THE GENETIC DIVERSITY ASSESSMENT OF NEW POTATO VARIETIES OF DIFFERENT MATURITY GROUPS BY SSR MARKERS

L. Prysiazhniuk, T. Sonets, Yu. Shytikova, S. Hryniv

Ukrainian Institute for Plant Variety Examination

Ukraine is one of the five world leaders in potato (*Solanum tuberosum* L.) production – 22 million tons of tubers on an area of 1.5 million hectares. Around 40 varieties are applied for DUS (distinctness, uniformity and stability) examination annually. In this case the increasing of number new varieties requires the involving the additional molecular methods for manage refence collection within DUS test. The simple sequence repeat (SSR) markers have proved to be highly efficient and reproducible, and allow the rapid differentiation of potato varieties.

Twenty-four potato varieties of different maturity groups (very early, yearly, medium, late) were investigated by 8 SSR markers (STM0019, STM3009, STM2005, STM2028, STM3012, STM3023, STM5136, STM5148) for genetic diversity assessment. PIC for each of SSR marker was detected in order to evaluate markers set ability of varieties differentiation. To assess the genetic diversity of studied varieties, the cluster analysis was performed and the genetic distances between varieties were determined.

As results of PCR analysis from 6 to 10 alleles were determined by each marker with an average of 7.88 alleles. The most polymorphic marker was STM2028 with PIC 0.89. The lowest value of PIC (0.78) was obtained for STM3012 marker. For other studied markers values of PIC were from 0.82 to 0.88. Thus, the high values of PIC demonstrate rather uniform allele distribution. As results of cluster analysis, 8 clusters were obtained. It is determined that the most similar varieties by studied markers are varieties with genetic distance 3.74: Pravda and Riviera, Pravda and Vzirets. Pravda and Riviera varieties are located in the one cluster; Vzirets variety is in adjacent cluster. The most different varieties turned out to be Vzirets and Lilly varieties with genetic distance 6.00. Thus, it was found that the major of studied varieties formed cluster grouts according their maturity groups; the similar varieties by studied SSR markers are belonged to one maturity group – very early.