## "3rd WORKSHOP OF THE EWRS WORKING GROUP: WEEDS AND BIODIVERSITY"

## Differences between weed communities under conventional and organic management



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In many European countries, big changes in land use, cropping systems and fertilizer application came about in the last century. Crop management has been intensified, and in weed control, herbicides started to be used to a large extent. In the Czech Republic, the significant decline of a mean number of weed species during last decades was noticed (PYŠEK et al. 2005).

In 2006-2008, the phytocoenological survey was carried out in selected farms in the Czech Republic. The farms applying

conventional or organic farming management have been situated in different climatic and soil conditions. In total, 290 phytocoenological relevés were recorded in winter and spring cereals and root crops. The observations were focused on weed dominance. At each field, 1 phytocoenological relevé with unique size 100 m2 was recorded. The influence of farming system on occurrence of some weed species was approved by multivariate analysis CCA in programme Canoco for Windows 4.5.

In CCA, the dependence of weed species occurrence on different farming management was considered as statistically significant. Different farming management explained 1.8 % of total variability. Conventional farming was characterized mainly by weeds having wide ecological amplitude (Polygonum) aviculare, Veronica persica) and by volunteers (Brassica napus subsp. napus, Helianthus annuus). Majority of winter crops in crop rotations and application of higher herbicide doses caused higher occurrence of Viola arvensis which is tolerant to commonly used herbicides. Due to reduced soil tillage in conventional agriculture, Bromus sterilis is currently spreading, first of all in winter crops. Thanks to shallow soil tillage and not cutted meadows, higher occurrence of *Taraxacum* was recorded. In sugar-beet stands, weed beet (*Beta vulgaris*) was often noticed.

Under organic farming, occurrence of some species presented in Black and Red List of Vascular Plants of the Czech Republic (PROCHÁZKA, 2001) was noticed (e. g. Adonis aestivalis, Coronopus squamatus, Odontites vernus, Stachys annua). Many species more sensitive to herbicides (Myosotis arvensis, Vicia hirsuta, Lycopsis arvensis) were also found. In the fields with lower intensity of farming, perennial species Stachys palustris, Mentha arvensis, Sonchus arvensis occurred. Some species indicated the natural conditions of locality (e.g. Scleranthus annuus - acid soils in higher altitudes). Due to growing of catch crops and fodder crops in crop rotations, Trifolium pratense as a volunteer was recorded in a succeeding crops.





Fig. 1: Ordination diagram – CCA (minimum species fit – 3 %).





This study was supported by the grants NAZV 1R55010 and MSM 6046070901.