

Agricultural Beet

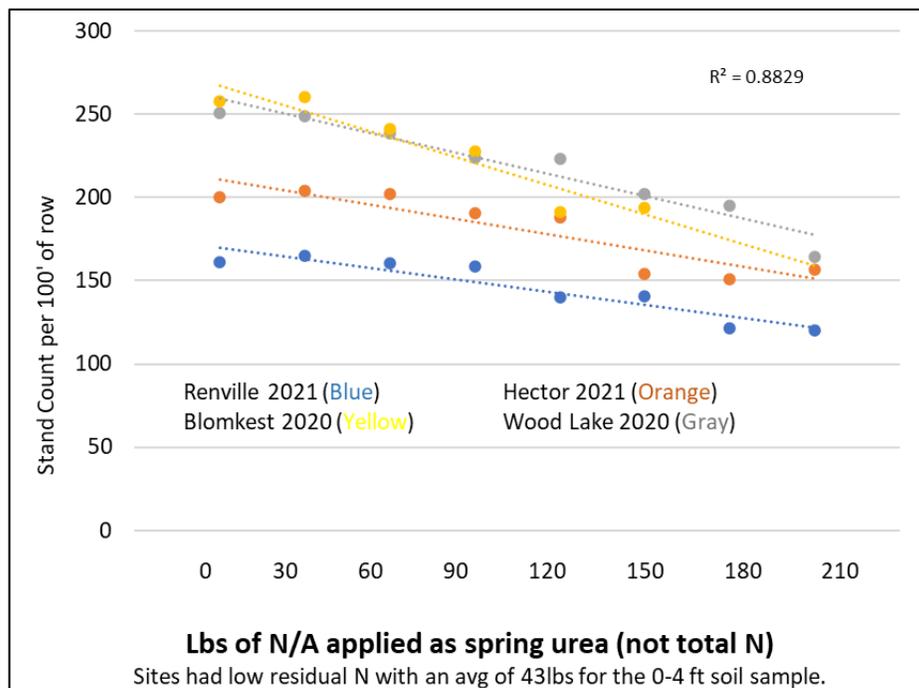
March 28th 2022

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Spring Applied Urea Induced Emergence Reduction

There are many factors that can contribute to poor sugar beet stands across a field; heavy residue from previous crop, dry conditions after planting, cutworm, etc. Something that has not been discussed much in sugar beets is the emergence reduction that can occur with the use of urea fertilizer in the spring. Here at SMBSC we have conducted nitrogen rate trials each year for some time. Something that has been observed over the years is reduced stands at some of the greater rates of urea. This Ag Beet is not an in-depth dive into the cause of urea induced emergence reduction but simply sharing the stand count data from our nitrogen rate trials from 2020 and 2021. Please review the graph below to see how increasing the rate of urea is strongly correlated with a significant reduction in stand counts.



All trials were conducted with spring pre-plant applied urea and incorporated using a small field cultivator. Stand counts were taken on the entire length of both harvest rows. When averaged across all four trials the emergence loss incurred over no urea applied is as follows:

Lbs. of N/A	Stand Change
30	1.1%
60	-2.8%
90	-7.2%
120	-14.0%
150	-20.0%
180	-23.8%
210	-27.2%

As you can see even 90lbs of N/A applied as spring urea can start to cause emergence reduction. However, the severity may depend on environmental conditions in the given year.

While the reduction in emergence was significant the tons per acre was not negatively impacted in any of these trials (data not shown, can be found in Research Reports, <https://www.smbc.com/agronomy/AgronomyDefault>). Sugar beets can compensate for low stand counts by the remaining beets growing larger. However, this can lead to additional problems that arise from inconsistent beet size: pinch wheel setting, defoliator setting, etc., that can lead to increased harvest losses. And while the overall tons per acre may not be negatively impacted, the quality generally is negatively impacted by increasing nitrogen rates. The total optimum extractable sugar per acre from 2010-2020 was ~130lbs per acre of total N (0-4ft soil sample plus applied) with 2021 being 105lbs of total N in research trials. With the rising cost of fertilizer and the negative impact that excessive N can have on both the stand and quality of your sugar beet crop, 2022 is a great time to get a spring soil sample and only apply the nitrogen that the crop needs.

Other researchers have seen similar results with emergence reductions occurring with 75lbs per acre and greater of N applied as spring urea (SURFACE APPLIED NITROGEN EFFECTS ON SUGAR BEET EMERGENCE – 2021 ANNUAL REPORT OF THE COMPANY-GROWER SUGAR BEET RESEARCH COMMITTEE FOR ALBERTA. Peter J. Regitnig and Jay F. Anderson).