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Analysis of biodiversity of honey bee populations bred in Poland

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Originally, the Central European bee covered the majority of Poland territory, and only in south-eastern areas of Poland Carniolan honeybee occurred. At the moment, the native bee has been greatly replaced by other geographical races, creating higher but factitious diversity. Depending on the period, the popularity of individual races differed, and currently the Carniolan bee is most widely kept. Geographical conditions and population density and consequently number of bee colonies on any area prevented to organize natural mating stations, that is why instrumental insemination of bee queens became popular in Poland (over 100 thousand of instrumentally inseminated queens per year). At the end of the 20th century several, mainly state, leading honeybee breeding centers existed, that supplied other breeders in the breeding material. Widely used insemination was a toll to achieve breeding progress relatively quickly, unfortunately some mating design resulted a change of diversity.

Bee breeders, mostly private companies, are currently supervised by the state institution, which carries breeding registry. The selection and distribution of Carnica, Caucasica, Central European and Italian bees is permitted in Poland. Beekeepers that buy such queens can use the EU fundings, that indirectly favors the races. Beekeepers buy also from abroad other races bees, for example, Buckfast. However, later distribution of these bees may not be official in Poland.

The new project is planned to examine the biodiversity of the honey bee populations that are officially controlled, including populations of native Central European bees and Carnica bees. In bee diversity studies the molecular techniques (SSR-PCR) and geometric morphometry analysis (wing venation) are used. So far 12 from 48 of bees populations registered in Poland have been examined. Preliminary studies indicate high or average differentiation of bee colonies within each population (FST = 0,027-0,117), and the moderate genetic variation between breeding lines.

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