2004
U.S. Sunflower Crop Quality Report

National Sunflower Association

Table of Contents

About the 2004 Sunflower Crop Quality Report

The 2004 U.S. Sunflower Crop Quality Report, compiled by the National Sunflower Association in co-operation with the Foreign Agricultural Service, U.S. Department of Agriculture, provides an overview on the size and quality of the 2004 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 website, www.sunflowernsa.com. Printed copies of this report can be made available by the NSA (See NSA contact information on page 11).

2004 U.S. Sunflower Acreage, Production

Poor growing conditions in the Northern Plains, but generally more favorable conditions in the High Plains, defined the 2004 U.S. sunflower crop.

The crop in the Northern Plains was planted at near normal timeframes compared to the five-year average, but was delayed in the Northern Plains due to cool wet weather in mid-May. The weather that followed after planting had a significant impact on emerging plants and sunflowers up to the four-leaf stage, creating conditions favorable for infection of downy mildew. Cool conditions prevailed in the northern region through the summer, with incidences of frost in June, high temps on some days that only reached the 40s and 50s, and a hard frost in August. Wet weather set in during the delayed pollination period, resulting in Sclerotinia for many producers that seemed to get worse the further north and east you went in North Dakota.

Given the cool growing season, the row crop harvest for many in the Northern Plains extended into November. Harvest yields and quality were a mixed bag in the Dakotas and Minnesota, generally better as one traveled south.

Growing conditions were better in the High Plains, with more favorable moisture than in recent years that resulted in generally favorable yields and test weights, both confection and oil types.

According to USDA, sunflower production in 2004 totaled 2.05 billion pounds, 23% below the 2003 production and down 16% from 2002. The U.S. average yield per acre, at 1,197 pounds, decreased 16 lbs from 2003. Planted area, at 1.87 million acres, was 20% below 2003. Acreage harvested decreased 22% from 2003 to 1.71 million acres.

U.S. production of oil type sunflower varieties, at 1.76 billion pounds, decreased 22% from 2003. Harvested acres were down 24% from the previous year but the yield increased by 31 pounds. Production of non-oil sunflower varieties, at 286 million pounds, decreased 29% from 2003. Acreage harvested of non-oil varieties was down 11% from 2003 and the average yield declined 259 pounds from 2003 to 997 pounds per acre.

U.S. Sunflower Production

(1,000 pounds)

	2002	2003	2004
Oil	2,069,780	2,259,666	1,761,628
Non-Oil	419,826	405,560	286,235
Total	**2,489,606**	**2,665,226**	**2,047,863**

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

(Thousands of Hectares)

State	1998	1999	2000	2001	2002	2003	2004
Colorado	43.3	69.6	43.0	48.6	24.3	34.4	49.8
Kansas	62.7	97.1	75.8	117.4	62.7	62.7	63.9
Minnesota	35.2	31.2	19.6	11.3	15.0	21.9	21.4
Nebraska	15.4	19.0	20.0	20.2	13.8	19.4	21.4
North Dakota	639.4	493.7	401.8	337.0	447.2	412.8	319.7
South Dakota	358.2	348.8	278.8	267.5	151.8	174.0	167.9
Texas	4.5	9.7	5.3	13.4	3.6	6.5	15.4
Other	13.8	21.5	20.0	17.4	16.2	26.7	32.8
Total	**1,172.5**	**1,090.6**	**864.7**	**833.7**	**734.6**	**758.4**	**692.3**

2005 Key for NuSun™

Published study, new labeling law boost health benefits of this sun oil

Key events in 2005 figure to boost the marketability of NuSun™ sunflower oil. And with pieces of the demand puzzle falling into place, the industry now needs to build acres and supply to feed this demand.

NuSun sunflower oil research conducted at Penn State University by Dr. Penny Kris-Etherton was accepted for publication in 2005 by the Journal of the American Dietetic Association. In the Penn State controlled feeding study, cholesterol levels of 31 volunteers were evaluated in a comparison of food prepared with a NuSun sunflower oil diet, an olive oil diet, and an average American diet. Olive oil was chosen as a comparison, since the oil, like NuSun, is recognized for its healthful benefits.

Preliminary results of the study showed that the diet with NuSun sunflower oil significantly reduced total cholesterol and reduced LDL cholesterol compared to the average American diet.

LDL (bad) cholesterol is the main source of cholesterol buildup and blockage in the arteries. HDL (good) cholesterol helps keep cholesterol from building up in the arteries. Consumption of trans fats has been associated with higher blood levels of LDL, or the "bad" cholesterol, and NuSun has no trans fats.

In the Penn State study, substituting NuSun sunflower oil daily in place of saturated fat had a significantly better cholesterol lowering effect than substituting a similar amount of olive oil.

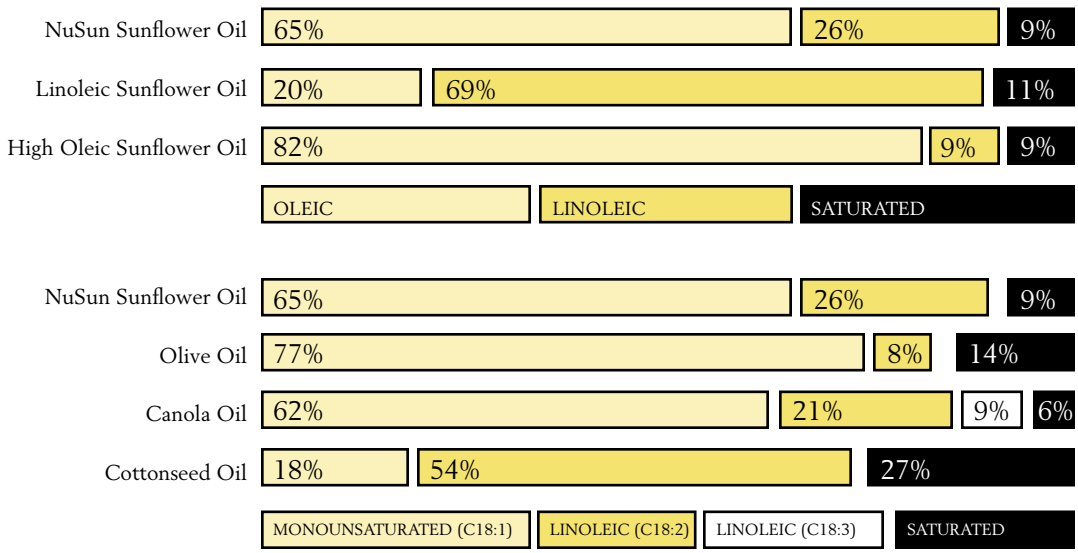
A new food label rule on trans fats is also supportive to NuSun. The U.S. Food and Drug Administration has stipulated that all food labels must list trans fat by January 2006. Trans Fat will be listed on a separate line in the Nutrition Facts Panel, underneath Saturated Fat. Products with less than 0.5 grams of trans fat per serving can be labeled as zero trans fat. Canada is adopting a similar rule in 2006, and companies in both countries are acting now to reformulate products and labels, with some food manufacturers shifting to trans free oils.

Trans fats, recognized as a contributing factor with some health problems, are produced when a vegetable oil is partially hydrogenated. Certain oils must go through this process when used in frying and baking. Hydrogenated soybean oil has been the most common product used by the industry.

Continued pressure on the food industry provides excellent market opportunities for NuSun and high oleic sunflower oil. Neither of these oils need to be partially hydrogenated when used in a frying medium. NuSun and high oleic sunflower provides further attractiveness to some users since it is not genetically-engineered.

The NSA continues to increase awareness of NuSun among health and foodservice professionals, food manufacturers, and other vegetable oil users across the U.S., through educational displays and briefings at industry trade shows, one-on-one meetings, cooking oil samples, and print and online materials.

Fatty Acid Composition



2004 Seed Quality/Confection Kernel Specifications

Seed quality and kernel specifications of the 2004 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 and Aberdeen (S.D.) Grain Inspection.

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 41.1%, down from the 2003 average of 42.6%. Test weight was 28.4 pounds per bushel, lower than the 2003 test weight of 30.7. Foreign material at 8.3% was considerably higher than in the past few years. Moisture at 10% was higher than the 2003 moisture of 8.5%.

The percentage of confection seed in 2004 over 20/64 in size was 67.3%, higher than the 67.1% in 2003 and the highest in over five years. Foreign material in samples in 2004 was 14.5%, nearly double that of 2003 and the five-year average. Test weight at 23.2% was lower than in 2003, with moisture (11.8%) higher than in 2003.

Oil-Type Sunflower Seed Quality

Year	Test Weight	Moisture	Foreign Material	Oil%
2004	28.4	10	8.3	41.1
2003	30.7	8.5	6.0	42.6
2002	29.8	10.8	5.3	42.1
2001	30.7	9.6	5.1	42.3
2000	30.2	9.5	5.9	43.0

Non-Oil Sunflower Seed Quality

Year	Test Weight	Moisture	Foreign Material	Over 20/64 Size
2004	23.2	11.8	14.5	67.3
2003	25.4	10.1	7.7	67.1
2002	26.6	10.1	8.1	55.9
2001	27.5	10.4	7.8	55.7
2000	24.8	10.8	8.1	65.9

U.S. Confection Sunflower Kernel Product Specifications

Origin - Confection 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 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

Moisture - Not more than 10%; not less than 4%

Size - Not more than 650/oz.

Foreign Material, Shell/Unshelled Seed - Not more than 0.1%

Damage - Not more than 0.5% heat damage and not more than 2% misc. damage

Broken Kernels - Not more than 10% (broken kernel is any portion less than ½ kernel)

2004 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 2004 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 58.01% oleic average of NuSun samples in 2004 was lower than in 2003 and the lowest in the last five years, a reflection of the growing season.

The 2004 linoleic acid content of 63.56% is lower than the 65.54% average of 2003 crop samples. The 24.85% oleic level average of the 2004 sunflower oil samples is higher than the 22.96% average of the 2003 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 linoleic oil, as well as product specification tables for confection kernel and sunflower meal at various protein levels, at www.sunflowernsa.com. Click on the link "Buyers and Sellers," then "product specifications." For further information or questions regarding trading rules, go to the American Fats & Oils Assn Inc web site, afoaonline.org.

Sunflower Oil Quality Linoleic

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2004	5.95	4.28	24.85	63.56	0.38
2003	5.97	4.13	22.96	65.54	0.26
2002	5.75	4.36	24.63	63.95	0.25
2001	5.38	4.21	24.19	64.65	0.18
2000	6.04	4.53	22.01	65.76	0.25

Sunflower Oil Quality NuSun

Percent

Year	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
2004	4.39	3.53	58.01	32.59	0.42
2003	4.46	3.40	60.26	29.50	0.18
2002	4.32	3.49	59.52	30.97	0.17
2001	4.36	4.03	61.15	28.55	0.11
2000	4.33	4.14	59.08	30.58	0.39

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 and 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 sunflowerseed of fair average quality by hydraulic, expeller, or solvent extraction process. The 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 and 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 Degrees 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)

2004 Sun Oil & Meal Exports

Oil Exports -- Sunflower oil is the preferred oil in most of Europe, East Europe, Russia, Mexico, countries along the Mediterranean and several South American countries. U.S. sunflower oil exporters can deliver three types of sunflower oil: NuSun, Linoleic and High Oleic.

U.S. Sunflower Meal Exports

October 03 - September 04

Country	2000/01	2001/02	2002/03	2003/04
Canada	1,423	2,166	1,740	231
Mexico	2,731	2,451	1,372	1,455
Ireland	3,862	17,677	0	4,276
U.K.	0	3,348	0	5,468
Other	92	20	31	549
Total MT	8,108	25,662	3,143	11,979

U.S. Sunflower Oil Exports

October 03-September 04

Country	2000/01	2001/02	2002/03	2003/04
Algeria	62,701	47,898	0	12,100
Bahrain	24	60	0	0
Canada	22,990	24,465	16,939	19,509
Columbia	1,058	187	0	0
Egype	5,924	12,500	3,000	0
El Salvador	295	254	0	270
Guatemala	4,428	0	1,050	201
India	0	752	0	0
Japan	5,769	6,143	10,228	3,572
Jordan	3,797	4,889	1,000	2,039
Kuwait	616	14	24	49
Mexico	43,086	17,761	5,258	63,786
Netherlands	57,547	22,914	16	30
Singapore	1,054	4	11	783
Taiwan	9,920	13,647	4,230	195
Turkey	12,575	15,697	0	0
UAE	6,513	3,999	0	0
Other	13,125	34,467	9,909	7,142
Total MT	251,422	205,651	51,665	109,676

NuSun™ is a mid-range oleic, 55%-75% (monounsaturated) sunflower 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 the taste of products.

Linoleic sunflower oil has about 69% polyunsaturated fat, 20% monounsaturated fat and 11% saturated fat. Linoleic sunflower oil is 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 the 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. Both U.S. sunflower oil and meal exports increased in 2003/04 compared to 2002/03, a reflection of market supply and demand.

U.S. Supply & Disappearance

(In 1,000 Metric Tons, Unless Specificed)

Item	1999/00 Oct-Sep	2000/01	2001/02	2002/03	2003/04 Revised	2004/05 *Forecast*	Traditional	NuSun	Totals
NON-OIL SUNFLOWER									
Area Harvested (1,000 HA)	302	215	200	146	131	116	--	--	--
Area Harvested (1,000 AC)	746	531	495	361	323	287	--	--	--
Yield (MT\HA)	1.27	1.34	1.39	1.20	1.41	1.12	--	--	--
Yield (LB/AC)	1,131	1,195	1,243	1,067	1,256	997	--	--	--
Stocks, Oct 1	16	27	22	15	13	12	--	--	--
Production	383	288	279	175	184	130	--	--	--
Seed Import	18	44	56	73	75	20	--	--	--
TOTAL SUPPLY	**417**	**359**	**357**	**263**	**272**	**162**	**--**	**--**	**--**
Disappearance	390	337	342	250	260	155	--	--	--
Ending Stocks	27	22	15	13	12	7	--	--	--
OIL SUNFLOWER									
Area Harvested (1,000 HA)	1,091	856	834	731	758	576	196	380	576
Area Harvested (1,000 AC)	2,695	2,116	2,060	1,806	1,874	1,424	484	940	1,424
Yield (MT\HA)	1.46	1.54	1.53	1.28	1.35	1.39	1.39	1.39	
Yield (LB\AC)	1,298	1,375	1,361	1,144	1,206	1,237	1,237	1,237	
Stocks, Oct 1	110	94	40	41	114	102	42	60	102
Production	1,587	1,320	1,272	937	1,025	799	272	528	799
Seed Import	31	23	16	24	25	10	10	0	10
TOTAL SUPPLY	**1,728**	**1,437**	**1,328**	**1,003**	**1,164**	**911**	**324**	**588**	**911**
Oilseed Crushed	1,103	922	723	346	609	375	75	300	375
Planting Seed, Birdfood, Domestic Use	490	447	536	543	448	495	234	261	495
Exports	41	28	28	0	0	0	0	0	0
Disappearance	1,634	1,397	1,287	889	1,057	870	309	561	870
Ending Stocks	94	40	41	114	107	41	15	27	41
SUNFLOWER OIL									
Stocks, Oct 1	55	71	62	10	12	18	6	12	18
Oil Imports	0	0	16	28	12	30	30	0	30
Oil Production	452	387	304	145	256	158	32	126	158
TOTAL SUPPLY	**507**	**458**	**382**	**183**	**280**	**206**	**68**	**138**	**206**
Domestic Oil Use	150	145	166	119	151	171	60	111	171
Oil Exports	286	251	206	52	111	25	5	20	25
Total Use	436	396	372	171	262	196	65	131	196
Ending Stocks	71	62	10	12	18	10	3	7	10
SUNFLOWER MEAL									
Stocks, Oct. 1	7	5	7	3	3	6	3	3	6
Production	552	443	347	166	292	180	36	144	180
TOTAL SUPPLY	**559**	**448**	**354**	**169**	**295**	**186**	**39**	**147**	**186**
Domestic Use	533	433	325	163	277	180	35	145	180
Exports	21	8	26	3	12	3	2	1	3
Total Use	554	441	351	166	289	183	37	146	183
Ending Stocks	5	7	3	3	6	3	2	1	3

World Sunflower Supply/Disappearance

Item	1999/00	2000/01	2001/02	2002/03	2003/04 Revised	2004/05 *Forecast*
Area Harvested (1,000 HA)	22858	19540	18485	19892	22806	21121
Yield (MT/HEC)	1.18	1.18	1.18	1.2	1.18	1.19
SUNFLOWER SEED						
Production						
Argentina	5800	2950	3720	3340	2980	3200
Eastern Europe	2754	1657	1861	1648	2219	2050
European Union	3105	3333	3030	3718	4060	4118
China, Peoples Republic of	1765	1954	1750	1946	1840	1880
former USSR	6890	7368	4936	7194	9348	7500
United States	1970	1608	1551	1112	1209	929
India	870	730	870	1060	1160	1300
Turkey	820	630	530	830	560	650
Other	2983	2880	3551	3108	3476	3575
TOTAL	**26957**	**23110**	**21799**	**23956**	**26852**	**25202**
Seed Imports						
Mexico	15	23	10	104	38	12
European Union	2231	1999	1155	1007	1492	669
Other	871	704	467	812	1332	792
TOTAL	**3117**	**2726**	**1632**	**1923**	**2862**	**1473**
Oilseed Crushed	23366	21116	18514	21149	23517	22126
Seed Exports						
Argentina	265	94	342	232	44	80
United States	168	153	176	122	136	115
former USSR	1239	1768	100	524	1271	100
Other	1372	711	1084	1112	1383	1142
TOTAL	**3044**	**2726**	**1702**	**1990**	**2834**	**1437**
SUNFLOWER OIL						
Oil Opening Stocks	974	1241	922	759	743	740
Oil Production	9550	8668	7489	8700	9611	9029
Oil Imports						
Algeria	233	276	207	228	210	180
Turkey	99	133	147	72	81	70
Egypt	187	114	145	93	196	125
Mexico	173	73	40	52	110	77
former USSR	228	175	173	193	170	145
Taiwan	32	29	25	26	28	28
Others	1988	1788	1525	1846	2052	1935
TOTAL	**2940**	**2588**	**2262**	**2510**	**2847**	**2560**
Disappearance	9322	9029	7664	8633	9653	9100
Oil Exports						
Argentina	1484	1149	1083	1094	944	1025
European Union	178	161	114	137	179	105
Eastern Europe	172	90	95	64	138	158
United States	286	251	206	52	110	25
Others	817	918	744	1246	1438	1215
TOTAL	**2937**	**2569**	**2242**	**2593**	**2809**	**2528**
Ending Stocks	1161	899	767	743	740	700
SUNFLOWER MEAL						
Meal Production	10976	9971	8687	9851	10998	10273
Meal Import	2995	2665	2296	2523	3038	2945
Disappearance	10937	10122	8713	9815	10911	10310
Meal Exports	3010	2569	2311	2568	3045	2915
Ending Stocks	247	133	92	84	163	156

Source: *Oil World & USDA*

NuSun™, Clearfield™, Developed With Standard Hybrid Breeding Methods

Currently, no transgenic sunflower is commercially available in the United States. Some commodity buyers request proof of non-transgenic crop origin, however, and thus for sunflower seed or oil exports, the NSA povides members with a letter stating that U.S. sunflower is currently free of transgenic traits. USDA's Grain Inspection, Packers and Stockyards Administration (GIPSA) is providing similar documentation upon request.

NuSun, the new category of cooking oil made from sunflower that is mid-oleic, predominantly monounsaturated, with low saturated fat, is non-transgenic. It was developed with standard hybrid breeding methods.

It should be noted that Clearfield™ sunflower technology now available to sunflower producers is nontransgenic. Clearfield sunflower is conventionally bred sunflower resistant to imazamox herbicide for control of a wide array of grassy and broadleaf weeds. The Clearfield technology was developed by BASF, and the resistant breeding work was done by USDA and the private hybrid seed industry.

About the National Sunflower Association

The National Sunflower Association (NSA) is a non- profit 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 technical 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 overseas, 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.

NSA welcomes inquiries from any foreign agencies, companies or individuals interested in U.S. sunflower.

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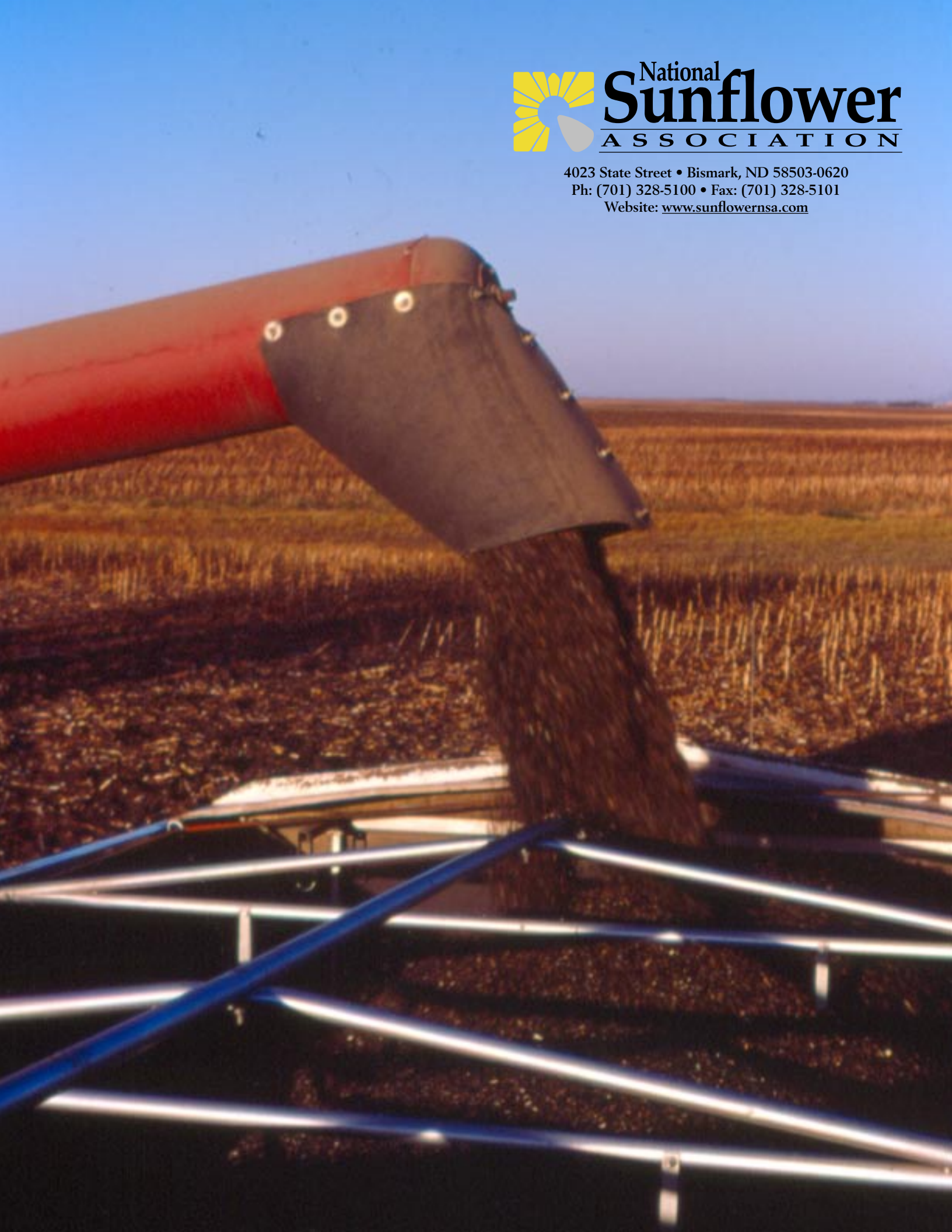
U.S. Sunflower Information Online

The National Sunflower Association has a wealth of U.S. sunflower information online, www.sunflowernsa.com. Click on the "Buyers Information" link for international marketing information, product specifications, and a list of sunflower product suppliers.

The NuSun™ link has more information about this mid-oleic oil, and suppliers.

See the Confection/Non-oil link for a list of industry suppliers.

National Sunflower Association



National Sunflower Association

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