SDSU Extension

agronomy

South Dakota Agricultural Experiment Station Research at SDSU

MAY 2019

SOUTH DAKOTA STATE UNIVERSITY®
AGRONOMY, HORTICULTURE, & PLANT SCIENCE DEPARTMENT

Alfalfa Variety Trial at the Southeast Research Farm 2018 Season

P-00103

South Dakota State University
2018 Progress Report
Agricultural Experiment Station
Agronomy, Horticulture, & Plant Science Department
South Dakota State University, Brookings, SD 57007
Southeast Research Farm, Beresford, SD 57004

Alfalfa Variety Trial at the Southeast Research Farm – 2018 Season

Sara Bauder, Karla Hernandez,
Brad Rops, and Peter Sexton*

INTRODUCTION

Alfalfa is an important crop for most ruminant nutrition, and it is critical for profitable dairy production. South Dakota ranks fourth in the nation, behind California, Idaho, and Montana, in alfalfa production with approximately 1.5 million acres harvested in the state in 2017 (USDA-NASS, 2018). Variety selection is an important component of profitable alfalfa production. The following is a report on yields observed in an alfalfa variety trial being conducted at the SDSU Southeast Research Farm. This is the third year of a small plot study with 21 lines.

METHODS

The plots were laid out in a randomized complete block design with four replications. Plot size is 4' by 25'. Plots were end-trimmed to approximately 20' length and plot lengths recorded immediately before harvest and then whole plot yields were taken using a forage harvester (Model SMW-SCH-48; Swift Machine & Welding, Swift Current, Saskatchewan, Canada) at approximately 4 week intervals: 24 May, 27 June, 27 July, and 29 August, 2018. 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. Because of rainfall during the winter, alfalfa stands were damaged in a swale in the plot area. Data was subjected to standard ANOVA. Where treatment effects were statistically significant ($P < 0.10$), 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

Yield data for each cutting and total 2018 production, as well as 2016 and 2017 production are shown in Table 1. Average yield over the season for these plots was 6.22 tons per acre on a dry matter basis, ranging from 5.50 to 8.01 ton/ac. Monthly weather data for the period of January through September 2018, is shown in Table 2 (average temperature) and Table 3 (rainfall) at the end of this report. June was an exceptionally wet month with 8.1" of rainfall recorded at the research farm.

ACKNOWLEDGEMENT

Authors thank the SDSU Southeast Research Farm at Beresford for all the technical help with this project and for the contributions of the South Dakota Agricultural Experiment Station to support this project.

* *Corresponding author: Peter.Sexton@sdstate.edu*

Table 1. Forage yield on a dry matter basis during the third year of growth (2018 season) for 21 lines of alfalfa evaluated at the SDSU Southeast Research Farm, Beresford, SD. Data are based on whole plot (4' by 20') yields in a replicated trial. Harvest dates were 24 May, 27 June, 27 July, and 29 August 2018. Variety effects were statistically significant (P<0.10) for the third and fourth cuttings, and for the season total yield. Lines are sorted according to total yield for the 2018 season. The LSD values were calculated with three replications to allow for missing data and are shown at the bottom of the table.

Line		1st Cut May 24	2nd Cut June 27	3rd Cut July 27	4th Cut Aug. 29	2018 Total	2017 Total	2016 Total
Leyenda	Legend Seeds	2.45	2.20	**2.00**	**1.37**	**8.01**	**7.29**	**2.38**
8420	Wilbur Ellis Company	2.21	1.85	**1.71**	**1.11**	**7.12**	**7.06**	**2.56**
AFXH143146	Dairyland	2.29	1.91	**1.62**	**1.21**	**7.02**	**6.78**	**2.43**
GA-497 HD	Preferred Alfalfa Genetics	2.19	1.88	**1.68**	**1.13**	**6.89**	**6.57**	**2.40**
4H400	Mycogen	2.16	1.78	1.55	1.07	6.55	**5.99**	**2.46**
HybridForce 3420/West	Dairyland	2.27	1.67	1.45	1.01	6.40	**5.93**	**2.58**
GA-409	Preferred Alfalfa Genetics	2.16	1.69	1.48	1.03	6.37	**6.46**	**2.42**
FSG 426	Farm Science Genetics	2.16	1.72	1.40	1.00	6.27	**6.81**	2.24
8444R	Wilbur Ellis Company	2.13	1.69	1.47	1.00	6.25	5.51	2.14
FSG 423ST	Farm Science Genetics	2.18	1.68	1.38	0.96	6.19	5.50	**2.44**
8450	Wilbur Ellis Company	2.24	1.70	1.30	0.93	6.17	**6.14**	**2.30**
Mustang 420+	Mustang Seeds	2.05	1.69	1.42	1.00	6.16	**6.46**	2.17
Bobolink	Blue River Hybrids	2.12	1.51	1.39	1.00	6.01	5.74	2.29
HybriForce 3430	Dairyland	2.28	1.54	1.26	0.90	5.99	5.74	2.08
FSG 415 BR	Farm Science Genetics	2.17	1.54	1.27	0.96	5.95	5.58	**2.36**
AFXH144110	Dairyland	2.24	1.58	1.15	0.86	5.83	5.21	**2.36**
Mustang 620 Aph 2	Mustang Seeds	2.15	1.59	1.13	0.82	5.69	5.38	1.95
FSG 403LR	Farm Science Genetics	2.21	1.42	1.13	0.84	5.60	4.61	2.16
Robin	Blue River Hybrids	2.16	1.48	1.13	0.79	5.57	5.81	2.28
Roadrunner	Blue River Hybrids	2.09	1.42	1.24	0.81	5.56	5.20	2.09
DG 4210	Dyna-Gro	2.10	1.44	1.16	0.80	5.50	4.66	1.96
	Mean	*2.19*	*1.67*	*1.40*	*0.98*	*6.22*	*5.92*	*2.29*
	CV (%)	*6.6*	*17.4*	*21.8*	*20.5*	*14.1*	*17.2*	*10.5*
	LSD (0.10)	*NS*	*NS*	*0.41*	*0.27*	*1.19*	*1.39*	*0.29*