

~ 2014 ~

U.S. Sunflower Crop Quality Report



Regarding the 2014 Sunflower Crop Quality Report . . .

The 2014 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 2014 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 newest U.S. Sunflower Crop Quality Report can be found on the NSA's website. Address: www.sunflowernsa.com. Printed copies of this report can be made available by the NSA. (See NSA's contact details on page 9).

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2014 U.S. Sunflower Acreage & Production

United States sunflower production totaled just over 2.2 billion pounds in 2014, up about 9% from the 2013 crop's size.

The U.S. average yield per acre — at 1,469 pounds — was 6.5% higher than 2013's 1,380-pound average. Planted area, at 1.56 million acres, was just slightly below that of 2013. Area harvested in 2014, however, increased by 3% from the prior year, at 1.51 million acres.

For the second straight year, South Dakota was the nation's leading sunflower-producing state. South Dakota producers harvested 876.6 million pounds of sunflower in 2014, compared to about 848.6 million in North Dakota.

U.S. production of oil-

type sunflower varieties in 2014, at 1.66 billion pounds, was up slightly from 2013's 1.64 billion. Harvested acreage of oil types was down about 5% from the prior year.

At 1,461 pounds per acre, the average yield of 2014 oil sunflower fields was more than 7% above 2013's 1,363-pound level and just slightly below 2012's 1,484-pound average yield.

The 2014 U.S. production of nonoil sunflower varieties — at just under 551.7 million pounds — was more than 43% higher than 2013's nonoil output. Average nonoil yield in 2014 — 1,495 pounds — was 37 pounds above the 2013 average. At 208.6 million pounds, South Dakota was the top nonoil producing state.



U.S. Sunflower Production

(1,000s of Pounds)

	2011	2012	2013	2014
Oil	1,722,675	2,359,775	1,637,205	1,663,170
Nonoil	315,600	376,285	384,560	551,665
Total	2,038,275	2,736,060	2,021,765	2,214,835

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

(1,000s of Hectares)

State	2007	2008	2009	2010	2011	2012	2013	2014
Colorado	40.5	57.9	27.5	37.2	39.3	24.7	15.8	13.4
Kansas	58.7	83.0	56.7	42.5	42.5	26.3	20.2	17.0
Minnesota	35.6	29.5	17.8	20.6	10.9	15.0	13.0	18.2
Nebraska	13.4	17.4	10.5	9.7	14.2	11.9	10.3	9.3
North Dakota	362.2	376.4	307.6	277.2	202.3	305.5	163.9	206.4
South Dakota	157.4	220.6	206.4	161.9	163.1	226.6	218.5	161.9
Texas	5.9	21.9	23.9	11.3	9.3	13.4	24.3	16.2
Other	22.1	27.9	18.6	15.1	17.6	20.8	23.6	18.3
Total	695.8	834.6	669.0	575.5	499.2	644.2	489.6	460.7

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2014 Seed Quality/Confection Kernel Specifications

Seed quality and kernel specifications of the 2014 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 41.5%, down from the 2014 average of 41.9%. Test weight was 30.1 pounds per bushel — identical to that of the 2013 samples. Foreign material, at 5.6%, was higher than the 2013 average of 5.0%. Moisture, at 8.6%, was 1.4% lower than the 2013 average of 10.0%.

The percentage of confection (nonoil) seeds over 20/64 in size averaged 79.7% among the 2014 samples, compared to the 2013 average of 85.4%.

Foreign material in the nonoils averaged 11.6% in 2014, well above the 7.3%

2013 average. At 21.0 pounds per bushel, average 2014 nonoil test weight was 1.0 pound lower than 2013's 22.0 pounds per bushel. Moisture, at 9.3%, was 2.3% lower than the 2013 nonoil crop's average.

Oil-Type Sunflower Seed Quality

Year	Test Weight (Lbs/Bu)	Moisture (%)	Foreign Material (%)	Oil (%)
2014	30.1	8.6	5.6	41.5
2013	30.1	10.0	5.0	41.9
2012	30.4	9.3	5.1	41.6
2011	28.8	9.6	4.4	41.4
2010	31.1	9.5	5.1	43.5

Nonoil Sunflower Seed Quality

Year	Test Weight (Lbs/Bu)	Moisture (%)	Foreign Material (%)	Seeds Over 20/64 Size (%)
2014	21.0	9.3	11.6	79.7
2013	22.0	11.6	7.3	85.4
2012	22.4	10.4	7.9	84.1
2011	21.2	10.6	8.7	84.3
2010	22.3	10.6	9.3	81.2

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.

2014 Oil Quality Analysis/Oil Traits & Rules

The tables below compare the oil quality and fatty acid content of representative samples of high-oleic and mid-oleic sunflower seed oil, gathered from the 2014 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 67.23% oleic average of the 2014 NuSun® (mid-oleic) samples was higher than 2013's 66.17%, which in turn was well above prior years.

The 2014 high-oleic seed samples averaged an oleic acid content of

85.52%. That is just slightly below the 85.87% average of the 2013 high-oleic seed samples.

As is the case each year, climatic factors and timing of production contributed to the fatty acid levels of both the NuSun and high-oleic samples collected at harvest.

See general trading rules for mid-oleic and high-oleic 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, afoaonline.org.

Sunflower Oil Quality / High Oleic

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2014	3.62	3.09	85.52	5.38	0.30
2013	3.72	3.29	85.87	4.96	0.18
2012	3.54	3.18	84.80	6.30	0.23
2011	3.34	3.15	85.06	6.46	0.26
2010	3.24	3.03	85.27	6.62	0.21

Sunflower Oil Quality / NuSun®

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2014	4.14	3.20	67.23	22.98	0.43
2013	4.41	3.72	66.17	23.44	0.28
2012	4.43	3.74	62.90	26.56	0.40
2011	4.44	3.47	62.42	27.67	0.35
2010	4.30	3.40	62.82	27.47	0.23

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)

2014 Sunflower Oil & Sunflower 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** sun-

flower 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, in Metric Tons)

Country	2010/11	2011/12	2012/13	2013/14
Australia	27	32	211	910
Canada	15,101	13,995	15,178	16,652
Costa Rica	1,120	277	413	519
Germany	29	5	2	2,000
Japan	3,983	999	1,106	2,575
Mexico	5,056	478	8,343	4,654
Netherlands	0	7	1	2,445
Singapore	0	32	312	146
South Korea	112	36	998	900
Taiwan	103	174	313	45
South Africa	10,000	0	0	0
United Kingdom	58	0	4	4,094
Vietnam	48	377	1,029	1,390
Other	2,394	2,796	1,421	854
Total MT	38,031	19,208	29,331	37,184

U.S. Sunflower Meal Exports

(October-September, in Metric Tons)

Country	2010/11	2011/12	2012/13	2013/14
Canada	2,049	3,051	5,112	4,328
Germany	0	0	0	1,036
Israel	0	0	14,057	0
Mexico	825	204	18	0
Romania	0	0	0	2,012
Other	0	2	71	337
Total MT	2,874	3,257	19,258	7,713



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

Item	2009/10 <i>Oct.-Sept.</i>	2010/11	2011/12	2012/13	2013/14 <i>Revised</i>	2014/15 <i>Forecast</i>
NONOIL SUNFLOWER						
Area Harvested (1,000 HA)	122	183	91	101	107	149
Area Harvested (1,000 AC)	301	451	224	249	264	369
Yield (MT/HA)	1.69	1.64	1.58	1.74	1.63	1.68
Yield (LB/AC)	1,506	1,465	1,406	1,548	1,458	1,495
Stocks, Oct. 1	21	18	50	28	23	31
Production	205	300	143	175	174	250
Seed Import	36	28	28	25	28	25
TOTAL SUPPLY	263	346	221	228	226	306
Disappearance	245	296	193	205	195	250
Ending Stocks	18	50	28	23	31	56
OIL SUNFLOWER						
Area Harvested (1,000 HA)	669	576	499	644	486	461
Area Harvested (1,000 AC)	1,653	1,423	1,233	1,592	1,201	1,139
Yield (MT/HA)	1.75	1.63	1.57	1.69	1.53	1.64
Yield (LB/AC)	1,563	1,458	1,397	1,508	1,363	1,461
Stocks, Oct. 1	202	126	38	30	165	15
Production	1,172	941	782	1,089	743	755
Seed Import	12	15	15	25	27	25
TOTAL SUPPLY	1,387	1,082	835	1,144	935	795
Oilseed Crushed	780	526	355	467	470	395
Planting Seed, Birdfood, Domestic Use	448	490	420	478	420	350
Exports	33	28	29	34	30	28
Disappearance	1,261	1,044	804	979	920	773
Ending Stocks	126	38	31	165	15	22
SUNFLOWER OIL						
Stocks, Oct. 1	50	37	25	17	19	17
Oil Imports	22	47	74	33	35	45
Oil Production	320	216	146	194	195	164
TOTAL SUPPLY	392	300	244	244	249	226
Domestic Oil Use	257	237	208	196	195	190
Oil Exports	98	38	19	29	37	19
Total Use	355	275	227	225	232	209
Ending Stocks	37	25	17	19	17	17
SUNFLOWER MEAL						
Stocks, Oct. 1	4	6	4	2	2	4
Production	398	268	181	238	240	201
TOTAL SUPPLY	402	274	185	240	242	205
Domestic Use	390	267	179	219	230	198
Exports	6	3	3	19	8	4
Total Use	396	270	182	238	238	202
Ending Stocks	6	4	3	2	4	3

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World Sunflower Supply & Disappearance

Sources:
Oil World & USDA

Item	2009/10	2010/11	2011/12	2012/13	2013/14 <i>Revised</i>	2014/15 <i>Forecast</i>
Area Harvested (1,000 HA)	24,250	23,923	25,856	25,470	26,235	25,495
Yield (MT/HA)	1.36	1.40	1.53	1.40	1.63	1.56
SUNFLOWER SEED —						
Production						
Argentina	2,650	3,665	3,775	2,850	2,250	2,650
European Union	7,001	6,975	8,323	7,018	9,029	8,907
China	1,650	1,710	1,700	1,730	1,750	1,750
Russia	6,600	5,820	9,500	8,000	10,000	9,000
Ukraine	7,300	8,000	9,500	8,387	11,051	10,000
United States	1,377	1,241	925	1,264	922	1,005
India	1,000	650	620	615	580	530
Turkey	790	1,020	940	1,100	1,450	1,200
Other	3,425	4,113	4,226	4,783	5,655	5,393
TOTAL	32,171	33,572	39,509	35,747	42,687	40,435
Seed Import						
Turkey	704	719	844	627	581	700
European Union	283	393	291	220	329	290
Other	693	620	830	638	1,030	960
TOTAL	1,680	1,732	1,965	1,485	1,940	1,950
Seed Exports						
Argentina	67	70	83	85	80	85
United States	160	144	114	144	132	142
Russia	18	13	402	59	135	90
Ukraine	350	446	284	124	71	75
Other	1,018	1,083	1,097	1,128	1,532	1,563
TOTAL	1,613	1,756	1,980	1,540	1,950	1,955
Oilseed Crushed	30,454	30,034	36,145	32,355	38,675	36,750
SUNFLOWER OIL —						
Oil Opening Stocks	1,598	1,287	1,212	1,926	1,665	2,097
Oil Production	12,543	12,418	15,171	13,554	16,348	15,369
Oil Imports						
Algeria	175	45	229	48	110	80
Turkey	194	403	681	656	773	650
Egypt	503	315	863	643	777	650
European Union	972	883	1,046	936	1,076	930
India	622	776	1,151	939	1,578	1,350
Others	2,361	2,317	3,165	3,043	3,871	3,675
TOTAL	4,879	4,883	7,135	6,265	8,185	7,335
Oil Exports						
Argentina	727	893	936	612	435	450
European Union	144	157	200	235	368	370
Russia	503	195	1,505	1,088	1,807	1,450
Ukraine	2,552	2,654	3,454	3,120	4,300	3,750
United States	98	38	19	29	37	19
Other	741	922	1,166	1,101	1,378	1,236
TOTAL	4,765	4,859	7,280	6,185	8,325	7,275
Disappearance	12,854	12,493	14,525	13,895	15,775	15,615
Ending Stocks	1,287	1,212	1,858	1,585	2,238	1,851
SUNFLOWER MEAL —						
Meal Production	14,018	14,128	16,934	15,033	17,621	16,937
Meal Imports	4,150	4,645	6,955	5,465	6,265	5,725
Meal Exports	4,190	4,703	6,980	5,450	6,310	5,720
Disappearance	13,866	14,084	16,845	15,120	17,541	16,963
Ending Stocks	370	408	407	318	352	331

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 central North Dakota city of Mandan, 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 tech-

nical 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, which is 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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