

EXST7015

Daily Design 28

Carefully read the description of the experiment below. Be prepared to answer the questions that follow the design description as a class quiz.

This study was conducted in Metema in the Amhara National Regional State of Ethiopia. Agricultural production throughout the study area is mixed crop/livestock by small landowners. The major crops grown include sorghum, rice, cotton, sesame, haricot bean and soybean, but the farming systems can be broadly classified as cotton based farming and sesame based farming.

Most farmers also raise goats and benefits of supplemental protein feed sources from locally available materials

were examined in this study. The supplemental feeds were noug seedcake, sesame seedcake and cotton seedcake. All supplemented diets also received wheat bran and there was also a grazing only control. Five farmers volunteered to participate in the study. Twenty young, male goats of similar age and weight were purchased and four were randomly assigned to each farmer. All experimental goats grazed on the communal pasture on each farm for most of the day. After grazing the experimental goats were watered and then tethered with their supplemental feed. Each of the 5 farmers had one goat receiving each of the 4 supplemental feed sources. The variable of interest is the average daily weight gain (ADG) for each goat during the study.

| Initial weight (IW), final weight (FWT) and average daily gain (ADG) of goats with and without dietary protein supplements including wheat bran (WB) plus other local oil seedcakes. | | | |
|--|--------------|--------------|---------------------|
| Treatment | IW (kg) | FWT (kg) | ADG (g/day) |
| Overall mean ± se | 22.35±0.12 | 27.09±0.19 | 52.61±2.01 |
| R ² | 0.97 | 0.92 | 0.76 |
| CV (%) | 2.35 | 3.14 | 17.4 |
| Standard Error | 0.23 | 0.38 | 4.09 |
| Test of Treatments (F, P value) | 1.15, 0.3683 | 11.98 0.0006 | 11.37 0.0008 |
| Grazing only | 22.4 | 25.5 a | 34.4 a |
| Grazing + noug cake +WB mixtures | 22.4 | 27.2 b | 52.9 b |
| Grazing + sesame cake +WB mixtures | 22.0 | 27.0 b | 55.1 b |
| Grazing + cotton cake +WB mixtures | 22.6 | 28.7 c | 68.0 c |
| Means with the same letter within the same column are not significantly different. | | | |



| | | | |
|-----------------|-------------------------------|--------------------|------------------------------------|
| Answer choices: | (A) supplemental feeds | (B) a goat | (C) farmers or farms |
| | (D) farming systems | (E) pasture | (F) daily weight gain (ADG) |

Name _____ Quiz Number ____ Date ____ / ____ / 2012

Circle the appropriate letter for each question.

- 1) What is the experimental unit for this experiment? A B C D E F
- 2) What is the sampling unit for this experiment? A B C D E F
- 3) What is the dependent variable for this experiment? A B C D E F
- 4) What is the treatment variable for this experiment? A B C D E F
- 5) If the design is RBD, what are the blocks? A B C D E F NA
- 6) Does it seem more likely that the treatments are fixed or random? (A) fixed (B) random
- 7) What is the treatment arrangement for this experiment? (A) single factor (B) factorial (C) nested
- 8) What is the experimental design? (A) CRD (B) RBD (C) LSD (D) Split-plot (E) Repeated Measures
- 9) The treatment degrees of freedom are _____ .
- 10) The degrees of freedom for the error used for testing treatments are _____ .