



NEBRASKA CORN

QUALITY REPORT





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## **2007-2008 NEBRASKA CORN QUALITY REPORT**

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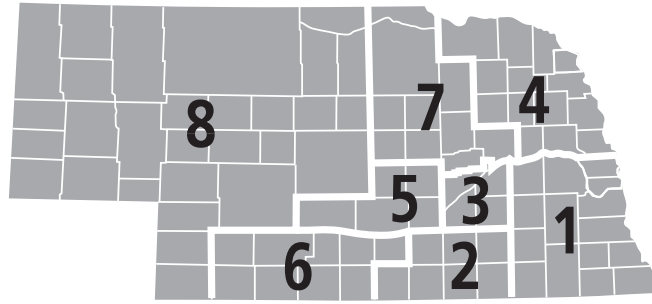
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## NEBRASKA CORN BOARD

The Nebraska Corn Board is responsible for developing and carrying out programs that enhance profit opportunities for corn producers through market promotion, research and education. Its members represent the eight districts indicated on the map and are appointed by the Governor.

One at-large member is elected by other board members.



**District 1**  
Dave Nielsen  
Lincoln



**District 2**  
Mark Jagels  
Davenport



**District 3**  
Stan Boehr  
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David Merrell  
St. Edward



**District 8**  
Jon Holzfaster  
Paxton



**At-Large**  
Alan Tiemann  
Seward



**Don Hutchens**  
Executive  
Director



**Randy Klein**  
Market  
Development  
Director



**Kelly Brunckhorst**  
Ag Promotion  
Coordinator



**Janet Miller**  
Administrative  
Assistant



**Susan Zabel**  
Staff Assistant



## **T A B L E O F C O N T E N T S**

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## INTRODUCTION

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High quality, reliable supply and abundant production. These words best describe Nebraska corn.

The Nebraska Corn Quality Study documents the ability of Nebraska corn farmers to produce a large volume of high quality corn year after year. The study, conducted annually from 1994 to 2005, has shown the consistency and quality of Nebraska production. That consistency allowed us to switch to conducting the study every other year, beginning in 2005.

Nebraska corn producers harvested another quality crop in 2007—with 91 percent of the corn grading #1 and 6.9 percent grading #2. Average test weight was 58.7 pounds/bushel (75.5 kilograms/hectoliter).

Nebraska, known as the “Cornhusker State”, is the third largest corn-producing state in the United States. It is estimated that in 2007 Nebraska farmers harvested 1.46 billion bushels (37 mmt) of corn! Climate, soil type, ample irrigation, and progressive farming techniques are a few reasons why Nebraska farmers consistently produce a high quality, extremely reliable and abundant supply of corn for the world's markets.

The Nebraska Corn Board is a state agency financed by Nebraska corn producers to improve corn marketing opportunities. Nebraska corn producers are represented in the world marketplace by the U.S. Grains Council, a non-profit organization with nine international offices. The Nebraska Corn Board also works closely with the Nebraska Department of Agriculture in generating and responding to corn export marketing opportunities.

We hope you find the 2007 Nebraska Corn Quality Study useful. If you have any questions about Nebraska corn, please call 402-471-CORN (2676), 800-NECORN1 (632-6761) or fax 402-471-3345. You can contact us at our email address: [r.klein@necorn.state.ne.us](mailto:r.klein@necorn.state.ne.us) or visit us at our internet home page:

**<http://www.nebraskacorn.org>**

Thank you for your interest in Nebraska corn!

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**Year in and year out, Nebraska farmers produce some of the best corn in the world. The 2007 Nebraska Corn Quality Study shows the 2007 corn crop was outstanding.**

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**91% of the yellow corn graded #1 and 6.9% graded #2 .**

Hastings Grain Inspection, official grain inspection agency designated by the Federal Grain Inspection Service (FGIS), performed the testing for the 2007 Nebraska Corn Quality Study. The Nebraska Grain and Feed Association, the Nebraska Cooperative Council and the Nebraska Corn Growers Association arranged the collection of random samples from throughout the state’s corn production areas. Each location provided three samples on which testing was performed. Included in the testing were the standard tests conducted on corn as offered under the U.S. Grain Standards Act which includes test weight, moisture, damage and foreign material. Additional analysis of aflatoxin, stress cracks, protein, starch and oil were also performed.

This is the fifteenth year the study has been completed, documenting Nebraska as a consistent supplier of high quality corn. On average over the 15 years of the study, 74.5% of the samples have tested U.S. #1 and 21.1% have tested #2.

The following table summarizes the corn quality of 2007:

**TABLE 1**

<b>2007 Nebraska Corn Quality Study U.S. Grade Results</b>		
<b>Yellow Corn</b>		
<b>U.S. Grade</b>	<b># of Samples</b>	<b>Percent</b>
<b>1</b>	<b>171</b>	<b>91</b>
<b>2</b>	<b>13</b>	<b>6.9</b>
<b>3</b>	<b>2</b>	<b>1.0</b>
<b>4 and below</b>	<b>2</b>	<b>1.0</b>
<b>Total</b>	<b>188</b>	

Of the 188 samples provided to the inspection agency, 91% graded #1 and 6.9% graded #2.

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Test weights in the 2007 crop averaged 58.7 pounds/bushel (75.5 kg/hl). The minimum test weight for #2 yellow corn is 54.0 pounds/bushel, which is required for export shipping.

The total damage limit for #2 corn is 5 percent maximum. The average for the study was 1.02 percent.

Three (3.0) percent is the maximum limit of broken corn and foreign material (BCFM) for #2 corn. The average for the study was 0.78 percent.

Moisture levels ranged from a low of 11.0 percent to a high of 18.4 percent. The average for all of the samples brought into the agency was 14.38 percent.

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**Test weights  
for yellow corn  
averaged 58.7  
pounds/bushel,  
well above  
the minimum  
required for  
export.**

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The following were the ranges and averages of protein, oil and starch content:

TABLE 2

<b>2007 Nebraska Corn Quality Study</b>			
<b>Protein, Oil and Starch Results</b>			
<i>based on dry matter basis</i>			
<b>Yellow Corn</b>			
	<b>Low</b>	<b>High</b>	<b>Average</b>
<b>Protein</b>	<b>7.6%</b>	<b>10.4 %</b>	<b>8.8%</b>
<b>Oil</b>	<b>3.4%</b>	<b>5.0%</b>	<b>4.2%</b>
<b>Starch</b>	<b>70.1%</b>	<b>74.1%</b>	<b>72.6%</b>

Aflatoxin testing was conducted on one sample per location. Twenty parts per billion (ppb) is the acceptable maximum for human consumption and up to 300 ppb is acceptable for finishing cattle. All samples tested negative for aflatoxin.

The average stress crack level was 3.5 percent, compared to 4.5 percent in the 2005 study.

The following parameters are generally accepted for yellow corn exports. The second column is the average of the 2007 crop.

TABLE 3

<b>2007 Nebraska Corn Crop</b>		
	<b>General Export Parameters</b>	<b>2007 Corn Crop</b>
<b>U.S. Grade</b>	<b>No. 2 or better</b>	<b>No. 1</b>
<b>Test Weight</b>	<b>54.0 lbs.</b>	<b>58.7 lbs</b>
<b>Total Damage</b>	<b>5.0%</b>	<b>1.02%</b>
<b>BCFM</b>	<b>3.0%</b>	<b>0.78%</b>
<b>Moisture</b>	<b>15.5%</b>	<b>14.38%</b>
<b>Aflatoxin</b>	<b>20 ppb</b>	<b>None</b>

The 2007 crop easily exceeded quality standards for shipment of corn to international destinations.

**Nebraska Corn Quality Study  
Results from 2003, 2004 and 2005**

**TABLE 4**

	2003	2004	2005
<b>U.S. Grade</b>			
<b>1</b>	<b>84.1%</b>	<b>92.3 %</b>	<b>97%</b>
<b>2</b>	<b>11.0 %</b>	<b>5.9 %</b>	<b>3%</b>
<b>3</b>	<b>2.4 %</b>	<b>2.5 %</b>	<b>0%</b>
<b>4 or below</b>	<b>2.4 %</b>	<b>0%</b>	<b>0%</b>

In 13 of the 15 years in which this study has been completed, no samples were even close to exceeding the 20 ppb of aflatoxin allowed for all uses, including human consumption. The two years that showed small incidences of aflatoxin were marked by one of the most severe droughts on record, yet only a small number of samples tested negative. Because we irrigate 75% of our corn, stress is controlled and aflatoxin is rarely, if ever, a problem.

# NEBRASKA CORN PRODUCTION

TABLE 5

Nebraska – Corn for Grain in English units			
Year	Harvested Corn 000 Acres	Yield bushels/acre	Production million bushels
1998	8,550	145	1,239.8
1999	8,300	139	1,153.7
2000	8,050	126	1,014.3
2001	7,750	147	1,139.2
2002	7,350	128	940.8
2003	7,700	146	1,124
2004	7,950	166	1,320
2005	8,250	154	1,271
2006	7,750	152	1,178
2007*	9,000	162	1,458

\* projected as of Nov. 2007

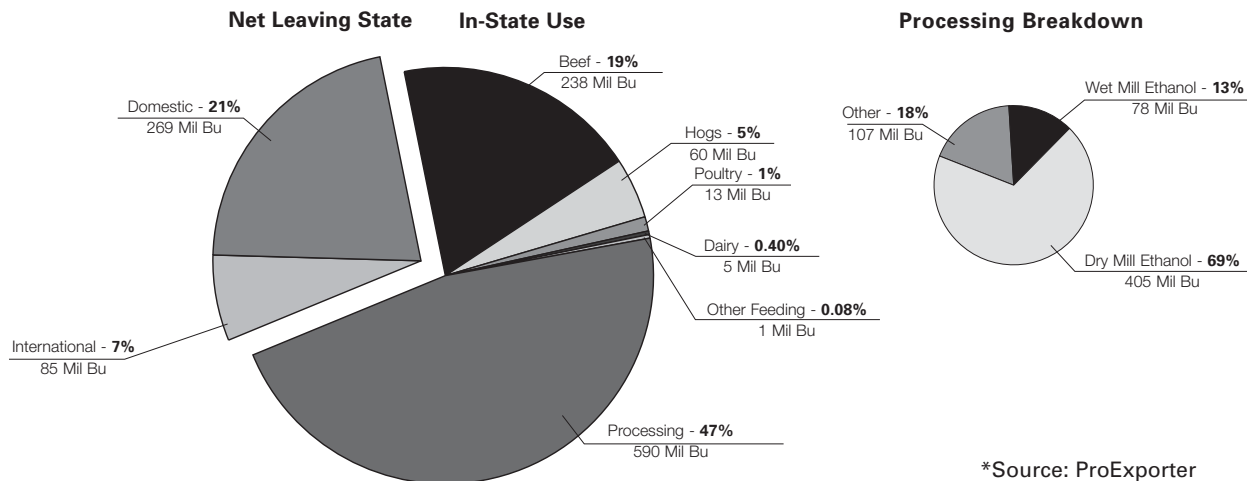
TABLE 6

Nebraska – Corn for Grain in Metric units			
Year	Harvested Corn 000 Hectares	Yield mt/hectare	Production million metric tons (mmt)
1998	3,462	9.10	31.5
1999	3,360	8.72	29.3
2000	3,258	7.90	25.8
2001	3,138	9.22	28.9
2002	2,975	8.03	23.9
2003	3,117	9.16	28.5
2004	3,219	10.41	33.5
2005	3,340	9.64	32.2
2006	3,476	8.61	29.9
2007*	3,643	10.2	37.0

\* projected as of Nov. 2007

Source: Nebraska Agricultural Statistics Service

## Total Nebraska Corn Use 07-08 Projected\*



\*Source: ProExporter

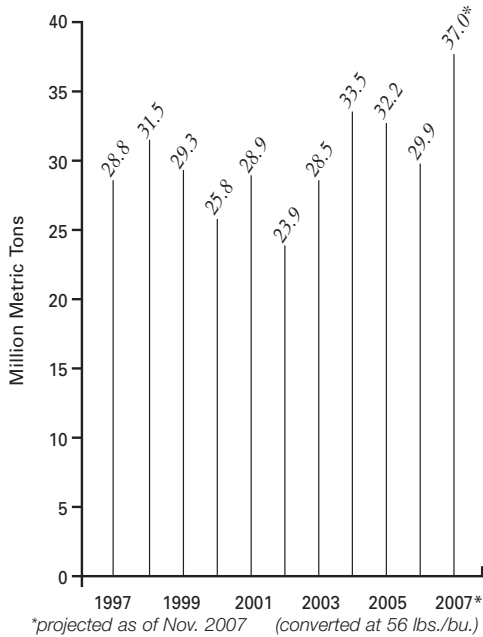
# NEBRASKA & U.S. CORN PRODUCTION AND EXPORTS

U.S. corn farmers in 2007 produced 13.2 billion bushels (approximately 330 mmt) of corn. This is a remarkable feat and a testament to the continued efficiency and productivity of the American farmer.

Thirty-nine (39) percent of the world's corn was produced in the United States in 2006-2007. The United States claimed 68 percent of world corn exports. Exports are an integral part of American agriculture. Nineteen (19) percent of the 2006 U.S. corn crop went to exports.

## Nebraska Corn Production

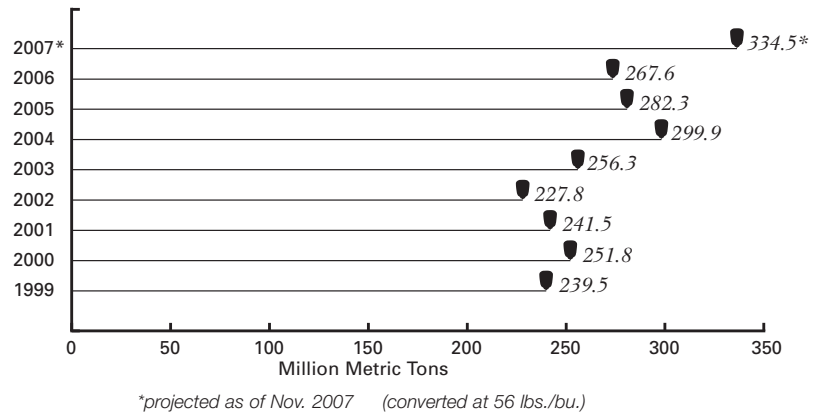
Source: USDA National Agricultural Statistics Service



Nebraska's plentiful water supply also helps make it a reliable producer of high quality corn. On average, 75 percent of the corn produced in Nebraska is irrigated.

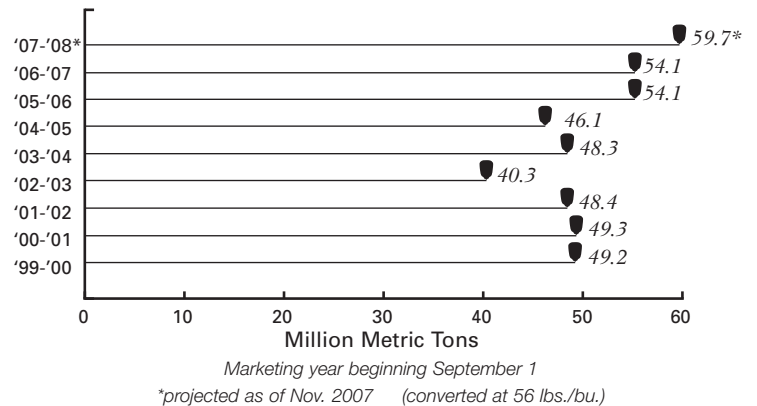
## U.S. Corn Production

Source: USDA



## U.S. Corn Exports

Source: USDA, World Agricultural Outlook Board



**Types of  
Specialty  
Corn**

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**Hard Endosperm/Food Grade Corn:** Food grade corn hybrids are typically high yielding corn hybrids with special quality traits desirable for certain uses such as dry milling or alkaline cooking. Used for snack foods, breakfast cereals, tortillas, etc.

**High Amylose Corn:** High amylose corn produces a larger volume of amylose starch. It is used primarily for special starch needs, such as quick-setting confectionery gums (jelly beans), and in certain glues.

**High Extractable and High Fermentable Starch Corns:** Although limited hybrids are currently identified, these hybrids can improve ethanol and sweetener production efficiency by a few percent. Many of these are leading hybrids that are already being produced by growers across the country.

**High Available Energy Corn:** Ideal for livestock because of its enhanced nutrient digestibility, particularly for pork and poultry rations.

**White Corn:** Typically used for food, examples include tortillas, corn chips and other snack foods. Nebraska is projected as the leading white corn producing state in the nation, raising nearly 30 million bushels (762,000 mt) of white corn in 2007.

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## **CORN CO-PRODUCTS**

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Nebraska has a growing ethanol industry which creates a variety of co-products such as distillers grains and corn gluten feed. These are excellent feed ingredients for livestock producers. Most ethanol production is dry mill processing, which produces distillers grains in addition to ethanol. Wet mill processing can also produce ethanol and corn gluten feed, along with a variety of products including starch and starch products such as sweeteners and acids.

Both distillers grains and corn gluten feed can be produced as a high moisture (or wet) product for livestock feed. The use of these wet products is generally limited to nearby markets.

Markets outside Nebraska will typically have access to these feeds in the dry form only. Distillers Dried Grains with Solubles (DDGS) or Corn Gluten Feed (CGF) are the names associated with the products. These are excellent feeds for the livestock industry. Information about feeding these products and a co-products merchandisers list can be found at the Nebraska Corn Board's website: [nebraskacorn.org/usesofcorn/coproducts.htm](http://nebraskacorn.org/usesofcorn/coproducts.htm)

Nebraska provides major highway and rail corridors to both the Pacific and Atlantic coasts, Mexico and Canada, plus access to the Gulf of Mexico from ports on the Missouri River. Nebraska companies ship everything from bulk grains and food products to auto parts throughout the world using railroads, highways, motor freight, air and water.

**Storage** There are 1,810 million bushels of grain storage capacity in Nebraska. Commercial storage facilities hold 740 million bushels, and on-farm storage capacity is 1,070 million bushels. The high volume of on-farm storage is ideal for isolating specialty corn.

**Railroads** Nebraska has excellent rail service from some of the nation's largest railroads, including Union Pacific and Burlington Northern/Santa Fe. The state is covered by approximately 3,800 miles (6,114 kilometers) of rail. The Union Pacific Railroad headquarters are in Omaha, Nebraska. North Platte, Nebraska, is the site of Union Pacific's Bailey Yard, the largest rail complex in the United States.

Nebraska's railroad system provides access to Mexico and Canada, ports along the Atlantic and Pacific coasts, the Gulf of Mexico and the St. Lawrence Seaway, and destinations throughout the United States. The most direct mid-continent route to the West Coast passes through Nebraska, with branches terminating in Portland, Spokane and Seattle and a southern branch terminating in Los Angeles. Unit trains moving south out of Nebraska can reach Laredo or other Mexican border crossings within 3 days.

**Water Ways** The Missouri River, Nebraska's eastern border, provides a water link to the Gulf of Mexico via the Mississippi River. Eight Nebraska ports, encompassing 19 terminals on the Missouri River (most with rail connections), are available for service by approximately 35 barge owners and towing companies. Eleven additional terminal facilities are available to shippers in Sioux City and Council Bluffs, Iowa.

The U.S. Army Corps of Engineers maintains a channel for 735 navigable miles from Sioux City to the mouth of the Missouri River near St. Louis. The river is navigable approximately eight months of the year (April through November). It is free flowing with no locks or dams.

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All of Nebraska's communities are connected by a good system of all-weather roads. The system contains approximately 96,000 miles (154,000 kilometers) of hard-surfaced roads, which helps maintain the quality of Nebraska's corn crop as it is harvested and efficiently transported to storage. Interstate 80, which is the only coast-to-coast (New York to San Francisco) segment of the U.S. interstate highway system, is included in the system. North-South interstate highways, which add to Nebraska's market access, are I-29 passing along Nebraska's eastern border and I-25 in close proximity to the state's western border. There are currently 575 motor freight carriers with authority to operate within Nebraska and to and from other states.

## **Highways & Motor Freight**

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### **U.S. GRAINS COUNCIL INTERNATIONAL OFFICES**

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The United States Grains Council represents Nebraska corn farmers in the world marketplace. The Council is a private, nonprofit organization that develops and expands export markets for U.S. corn through a network of nine international offices with active market development programs in more than 50 countries. The Council receives substantial funding from the Nebraska Corn Board.

Council programs include market education seminars, demonstration farms and projects, feeding trials, model feedmills and feedmilling practices, and foreign team travel in the United States, including Nebraska.

#### **U.S. Grains Council Headquarters Office**

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Fax: 011-60-3-2273-2052  
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**Representatives in:**

**Brazil**  
**Colombia**  
**India**  
**Indonesia**  
**Jordan**  
**Morocco**  
**Venezuela**  
**Vietnam**

011 is the international operator when dialing from the U.S.

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## NEBRASKA GRAIN INSPECTION SERVICE

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### (FGIS supervised-official)

The following grain inspection companies provide Federal Grain Inspection Service (FGIS) certified inspection and can test grain for numerous specifications as required by grain buyers or sellers. They are private businesses which conduct grain testing to meet the industry's needs.

#### **Fremont**

Dave Reeder, Chief Inspector  
Fremont Grain Inspection  
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#### **Grand Island**

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Phone: (308) 384-2174  
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#### **Hastings**

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Fax: (402) 462-4100

#### **Lincoln**

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#### **Omaha**

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#### **Sioux City, Iowa**

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## CONTACTS FOR ADDITIONAL INFORMATION

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#### **Nebraska Department of Agriculture**

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Lincoln, NE 68583  
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Fax: (402) 472-1693

#### **Nebraska Cooperative Council**

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Phone: (402) 475-6555

#### **Nebraska Grain and Feed Association**

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Fax: (402) 476-3401

#### **U.S. Grains Council**

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Fax: (202) 898-0522  
e-mail: [grains@grains.org](mailto:grains@grains.org)

**Population:** 1,758,787

**Geography:**

**Land mass:** 77,227 square miles (200,017 square kilometers)

**Acres:** 49.2 million acres (19.9 million hectares)

**Tillable acres:** 21 million acres (8.5 million hectares)

**Temperature:** (average for growing season: May through September)

East: 72.6 degrees Fahrenheit or 22.5 degrees Celsius

West: 68.7 degrees Fahrenheit or 20.4 degrees Celsius

**Average Annual Rainfall:**

East: 30 inches or 76.2 centimeters

West: 18 inches or 45.7 centimeters

**Irrigation:**

Nebraska's plentiful water supply helps make the state a reliable producer of high quality corn:

- On average, 75 percent of the corn produced in Nebraska is irrigated.
- Approximately 91,000 registered wells and a network of surface water canals and rivers supply 8.2 million acres (3.3 million hectares) of irrigated crops and pasture land.
- An estimated two billion acre-feet (more than five times the water of Lake Erie) of easily accessible ground water from the Ogallala Aquifer lies below 59 percent of Nebraska's land surface.

**Planting and Harvest Dates:**

Average planting dates in Nebraska range from April 15 to June 5, but the majority of Nebraska's corn acres are planted between April 25 and May 20. Average harvesting dates range from September 10 to November 25, but the majority of acres are harvested between September 30 and October 30.

## CONVERSIONS

TABLE 7

Conversions		
To Convert:	Into:	Multiply By:
kilometers	miles	0.621
miles	kilometers	1.609
meters	feet	3.281
meters	inches	39.37
inches	meters	0.0254
hectare	acre	2.47
acre	hectare	0.40486
kilogram	pound	2.205
pound	kilogram	0.454
liter	gallon	2.64
gallon	liter	3.785
U.S. tons	metric tons	0.909
metric tons	U.S. tons	1.1
metric tons	bushels(U.S. #1)	39.368
metric tons	bushels(U.S. #2)	40.826
bushels(U.S. #1)	metric tons	0.0254
bushels(U.S. #2)	metric tons	0.0245
pounds/bushel	kilograms/hectoliter	1.287
kilograms/hectoliter	pounds/bushel	0.777
temperature:	°F = 9/5 (°C) + 32    °C = 5/9 (°F - 32)	

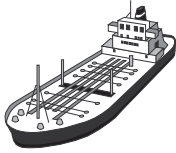



## U.S. GRADING STANDARDS

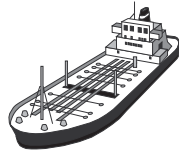



TABLE 8

Grade	U.S. Grades and Grade Requirements for Corn		Maximum Limits		
	Minimum Test Weight		Damaged Kernels		Broken Corn & Foreign Material (%)
	lbs/bu	kg/hl	Heat Damaged Kernels (%)	Total (%)	
U.S. #1	56.0	72.1	0.1	3.0	2.0
U.S. #2	54.0	69.5	0.2	5.0	3.0
U.S. #3	52.0	66.9	0.5	7.0	4.0
U.S. #4	49.0	63.1	1.0	10.0	5.0
U.S. #5	46.0	59.2	3.0	15.0	7.0

## CARGO COMPARISONS

Developed by Nebraska Department of Agriculture Agricultural Promotion and Development Division. For more information call 402.471.4876.

				<b>Container Capacities</b>
				
Panamax Ship 55,000 Ton 50,000 MT 1.96 Million Bu.	River Barge 1500 Ton 1364 MT 53,700 Bu.	100 Car Unit Train 10,000 Ton 9,091 MT 357,900 Bu.	Large Semi Truck 26 Ton 23.64 MT 930 Bu.	

		<b>Equivalent Units</b>
1 Panamax Ship Equals:		<p>Note: 1 full Panamax Ship would equal 10,185 acres of grain, yielding 200 Bu. per acre @ 56 lbs. TW.</p>
5.48 Unit Trains (548 Rail Cars) or;		
36.5 Barge Loads or;		
2,108 Truckloads		

## CORN QUALITY STUDY HISTORICAL DATA

TABLE 9

Corn Quality Study Historical Data										
	U.S. Grade #1	U.S. Grade #2	U.S. Grade #3	U.S. Grade #4 or below	Avg. Test Weight	Avg. Moisture	Avg. Aflatoxin below 20 ppb	Avg. Protein	Avg. Oil	Avg. Starch
1991	78.05%	19.51%	0.00%	2.44%	57.89	13.60%	100.00%	-	-	-
1992	46.00%	38.00%	11.00%	5.00%	56.84	14.86%	100.00%	-	-	-
1994	88.00%	12.00%	0.00%	0.00%	57.15	14.91%	100.00%	9.65%	4.10%	75.97%
1995	47.00%	49.00%	4.00%	0.00%	56.00	14.80%	100.00%	8.03%	3.24%	60.18%
1996	34.00%	56.00%	7.00%	3.00%	56.40	15.20%	100.00%	7.94%	3.80%	59.62%
1997	62.00%	33.00%	5.00%	0.00%	57.80	14.70%	100.00%	8.73%	4.14%	71.97%
1998	84.60%	15.40%	0.00%	0.00%	58.01	14.92%	100.00%	9.28%	4.36%	72.26%
1999	82.00%	15.50%	2.00%	0.50%	58.50	14.50%	100.00%	9.50%	4.30%	72.10%
2000	82.00%	15.00%	3.00%	0.00%	58.10	13.70%	100.00%	9.50%	4.30%	72.10%
2001	84.10%	15.30%	0.00%	0.50%	58.30	14.60%	100.00%	9.30%	4.30%	72.20%
2002	65.10%	20.80%	8.10%	6.00%	57.85	15.44%	83.00%	9.50%	4.20%	72.70%
2003	84.20%	11.00%	2.40%	2.40%	57.84	14.85%	93.20%	9.50%	4.30%	72.30%
2004	92.30%	5.90%	2.50%	0.00%	58.70	15.28%	100.00%	9.20%	4.57%	72.10%
2005	97.00%	3.00%	0.00%	0.00%	59.73	14.26%	100.00%	9.09%	4.47%	72.29%
2007	91.00%	6.90%	1.00%	1.00%	58.70	14.38%	100.00%	8.80%	4.20%	72.60%
<b>AVG.</b>	<b>74.49%</b>	<b>21.09%</b>	<b>3.07%</b>	<b>1.40%</b>	<b>57.85</b>	<b>14.67%</b>	<b>98.41%</b>	<b>9.07%</b>	<b>4.15%</b>	<b>70.92%</b>

Note: There was no Corn Quality Study (CQS) done in 1993. The CQS became a bi-annual report in 2005. All samples were yellow corn only.