European Weed Research Society

3rd Workshop of the EWRS Working Group:

WEEDS AND BIODIVERSITY

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Repeated surveys in Finland follow the changes of weed flora in spring cereal fields

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Crop production undergoes constantly changes that apparently affect the composition of weed flora in arable fields. Regular weed surveys are considered a valuable means of monitoring the response of weed flora to changes in agricultural habitats and practices. MTT has carried out three extensive surveys of weeds in spring cereal fields, the first in 1961-1964, the second in 1982-1984 and the third ten years ago in 1997-1999. For the moment, the fourth similar survey is going on in 2007-2009. Both conventionally and organically cultivated farm fields are examined in 16 regions in southern and central Finland.

The number of weed species per field is used as a measure of diversity. Altogether 160 weed species were found from the 690 fields surveyed ten years ago. Typically, as observed in 1997-1999, the average species number was about 25 in organically farmed field and some 10 species less in conventionally farmed field. In this respect, organic farming clearly promotes biodiversity at the farm scale but not so much at the national scale as the field area of organic cropping is only about 6% of the total Finnish field area. Moreover, the interest in organic cropping of spring cereals has decreased substantially in our survey farms. One evident reason for the transition back to conventional farming has been the increased weed infestation and particularly the problems with perennial weeds like *Elymus repens*, *Cirsium arvense* and *Sonchus arvensis*. In general, some other noxious species like *Avena fatua* and *Galium spurium* have become more frequent during the last ten years.

The current weed survey is part of the monitoring program of the Agri-Environment Support Scheme in Finland. The authorities are interested in the impact of certain subsidized measures, like organic cropping and sustainable use of fertilizers and pesticides, on biodiversity in agricultural areas. Weed flora with interactions to other trophic levels serve as indicator of agricultural intensity and sustainability. From the agronomic point of view, some recent trends in cropping practices, like direct drilling, obviously affect the composition of weed flora which has to be taken into account in weed management practices. The weed shift over the decades will be discussed.