2020 Summer Annual Variety Trial

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THE UNIVERSITY OF VERMONT EXTENSION

2020 SUMMER ANNUAL VARIETY TRIAL

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Warm season grasses, such as sudangrass, and millet can provide quality forage in the hot summer months, when cool season perennial grasses enter dormancy and decline in productivity. The addition of summer annuals into a rotation can provide a harvest of high-quality forage for stored feed or grazing during this critical time. Generally, summer annuals germinate quickly, grow rapidly, are drought resistant, and have high productivity and flexibility in utilization. The UVM Extension Northwest Crops and Soils Program conducted this variety trial to evaluate the yield and quality of warm season annual grasses.

MATERIALS AND METHODS

A trial was initiated at Borderview Research Farm in Alburgh, VT on 22-May 2020. Plots were managed with practices similar to those used by producers in the surrounding area (Table 1). Fifteen varieties of summer annual species were compared (Table 2). Plots were seeded with a Great Plains cone seeder at a seeding rate of 50 lbs ac^{-1} for the sorghums, sudangrasses, and sorghum x sudangrass crosses, at 20 lbs ac^{-1} for millet, and at 30 lbs ac^{-1} for annual ryegrass. The mixtures were seeded according to the recommendation on the labels. Approximately 92 lbs N was applied in the form of urea (46-0-0) on 23-Jun.

Table 1. General plot management, 2020.

Trial Information	**Borderview Research Farm-Alburgh, VT**
Soil Type	Benson rocky silt loam
Previous crop	Hemp
Planting date	22-May
First harvest date	15-Jul
Second harvest date	10-Aug
Seeding rates: Millets	20 lbs ac^{-1}
Sorghum, Sudangrass, and hybrids	50 lbs ac^{-1}
Annual ryegrass	30 lbs ac^{-1}
Mixture (Summer Feast)	20 lbs ac^{-1}
Mixture (Ray's Crazy Summer Mix)	50 lbs ac^{-1}
Mixture (Summer 2020 Mix)	50 lbs ac^{-1}
Tillage methods	Mold board plow, disk, and spike tooth harrow

Prior to harvest, plant heights were measured at three random locations within each plot. Treatments that did not reach a minimum of 24" were not harvested. Plots were harvested with a Carter flail forage harvester outfitted with scales on 15-

Table 2. Summer annual varieties, characteristics, and seed sources, 2020.

Variety	Species	Characteristics	Company
KF Prime 180	Pearl Millet	BMR, Dwarf	King Fisher
KF Prime 360	Pearl Millet	BMR, Dwarf	King Fisher
FSG 315	Pearl Millet	BMR, Dwarf	Farm Science Genetics
VNS	Japanese Millet		Seedway, LLC
KF Sugar Pro 55 SS	Sorghum x Sudangrass	BMR	King Fisher
Green Grazer V	Sorghum x Sudangrass	Green Top	Seedway, LLC
AS 9302	Sorghum x Sudangrass	BMR6, Dwarf	Alta Seeds
FSG 214			

the Least Significant Difference (LSD) procedure where the F-test was considered significant, at $p<0.10$. Variations in yield and quality can occur because of variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference between treatments (i.e. varieties) is likely attributable to the treatment or random variation. At the bottom of each table, an LSD value may be presented. Where the difference between two treatments within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure in 9 out of 10 chances that there is a real difference between the two treatments. Treatments that were not significantly lower in performance than the highest value in a particular column is indicated with an asterisk. In this example, A is significantly

Table 4. Height of all summer annual treatments across both harvests, 2020.

Variety	Species	Height (cm)	
		1st cut	2nd cut

also differed by variety ranging from 7.39% to 9.37%. The estimated portion of overall dry matter that contains digestible nutrients (TDN) ranged from 52.9% to 57.1%. However, utilizing these quality metrics, the estimated amount of energy available to an animal for lactation, as estimated by net energy of lactation (NEL) did not differ statistically.

Table 5. Yield of six summer annual varieties across two cuttings.

Variety	**Dry matter (DM)**	**DM yield**		
		1st cut	2nd cut	Total
	%	tons ac^{-1}		
KF Sugar Pro 55 SS	15.3	**2.60**	2.05	4.65
Green Grazer V	15.6	2.52	2.19	4.71
AS 9302	15.4			
LSD (p = 0.10)	NS‡	N/A†	N/A	NS
Trial mean	15.4			

Table 6. Forage quality of six summer annual varieties across two cuttings.

Variety	CP	ADF	aNDFom	WSC

Do not graze after a killing frost until plant material is dry (the toxin usually dissipates within 48 hours).

Do not graze at night when frost is likely. High levels of toxins are produced within hours after frost occurs.

Delay feeding silage six to eight weeks following ensiling.

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