AGRICULTURE AND BIOLOGY JOURNAL OF NORTH AMERICA
ISSN Print: 2151-7517, ISSN Online: 2151-7525, doi:10.5251/abjna.2011.2.12.1409.1415

Identification of suitable parents and temperatures for breeding Potato virus Y (PVY) and Potato virus X (PVX) resistant potatoes

J. O. Onditi [1], Kiarie Njoroge[2], Shibairo I. S[2]

[1]Kenya Agricultural Research Institute (KARI), National Potato Research Centre (NPRC), Tigoni P.O. Box 338 – 00217 Limuru Email: john3oju@yahoo.com
[2]University of Nairobi, Department of Plant Science and Crop Protection P.O. Box 29053, Nairobi, Kenya

ABSTRACT

Mixed infection of Potato virus Y (PVY) and Potato virus X (PVX) together with other potato viruses have the potential of causing yield losses of up to 80 % in the major varieties grown in Kenya. In search for suitable resistant parents and a favourable temperature range for cross breeding, seven virus resistant potato genotypes from International Potato Centre (CIP), Lima Peru were test crossed (progeny tested) with one local PVY and PVX susceptible cultivar (Tigoni) under low (11-18˚C), medium (18-27˚C) and high temperatures (28-34˚C) at the Kenya Agricultural Research Institute (KARI), Tigoni. Low temperature range of (11-18˚C) with the highest percentage (43%) of successful crosses was identified as the most favourable for cross breeding. Among the seven CIP clones tested, CIP395196.4 gave the highest percentage (98 %) of resistant progenies and was found to have multiplex Ry Ry Ry ry / Ry Ry Ry Ry genes for PVY and PVX resistance. This type of parent was the most suitable for cross breeding because it produced significantly (P=0.05) 100% resistant progenies when crossed with a susceptible cultivar hence eliminating the need (cost and labour) for preliminary seedling screening.

Keywords: Potato, PVY, PVX, parents and temperature