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Stale seedbed for weed management in sugar beet.

Herbicides are widely used in North American sugar beet production due to the economic benefits and simplicity of weed control. Frequent exposure of weeds to herbicides has selected for herbicide-resistant weed species. Weeds in sugar beet fields are currently known to exhibit resistance to glyphosate, ALS-inhibitors, and dicamba, as well as other herbicides. Widespread herbicide resistance requires an integrated weed management program that reduces reliance on herbicides. Field studies were conducted near Lingle, WY and Scottsbluff, NE in 2023 and 2024 to evaluate the effectiveness of a stale seedbed approach to weed management in sugar beet. Treatments included four different sugar beet planting dates with 10 days interval between subsequent dates and three pre-emergence (PRE) herbicide treatments. In 2023, PRE herbicide treatments included ethofumesate, EPTC, or no PRE; while in 2024 herbicide treatments included metamitron + ethofumesate, a hand-weeded check and no PRE. Delaying planting date can effectively reduce mid-season density of some weed species could be an effective strategy to manage early emerging weeds in the absence of effective postemergence herbicides.