

PROJECT TITLE: The evaluation of safflower varieties under dryland and irrigated conditions.

PROJECT LEADER: G.F. Stallknecht

PROJECT PERSONNEL: Dr. Jerald R. Bergman, Safflower breeder, EARC, Sidney; K.M. Gilbertson, SARC

OBJECTIVES: To evaluate safflower varieties for potential as a new crop for south-central Montana.

RESULTS: Yields (ranging from 263 to 1530 Lb/A) for the irrigated nursery were lower than normal, averaging approx. 900 Lb/A compared to 1600 Lb/A. This may have been due to early moisture stress, or the cool wet ripening period. Test weights were lower and flowering was later than normal. The dryland trial did much better (ranging from 1250-2147 Lb/A), approaching normal yields. Test weights were also near normal on dryland averaging 36 Lb/Bu, and flowering was slightly later.

SUMMARY: Weather had a significant effect on the irrigated nursery, but had little effect on the dryland trial. Safflower still appears to be a viable alternative for this area.

FUTURE PLANS: This is an ongoing study to continue evaluation of safflower in south-central Montana.

TABLE 1. 1993 IRRIGATED SAFFLOWER VARIETY TRIAL, SARC, HUNTLEY, MT.

VARIETY	YIELD LB/AC	TESTWT LB/BU	PLANTHT INCHES	FLOWER DATE
GIRARD ND Lot #GS 2006	1533.79	32.43	29.33	217.50
STIRLING 92 Lethbridge	1480.73	32.43	24.67	214.00
SAFFIRE* 93 Lethbridge	1427.60	35.67	21.00	209.00
91B 1282 ND 92ADVII #75 91B 1	1358.05	30.43	28.33	218.00
S-541 SeedTec Lot #02061	1318.24	30.17	28.00	218.50
CENT'L-A Apron Trtmt	1141.78	28.93	29.33	220.00
90B 6011 ND 92 DRS 115	1140.06	29.60	29.67	221.50
S-317 SeedTec 88A-304-0223	1068.04	30.03	30.00	219.50
91B 6668 ND 92ADVOIII #80 91B	1050.67	31.90	26.33	218.50
88B 3006 ND 92DRS 110	1011.26	31.60	31.67	222.50
CENTENNL HV Cert. #901-1925	949.40	29.33	28.00	219.00
MORLIN MT 911-880	940.55	28.47	27.33	221.50
85B 3910 W 92DRS 112	906.90	30.40	28.00	217.50
FINCH ND Lot #FS 2003&2004	868.97	35.80	29.67	219.00
90B 2763 ND 92 ADVI #74 310	779.82	31.07	25.67	216.50
OKER 841-1670	736.37	30.50	30.33	217.50
MT 2001 ND 92 91B 6857	633.53	25.97	25.33	220.00
MT 3697 891-992	538.54	33.57	28.33	219.00
S-208 SeedTec 83WW045-8	519.49	30.37	30.33	221.50
MT 2000 MT Cert #911-906	263.89	29.90	25.33	216.50

***** STATISTICAL TABLE *****

EXPERIMENTAL MEANS	983.38	30.93	27.83	218.35
TOTAL OBSERVATIONS	60.00	60.00	60.00	40.00
NO. OF REPLICATIONS	3.00	3.00	3.00	2.00
NO. OF VARIETIES	20.00	20.00	20.00	20.00
REP. MEAN SQUARE	*****	16.26	14.82	3.60
VAR. MEAN SQUARE	*****	16.03	18.96	17.95
ERROR MEAN SQUARE	*****	4.58	6.11	2.97
ERROR DEGREES OF FREEDOM	38.00	38.00	38.00	19.00
F TEST FOR REPS.	4.48	3.55	2.42	1.21
F TEST FOR VAR.	4.96	3.50	3.10	6.05
STANDARD ERROR	267.00	2.14	2.47	1.72
STANDARD ERROR OF THE MEAN	154.15	1.24	1.43	1.22
C.V. 1: (S/MEAN)*100	27.15	6.92	8.88	.79
C.V. 2: (S OF MEAN/MEAN)*100	15.68	3.99	5.13	.56
LSD (0.05)	441.33	3.54	4.09	3.61

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TABLE 2 . 1993 DRYLAND SAFFLOWER VARIETY TRIAL, SARC,
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VARIETY	YIELD LB/AC	TESTWT LB/BU	PLANTHT INCHES	FLOWER DATE	STAND %
91B 1282 ND 92ADVII #75 91B 1	2147.16	37.70	24.00	213.00	.00
STIRLING 92 Lethbridge	2002.87	36.97	22.67	207.50	.00
S-317 SeedTec 88A-304-0223	1976.86	36.10	27.00	211.50	.00
90B 6011 ND 92 DRS 115	1863.26	36.30	27.00	211.50	.00
CENT'L-A Apron Trtmt	1833.69	36.40	24.33	210.00	.00
SAFFIRE* 93 Lethbridge	1810.20	36.67	25.00	206.50	80.00
CENTENNL HV Cert. #901-1925	1802.68	35.97	25.00	211.50	.00
S-208 SeedTec 83WW045-8	1777.83	36.37	25.00	213.50	.00
91B 6668 ND 92ADVOIII #80 91B	1769.67	35.80	25.00	212.00	.00
85B 3910 W 92DRS 112	1755.47	36.67	22.33	210.00	.00
S-541 SeedTec Lot #02061	1712.25	37.40	23.67	211.50	.00
88B 3006 ND 92DRS 110	1617.50	35.73	25.00	214.00	.00
GIRARD ND Lot #GS 2006	1579.65	38.67	25.00	212.00	.00
MT 3697 891-992	1565.32	37.47	23.67	210.00	.00
MORLIN MT 911-880	1558.80	34.27	24.67	210.50	.00
MT 2000 MT Cert #911-906	1520.35	34.37	23.67	207.50	.00
OKER 841-1670	1482.29	35.50	23.67	211.50	.00
FINCH ND Lot #FS 2003&2004	1409.55	38.77	25.67	212.00	.00
90B 2763 ND 92 ADVI #74 310	1261.30	35.87	22.33	210.00	.00
MT 2001B 91B 6853-92W 91B 685	1257.22	32.00	23.67	213.50	.00

***** STATISTICAL TABLE *****

EXPERIMENTAL MEANS	1685.20	36.25	24.42	210.98	.00
TOTAL OBSERVATIONS	60.00	60.00	60.00	40.00	.00
NO. OF REPLICATIONS	3.00	3.00	3.00	2.00	.00
NO. OF VARIETIES	20.00	20.00	20.00	20.00	.00
REP. MEAN SQUARE	*****	.38	32.62	30.63	.00
VAR. MEAN SQUARE	*****	7.07	5.01	8.29	.00
ERROR MEAN SQUARE	*****	.49	5.53	1.41	.00
ERROR DEGREES OF FREEDOM	38.00	38.00	38.00	19.00	.00
F TEST FOR REPS.	1.90	.77	5.90	21.65	.00
F TEST FOR VAR.	4.00	14.53	.91	5.86	.00
STANDARD ERROR	204.36	.70	2.35	1.19	.00
STANDARD ERROR OF THE MEAN	117.99	.40	1.36	.84	.00
C.V. 1: (S/MEAN)*100	12.13	1.93	9.63	.56	.00
C.V. 2: (S OF MEAN/MEAN)*100	7.00	1.11	5.56	.40	.00
LSD (0.05)	337.79	1.15	3.89	2.49	.00

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