SOME ASPECTS OF GRAIN STORAGE SYSTEM IN KENYA:

THE CASE OF MAIZE IN TRANS-NZOIA DISTRICT

BY

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Thesis submitted in partial fulfilment for the award
of the Degree of Master of Arts (Agricultural Geography),
University of Nairobi, 1993.

ABSTRACT

The main objective of this study is to investigate the maize storage process in Trans-Nzoia district, Western Kenya. The study examines the various roles of environmental and biogenic factors in maize grain loss at the farm and district levels. It also investigates the typology at storage of the farm and district levels. An attempt has been made to examine storage problems at the farm and National level and possible solutions are suggested.

The study is guided by a theoretical perspective purporting that maize grain loss is evident at all levels of grain storage, and that these losses are preventable through appropriately designed strategies. This geographical investigation is motivated by the desire to understand the physio-biogenic conditions that prevail when maize is stored with an intention of giving suggestions on how to prevent loss on the basis of what has been observed in the field. This study therefore revolves around an attempt to test the major hypothesis that "physical and environmental factors do not significantly influence maize grain loss during storage" and to verify this hypothesis, several lines of investigation have been pursued.

Data used in the study was gathered through a recording schedule which involved farms randomly selected from the district. Regression analysis done on the data is used to show the relationship which exists between the physical, environmental and biogenic factors and maize grain loss. This analysis indicates some strong and significant relationship between these variables

under study. It was felt that these factors provide sufficient explanation of maize grain loss during storage.

To find out whether there is more variation between the samples than within them, the F-test is performed on the data. Strong and significant relationships are found to exist between the independent and dependent variables. Several factors are found to be significantly associated with maize grain loss at the farm and national level and these are physical factors like temperature inside the store, humidity and grain moisture content. The biogenic factors are level of infestation including number of insects present, trash content and grain coloration. A major finding from the regression analysis is that all these factors exert a strong role on grain loss right from the farm to the national level. Results also indicate that store construction is a substantial factor in farm grain storage loss.

Few farmers in the area have as yet adapted modern recommended stores that can minimize grain loss. This has led to farmers experiencing higher losses when they store the maize than when it is stored by the cereals board. Less educated farmers preferred the traditional bin-type storage method compared to more educated farmers whose losses were minimal because they use modern recommended stores. A large proportion of the farmers was observed to use either malathion or actelic dusts as pesticides. These work well when properly applied but still losses are observed to occur. Consequently these losses have to be attributed to the physical and environmental conditions within and around the stores.

A major conclusion emanating from findings of the research is that there is need to improve the storage facilities to arrest the present rate of grain deterioration and loss. Improvement in the handling of the grain right from the farm to national level and also improvement in storage typology is essential.

This study recommends that farmers be educated about proper storage techniques which will minimize post-harvest loss, since lack of knowledge of proper storage techniques has been identified as one of the most serious problems facing the farmer. In this respect extension workers curricula needs to be modified to have more emphasis on post-harvest loss education. This will ensure that farmers in the end are fully aware of the losses that they experience and hence be able to adopt appropriate loss control measures.

The study recommends research priority of scholars to include specific contributions of pests like rats and birds on actual loss. Appropriate loss assessment methods should be designed such that particular roles played by different variables can be pinpointed other than presenting loss as being the result of a combination of variables.