Field Day: Sorghum Sudangrass Yield Trial
Morrison Ranch, Wardner, September 2, 2020

Summary

Tyler Morrison is a second-generation rancher in Wardner BC and is interested to experiment with crops to extend the fall grazing season for his cattle. Tyler currently produces hay on irrigated and non-irrigated land and for this trial he is interested to experiment with dryland crops. Sorghum Sudangrass was chosen because it is a drought tolerant crop that can produce good biomass for grazing. This trial looked at two different varieties of Sudangrass at two different seeding rates to see which would produce higher yields.

Planning the trial layout, spring 2020. Sorghum Sudangrass was selected as the trial crop as it is drought tolerant.

Limitation for crop selection exist in the East Kootenay because many ranchers grow seed for a commercial tenant where brassicas such as kale or radish are not permitted due to concerns of cross pollination.

Project Design: 40-acre field with four 10-acre strips

1) Variety One: 15 lb/acre 2) Variety One: 25 lb/acre
3) Variety Two: 15 lb/acre 4) Variety Two: 25 lb/acre

Field History and Preparation

Seeding the Sudangrass, June 21. The soil needs to be above 12^{0}C.

A 40-acre old pasture field was the site for the trial where the soils are coarse textured and well draining. To prepare the field, it was disked and rolled early May. Herbicide was applied in early June for weed suppression. **The soil temperature needs to be at least 12^{0}C for Sudangrass to germinate** so seeding took place June 21. The soil moisture was ideal at 18 % - 20 % at the time of planting.

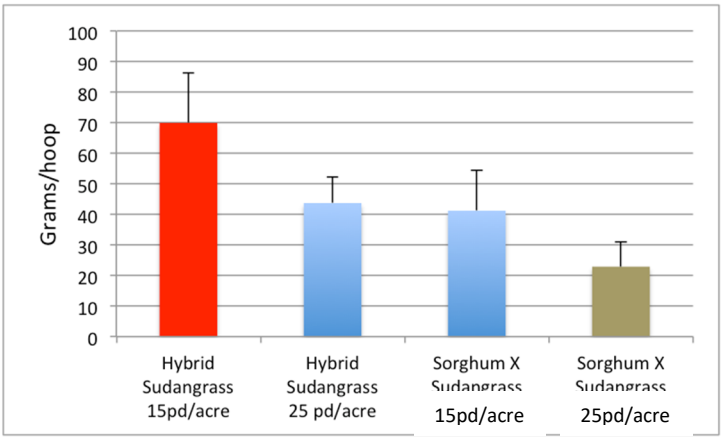
Seeding was done with a no-till drill at one-inch depth. Nitrogen fertilizer was applied after plant emergence.

Results

Ten samples were collected and weighed from each row on September 1 for a total of 40 samples. Soil moisture was 2% -3% when the samples were collected indicating drought conditions and therefore the crops had gone dormant due to lack of moisture. **Results indicate that the lower seeding rate at 15lb/acre produced higher yields (see Graph 1).** This is likely due to plant competition for moisture. Where rogue seeds had germinated on the edges and spacing was wide, the plants appeared the largest. The Sudangrass was planted beside a dryland barley crop and it appeared that the Sudangrass was more drought tolerant than the barley as there was still green colour in the plants.

September 2: The Sudangrass stopped growing with drought conditions (2% - 3% soil moisture). The crop would likely start growing again with fall precipitation; however, a hard frost hit on September 7.

Example of a hoop that is used for sample collection. 10 hoops were thrown for each trial row. Plants were cut and weighed from each hoop.



Graph 1: Yield results for Sorghum Sudangrass (non-irrigated). Lower seeding rates produced higher yields likely due to moisture availability.

Field day with Ranchers on September 2 to review the results and discuss on-farm research.

Next Steps

At the field day we discussed that another round of yield results would be taken if the plants continued to grow after fall precipitation and that prussic acid is a concern in new plant growth after a period of plant dormancy. However, a hard frost (-4^{0}C) hit on September 7th which likely ended any additional growth for the plants. Tyler will likely till-in the crop as a cover crop and it will not be fall grazed.

About this Project

This trial is a project of the BC Agriculture Farm Adaptation Innovator Program where the Morrison Ranch is receiving support for research design, methodology, materials, field measurements and final data analysis. This trial will be standardized into a template that can be replicated so that other producers can conduct their own on-farm research. Dr. Catherine Tarasoff of AgroWest Consulting is providing support for research design and standardized measurements. Rachael Roussin of the Kootenay & Boundary Farm Advisor supports with extension and coordination support.