

Can I apply fertilizers in the fall?

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The simple answer is yes! Let's try to understand why? Phosphorus (P) and potassium (K) are usually recommended to be fall applied any way to the forage crops. Unlike N, there is no risk of leaching of P and K. It is felt that fall applied nitrogen (N) could be lost to the environment (through leaching, denitrification and volatilization). Research at LUARS on grasses (Timothy and Bromegrass) for 6 years (one seeding and five harvest years; 2008-2013) and 3 years on spring wheat (2014-2016) broke this myth.

In grasses, the treatments included No N, urea @ 70 kg N/ha applied in the fall (on September 25, October 10, October 25 and November 10) and spring; supplemented with urea @ 35 kg N/ha after the first cut and ESN @ 105 kg/ha applied on September 25. Thus N rate in all the fertilizer treatments was equal at 105 kg/ha. Averaged over 5 harvest years and two grasses (that had similar yield from two cuts), No N control gave 3,050 kg/ha dry matter yield (DMY). DMY from the fall (September 25 to November 10) application of urea @ 70 kg/ha supplemented with urea @ 35 kg N/ha after the first cut ranged from ~4,700 kg/ha to ~4,800 kg/ha. ESN applied @ 105 kg/ha on September 25 produced ~4,800 kg DMY/ha. Urea @ 70 kg N/ha applied in spring supplemented with 35 kg N/ha resulted in 5,080 kg DMY/ha. The DMY from all the fertilizers treatments were statistically equal. Which means that there was no difference between the DMY from fall and spring application of fertilizers. Protein content in the first cut was 12.6 % without N and ranged from 12.5 % to 13.6 % in the fertilizer treatments. Protein content with ESN applied on September 25 @ 105 kg N/ha was 13.2 % and with urea @ 105 kg N/ha (70 kg N/ha in the spring and 35 kg N/ha after the first cut) resulted in 13.6 % protein content. In the second cut, protein content without N application was 13.3 %. None of the fertilizer treatments exceeded the No N treatment in protein content. Equal yield from the fall and spring application of N disproves the myth that fall application of N could be lost to the environment (soil, water and air). If N was lost from its fall application, fall application of N would not equal in yield with its spring application. I believe that the N up taken by the grasses in the fall is stored in the crowns and is used for growth in the spring.

In spring wheat, application of urea and ESN and urea + ESN blends on 3:1 and 1:1 ratio each @ 80 kg/ha in the fall was compared with their spring applications during 2014-2016. Averaged over sources of N and years, grain yield from spring (4,298 kg/ha) and fall (4,148 kg/ha) applications were similar. Straw yields from the fall and spring application of N were 4,964 kg/ha and 5,282 kg/ha, respectively and statistically equal.

From these two experiments we can conclude that if there is a time and opportunity, N (and even P and K fertilizers) to the field crops, especially hay fields could be applied in the fall. Fall application of fertilizers will be particularly rewarding in the fields which are not tile drained and in which it is almost impossible to move with fertilizer spreaders in the early spring. Any questions? Please feel free to contact me at tssahota@lakeheadu.ca or at 807-707-1987.