2022 PERENNIAL GRASS VARIETY TRIAL

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In 2019, the University of Vermont Extension Northwest Crops and Soils Program initiated a trial evaluating forage yield and quality of an array of cool season perennial grass species and varieties planted in monocultures. The grass species selected were Kentucky bluegrass, meadow brome, meadow fescue, orchardgrass, perennial ryegrass, and timothy. The 2022 growing season was the third full season after establishment. Monitoring the stand over multiple years will help evaluate yield, quality, survivability, pest resistance, persistence, and other characteristics of these species and varieties to identify

Table 2.

RESULTS

Weather data was recorded with a Davis Instrument Vantage Pro2 weather station, equipped with a WeatherLink data logger at Borderview Research Farm in Alburgh, VT (Table 3). In general, the fall of 2021 was warmer and wetter than normal. Winter temperatures were below normal, especially in January which saw nearly half of the days with average temperatures <10 F. Precipitation was below normal for January and February 2022. Despite a cool wet April, conditions in May were warmer with normal precipitation. However, monthly fluctuations led to June and August having cooler wetter weather and May and July having warmer drier weather. Overall, the grass trial accumulated 4008 Growing Degree Days (GDDs) in 2022, 14 above the 30-year normal.

Table 3. 2021-2022 weather data for Alburgh, VT.

	2021			2022							
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug

Table 4. Yield

Species	CP	NDF	WSC	30-hr NDFD	Milk yield
		% DM		% NDF	lbs ton^{-1}
Kentucky bluegrass	13.5ab	53.5c	11.8b	63.5d	3781bc
Meadow fescue	**13.9a**	51.1ab	12.9b	**72.7a**	**4068a**
Meadow brome	13.7ab	56.9d	9.95c	71.0ab	3702c
Orchardgrass	12.7b	56.9d	10.5c	67.0c	3796c
Perennial ryegrass	12.5b	**50.3a**	**15.1a**	68.5bc	3807c
Timothy	12.5b	52.0bc	12.8b	67.3c	3916b
Level of significance	**	***	***	***	***
Trial mean	13.0	53.4	12.3	68.5	3857

Two varieties of Kentucky bluegrass were included in this evaluation (Table 7). In 2022, the two varieties performed similarly to one another in yield and most quality parameters, as was also observed in 2021. Through the season they averaged 2.38 tons ac^{-1} at 13.5% protein and 63.5% NDF digestibility. The two varieties did differ slightly in WSC content with Balin averaging 1.5% higher than Ginger across the season. However, dry matter, quality components, and predicted milk yields were similar between the two varieties on a per acre basis. The two varieties also exhibited similar maturation timing heading around 21-May.

Table 7. Yield and quality of two varieties of Kentucky bluegrass, 2022.

Variety	1st cut	2nd cut	3rd cut	Season yield	CP	30-hr digestible NDF	WSC	Milk yield
	Dry matter tons ac^{-1}				tons ac^{-1}			
Balin	0.699	0.839	**0.763**	2.30	0.304	0.763	**0.277**	4.36

The varieties did differ slightly in maturation timing with all varieties, except Preval, heading around 30-May. Preval headed

Perennial Ryegrass

Six varieties of perennial ryegrass were included in this evaluation (Table 11). Perennial ryegrass is the least cold hardy species included in this trial and therefore, may not be recommended for your specific location. Sites with prolonged periods of cold temperatures with little to no insulation from snow cover during the winter can lead to reduced survival and productivity.

Table 11. Yield and quality of six varieties of perennial ryegrass, 2022.

Variety	1st cut	2nd cut	3rd cut	Season yield	CP	30-hr digestible NDF	WSC	Milk yield
	Dry matter tons ac^{-1}					tons ac^{-1}		
Calibra	0.271	0.707	0.000	0.978	0.088c	0.293	0.149	1.71
Kentaur	0.252	0.832	0.000	1.08	0.104bc	0.361	0.161	1.87
Remington	0.251	**1.17**	0.000	**1.42**	**0.142a**	**0.449**	0.161	**2.37**

Table 13. Dry matter yield for 30 varieties of six perennial grass species, 2022.

Species	Variety	Heading date	DM Yield			Total
			1st cut	2nd cut	3rd cut	
			20-May	7-Jul	24-Aug	
Kentucky Bluegrass	Balin	21-May	0.699	0.839	**0.763**	2.30
	Ginger	21-May	**0.948**	**0.975**	0.540	**2.46**
Species mean			0.824	0.907	0.652	2.38
Meadow Brome	Fleet	25-May	1.27	1.30	1.01	3.58
	Macbeth	25-May	1.69	1.29	1.38	4.36
	Montana	25-May	1.36	0.470	0.886	2.71
Species mean						
Meadow Fescue	Laura	30-May	0.715	1.38	0.687	2.78
	Liherold	30-May	**0.852**	1.10	0.975	2.92
	Preval	3-Jun	0.645	**1.39**	**1.19**	**3.23**
	SW Minto	30-May	0.540	1.06	0.616	2.21
	Tetrax	30-May	0.692	0.720	1.03	2.45
[redacted]				1.13	0.900	2.72
			[redacted]	1.23	0.990	2.85
Orchardgrass	Harvestar	28-May	**1.22**	1.30	1.04	3.56
	Husar	30-May	0.768	1.09	0.795	2.65
	Inavale	30-May	0.663	1.44	0.721	2.82
	Luxor	28-May	1.09	1.22	1.08	3.40
	Niva	28-May	1.02	1.57	1.05	3.64
	Olathe	25-May	0.994	**1.66**	**1.28**	**3.94**
	Otello	23-May	1.20	1.31	1.04	3.56
Species mean			0.950	1.35	1.00	3.30

[redacted]

Table 14. Average quality of 30 varieties of six perennial grass species, 2022.

Species	Variety

Species	Variety	CP	WSC	NDF	30-hr NDF digestibility	CP	WSC	30-hr digestible NDF	Predicted milk yield

Figure 2. Dry matter yields over three harvests, 2022.