WARM SEASON GRASS SPECIES TRIAL

Forage production plays a critical role in supporting livestock systems across Alberta. In north central Alberta, most pasture and forage systems are dominated by cool-season grasses such as bromegrass, timothy, and various cereals like barley, oat, and triticale. However, their growth often slows during the hotter and drier months of summer, which can create a shortage of available forage for grazing livestock during mid to late summer (Beef Cattle Research Council, 2023). Warm-season grasses can offer a potential alternative to address this seasonal forage gap. Unlike cool-season species, warm-season grasses use the C4 photosynthetic pathway, which allows them to grow more efficiently under high temperatures and limited water conditions. Their ability to maintain growth during hot and dry periods makes them particularly valuable in regions where drought and heat stress can reduce forage production.

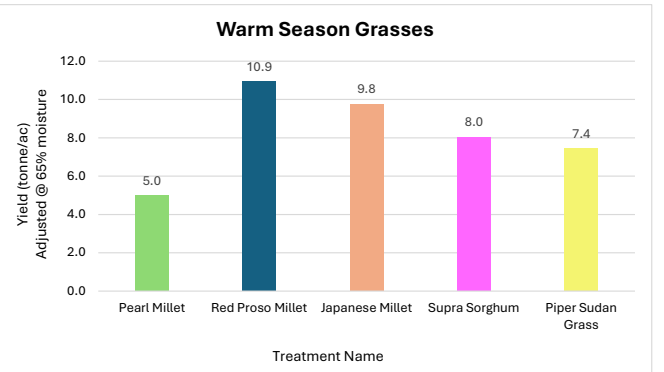
Despite their potential benefits, limited research has been conducted to evaluate the performance of these warm-season grasses under the specific climatic and soil conditions of north central Alberta. The region's relatively short growing season and cold winters present unique challenges for establishing and managing warm--season forage crops. With producer interest in seeing small-plot data, Gateway Research Organization (GRO) conducted a replicated trial in 2025 to evaluate the establishment, biomass production, and overall forage potential of several species, including Pearl Millet, Japanese Millet, Red Proso Millet, Supra Sorghum, and Piper Sudan Grass.

AGRONOMICS:

Seeded: June 9, 2025
Seed Depth: ¾ inch
Soil Temp: 20°C
Rainfall recorded: June 9 to Oct. 7, 2025: 162.4 mm
Fertilizer:
- Side Banded: 28.29-5.78-15.42-1.93 @ 311.28 lbs/ac
  - 88 lbs/ac Actual N; 18 lbs/ac Actual P; 48 lbs/ac Actual K; 6 lbs/ac Actual S
- Seed Placed: 11-52-0 @ 53.5 lbs/ac
  - 5.8 lbs/ac Actual N; 27.8 lbs/ac Actual P

Pre-emergence: Glyphosate @ 280 g ae/ac on June 10, 2025
Harvested: Oct. 7, 2025

RESULTS AND DISCUSSION:



The Westlock area is not typically known for growing warm season grasses due to its relatively short and cool growing season. However, yield results from this trial show that Red Proso Millet and Japanese Millet had significantly higher yields in tonnes/ac compared to the other treatments in the trial, indicating that these two treatments may be best suited to growing in north central Alberta's climatic conditions. Supra Sorghum and Piper Sudan grass performed next best followed by Pearl Millet which had a significantly lower yield than the rest of the treatments in the trial.

Piper Sudan Grass is typically known to out yield Red Proso and Japanese Millet, however, it requires higher temperatures to perform well as its growth is drastically slowed when temperatures are not in the ideal range, reducing total biomass production. Millets are better adapted to cooler conditions which may explain the results observed. Recorded heights for Pearl Millet were drastically lower than the rest of the treatments in the trial with the average height being only 72 cm tall, whereas the rest of the treatments in the trial averaged over 100 cm, which could explain the significantly lower yield.

WARM SEASON GRASSES - GRO, WESTLOCK - 2025

Trt No.	Treatment Name	Crude Protein %	ADF %	NDF %	TDN %	Calcium %	Phosph-orous %	Potas-sium %	Magne-sium %	RFV
1	Pearl Millet	13.22	29.64	57.22	75.45	0.53	0.12	1.84	0.38	106.99
2	Red Proso Millet	11.91	24.94	47.76	67.61	0.28	0.14	2.06	0.22	135.31
3	Japanese Millet	11.29	29.44	54.14	71.61	0.68	0.14	1.57	0.41	113.35
4	Supra Sorghum	8.75	24.66	49.57	76.23	0.39	0.14	1.62	0.22	130.78
5	Piper Sudan Grass	8.34	33.28	63.29	61.92	0.25	0.14	0.87	0.17	92.55

on a dry matter basis

Looking at the feed analysis results on a dry matter basis, Red Proso Millet had the highest RFV, followed closely by Supra Sorghum, indicating that these two treatments provided the highest overall forage quality. Pearl Millet had the highest percentages of crude protein and second highest TDN; however, its relatively high levels of ADF and NDF ultimately reduced its overall quality. Piper Sudan Grass had the lowest RFV, which is consistent with its high ADF and NDF levels and comparatively low crude protein, TDN, and mineral concentrations. Japanese Millet ranked in the middle across most measures, reflecting moderate forage quality relative to the other treatments.

It is worth keeping in mind that these treatments might not have reached their full potential. Some were harvested while still flowering, so the lab-measured forage quality may not represent the highest quality they could offer.

ACKNOWLEDGEMENTS:

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