Tropentag, September 9-11, 2020, virtual conference

"Food and nutrition security and its resilience to global crises"

Evaluation of Selected Common Bean Genotypes for their Reaction to *Xanthomonas Campestris* Pv. *phaseoli* in Kakamega County, Kenya

Angeline Chepkemboi[1], JOHN MAINGI[2], Shem Nchore[3]

[1]*Kenyatta University, Department of Plant Sciences, Kenya*
[2]*Kenyatta University, Department of Biochemistry, Microbiology and Biotechnology, Kenya*
[3]*Kenyatta University, School of Agriculture and Enterprise Development, Kenya*

Abstract

Common bean (*Phaseolus vulgaris* L.), plays a significant role in food security owing to its nutritional value and generation of income. However, output of dry beans in Western Kenya is constrained with a myriad of biotic and abiotic challenges including; diseases, pests, soil infertility and unfavourable weather conditions resulting to low productivity. Of the many diseases of beans, common bacterial blight (CBB) caused by *Xanthomonas axonopodis* pv. *phaseoli* (Xap) is a major biotic constraint to bean production causing up to 80 % yield losses on farmers fields when severe. Due to the fact that most agro-chemicals have not been effective against CBB and limited information on pathogen distribution in Kakamega County, the use of resistant genotypes is therefore a central management strategy. The aim of this study was to screen the available nine bean genotypes for resistance to CBB disease in both greenhouse and field conditions. Experiments were conducted in randomised complete block design with three replications in a factorial factor of 9×2×2 during the greenhouse and 9×2 field screening. During growth, data on plant height number of pods/plant, length of pods and size and number of CBB spots was taken. Yield parameters were also assessed. The findings from the experiment revealed a significant variation ($p < 0.05$) on the entire traits studied among the nine bean genotypes. Data from the field and greenhouse experiments were in conformity. None of the evaluated genotype was immune to CBB. In the green house, it was observed that disease symptoms were significantly severe ($p < 0.05$) in beans planted in non-sterile soil and inoculated with Xap compared to those planted in sterile soil and non-inoculated respectively. Cal77 and Cal156A genotypes exhibited high level of resistance to CBB while seven genotypes namely Cal285, Cal256, Cal271A, Cal274, KK8 and Cal87 showed moderate resistance. Further evaluation and screening needs to be done and the susceptible genotypes be tried in other locations.

Keywords: Common bean, immune, response, *Xanthomonas*

Contact Address: Shem Nchore, Kenyatta University, School of Agriculture and Enterprise Development, P.O.Box 43844 , 00100 Nairobi, Kenya, e-mail: nchoree@gmail.com