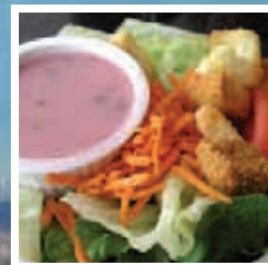
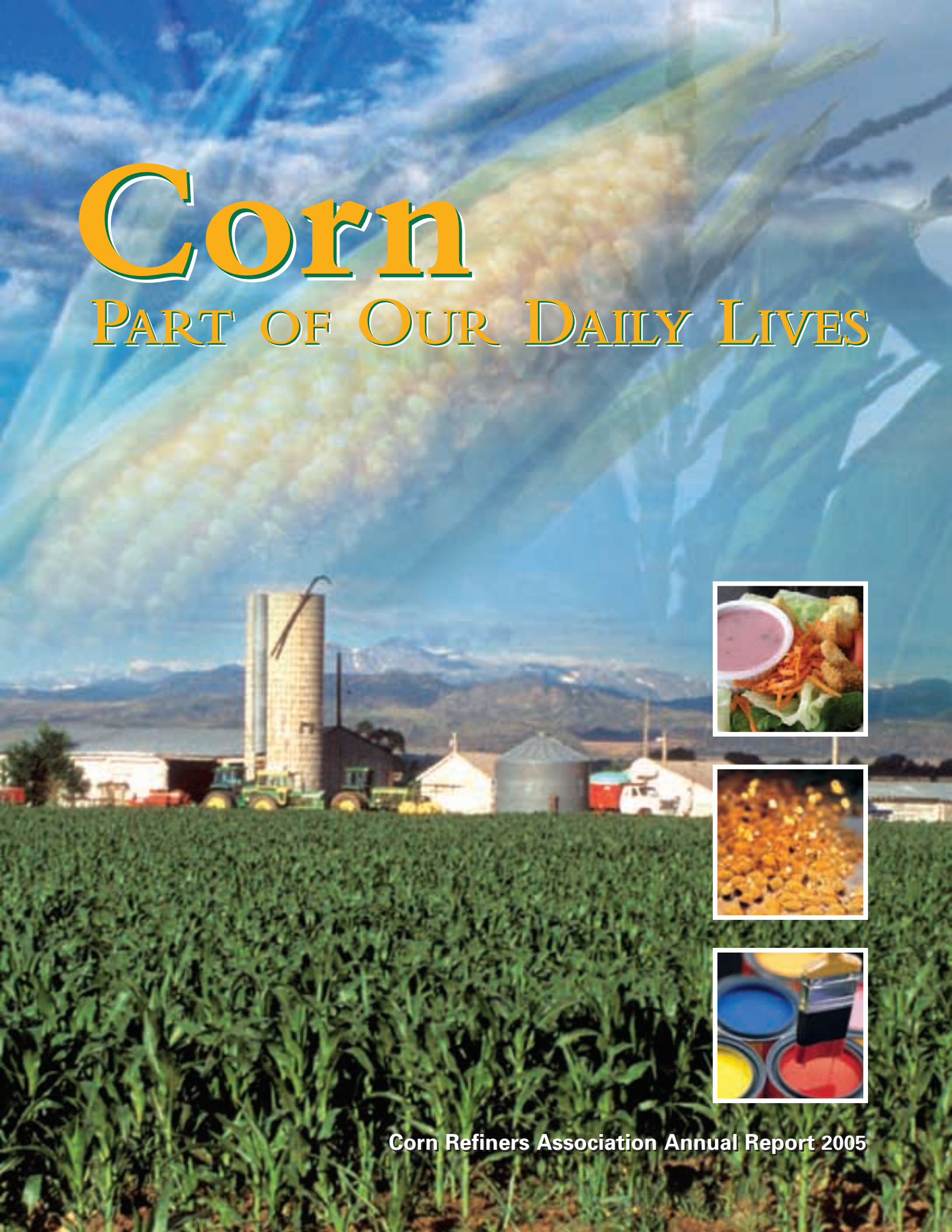


Corn

PART OF OUR DAILY LIVES



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*This edition of the Corn Annual is dedicated to the memory of **L. Mark Hanover (1948-2005)** who devoted his career to the advancement of the corn wet milling industry.*

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The Year in Review



**AUDRAE
ERICKSON**

President
Corn Refiners
Association

Imagine a world without corn. You may picture vast empty expanses of Midwest farmland, or a summer dinner with an empty spot on the plate for the fresh, buttered sweet corn. But to truly grasp a world without corn, you would have to seriously stretch your imagination. Corn has a profound impact on our daily lives. Its role is not always transparent and without it, nothing would be the same. From the toothpaste you use in the morning to the book you read at bedtime, corn plays a part in nearly every aspect of our lives.

2005 Corn Annual

In this year's *Corn Annual*, our guest authors demonstrate the various ways that corn is an important part of our everyday lives. The articles reveal interesting facts about corn's role in the economy, well recognized consumer products, energy resources and medicine. We are extremely grateful to each of our contributors.

As America's number-one crop, corn plays a major role in the U.S. economy. Agriculture Secretary Mike Johanns has deep roots in Iowa and Nebraska and an unwavering commitment to a strong farm economy. Secretary Johanns shares his knowledge, experience and perspective on the economic impact of corn on our everyday lives.

Corn, in and of itself, has many uses, including as a staple in both consumer and cattle diets. But once it is refined, the myriad of products from corn and their uses grow exponentially. Corn Refiners Association Chairman Pat Bowe of Cargill, Incorporated sheds light on the role of refined corn in products we use everyday.

As we strive to find alternative energy resources, corn-based ethanol will be a significant contributor to our energy mix. By explaining advancements in corn production and increasing efficiency in ethanol production, National Corn Growers Association President Leon Corzine demonstrates how important corn is to our energy independence.

Our final article explores the various medical products that are made possible, in part, by corn. Dr. John White, founder and president of White Technical Research, uncovers the array of refined corn ingredients and their uses in products that keep us healthy.

Issues of importance to the industry

Obesity

Obesity is an important public health matter. As a result, many scientists, health professionals and regulators are actively searching for causes and solutions. Journalists are also attempting to cover the subject, with varying levels of expertise. Unfortunately, some press reports oversimplify the issues by attempting to single out specific ingredients, including high fructose corn syrup (HFCS), as the sole cause for the complex conditions of overweight and obesity.

Responding rapidly and accurately to press stories that affect our industry is a key component of CRA's obesity strategy. Expanding our scientific resources, CRA established a Scientific Advisory Panel comprised of independent, outside expert advisors to provide advice on scientific matters affecting food policy, technology and health and safety.

CRA's policy of immediately responding to news stories that mischaracterize HFCS has been effective in educating the public and providing useful scientific information to reporters. CRA responded to over 400 stories concerning HFCS over the past 12 months with over 90 publications printing our response.

We also produced a science-based, consumer-friendly brochure entitled: "Questions and Answers About High Fructose Corn Syrup," which provides key information about HFCS, including its compositional similarity to table sugar and the consumer benefits of HFCS. The Q&A served as the primary content for

redesigning the HFCSfacts.com web site. Both are key communication tools in responding to press reports that mischaracterize HFCS.

Exhibiting at conferences has also provided significant outreach opportunities to food, nutrition and health writers as well as dietitians and medical professionals. CRA interacted with these professionals at the American Dietetic Association Public Policy Workshop in March 2005 and at the International Food Technologists Conference in July 2005. We will also exhibit at the American Dietetic Association Conference in October 2005 and will present a nutritive sweeteners workshop in conjunction with the ADA conference.

CRA continues to work closely with a number of important allied organizations to present factual information concerning the corn industry and users of our ingredients.

Mexico sweetener dispute

August 2005 brought welcome reports that the World Trade Organization found Mexico's tax on beverages containing HFCS to be in violation of Mexico's WTO commitments. The WTO ruling will provide a sound basis for a resolution to this longstanding dispute.

Many members of Congress, including Senate Finance Chairman Charles Grassley (R-IA), have worked diligently to gain the support of the Administration to pursue the WTO case and press for a resolution to the dispute.

Since 1997, the sweetener impasse with Mexico has resulted in more than \$3 billion of lost HFCS exports and U.S. owned HFCS sales in Mexico, or 672 million bushels of corn production. Losses of \$944 million in HFCS sales, equivalent to 168 million bushels of corn, are

Shipments of Products of the Corn Refining Industry—2004

Starch Products <i>(includes corn starch, modified starch and dextrins)</i>	6,683,503,000
Refinery Products <i>(includes glucose syrup, high fructose syrup, dextrose, corn syrup solids, maltodextrins)</i>	32,857,856,000
High fructose corn syrup—42%	10,122,003,000
High fructose corn syrup—55%+	13,393,900,000
Total HFCS	23,515,903,000
Total - Domestic Basic Products	39,541,359,000
Total - Export Basic Products	1,537,090,000
Corn oil (crude and refined)	1,077,457,000
Corn gluten feed and corn oil meal	9,861,094,000
Corn gluten meal	2,613,472,000
Steepwater	1,306,912,000
TOTAL SHIPMENTS	55,937,384,000

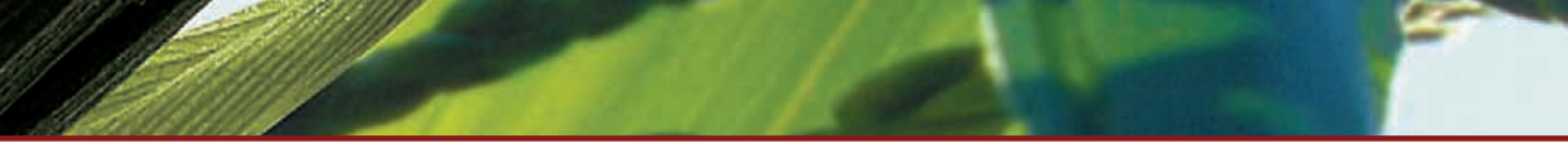
Compiled for the Corn Refiners Association, Inc., by VERIS Consulting, LLC. Statistics represent shipments by members of the association. Shipments are in pounds, commercial weights, and do not include co-products derived from ethanol production.



Exports of Products From Corn

PRODUCT	2004	UNITS	VALUE
Corn meal	201,484,998	Kilograms	\$53,476,831
Corn starch	91,656,410	Kilograms	\$39,117,936
Corn oil, crude	187,968,444	Kilograms	\$129,336,777
Corn oil, once refined	1,800,271	Kilograms	\$1,851,606
Corn oil, fully refined	170,159,416	Kilograms	\$143,562,329
Glucose (dextrose)	79,461,149	Kilograms	\$36,351,199
Glucose syrup not containing fructose or containing in the dry state less than 20% fructose	142,615,117	Kilograms	\$44,694,128
Glucose syrup with 20-50% fructose	22,384,231	Kilograms	\$6,007,247
Chemically pure fructose	58,705,450	Kilograms	\$44,954,600
Fructose syrup with 50%+ fructose	79,797,278	Kilograms	\$28,707,520
Fructose solids containing more than 50% fructose	11,540,760	Kilograms	\$34,739,145
Bran, sharps and other residues	69,343	Metric tons	\$7,794,189
Corn gluten feed	3,360,595	Metric tons	\$331,200,076
Corn gluten meal	899,614	Metric tons	\$281,438,115
Other residues of starch manufacturing	13,329	Metric tons	\$2,835,598
Corn oil cake	2,926,764	Kilograms	\$392,464
Dextrins	20,530,458	Kilograms	\$15,257,732
Modified starches derived from corn starch	163,076,507	Kilograms	\$117,001,197

Source: U.S. Department of Commerce



sustained every year that the tax is in place with additional sizable losses to investments.

Full resolution of the dispute would enable U.S. corn farmers to realize a \$0.06 per bushel increase in the price of corn nationally, and up to \$0.10 per bushel in key corn states.

Biotechnology

Exports of corn gluten feed (CGF) to the European Union were temporarily disrupted following the announcement by the U.S. government and Syngenta Seeds that Bt10 (an unapproved event) had been sold in the United States as the approved event Bt11. The EU now requires that all imports of U.S. CGF and distillers grains be accompanied by a laboratory analysis indicating that the shipments do not contain Bt10 genetics. In 2004, the EU imported 3.15 million metric tons of U.S. CGF worth approximately \$303 million representing 94 percent of total CGF exports.

Despite trade difficulties with the EU, American farmers continue to embrace biotech corn varieties — for good reason. In 2004, corn acres planted to biotech varieties increased to 47 percent of the crop.

Economic contribution

Corn refiners make a significant contribution to the health of our national economy and the local markets where refining plants are located.

The corn refining industry and its member companies provide well-paying jobs to over 65,000 employees across the country. In Illinois alone, nearly 11,000 individuals work in the industry. The national payroll for our specific sector is over \$3.3 billion. Nearly 41,000 farmers benefit from the sale of their corn to corn wet millers, with nearly 11,000 producers supplying corn to the industry from Indiana alone.

Corn refiners also contribute to the economy through purchases of material inputs such as utilities, fuels, shipping materials, transportation and manufacturing equipment, processing chemicals/enzymes and other items necessary for plant operations. Nationwide, corn refiners

spend more than \$23 billion annually on these types of expenditures, which have further multiplier effects in our nation's rural areas.

Another important economic contribution from the corn refining industry is property taxes. Corn refiners add nearly \$8.8 billion annually to local economies through payment of property taxes, which in turn provides American citizens necessary public services.

Trade

Corn refiners exported over 22 percent of the industry's 2004 shipments. The value of refined corn exports increased over \$60 million, contributing a positive balance of \$1.3 billion to the U.S. economy. Opportunities to strengthen this segment of the industry's business are found in trade agreements that significantly reduce or eliminate tariffs on all refined corn products.

CRA welcomed passage of the Central American-Dominican Republic Free Trade Agreement (CAFTA-DR), a comprehensive and balanced agreement. The provisions concerning trade in sweeteners and other refined corn products in CAFTA are unambiguous and represent real opportunity for growth. U.S. exports of corn oil, corn starch, corn sweeteners and animal feed ingredients to the CAFTA countries have averaged \$19 million over the past five years and grew by 56 percent during the same period.

CRA worked with USTR Ambassador Portman, Secretary Johanns, the White House and a broad-based food and agricultural coalition to secure passage of the agreement.

The aggressive trade agenda of the Bush Administration offers excellent prospects to increase the growing export of value-added products from the U.S. corn refining industry. As other countries continue to develop and change their food supplies, refined corn ingredients will find new markets to explore. New and expanding export markets will boost corn utilization, add well-paying jobs in the corn refining and associated industries and increase the economic contribution of the industry in the United States. ♣

Corn's Role in the Economy



PHOTO CREDIT: USDA

THE HONORABLE MIKE JOHANNS

Secretary
U.S. Department of
Agriculture

King Corn has dominated agriculture in the Western Hemisphere since the Mayan, Aztec and Incan civilizations. From starches to sweeteners, super lubricants made from corn oil to feed products for America's livestock, corn touches our lives in many ways.

Just consider the rising market for high-quality biobased products — plates, cups and utensils that are farmer and eco-friendly. They come from the farm and will be returned to the farm — to the earth — in the form of composting. They are replacing petroleum-based products that have historically fed our dependence on foreign oil.

A survey conducted by the Corn Refiners Association several years ago found that in a supermarket containing approximately 30,000 products, 3,700 food items on the shelves contained over 7,300 refined corn ingredients.

I appreciate this opportunity to share some thoughts on the remarkable success story of our nation's corn industry — as important to American agriculture as it is to America's future.

In 2004, American farmers contributed a record \$126 billion to the U.S. economy — in the form of agricultural products, and corn farmers were responsible for a significant share. Last year's corn crop set an all-time production record of 11.8 billion bushels with an average yield of 160.4 bushels per acre.

In 1970, the first year the *Corn Annual* was published, corn farmers produced a crop of 4.1 billion bushels with an average yield of 71.6 bushels per acre. The average price for a bushel of corn was \$1.36, which put the value of the crop at about a quarter of last year's \$23 billion.



PHOTO CREDIT: CARGILL, INCORPORATED

Corn: Food and Industrial Uses

Year	HFCS	Glucose and Dextrose	Starch	Fuel Alcohol	Beverage Alcohol	Cereals and other products	TOTAL
1990	379	200	219	349	135	124	1,406
1991	392	210	225	398	161	128	1,514
1992	415	214	218	426	136	129	1,538
1993	441	219	225	458	110	140	1,593
1994	459	224	230	533	100	150	1,696
1995	473	227	226	396	125	161	1,608
1996	492	233	238	429	130	172	1,694
1997	513	229	246	481	133	182	1,784
1998	530	219	240	526	127	184	1,826
1999	540	222	251	566	130	185	1,894
2000	530	218	247	628	130	185	1,938
2001	541	217	246	706	131	186	2,027
2002	532	219	256	996	131	187	2,321
2003	530	228	271	1,168	132	187	2,516
2004	515	222	280	1,325	133	189	2,664

In million bushels. Source: USDA—Economic Research Service. Year beginning Sept. 1.

Corn acreage has remained relatively constant, but production has steadily increased due to technological advances in machinery, farming techniques and breeding. At the turn of the 20th century, it took 14-16 labor-hours to produce an acre of corn with an average yield of less than 30 bushels. Now, it takes less than 2.5 labor-hours to produce an acre that yields more than five times as much corn.

The uses of corn have also changed dramatically since 1970. Back then, the corn refining industry was just beginning to develop high fructose corn syrup and markets for ethanol. And the notion of corn-based products replacing petroleum-based products was not yet on the drawing board.

Today, more than 730 million bushels of corn are used to make corn sweeteners, which account for more than half of the U.S. sweetener supply.

There's an enormous market share ready to be captured by renewable energy — ethanol production in 2005 will approach four billion gallons, which translates into 14 percent of corn use. And, the markets for corn-based plastics and textiles are growing everyday.

I've learned about the role and value of corn in our economy from a number of perspectives; as Secretary of Agriculture, as the Governor of a largely agricultural state and as a youngster growing-up on a farm near Osage, Iowa.

Back on that farm, I was convinced we were churning out as many bushels of corn per acre as humanly possible. Working from dawn until dusk, I could not imagine how one could work any harder to squeeze out one more bushel. Today, ingenuity has increased productivity so dramatically that producers harvest crops that I could not have comprehended when I was a kid.



Technology has revolutionized agriculture and is opening the door to a more productive future. During my tenure as Governor of Nebraska, I chaired the Governors' Biotechnology Partnership and actively encouraged the exploration of biotech opportunities with a determination to overcome hurdles, open new markets and provide expanded opportunities for productivity in agriculture.

I also saw first hand how agriculture serves as a key economic driver. Nebraska is the nation's third largest producer of corn, contributing substantially to the \$5.8 billion brought in to the U.S. from corn exports in 2004.

As Governor, I signed legislation that focused our financial resources on providing transfer-

able, non-refundable gas tax credits for the production of ethanol. The result is expected to be a state investment of more than \$200 million within the next eight years. It is already paying off. Seventeen of the nation's 88 ethanol plants are located in Nebraska. Today, nearly one in five bushels of Nebraska corn is processed into ethanol.

In many Midwestern states, ethanol is becoming a player in the energy sector. My home state of Iowa, for example, produces more ethanol than any other state. Nationwide, ethanol production and capacity development supports more than 143,350 jobs.

As Secretary of Agriculture, I have an even broader role in supporting and spreading the

U.S. Per Capita Sweetener Deliveries* for Food and Beverage Use

Year	Refined Sugar	HFCS	Glucose	Dextrose	Total	Honey and Edible Syrups	Total Caloric Sweeteners
		Corn Sweeteners (DRY BASIS)					
1970	101.8	0.5	10.7	4.6	15.9	1.5	119.1
1975	89.2	4.9	14.0	4.4	23.3	1.4	113.8
1980	83.6	19.0	12.9	3.5	35.3	1.3	120.2
1985	62.7	45.2	13.5	3.5	62.2	1.3	126.2
1990	64.4	49.6	13.6	3.6	66.8	1.2	132.4
1995	64.9	57.6	16.3	4.0	77.9	1.3	144.1
1996	65.2	57.8	16.4	4.0	78.2	1.4	144.7
1997	64.9	60.4	17.3	3.7	81.5	1.4	147.8
1998	64.9	61.9	17.1	3.6	82.7	1.4	149.0
1999	66.3	63.7	16.3	3.5	83.5	1.5	151.4
2000	65.5	62.7	15.8	3.4	81.8	1.5	148.9
2001	64.5	62.6	15.5	3.3	81.4	1.4	147.3
2002	63.3	62.9	15.5	3.3	81.6	1.5	146.5
2003	61.0	61.0	15.2	3.1	79.3	1.4	141.7
2004	61.9	59.4	15.6	3.3	78.4	1.3	141.5

Units Measured in Pounds

Source: USDA—Economic Research Service

* Per capita deliveries of sweeteners by U.S. processors and refiners and direct-consumption imports to food manufacturers, retailers, and other end users represent the per capita supply of caloric sweeteners. Actual human intake of caloric sweeteners is lower because of uneaten food, spoilage, and other losses. Figures do not include deliveries to alcohol manufacturers.

message about our nation's home-grown fuel, as well as opportunities to expand biotechnology. I am proud to serve in an administration that is making great strides to continue these advancements.

Earlier this year, President Bush signed the Central American-Dominican Republic Free Trade Agreement which will help level the playing field with our trading partners in this hemisphere by eliminating or lowering import duties on exports of U.S. agriculture products.

President Bush also signed a new energy bill into law that includes a Renewable Fuels Standard that calls for increases in the use of home grown fuels — 7.5 billion gallons of biodiesel and ethanol — by 2012.

The Renewable Fuels Standard is good news for farmers and ranchers, as well as our nation as a whole, because it will enhance our nation's economic security. I've said many times: I would much rather secure our energy from the corn fields of America, than the oil fields of the Middle East.

That initiative will help to bring down costs of energy production as well as consumer costs, and encourage construction of new ethanol plants, which will bring new jobs that generate additional revenue.

That's a win-win situation in my book!

Already, a number of USDA mission areas are working to increase our economic security by promoting ethanol production and increased uses for corn and corn-based products. Our researchers are also finding new ways to improve corn processing techniques, utilize corn fiber, corn protein, corn stover and new uses for numerous refined corn products.

Americans are recognizing the importance of corn-refined products to our economy. I hope it won't be long before millions more Americans are driving ethanol-fueled vehicles to shopping centers where they can buy clothing, food, household items and a host of other products made from corn. ✓

U.S. Corn Refining Industry at a Glance, 2004

Corn Refining Plants:	26
Location:	12 states
Corn Grind:	1.5 billion bushels
Value of Corn Purchased:	\$3.6 billion
Number of Corn Suppliers:	41,000
Direct Employment by CRA Member Companies:	65,300*
Capital Investment (Replacement Value):	\$13 billion
MAJOR PRODUCTS (estimated)	
Sweeteners (dry weight):	25.4 billion pounds
Starches:	7.3 billion pounds
Ethanol:	1.3 billion gallons
Co-Products:	26.7 billion pounds
Value Added by Manufacture:	\$6.3 billion

*Includes employees that provide services in non-corn refining areas.

Compiled by the Corn Refiners Association based on data from the U.S. Department of Agriculture, LMC Commodity Studies, Renewable Fuels Association, and industry data compiled for CRA by VERIS Consulting, LLC.

Corn: A Plant for All Seasons and All Reasons

PHOTO CREDIT: CARGILL INCORPORATED



PAT BOWE

Chair of the Board
Corn Refiners
Association

President
Cargill Sweeteners
North America

Ask the average person to name a product made from corn and he or she may respond with corn syrup, tortillas or maybe even ethanol. But how many people realize that corn is in their carpet cleaner? How many know that corn helps put “bounce” into their laundry softener sheets? How many would realize that the “bottle” in their bottled water just might be made of corn-based plastic?

It’s true, there are almost as many uses for corn as there are Web sites that pop up when you Google the phrase, “Many Uses of Corn” (1,550,000 to be exact — I tried it).

To paraphrase the slogan of one of our CRA member companies: *Look around you. Chances are, you’re looking at corn.* It is an essential ingredient in many of the products consumers use today. You find it in everything from textiles to toothpaste, from dyes to disposable diapers.

In the supermarket

On the supermarket shelf, literally thousands of food staples use some part of the corn kernel. Many of today’s instant and ready-to-eat foods use cornstarches to help them maintain proper texture during freezing, thawing and heating. Other starches are the backbone of instant pie and pudding fillings. In the meat case, you’ll find succulent cuts of pork, poultry and beef from animals that were fed lysine, a protein-rich feed supplement made from corn-derived dextrose and growing in popularity worldwide.

But corn’s contributions don’t stop where the food aisles end. It’s also vital to products such as paper and cardboard, which use cornstarch in sizing and surface coating. Hundreds of adhesive applications are also made possible by cornstarches.

Personal care

Stroll down the personal hygiene aisle and you’ll find toothpastes and mouthwashes made tastier with tooth-friendly liquid sorbitol, one of a family of corn-derived sugar alcohols known as polyols.

While we’re walking, let’s stop in the health and beauty section, where we’ll find other polyols being used as moisture-retainers in cosmetics or hardening agents in pills and tablets. Further down the aisle are the omega-3 fatty acid supplements, produced through a fermentation process that starts with corn-derived dextrose. Got achy joints? You might want to purchase some shellfish-free glucosamine made from corn. Looking to lose some weight? Corn-bran based dietary gels are now being touted as replacements for fats and oils in some recipes.

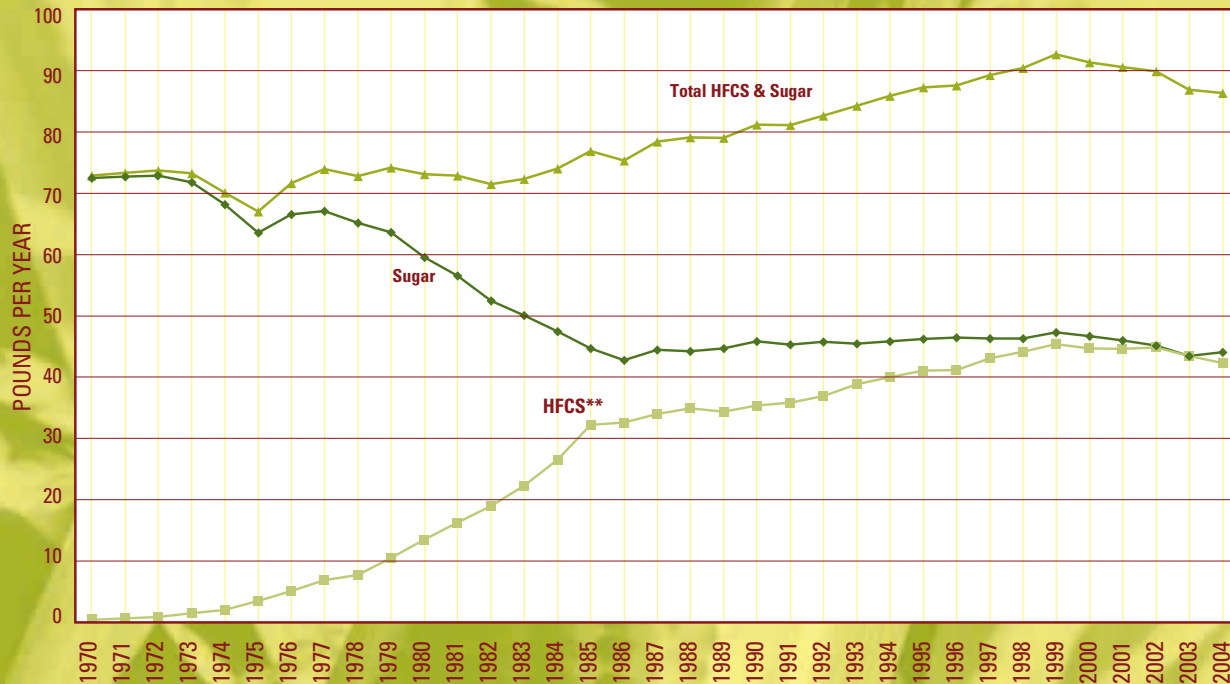
If your dog is in need of a bath, you might want to pick up some organic pet shampoo with its “corn oil soap base [that] cleanses gently, without irritating a dog’s sensitive skin.” Might want to pick up some for yourself while you’re at it — some of the human shampoo varieties contain corn, too.



PHOTO CREDIT: ARCHER DANIELS MIDLAND COMPANY

Annual Per Capita Availability of Sugar and HFCS Adjusted for Loss

USDA FOOD DISAPPEARANCE DATA



Source: USDA—Economic Research Service, Sweetener Yearbook, Tables 51 and 52

*Estimated annual per capita sugar availability calculated by adjusting sugar deliveries for domestic food and beverage use for food losses.

**Estimated annual per capita HFCS availability calculated by adjusting HFCS deliveries for domestic food and beverage use for food losses.

Household cleaners

While we're on the subject of getting things clean, check out the industrial-strength cleaners and laundry detergents — likely as not they'll contain corn-derived citric acid, which works like a water softener, allowing the cleaner to produce more suds.

Our walk through the store would hardly be complete without running into at least a couple examples of an unsung corn product known as cyclodextrin.

Cyclodextrins are obtained from starch that is modified with an enzyme to look, on the

molecular level, like tiny hollow cones that can hold other substances inside. Cyclodextrins can be used to carry all kinds of active ingredients such as drugs, vitamins, fragrances and flavors. By matching them with other molecules, cyclodextrins can control the release of active ingredients, as in the case of laundry sheets, which release their softener in the dryer cycle.

In industry

Exiting the supermarket, you'll continue to find corn products down at the factory. American industry uses cornstarch as an anti-caking agent,



PHOTO CREDIT: USDA

mold-release agent, dusting powder and thickening agent. Itaconic acid from corn is put into the latex backing on carpets. There are even special types of cornstarches used in the search for oil as part of the “drilling mud” which cools down superheated oil drilling bits.

Competition for petroleum-based products

As the 21st century unfolds, corn may be used less to help in the search for oil and more as a substitute for the oil itself. We’re not just talking about ethanol replacing gasoline, as significant as that is proving to be. We’re talking about the staggering array of products, from polyester to plastic piping, that start life as petroleum.

Nearly 20 years ago, researchers at Cargill began developing a polymer made from corn. Today, NatureWorks® PLA offers a family of packaging material and fibers which can compete with petroleum-based counterparts on cost and performance, plus have the added benefits of biodegradability and being from a renewable source. Around the world, progressive companies are using PLA to package everything from candy to compact discs and from milk to mp-3s.

A bio-industrial revolution

But NatureWorks may turn out to be just the tip of the industrial iceberg. There is ample reason to believe that the “biorefinery” of tomorrow may be capable of producing as wide a variety of industrial products as does the petroleum refinery of today.

Take industrial chemicals, for instance. Quite a number are produced via petroleum refining — things with hard-to-pronounce names like propionic acid (helps preserve freshness), propylene oxide (used in antifreeze and detergents) and butanol (a solvent). The primary building block for these chemicals is not the petroleum per se, but carbon, an abundant element in petroleum that is relatively easy to extract.

Carbon is also abundant in a lot of other living things, including — surprise, surprise — corn. Carbon is carbon, whether it was fixed a million years ago (as with oil) or six months ago (as with corn). If a way can be found to extract and exploit biocarbon inexpensively, it could be the start of a bio-industrial revolution. Just as today’s oil refineries break petroleum into hundreds of different compounds, there could be a day when biorefineries will turn corn and other crops into many types of chemicals and intermediates with countless uses.

Many of us in the corn industry believe that day is approaching. It may take many years, maybe decades, to develop, but its potential is substantial. By some estimates, for example, as much as two-thirds of the \$1.5 trillion global industrial chemicals and plastics business could potentially be served by renewable feedstocks. Corn won’t fill that niche all by itself, but it could take a major chunk of it.

Corn has come a long way since the people of what is now Mexico first gathered it from wild plants 10,000 years ago. From the looks of it, we’ll continue reaping benefits from it for thousands of years to come. ♻️

Corn: The Dependable Resource

The United States of America has been the top corn-producing country in the world for the past 200 hundred years. With the United States leading the way in technological advances, including biotechnology, equipment and farming techniques, it is certain it will remain No. 1 in corn production.

The record 11.8 billion bushel corn crop of 2004 is an indication of the increasing potential of the U.S. corn producer. Soon, corn growers will be looking at 14 or 15 billion bushels of annual corn production. It is imperative we continue working as an industry to develop new and expanded uses as we look to the future. We have great potential as indicated by corn now being used in candy, cosmetics, soda, toothpaste — the list goes on and on. Corn's versatility continues to expand and influence both agricultural and consumer economies.

A carbohydrate-based economy

Currently, more than one billion bushels of corn are replacing millions of barrels of oil in fuel, plastics, solvents and cleaners — signaling the evolution from a petroleum-based economy to a carbohydrate-based economy. Research and improved refining are uncovering new ways to convert corn's various components into renewable, high-value products that are changing the face of manufacturing and industry. The world's ability to produce abundant and renewable corn-based fuels, plastics and fibers signals a new age of innovation based on sustainability and viability.

One use revolutionizing the U.S. energy sector is ethanol — the biggest success story in the corn industry since the development of corn hybrid technology in the early 20th century. Ethanol has received more attention recently as Americans face soaring oil prices. Ethanol lessens dependence on foreign oil, cuts greenhouse gas emissions and saves money at the pump, in addition to providing livestock feed.

Success through biotechnology

Ethanol's success is clearly tied to biotechnology, which has revolutionized the way we grow corn. In the past 10 years, U.S. farmers have increased yields 42 percent through improved hybrids and better farming methods.

Through biotechnology, major seed companies are developing hybrids that improve the ethanol yield potential of corn. The National Corn Growers Association and major seed technology providers are working to establish a single industry standard that measures that potential. This will allow corn growers to provide grain that will improve the efficiency of ethanol plants.

Current research is focused on increasing ethanol's efficiency. In less than 10 years, ethanol plants have improved production from 2.5 gallons of ethanol per bushel to 2.8 gallons per bushel. In addition, scientists are continuing to improve ethanol's BTU balance, raising the net energy balance of corn-based ethanol from 1.35 in 2002 to 1.67 in 2004.

U.S. energy policy

The Energy Policy Act of 2005, recently signed by President George W. Bush, includes a 7.5-billion-gallon renewable fuels standard (RFS). The RFS, which requires the United States to blend at least 7.5 billion gallons of ethanol with gasoline by 2012, is one of the most significant events in the history of ethanol production.

This is just the beginning of America's energy evolution. As we wean ourselves from dependence on foreign oil, ethanol will play an integral part in U.S. energy policy. Across the United States, Americans are realizing the benefits of clean-burning ethanol-blended fuels by driving flex-fuel vehicles that operate on E85. Automobile manufacturers are increasing production of flex-fuel vehicles, and gas stations are changing their infrastructures to provide the fuel that contains 85 percent ethanol and 15 percent gasoline.



**LEON
CORZINE**

President
National Corn Growers
Association



The National Ethanol Vehicle Coalition projected 55 E85 stations would open in 2005. To date, 160 have opened, with several more on the way. As more Americans use E85, U.S. dependence on foreign oil will shrink.

Valuable coproducts

Corn-to-ethanol plants produce more than ethanol. Wet mill and dry grind plants both produce high-value feed of choice for beef, dairy, swine and poultry. Wet mills produce corn gluten feed, and dry mills produce distiller's grain. These coproducts add to the bottom line for ethanol plants and are very valuable to our livestock customers. For every bushel of corn used for ethanol, 13.5 pounds of corn gluten feed are produced. Our livestock partners' use of these coproducts help provide a healthy, nutritious and economical food supply for Americans and the world.

An exciting future

The success of ethanol is one of many for the corn industry, as we show the world agriculture has solutions for the wide array of challenges facing our society. We will provide food, feed, fuel and fiber for future generations in a more efficient and more environmentally friendly way. The use of new technologies points to an exciting future for U.S. agriculture and related industries.

Corn, used as a solar collector, is a key part of our agricultural history, and it always will be an exciting part of our future. We will continue to produce more corn in an economical and environmentally efficient manner. Yet, we are not going to rest on the laurels of 160 bushels/acre, 2.8 gallons of ethanol per bushel or 1.67 BTUs. As corn growers produce more corn — and better corn — all sectors of the U.S. economy will reap the benefits. ✓

Corn: Supply and Disappearance

Year Beginning September 1	SUPPLY				DISAPPEARANCE						ENDING STOCKS		
	Beginning Stocks	Production	Imports	Total	Food, Alcohol and Industrial	Seed	Feed and Residual	Total	Exports	Total Disappearance	Govt. Owned	Privately Owned	Total
1995/96	1,557.8	7,400.1	16.5	8,974.4	1,608.0	20.1	4,692.5	6,320.6	2,227.8	8,548.4	30.4	395.5	425.9
1996/97	425.9	9,232.6	13.3	9,671.8	1,693.9	20.3	5,277.0	6,991.2	1,797.4	8,788.6	2.1	881.1	883.2
1997/98	883.2	9,206.8	8.8	10,098.8	1,784.4	20.4	5,481.8	7,286.6	1,504.4	8,791.0	4.3	1,303.5	1,307.8
1998/99	1,307.8	9,758.7	18.8	11,085.3	1,826.5	19.8	5,467.8	7,314.1	1,984.2	9,298.3	11.6	1,775.4	1,787.0
1999/00	1,787.0	9,430.6	14.7	11,232.3	1,893.0	20.3	5,664.9	7,578.2	1,936.6	9,514.8	14.7	1,702.8	1,717.5
2000/01	1,717.5	9,915.1	6.8	11,639.4	1,937.6	19.3	5,842.1	7,799.0	1,941.3	9,740.3	7.7	1,891.4	1,899.1
2001/02	1,899.1	9,502.6	10.1	11,411.8	2,026.3	20.1	5,864.2	7,910.6	1,904.8	9,815.4	6.4	1,590.0	1,596.4
2002/03	1,596.4	8,966.8	14.4	10,577.7	2,320.2	20.0	5,562.9	7,903.1	1,587.9	9,491.0	4.2	1,082.5	1,086.7
2003/04*	1,086.7	10,089.2	14.1	11,190.0	2,516.7	20.5	5,794.9	8,332.1	1,899.8	10,231.9	0.1	958.0	958.1
2004/05**	958.1	11,807.2	10.0	12,775.3	2,669.3	20.7	6,150.0	8,840.0	1,825.0	10,665.0	1.0	2,109.3	2,110.3
2005/06**	2110.3	10,349.8	10.0	12,470.1	2,850.0	20.0	5,750.0	8,620.0	1,950.0	10,570.0	0.0	1,900.1	1,900.1

Million Bushels. Source: USDA – Economic Research Service.

* Preliminary

** Projected

Corn for Grain: Yield and Production

State	AREA HARVESTED Thousand Acres			YIELD Bushel Per Acre			PRODUCTION Thousand Bushels		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
AL	180	190	195	88.0	122.0	123.0	15,840	23,180	23,985
AZ	28	22	27	185.0	190.0	180.0	5,180	4,180	4,860
AR	255	350	305	134.0	140.0	140.0	34,170	49,000	42,700
CA	150	140	150	170.0	160.0	175.0	25,500	22,400	26,250
CO	720	890	1,040	150.0	135.0	135.0	108,000	120,150	140,400
DE	167	162	153	84.0	123.0	152.0	14,028	19,926	23,256
FL	37	39	32	96.0	82.0	90.0	3,552	3,198	2,880
GA	290	290	280	110.0	129.0	130.0	31,900	37,410	36,400
ID	45	50	75	155.0	140.0	170.0	6,975	7,000	12,750
IL	10,900	11,050	11,600	135.0	164.0	180.0	1,471,500	1,812,200	2,088,000
IN	5,220	5,390	5,530	121.0	146.0	168.0	631,620	786,940	929,040
IA	11,850	11,900	12,400	163.0	157.0	181.0	1,931,550	1,868,300	2,244,400
KS	2,600	2,500	2,880	116.0	120.0	150.0	301,600	300,000	432,000
KY	1,070	1,080	1,140	104.0	137.0	152.0	111,280	147,960	173,280
LA	540	500	410	121.0	134.0	135.0	65,340	67,000	55,350
MD	425	410	425	74.0	123.0	153.0	31,450	50,430	65,025
MI	2,000	2,030	1,920	117.0	128.0	134.0	234,000	259,840	257,280
MN	6,700	6,650	7,050	157.0	146.0	159.0	1,051,900	970,900	1,120,950
MS	530	530	440	120.0	135.0	136.0	63,600	71,550	59,840
MO	2,700	2,800	2,880	105.0	108.0	162.0	283,500	302,400	466,560
MT	13	17	15	140.0	140.0	143.0	1,820	2,380	2,145
NE	7,350	7,700	7,950	128.0	146.0	166.0	940,800	1,124,200	1,319,700
NJ	70	61	72	61.0	113.0	143.0	4,270	6,893	10,296
NM	49	48	58	175.0	180.0	180.0	8,575	8,640	10,440
NY	460	440	500	97.0	121.0	122.0	44,620	53,240	61,000
NC	680	680	740	83.0	106.0	117.0	56,440	72,080	86,580
ND	995	1,170	1,150	114.0	112.0	105.0	113,430	131,040	120,750
OH	2,970	3,070	3,110	89.0	156.0	158.0	264,330	478,920	491,380
OK	190	190	200	130.0	125.0	150.0	24,700	23,750	30,000
OR	20	30	28	160.0	170.0	170.0	3,200	5,100	4,760
PA	840	890	980	68.0	115.0	140.0	57,120	102,350	137,200
SC	260	215	295	47.0	105.0	100.0	12,220	22,575	29,500
SD	3,250	3,850	4,150	95.0	111.0	130.0	308,750	427,350	539,500
TN	610	620	615	107.0	131.0	140.0	65,270	81,220	86,100
TX	1,790	1,650	1,680	113.0	118.0	139.0	202,270	194,700	233,520
UT	16	13	12	142.0	155.0	155.0	2,272	2,015	1,860
VA	325	330	360	68.0	115.0	145.0	22,100	37,950	52,200
WA	70	70	105	190.0	195.0	200.0	13,300	13,650	21,000
WV	30	27	29	105.0	115.0	131.0	3,150	3,105	3,799
WI	2,900	2,850	2,600	135.0	129.0	136.0	391,500	367,650	353,600
WY	35	50	51	119.0	129.0	131.0	4,165	6,450	6,681
US	69,330	70,944	73,632	129.3	142.2	160.4	8,966,787	10,089,222	11,807,217

CT, ME, MA, NV, NH, RI, VT Not estimated. Source: USDA—National Agricultural Statistics Service

Corn's Role in Keeping Us Healthy



JOHN S. WHITE, PH.D.

President
WHITE Technical Research

Refined corn products are used in a variety of items that keep us healthy — from vitamins to cough syrups to surgical gloves. Pharmaceutical companies depend on high-quality refined corn ingredients to produce traditional medicines and develop better drug delivery systems. Refined corn products are used in pharmaceuticals as excipients to enhance drug delivery, and as binders, diluents, tableting agents and coating agents. They are also important ingredients in the formulation of intravenous injection solutions and clinical nutrition products. Hospitals and other care facilities rely on products made with refined corn ingredients for patients who have difficulty swallowing (dysphagia), who require a liquid diet or who are diabetic. The corn refining industry and the pharmaceutical industry work closely to bring consumers better, more effective products to meet their health care needs.

Resistant starch

Resistant starches are a rich source of dietary fiber. They are not appreciably digested until they reach the large intestine, where colonic bacteria are able to ferment them. Products are now being formulated with resistant starches to treat special needs patients like those with celiac sensitivity or ulcerative colitis; for those who are looking for a way to control their appetite and weight; and for patients with reduced insulin sensitivity who would benefit from moderate glycemic and insulin responses. Resistant starches also help maintain digestive health — a focus in the Far East for many years — by stimulating growth in the intestine of beneficial colonic bacteria, producing advantageous short-chain fatty acids, lowering the pH in the colon and improving bowel function and health.

Cyclodextrins

Cyclodextrins are starch derivatives with a unique ability to form inclusion complexes — three-dimensional structures with an open interior cavity that can accommodate “guest”

molecules of various shapes and sizes. They have proven to be highly useful in pharmaceutical applications through their ability to increase the solubility, bioavailability and shelf life of otherwise unusable or ineffective drugs. Cyclodextrins are able to shield sensitive drugs from exposure to radiation, heat, oxygen and water, thereby stabilizing their activity. Unpleasant flavors and odors characteristic of certain drugs are masked from sensory receptors by enveloping the drug in cyclodextrins, improving both patient appeal and the likelihood it will be taken as directed by the physician. Incompatible drugs can be physically separated from one-another using cyclodextrins; an advantage when both are needed in the same formulation. And finally, material handling during manufacture is improved and worker irritation is reduced through the use of cyclodextrins.

Maltodextrins and pyrodextrins

There are several medical conditions in which patients on a liquid diet may need extra protein or carbohydrate: patients with burns or multiple traumas; patients who don't, won't or can't eat enough; and patients with dietary restrictions of protein or fat. Maltodextrins, which are made through the partial depolymerization of starch, and pyrodextrins, which are made by the reaction of starch fragments with acid and heat, are excellent sources of carbohydrate for these patients. Both ingredients are rapidly absorbed and provide instant energy to patients. They are free of digestibility problems caused by other sugars in sensitive individuals.



PHOTO CREDIT: BUDGETSTOCKPHOTO.COM

Properties and Uses of Refined Corn Products in Pharmaceutical Formulations

Citric acid	Acidulent; antioxidant; buffer; chelating agent; flavor enhancer
Corn oil	Solvent; oleaginous (emulsion-forming) agent
Corn syrup (glucose, liquid)	Coating and sweetening agent; tablet binder
Cyclodextrins	Solubilizing and stabilizing agents
Dextrin	Suspending agent; tablet binder; tablet/capsule diluent
Glucose (dextrose)	Sweetening, therapeutic and tonicity agent; tablet/capsule diluent
Fructose	Dissolution and flavor enhancer; sweetening agent; tablet diluent; humectant
Lactic acid	Acidulent
Maltitol	Coating, granulating, suspending, sweetening and viscosity agent; diluent
Maltodextrin	Coating and viscosity agent; tablet binder; tablet/capsule diluent
Mannitol	Bulking, sweetening and tonicity agent; tablet/capsule diluent
Polydextrose	Coating and viscosity agent; granulation aid; tablet binder; granulation aid; medicated confectionery base
Sorbitol	Humectant; plasticizer; sweetening agent; tablet/capsule diluent
Starch	Tablet binder; tablet/capsule diluent and disintegrant; medicated dusting powders; glidant (facilitating the flow of powders); glove lubricant
Sucralose	Sweetening agent
Xanthan gum	Stabilizing, suspending and viscosity agent
Xylitol	Antimicrobial preservative; coating and sweetening agent; emollient; tablet/capsule diluent; humectant; medicated confectionery base

Corn sweeteners

Many medicines contain unpleasant-tasting compounds. Syrups deliver these medicines to the patient in a liquid form that is easy to take, and in which the strong flavors are masked by various sweeteners and flavors. High fructose corn syrup and the sugar alcohols — including maltitol, mannitol, sorbitol and xylitol — give formulation scientists additional ingredients from which to choose in designing new cough, vitamin and antibiotic syrups. Because of its

resistance to crystallization, fructose is sometimes used in place of sucrose in syrup formulations to eliminate the “sticky caps” that result from sucrose crystallizing around the bottle lid.

Pharmaceutical applications

Numerous refined corn ingredients are used by the pharmaceutical industry as excipients — inert substances added to a drug to provide bulk. They are also used in pharmaceutical formulations for many other purposes



because of their unique physical or functional properties. The table on page 17 provides an overview of refined corn ingredients and their properties and applications.

Surgical gloves

Billions of surgical gloves are used each year. They are dusted both inside and out during manufacture to improve tactility, and make them easier to separate and don. Cornstarch has long proven to be a suitable dusting agent. It does not irritate most skin from prolonged and repeated exposure. In response to recent demand in the surgical glove market, however, corn refiners are now beginning to develop and market special hypoallergenic dusting agents.

Summary

Refined corn products are integral components in the care of our health. The use of these ingredients in medical and pharmaceutical applications results in highly effective drug delivery systems like pills, tablets, capsules, IV drips and syrups. They can physically mobilize drugs that would otherwise be impractical to use.

Corn refiners work with pharmaceutical companies to improve current products and applications and develop new applications. Recent research suggests that modified starches may find their way to the operating room as plasma volume expansion agents during and after cardiac surgery.

The next time you reach for your daily vitamin or visit your health care professional, consider the beneficial impact that corn refined products have on our health and well being. 🍋

Dr. White is the founder and president of WHITE Technical Research, an international consulting company focusing on the science of nutritive sweeteners. With 25 years in the food and beverage industry, Dr. White has extensive experience with the composition, physical and functional properties, metabolism and applications of refined corn products.

World Corn Production, Consumption and Stocks

PRODUCTION	2003/04	2004/05
Argentina	15,000	19,500
Brazil	42,000	35,500
Canada	9,600	8,836
China	115,830	128,000
Egypt	5,740	5,780
India	14,720	13,600
Indonesia	6,350	6,500
Mexico	21,800	22,000
Nigeria	5,500	6,500
Philippines	4,845	5,100
Romania	7,020	12,000
Serbia and Montenegro	3,800	6,274
South Africa	9,700	12,000
Thailand	4,100	4,000
Turkey	2,800	3,000
Ukraine	6,850	8,800
EU-25	39,861	53,350
Others	51,917	55,606
United States	256,278	299,917
TOTAL	623,711	706,263
CONSUMPTION		
Brazil	38,600	38,900
Canada	11,238	10,950
China	128,400	131,500
Egypt	9,500	10,600
India	13,200	13,600
Indonesia	7,350	7,200
Japan	16,900	16,800
South Korea	8,710	8,800
Malaysia	2,300	2,450
Mexico	26,400	27,900
Nigeria	5,500	5,900
Romania	7,300	9,400
Serbia and Montenegro	4,450	5,300
South Africa	8,677	8,950
EU-25	46,814	52,500
Others	100,123	105,302
United States	211,723	224,420
TOTAL	647,185	680,472
ENDING STOCKS		
Brazil	4,107	1,007
China	44,852	35,452
Japan	1,339	1,340
Mexico	4,340	4,430
South Africa	2,956	4,156
EU-25	3,166	6,316
Others	15,026	19,482
United States	24,337	53,731
TOTAL	100,123	125,914

Source: USDA–Foreign Agricultural Service
Based on local marketing years in thousands of metric tons.

Member Company Products

	ARCHER DANIELS MIDLAND COMPANY	CARGILL, INCORPORATED	CORN PRODUCTS INTERNATIONAL, INC.	NATIONAL STARCH AND CHEMICAL COMPANY	PENFORD CORPORATION	ROUETTE AMERICA, INC.	TATE & LYLE INGREDIENTS AMERICAS, INC.
STARCH PRODUCTS							
Unmodified, food	●	●	●	●	●	●	●
Unmodified, industrial	●	●	●	●	●	●	●
Modified, food	●	●	●	●	●	●	●
Modified, industrial	●	●	●	●	●	●	●
Dextrins	●	●	●	●	●	●	●
Cyclodextrins		●				●	
REFINERY PRODUCTS							
Glucose syrups	●	●	●		●	●	●
Maltodextrins	●	●	●		●	●	●
Dextrose monohydrate	●	●	●		●	●	●
Dextrose anhydrous		●	●			●	●
HFCS-42	●	●	●			●	●
HFCS-55	●	●	●			●	●
Crystalline fructose	●						●
CO-PRODUCTS							
Crude Oil	●	●	●				
Refined Oil	●	●	●				
Corn gluten feed	●	●	●	●	●	●	●
Corn gluten meal	●	●	●	●	●	●	●
Corn germ or corn germ meal	●	●	●	●	●	●	●
Steepwater (CFCE)	●	●	●	●	●	●	●
Carbon dioxide	●						●
FERMENTATION AND OTHER CHEMICALS							
Citric acid	●	●					●
Lactic acid	●	●					
Lysine	●						
Tryptophan	●						
Xanthan gum	●	●					●
Erythritol		●					
Sorbitol	●	●	●			●	
Xylitol		●				●	
Mannitol	●	●				●	
Maltitol	●	●				●	
Hydrogenated starch hydrolysates						●	
Glucose hydrolysates						●	
OTHER							
Ethanol, fuel/industrial	●	●					●
Ethanol, beverage	●						

Product lists are accurate as of publication date, but may change with time. Also available online at <http://www.corn.org/memberproductlines.htm>



Corn Refiners Association Member Companies Domestic and International Plant Locations

Archer Daniels Midland Company

*P.O. Box 1470
Decatur, Illinois 62525*

Domestic Plants:

Cedar Rapids, Iowa 52404
Clinton, Iowa 52732
Columbus, Nebraska 68601
Decatur, Illinois 62525
Marshall, Minnesota 56258-2744

International Plant:

Guadalajara, Jalisco, Mexico

Cargill, Incorporated

*P.O. Box 5662/MS62
Minneapolis, Minnesota 55440-5662*

Domestic Plants:

Blair, Nebraska 68008-2649
Cedar Rapids, Iowa 52406-2638
Dayton, Ohio 45413-8001
Decatur, Alabama 35601
Eddyville, Iowa 52553-5000
Hammond, Indiana 46320-1094
Memphis, Tennessee 38113-0368
Wahpeton, North Dakota 58075

International Plants:

Uberlandia, Minas Gerais, Brazil
Shanghai, China
Song Yuan, China
Langholt, Nordjylland, Denmark
Haubourdin, Pas-de-Calais, France
Krefeld, Nordrhein-Westfalen, Germany
Magdeburg, Sachsen-Anhalt, Germany
Castelmassa, Veneto, Italy
Wroclaw, Dolnoslaskie, Poland
Martorell, Barcelona, Spain
Santo Domingo, Spain
Wadenswil, Zurich, Switzerland
Efremov, Tula, Russia
Bergen Op Zoom, Noord-Brabant,
The Netherlands
Sas van Gent, Zeeland, The Netherlands
Istanbul, Turkey
Orhangasi, Bursa, Turkey
Vanikoy, Istanbul, Turkey
Manchester, England, United Kingdom

Corn Products International, Inc.

*5 Westbrook Corporate Center
Westchester, Illinois 60154*

Domestic Plants:

Bedford Park, Illinois 60501-1933
Stockton, California 95206-0129
Winston-Salem, North Carolina 27107

International Plants:

Cardinal, Ontario, Canada
Port Colborne, Ontario, Canada
Guadalajara, Jalisco, Mexico (2 plants)
San Juan del Rio, Queretaro, Mexico
Tlalnepantla, Mexico State, Mexico
Baradero, Buenos Aires, Argentina
Chacabuco, Buenos Aires, Argentina
Balsa Nova, Parana, Brazil
Cabo, Pernambuco, Brazil
Mogi-Guacu, Sao Paulo, Brazil
Llay-Llay, Valparaiso, Chile
Cali, Valle del Cauca, Colombia
Eldoret, Rift Valley, Kenya
Icheon, Kyunggi-do, South Korea
Incheon, Bupyong-ku, South Korea
Faisalabad, Punjab, Pakistan
Cornwala, Punjab, Pakistan

National Starch and Chemical Company

*10 Finderne Avenue
Bridgewater, New Jersey 08807-0500*

Domestic Plants:

Indianapolis, Indiana 46221
North Kansas City, Missouri 64116

International Plants:

Collingwood, Ontario, Canada
Trombudo Central, Brazil
Hamburg, Germany

Penford Products Co.

*(A company of Penford Corporation)
P.O. Box 428
Cedar Rapids, Iowa 52406-0428*

Domestic Plant:

Cedar Rapids, Iowa 52404-2175

International Plants:

Lane Cove, Sydney, Australia
Onehunga, Auckland, New Zealand

Roquette America, Inc.

*1417 Exchange Street
P.O. Box 6647
Keokuk, Iowa 52632-6647*

Domestic Plant:

Keokuk, Iowa 52632-6647

International Plants:

Lestrem, Pas-de-Calais, France
Beinheim, Bas-Rhin, France
Cassano Spinola, Alessandria, Italy
Benifayo, Valencia, Spain
Calafat, Dolj, Romania

Tate & Lyle Ingredients Americas, Inc.

*(A subsidiary of Tate & Lyle, PLC)
P.O. Box 151
Decatur, Illinois 62525*

Domestic Plants:

Decatur, Illinois 62521
Lafayette, Indiana 47902
Lafayette, Indiana 47905
Loudon, Tennessee 37774

International Plant:

Guadalajara, Jalisco, Mexico





Corn Refiners Association, Inc.

1701 Pennsylvania Avenue, N.W.

Suite 950

Washington, D.C. 20006-5805

tel. 202.331.1634

fax 202.331.2054

web site: <http://www.corn.org>