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Pod quality, pod yield and disease resistance of new bush snap bean lines in Kenya

Cheptoo, J. J., P.M. Kimani and R.D. Narla,
Department of Plant Science and Crop Protection
College of Agriculture and Veterinary Sciences, University of Nairobi
P.O Box 29053-00625, Nairobi, Kenya
Corresponding author: <joanne2012@students.uonbi.ac.ke>

Abstract

This study was conducted at Mwea and Embu where 20 F_{6,7} lines selected from 31 bulk populations were evaluated for reaction to diseases, pod quality and pod yield in on-farm trials during the 2013 long rain and short rain seasons. Diseases were scored on a scale of 1 to 9, where scores of 1-3 were considered resistant, 4 to 6 intermediate, and 7 to 9 susceptible. Two rows per plot of each genotype were harvested three days a week and pods graded as extra-fine, fine and bobby using standard commercial criteria. Genstat Version 15 software was used for analysis of variance and mean separation. Results showed that there were significant differences among the lines for pod quality, pod yield and resistance to angular leaf spot and anthracnose. Seven new lines showed combined resistance to angular leaf spot rust and anthracnose at both sites contrasting with commercial checks which were susceptible. Angular leaf spot was more severe at Embu, where plots were irrigated with overhead sprinklers. All test lines showed resistant reactions to anthracnose at Embu but the two commercial checks were susceptible. Rust incidence was low at both locations. Pod yield over the 13 harvests varied from 6354 to 19253 kg ha⁻¹ at Mwea, and 4731 to 21175 kg ha⁻¹ at Embu, with the best lines giving a yield advantage of up to 17.7% and 29.5% over the commercial checks at Mwea and Embu, respectively. These results indicate that new bush snap bean varieties with market demanded traits, higher productivity and resistance to major diseases can be developed from these lines. Utilization of these varieties will contribute to better returns for snap bean farmers and enhanced competitiveness of local products.

Key words: snap beans, multiple disease resistance, pod yield, pod quality.