LUARS Research 2021 – Results from Forage Experiments

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Results from this year's forage experiments at LUARS Thunder Bay, described below briefly, could be useful to the Ontario producers; especially those from northwestern Ontario:

Alfalfa Varieties (Seeded in 2020): Two western alfalfa varieties (*Revolution MD* and *Response WT*) were compared with two Atlantic Canadian varieties (*AAC Trueman* and *Elite*) by keeping *WL319HQ* (Roundup Ready alfalfa) as a check. Dry matter yield from two cuts varied from 4,822 kg/ha with *AAC Trueman* to 5,265 kg/ha with *Response WT*. However, the yield differences between the varieties were non-significant. First cut protein content varied from 19.1 % in *Elite* to 20.0 % in *WL319HQ* and from 20.6 % in *Elite* to 22.5 % in *WL319HQ* in the second cut. RFV was highest in *Response WT* (134) in the first cut and highest in *WL319HQ* (148) in the second cut. Generally speaking, higher RFV could mean higher milk yield.

Alfalfa Row Spacing and Rates of Sulphur Application (Seeded in 2020): Highest alfalfa dry matter yield (7,450 kg/ha) from two cuts was obtained with missing one row after every two rows and application of S @ 48 kg/ha in two splits – half in early spring and half after the first cut. The treatment also gave the highest protein content both in the first (20.2 %) and the second cut (21.5 %). Averaged over S rates, missing one row after every two rows produced the highest first cut yield (3,319 kg/ha), whereas regular row spacing at 15 cm recorded the highest yield in the second cut (3,977 kg/ha). Dry matter yield from the two cuts was in the following order: missing one row after every two rows (6,613) ≥ regular rows - without missing any rows (6,438 kg/ha) ≥ missing alternate rows (6,120 kg/ha). Seed rate was kept the same with all the row spacing treatments. Protein content with different row geometries varied from 18.7 to 19.1 % in the first cut and from 20.1 to 20.8 % in the second cut. RFV was highest with missing one row after very two rows in the first cut (133) and highest with missing alternate rows in the second cut (143). Application of S @ 36 kg/ha and not @ 24 kg/ha increased the alfalfa dry matter yield (from two cuts) significantly from 5,864 kg/ha without S to 6,677 kg/ha (with 36 kg S/ha). Increasing the S rate from 36 to 48 kg/ha didn't bring in significant improvement in the dry matter yield. Protein content was highest with 48 kg S/ha applied in two splits both in the first (19.6 %) and the second cut (21.0 %). RFV in the first cut was highest (134) with S @ 36 kg/ha/or 48 kg S/ha applied in two splits. In the second cut, RFV ranged from 136 to 139 (didn't vary much with the rates of S application). Pre seeding S test in this experiment was 8 ppm S.

Comparative Performance of Alfalfa and Galega (Seeded in 2011): This is the first year when Galega gave somewhat lower dry matter yield than alfalfa because it was hit by a hard frost (-5^{o} C) on June 21, which offset its growth and impacted the yield. Averaged over 2012 to 2021, Galega (5,218 kg/ha/year) produced higher dry matter yield than alfalfa (4,807 kg/ha/year). Galega had 1.8-4.4 % point higher protein content in the first cut and 2.5-4.7 % point higher protein content in the second cut as compared to alfalfa. Galega didn't exceed alfalfa in RFV in the first cut, whereas in the second cut it had up to ~11 % higher RFV than alfalfa.

Alternate Forages (Seeded in 2020): Galega, sainfoin, alfalfa and red clover (seeded last year) were compared for their production potential and forage quality. This is the first year when sainfoin produced higher dry matter yield (5,043 kg/ha @ 30 kg seed/ha and 5,350 kg/ha @ 40 kg seed/ha) than Galega (4,511 kg/ha), alfalfa (4,476 kg/ha) and red clover (4,290 kg/ha). First cut protein content was highest with alfalfa/Galega (20.7/20.5) and lowest with sainfoin (14.4 %; at both the seed rates). First cut protein content in red clover was 19.2 %. Second cut protein content was highest (15.7 %) in sainfoin seeded @ 30 kg/ha. RFV of the first cut was highest (150) in alfalfa,

whereas in the second cut, sainfoin @ 30 kg seed/ha equaled alfalfa in RFV (120) and the two topped in RFV among all forage legumes.

Forage Production from Kernza and Alfalfa + Kernza (80:20) – Seeded in 2017: First cut dry matter forage yield from Kernza alone increased from 2,521 kg/ha with 70 seeds/m^2 to 2,927 kg/ha with 110 seeds/m^2. The crop didn't grow enough for the second cut. Forage dry matter yield from Alfalfa + Kernza (80:20) was 2,351 kg/ha from the first cut and 5,602 kg/ha from the two cuts. First cut protein content from Alfalfa + Kernza (80:20) was 17 % and that from Kernza alone @ 110 seeds/m^2 was 16.4 %. Corresponding values of RFV were 108 and 114, respectively. Protein content and RFV in the second cut in Alfalfa + Kernza were 19.6 % and 131, respectively.

Questions/or comments are welcome at tssahota@lakeheadu.ca/or at 807-707-1987!