

2007 U.S. Sunflower Crop Quality Report



Regarding The 2007 Sunflower Crop Quality Report

The 2007 U.S. Sunflower Crop Quality Report, compiled by the National Sunflower Association in cooperation with the Foreign Agricultural Service, U.S. Department of Agriculture, provides an overview on the size and quality of the 2007 U.S. sunflower seed crop. It includes statistics on the marketing of the crop, as well as U.S. and world supply/disappearance tables and information on U.S. sunflower oil.

Produced annually by the National Sunflower Association since 1981, this latest U.S. Sunflower Crop Quality Report can be found on the NSA's website — www.sunflower-nsa.com. Printed copies of this report can be made available by the NSA. (See NSA's contact information on page 9).

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2007 U.S. Sunflower Acreage & Production

The 2007 sunflower production totaled 2.89 billion pounds, up 35% from 2006 but down 28% from 2005. The U.S. average yield per acre increased by 226 pounds from 2006, up to 1,437 pounds. Planted area, at 2.07 million acres, was 6% above 2006 but 24% below 2005. Area harvested increased 14% from 2006, up to 2.01 million acres.

Production in North Dakota, the leading sunflower-producing state, was estimated at 1.49 billion pounds for 2007, up 34 percent from 2006. The average yield in North Dakota, at 1,414 pounds per acre, was up 118 pounds from 2006. Compared with 2006, planted and harvested area in North Dakota increased by 19 and 23%, respectively. Yields, compared with last year, were

up in all major sunflower-producing states except Minnesota. The yield in Minnesota, at 1,508 pounds per acre, was down 248 pounds from the prior year's yield of 1,756 pounds per acre, which was the second highest yield on record.

U.S. production of oil-type sunflower varieties, at 2.50 billion pounds, increased 40% from 2006. Harvested acres were up 13% from the previous year, and the average yield increased by 273 pounds to 1,454 pounds per acre. A record high yield for oil-type sunflower varieties in Texas was set at 1,700 pounds per acre.

Production of nonoil sunflower varieties, at 392 million pounds, increased 10% from 2006. Area harvested, at 292,500 acres, was up 14% from 2006. The average yield

decreased by 50 pounds from last year to 1,339 pounds per acre. The record high yield for non-oil sunflower varieties was tied in South Dakota, at 1,700 pounds per acre.

As the 2007 sunflower harvest began in late September, progress in was well ahead of normal in Colorado, but lagged behind in Kansas and South Dakota. As of September 30, harvest was already 39% complete in Colorado, compared with the five-year average of 12%.

Meanwhile, Kansas and South Dakota were nine and seven points behind normal, respectively.

Through October, harvest in the four major producing states progressed behind 2006 and the five-year average, as periods of heavy rain during the month slowed harvest. By October 28, harvest was 50% complete, compared with 64% on the same date in 2006 and the five-year average of 58%. By mid-November, conditions had improved and harvest was completed.

U.S. Sunflower Production

(1,000s of Pounds)

	2005	2006	2007
Oil	3,177,635	1,787,966	2,496,970
Nonoil	840,720	355,647	391,585
Total	4,018,355	2,143,613	2,888,555

U.S. Oil-Type Sunflower Harvested Area, By State

(1,000s of Hectares)

State	2001	2002	2003	2004	2005	2006	2007
Colorado	48.6	24.3	34.4	32.4	58.7	30.4	40.5
Kansas	117.4	62.7	62.7	56.7	99.2	52.6	58.7
Minnesota	11.3	15.0	21.9	11.3	29.1	21.4	35.6
Nebraska	20.2	13.8	19.4	14.2	23.5	12.5	13.4
North Dakota	337.0	447.2	412.8	267.1	358.2	299.5	362.2
South Dakota	267.5	151.8	174.0	159.4	194.7	165.9	157.4
Texas	13.4	3.6	6.5	6.5	19.4	5.3	5.3
Other	17.4	16.2	26.7	28.7	39.5	25.1	21.9
Total	832.8	734.6	758.4	576.3	822.3	612.7	695.0

2007 Seed Quality/Confection Kernel Specifications

Seed quality and kernel specifications of the 2007 crop were estimated from samples of oil and nonoil (confection) sunflower collected with the aid of the North Dakota Grain Inspection Service, Kansas Grain Inspection Service, Aberdeen (S.D.) Grain Inspection and several confection sunflower processing plants. The samples were drawn from sunflower loads delivered to processors, or from submitted samples taken at local grain buying facilities. The seed samples were then analyzed according to USDA Grain Inspection, Packers & Stockyards Administration

(GIPSA, formerly known as FGIS) directives. Oil content of oil-type seed samples was determined on a clean-seed basis using nuclear magnetic resonance (NMR) analysis.

Analysis of the oil-type sunflower seed samples indicated an average oil of 43.1 %, down only slightly from the 2006 average of 43.4 %. Test weight was 30.9 pounds per bushel, one pound lighter than the 2006 test weight of 31.9, but above the five-year average test weight. Foreign material at 5.5 % was slightly higher than 2006, but considerably less than the five-year average. Moisture at 9.1 % was similar to the 2006

moisture of 9.2 %.

The percentage of confection seed over 20/64 in size was 68.1 % in 2007, much lower than the two prior years when the percentage was 70 % over 20/64 in size. Foreign

material in 2007 samples was 7.5 %, higher than 2006 but comparable to recent years. At 25.1 %, test weight was lower than in 2006, while average moisture at 10.0 %, was slightly less than in 2006.

Oil-Type Sunflower Seed Quality

Year	Test Weight	Moisture	Foreign Material	Oil %
2007	30.9	9.1	5.5	43.1
2006	31.9	9.2	4.9	43.4
2005	31.3	9.7	4.4	42.7
2004	28.4	10.0	8.3	41.1
2003	30.7	8.5	6.0	42.6

Nonoil Sunflower Seed Quality

Year	Test Weight	Moisture	Foreign Material	Over 20/64 Size
2007	25.1	10.0	7.5	68.1
2006	26.3	10.5	6.4	70.7
2005	25.1	10.9	7.9	70.9
2004	23.2	11.8	14.5	67.3
2003	25.4	10.1	7.7	67.1

Product Specifications U.S. Sunflower Kernel

- Origin** - Sunflower hybrid seed
 - Flavor** - Good, typical, mild, distinctive
 - Odor** - Good, clean, fresh aroma
 - Texture** - Firm, not brittle or soggy
 - Color** - Off-white, gray
 - Microbiological** - Aflatoxin: Negative
Pathogens: Negative
 - Chemical Additives** - No preservatives or chemical additives may be used
 - Pesticide Residues** - Meets all state & federal regulatory requirements
 - Fumigants** - Only FDA-approved fumigants may be used as considered necessary. Residues may not exceed FDA approved tolerances
- Quality and type of kernel is determined with the following factors to meet specific customer needs:**
- Size** - Defined as kernel count per oz
 - Foreign Material** - Includes shells and unshelled seed; defined as percentage or count per unit of weight
 - Moisture** - Defined as a percentage at or below 8 %
 - Damage** - Distinctly discolored kernel or insect damage. Each defined as a percentage
 - Broken or Chip** - Any portion less than 1/2 kernel; defined as a percentage
 - Sticktites** - Kernel with a piece of shell adhering; defined as count per unit of weight.

2007 Oil Quality Analysis/Oil Traits & Rules

The tables below compare the oil quality and fatty acid content of representative samples of linoleic and mid-oleic sunflower seed oil, gathered from the 2007 U.S. crop, to previous years' data on oil quality. The sunflower oil quality analysis was conducted with standard gas chromatography, basis American Oil Chemists' Society Method #Cel-62.

The 61.73% oleic average of NuSun® samples was higher than 2006's 60.66% average and the highest since 2001 (which had a 61.15% average).

The 2007 linoleic acid content of 62.37% is lower than the 63.25% average of 2006 crop samples. The

25.93% oleic level average of the 2007 sunflower oil samples was slightly higher than the 25.38% average of the 2006 oil samples.

As is the case each year, climatic factors and the timing of production contributed to the level of both linoleic and oleic acid in the samples collected each harvest.

See general trading rules for mid-oleic and linoleic oil, as well as product specification tables, at www.sunflowernsa.com.

Click on the link "Sunflower oil," then "product specifications."

For more details or questions regarding trading rules, go to the American Fats & Oils Assn., Inc., website, foaonline.org.

Mid-Oleic Sunflower Oil (NuSun®): Crude

Trading Rules: Specifications from American Fats and Oils Association: Rule 14B

ITEM	VALUE
Flash Point (AOCS Cc 9b-56)	250°F Minimum
Halphen Test	Negative
Saponification Value	188-194
Unsaponifiable	1.3% Maximum
Free Fatty Acid (as Oleic)	Basis 2.0% Maximum 3.0%
Moisture & Volatile (AOCS Ca 2d-25)	0.5% Maximum
Insoluble Impurities (AOCS Ca 3-46)	0.3% Maximum
Color (in 5 1/4 inch cell or tube), as determined under AOCS Method Cc 13b-45, Bleached (AOCS Cc 8g-52), after refining (AOCS Ca 9a-52)	2.5 Red Maximum
Linolenic acid	1.0% Maximum
Oleic (as % of TFA)	55% Minimum 75% Maximum

Rule 14B -- Crude mid-oleic sunflower oil (NuSun®) shall be pure and produced only from sunflower seed of fair average quality by hydraulic, expeller, or solvent extraction process. Buyer shall receive an allowance of 0.1% of the invoice value for each 0.1% of free fatty acid in excess of 2%; fractions in proportion. (Effective 1/1/2003)

Mid-Oleic Sunflower Oil (NuSun®): Fully Refined, Bleached & Deodorized

Trading Rules: Specifications from American Fats and Oils Association: Rule 15B

ITEM	VALUE
Free Fatty Acid (as Oleic)	0.05% Maximum
Moisture & Impurities (AOCS Ca 2d-25)	0.10% Maximum
Peroxide Value	2.0 Maximum
Color (Lovibond Scale)	2.5 Red Maximum
Iodine Value	88-115.0
Oleic	55% Minimum 75% Maximum
Flavor	Pleasing
Appearances (Waxes Not Separated)	Will be cloudy at room temperature

Other Possible Specs:

Saponification Value	186-194
Unsaponifiable	1.5% Maximum
Specific Gravity by 20° Centigrade	0.917-0.924

Rule 15B -- Fully refined, bleached and deodorized mid-oleic sunflower oil (NuSun®) shall be pure mid-oleic sunflower seed oil. It shall be produced from fair average quality crude mid-oleic sunflower seed oil from which essentially all of the free fatty acids and non-oil substances have been removed by chemical treatments and by mechanical or physical separation. (Effective 1/1/2003)

Sunflower Oil Quality / Linoleic

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2007	5.71	4.07	25.93	62.37	0.16
2006	5.78	4.59	25.38	63.25	0.20
2005	5.95	4.28	24.85	63.56	0.38
2004	5.97	4.13	22.96	65.54	0.26
2003	5.75	4.36	24.63	63.95	0.25

Sunflower Oil Quality / NuSun®

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2007	4.12	3.98	61.73	28.32	0.43
2006	4.24	3.66	60.66	28.98	0.27
2005	4.36	3.51	59.44	31.04	0.44
2004	4.39	3.53	58.01	32.59	0.42
2003	4.46	3.40	60.26	29.50	0.18

2007 Sun Oil & Sun Meal Exports

Oil Exports - Sunflower oil is the preferred oil in most of Europe, Russia and Mexico, as well as in countries along the Mediterranean and several South American nations.

U.S. sunflower oil exporters can deliver three types of sunflower oil: NuSun®, Linoleic and High Oleic.

- **NuSun®** is a mid-range oleic, 55%-75% (monounsaturated) sun-

flower oil. It needs no hydrogenation and has a 9% saturated fat level. NuSun® is extremely functional for frying applications and has a good balance of linoleic acid — an essential fatty acid that enhances products' taste.

- **Linoleic** sunflower oil has about 69% polyunsaturated fat, 20% monounsaturated fat and 11% saturated fat. Linoleic sunflower is an excellent cooking oil with a neutral taste. This enhances the taste of food rather than overpowering it.

- **High Oleic** sunflower oil has 80% or more oleic (monounsaturated) acid. This unique oil has many specialty applications.

Sun Meal Exports - Most of U.S. sunflower meal produced is utilized within the United States as an ingredient for the domestic livestock feeding industry, although some U.S. sunflower meal is exported. Four types of sun meal, identified by their respective protein contents (28, 30, 32 and 35%), are produced in the United States.

U.S. Sunflower Oil Exports

(October-September)

Country	2003/04	2004/05	2005/06	2006/07
Belgium	742	2,722	6,001	9,524
Canada	19,509	41,167	47,905	50,541
Chile	0	0	188	1,145
Guatemala	201	590	272	0
Japan	3,572	3,240	2,372	4,812
Lebanon	490	464	13	0
Mexico	63,786	5,334	26,154	3,547
Netherlands	30	0	5,658	15
Singapore	783	1,673	4,162	5,906
South Korea	356	158	81	172
Taiwan	195	198	267	201
Other	20,012	2,231	2,413	1,180
Total MT	109,676	57,777	95,486	77,043

U.S. Sunflower Meal Exports

(October-September)

Country	2003/04	2004/05	2005/06	2006/07
Canada	231	304	1,669	4,032
Mexico	1,455	2,491	4,363	6,526
Ireland	4,276	0	0	0
U.K.	5,468	0	0	2,707
Other	549	323	21	81
Total MT	11,979	3,118	6,053	13,346



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U.S. Sunflower Supply & Disappearance (in 1,000 Metric Tons, Unless Specified)

Item	2002/03 <i>Oct.-Sept.</i>	2003/04	2004/05	2005/06	2006/07 <i>Revised</i>	2007/08 <i>Forecast</i>
NONOIL SUNFLOWER						
Area Harvested (1,000 HA)	146	131	116	234	104	118
Area Harvested (1,000 AC)	361	323	287	578	256	293
Yield (MT/HA)	1.20	1.41	1.12	1.63	1.56	1.50
Yield (LB/AC)	1,067	1,256	997	1,455	1,389	1,339
Stocks, Oct. 1	15	13	11	12	120	43
Production	175	184	130	382	161	178
Seed Import	73	75	34	29	86	78
TOTAL SUPPLY	263	272	175	422	368	298
Disappearance	250	261	163	302	325	288
Ending Stocks	13	11	12	120	43	10
OIL SUNFLOWER						
Area Harvested (1,000 HA)	731	758	576	822	613	695
Area Harvested (1,000 AC)	1,806	1,874	1,424	2,032	1,514	1,717
Yield (MT/HA)	1.28	1.35	1.39	1.75	1.32	1.63
Yield (LB/AC)	1,144	1,206	1,238	1,564	1,181	1,454
Stocks, Oct. 1	41	113	107	55	350	21
Production	937	1,025	800	1,442	811	1,133
Seed Import	24	25	10	13	27	40
TOTAL SUPPLY	1,002	1,164	917	1,510	1,188	1,194
Oilseed Crushed	346	609	276	597	648	650
Planting Seed, Birdfood, Domestic Use	543	448	586	563	519	500
Exports	0	0	0	0	0	0
Disappearance	889	1,057	862	1,160	1,167	1,150
Ending Stocks	113	107	55	350	21	44
SUNFLOWER OIL						
Stocks, Oct. 1	10	12	12	10	26	27
Oil Imports	28	12	34	26	71	70
Oil Production	145	256	116	248	259	260
TOTAL SUPPLY	183	280	162	284	356	357
Domestic Oil Use	119	157	94	163	252	280
Oil Exports	52	111	58	95	77	65
Total Use	171	268	152	258	329	345
Ending Stocks	12	12	10	26	27	12
SUNFLOWER MEAL						
Stocks, Oct. 1	3	3	3	4	3	4
Production	166	292	132	287	311	312
TOTAL SUPPLY	169	295	136	290	314	316
Domestic Use	163	280	129	281	297	305
Exports	3	12	3	6	13	7
Total Use	166	292	132	287	310	312
Ending Stocks	3	3	4	3	4	4

Table Data: NSA Assumptions

World Sunflower Supply & Disappearance

Item	2002/03	2003/04	2004/05	2005/06	2006/07 <i>Revised</i>	2007/08 <i>Forecast</i>
Area Harvested (1,000 HA)	19,941	22,820	21,254	22,944	23,912	22,824
Yield (MT/HA)	1.20	1.18	1.23	1.32	1.26	1.23
SUNFLOWER SEED						
Production						
Argentina	3,340	2,980	3,730	3,840	3,350	4,500
Other Europe	2,019	2,670	2,250	682	764	520
European Union	3,718	4,070	4,069	5,717	6,388	4,668
China, Peoples Republic of	1,946	1,820	1,700	1,830	1,850	1,780
Russia/Ukraine	7,194	9,348	8,001	11,390	11,650	9,800
United States	1,112	1,209	930	1,720	997	1,310
India	1,060	1,160	1,300	1,490	1,380	1,420
Turkey	830	560	640	780	820	640
Other	2,738	3,069	3,555	2,852	2,854	3,344
TOTAL	23,957	26,886	26,175	30,301	30,053	27,982
Seed Import						
Turkey	700	630	518	391	495	370
European Union	1,007	1,077	481	686	659	340
Other	137	579	300	437	765	312
TOTAL	1,844	2,286	1,299	1,514	1,919	1,022
Oilseed Crushed	21,021	23,384	23,303	26,570	27,446	24,326
Seed Exports						
Argentina	232	44	99	45	64	85
United States	122	138	117	155	156	139
Russia/Ukraine	524	1,251	73	595	500	110
Other	1,062	879	902	755	1,211	670
TOTAL	1,940	2,312	1,191	1,550	1,931	1,004
SUNFLOWER OIL						
Oil Opening Stocks	768	833	793	832	1,061	860
Oil Production	8,708	9,579	9,417	10,993	11,268	9,895
Oil Imports						
Algeria	214	238	126	75	139	68
Turkey	72	81	157	456	132	200
Egypt	87	137	208	254	267	210
Mexico	52	110	54	91	82	66
Russia	193	175	136	101	124	99
Taiwan	27	26	21	24	22	22
Others	1,874	2,026	2,145	3,289	3,578	2,789
TOTAL	2,519	2,793	2,847	4,290	4,344	3,454
Disappearance	8,620	9,625	9,432	10,701	11,478	10,080
Oil Exports						
Argentina	1,094	944	1,230	1,306	1,078	1,340
European Union	138	250	231	177	159	100
Other Europe	59	37	88	51	55	38
United States	52	110	58	95	77	65
Other	1,231	1,446	1,186	2,725	2,965	1,879
TOTAL	2,574	2,787	2,793	4,354	4,334	3,422
Ending Stocks	800	793	832	1,061	860	707
SUNFLOWER MEAL						
Meal Production	9,769	10,946	10,745	12,221	12,639	11,176
Meal Imports	2,569	2,925	2,900	3,591	3,653	3,163
Disappearance	9,770	10,935	10,699	12,025	12,623	11,280
Meal Exports	2,592	2,936	2,869	3,720	3,706	3,070
Ending Stocks	80	79	156	223	186	175

About the National Sunflower Association

The National Sunflower Association (NSA) is a nonprofit organization dedicated to the promotion of U.S. sunflower and its products, and to the development of sunflower markets throughout the world.

Based in the capital city of the nation's largest sunflower producing state, NSA was incorporated in 1981. It is funded and governed by U.S. sunflower growers and industry representatives. Agreements with the U.S. Department

of Agriculture's Foreign Agricultural Service provide funding for overseas market development programs, including this publication.

Among the many NSA programs and activities are the following:

- Developing and distributing technical literature on sunflower refining and nutrition.
- Providing technical assistance to foreign companies on oil refining and finished product manufacture; also, providing techni-

cal aid to U.S. confection sunflower customers.

- Producing and distributing a variety of literature pertaining to sunflower markets, the U.S. sunflower crop and sunflower products, including *The Sunflower* magazine, published six times annually
- Researching the marketplace and surveying consumer awareness of (and attitudes toward) sunflower products.
- Conducting industrial research abroad, including confection shelf-life and

other utilization studies.

- Hosting foreign marketing and technical personnel, arranging meetings with U.S. sunflower industry representatives, setting up tours of U.S. processing and research facilities, and coordinating educational seminars for the benefit of foreign visitors.

The National Sunflower Association welcomes inquiries from any foreign agencies, companies or individuals interested in U.S. sunflower.

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U.S. Sunflower Information Online

The National Sunflower Association has a wealth of U.S. sunflower information online at www.sunflowernsa.com.

This web site provides international marketing information, product specifications, and a list of sunflower product suppliers.

Click on the "Buyers and Sellers" link for a list of sunflower product suppliers and buyers.

The "Sunflower oil" link provides more detailed information on sunflower oil.

Use the "Sunflower seed/kernel" link if you require information about confection sunflower seeds and kernel.



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