

ABSTRACT

Herbicides were used on 96% and insecticides on 76% of the sugarbeet acres in eastern North Dakota and Minnesota in 1992 based on responses to an annual survey of sugarbeet growers. Most of the insecticide use was for control of sugarbeet root maggot. Field experiments were conducted in 1992 with the objective of investigating interactions between herbicides and insecticides and between herbicide use and root maggot injury to sugarbeet.

Desmedipham (Betanex) at 0.33 lb/A on cotyledon to 2-leaf sugarbeet followed in 6 days by 0.5 lb/A gave 26% sugarbeet injury. Chlorpyrifos (Lorsban 4E) added to the second application of desmedipham caused increased sugarbeet injury compared to desmedipham alone. Desmedipham at 0.33 lb/A followed by desmedipham at 0.5 lb/A plus chlorpyrifos at 0.38, 0.75, 1.5, or 3.0 lb/A caused 31, 36, 43, and 49% sugarbeet injury, respectively.

Sugarbeet injured by high rates of preplant incorporated EPTC or postemergence desmedipham had less damage from sugarbeet root maggot than sugarbeet not treated with herbicide. The herbicide injury was prior to root maggot egg laying. These results suggest that root maggot flies were more attracted to healthy, undamaged plants for egg laying. In a separate experiment, sugarbeet damaged by root maggot were treated with low rates of herbicide to simulate damage from spray drift. The root maggot damage plus herbicide injury caused more sugarbeet yield loss than from root maggot damage alone suggesting that herbicide damage to a sugarbeet previously injured by root maggot would cause additive effects.

Sugarbeet treated with chlorpyrifos (Lorsban 15G) at 2 lb/A in a 2- to 3- inch band in front of the planter press wheels yielded less than sugarbeet treated with chlorpyrifos at 1 lb/A. Chlorpyrifos at 2 lb/A plus desmedipham at high rates caused greater loss in sugarbeet yield than chlorpyrifos alone suggesting an additive effect between herbicide injury and insecticide injury.

Terbufos (Counter 15G) at 1.8 lb/A was applied in a 2- to 3- inch band in front of the planter press wheels to half an experiment and half was left untreated in an area not affected by sugarbeet root maggot. Imazethapyr (Pursuit) plus oil additive and thifensulfuron plus tribenuron (Harmony Extra) were applied at low rates to simulate spray drift over terbufos treated and untreated sugarbeet. Terbufos treated sugarbeet yielded 4610 lb/A sucrose while untreated yielded 4600 lb/A. Sugarbeet treated with imazethapyr plus terbufos yielded 1990 lb/A of sucrose while those treated with imazethapyr yielded 2490 lb/A. Sugarbeet treated with thifensulfuron plus tribenuron plus terbufos yielded 3940 lb/A while those treated with thifensulfuron plus tribenuron yielded 4290 lb/A. These results suggest that terbufos made the sugarbeet slightly more susceptible to imazethapyr and thifensulfuron plus tribenuron.