

RALLF Forage Quality

preliminary report

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Review of experiment

Experiment was seeded in spring 2021, reducing the number of cuttings that could be taken in 2021.

There was a drought in 2022, reducing the number of cuttings that could be taken in 2022.

For 2021, The first cutting was in July2021. The 35-day cutting treatment (sometimes called the 5-cut system), was harvested 3 times in 2021. The 45-day cutting treatment (sometimes called the 4-cut system), was harvested 2 times in 2021.

For 2022, the first cutting was in May2022. The 35-day cutting treatment was harvested 4 times in 2022. The 45-day cutting treatment was harvested 3 times in 2022.

There are 6 varieties of alfalfa * 4 reps = 24 plots for a given cutting intensity at a given site.

Review of data organization

Different people are entering different types of data (yield, NIR). The naming schemes are unfortunately different, but we want the person entering the data to remain consistent doing what they decided made the most sense to them.

We assume future data will be entered into the datasheets with the same format.

Here I am designing keys to get the different dataflows to talk together

These are the following treatments

variety = 6 levels intensity = 2 levels (35 or 45 day) OR (5 cut or 4 cut) plot = contains the varietyXintensityXsiteXrep = 6X2X2X4 = 96 unique plots harvest_point = plots are harvested multiple times per year at differing intensities, a harvest point represents the unique date of a harvest at a site cutting_number = which cutting of a given plot, resetting each year

2021 half were harvested 3X and half 2X = 240

2022 half were harvested 4X and half 3X = 336

so we expect 576 datapoints

We have 506 data points

We are designing keys within the markdown document to make these sheets talk with eachother

Rather than change datasheets, we want to keep on filling datasheets as they are

NIR

For NIR output, we get a code and NIR data.

We have a compiled sheet where all information associated with a code is dumped

We pull in all the information associated with the codes into the NIR data sheet, then select for rows that contain the word RALLF in one of the ID columns

We go into excel and line up the ID columns and then export that file, this is our working NIR RALLF data.

One problem was that some RALLF data was saved as a date “07/16/2021” and imported as a serial number that could not be back converted. I could’ve added in a manual harvest timepoint, but the key I was pulling off of was static.

Now, the most important ID we need is plot and date. From this information, we can pull in all the info we need. Another work around is plot, year, cutting number. But the only time point data we have is plot, year, harvest_point.

But some had dates that were not imported correctly into R

primary datasets df2 = date connected to cut number, site year intensity df3 = date connected to harvest_point (1:6) site year, which is used in a lot of yield data

dat7 = connects date to plot site and treatments dat6 = connects forage quality data with plot site-year and treatments

What we expect and what we have

Table 1: Expected and observed forage quality data

date	site	intensity	cut	n_expected	n_observed
2021-07-16	rosemount	35-day	1	24	NA
2021-07-16	st paul	35-day	1	24	NA
2021-07-16	rosemount	45-day	1	24	24
2021-07-16	st paul	45-day	1	24	23
2021-08-20	rosemount	35-day	2	24	NA
2021-08-20	st paul	35-day	2	24	NA
2021-09-01	rosemount	45-day	2	24	NA
2021-09-01	st paul	45-day	2	24	NA
2021-10-18	rosemount	35-day	3	24	NA
2021-10-18	st paul	35-day	3	24	NA
2022-05-23	st paul	35-day	1	24	24
2022-05-23	st paul	45-day	1	24	25
2022-05-24	rosemount	35-day	1	24	NA
2022-05-24	rosemount	45-day	1	24	NA
2022-06-29	rosemount	35-day	2	24	24
2022-06-29	st paul	35-day	2	24	24
2022-07-12	rosemount	45-day	2	24	24
2022-07-12	st paul	45-day	2	24	24
2022-08-02	rosemount	35-day	3	24	2
2022-08-02	st paul	35-day	3	24	11
2022-08-22	rosemount	45-day	3	24	24
2022-08-22	st paul	45-day	3	24	24
2022-09-07	rosemount	35-day	4	24	25
2022-09-07	st paul	35-day	4	24	25

Table 2: Missing forage quality data

date	site	intensity	cut	n_expected	n_observed	missing
2021-07-16	rosemount	35-day	1	24	0	24
2021-07-16	st paul	35-day	1	24	0	24
2021-08-20	rosemount	35-day	2	24	0	24
2021-08-20	st paul	35-day	2	24	0	24
2021-09-01	rosemount	45-day	2	24	0	24
2021-09-01	st paul	45-day	2	24	0	24
2021-10-18	rosemount	35-day	3	24	0	24
2021-10-18	st paul	35-day	3	24	0	24
2022-05-24	rosemount	35-day	1	24	0	24
2022-05-24	rosemount	45-day	1	24	0	24
2022-08-02	rosemount	35-day	3	24	2	22
2022-08-02	st paul	35-day	3	24	11	13
2021-07-16	st paul	45-day	1	24	23	1

What we are seeing