

YOUNG, STEPHEN L., MORISHITA, DON W.*, and MICHAEL J. WILLE¹, ¹University of Idaho, Twin Falls R&E Center, P.O. Box 1827, Twin Falls, ID 83303. **Weed emergence patterns and their relationship to weed control in sugar beet.**

ABSTRACT

Weed species emergence patterns can affect chemical control selection as well as weed control efficacy. Late emerging weeds are considered an important problem in weed control. Field experiments were conducted in 1997 and 1998 near Kimberly, Idaho to determine how weed emergence and chemical control inputs during the growing season affect sugar beet yield and quality. In 1997, kochia began emerging on May 2, while common lambsquarters and hairy nightshade began 5 days later. Redroot pigweed and green foxtail emergence followed kochia almost two weeks and a month later, respectively. In 1998, all weeds had emerged by May 8. For both years, weed emergence peaked on or before June 11 and populations declined the rest of the season. Any later emerging weeds were suppressed or killed by the sugar beet canopy. The addition of cycloate applied at lay-by did not improve weed control or yield. Common lambsquarters and hairy nightshade were controlled 96 to 100% at late season with ethofumesate applied preemergence (PRE) followed by two postemergence POST applications of ethofumesate, desmedipham, and phenmedipham + triflusaluron. This same treatment was not as effective in controlling kochia, redroot pigweed, and green foxtail. Sugar beet yield was significantly different between the two years, with 1998 yielding greater than 1997. A minimum number of properly timed weed control applications combined with a healthy crop canopy were effective in producing optimum yields and controlling weeds, regardless of when they emerged. This study showed that weed emergence in sugar beet begins early in the season and peaks sometime before row closure. Weed densities can be altered by herbicide applications and crop competition. Timely early season weed control treatments are the most effective way to reduce the number of escaped weeds and a full, vigorous stand of sugar beets will control any late emerging weeds.