# 18. Assessment of full season cover crop blend for forage production

## Project duration

- 2021

## Collaborators

- Fosters Ag Services

## Objectives

- Full season cover crop blend from Covers & Co was assessed for forage production on heavy clay soils in Interlake region of Manitoba. This blend was harvested at three different cut times (Early, Normal & Late) to examine the effects on forage yield and quality. Regrowth potential (second cut) for fall grazing was also assessed in the study.

## Results

Plots were well established and the cool season grasses dominated the stand (Fig.18.1). Most of the species in the blend were established although plant diversity differences were there.

No differences in forage yield were recorded from the first cut when different cutting time treatments were compared (Table 18.1). Regrowth yield potential, however, was lower when the plots were cut later during the first cut. Cutting time did not have any effect on the overall dry matter forage field for this blend.

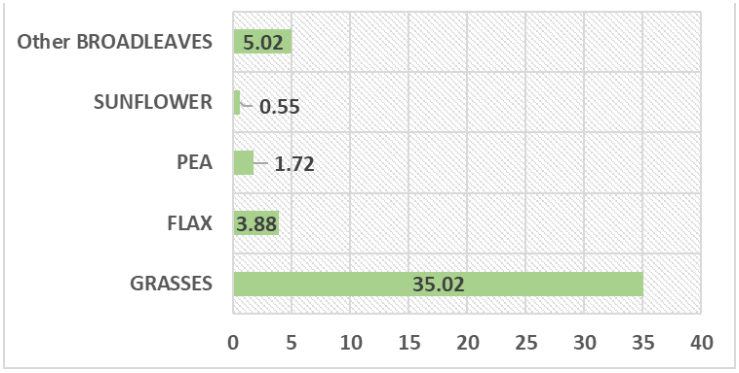


*Fig.18.1. Plant diversity (Average no. of plants established / ft$^2$) at Arborg site.*

Feed test results showed a general decline in protein levels with delayed cutting time (Table 18.2). ADF and NDF levels were lower when the blend was cut at the normal time. TDN levels, NE Gain and relative feed value (RFV) were higher when the plots were cut at the normal time. Crude protein, ADF, NDF, TDN and RFV were similar for the second cut irrespective of the first cut treatments.

## Project findings

Full season blend produced about 2.5 tonnes /acre of dry matter forage yield during the entire season. It is important to note that 2021 was an extremely dry year at the PESAI site. Cutting time did not have any effect on the overall forage yield. Normal cut time, however, produced relatively good quality forage.

*Table 18.1. Dry matter forage yield as affected by different cutting time at Arborg site.*

| Treatment | Growth stage at cut of | | | | Dry matter forage yield | | |
|---|---|---|---|---|---|---|---|
| | wheat | barley | oats | peas | First cut | Second cut | Total |
| | ----------BBCH---------- | | | | ---------- tonnes / acre ---------- | | |
| **Early cut** | 77 | 79 | 73 | R5 | 1.86 | 0.64b | 2.50 |
| **Normal** | 87 | 87 | 75-87 | R6 | 2.12 | 0.54b | 2.65 |
| **Late cut** | 92 | 92 | 87 | R7 | 2.21 | 0.27a | 2.48 |
| **P value** | | | | | 0.07 | <0.0001 | 0.27 |
| **CV (%)** | | | | | 11.9 | 19.5 | 7.6 |
| **Sig. diff.** | | | | | No | Yes | No |

*Table 18.2. Effect of different cutting times on the feed quality parameters of the full season blend at Arborg site.*

| Harvest | Treatment | Dry Matter | Crude Protein | ADF[1] | NDF[2] | TDN[3] | NE Gain | RFV[4] |
|---|---|---|---|---|---|---|---|---|
| | | ---------- % ---------- | | | | | (Mcal /gain) | |
| **First cut** | Early cut | 33.5 | 12.2 | 30.2 | 50.7 | 65.4 | 0.89 | 120 |
| | Normal cut | 47.4 | 10.8 | 26.4 | 47.0 | 68.3 | 0.97 | 135 |
| | Late cut | 67.3 | 10.1 | 32.5 | 53.0 | 63.6 | 0.84 | 112 |
| **Second cut** | Early cut | 19.5 | 18.1 | 28.6 | 47.6 | 66.6 | 0.92 | 130 |
| | Normal cut | 17.4 | 19.2 | 30.1 | 46.5 | 65.4 | 0.89 | 131 |
| | Late cut | 22.4 | 18.6 | 28.6 | 47.3 | 66.6 | 0.92 | 131 |

*ADF[1] – Acid Detergent Fibre; NDF[2] - Neutral Detergent Fibre; TDN[3] - Total Digestible Nutrients; RFV[4] – Relative Feed Value*

## Background / References / Additional resources

Cover crops are planted with the intent to build and improve the soil health. Cover crops are usually seeded in diverse annual mixes comprised of five, ten, or even twenty species, although they can include biennial or perennial species (BCRC, 2016). They can be a valuable and quick-growing source of forage for livestock. Cover crops also allow cropland and pastures to be more efficient with water and nutrient cycling, and less reliant on costly inputs such as fertilizer.

In the current study, a blend of warm and cool-season plant species was tested for forage production (Fig. 18.2). This blend was obtained from Covers and Co. and is intended to


*Fig. 18.2. Different plant species in the full season blend.*

provide high-yielding, high-quality livestock feed while improving soil health and reducing input costs (Covers and Co, 2021). A major benefit of using a multi species cover crop blend is flexibility in harvest timing. Covers and Co has reported dry forage yield of greater than 2.27 tonnes per acre along with relatively good TDN (58-63%) and RFV (115) from the testing of full season blend at few Manitoban sites.

***References:***

*BCRC (2016) https://www.beefresearch.ca/files/pdf/BCRC_Cover_Crops_Fact_Sheet.pdf*
*Covers and Co (2021) https://www.coversandco.ca/full-season-cover*

## Materials and Methods

*Experimental design* – Randomized complete block design.
*Plot size* – 8.22 $m^2$ *Varieties* – A blend of 15 species (Fig. 18.2)
*Seeding rate* – 75 lb /acre; Seeding depth – 0.75 inch
Treatments – Three:

- Early cut (on July 23),
- Normal cut (on Aug 6) and
- Late cut (on Aug 18)

***Data collected***

Plant species established, crop stage at harvest and dry matter forage yield

***Agronomic information***

*Stubble, soil type* – Fallow, Heavy clay
*Fertilizer applied* – None.
*Inoculant rate* – 8 lb/acre
Pesticides application: Silencer @ 34ml /acre on July 13 & July 29 for the control of grasshoppers.
*Seeding date* – May 21, 2021

*Fig.18.3. Various plant species of cover crops established during 2021 trial at Arborg.*