

POTATO BREEDING, MEETING THE CHALLENGES OF CLIMATE CHANGE

Zsolt POLGAR¹, Istvan CERNAK¹, Zsolt VASZILY¹

e-mail: polg-zs@georgikon.hu

Abstract

Potato, the third most important food crop originates from temperate climatic zone characterised by moderate and even precipitation. Current climatic changes in Central European region mean serious challenges to the potato plant, its growers and breeders as well. The average daily temperature in the growing season is generally above the optimum and the required precipitation is less than needed. The risk of spreading pathogens and pest adapted to warmer climates is increasing, while appearance of new strains of common pathogens like Potato Virus Y and *Phytophthora infestans* means new challenges to the potato production in the Region as well. Potato in general is a sensitive crop to biotic and abiotic stresses due to its numerous pathogens, pest and weak root system. Stress sensitivity may manifest in yield decrease and quality loss. Breeding and cultivation of stress resistant varieties is needed to maintain profitability of potato production under stressful conditions. The Potato Research Center at Keszthely runs a specific breeding program since 1960 focusing on the release of varieties suitable for Central European agro-ecological conditions due to their resistance against major biotic and abiotic stress factors. The applied breeding strategy is a complex approach using classical and modern biotechnological methods, such as negative and positive selection based on phenotyping, somatic hybridization, DNA marker based selection for certain traits, use of resistant genotypes as parents and application of a complex parental line evaluation system for breeding value estimation of crossing families. As the results of the consistent selection work several new varieties with complex resistance traits were released from the program recently.

Key words: potato, resistance breeding, climate change
