Alfalfa Variety Trial at the Southeast Research Farm – 2025 Season

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Introduction

Alfalfa is an important crop in South Dakota. South Dakota was the second leading state in the country for the number of acres in alfalfa production in 2024. The USDA-NASS reported 1.51 million acres of alfalfa (hay and haylage combined) were raised in South Dakota in 2024 with an estimated value of $396 million dollars. The high forage value of alfalfa and its robust nature make it an important crop for many ruminant nutrition programs, and especially critical for profitable dairy production. The following is a report on forage yields observed in the second year of an alfalfa variety trial established in the spring of 2024 at the SDSU Southeast Research Farm in Beresford, South Dakota.

Methods

The trial is laid out in a randomized complete block design with five replications and direct seeded into soybean stubble on 12 April, 2024 at a seed rate of 15 lb/ac or 60 seeds/ft^2, whichever was greater for the given seedlot. Plot size is 5' by 20'. Soil fertility levels were maintained at university recommendations and pest control took place as needed across the entire plot area. Whole plot yields were taken using a forage harvester (Model SMW-SCH-48; Swift Machine & Welding, Swift Current, Saskatchewan, Canada) on May 30, June 27, July 27, and August 25, 2025. Subsamples of fresh material were weighed and dried at 140˚ F to determine percent moisture. All yield data are presented on a dry weight basis. The means were individually compared to the highest yielding line for that cutting and separated with an LSD test ($P < 0.10$) using SAS statistical software.

Results

The fall of 2024 was relatively dry, leaving little moisture reserve going into spring. The first half of June was warm and dry with temperatures breaking the 100 F mark in the third week of June. However, the weather shifted with heavy rains at the end of June and into July (Fig. 1 and 2). Temperatures were moderate for July and August, which further favored later season growth. Yield data for each cutting and total production for the establishment year for the lines in the trial are shown in Table 1. The lines are listed in order of highest total production for the year to the least. The fourth cutting showed some significant differences between lines, but this was not reflected in total yield for the season. This trial will be continued for one more season.

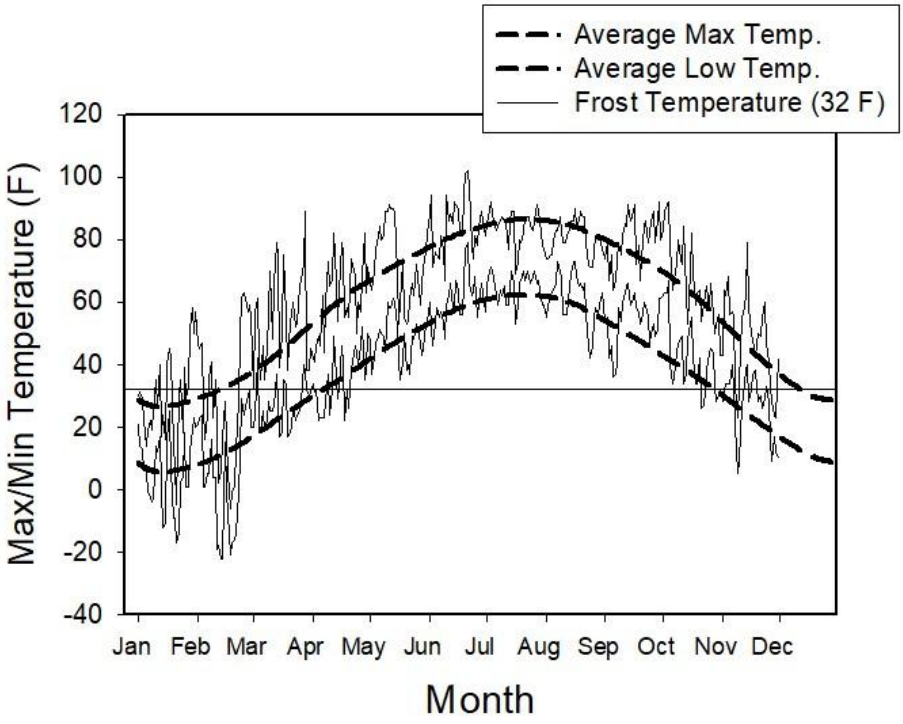

Figure 1. Daily maximum and minimum temperatures in 2025 recorded at the SDSU Southeast Research Farm in Beresford, South Dakota. Note the high temperatures in mid-June and the relatively mild temperatures in July and August. This corresponded with drought stress which developed in June followed by a rainy period which started on June 23 and ran through July.

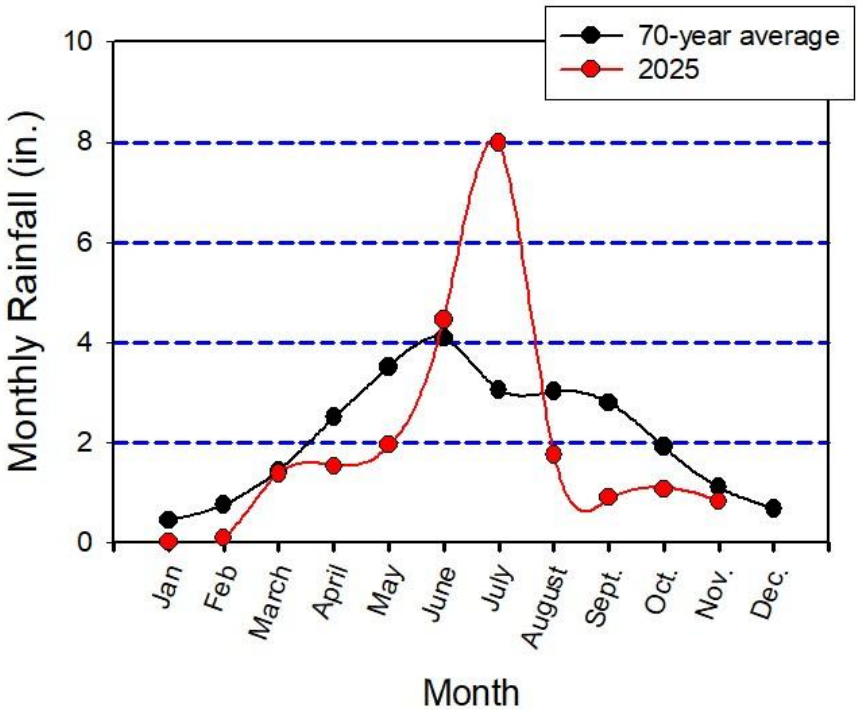

Figure 2. Monthly rainfall from January through November of 2025 plotted with the 70 year average monthly rainfall at the SDSU Southeast Research Farm in Beresford, South Dakota. Eighty percent of the rainfall in June came in the last week of that month (i.e., 3.53” out of 4.46” total).

Table 1. Dry matter yields in tons per acre from the second year of an alfalfa variety trial conducted at the SDSU Southeast Research Farm in Beresford, South Dakota, in 2025. Plots were harvested on the dates indicated with a forage harvester and whole plot fresh weight determined, subsamples were taken for measurement of percent moisture and dry yield was calculated using the subsample moisture percentage. The lines are listed in order of highest total production for the year to the least.

LINE	5/30 CUT 1	6/27 CUT 2	7/25 CUT 3	8/25 CUT 4	TOTAL
	(tons/ac)	(tons/ac)	(tons/ac)	(tons/ac)	(tons/ac)
AFX184024	1.31	0.52	1.40	**1.40**	4.64
R. Final Answer	1.30	0.53	1.38	**1.37**	4.58
374 HD	1.18	0.49	1.43	**1.43**	4.54
Mustang 625	1.22	0.47	1.36	**1.34**	4.40
DB AquaMaxx	1.15	0.49	1.40	**1.31**	4.36
Check	1.17	0.44	1.37	1.30	4.29
Mustang 425 HD	1.12	0.43	1.34	**1.37**	4.26
R. Prime Cut	1.08	0.46	1.35	**1.32**	4.20
394 AP	1.13	0.43	1.34	1.27	4.17
AFX20WH62AY	1.02	0.40	1.41	**1.31**	4.14
Finch	1.13	0.37	1.35	1.29	4.13
AFX184034	1.02	0.47	1.34	1.28	4.12
AFX20WH57AA	1.07	0.43	1.35	1.26	4.11
Mustang 995	1.02	0.44	1.34	1.29	4.10
Ladak-DL	1.11	0.33	1.33	1.27	4.03
GA-429	1.00	0.45	1.26	1.23	3.94
AFX185070	1.09	0.38	1.28	1.17	3.91
Exp. 2450	0.97	0.44	1.28	1.18	3.88
DB Heavy Weight	0.96	0.45	1.25	1.20	3.86
Mean	*1.11*	*0.44*	*1.35*	*1.29*	*4.19*
CV (%)	*18.6*	*23.0*	*6.7*	*8.0*	*9.2*
LSD (0.10)	*NS*	*NS*	*NS*	*0.12*	*NS*