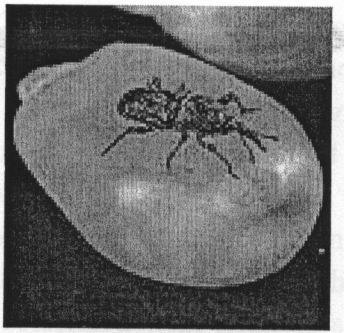
1.1.9  **Siwale, Julius. (2007). Comparative resistance of maize (*Zea mays* L.) populations to the maize weevil (*Sitophilus zeamais* Motschulsky). (Supervisor: Prof. K. J. Mbata).**

Storage losses present a major threat to food security among the small-holder farmers in Africa. The maize weevil, *Sitophilus zeamais* Motschulsky, is one of the most important storage pest for which breeding for resistance is the best option for reducing storage losses. A study was conducted to identify maize cob and grain characteristics conferring resistance to the maize weevil in selected maize genotypes. Field and laboratory experiments were conducted using 52 maize genotypes of varying resistance to the pest. Field experiments looked at husk cover length and husk cover rating, while laboratory experiments focused on grain hardness, protein content, cob and grain weight loss and Dobie's susceptibility indices. Results from the field showed that there was no initial maize weevil infestation from the field on the cobs harvested. Genotypes were significantly different for husk length and husk cover rating scores ($p \leq 0.01$), with landraces having longer husks (mean, 88 mm) and better husk cover score ratings (mean, 1.8) than hybrids



(mean, 35 mm and 3.0, for husk length and cover rating scores, respectively) and open pollinated varieties (OPVs) (mean 48 mm cover length and score 2.1). Genotypes were significantly different ($p \leq 0.05$) for grain hardness. Grain protein content was not significantly different among the genotypes ($p \leq 0.05$). There was no correlation between protein content and grain hardness across genotypes ($r=0.14$ among all genotypes; $r=0.20$ among hybrids; and $r=0.26$ among OPVs). However, there was significant correlation between protein content and grain hardness for resistant in OPVs ($r=0.82$) only. Husk parameters measured did not discriminate the tested genotypes for weevil resistance because there was no initial infestation from the field.