25.4
	Vetch	25.3	24.8	28.4
	Barley - Vetch	25.9	26.7	27.6

- a) Perform analysis of variance for the above data.
b) Interpret your results at $P = 0.05$.

2. A scientist carried out an experiment to investigate the effect of K^+ ion concentration on the growth of a certain aquatic plant type. Dry weight increase of plants during a period is given below

Dry weight increase (mg)	K^+ ion concentration (ppm)
(x)	(y)
8.14	12.0
6.67	29.5
6.08	43.0
5.90	53.0
5.83	62.5
4.68	75.5
4.20	85.0
3.72	93.0

- Draw a scattered diagram for the above data.
 - What does the scattered diagram suggest about the relationship between x and y.
 - Fit the linear regression line on your graph.
 - Test the significance of the simple linear regression at $P = 0.05$.
 - Compute the correlation co-efficient and interpret it.
- 3.
- Briefly explain the interaction between two factors using a graph.
 - How would you select main factor and sub factor in a split plot design?
 - Briefly discuss the LSD and DMRT as tools to compare means.
4. Briefly describe the following in field experiment:
- Blocking.
 - Soil heterogeneity.