RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2016

The Annual Report of the Investigations at and Administration of the
Southern Agricultural Research Center, Huntley, Montana

http://www.sarc.montana.edu/annualreport/2016/

PROJECT TITLE:

Intrastate Alfalfa Yield Trial Performance under Irrigated Condition near Huntley, Montana. Established in 2013. (Exp. 16IAYT09).

PROJECT LEADERS:

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PROJECT PERSONNEL:

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OBJECTIVES:

To provide alfalfa growers in south central Montana with a reliable, unbiased, up-to-date source of information that will permit valid comparisons among alfalfa varieties. This information should help alfalfa producers in south central Montana select varieties best suited to their particular area and growing conditions.

METHODS:

The irrigated alfalfa trial had 13 entries with 3 check varieties and was planted in 2013 using a randomized complete block design with 3 replications. Test plots consisted of a 25-foot, 7-row plot with 7-inch row spacing. All test plots were divided into about 20 feet of yield area and 5 feet of border area for harvest purposes. Plots were cut using an experimental-plot forage harvester. Alfalfa yields are reported in tons of dry matter per acre.

RESULTS and SUMMARY:

Unusually warm and dry conditions prevailed during the preceding fall and winter months at Huntley (Table 3). Although conditions remained warmer than average during March, April and May of 2016, precipitation also was above average during those months. June growing conditions were much warmer than normal with less than average precipitation.

Agronomic performance of the alfalfa varieties and experimental lines tested during 2016 under irrigated conditions near Huntley is presented in Table 1. Irrigated alfalfa plots were cut four times during 2016. First cutting alfalfa production averaged 2.13 ton/ac and ranged from 1.86 ton/ac for 'Baracade SLT' to 2.51 ton/ac for 'Ameristand 445NT'. '55Q27', '55VR05', 'Ameristand 201T', 'Baracade SLT', 'IS-1035', 'Ladak 65' (check variety), 'Ladak II', 'PGI 212', and 'Venus 4 + T' produced yields from 2.08 to 2.36 ton/ac, statistically equal to the highest yields entry. Second cutting alfalfa production averaged 2.09 ton/ac and ranged from 1.83 ton/ac for 'Cooper' check variety to 2.34 ton/ac for 'PGI 212'. '55Q27', '55VR05', '9111MF', 'DG4210', 'PGI 212', 'Shaw (check variety), and 'Venus 4 + T' produced yields from 2.13 to 2.27 ton/ac, statistically to the highest yielding entry. Third cutting alfalfa production averaged 1.87 ton/ac and ranged from 1.62 ton/ac for '9111MF' to 2.02 ton/ac for 'Venus 4 + T'. Fourth cutting alfalfa production averaged 1.13 ton/ac and ranged from 0.93 ton/ac for 'Matrix' to 1.34 ton/ac for 'Ladak II'. There was no siginificant difference in the yields for the third or fourth cutting.

Total irrigated alfalfa production averaged 7.21 ton/ac for the 2016 growing season and ranged from 6.67 ton/ac for '9111MF' to 7.88 ton/ac for 'Ameristand 445NT'. '55Q27', '55VR05', 'Ameristnad 201T', 'Baracade SLT', 'DG 4210', ''IS-1035', 'Ladak II', 'PGI 212', and 'Venus 4 + T' produced yields from 7.12 to 7.76 ton/ac, statistically equal to the highest yielding entry.

The three-year total for the years from 2014-2016 averaged 22.45 ton/ac and ranged from 20.67 for 'Matrix' to 24.60 ton/ac for 'Ameristand 445NT'. '55Q27', '55VR05', 'DG 4210', 'IS 1035', 'Ladak II', 'PGI 212', and 'Venus 4 + T' produced yields from 22.79 to 24.22, which were statistically equal to the highest yielding entry.

FUTURE PLANS:

The irrigated alfalfa evaluation trial established in 2013 at the Southern Agricultural Research Center will not continue through 2017 per trial protocols.

Table 1. Yield of 16 alfalfa varieties tested under irrigated conditions near Huntley, MT from 2014 through 2016.[1/]

Cultivar	2014 Total	2015 Total	2016[2/ 3/] Cut 1	Cut 2	Cut 3	Cut 4	Total	3 yr Total[4/]
	tons dry matter / acre							
55Q27	7.77	9.43	**2.36***	**2.21***	1.98	0.98	**7.56***	**23.47***
55VR05	8.20	8.22	**2.20***	**2.21***	1.82	1.07	**7.31***	**22.79***
9111MF	5.72	8.64	1.93	**2.11***	1.62	0.99	6.67	20.89
Ameristand 201T	6.66	9.63	**2.08***	1.99	1.94	1.10	**7.10***	22.16
Ameristand 445NT	7.64	9.13	**2.51****	2.07	1.99	1.20	**7.88****	**24.60****
Baracade SLT	6.73	8.84	1.86	2.01	1.88	1.32	**7.12***	22.00
Cooper (Check)	6.22	8.60	2.00	1.83	1.82	1.13	6.77	21.32
DG 4210	8.03	8.75	**2.34***	**2.14***	1.94	1.19	**7.57***	**23.53***
FSG423ST	6.38	8.80	1.93	2.04	1.80	1.18	6.93	21.49
IS-1035	6.81	11.03	**2.33***	2.00	1.99	1.18	**7.42***	**22.90***
Ladak 65 (Check)	6.63	8.25	**2.11***	1.94	1.65	1.02	6.78	21.11
Ladak II	6.94	8.96	**2.15***	2.05	1.81	1.34	**7.37***	**22.98***
Matrix	5.46	7.31	1.95	2.03	1.71	0.93	6.60	20.67
PGI 212	7.17	8.24	**2.25***	**2.34****	1.93	1.25	**7.76***	**24.22***
Shaw (Check)	6.66	8.55	1.98	**2.13***	1.97	1.02	7.05	22.02
Venus 4 + T	6.56	8.35	**2.09***	**2.27***	2.02	1.16	**7.50***	**23.01***
Mean	6.85	8.79	2.13	2.09	1.87	1.13	7.21	22.45
P-value	<.0001	0.0553	0.0026	0.0239	0.4279	0.0823	0.0084	0.0084
CV (%)	7.8	11.3	7.5	6.5	11.3	13.8	5.2	5.0
LSD (0.05)	0.89	ns	0.29	0.25	ns	ns	0.69	2.09
Lattice RE (%)[5/]	94	96	122	124	102	98	117	128

**Denotes highest yielding entry totaled from 2014 to 2016.

* Denotes entries yielding equal to the highest yielding entry based on Fisher's Protected LSD at the 0.05 probability level.

[1/]Trial planted 1 May 2013.

[2/]Plots were harvested 24 May, 6 July, 17 August, and 10 October 2016.

[3/]Plots were irrigated 25 May, 7 June, 29 June, 15 July, and 25 August 2016 for a total application of 11".

[4/]Precipitation totaled 15.1" in 2013, 13.5" in 2014, 12.3" in 2015, and 12.6" in 2016.

[5/]Adjusted means provided for Lattice RE% values equal to or greater than 105%.