

PETERS, THOMAS J.* and ANDREW B. LUECK. North Dakota State University and the University of Minnesota, NDSU, Dept 7670, PO Box 6050, Fargo, ND 58108-6050. **Mixtures of effective herbicides for control of broadleaf weeds in sugarbeet.**

Survey of sugarbeet growers in Minnesota and North Dakota indicated a significant percentage still use multiple applications of a single herbicide, glyphosate, for weed control in sugarbeet. This statistic is especially great in the northern region of the Red River Valley or acres where glyphosate-tolerant weeds are not as common. There is agreement among weed scientists that a weed control program should contain multiple herbicide groups (sites of action), effective against target weed. That is, a) herbicide labeled for control of target weed and 2) target weed is sensitive to the herbicide group. Experiments were conducted in 2014, 2015 and 2016 to investigate a systems approach for management of common ragweed, kochia, lambsquarters, redroot pigweed, and waterhemp in sugarbeet. Weeds were indigenous to grower/cooperator field and often demonstrated a low level resistance to glyphosate. Weed control from glyphosate applied twice at 0.98 lb ai/A was compared to a systems approach including soil-applied followed by postemergence herbicide(s) or mixtures of postemergence herbicides. Data were a visual assessment of control 14 and 30 days after treatment with an expectation of a minimum 90% control. Control also meant at least two effective SOA against target weed. Results indicate there was one herbicide group depending on weed species but there seldom were two herbicide groups that meet said criteria. The implication on the weeds management in sugarbeet is significant and requires action. At the commodity level, more emphasis must be placed on registering new herbicide groups and proactively re-registering older sugarbeet herbicides that require additional environmental and human health assessment data. At the field level, weeds management in crops planted in sequence with sugarbeet must be carefully planned to create appropriate herbicide diversity. The strategy will also require renewed emphasis on mechanical and cultural approaches to weeds management.