

EVALUATION OF THE TRUE POTATO SEED PROGENIES IN FIELD CONDITIONS AND ITS ADAPTABILITY IN CENTRAL ROMANIA

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Introduction

One of the pressing problems of the nowadays world is to provide food for a continuously growing population. Also, the world economic crisis leads to necessity of finding some abundant food sources with minimal costs. The True Potato Seed (TPS) technology is dedicated for less expensive potato production, mostly in warm regions where the seed potato cannot be produced and for those who have limited financial resources, but not only.

Materials and Methods

The goal of this study is to evaluate the vegetative progenies of four potato isogenic lines: Mindy, Zolushka, Gilroy and Catalina (creations of Bejo Zaden company, Netherlands), compared with two control varieties (Santé and Rustic) under field conditions and assessment of phenotypic, quality and yielding uniformity compared with performance of conventional potato varieties. The research was set at the experimental fields of the National Research and Development Institute for Potato and Sugar Beet Brasov in 2010. During the growing season there was made several observations on the potato plant development, from emergence to maturity and how the phenological issues have influenced the yield and number of tubers. Also, were made laboratory determinations on the culinary and technological quality of studied potato genotypes.

Results

Regarding the percentage of emergence, the best result was recorded for Santé (95.15%) and Zolushka (93.53%), the sprouting was distributed between middle and uniform and there were no significant differences among the six studied potato genotypes. Regarding the overall assessment of the plant, Gilroy followed by Zolushka, was similar with control varieties, which have received the highest scores. In terms of flower and fruit richness, the isogenic lines were obtained higher marks than the control varieties. Under the climatic conditions that characterized 2010, the studied variants were expressed different resistance to the late blight attack. Thus, Rustic showed a very good resistance, Santé was medium resistant and the isogenic lines were strongly affected. The highest number of tubers/plant was registered on Rustic (22.2) followed by Santé (12.2). Among the studied lines, Gilroy had the best results (8.5), followed by Mindy (7.9), Catalina and Zolushka (7.8). Regarding the average weight of tubers/plant, the lowest value was recorded on Rustic (43.5 g). Isogenic lines had intermediate values (from 55.4 to 59.3 g) and the highest value was obtained by Santé (73.3 g). Regarding the total tuber yield, the best results were obtained in control varieties (over 40 t/ha), the isogenic lines have done lower yield (about 23 t/ha). Following the determinations made in the laboratory on the culinary and technological quality, the results showed that Mindy got the lowest percentage of starch content, making it suitable for fresh consumption, while others, due to higher starch content, suitable for processing.

Conclusion and perspectives

Of the four studied potato isogenic lines Catalina was noted having good production capacity, low and compact appearance of the haulm, which made it suitable for mechanized tillage. As well Catalina has the most uniform tubers. Gilroy made the highest number of tubers/plant and Mindy has the highest average weight of tubers/plant. Compared with the control varieties, the four isogenic potato lines showed competitive results in terms of uniformity, productivity, cooking and technological quality.