

PROJECT TITLE: Camelina Performance Evaluations near Moccasin, Sidney, Havre, Kalispell, Huntley and Conrad, Montana and Williston, North Dakota. (Exps. 11-CM07, 11-CM70, 11-CM03, 11-CM02, 11-CM05, 11-CM08, 11-CM18, 11-CM20)

PROJECT LEADER: Peggy Lamb, Agronomy Research Associate, NARC, Havre

PROJECT PERSONNEL: Eleri Haney, Agronomy Research Assistant, NARC, Havre
David Wichman, Assistant Professor of Agronomy, CARC, Moccasin
Sally Dahlhausen, Seasonal Field Technician, CARC, Moccasin
Jerry Bergman, Professor of Agronomy, EARC, Sidney
Chuck Flynn, Research Chemist, EARC, Sidney
Heather Mason, Assistant Professor of Cropping Systems, NWARC, Kalispell
Brooke Bohannon; Agronomy Research Assistant, NWARC, Kalispell
Ken Kephart, Professor of Agronomy, SARC, Huntley
Gigi Opena, Agronomy Research Associate, SARC, Huntley
Mathew Peterson-Walter, Agronomy Research Associate, SARC, Huntley
John Miller, Agronomy Research Associate, WTARC, Conrad
Clint Rouns, Soils Research Assistant, WTARC, Conrad
Neil Riveland, Research Agronomist, WREC, Williston
Gordon Bradbury, Agronomy Research Specialist, WREC, Williston
Sara Brogger, Agronomy Research Specialist, WREC, Williston

OBJECTIVES:

To provide camelina growers in Montana and western North Dakota with a reliable, unbiased, up-to-date source of information that will facilitate valid dryland seed production comparisons among improved camelina varieties and experimental lines submitted for testing by participating commercial and university entities. Over time, these trials will help determine the yield potential of camelina in the various cropping environments which will assist producers in determining the economic viability of camelina in their region.

RESULTS and SUMMARY:

In 2011, two industry sponsors submitted a total of eight camelina entries that were included in trials with four publically available camelina check varieties for testing near Moccasin, Sidney, Havre, Kalispell, Huntley and Conrad, MT, and Williston, ND (Table 1). Moccasin, Sidney, Havre, Huntley, Conrad and Williston were dryland sites, while Kalispell was a high rainfall site. Two trials were grown at Moccasin; one seeded into tilled fallow and one seeded into no-till recrop. The trial at Kalispell was also seeded on recropped land. Summary weather information for each site is located in Table 2. Summaries of yield, percent oil and pounds of oil per acre are presented in Tables 3, 4 and 5. Seed yields across the state were variable (Table 3), but in general very good, with averages ranging from a low of 808 lb/ac at Moccasin on recrop to 2,218 lb/ac at Kalispell which is designated as high rainfall.

Central Agricultural Research Center, Moccasin: In a dryland environment, fallow seeded camelina seed yield at CARC ranged from 1,545 to 1,965 lb/ac, with no statistical difference between entries (Table 6). Test weight for fallow seeded camelina at CARC averaged over 51 lb/bu and grain oil averaged over 33 percent. Camelina ID, plant count, grain yield, grain test weight, grain moisture, grain protein, grain oil, oil yield and plant height data are summarized for CARC fallow seeded camelina in Table 6. Fatty acid composition data are summarized for CARC fallow seeded camelina in Table 14.

Recrop seeded camelina seed yield at CARC ranged from 728 lb/ac to 903 lb/ac, again with no statistical difference between entries (Table 7). Test weight for recrop seeded camelina at CARC averaged over 51 lb/bu and grain oil averaged nearly 33 percent. Camelina ID, plant count, grain yield, grain test weight, grain protein, grain oil, oil yield and plant height data are summarized for CARC recrop seeded camelina in Table 7. Fatty acid composition data are summarized for CARC recrop seeded camelina in Table 15.

Eastern Agricultural Research Center, Sidney: In a dryland environment, fallow seeded camelina at EARC produced an overall average seed yield of 979 lb/ac (Table 8). Eight of the 12 entries produced seed yields equal to the highest yielding entry, 'Calena' (1,130 lb/ac). Test weights of all entries averaged just over 52 lb/bu and grain oil ranged from 37.4 to 35.9 percent. Camelina ID, plant stand, grain yield, grain test weight, grain protein, grain oil, oil yield, flowering date, plant height and pod shatter are summarized for EARC in Table 8. Fatty acid composition data are summarized

for EARC fallow seeded camelina in Table 16.

Northern Agricultural Research Center, Havre: In a dryland environment, fallow seeded camelina seed yield at NARC averaged 1,542 lb/ac. Four of the 12 entries grown, produced yields statistically equal to the highest yielding entry, 'Blaine Creek' (1,773 lb/ac) which was a check variety (Table 9). Test weights averaged nearly 52 lb/bu. Grain oil averaged 34.3 percent and five of the 12 entries produced over 540 pounds of oil per acre. Camelina ID, plant stand, plant count, grain yield, grain test weight, grain moisture, grain protein, grain oil, oil yield, flowering date, maturity date, plant height, pod shatter and lodging index are summarized for NARC in Table 9. Fatty acid composition data are summarized for NARC fallow seeded camelina in Table 17.

Northwestern Agricultural Research Center, Kalispell: In a high rainfall environment, recrop camelina seed yield averaged 2,218 lb/ac. Nine of the 12 entries grown, produced yields statistically equal to the highest yielding entry, 'Blaine Creek', (2,400 lb/ac) which was one of the check varieties (Table 10). Test weights averaged over 52 lb/bu. Grain oil averaged nearly 34 percent with Blaine Creek also producing the most oil per acre at 824 lbs. Camelina ID, plant count, grain yield, grain test weight, grain moisture, grain protein, grain oil, oil yield, flowering date, plant height, pod shatter and lodging index are summarized for NWARC in Table 10. Fatty acid composition data are summarized for NWARC high rainfall, recrop seeded camelina, in Table 18.

Southern Agricultural Research Center, Huntley: In a dryland environment, fallow seeded camelina seed yield at SARC averaged 1,287 lb/ac (Table 11). The highest yielding entry was 'C10-BZ-SB7-6' (1,757 lb/ac), submitted by Sustainable Oils, LLC. "Ligena", "SO-30", "SO-40" and "SO-50" produced yields statistically equal to the top entry. Test weights averaged just over 49 lb/bu. Grain oil ranged from 28.6 to 30.3 percent and average oil per acre for the 12 entries was 380 lbs. Camelina ID, plant count, grain yield, grain test weight, grain moisture, grain protein, grain oil, oil yield, flowering date, maturity date, plant height, pod shatter and lodging index are summarized for SARC in Table 11. Fatty acid composition data are summarized for SARC fallow seeded camelina in Table 19.

Western Triangle Agricultural Research Center, Conrad: In a dryland environment, fallow seeded camelina seed yield at WTARC averaged 1,264 lb/ac, with no statistical difference between entries (Table 12). Grain oil averaged just over 39 percent and 496 lb/ac, again with no statistical differences between entries. Camelina ID, grain yield, grain test weight, grain protein, grain oil, oil yield, flowering date, maturity date, plant height, pod shatter and lodging index are summarized for WTARC in Table 12. Fatty acid composition data are summarized for WTARC fallow seeded camelina in Table 20.

Williston Research Extension Center, Williston, ND: In a dryland environment, fallow seeded camelina seed yield at WREC averaged 1,582 lb/ac (Table 13). Eight of the 12 entries grown, produced yields statistically equal to the highest yielding entry Calena (1,750 lb/ac). Grain oil averaged just over 36 percent and 570 lb/ac. Camelina ID, grain yield, grain test weight, grain protein, grain oil, oil yield, flowering date, plant height and lodging index are summarized for WREC in Table 13. Fatty acid composition data are summarized for WREC fallow seeded camelina in Table 21.

FUTURE PLANS:

With continued support from the camelina industry and research center personnel, multi-location camelina evaluations will continue in 2012 at selected sites across Montana and North Dakota.

Table 1. Contact Information for Industry Seed Sources of Eight Camelina Lines Tested near Moccasin, Sidney, Have, Kalispell, Huntley and Conrad, MT and Williston, ND. 2011.
(Exps. 11-CM07, 11-CM70, 11-CM03, 11-CM02, 11-CM05, 11-CM08, 11-CM18, 11-CM20)

SPONSOR	LINES TESTED	CONTACTS
Phoenix Rising, Inc	Clearwater Hy 101 Yellowstone	Dr. Duane Johnson Senior Plant Breeder 439 Grand Ave., Suite 118 Bigfork, MT 59911 PH: 1-406-471-0671 EM: camelinaguy@juno.com
Sustainable Oils, LLC	SO-30 SO-40 SO-50 SO-60 C10-BZ-SB7-6 C10-BZ-SB7-7	Dr. Fernando Guillen-Portal Senior Plant Breeder 214 Shepherd Trail, Suite F Bozeman, MT 59718 PH: 1-406-522-8900 FX: 1-406-522-8910 EM: fernando.guillen@susoils.com
Montana State University Department of Research Centers	Blaine Creek Calena Ligena Suneson	

Table 2. Summary of climatic data by location for the crop year September 2010 - August 2011.

Entry	ID	Moccasin CARC	Sidney EARC	Have NARC	Kalispell NWARC	Huntley SARC	Conrad WTARC	Williston WREC
Precipitation (inches)		21.64	22.73	15.45	22.98	12.23	15.23	18.06
Mean Temperature (F)		42.1	42.5	40.3	41.2	43.2	40.8	41.8
Last Killing Spring Frost		May 19	May 2	May 14	May 18	May 5	May 18	May 2
First Killing Fall Frost		Sept 3	Sept 14	Sept 20	Sept 29	Oct 17	Oct 15	Sept 18
Frost Free Period (days)		107	134	129	134	139	150	138
Growing Degree Days (Base 50)		-	2,199	2,339	1,593	2,223	1,285	2,419
Maximum Summer Temperature (F)		99	98	101	89	100	97	98
Minimum Winter Temperature (F)		-25	-31	-37	-16	-22	-24	-27

Table 3. 11CMxx: Montana Statewide Camelina Trial Grain Yield Summary. 2011.

ID	Moccasin	Moccasin	Sidney	Have	Kalispell	Huntley	Conrad	Williston
	dryland fallow	dryland recrop	dryland fallow	dryland fallow	high rainfall recrop	dryland fallow	dryland fallow	dryland fallow
	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac
Blaine Creek	1,661	815	887	1,773	2,400	1,163	1,225	1,611
Calena	1,803	873	1,130	1,668	2,372	1,309	1,256	1,750
Ligena	1,778	798	1,050	1,475	2,351	1,409	1,232	1,558
Suneson	1,913	903	936	1,692	2,065	1,044	1,168	1,619
Clearwater Hy 101	1,643	837	1,066	1,495	2,248	1,189	1,290	1,520
Yellowstone	1,647	728	650	1,335	1,900	938	1,362	1,366
SO-30	1,682	782	1,029	1,422	2,275	1,361	1,255	1,495
SO-40	1,545	749	1,005	1,511	2,206	1,623	1,363	1,652
SO-50	1,860	747	1,004	1,589	2,156	1,424	1,316	1,619
SO-60	1,719	859	1,036	1,506	2,360	1,116	1,325	1,726
C10-BZ-SB7-6	1,824	796	855	1,501	2,012	1,757	1,141	1,597
C10-BZ-SB7-7	1,965	810	1,101	1,541	2,268	1,116	1,238	1,472
Average	1,753	808	979	1,542	2,218	1,287	1,264	1,582
LSD (p=0.05)	ns	ns	211.1	214.9	268.8	420.0	ns	198.6
CV%	15.7	15.7	15.0	9.7	8.4	22.7	15.4	8.7
P-Value (Entry)	0.615	0.723	0.005	0.015	0.010		0.877	0.023

bold Indicates cultivars yielding equal to the highest yielding entry in each column based on Fischer's Protected LSD at the 0.05 probability level.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Table 4. 11CMxx: Montana Statewide Camelina Trial Grain Oil Content Summary. 2011.

ID	Moccasin	Moccasin	Sidney	Have	Kalispell	Huntley	Conrad	Williston
	dryland fallow	dryland recrop	dryland fallow	dryland fallow	high rainfall recrop	dryland fallow	dryland fallow	dryland fallow
	%	%	%	%	%	%	%	%
Blaine Creek	33.3	33.4	35.4	34.0	34.3	29.9	38.7	36.6
Calena	33.1	32.4	35.3	34.8	34.2	29.4	38.9	35.3
Ligena	33.6	33.7	35.5	34.0	33.5	29.6	39.7	36.3
Suneson	33.2	33.2	35.4	34.2	34.0	30.3	38.8	36.1
Clearwater Hy 101	32.7	33.1	35.9	34.3	34.0	29.2	38.9	36.7
Yellowstone	32.6	33.1	34.7	34.7	33.2	29.7	39.9	36.9
SO-30	33.4	32.9	35.4	35.0	33.4	29.2	39.7	36.2
SO-40	33.8	32.8	34.7	33.4	33.8	28.6	38.9	35.7
SO-50	33.0	32.4	35.5	34.2	33.4	29.9	39.3	35.8
SO-60	32.8	32.5	34.9	34.5	32.7	29.2	38.4	35.4
C10-BZ-SB7-6	33.3	33.7	35.2	33.2	34.6	29.9	38.9	36.2
C10-BZ-SB7-7	33.8	32.3	35.6	35.3	33.9	28.8	39.6	35.6
Average	33.2	32.9	35.3	34.3	33.8	29.5	39.2	36.1
LSD (p=0.05)	ns	0.3	0.6	ns	0.9	ns	ns	0.5
CV%	2.7	0.7	1.2	2.5	1.8	4.2	2.1	1.0
P-Value (Entry)	0.645	<0.0001	0.019	0.057	0.004		0.194	<0.0001

Grain oil is reported on a dry matter basis.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Table 5. 11CMxx: Montana Statewide Camelina Trial Grain Oil Yield Summary. 2011.

ID	Moccasin	Moccasin	Sidney	Have	Kalispell	Huntley	Conrad	Williston
	dryland fallow	dryland recrop	dryland fallow	dryland fallow	high rainfall recrop	dryland fallow	dryland fallow	dryland fallow
	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac
Blaine Creek	554	272	314	602	824	349	475	589
Calena	597	282	399	580	812	384	489	617
Ligena	599	269	373	503	786	422	491	565
Suneson	636	300	331	578	701	316	454	584
Clearwater Hy 101	536	277	382	515	765	348	503	557
Yellowstone	537	240	226	463	627	278	544	504
SO-30	562	257	364	498	760	402	500	541
SO-40	522	245	349	505	746	466	530	589
SO-50	611	242	356	542	718	426	519	580
SO-60	563	279	361	519	768	325	510	611
C10-BZ-SB7-6	607	268	302	499	696	526	444	577
C10-BZ-SB7-7	663	262	391	544	767	321	490	524
Average	582	266	346	529	747	380	496	570
LSD (p=0.05)	ns	ns	77.7	79.7	86.4	130.8	ns	ns
CV%	15.5	15.6	15.6	10.5	8.0	23.9	16.8	8.5
P-Value (Entry)	0.527	0.691	0.005	0.041	0.004		0.900	0.067

bold Indicates cultivars yielding equal to the highest yielding entry in each column based on Fischer's Protected LSD at the 0.05 probability level.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level. Grain oil yield is reported on a dry matter basis.

Table 6. 11CM07: Statewide Industry Camelina Trial - Dryland, Fallow.
MSU Central Agricultural Research Center. Moccasin, MT. 2011.

ID	Plant	Plant	Grain	Test	Grain	Grain	Oil	Flowering Date	Maturity Date	Plant	Pod	Lodging			
	Stand	Count	Yield	Weight	Moisture	Protein	Oil						Yield	Julian	Calendar
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	day	date	day	date	inches	%	rating
Blaine Creek		19.6	1,661	51.7	7.1	26.8	33.3	554					31.9	0.0	0.0
Calena		21.0	1,803	51.8	7.4	26.6	33.1	597					32.6	0.0	0.0
Ligena		18.7	1,778	50.9	7.1	26.8	33.6	599					32.7	0.0	0.0
Suneson		22.0	1,913	50.9	7.4	26.4	33.2	636					33.3	0.0	0.0
Clearwater Hy 101		21.9	1,643	51.2	7.7	27.0	32.7	536					31.4	0.0	0.0
Yellowstone		17.8	1,647	51.3	7.3	26.8	32.6	537					33.3	0.0	0.0
SO-30		22.6	1,682	51.4	7.4	27.0	33.4	562					31.9	0.0	0.0
SO-40		22.8	1,545	51.0	7.0	27.1	33.8	522					33.0	0.0	0.0
SO-50		22.1	1,860	51.0	8.0	25.9	33.0	611					33.3	0.0	0.0
SO-60		19.6	1,719	50.8	7.7	26.6	32.8	563					33.8	0.0	0.0
C10-BZ-SB7-6		23.0	1,824	52.0	7.2	26.9	33.3	607					30.7	0.0	0.0
C10-BZ-SB7-7		17.8	1,965	51.4	7.5	26.3	33.8	663					33.4	0.0	0.0
Average		20.7	1,753	51.3	7.4	26.7	33.2	582					32.6	0.0	0.0
LSD (p=0.05)		ns	ns	ns	ns	ns	ns	ns					1.8	-	-
CV%		16.4	15.7	1.9	9.0	3.2	2.7	15.5					3.8	-	-
P-Value (Entry)		0.137	0.615	0.799	0.642	0.731	0.645	0.527					0.034	-	-

Grain yield is adjusted to 8 percent grain moisture content.

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 21, 2011
Harvest Date: August 9, 2011

Table 7. 11CM70: Statewide Industry Camelina Trial - Dryland, Recrop.
MSU Central Agricultural Research Center. Moccasin, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian day	Calendar date	Julian day	Calendar date	inches	%	rating
Blaine Creek		21.3	815	51.6	7.2	27.2	33.4	272					25.7	0.0	0.0
Calena		23.2	873	51.4	7.3	26.8	32.4	282					25.7	0.0	0.0
Ligena		21.8	798	51.4	7.3	26.9	33.7	269					26.2	0.0	0.0
Suneson		21.6	903	52.4	7.2	26.9	33.2	300					25.9	0.0	0.0
Clearwater Hy 101		20.3	837	51.4	7.5	27.0	33.1	277					26.2	0.0	0.0
Yellowstone		19.9	728	50.9	7.4	27.8	33.1	240					27.1	0.0	0.0
SO-30		18.4	782	52.0	7.2	27.3	32.9	257					25.3	0.0	0.0
SO-40		22.6	749	50.7	7.4	27.1	32.8	245					26.1	0.0	0.0
SO-50		20.1	747	52.1	7.5	27.0	32.4	242					25.3	0.0	0.0
SO-60		19.1	859	51.0	7.5	27.0	32.5	279					27.2	0.0	0.0
C10-BZ-SB7-6		21.6	796	50.8	7.2	26.9	33.7	268					23.8	0.0	0.0
C10-BZ-SB7-7		18.7	810	51.3	7.3	27.8	32.3	262					25.3	0.0	0.0
Average		20.7	808	51.4	7.3	27.1	32.9	266					25.8	0.0	0.0
LSD (p=0.05)		ns	ns	0.7	0.3	0.4	0.3	ns					1.5	-	-
CV%		23.1	15.7	1.0	2.4	1.0	0.7	15.6					4.1	-	-
P-Value (Entry)		0.939	0.723	0.000	0.054	<0.0001	<0.0001	0.691					0.008	-	-

Grain yield is adjusted to 8 percent grain moisture content.

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 21, 2011
Harvest Date: August 9, 2011

Table 8. 11CM03: Statewide Industry Camelina Trial - Dryland, Fallow.
MSU Eastern Agricultural Research Center. Sidney, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian day	Calendar date	Julian day	Calendar date	inches	%	rating
Blaine Creek	86.3		887	52.0		28.7	35.4	314	179.3	Jun 28			26.3	3.8	0.0
Calena	86.3		1,130	52.8		27.9	35.3	399	179.8	Jun 29			27.3	6.3	0.0
Ligena	86.3		1,050	51.8	*	28.6	35.5	373	180.8	Jun 30			27.0	2.5	0.0
Suneson	86.3		936	52.9	*	28.7	35.4	331	179.5	Jun 29			26.4	1.3	0.0
Clearwater Hy 101	88.8		1,066	51.8	*	28.4	35.9	382	179.3	Jun 28			27.0	5.0	0.0
Yellowstone	72.5		650	52.1		29.7	34.7	226	181.5	Jul 1			27.6	1.3	0.0
SO-30	88.8		1,029	52.6	*	28.5	35.4	364	179.3	Jun 28			28.0	1.3	0.0
SO-40	86.3		1,005	51.4	*	28.7	34.7	349	180.0	Jun 29			29.2	2.5	0.0
SO-50	87.5		1,004	52.5	*	28.1	35.5	356	180.3	Jun 29			27.8	2.5	0.0
SO-60	85.0		1,036	51.9	*	27.7	34.9	361	180.3	Jun 29			28.2	0.0	0.0
C10-BZ-SB7-6	78.8		855	51.5		29.0	35.2	302	180.5	Jun 30			25.2	2.5	0.0
C10-BZ-SB7-7	86.3		1,101	52.3	*	28.3	35.6	391	181.5	Jul 1			27.5	1.3	0.0
Average	84.9		979	52.1		28.5	35.3	346	180.1	Jun 29			27.3	2.5	0.0
LSD (p=0.05)	10.2		211.1	0.4		0.5	0.6	77.7	ns	-			ns	ns	-
CV%	8.4		15.0	0.6		1.3	1.2	15.6	0.6	-			7.5	147.0	-
P-Value (Entry)	0.110		0.005	<0.0001		<0.0001	0.019	0.005	0.060	-			0.489	0.529	-

Grain yield is reported "as is" at harvest - not adjusted to a uniform moisture content.

** Indicates highest yielding cultivar within a column.

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

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: May 6, 2011
Harvest Date: August 3, 2011

Table 9. 11CM02: Statewide Industry Camelina Trial - Dryland, Fallow.
MSU Northern Agricultural Research Center. Havre, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian	Calendar	Julian	Calendar	inches	%	rating
Blaine Creek	96.9	17.6	1,773 **	51.6	7.3	27.9	34.0	602 **	170.8	Jun 20	205.3	Jul 24	32.7	7.5	0.0
Calena	97.2	18.7	1,668 *	52.3	7.3	26.5	34.8	580 *	172.0	Jun 21	206.8	Jul 26	30.2	6.3	0.0
Ligena	95.8	21.9	1,475	51.3	7.3	27.8	34.0	503	173.0	Jun 22	208.8	Jul 28	31.7	3.0	0.0
Suneson	97.6	21.9	1,692 *	52.8	7.1	27.9	34.2	578 *	171.3	Jun 20	205.8	Jul 25	32.3	4.0	0.0
Clearwater Hy 101	96.7	20.8	1,495	51.1	7.4	27.1	34.3	515	172.5	Jun 22	206.3	Jul 25	31.3	8.8	0.0
Yellowstone	96.4	18.1	1,335	52.0	7.2	27.8	34.7	463	173.3	Jun 22	205.8	Jul 25	36.5	13.8	0.0
SO-30	94.8	15.4	1,422	52.4	7.1	26.8	35.0	498	173.0	Jun 22	209.0	Jul 28	29.6	3.0	0.0
SO-40	93.4	13.8	1,511	50.9	7.3	28.2	33.4	505	172.3	Jun 21	206.8	Jul 26	32.8	3.0	0.0
SO-50	97.9	18.7	1,589 *	52.2	7.3	27.2	34.2	542 *	172.0	Jun 21	206.5	Jul 26	30.9	7.5	0.0
SO-60	96.7	20.4	1,506	51.5	7.3	26.6	34.5	519	172.3	Jun 21	206.8	Jul 26	31.0	6.3	0.0
C10-BZ-SB7-6	96.0	21.1	1,501	50.9	7.4	28.1	33.2	499	170.5	Jun 20	204.5	Jul 24	27.3	10.0	0.0
C10-BZ-SB7-7	99.3	18.8	1,541	52.9	7.1	27.0	35.3	544 *	174.3	Jun 23	208.3	Jul 27	30.8	8.8	0.0
Average	96.6	18.9	1,542	51.8	7.3	27.4	34.3	529	172.3	Jun 21	206.7	Jul 26	31.4	6.8	0.0
LSD (p=0.05)	ns	ns	214.9	0.6	ns	1.2	ns	79.7	1.7	-	1.5	-	3.3	3.9	-
CV%	2.9	19.3	9.7	0.8	4.2	3.0	2.5	10.5	0.7	-	0.5	-	7.4	39.5	-
P-Value (Entry)	0.370	0.082	0.015	<0.0001	0.891	0.048	0.057	0.041	0.006	-	<0.0001	-	0.002	<0.0001	-

Grain yield is adjusted to 8 percent grain moisture content.

** Indicates highest yielding cultivar within a column.

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

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 21, 2011
Harvest Date: August 15, 2011

Table 10. 11CM05: Statewide Industry Camelina Trial - High Rainfall, Recrop.
MSU Northwestern Agricultural Research Center. Kalispell, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian	Calendar	Julian	Calendar	inches	%	rating
Blaine Creek	33.7	2,400 **	52.6	7.0	27.2	34.3	824 **	178.3	Jun 27				42.6	0.0	1.0
Calena	33.1	2,372 *	53.0	6.6	26.9	34.2	812 *	178.3	Jun 27				39.9	0.0	1.0
Ligena	29.4	2,351 *	51.8	7.5	27.3	33.5	786 *	179.3	Jun 28				42.9	0.0	1.8
Suneson	25.8	2,065	52.8	6.9	27.1	34.0	701	178.3	Jun 27				41.6	0.0	1.8
Clearwater Hy 101	34.4	2,248 *	51.9	7.2	26.7	34.0	765 *	178.8	Jun 28				40.9	0.0	1.0
Yellowstone	22.3	1,900	52.0	7.3	28.2	33.2	627	181.0	Jun 30				43.6	0.0	1.8
SO-30	24.8	2,275 *	52.8	7.2	26.7	33.4	760 *	179.8	Jun 29				43.6	0.0	1.5
SO-40	34.3	2,206 *	51.6	7.0	26.9	33.8	746 *	178.5	Jun 28				43.4	0.0	1.3
SO-50	25.0	2,156 *	52.8	6.9	27.0	33.4	718	179.5	Jun 29				42.1	0.0	1.3
SO-60	27.2	2,360 *	51.3	7.8	27.0	32.7	768 *	176.3	Jun 25				41.1	0.0	1.0
C10-BZ-SB7-6	26.9	2,012	51.1	6.3	27.1	34.6	696	178.0	Jun 27				40.1	0.0	1.5
C10-BZ-SB7-7	27.4	2,268 *	52.6	7.1	27.4	33.9	767 *	181.8	Jul 1				41.6	0.0	1.3
Average	28.7	2,218	52.2	7.1	27.1	33.8	747	179.0	Jun 28				42.0	0.0	1.3
LSD (p=0.05)	ns	268.8	0.8	0.7	0.5	0.9	86.4	2.3	-				ns	-	ns
CV%	22.7	8.4	1.0	6.9	1.2	1.8	8.0	0.9	-				8.5	-	34.5
P-Value (Entry)	0.130	0.010	<0.0001	0.015	<0.0001	0.004	0.004	0.003	-				0.867	-	0.097

Grain yield is adjusted to 8 percent grain moisture content.

** Indicates highest yielding cultivar within a column.

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

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 26, 2011
Harvest Date: August 15, 2011

Table 11. 11CM08: Statewide Industry Camelina Trial - Dryland, Fallow.
MSU Southern Agricultural Research Center. Huntley, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian	Calendar	Julian	Calendar	inches	%	rating
Blaine Creek		11.2	1,163	51.1	10.3	26.4	29.9	349	170.3	Jun 19	198.3	Jul 17	28.2	3.0	0.0
Calena		12.4	1,309	51.0	12.2	26.0	29.4	384	171.0	Jun 20	198.3	Jul 17	30.7	1.0	0.0
Ligena		11.0	1,409 *	49.8	13.8	26.8	29.6	422 *	171.0	Jun 20	199.8	Jul 19	29.7	1.5	0.0
Suneson		12.0	1,044	52.1	10.8	26.3	30.3	316	169.5	Jun 19	198.0	Jul 17	28.3	4.5	0.0
Clearwater Hy 101		11.7	1,189	49.9	13.0	26.5	29.2	348	170.3	Jun 19	198.3	Jul 17	29.1	2.5	0.0
Yellowstone		11.3	938	38.1	11.8	27.7	29.7	278	171.8	Jun 21	199.3	Jul 18	28.6	1.5	0.0
SO-30		13.6	1,361 *	50.8	13.2	26.5	29.2	402 *	170.5	Jun 20	198.8	Jul 18	30.4	1.2	0.0
SO-40		15.0	1,623 *	48.6	12.6	26.8	28.6	466 *	170.3	Jun 19	198.0	Jul 17	33.0	2.3	0.0
SO-50		7.6	1,424 *	50.9	12.5	25.9	29.9	426 *	170.8	Jun 20	199.0	Jul 18	29.3	1.5	0.0
SO-60		7.5	1,116	49.6	14.1	26.7	29.2	325	171.3	Jun 20	198.5	Jul 18	30.0	1.0	0.0
C10-BZ-SB7-6		13.4	1,757 **	50.4	11.3	26.6	29.9	526 **	170.0	Jun 19	198.0	Jul 17	29.8	2.8	0.7
C10-BZ-SB7-7		13.8	1,116	48.0	16.1	27.7	28.8	321	171.8	Jun 21	200.3	Jul 19	29.6	1.3	0.0
Average		11.7	1,287	49.2	12.6	26.7	29.5	380	170.7	Jun 20	198.7	Jul 18	29.7	2.0	0.1
PLSD (p=0.05)		ns	420.0	ns	ns	1.0	ns	130.8	0.9	-	0.9	-	ns	ns	ns
CV%		36.5	22.7	14.7	18.8	2.5	4.2	23.9	0.4	-	0.3	-	6.2	105.8	433.0

Grain yield is adjusted to 8 percent grain moisture content.

** Indicates highest yielding cultivar within a column.

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

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 25, 2011

Harvest Date: July 27, 2011

Table 12. 11CM18: Statewide Industry Camelina Trial - Dryland, Fallow.
MSU Western Triangle Agricultural Research Center. Conrad, MT. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian	Calendar	Julian	Calendar	inches	%	rating
Blaine Creek			1,225	52.2		26.1	38.7	475	183.3	Jul 2	223.0	Aug 11	29.0	0.0	0.0
Calena			1,256	52.9		25.0	38.9	489	185.3	Jul 4	225.0	Aug 13	29.8	0.0	0.0
Ligena			1,232	52.2		24.8	39.7	491	184.5	Jul 4	223.0	Aug 11	31.0	0.0	0.0
Suneson			1,168	53.1		26.4	38.8	454	182.8	Jul 2	225.0	Aug 13	29.8	0.0	0.0
Clearwater Hy 101			1,290	51.7		25.9	38.9	503	182.8	Jul 2	225.0	Aug 13	30.5	0.0	0.0
Yellowstone			1,362	52.0		25.6	39.9	544	186.0	Jul 5	224.0	Aug 12	30.3	0.0	0.0
SO-30			1,255	52.8		25.1	39.7	500	183.5	Jul 3	223.0	Aug 11	29.3	0.0	0.0
SO-40			1,363	51.7		25.5	38.9	530	185.3	Jul 4	224.0	Aug 12	32.3	0.0	0.0
SO-50			1,316	52.8		24.9	39.3	519	184.5	Jul 4	225.0	Aug 13	32.0	0.0	0.0
SO-60			1,325	52.3		25.7	38.4	510	184.5	Jul 4	223.0	Aug 11	31.3	0.0	0.0
C10-BZ-SB7-6			1,141	51.5		25.5	38.9	444	181.5	Jul 1	224.0	Aug 12	28.8	0.0	0.0
C10-BZ-SB7-7			1,238	52.4		25.0	39.6	490	185.0	Jul 4	225.0	Aug 13	31.8	0.0	0.0
Average			1,264	52.3		25.4	39.2	496	184.1	Jul 3	224.1	Aug 12	30.5	0.0	0.0
LSD (p=0.05)			ns	0.5		ns	ns	ns	2.2	-	ns	-	ns	-	-
CV%			15.4	0.6		4.5	2.1	16.8	0.8	-	0.7	-	5.6	-	-
P-Value (Entry)			0.877	<0.0001		0.603	0.194	0.900	0.009	-	0.251	-	0.065	-	-

Grain yield is reported "as is" at harvest - not adjusted to a uniform moisture content.

Grain protein, grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: May 6, 2011

Harvest Date: August 28, 2011

Table 13. 11CM20: Statewide Industry Camelina Trial - Dryland, Fallow. NDSU Williston Research Extension Center. Williston, ND. 2011.

ID	Plant Stand	Plant Count	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Grain Oil	Oil Yield	Flowering Date		Maturity Date		Plant Height	Pod Shatter	Lodging Index
	%	no/ft2	lb/ac	lb/bu	%	%	%	lb/ac	Julian day	Calendar date	Julian day	Calendar date	inches	%	rating
Blaine Creek			1,611 *	52.4		29.3	36.6	589	175.3	Jun 24			27.7		0.0
Calena			1,750 **	53.2		29.7	35.3	617	174.0	Jun 23			27.9		0.0
Ligena			1,558 *	52.1		29.6	36.3	565	174.8	Jun 24			26.6		0.0
Suneson			1,619 *	53.1		29.7	36.1	584	174.5	Jun 24			26.9		0.0
Clearwater Hy 101			1,520	52.1		29.4	36.7	557	174.8	Jun 24			25.9		0.0
Yellowstone			1,366	52.7		30.1	36.9	504	176.8	Jun 26			29.3		0.0
SO-30			1,495	52.6		29.4	36.2	541	174.8	Jun 24			25.9		0.0
SO-40			1,652 *	51.9		29.7	35.7	589	175.0	Jun 24			28.5		0.0
SO-50			1,619 *	52.9		29.4	35.8	580	175.3	Jun 24			28.9		0.0
SO-60			1,726 *	52.4		29.9	35.4	611	174.3	Jun 23			28.9		0.0
C10-BZ-SB7-6			1,597 *	51.8		29.4	36.2	577	173.8	Jun 23			25.3		0.0
C10-BZ-SB7-7			1,472	52.6		30.1	35.6	524	176.5	Jun 26			26.9		0.0
Average			1,582	52.5		29.6	36.1	570	175.0	Jun 24			27.4		0.0
LSD (p=0.05)			198.6	0.3		0.4	0.5	ns	1.5	-			2.0		-
CV%			8.7	0.4		1.0	1.0	8.5	0.6	-			5.0		-
P-Value (Entry)			0.023	<0.0001		0.005	<0.0001	0.067	0.006	-			0.002		-

Grain yield is reported "as is" at harvest - not adjusted to a uniform moisture content.

** Indicates highest yielding cultivar within a column.

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

Grain oil and oil yield are reported on a dry matter basis.

Lodging visually estimated on a score from 0 to 9 (0=none, 9=all plants flat).

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Seeding Date: April 27, 2011
Harvest Date: August 2, 2011

Table 14. 11CM07: Statewide Camelina Trial - Dryland, Fallow. Fatty Acid Composition. MSU Central Agricultural Research Center. Moccasin, MT. 2011.

ID	Palmitic Acid	Stearic Acid	Oleic Acid	Linoleic Acid	α -Linolenic Acid	Arachidic Acid	Gondoic Acid	Eicosadienoic Acid	Erucic Acid	Nervonic Acid	Saturated		Mono-unsaturated	Poly-unsaturated
	(16:0)	(18:0)	(18:1)	(18:2)	(18:3)	(20:0)	(20:1)	(22:0)	(22:1)	(24:1)	%	%	%	%
Blaine Creek	5.3	2.4	18.9	18.6	31.0	1.9	15.7	0.4	3.3	0.6	9.7	36.8	49.1	
Calena	5.2	2.4	20.0	17.0	31.4	2.0	16.4	0.5	3.6	0.6	9.6	38.5	47.6	
Ligena	5.4	2.5	19.4	18.5	30.3	1.9	15.8	0.4	3.3	0.6	9.8	37.2	48.7	
Suneson	5.1	2.4	19.4	17.2	32.2	1.8	16.4	0.4	3.3	0.6	9.4	37.6	48.5	
Clearwater Hy 101	5.0	2.4	20.0	16.5	32.6	2.0	16.8	0.5	3.6	0.6	9.4	38.5	47.6	
Yellowstone	5.4	2.3	19.0	18.9	30.7	1.9	16.0	0.5	3.5	0.6	9.6	37.0	49.0	
SO-30	5.0	2.4	19.7	16.8	32.4	1.9	16.4	0.4	3.5	0.6	9.4	38.1	48.0	
SO-40	5.2	2.5	19.5	17.5	31.3	1.9	15.8	0.4	3.3	0.6	9.7	37.7	48.3	
SO-50	4.7	2.3	20.5	15.4	34.2	1.9	17.6	0.5	3.6	0.6	8.9	39.3	47.1	
SO-60	5.0	2.3	20.0	16.4	32.7	1.9	16.9	0.5	3.5	0.6	9.3	38.4	47.8	
C10-BZ-SB7-6	5.2	2.4	19.3	18.0	31.6	2.0	16.1	0.4	3.4	0.6	9.6	37.6	48.4	
C10-BZ-SB7-7	5.0	2.4	19.8	16.7	32.5	1.9	16.7	0.4	3.4	0.6	9.4	38.4	47.8	
Average	5.1	2.4	19.6	17.3	31.9	1.9	16.4	0.4	3.4	0.6	9.5	37.9	48.2	
LSD (p=0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	
CV%	7.75	4.20	4.55	14.54	7.24	6.31	16.38	5.77	9.47	6.22	5.07	4.31	2.73	
P-Value (Entry)	0.539	0.373	0.425	0.718	0.571	0.754	0.716	0.971	0.897	0.661	0.502	0.664	0.599	

Fatty acid composition reported on dry matter basis of the whole seed.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Table 15. 11CM70: Statewide Camelina Trial - Dryland, Recrop. Fatty Acid Composition.
MSU Central Agricultural Research Center. Moccasin, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Saturated	Mono- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	5.0	2.5	19.9	17.1	32.3	2.0	16.4	0.4	3.1	0.6	9.5	38.1	47.8
Calena	5.1	2.4	19.1	17.7	32.8	2.0	16.4	0.4	3.2	0.6	9.3	37.1	48.9
Ligena	5.1	2.4	18.9	18.6	32.1	2.0	16.2	0.4	3.0	0.6	9.5	36.8	48.8
Suneson	5.2	2.4	19.3	18.3	31.7	2.1	16.1	0.4	3.1	0.6	9.6	37.3	48.6
Clearwater Hy 101	4.9	2.4	20.2	15.9	32.8	2.1	17.0	0.5	3.4	0.6	9.4	39.0	47.1
Yellowstone	4.7	2.3	19.3	16.0	35.5	1.9	16.2	0.4	3.0	0.6	8.8	37.2	48.8
SO-30	5.3	2.4	19.1	19.5	30.8	2.2	16.0	0.4	3.0	0.6	9.8	36.6	49.0
SO-40	5.1	2.3	19.6	18.1	31.9	2.2	16.3	0.4	3.3	0.6	9.5	37.8	48.1
SO-50	5.1	2.4	19.8	17.7	31.9	2.1	16.9	0.5	3.2	0.6	9.5	37.5	48.3
SO-60	5.1	2.4	20.1	17.4	31.8	2.1	16.9	0.5	3.3	0.6	9.5	37.9	47.9
C10-BZ-SB7-6	5.2	2.5	19.5	18.9	31.3	2.0	16.0	0.4	2.9	0.6	9.7	37.4	48.4
C10-BZ-SB7-7	5.1	2.4	18.7	17.3	33.6	2.0	16.2	0.4	3.0	0.6	9.2	36.6	49.4
Average	5.1	2.4	19.5	17.7	32.4	2.1	16.4	0.4	3.1	0.6	9.5	37.4	48.4
LSD (p=0.05)	0.2	0.0	0.4	1.1	1.0	0.1	0.6	0.0	0.2	0.0	0.2	0.7	0.6
CV%	2.30	1.34	1.34	4.28	2.09	3.20	2.42	2.03	3.86	1.98	1.53	1.32	0.82
P-Value (Entry)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.003	<0.0001	<0.0001	0.002	<0.0001	<0.0001	<0.0001

Fatty acid composition reported on dry matter basis of the whole seed.

Table 16. 11CM03: Statewide Industry Camelina Trial - Dryland, Fallow. Fatty Acid Composition.
MSU Eastern Agricultural Research Center. Sidney, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Saturated	Mono- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	5.2	2.5	19.1	18.2	31.2	1.9	14.3	0.4	3.0	0.7	10.0	37.8	48.3
Calena	5.2	2.5	18.0	18.4	32.0	1.7	14.5	0.4	3.0	0.7	9.7	36.0	49.9
Ligena	5.3	2.4	17.3	20.4	31.2	1.8	13.5	0.4	2.7	0.7	9.9	35.3	50.6
Suneson	5.4	2.4	18.1	20.1	30.4	1.9	13.6	0.4	2.7	0.7	10.1	35.8	49.9
Clearwater Hy 101	5.1	2.4	18.4	19.1	31.6	1.9	13.9	0.4	2.9	0.7	9.9	37.0	49.1
Yellowstone	5.2	2.3	17.9	19.7	32.9	1.6	13.1	0.4	2.6	0.7	9.5	35.5	50.5
SO-30	5.6	2.4	17.9	21.6	29.0	1.9	13.5	0.4	2.8	0.7	10.3	35.4	50.2
SO-40	5.3	2.3	18.0	20.9	30.3	2.0	13.6	0.4	3.0	0.7	10.0	36.2	49.7
SO-50	5.4	2.5	18.2	20.4	30.1	1.9	14.0	0.4	2.8	0.7	10.1	35.8	49.9
SO-60	5.4	2.4	18.6	19.5	30.5	1.9	14.2	0.4	3.0	0.7	9.9	36.1	49.7
C10-BZ-SB7-6	5.4	2.4	17.5	21.7	30.9	1.7	13.4	0.4	2.6	0.7	9.9	35.3	50.5
C10-BZ-SB7-7	5.0	2.4	17.2	18.3	33.6	1.7	14.2	0.4	2.8	0.7	9.4	35.5	50.5
Average	5.3	2.4	18.0	19.9	31.1	1.8	13.8	0.4	2.8	0.7	9.9	36.0	49.9
LSD (p=0.05)	0.1	0.1	0.3	0.8	0.6	0.1	0.3	0.0	0.1	0.0	0.1	0.5	0.4
CV%	1.58	2.13	1.21	2.88	1.42	2.84	1.53	2.06	3.51	1.33	1.03	1.04	0.62
P-Value (Entry)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Fatty acid composition reported on dry matter basis of the whole seed.

Table 17. 11CM02: Statewide Industry Camelina Trial - Dryland, Fallow. Fatty Acid Composition.
MSU Northern Agricultural Research Center. Havre, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Saturated	Mono- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	4.4	2.3	21.1	11.5	36.8	1.7	16.7	0.4	3.3	0.6	8.7	39.6	46.5
Calena	4.5	2.3	19.9	12.8	36.8	1.5	16.6	0.4	3.2	0.6	8.6	37.9	48.2
Ligena	4.7	2.2	19.6	14.6	35.8	1.5	15.9	0.4	3.0	0.6	8.8	37.1	48.6
Suneson	4.7	2.3	19.9	13.8	35.7	1.6	15.8	0.4	2.9	0.6	8.9	37.3	48.4
Clearwater Hy 101	4.5	2.2	20.4	12.6	36.3	1.6	16.4	0.4	3.2	0.6	8.7	38.6	47.5
Yellowstone	4.4	2.2	20.1	13.2	37.8	1.4	15.6	0.4	2.7	0.6	8.4	37.2	48.7
SO-30	4.8	2.2	19.7	14.9	34.4	1.7	15.8	0.4	3.0	0.6	9.1	37.0	48.5
SO-40	4.6	2.1	20.5	13.8	35.1	1.7	16.1	0.4	3.4	0.6	9.0	38.6	47.4
SO-50	4.8	2.3	20.5	13.5	34.8	1.7	16.7	0.4	3.2	0.6	9.0	37.8	47.8
SO-60	4.7	2.3	21.1	12.9	34.8	1.6	16.9	0.4	3.2	0.6	9.0	38.5	47.2
C10-BZ-SB7-6	4.8	2.3	20.1	14.7	35.5	1.5	16.0	0.4	3.0	0.6	8.9	37.3	48.4
C10-BZ-SB7-7	4.5	2.3	19.6	12.7	37.2	1.4	16.3	0.4	2.9	0.6	8.6	37.2	48.7
Average	4.6	2.3	20.2	13.4	35.9	1.6	16.2	0.4	3.1	0.6	8.8	37.8	48.0
LSD (p=0.05)	0.3	0.1	0.9	1.8	1.3	0.1	ns	0.0	0.2	ns	0.2	1.5	1.3
CV%	4.07	1.63	3.03	9.58	2.42	3.89	4.22	3.00	5.50	2.89	1.86	2.76	1.86
P-Value (Entry)	0.023	<0.0001	0.011	0.024	<0.0001	<0.0001	0.156	<0.0001	<0.0001	0.072	<0.0001	0.027	0.024

Fatty acid composition reported on dry matter basis of the whole seed.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Table 18. 11CM05: Statewide Industry Camelina Trial - High Rainfall, Recrop. Fatty Acid Composition.
MSU Northwestern Agricultural Research Center. Kalispell, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Saturated	Mono- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	4.1	2.3	19.3	12.0	37.6	2.0	17.5	0.4	3.8	0.6	8.5	40.1	46.9
Calena	4.4	2.3	18.1	13.9	36.6	2.0	17.1	0.4	3.7	0.6	8.7	38.1	48.5
Ligena	4.3	2.2	18.6	13.9	36.9	2.0	17.5	0.4	3.7	0.6	8.5	38.8	47.9
Suneson	4.4	2.2	18.9	14.1	36.2	2.0	17.0	0.4	3.6	0.6	8.7	38.9	47.8
Clearwater Hy 101	4.1	2.2	19.5	11.9	37.6	2.0	17.8	0.4	3.9	0.6	8.4	40.4	46.6
Yellowstone	4.1	2.1	19.7	13.1	38.7	1.9	17.1	0.4	3.5	0.6	8.1	39.1	47.7
SO-30	4.4	2.2	18.8	14.2	35.6	2.2	17.6	0.5	3.9	0.6	8.8	38.9	47.7
SO-40	4.3	2.1	18.7	13.9	36.3	2.1	17.2	0.4	3.9	0.6	8.7	39.3	47.6
SO-50	4.6	2.3	18.9	14.7	34.8	2.1	17.4	0.4	3.7	0.6	9.0	38.5	48.0
SO-60	4.2	2.2	19.8	12.5	37.0	2.1	18.6	0.5	4.0	0.6	8.5	40.3	46.6
C10-BZ-SB7-6	4.7	2.4	18.3	16.5	34.6	1.8	15.9	0.4	3.2	0.6	9.1	37.5	48.9
C10-BZ-SB7-7	4.2	2.3	18.2	12.8	38.1	1.9	17.6	0.4	3.6	0.6	8.4	38.4	48.4
Average	4.3	2.2	18.9	13.6	36.7	2.0	17.4	0.4	3.7	0.6	8.6	39.0	47.7
LSD (p=0.05)	0.3	0.1	0.7	1.6	1.4	0.1	1.0	0.0	0.3	0.0	0.3	1.3	1.0
CV%	4.68	2.90	2.51	8.26	2.59	3.51	3.94	3.30	5.44	4.07	2.64	2.33	1.49
P-Value (Entry)	0.001	<0.0001	<0.0001	0.000	<0.0001	<0.0001	0.004	<0.0001	0.000	0.038	<.0001	0.002	0.001

Fatty acid composition reported on dry matter basis of the whole seed.

Table 19. 11CM08: Statewide Industry Camelina Trial - Dryland, Fallow. Fatty Acid Composition. MSU Southern Agricultural Research Center. Huntley, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Mono- Saturated	Poly- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	3.1	2.2	25.4	6.9	42.7	2.5	22.7	0.5	4.0	0.4	7.2	47.1	41.0
Calena	2.9	2.0	25.4	7.1	44.3	2.5	23.2	0.5	3.8	0.4	6.6	46.8	41.5
Ligena	2.7	2.0	25.7	7.3	44.7	2.7	23.2	0.5	3.6	0.4	6.6	47.4	40.9
Suneson	3.4	2.1	24.2	8.3	41.4	2.4	21.6	0.5	4.0	0.4	7.4	45.0	42.6
Clearwater Hy 101	2.6	2.0	26.2	5.9	44.8	2.7	23.6	0.6	4.0	0.4	6.7	48.6	40.0
Yellowstone	3.0	2.0	25.2	7.9	43.9	2.4	21.7	0.5	3.6	0.4	6.8	46.1	42.0
SO-30	2.9	1.9	25.5	8.3	43.0	2.8	23.2	0.6	3.8	0.4	6.9	47.1	41.1
SO-40	2.5	1.9	26.3	7.6	44.9	3.1	24.0	0.6	3.7	0.3	6.6	48.8	40.0
SO-50	3.3	2.2	25.3	8.0	41.4	2.5	22.8	0.5	4.0	0.4	7.3	46.2	41.5
SO-60	3.2	2.0	25.8	8.9	41.9	2.7	22.6	0.5	3.6	0.4	7.1	46.3	41.6
C10-BZ-SB7-6	3.3	2.2	24.1	9.1	41.9	2.3	21.9	0.5	3.8	0.4	7.3	45.1	42.7
C10-BZ-SB7-7	2.6	2.0	26.0	7.3	46.5	2.8	23.6	0.5	3.0	0.4	6.2	47.1	41.4
Average	3.0	2.0	25.4	7.7	43.4	2.6	22.8	0.5	3.7	0.4	6.9	46.8	41.4
PLSD (p=0.05)	ns	0.2	ns	ns	ns	ns	ns	ns	0.5	ns	ns	ns	ns
CV%	24.7	6.1	7.4	27.30	8.4	14.8	9.1	5.8	9.7	18.9	11.4	6	5

Fatty acid composition reported on dry matter basis of the whole seed.

ns Indicates no difference between cultivars within a column based on Fisher's Protected LSD at the 0.05 probability level.

Table 20. 11CM18: Statewide Industry Camelina Trial - Dryland, Fallow. Fatty Acid Composition. MSU Western Triangle Agricultural Research Center. Conrad, MT. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Mono- Saturated	Poly- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	4.8	2.5	17.9	16.3	34.3	1.5	13.6	0.3	2.4	0.7	9.3	36.0	49.8
Calena	4.8	2.5	16.7	16.3	34.5	1.5	14.1	0.3	2.5	0.7	9.1	34.7	51.1
Ligena	4.9	2.5	16.1	19.2	33.5	1.5	13.1	0.3	2.1	0.7	9.2	33.7	51.8
Suneson	5.0	2.5	16.8	18.3	33.8	1.5	13.1	0.3	2.1	0.7	9.3	34.2	51.4
Clearwater Hy 101	4.8	2.5	17.7	16.8	33.8	1.5	13.7	0.3	2.4	0.7	9.3	35.9	49.9
Yellowstone	4.8	2.5	17.3	18.7	34.5	1.3	12.5	0.3	1.8	0.7	9.0	34.1	51.5
SO-30	5.0	2.4	16.1	19.4	33.0	1.6	13.1	0.3	2.1	0.7	9.4	33.5	51.9
SO-40	4.9	2.3	17.4	18.6	32.8	1.7	13.4	0.3	2.5	0.7	9.4	35.4	50.3
SO-50	5.1	2.6	17.0	18.3	32.3	1.5	13.7	0.3	2.3	0.7	9.5	34.3	51.1
SO-60	5.0	2.5	17.8	17.3	32.7	1.6	14.2	0.3	2.5	0.7	9.5	35.4	50.2
C10-BZ-SB7-6	5.1	2.6	17.1	20.0	32.2	1.4	13.1	0.3	2.1	0.7	9.6	34.4	51.1
C10-BZ-SB7-7	4.8	2.6	16.7	17.6	34.5	1.4	13.6	0.3	2.1	0.7	9.1	34.4	51.3
Average	4.9	2.5	17.1	18.1	33.5	1.5	13.4	0.3	2.3	0.7	9.3	34.7	50.9
LSD (p=0.05)	0.1	0.1	0.4	0.8	0.5	0.1	0.3	0.0	0.1	0.0	0.2	0.6	0.5
CV%	1.36	1.54	1.54	3.10	0.98	2.89	1.74	3.14	3.78	1.96	1.16	1.11	0.67
P-Value (Entry)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.009	<0.0001	<0.0001	<0.0001

Fatty acid composition reported on dry matter basis of the whole seed.

Table 21. 11CM20: Statewide Industry Camelina Trial - Dryland, Fallow. Fatty Acid Composition.
NDSU Williston Research Extension Center. Williston, ND. 2011.

ID	Palmitic	Stearic	Oleic	Linoleic	α -Linolenic	Arachidic	Gondoic	Eicosadienoic	Erucic	Nervonic	Saturated	Mono- unsaturated	Poly- unsaturated
	Acid (16:0)	Acid (18:0)	Acid (18:1)	Acid (18:2)	Acid (18:3)	Acid (20:0)	Acid (20:1)	Acid (22:0)	Acid (22:1)	Acid (24:1)			
	%	%	%	%	%	%	%	%	%	%	%	%	%
Blaine Creek	5.2	2.6	19.1	18.5	31.2	1.7	13.6	0.4	2.6	0.7	10.0	36.7	49.0
Calena	5.3	2.5	17.2	19.1	32.2	1.6	13.6	0.3	2.7	0.7	9.8	34.6	51.1
Ligena	5.5	2.5	17.2	22.0	30.1	1.6	12.6	0.3	2.2	0.7	10.1	34.0	51.3
Suneson	5.4	2.6	17.8	20.6	30.6	1.7	13.0	0.4	2.4	0.7	10.1	34.9	50.5
Clearwater Hy 101	5.4	2.5	18.3	20.2	30.3	1.7	13.2	0.4	2.5	0.7	10.2	35.7	49.8
Yellowstone	5.4	2.5	18.5	20.5	31.2	1.5	12.7	0.3	2.1	0.7	10.0	34.9	50.5
SO-30	5.7	2.5	17.6	22.5	28.8	1.7	12.7	0.4	2.3	0.7	10.4	34.1	51.1
SO-40	5.5	2.4	17.5	21.9	29.5	1.8	12.8	0.4	2.6	0.7	10.2	34.8	50.7
SO-50	5.7	2.6	18.2	21.1	28.8	1.8	13.5	0.4	2.5	0.7	10.4	34.8	50.5
SO-60	5.6	2.6	18.3	20.7	29.4	1.7	13.4	0.4	2.6	0.7	10.3	35.0	50.3
C10-BZ-SB7-6	5.5	2.6	17.3	21.5	30.7	1.5	13.0	0.3	2.3	0.7	10.0	34.3	51.2
C10-BZ-SB7-7	5.5	2.6	17.2	20.3	31.4	1.6	13.2	0.3	2.4	0.7	9.9	34.1	51.4
Average	5.5	2.5	17.9	20.7	30.3	1.7	13.1	0.4	2.4	0.7	10.1	34.8	50.6
LSD (p=0.05)	0.1	0.1	0.6	0.7	0.9	0.1	0.2	0.0	0.1	0.0	0.2	0.6	0.7
CV%	1.05	1.76	2.37	2.49	2.05	2.83	1.11	2.18	4.13	1.03	1.56	1.25	0.90
P-Value (Entry)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Fatty acid composition reported on dry matter basis of the whole seed.