

PROJECT TITLE: Dryland oilseed (A), and dryland annual legume (B) variety evaluation 1991.

PROJECT LEADERS: Dr. Jerry Bergman, EARC, Sidney, MT  
Dr. Jim Sims, P&SS, MSU, Bozeman, MT  
G.F. Stallknecht, and K.M. Gilbertson

PROJECT LOCATION: MSU-Southern Agricultural Research Center  
Huntley, MT 59037

OBJECTIVES: A. To evaluate safflower varieties and breeder selections for adaptability, yield, test weight, oil content and quality, and disease resistance for production on dryland in south-central Montana.  
B. To evaluate a wide range of annual legume species for adaptation to dryland cropping in Montana.

SUMMARY AND RESULTS: A. In the dryland safflower nursery (Table 1), Saffire was highest yielding, although not significantly more than Centennial, Girard, or Montola 2000. MT 3697 had the highest test weight (but was lowest yielding), Finch had the highest test weight of the named varieties. The plots suffered severe hail damage-expressed here as lodging, this is probably what reduced yields (1990 yields averaged 1115 lbs/A).  
B. Tables 2 and 3 describe the forage yields for the 1991 small and large seeded annual legume nurseries respectively. Jemalong barrel medic had the highest forage yield of the small seeded legumes (Table 2), with the Berseem clovers close behind. In the large seeded trial (Table 3) the Cowpea selections did not emerge or grow. Austrian winter pea yielded the most forage, but not significantly more than the others.

FUTURE PLANS: These are continuing studies for evaluation of potential variety, or species release.

TABLE 1 . 1991 DRYLAND FALLOW SAFFLOWER VARIETY PERFORMANCE NURSERY SOUTHERN AG RESEARCH CENTER, HUNTLEY, MT.

VARIETY	YIELD LBS/AC	TESTWT LBS/BU	FLOWER DATE	PLANTHT INCHES	LODG PREVAL	LODG SEVER	LODG INDEX
SAFFIRE	584.99	39.97	202.00	27.00	7.00	30.00	23.30
CENTENNIAL	537.06	40.07	206.00	29.00	7.00	30.00	23.30
GIRARD	532.30	40.07	205.67	31.00	8.00	60.00	53.30
MONTOLA 2000	510.33	39.40	203.33	27.00	7.00	80.00	62.20
87B 1298	507.77	40.07	207.33	28.00	9.00	40.00	40.00
85B 3829	500.57	39.10	206.67	27.00	4.00	30.00	13.30
85B 3910	490.76	37.60	203.67	25.00	7.00	30.00	23.30
S-541	485.64	39.93	205.33	28.00	7.00	30.00	23.30
89B 6145	447.91	39.53	203.33	27.00	9.00	80.00	80.00
88B 3217	437.55	36.80	204.67	32.00	9.00	20.00	20.00
87B 1650	436.95	36.97	207.00	26.00	9.00	30.00	30.00
85B 4431	436.07	39.67	205.67	27.00	9.00	60.00	60.00
OKER	434.46	38.37	204.33	27.00	8.00	30.00	26.70
FINCH	423.30	41.77	203.67	27.00	7.00	30.00	23.30
S-208	422.86	40.07	206.00	28.00	8.00	20.00	17.80
S-317	342.35	39.43	206.00	30.00	8.00	70.00	62.20
88B 3006	324.99	37.70	206.67	27.00	9.00	50.00	50.00
MT 3697	316.55	45.40	205.33	27.00	8.00	30.00	26.70

\*\*\*\*\* STATISTICAL TABLE \*\*\*\*\*

	YIELD LBS/AC	TESTWT LBS/BU	FLOWER DATE
EXPERIMENTAL MEANS	454.02	39.55	205.15
TOTAL OBSERVATIONS	54.00	54.00	54.00
NO. OF REPLICATIONS	3.00	3.00	3.00
NO. OF VARIETIES	18.00	18.00	18.00
C.V. 1: (S/MEAN)*100	17.89	6.62	.61
C.V. 2: (S OF MEAN/MEAN)*100	10.33	3.82	.35
LSD (0.05)	134.75	4.34	2.09

Date planted: 5/1/91                      Date harvested: 9/6/91  
91FB7708.SAD  
7708SAF.STT

TABLE 2 . 1991 DRYLAND SMALL SEEDED STATE WIDE LEGUME ADAPTATION  
TRIAL SOUTHERN AG RESEARCH CENTER HUNTLEY, MT.

VARIETY	FORAGE STAND	
	DM LB/A	%
JEMALONG BARREL MEDI	1645.00	95.00
MULTICUT BERSEEM CLO	1544.62	85.00
FAHL BERSEEM CLOVER	1530.00	70.00
INDIANHEAD LENTIL	1481.30	100.00
BIGBEE BERSEEM CLOVE	1233.35	90.00
YELLOW SWEET CLOVER	1148.65	62.50
NITRO ALFALFA	1089.20	90.00
MT BARKER SUBTERRANE	1075.12	50.00
SELECTION 1 BERSEEM	1069.45	72.50
GEORGE BLACK MEDIC	766.48	15.00
SELECTION 5 BLACK ME	754.80	30.00
MARAL SHAFTAL CLOVER	388.63	7.50
YOUCHI ARROWLEAF CLO	232.95	2.50

\*\*\*\*\* STATISTICAL TABLE \*\*\*\*\*

EXPERIMENTAL MEANS	1073.81	59.23
TOTAL OBSERVATIONS	52.00	26.00
NO. OF REPLICATIONS	4.00	2.00
NO. OF VARIETIES	13.00	13.00
C.V. 1: (S/MEAN)*100	23.91	28.43
C.V. 2: (S OF MEAN/MEAN)*100	11.95	20.11
LSD (0.05)	368.13	36.70

Date planted: 4/30/91      Date harvested: 7/12/91  
 FB1HTSSL.CSD  
 SMLEGUME.STT

TABLE 3 . 1991 DRYLAND LARGE SEEDED STATEWIDE LEGUME ADAPTATION TRIAL SOUTHERN AG RESEARCH CENTER HUNTLEY, MT.

VARIETY	FORAGE DM LB/A	STAND %
AUSTRIAN WINTER PEA	1952.40	90.00
MIRANDA YELLOW FIELD	1890.90	90.00
TRAPPER PEA	1549.20	90.00
CAHABA WHITE VETCH	1478.00	80.00

\*\*\*\*\* STATISTICAL TABLE \*\*\*\*\*

EXPERIMENTAL MEANS	1717.63	87.50
TOTAL OBSERVATIONS	16.00	8.00
NO. OF REPLICATIONS	4.00	2.00
NO. OF VARIETIES	4.00	4.00
C.V. 1: (S/MEAN)*100	40.02	9.33
C.V. 2: (S OF MEAN/MEAN)*100	20.01	6.60
LSD (0.05)	1099.52	25.99

Date planted: 4/30/91  
FB1HTLSL.CSD  
LGLEGUME.STT

Date harvested: 7/15/91