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Czech J. Genet. Plant Breed.

**Štefúnová V.,
Galliková A.:
Selection of DNA
markers for detection
of extreme resistance
to potato virus Y in
tetraploid potato
(*Solanum tuberosum*
L.) F₁ progenies**

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Marker-assisted selection is progressively introduced into potato breeding especially in the case of monogenically inherited traits. Varieties and clones with extreme resistance to potato virus Y (PVY) from German, Hungarian, Polish, Dutch and Slovak breeding programmes were used as female parents in 6 crosses. F₁ progenies were subjected to the bulk segregant analysis. Polymerase chain

reaction (R_{OR}) based markers for Ry_{sto} and Ry_{adg} viral resistance alleles were used for the evaluation of varieties, clones and seedlings of F₁ progenies. All resistant F₁ genotypes were reliably identified using three molecular markers, STM0003, GP122₇₁₈ and GP122₄₀₆, associated with the Ry_{sto} allele. No genotype corresponded with phenotypic data and Ry_{adg} markers. Ry_{adg} and three selected Ry_{sto} markers were applied to 40 genotypes from an in vitro gene bank and 14 genotypes were recognized to have Ry_{sto} and none of them possessed Ry_{adg} . Indirect selection is based on DNA polymorphism linked to the extreme resistance to PVY resulting in error when polymorphism is not conserved in all genetic backgrounds. A failure to detect extreme resistance to PVY using the Ry_{sto} markers in variety Santé, resistant progeny of variety Santé and clone Y01-30 may be linked to recombination events or different *Solanum stoloniferum* background.

Keywords:

potato; potato virus Y (PVY); extreme resistance; DNA markers; Ry_{sto}

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