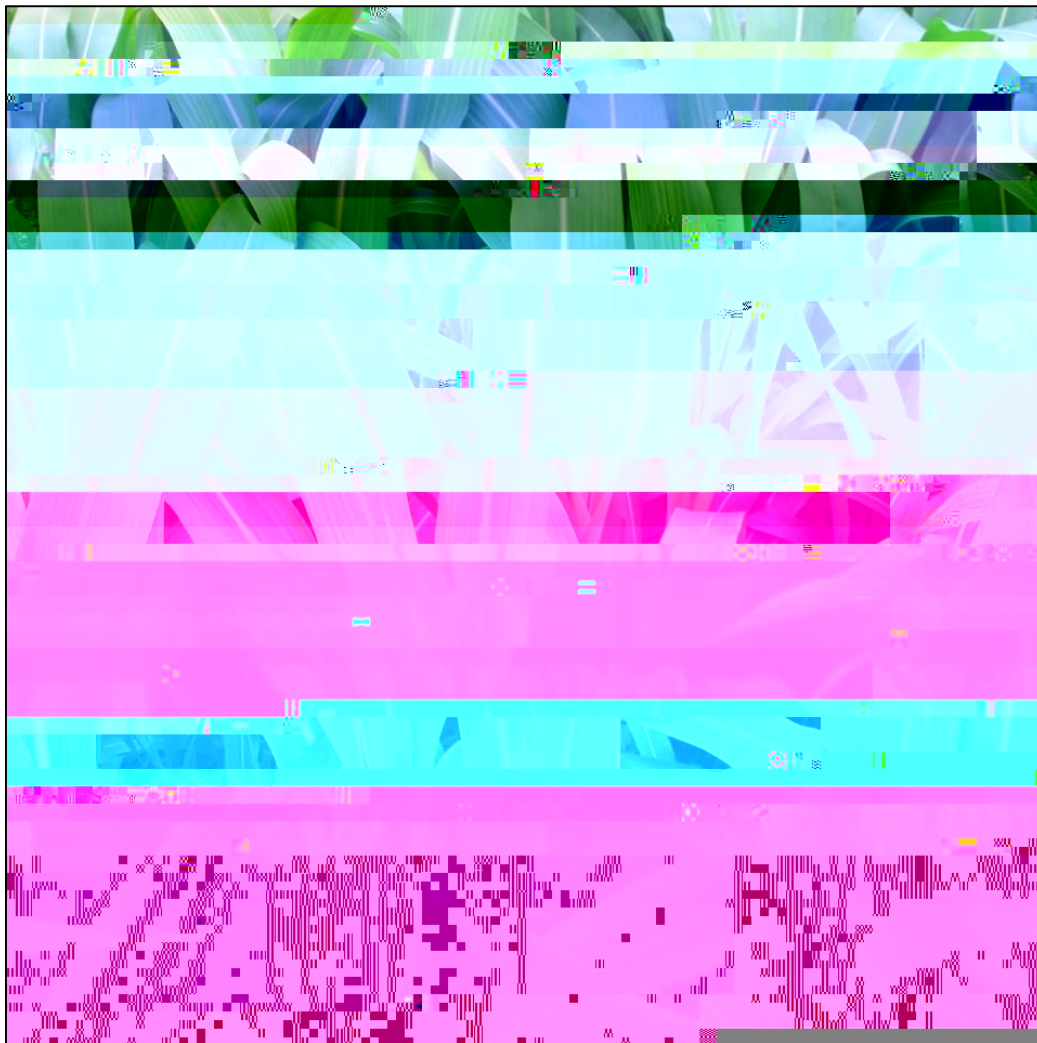# 2021 Summer Annual Variety Trial

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Table 2. Summer annual varieties, characteristics, and seed sources, 2021.

Variety	Species	Characteristics	Source
Exceed	Pearl Millet	BMR, Dwarf	King's Agriseed
FSG300	Pearl Millet	BMR, Dwarf	Seedway, LLC
KF Prime 180	Pearl Millet	BMR, Dwarf	G Boucher Fertilizer
KF Prime 360	Pearl Millet	BMR, Dwarf	King's Agriseed
VNS	Japanese Millet		G Boucher Fertilizer
KF Sugar Pro 55 SS	Sorghum x Sudangrass	BMR	G Boucher Fertilizer
Green Grazer V	Sorghum x Sudangrass	Green Top	Seedway, LLC
AS6501	Sorghum x Sudangrass	BMR	G Boucher Fertilizer
AS6201	Sorghum x Sudangrass	BMR	G Boucher Fertilizer
AS5201	Sorghum x Sudangrass		G Boucher Fertilizer
King's 150	Sorghum x Sudangrass	BMR	G Boucher Fertilizer
SSA-251	Sorghum x Sudangrass	BMR, Dry stalk	Seedway, LLC
SSA-252	Sorghum x Sudangrass	BMR	Seedway, LLC
SS275	Sorghum x Sudangrass	Male sterile	King's Agriseed
AS9301	Sudangrass	BMR	King's Agriseed
AS9302	Sudangrass	BMR, Dwarf	G Boucher Fertilizer
SSAM31	Sudangrass	BMR	Seedway, LLC
SSAM32	Sudangrass	BMR, Dwarf	Seedway, LLC
Piper	Sudangrass		Seedway, LLC
Centurion	Annual ryegrass		Seedway, LLC
Fria	Annual ryegrass		Seedway, LLC
VNS	Sainfoin		Oliver Seed Co.
Cresent Sun	Sunn hemp		Oliver Seed Co.

The total fiber content of forage is contained in the neutral detergent fiber (NDF) which includes cellulose, hemicellulose, and lignin. This measure indicates the bulky characteristic of the forage and therefore is negatively correlated with animal dry matter intake. The portion of the NDF that is digestible within 30 hours is represented by NDFD30. The acid detergent fraction (ADF) is composed of highly indigestible fiber and therefore, is negatively correlated with digestibility.

Results were analyzed using a general linear model procedure of SAS (SAS Institute, 2008). Replications were treated as random effects, and treatments were treated as fixed. Mean comparisons were made using 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 varieties is likely attributable to the treatment or random variation.

second harvest. Total dry matter harvested for the season averaged 2.41 tons ac^{-1}. The sorghum x Sudangrasses produced on averaged 2.94 tons ac^{1} while the Sudangrass produced 2.87 tons ac^{-1} and the pearl millets produced 2.22 tons ac^{-1}. Total yield, as well as yield from each harvest, are summarized in Figure 1.

Table 4. Yield of 23 smaried in

Figure 1. Total yield of 23 summer annual varieties by harvest, 2021.

Forage Quality Across Cuttings

In addition to yield, quality also varied significantly across varieties (Table 5). Crude protein levels ranged from 12.6 to 26.0% and averaged 16.6% across the trial. The ADF and NDF levels were significantly lower in the annual ryegrass, sainfoin, and sunn hemp compared to all other grasses. There was also a large range in 240-hr uNDF and 30-hr NDF digestibility both across species and across varieties within a species. For

DISCUSSION

These data demonstrate the value of integrating summer annual forages into forage production systems in the Northeast. In a year with precipitation below normal and July temperatures above the 30-year normal, summer annuals produced on average 2.41 tons ac^{-1} high quality forage. In terms of 30-hr NDF digestibility, all varieties resulted in NDF digestibility greater than 65%. Varietal selection is important as varieties differ in performance in terms of yield and quality. Piper sudangrass, for example, was one of the highest yielding varieties in the trial. However, its quality was substantially lower than all the other varieties. Piper is sold primarily as a summer cover crop. In contrast to Piper sudangrass, Centurion annual ryegrass had high quality but produced one of the lowest yields. The pearl millets KF Prime 180 and Exceed also produced higher quality forage despite lower yields.

With growing summer annuals, it is important to also be aware of the risk of nitrate accumulation and the presence of prussic acid. Nitrates are considered relatively safe for feed up to 5000 ppm, however, there is a risk of excessive nitrate accumulation under excessive fertility, and immediately after a drought stressed crop receives rainfall. Additionally, sorghums, sudangrasses, and hybrids may contain prussic acid, which can be toxic. To avoid prussic acid poisoning from summer annuals:

Graze when the grasses are at least 18 inches tall.
Do not graze plants during and shortly after drought periods when growth is severely reduced.
Do not graze wilted plants or plants with young tillers.
Do not graze after a non-killing frost; regrowth can be toxic.
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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UVM Extension helps individuals and communities put research-based knowledge to work.

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