

Spring Annual Forages for High Protein Feed

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Summary and Implications

Realistic yields for small grain forages in Iowa will provide data to make economic decisions on spring forage crops. Both yield and nutrient levels will help producers determine if this double-cropping option is feasible to implement, and if it can supply adequate protein levels in cattle diets. Data from the plots will be shared through eastern Iowa grazing and cover crop programs and field days.

Introduction

Limited information is available on forage yield or quality of small grains grown in Iowa, yet spring seeded small grains for forage provide an opportunity for Iowa cattlemen to produce both a forage and soybean crop on the same acres. Iowa does conduct oat variety trials but only measures grain yield, not forage yield, so there is no guidance provided to beef producers on recommended small cereal grains for forage yield. Current corn co-products have significantly increased in price or been in tight supply over the last year, increasing the need for alternative protein feed options. Barnhart shows that oats for forage can produce 2.1 tons of forage DM per acre at 15% crude protein in the milk stage, and about 2.9 DM tons/acre at 13% crude protein in the early dough stage (<https://crops.extension.iastate.edu/cropnews/2011/06/oats-forage>). Iowa producer John McGrath called to offer to conduct a small grain forage trial at Amana Farms, where they traditionally grow some small grains and/or cover crops for early spring forage.

Materials and Methods

Ten different spring cereal grains with or without peas were selected based on their forage production potential. Following a tillage pass with a Kinze MachTill high speed disk, they were drilled into a corn residue field at the Amana Farms on April 2, 2021. A 15' grain drill was used and a 5' open strip was left between each strip to designate plot boundaries. The strips were roughly 580' long. The ten varieties and actual seeding rates are reported in Table 1. Plots were randomly blocked with five replications, however due to harvest complications, all replications were combined into a single harvest. All plots were rolled on April 6, and 130# of nitrogen (46-0-0) was applied on April 14.

The spring of 2021 was extremely dry, and the forages were slow to emerge and grow. After a few light showers they did finally take off; however, harvest was at least 2-3 weeks later than expected.

Plots were mowed and forage quality samples were collected on June 11, 2021. Samples were frozen and shipped to Dairyland Testing Labs for analysis. Plots were chopped on June 12, following about a 24-hour wilt. All replications were chopped into a single sample that was weighed over the truck scale at the Amana feedlot and samples were collected to determine dry matter.

Results and Discussion

Due to harvest constraints, all five replications were chopped into a single truck so no statistical analysis could be completed. However, variations between forage protein level and yields were observed. Dry matter forage yield ranged from 1.2 tons/acre to 2.31 tons/acre. Crude protein ranged from 9.6 to 12.7% on a dry matter basis. The addition of peas in the seeding mix appears to have increased the CP level slightly but not as much as anticipated.

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Table 1. Variety, vendor and seeding rate.

Forage Variety	Vendor	Actual seeding rate/ac
Goliath Oats	Welter Seed & Honey	105
Dual Threat Oats	Millborn Seed	100
Deon Oats	Welter Seed & Honey	117
Everleaf Oats	Millborn Seed	85
Spring Triticale VNS	Welter Seed & Honey	100
Forage Barley (Hays)	Millborn Seed	115
Pea/Triticale	Welter Seed & Honey	100
Pea/Barley (60% pea, 40% barley)	Millborn Seed	105
Pea/Morton Oats (45% pea, 55% oats)	Welter Seed & Honey	118
Pea/Goliath Oats (60% pea , 40% oats)	Millborn Seed	130

Table 2. Yield and quality results.

Variety	Harvest DM	Yield ton/ac	Sampling DM	CP %DM	aNDF % DM	aNDFom % DM	TDN_OARDC % DM
Goliath oats	39.3	2.31	16.1	11	55.7	54.6	59.0
Dual threat oats	24.1	1.42	15.9	11.5	54.6	52.7	60.4
Dean oats	29.3	1.51	17.6	11.5	55.7	54.3	58.9
Everleaf oats	35.0	1.79	15.8	12.6	51.3	49.0	59.7
Spring triticale VNS	50.8	2.18	22.7	11.6	58.2	56.7	59.5
Forage barley (Hays)	35.7	2.14	23.1	9.6	57.4	55.3	60.0
Peas/triticale	57.6	1.83	22.2	11.9	53.1	52.1	62.3
Peas/barley	29.9	1.20	20.4	11.2	51.5	50.4	63.1
Peas/ Morton oats	27.3	1.63	20.8	10.0	48.2	46.9	63.2
Peas/Goliath oats	26.7	1.40	17.9	12.7	47.8	46.1	63.4