

Forage Quality and Quantity of Cover Crop Species Mixtures

Agriculture Program Focus Team

Introduction

Many producers across the state are incorporating cover crops in their operation for multiple soil improvements. In addition, producers with both crops and livestock are interested in the benefits that can be gained from grazing cover crop mixtures. There is a wide variety of cover crop species planted across the state. Many have traditionally been grown in Kansas, however numerous new species are being planted either alone or in cover crop mixtures. The goals of this study are to 1) determine the species composition of random cover crop mixtures grown by producers in the state, 2) determine the forage biomass and quality of species within a cover crop mixture, 3) grazing preference of plant species in cover crop mixtures.

Methods

Willing Program Focus Team members will identify a diverse species cover crop fields in their areas to conduct sampling. When cover crop mixtures have adequate growth (~9 inches or 60 days post planting), a 3 ft by 3 ft area will be selected at four random points across the field. Within the sample area, above ground cover crop species biomass will be harvested and separated by species. The fresh weight of each species within each sample area will be determined. Sub samples from the four composited sampling areas will be bagged and sent to Jaymelynn to be oven dried to determine dry matter (DM). This will then be used to determine final forage biomass on a DM basis. Collect the sample in a ziplock bag and either mail immediately to Jaymelynn, or you can freeze the sample (take all the air out of the ziplock bag before freezing) and mail a large package to Jaymelynn, if you have more than one operation participating.

At sample locations, if PFT members have a phone with camera and GPS capabilities, take a picture of the sample area prior to harvesting and email to Jaymelynn. She will overlay the GPS location and picture in a program so that we may be able to use this information for location differences within the model (tool).

For uncommon species with little historic forage quality knowledge (mungbean for example), the sample will be analyzed for protein, TDN, ADF, and energy (Forage Analysis #1). A list of cover crop species with little knowledge of forage quality are given in Table 1. Samples are to be sent to SDK Laboratories in Hutchinson, KS and should be billed to the Doug Shoup at the Agronomy Department in 2002 Throckmorton.

Little knowledge is available for livestock grazing preference within a diversified plant species mixture. For cover crop mixtures that are to be grazed, PFT members can return to collect fecal samples from grazing livestock. Fecal samples from cattle after 7, 28, and 49 days of grazing will be analyzed using PCR to identify the DNA of the plant species consumed. For agents interested in collecting fecal samples for cattle preference determinations, contact Jaymelynn for sample containers and specific directions.

To summarize the sampling method: samples collected need to be fairly fresh, placed in the sample container, and frozen until shipment to Jaymelynn, along with a list of the species planted that cattle had access to including any grasses, hay, and grain.

Also, to be able to best identify forage yields, you need to collect a minimum amount of data from the producer about their management they used. The sheet with the data we would like collected is on page 3 of this document. Try and collect as much as you can and send page 3 in with the bags of samples for DM determination to Jaymelynn (308 W. 14th St Chanute, KS 66720). Also send an email to Jaymelynn prior to mailing, so she will be on the lookout for the samples.

Results from the survey will be used to develop a cover crop for forage decision tool for producers to evaluate the benefit of various species in a mixture. Relative forage production, quality, and preference will be included to aid producers in selection of cover crop species.

Table 1. Cover crop species with little knowledge on forage biomass and quality when grown in Kansas.

| | | | |
|----------|----------------|-------------------|--|
| Mungbean | Sunnhemp | Ethiopian cabbage | |
| Cowpea | Black oats | Teff | |
| Lab lab | Chickling pea | Buckwheat | |
| Pajsa | Crimson clover | Kale | |

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|---------------------------------------|--|
| Name: | |
| Location: | |
| Planting Date: | |
| Soil type: | |
| Acreage Planted: | |
| Species and seeding amount | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| More | |
| Fertility: | |
| Timing of Fertility: | |
| Cattle | |
| Grazing Start Date: | |
| Class of cattle grazing: | |
| Average weight: | |
| Anything else that might be important | |