BREEDING OF EUROPEAN PLUM (*PRUNUS DOMESTICA* L.) IN POLAND

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- The aim of European plum breeding program carried out at the National Institute of Horticultural Research in Skierniewice, Poland is to obtain new cultivars tolerant to plum pox virus (PPV) and suitable for machine fruit harvesting.

- In order to eliminate closely related parental genotypes from the cross combinations and to verify the genetic identity of the best individuals selected from the evaluated seedling populations, the SSR (Simple Sequence Repeats) method is used. The use of SSR markers is recommended due to their uniform occurrence in the genome, high degree of polymorphism and codominant nature of inheritance.

- **EARLY SELECTION**
- **PROTECTION OF PROPERTY RIGHTS**

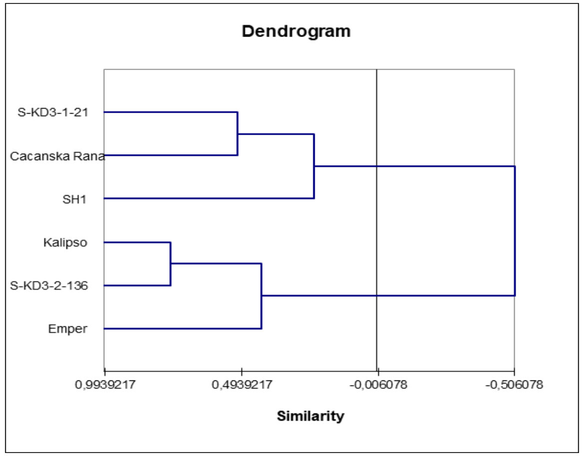
RESULTS

BREEDING:

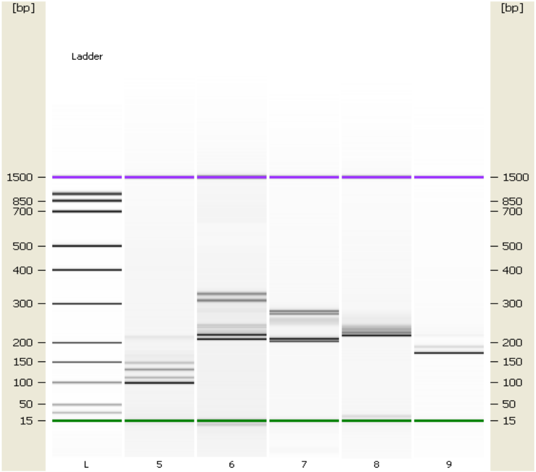
- In 2020-2025, 50 cross combinations were performed, using parental forms from different geographical regions - Poland, Sweden, Germany and the USA. Currently 3324 plum seedlings have been evaluated in the selection plots.
- Nineteen valuable selections have been assessed in two field trails.

  As the result of the Polish breeding program, varieties: ‘Węgierka Dąbrowicka’, ‘Emper’, ‘Kalipso’ and ‘Polinka’ were included in the National Register of Cultivated Plant Varieties of COBORU.

PLANT IDENTIFICATION OF NEW GENOTYPES PLUM



DNA-FINGERPRINTING

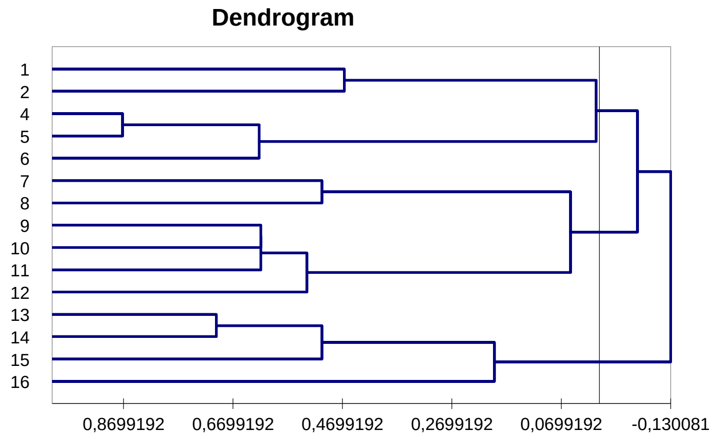


MOLECULAR ANALYSIS:

- plant identification
- assessment of genetic diversity and determination of varietal identity
- assessment of genetic distance

POLYMORPHISM:

- Among 40 primers applied in the tests only 31 generated clear and reproducible polymorphic bands.
- In total, 130 alleles (94%) with size 100-400 bp were obtained.
- Each of the 16 genotypes of *Prunus* have been characterized on the basis of 19-35 alleles.



The pool of European plum genotypes used in breeding programs at the National Institute of Horticultural Research, Skierniewice, Poland has high amount of genetic variation. Regarding germplasm management, our results show that the genotypes assessed are genetically different and may be important for future plum breeding program.

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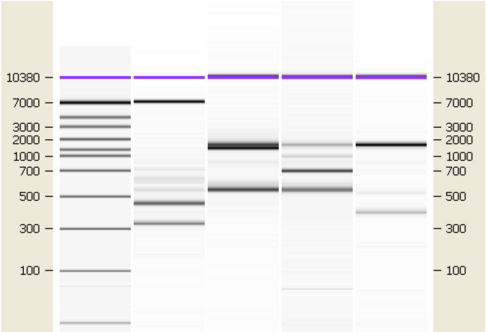
PLUM VARIETIES OF INHORT BREEDING PROGRAM IN SKIERNIEWICE

EMPER- ‘Empress’ x ‘Herman’

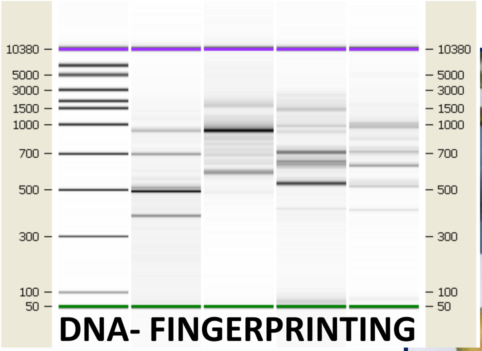


DNA- FINGERPRINTING

KALIPSO – ‘Opal’ x ‘Cacanska Lepotica’

JOVITA –SH1 x ‘Jojo’

POLINKA - ‘Cacanska Lepotica’ x ‘Węgierka Dąbrowicka’



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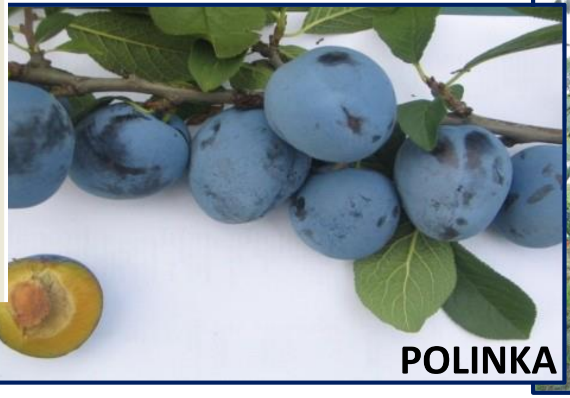

WĘGIERKA DĄBROWICKA – seedling of ’Węgierka Zwykła’

The research was carried out in the frame of subsidy of the Ministry of Agriculture and Rural Development special-purpose – Task 3.9: „Developing of an initial European plum (Prunus domestica L.) plant material suitable for combine harvesting of fruit and tolerant to sharka”.

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