Effectiveness of Commonly Used Insecticides and Methods for Maize Storage, In Koroma Location, Kirinyaga District, Kenya

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ABSTRACT

An increased demand for food due to a rising population growth has resulted to increased pressure on the limited arable land. which is less than 20% of the total land area in Kenya. This necessitates proper management and preservation of harvested food grains to make it last longer and feed more people and (or) fetch better market prices.

Previous studies show that 25-40 % of grains are lost to storage insect pests. This loss if not mitigated can contribute to food insecurity and poverty levels in Koroma location and the country at large. Various grain loss control methods and storage insecticides have been in use to manage the loss. Their effectiveness on maize grains storage has not been tested and therefore the need for this study. The study aimed at ranking some locally and commonly used dusts following a performance trial, so as to recommend such products to farmers. The experiment was conducted in Koroma location of Kirinyaga district using an RCBD design. In this study Sumicombi, Actellic Super, and Spintor dust were tested along Eucalyptus ash and metal silo grain storage container. The treatments were arranged in an RCBD layout. Grain damaged due to pests were observed and counted within samples taken from the treatments. Each treatment was replicated thrice within the storage space. A trial run was done before the actual experiment. Data was taken monthly for four months from the samples which had been exposed to insect pests in the storage space. The data was then subjected to analysis of variance (ANOVA) using the Statistical analysis system (SAS) package. Results revealed that all the chemical treatments performed better than ash treatment and were ranked on their performance levels. Treatment by storage in de-aerated containers showed better results than most of the chemical insecticide treatment. Grain damage levels for the treatments were found to be as follows, metal silo storage seven percent, Sumicombi dust nine percent, Spintor dust nine, Actellic super twelve percent, Eucalyptus ash twenty eight percent, and the free grain storage (control) thirty five percent. These percentage proportions give relative comparisons for the losses incurred in three months for the commonly used treatment practices in Koroma location.

This study concluded that control of post harvest insect pest losses if taken effectively can save the farmer and the country heavy economic loss. Concerns geared to making this country food sufficient must include both research efforts on increasing yield, quality and prevention against storage losses. Monitoring effectiveness of insecticide dusts in the market and other grain storage methods is important for agronomists when advising the farmers appropriately.

This study recommended use of Sumicombi and Spintor dusts among the chemical control for best results. The use of metal silo bin emerged to be the best with the least grain damage, therefore farmers willing to spend a little more cost on their purchase can enjoy better protection for their grains than chemical control method.

This study highly discourages farmers from storing maize grains without any measure to control pests as results showed this resulted to heavy loss. Use of ashes cannot adequately control the pests as loss was incurred even after this traditional method was used.