Project Title: 2021 Cool- and warm-season forage trial

Objective: To test for yield and quality of selected cool and warm-season forage grasses.

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Summary:
The cool-season forage species were planted April 22nd, 2020 and the warm-season teff and crabgrass were replanted May 28th, 2021. Sixteen forage species were studied in this trial.

There were two harvest cuts this year, except for the crabgrass. The total yield for 2021 ranged from 0.8 ton/A (crabgrass) to 6.4 ton/A (dryland mix 2). Dryland mix_1, dryland mix_2, tall fescue, meadow brome, and smooth brome performed well in this trial and had statistically similar forage yields. The warm season grass teff and crabgrass had lower yields compared with the cool-season 2nd year of establishment (Table 2). Crabgrass had the least forage yield, being the shortest among the species. The averaged forage quality data for all the cuts this year are also shown in Table 2.

Table 1. Management Information

Seeding date:	4/22/2020	**Field Location:**	P2
Julian date:	113	**Harvest date:**	See below
Seeding rate:	Variety-dependent	**Julian date:**	See below
Previous crop:	Winter wheat	**Soil type:**	Creston Silt Loam
Herbicide:	2,4-D (Shredder 7/10/2020) (Cleaver 6B 10/8/21- post harvest)	**Tillage:**	Conventional
Insecticide:	None	**Soil residual nutrient: (NO3-, P, K lb/A):**	122-20-376 (Fall, 2019)
Fungicide:	None	**Nutrient fertilizer applied: (N, P2O5, K20 lb/A):**	84-10-35-10(S) (spring, 2020) 50 lbs N [Spring, 2021]

The harvest dates are detailed below:
6/2 (Arsenal, Artillery, Barricade Raw, Barricade w/Yellow Jacket, Ammo, Armory, HDR)
6/4 (Milkway)
6/8 (HLR, Driftless)
6/16 (Moxie)
6/17 (Hamann, STF-43)
6/18 (Remington, Remington NEA2)
7/29 (2nd cut Moxie)
9/10 (1st cut mojo, 2nd cut for the rest of the entries)

Table 2. Second year (2021) total dry biomass yields and average forage qualities

Brand	Variety	Cuts	Forage YLD (t/A)	CP* (%)	RFV*	RFQ*	Lignin* (%)	Fat* (%)	NFC* (%)	WSC* (%)
	Cool-season									
Barricade w/Yellow Jacket	Dryland mix_2	2	6.4	11.4	92.8	124.1	3.6	3.3	18.3	9.0
STF-43	Tall fescue	2	6.3	11.4	96.5	116.6	3.8	3.5	18.2	8.9
Arsenal	Meadow brome	2	6.2	10.7	87.3	117.6	3.7	3.6	18.8	7.7
Barricade raw	Dryland mix_1	2	5.7	10.8	92.6	118.6	3.6	3.5	19.0	8.6
Artillery	Smooth brome	2	5.6	11.0	97.6	124.3	3.8	4.3	22.5	8.8
Ammo	Dryland orchardgrass	2	4.8	8.7	91.0	116.1	3.5	4.2	20.3	8.7
Hamann	Creeping wheatgrass	2	4.8	10.3	95.3	114.0	4.8	4.7	20.9	9.0
Armory	Dryland tall fescue	2	4.7	11.9	104.6	132.1	3.3	3.2	21.9	11.4
Driftless	Meadow fescue_1	2	4.7	9.7	90.3	117.1	3.5	4.1	19.3	6.5
HLR	Orchardgrass	2	4.7	8.4	86.8	103.3	4.1	4.1	18.4	7.2
HDR	Meadow fescue_2	2	4.3	10.3	102.5	137.8	2.7	3.9	24.0	10.0
Remington	Perennial ryegrass_1	2	4.3	9.8	103.5	138.8	3.0	3.4	24.6	12.1
Remington NEA2	Perennial ryegrass_2	2	4.2	11.3	101.6	135	3.5	3.3	22.1	10.2
Milkway	Tall fescue/meadow fescue mix	2	4.0	11.6	98.8	129.8	3.0	3.6	20.1	9.5
	Warm-season									
Moxie w/ Yellow Jacket	Teffgrass	2	2.5	9.6	103.1	150.8	3.8 bc	2.4 f	27.6	10.8
Mojo w/Yellow Jacket	Crabgrass	1	0.8	12.3	123	147.3	3.1 e-h	3.4 de	27.6	11.8
	Mean		4.7	10.6	98	126.5	3.6	3.7	21.5	9.4
	CV		16.4	12.8	3.6	7.1	8.4	9.1	5.7	9.4
	LSD		1.3	2.3	5.9	15.0	0.5	0.6	2.0	1.5
	PR>F		< 0.001	0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

CP = crude protein, RFV = relative feed value, RFQ = relative forage quality, NFC = non-fibrous carbohydrate, WSC = water-soluble carbohydrate, YLD = yield *Average of two cuttings except crabgrass