

Wilson, R.G., University of Nebraska, 4502 Ave. I, Scottsbluff, NE 69361. Influence of Preplant Nitrogen Fertilizer on Sugarbeet, Weeds, and Postemergence Weed Control.

ABSTRACT

A field study was initiated near Scottsbluff, NE to examine the influence of preplant applications of nitrogen fertilizer on sugarbeet stand, weed density, and weed control from postemergence herbicides. Ammonium nitrate was applied at rates of 0, 44, 88, 179, and 358 kg/ha and incorporated into the upper 10 cm of soil with a roller harrow 9 d before planting sugarbeets. Sugarbeets were planted in mid-April and irrigated with an overhead sprinkler with 13 mm of water 6 d after planting. Each fertilizer plot was divided so part of the plot received three postemergence treatments of phenmedipham plus desmedipham plus triflusaluron plus clopyralid at 0.09 plus 0.09 plus 0.009 plus 0.045 kg/ha and part received no weed control treatment. Sugarbeet stand and weed control were determined 14 days after the final postemergence herbicide treatment. Sugarbeet root yields and sucrose content were determined in early October. In mid March soil samples were taken to a depth of 0.9 m and indicated that the 0 to 1 m section of the soil profile contained 93 kg/ha of nitrate nitrogen.

As ammonium nitrate rates increased from 44 to 358 kg/ha sugarbeet stand decreased from 87600 to 58900 plants/ha. The 33% reduction in early season sugarbeet stand resulted in a 18% reduction in sugarbeet root yield (88 to 72 mt/ha) at harvest. Increasing nitrogen rates also caused a significant reduction in root sucrose content (13.3 to 12.6%) and root tare (4.9 to 4.4%). Weed density was also influenced by the addition of nitrogen fertilizer. As nitrogen rate increased from 44 to 358 kg/ha, common lambsquarters and kochia density increased from 160 to 190 and from 5 to 9 plants/10m², respectively. In contrast, hairy nightshade density was greatest when no nitrogen was applied and declined as nitrogen rate increased (68 to 13 plants/10m²). Weed control achieved from postemergence herbicides was 90% when no nitrogen was applied and 94% when 358 kg/ha of nitrogen was applied before planting.