

LONG TERM WEED CONTROL IN ASPARAGUS. Bernard H. Zandstra and Eric J. Ott, Professor and Research Assistant, Michigan State University, East Lansing, MI 48824.

Asparagus is a perennial crop that is maintained in the field for 15-20 years. New plantings reach maximum production in 6-8 yr, and then begin a slow decline. Several factors may contribute to decline of asparagus vigor and yield, including over-harvest, poor nutrition, soil diseases, weed competition, and herbicide injury. Long residual photosystem II inhibitor herbicides have been the primary preemergence herbicides in asparagus, and there is concern that their use may be contributing to the decline of asparagus fields. A herbicide experiment was established to determine whether herbicide treatments reduced yield over a 5-yr period.

Preemergence herbicide treatments were applied on a 10-yr old asparagus field in April, 2000, at the Asparagus Research Farm in Hart, MI. The soil was a fine sandy loam with 84% sand and 1.4% OM. Postemergence treatments were applied to some plots in early June. The same treatments and timing were used in 2000-2005. Asparagus was snapped by hand beginning about May 1, and at least 20 harvests were taken each year, with the final harvest about June 15. Asparagus yield was weighed at each harvest. Weeds were rated visually. Total and average yields were calculated over the life of the experiment.

Preemergence treatments that provided very good control of most annual weeds through the harvest season included diuron 1.34 kg/ha plus metribuzin 0.67 kg/ha, flumioxazin 0.45 kg/ha, sulfentrazone 0.28 kg/ha, and terbacil 1.34 kg/ha. Diuron 1.34 preemergence followed by dicamba 0.56 kg/ha plus sethoxydim 0.21 kg/ha postemergence gave the best control of all annual and perennial weeds. The highest average yield was provided by flumioxazin 0.45 kg/ha preemergence. Other high-yielding treatments were terbacil 1.34 kg/ha preemergence, sulfentrazone 0.28 kg/ha preemergence, halosulfuron 0.053 kg/ha preemergence, and diuron 1.34 kg/ha preemergence followed by dicamba plus sethoxydim postemergence.

Lowest yield over 5 yr was produced by diuron 1.34 plus metribuzin 0.67 kg/ha, and norflurazon 2.24 kg/ha. Diuron plus metribuzin gave good weed control, but consistently lower yield. Yield reduction may have been a response to herbicide treatments. Norflurazon had good weed control early in the season, but many weeds germinated in June. Yield reduction after application of norflurazon probably was a result of weed competition later in the season.

Repeated use of some herbicides may contribute to reduced asparagus yield. Rotating to herbicides of other modes of action may help avoid long-term crop injury.