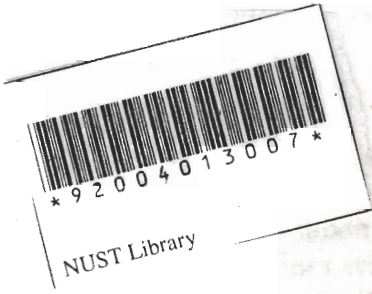


Department of Applied Mathematics

PROJECT TITLE: PERFORMANCE OF SORGHUM LINES IN DIFFERENT AGRO-ECOLOGICAL REGIONS OF ZIMBABWE.



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*This project is submitted in partial fulfillment of the requirement of BSc Honours Degree
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ABSTRACT

Crop performance is a function of the genotype of the crop and the nature of the production environment. In this project we will compare the performances of sorghum lines to the known varieties.

The aims of this project are that we want to determine the sorghum lines, which perform better than the known varieties.

In an attempt to archive the above-mentioned aims, in the project, the following methods were used

- a) Power Analysis (to determine the sample size)
- b) Analysis of variance
- c) Multivariate Analysis of variance.
- d) Duncan's Multiple Range Test
- e) Wilk's Lambda

The results from ANOVA showed that there were no significant differences amongst sorghum lines in Gwebi, Sandveld and Makoholi. In Kadoma and Matopo there were significant differences amongst lines and the Duncan's **multiple range test** was used to choose the sorghum lines with superior performance. In MANOVA we discovered that there were highly significant differences in yield, plant height and harvested head weight due to location (environment). There were marginally significant differences in yield, plant height and harvested head weight due to treatments (sorghum lines). We found that the differences in performance of sorghum lines are due to the environment (location) not due to sorghum **line make-up**.