South Dakota State University
College of Agriculture, Food and Environmental Sciences

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South Dakota Agricultural Experiment Station at SDSU

Alfalfa Variety Trial at the Southeast Research Farm – 2024 Season

Sara Bauder | SDSU Extension Forage Field Specialist
Brad Rops | Operations Manager, Southeast Research Farm
Peter Sexton[1] | Associate Professor and SDSU Extension Alternative Ag Systems Specialist
Joslyn Fousert | Graduate Research Assistant

1 Corresponding author: Peter.Sexton@sdstate.edu

S-0002-2024-13-A

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Introduction

South Dakota led the country in the number of acres in alfalfa production in 2023*. The USDA-NASS reported 1.75 million acres of alfalfa (hay and haylage combined) were raised in South Dakota in 2023 with an estimated value of $693 million dollars for the state**. 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 first year of an alfalfa variety trial established in the spring of 2024 at the SDSU Southeast Research Farm in Beresford, South Dakota.

Methods

The plots were laid out in a randomized complete block design with five replications and were direct seeded into soybean stubble on 12 April, 2024 at a seed rate of 15 lb/ac or 60 seeds/ft2, 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 June 28, July 30, and Sept. 4, 2024. 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

This past season was marked by heavy rains in April, May, and June (5.07, 6.25, and 7.24" per month, respectively) followed by dry weather from July through October (see weather summary at the beginning of this annual report). Temperatures trended below average for July and August, which slowed down development of drought stress. Yield data for each cutting and total production for the establishment year for the lines in the trial are shown in Table 1. The third cutting showed some differences between lines, but this was not reflected in total yield for the season.
In previous alfalfa variety trials run at the Southeast Farm, greater separation between lines tends to develop as the trial progresses. This trial will be continued for two more seasons.

* See https://www.progressivepublish.com/downloads/2024/general/2023-pf-stats-lowres.pdf

** See https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=SOUTH%20DAKOTA

Acknowledgement

The authors appreciate the contributions of the South Dakota Agricultural Experiment Station to support this research.

Table 1. Dry matter yields in tons per acre from the first year of an alfalfa variety trial conducted at the SDSU Southeast Research Farm in 2024. Plots were direct-seeded on 12 April 2024 with a small plot drill into soybean stubble. Plots were harvested on the dates indicated with a forage harvester and whole plot fresh weight was determined, subsamples were taken for measurement of percent moisture and dry yield was calculated using the subsample moisture percentage. This is the first season of a three year study.

Line	28-June 1st Cut (dm ton/ac)	30-July 2nd Cut (dm ton/ac)	4-Sept. 3rd Cut (dm ton/ac)	Year 1 Total (dm ton/ac)
Ladak-DL	1.56	1.16	**1.11**	3.83
AFX184024	1.31	1.15	**1.04**	3.50
Mustang 625	1.39	1.09	**1.01**	3.49
AFX184034	1.15	1.30	**0.96**	3.47
DB AqualMaxx	1.30	1.16	**1.00**	3.47
R Final Answer	1.27	1.16	**1.03**	3.46
Finch	1.17	1.23	**1.05**	3.44
EXP. 2450	1.33	1.15	0.92	3.40
374HD	1.34	1.11	**0.93**	3.38
DB Heavy Weight	1.24	1.12	0.82	3.37
Check	1.23	1.07	**1.05**	3.35
AFX20WH62AY	1.23	1.22	0.87	3.31
AFX20WH57AA	1.25	1.11	0.87	3.23
Mustang 425 HD	1.30	1.10	0.80	3.19
394 AP	1.31	1.08	0.78	3.17
Mustang 995	1.19	1.09	0.81	3.09
GA-429	1.06	1.08	0.83	3.03
R Prime Cut	0.99	1.11	0.78	2.88
AFX175070	0.98	1.00	0.79	2.72
Mean	1.24	1.13	0.91	3.30
CV (%)	20.6	11.1	14.1	11.2
LSD (0.10)	NS	NS	0.18	NS