WEED FLORA CHANGES IN ARABLE CROPS IN TURKEY. Husrev Mennan and Bernard H. Zandstra, Visiting Scientist and Professor, Department of Horticulture, Michigan State University, East Lansing MI 48824.

Density of single or several weed species can change during a long period of time. Purification of seed, choice of crops, rotations, sowing time and techniques, soil management, harvest time, fertilizing, chemical and mechanical weed control methods are important factors that influence weed flora. It is often difficult to separate the effects of one factor from another due to reciprocal interactions between all these factors. Herbicide selection, crop rotations, and fertilizer use may effect changes in weed flora.

The data for the present study were obtained from the weed surveys of wheat, onion and corn fields of Middle Black Sea Region of Turkey. The first surveys in winter wheat, onion and corn were carried out in 1992, 1976 and 1973 respectively. The second surveys in winter wheat, onion and corn were conducted by Mennan in 2000, 1999-2000 and 2001-2002 respectively, using the same method described in the first surveys. In both surveys, the samples were collected randomly from 1 m^2 area and the number of frames was adjusted depending on field size. The number of weed individuals in the sample frame was pooled. Thus, frequency and density of each weed species were calculated. In addition, a similarity index between the two surveys was calculated by using the equation SI=2C/(A+B) for each crop, where SI=similarity index, A=number of weed species in the first survey, B= number of weed species in the second survey, and C=number of similar weed species in both surveys (Odum, 1971).

There were few changes in the density and species of weeds in wheat fields between 1992 and 2000. Weed similarity index between the two surveys was 0.90. The background information on cropping practices in our study fields revealed that application rates of phenoxy herbicides have been reduced but some other active ingredients such as sulfonylureas have increased. Farmers had applied herbicides against broadleaves in Middle Black Sea Region of Turkey. Grasses such as wild oat, blackgrass, and canarygrass gained more importance as a result of using herbicides with similar modes of action. In addition, ivyleaf speedwell, bifra (*Bifora radians* Bieb.), catchweed bedstraw, wild mustard, and field bindweed remained common within the decade in spite of extensive use of herbicides.

In corn, the number of weed species decreased from 43 to 30 between the years 1973 and 2001. Weed similarity index between two surveys was 0.79. Field bindweed, barnyardgrass, redroot pigweed, common lambsquarters, johnsongrass and bermudagrass were important weed species in the first survey in terms of density and frequency. Velvetleaf, black nightshade, wild buckwheat, common purslane, puncturevine, blackgrass, jimsonweed, European heliotrope, corn buttercup, catchweed bedstraw and mugwort were more important in the second survey. While mugwort was not found in the first survey, density of this species reached 2.78 plant/m^2 in the second survey.

The number of weed species was completely different in the two surveys in onion. Weed similarity index between two surveys was 0.41. The frequencies of common lambsquarters, black nightshade, and European heliotrope decreased dramatically. In contrast, frequencies of field bindweed, redroot pigweed, common cocklebur, Canada thistle, wild mustard, catchweed bedstraw and bifra increased. After the late 1970's, linuron, pyrazon and monolinuron, and in early 1990's pendimethalin and oxyfluorfen have been used intensively in onion fields. These herbicides controlled successfully some broadleaved and grass weeds. But, vegetative reproducing weed species such as field bindweed and Canada thistle were not controlled and gained more importance.

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