

STEVENS, W. BART\*, JAY D. JABRO and WILLIAM M. IVERSEN, USDA, Agricultural Research Service, 1500 North Central Avenue, Sidney, MT 59270. **Sugarbeet response to seed position relative to fertilizer band in a strip tillage system.**

Fertilizer is often banded under the seed row when strip tillage is performed. When strip tillage and planting occur in separate operations it can be difficult to consistently plant seed in the optimal position relative to the fertilizer band. Our objective was to evaluate sugarbeet plant growth and yield when the seed row is offset laterally relative to the fertilizer band. The study was conducted from 2011 to 2013 on a sandy loam soil in western North Dakota using overhead sprinkler irrigation. Seed was planted 3 cm deep and 0, 7.5, 15, or 22.5 cm to the side of the fertilizer band. A control treatment with no fertilizer applied was also included. In the fall, urea (145 kg N ha<sup>-1</sup>) and monoammonium phosphate (12 kg N and 56 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup>) fertilizers were placed in a single band at a depth of 10 cm using a semi-parabolic shank strip tillage implement. In all three years, plant dry matter (PDM) 40 days after emergence (DAE) was from 0.6 to 3 g plant<sup>-1</sup> when seed was placed 22.5 cm to the side of the fertilizer band. This was indistinguishable from the control suggesting no significant fertilizer uptake occurred during the first 40 days of plant growth. Excessive precipitation in 2011 leached N from the root zone and limited response. In 2012 and 2013, PDM at 40 DAE was greatest when sugarbeet was seeded directly over the fertilizer band (0-cm offset) and was only marginally (9 to 15%) lower when offset by 7.5 cm. When the seed row was offset by 15 cm, PDM at 40 DAE was 20 to 55% less than where the offset was 0 cm. In 2012, end-of-season sucrose yield was similar (12262 to 12367 kg ha<sup>-1</sup>) for the 0-, 7.5- and 15-cm offset distances but was approximately 17% lower for both the 9-cm offset and control treatments. In 2013, sucrose yield was similar for the 0- (11841 kg ha<sup>-1</sup>) and 7.5-cm (10847 kg ha<sup>-1</sup>) offsets and decreased by 19, 23 and 43% (compared to the 0-cm offset) for the 15- and 22.5-cm offset and control treatments, respectively. Results suggest that the lateral distance between sugarbeet seed and the fertilizer band should be 7.5-cm or less.