

Project Title: 2022 Sorghum Sudangrass Planting Date

Objective: To identify the effect of planting date and harvest date on sorghum sudangrass yield and forage quality in northwestern Montana

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Summary:

Sorghum sudangrass was planted on three dates: May 1st, May 15th, and June 1st of 2022. All planting date treatments were harvested at three distinct harvest dates: August 1st, August 15th, and September 15th. Treatments that were harvested on August 1st and August 15th were harvested again on September 15th to assess the amount of regrowth that occurred between the first harvest event and the end of the growing season (Table 1).

There was no significant difference on forage yield or plant heights between planting dates, however there was a significant increase in yield as harvest date was delayed. The September 15th harvest date showed a significantly higher yield across planting dates, with an average of 23.4 tons/A. The August 15th harvest date also had a significantly higher yield than the August 1st date, yielding 15 tons/A and 8.1 tons/A, respectively (Table 3). This trend is also true for plant height at harvest. The September 15th harvest had an average height of 147.2 cm while the August 1st harvest had an average height of 87.5 cm (Table 3). The regrowth was significantly higher for the August 1st regrowth harvest than the August 15th regrowth harvest, as the earlier harvest date had more time for regrowth. The total forage yield, a combination of main harvest and regrowth harvest was comparable, at 16.4 ton/A for August 1st and 16.7 for August 15th (Table 3).

Nitrate levels declined as harvest date was delayed. Nitrate levels were near 120 ppm for the August 1st harvest and declined to near 40 ppm by the September 15th harvest date (Figure 2). Protein levels also decreased as harvest was delayed. Protein levels were near 12% when sorghum sudangrass was harvested August 1st and decreased to near 5% by the September 15th harvest date (Figure 3). ADF levels increased as harvest was delayed, and ADF was significantly lower for the June 1st planting date, compared to earlier planting dates (Figure 4).

Table 1. Management information

Seeding date: 5/1, 5/15, 6/1	Field Location: X4
Julian date: 122, 135, 152	Harvest date: 8/1, 8/15, 9/15
Seeding rate: 9 plt/ft ²	Julian date: 213, 227, 258
Previous crop: Canola	Soil type: Creston Silt Loam
Herbicide: 2, 4-D @ 12 oz/A & Destiny HC @6.4 oz/A 6/7/22	Tillage: Conventional
Insecticide: NA	Soil residual nutrient (NO₃⁻¹, P, K lb/A): 109-16-312
Fungicide: NA	Nutrient fertilizer applied (N, P₂O₅, K₂O lb/A): 100-20-30

Table 2. Agronomic performance by planting date

Planting Date	Weight (ton/A)	Height (cm)
May 1 st	16.0	116.0
May 15 th	16.4	119.8
June 1 st	14.1	116.4
Mean	15.5	117.4
C.V.	11.1	5.6
PR>F	0.091	0.459

Table 3. Agronomic performance by harvest date

Harvest Date	Main Harvest		*Regrowth Harvest		Total Yield (ton/A)
	Yield (ton/A)	Height (cm)	Yield (ton/A)	Height (cm)	
1st August	8.1 c	87.5 b	8.3 a	83.5 a	16.4
15th August	15.0 b	-	1.7 b	45.0 b	16.7
15th September	23.4 a	147.2 a	-	-	23.4
Mean	15.5	117.4	5.0	64.3	
C.V.	18.1	5.4	32.6	13.7	
LSD	2.4	5.5	1.4	7.5	
PR>F	<.001	<.001	<.001	<.001	

*Regrowth harvested 15-Sep

Letters represent differences ($\alpha=0.05$)

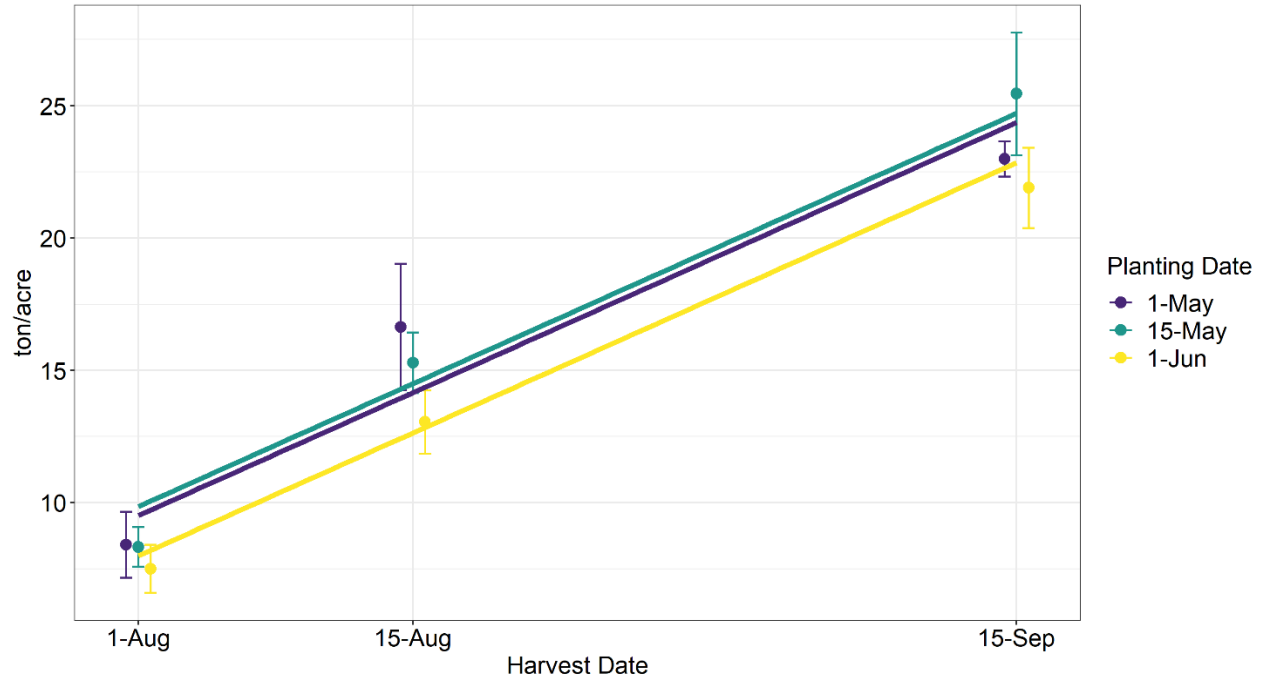


Figure 1. Forage yield (ton/A)

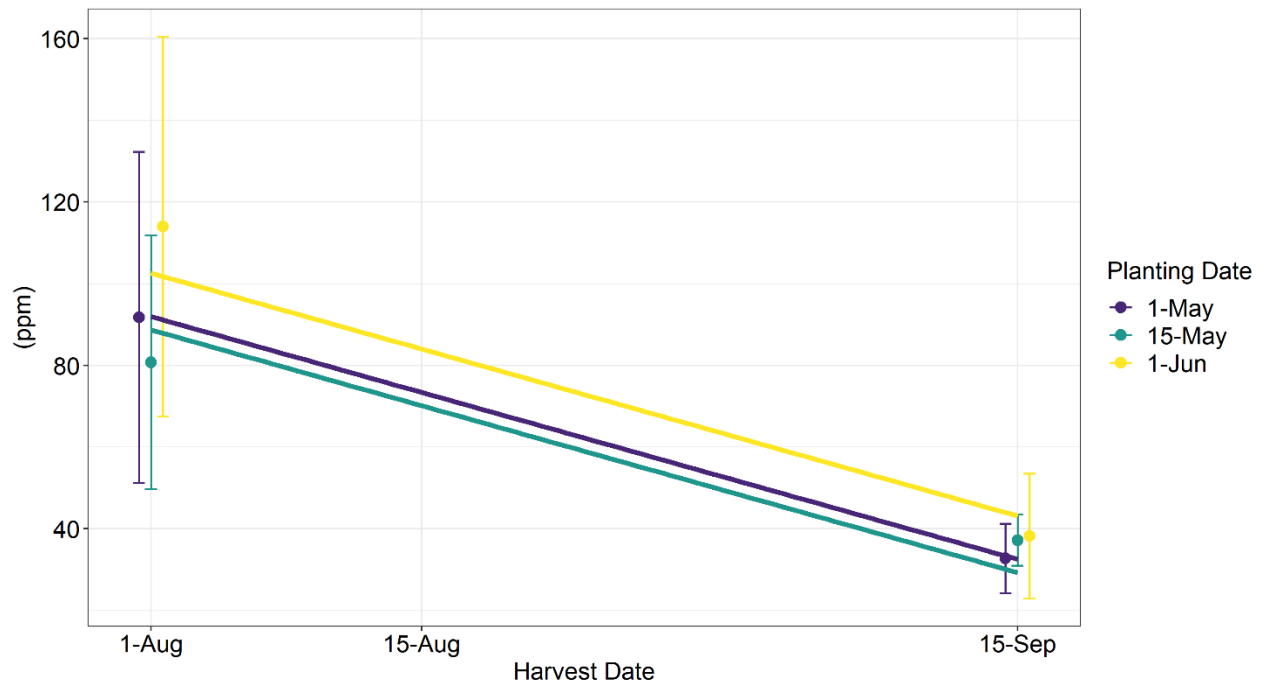


Figure 2. Nitrate (ppm)

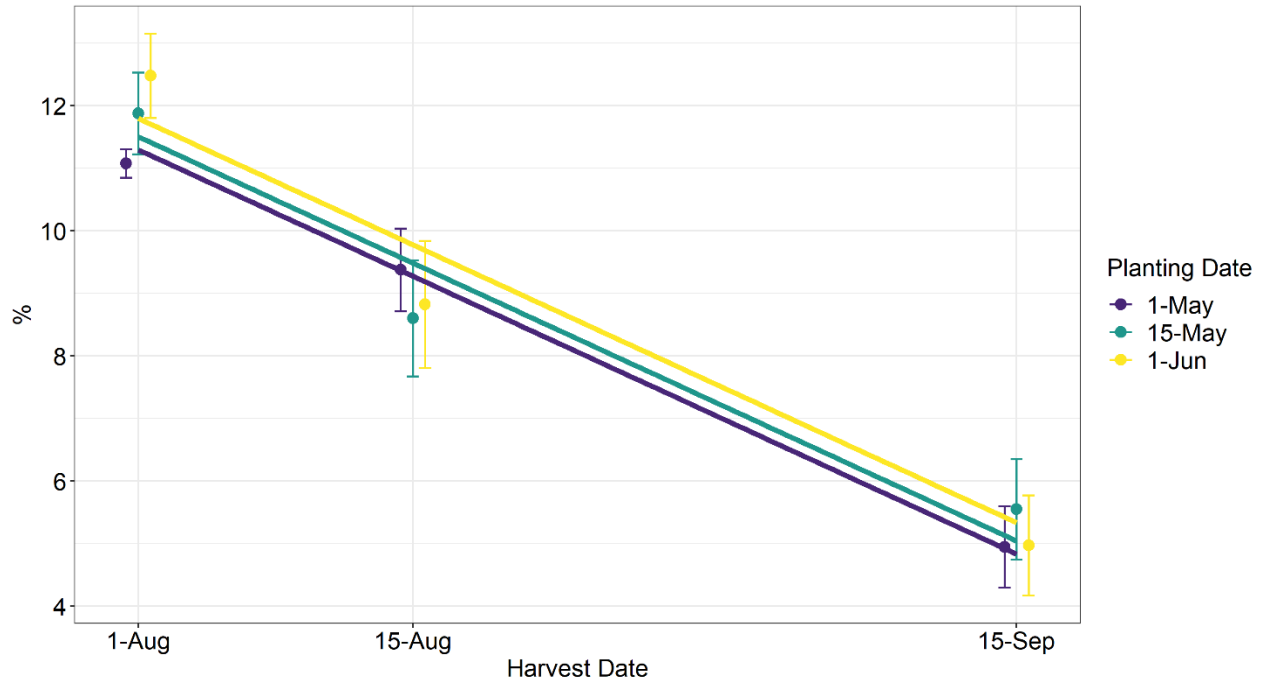


Figure 3. Protein (%)

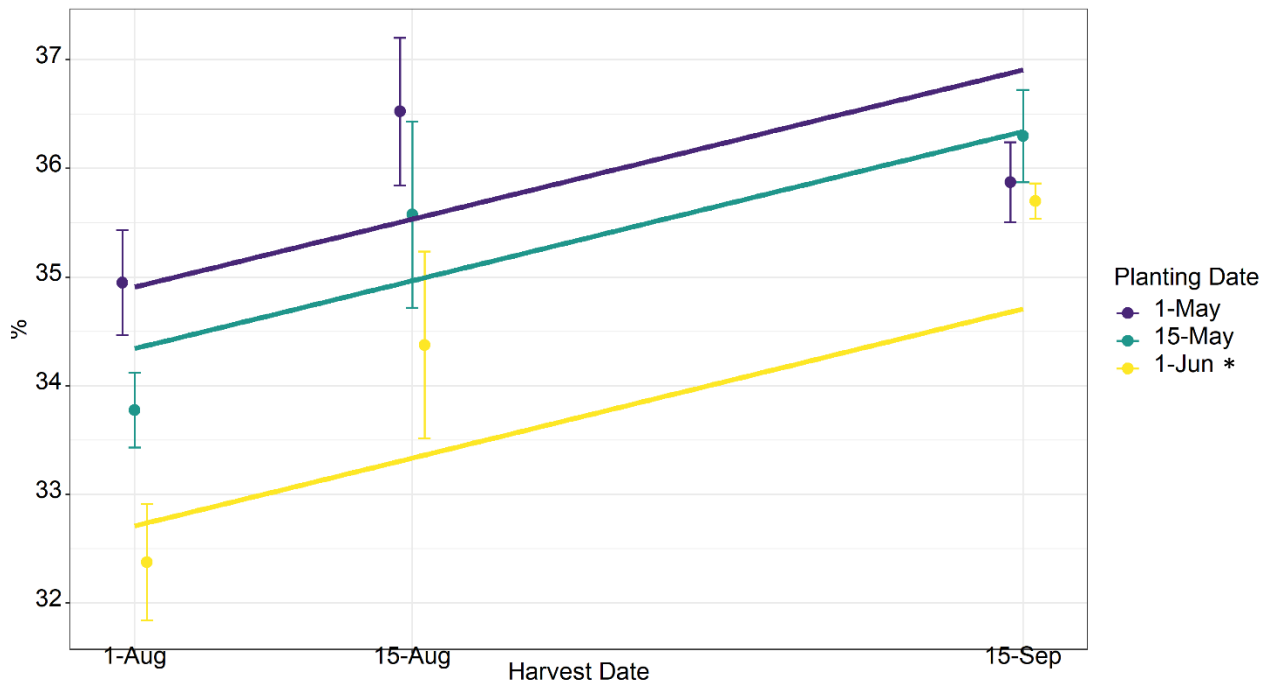


Figure 4. ADF (%)