INTEGRATED WEED MANAGEMENT IN CARROT PRODUCTION

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Carrot growers are challenged with a broad spectrum of weed species in a relatively uncompetitive crop and currently have few management options to remedy the situation. Furthermore, linuron, one of the more effective control options in carrots, is restricted in use on coarse-textured, low organic matter soils where the crop is often grown. With this in mind, studies were conducted to: 1) identify herbicide programs that provide season-long control; 2) evaluate preemergent herbicides on cereal nurse crops interseeded among carrots for wind erosion control; and, 3) identify carrot varieties that suppress weeds with rapid emergence and establishment. All studies were conducted at the Hancock Agricultural Research Station in Hancock, WI on a loamy sand soil.

In the carrot herbicide program evaluation, common lambsquarters control was poor where ethofumesate (Ethotron; not labeled for carrots in Wisconsin) was applied preemergence and followed by prometryn postemergence (Vegetable Pro or Caparol). Thirty days after the 5-carrot leaf stage application, hairy nightshade and common purslane control were complete with all herbicide programs. Harvested carrot number was similar among all herbicide programs. Carrot yield was reduced compared to the handweeded check where s-metolachlor (Dual Magnum) or ethofumesate were applied preemergence. Given that minimal injury was observed in these programs, it’s assumed that the yield reduction was a result of poor common lambsquarters control. Carrot yield was similar to the handweeded carrots with all other herbicide programs.

Pendimethalin (Prowl H2O) applied preemergence followed by prometryn at the 3- and 5-carrot leaf stage resulted in the most consistent weed control and crop yield among the commercially-available programs without linuron.

S-metolachlor, pendimethalin and prometryn were evaluated at multiple rates relative to barley, oat and wheat growth as nurse crops interseeded with carrots. All of the nurse crops were stunted 20 to 25% 8 days after planting where s-metolachlor was applied preemergence, and barley stand density was reduced by the 1 pt/acre product rate. While the oat stand density was not affected by any of the herbicides, wheat stand density was reduced by roughly 2/3 by s-metolachlor applied at 0.67 or 1.0 pt/acre. By 14 days after treatment, 2.0, 3.0 and 4.0 pt/acre product of prometryn and 1.0 pt/acre s-metolachlor resulted in greater barley, oat and wheat injury than the non-treated nurse crops. Nurse crop injury was 27% where prometryn was applied preemergence at the 3.0 or 4.0 pt/acre rates. Common lambsquarters control was best where prometryn was applied, regardless of rate.

Several carrot varieties were also evaluated for their ability to: 1) maintain yield in the presence of weeds; and, 2) suppress weeds through rapid establishment and canopy development. For example, ‘Bolero’ established a broad crop canopy sooner than most other varieties and maintained 95% of the weed-free carrot yield when weeds were present. In contrast, ‘SFF’ variety established slowly and never achieved full ground cover in canopy development. As a result, weed biomass was greater than in any other variety and the yield of the weedy carrots was only 72% of the weed-free yield. Carrot variety emergence and canopy development rates can be an important consideration in an integrated weed management program and require no additional crop inputs.

Labels change often. As always, read and follow the label prior to any pesticide use.

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