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Kochia control with Phenmedipham in sugarbeet.

Sugarbeet growers in Minnesota and North Dakota face significant challenges with glyphosate-resistant (GR) weeds, including kochia (*Bassia scoparia* L.). Greenhouse and field experiments to evaluate phenmedipham for kochia control have been ongoing since 2022. A 24(c) local needs label allows for phenmedipham (brand name Spin-Aid®) use alone or in tank-mixtures for kochia, common lambsquarters, and common ragweed control in sugarbeet. Sugarbeet visible growth reduction injury was greatest 14 to 21 days after application and increased as the number of Spin-Aid applications increased from one to three in the greenhouse and in field experiments. Injury was less after 21 days. Injury also increased in the greenhouse when Spin-Aid application coincided with air temperature greater than 24 C or when Spin-Aid was mixed with *S*-metolachlor. Two- or three-times Spin-Aid application or Spin-Aid following ethofumesate reduced root yield but did not affect sucrose content or recoverable sucrose per hectare. Kochia control from Spin-Aid was dependent on kochia size, tank-mixture partner, or environmental conditions at application. In the greenhouse, 3-times Spin-Aid application at 182, 273, and 363 g ai ha^{-1} with ethofumesate and methylated seed oil improved kochia control as compared to 2-times Spin-Aid application at 182 and 363 g ha^{-1} with ethofumesate and methylated seed oil. In the field, kochia control improved with 3-times Spin-Aid application as compared to a single or 2-times Spin-Aid application. Application rate did not seem to matter as much as multiple applications timed 5 to 7 days apart. Spin-Aid was mixed with ethofumesate or ethofumesate and glyphosate with high surfactant methylated seed oil. Kochia control was improved when Spin-Aid followed ethofumesate preemergence (PRE). Future research will focus on optimizing Spin-Aid rate with environmental conditions. We may also consider a 4-times Spin-Aid application.