

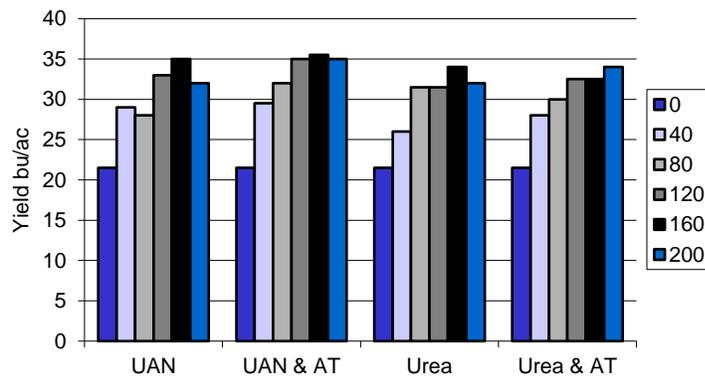
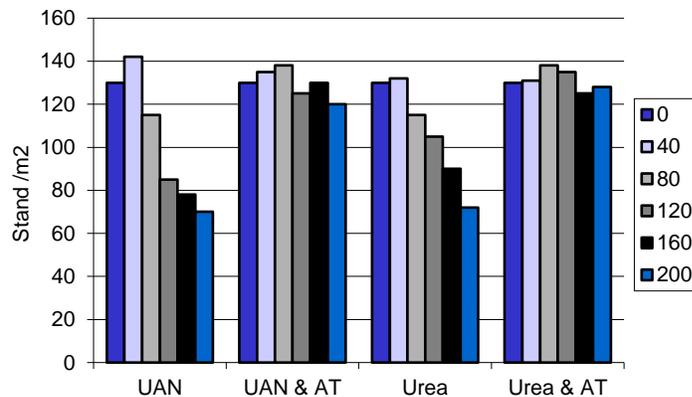
Can sidebanded N cause injury in a dry year?

Some 46% of Prairie canola growers sideband their nitrogen fertilizer (STRATUS).

With a lack of seedbed moisture, there are justified concerns about seedplaced fertilizer injury to canola and other crops. How safe is sidebanded nitrogen? Research studies by Dr. Cindy Grant documented considerable canola stand thinning when high rates of sidebanded urea or UAN solution were applied (Figures 1-2). Agrotain (AT) served to reduce stand injury, but is no longer supported for this use by the manufacturer.

Points:

- Stands were thinned at even modest N rates, on a clay loam soil. At high rates stands were reduced to 50%
- Crop growth compensated for reduced stands and generally produced as good a yield as the Agrotain protected stands, except at the highest rate.



Figures 1 and 2. Effect of sidebanding high rates of N (lb N/ac) on canola stand and yield. 3 site years on clay loam soil at Brandon. (Grant and Heard, 2004)

Dr. Grant description of the situation: *“Although sidebanding of seed and fertilizer is generally safe, damage may occur in sensitive crops such as canola. Many seeders are designed to place fertilizer about 1” to the side and 1” below the seed. With wider row spacings, higher fertilizer rates or sensitive crops this spacing may be insufficient and damage may occur in situations that promote seedling toxicity. Risk factors include high pH carbonated soils, soils with low cation exchange capacity (ie coarse textured soils with low organic matter), drying conditions after seeding and application on sensitive crops such as canola or flax. If the seed-fertilizer separation is not maintained, risk of damage will also be higher. Seedling damage will not always translate into a reduction in crop yield at the end of the growing season, but yield may be reduced depending on the growing season. Seedling toxicity may delay crop emergence and reduce crop vigour, increasing potential losses from weed competition. Crop maturity may be delayed, leading to greater risk of damage from fall frosts. Crop quality may also be affected. Where risk of damage is considerable, it may be advisable to increase the separation between seed and fertilizer band, consider an alternate method of fertilizer application such as midrow banding or preplant banding or use a less damaging fertilizer source.”*

One reason the injured stands did not always lead to yield reduction was due to the high seeding rates commonly used a decade ago – about 150 seeds/m², whereas farmers may be targeting half that today.

A MB Ag extension team documented stand reduction for a group of farmers in 2002 (Heard et al, 2002). Farmers were asked to turn off their N supply for a 50’ length just inside the headland. Following emergence, staff counted emerged plants in 3 – 1 m row lengths and compared to the adjacent fertilized row. Stage of plants were also recorded. Equal plant stands were achieved in 5 of 7 side-banded urea or anhydrous ammonia comparisons. In 2 cases there were stand reductions and delayed emergence. Delayed emergence of cereals varied from ½ to 1 leaf stage behind.

Farmers are using different openers than in 2002. Many innovative openers seem to be a blend of sideband and seed placement and no study will ever compare all options. It may be valuable to establish what typical injury is for a dry year – for their equipment, their soil, their fertilizer rate.

References:

Grant, C. and J. Heard. 2004. Spring options for nitrogen fertilization.

http://www.umanitoba.ca/faculties/afs/MAC_proceedings/proceedings/2004/grant_spring_options.pdf

Heard, J.A. Nadler and S. Day. 2002. Assessing crop stands when fertilizer is applied at seeding.

http://www.umanitoba.ca/faculties/afs/MAC_proceedings/2002/pdf/P5.pdf

STRATUS Ag Research. 2017. Fertilizer Use Survey. 2016 Crop Year.