



Soybean farm-saved seed viability and vigor as influenced by agro-ecological conditions of Meru South Sub-County, Kenya.

Grace J. Chirchir^{1*}, Maina Mwangi¹, Desterio O. Nyamongo², Joseph P. Gweyi-Onyango¹

¹Kenyatta University, School of Agriculture and Enterprise Development, Department of Agricultural Science and Technology, Nairobi, Kenya;

²Genetic Resource Research Institute, Kenya Agriculture and Livestock Research Organization, Kenya.

*Corresponding Author: gjchirchir@gmail.com;

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ABSTRACT

Objective: The experiment was conducted with the aim of assessing the soybean farm-saved seed viability and vigor as influenced by agro-ecological conditions of Meru South Sub-County, Kenya.

Methodology and results: Within one month of harvest, soybean farm-saved-seed was randomly sampled from 30 households in February 2013 from areas representative of agro-ecological zones Upper Midlands II (Ann. Mean temp. (18.2-20.6°C); Upper Midlands III (19.2-20.6°C; Lower Midlands III (20.9-22.9°C) and Lower Midlands IV (21-24°C). Standard germination, electrical conductivity and moisture content tests were done according to ISTA rules (2007). Analysis of Variance was done using SAS (9.2) and means separated using LSD. Results revealed that seed moisture was lowest in the warmer LM4 (6.3%) than in the cooler LM3 (8%); UM3 (8.4%) and UM2 (10%). In addition, soybean seed from the cooler agro-ecologies - UM2 (94%), UM3 (86.6%) and LM3 (99.5%) had significantly higher germination than seed from the lower warmer LM4 (57%). Similarly, seed vigor was highest in the cooler UM2 (41.7 μ/cm/g), UM3 (45.8μ/cm/g) and LM3 (31.6μ/cm/g) as shown by reduced seed leachates; indicative of better integrity of seed membranes than seed from the warmer LM4 (79.1μ/cm/g). In addition, there was a strong negative correlation between electrical conductivity and germination, showing a faster deterioration due to leakage of electrolytes.

Conclusions and applications of findings: The soybean farm-saved seed germination and vigor were significantly influenced by agro-ecological conditions. Considering that seed moisture content in the lower warmer agro-ecologies was significantly lower than those from higher cooler agro-ecologies the observed seed deterioration was attributable to the higher temperatures characteristic of lower altitudes agro-ecologies. Therefore, since the farm saved seed viability and vigor was better retained in the cooler higher agroecological zones (UM2, UM3 and LM3) of Meru South Sub-County, farmers should source better quality soybean seed from these areas. The results validate the need for ecological zoning of suitable areas for the production of high quality soybean seed in Kenya.

Key words: soybean farm-saved seed, agro-ecological zones, seed germination and vigor.