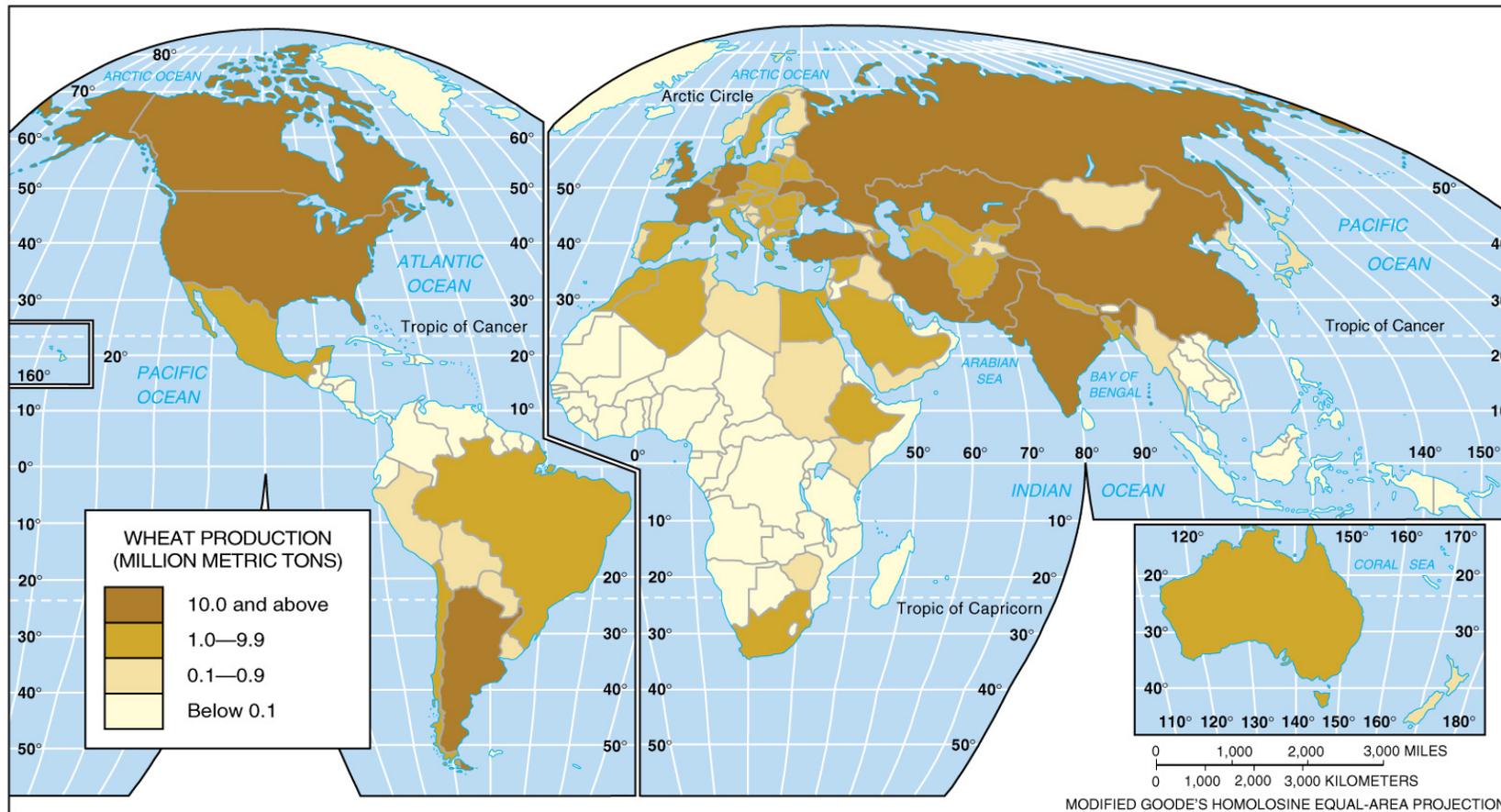


World Wheat Production



Wheat field in Nebraska



Grain elevators in the midwest



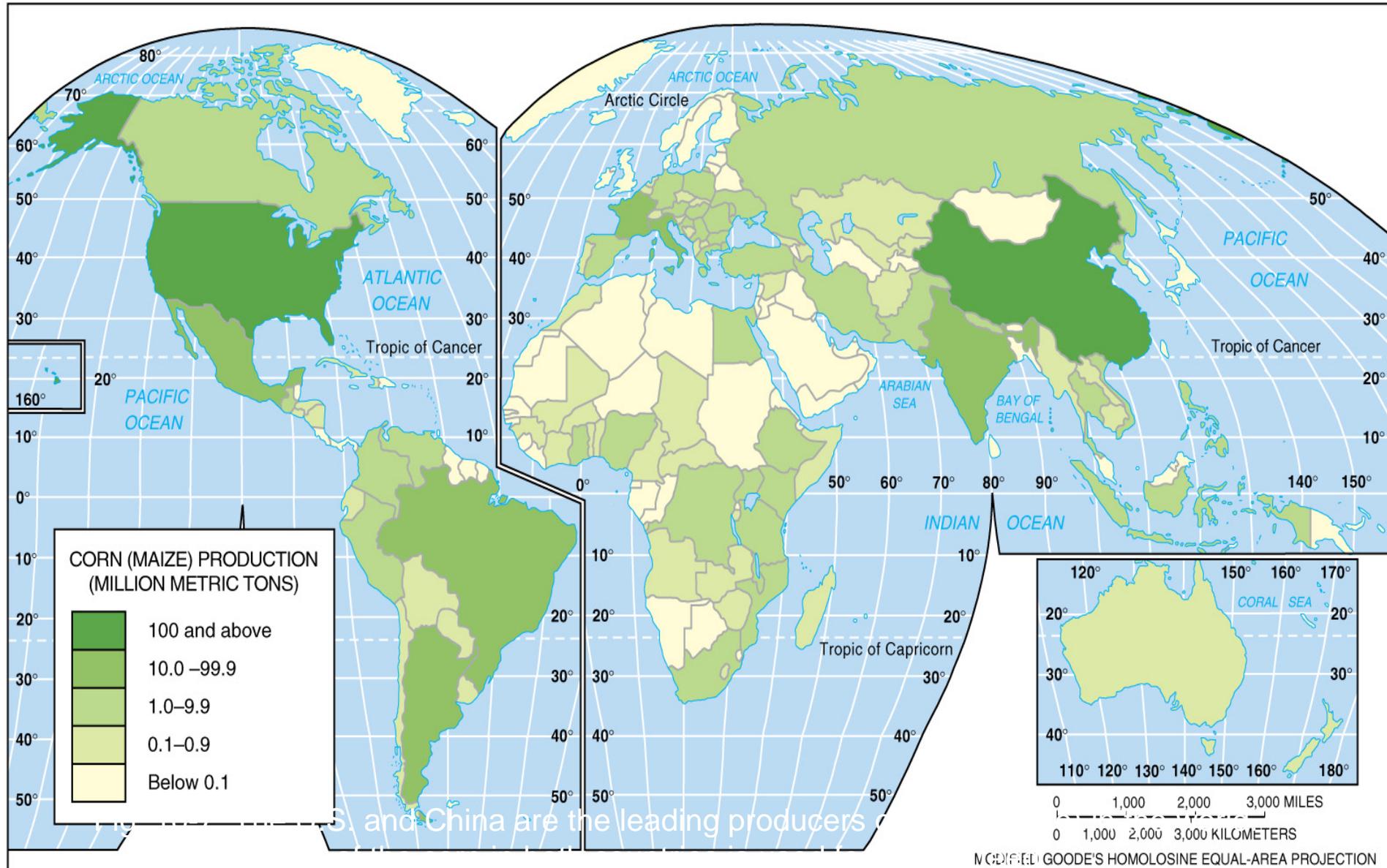
Wheat grown with pivot irrigation
in the southern Negev Desert of
Jordan

Wadi Rum-pivot irrigation in the southern
Negev desert-Irrigation accounts for 2/3 of the
world's fresh water consumption

Maize or Corn

- Like wheat corn moves from a few production areas to a small number of consumption zones
- Corn differs from wheat in that most of it is not consumed directly by humans
- Many industrial uses of corn oil and sweeteners.
- New interest in corn as fuel additive

World Corn (Maize) Production



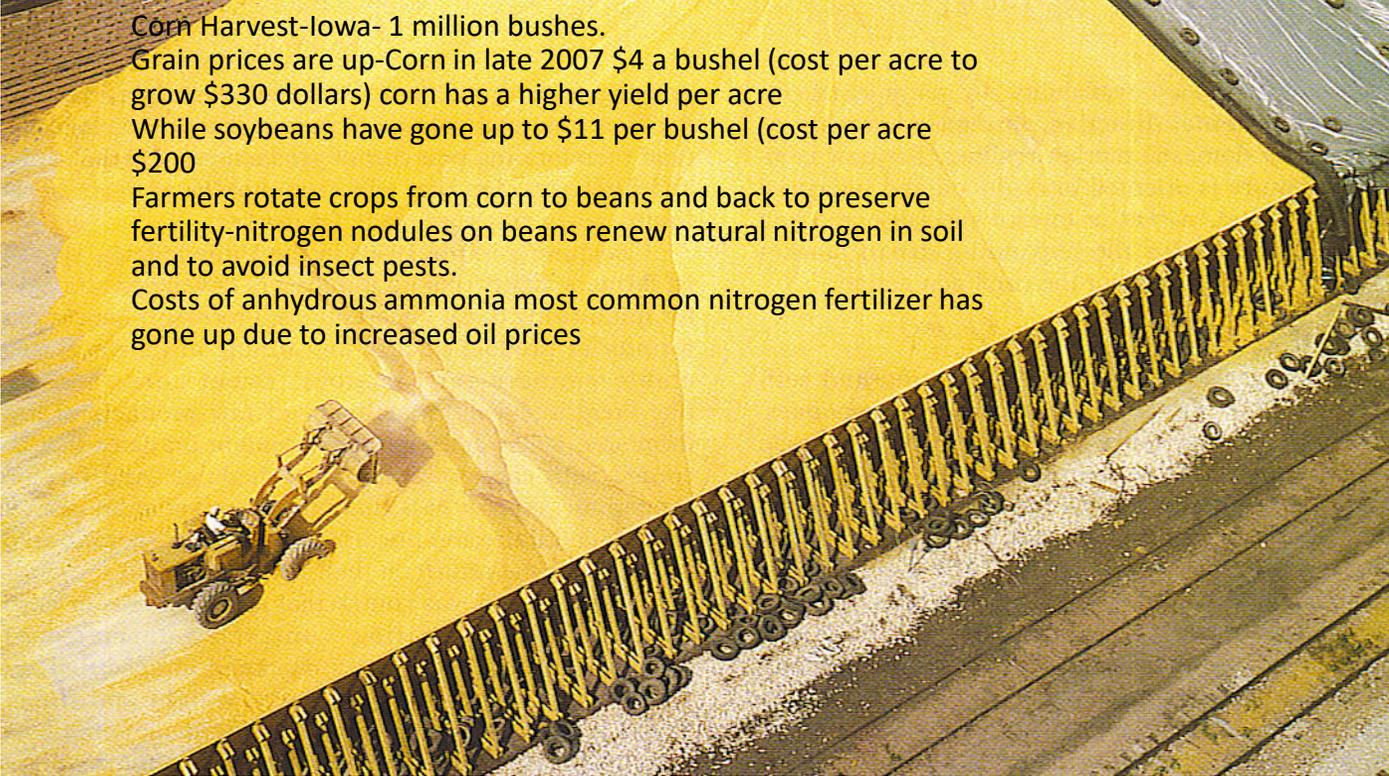
Corn Harvest-Iowa- 1 million bushels.

Grain prices are up-Corn in late 2007 \$4 a bushel (cost per acre to grow \$330 dollars) corn has a higher yield per acre

While soybeans have gone up to \$11 per bushel (cost per acre \$200

Farmers rotate crops from corn to beans and back to preserve fertility-nitrogen nodules on beans renew natural nitrogen in soil and to avoid insect pests.

Costs of anhydrous ammonia most common nitrogen fertilizer has gone up due to increased oil prices



- **Corn** 1-2 ears per stalk, 800 kernels per ear
- 272 million bushels of corn used for industry each year
- 187 million bushels for breakfast cereals, snack chips & tortillas
- 131 million bushels used to make beer & whiskey
- 5 billion bushels used for livestock feed

...AND THE REAL

1954
Burger King



2.8 oz
202 calories

2004



4.3 oz
310 calories

1955
McDonald's



2.4 oz
210 calories



7 oz
610 calories

1900
Hershey's



2 oz
297 calories



7 oz
1,000 calories

1916
Coca-Cola



6.5 fluid oz
79 calories



16 fluid oz
194 calories

1950s
Movie popcorn



3 cups
174 calories



21 cups (buttered)
1,700 calories

**1 Bushel of corn= 8 gallons or
56 lbs**



US Corn Belt

- Historic pattern of growing grain to feed livestock (cattle, hogs, poultry)
- Crops grown in rotation.
 - First corn and small grains and alfalfa
 - Now corn and soybeans
- Separation of grain and animal production



Large farm machines cost \$100,000 to over \$250,000 to purchase-fuel costs and the costs of fertilizer, herbicides and insecticides make the over all cost of farming very high with low return for the investment.





American Commercial Agriculture is conducted at a large scale-
In 1950 1 US Farmer fed 27-today 1 US farmer feeds 135 people

Corn harvest in Nebraska-we now export 2/3 of the world's corn
Wheat farm in Montana

Ethanol-pros-increases demand and price for corn-(doubled between 2005-2007)

Price of land up-good for land owners-not small farmers or renters.

Con-Acre of corn takes 110 gallons of gasoline to plant, fertilize, harvest & transport

Cost of food, animal feed goes up

US exports of food go down-world hunger goes up-as does US trade deficits. (filling up an SUV with ethanol takes enough corn to feed a person for 1 year. (Mother Jones-2007)





Corn planter

Corn picker



Industrial production

- A large expansion in ethanol production is underway in the United States, spurred by high oil prices and energy policies.
- Although corn is the primary feedstock used to produce ethanol in the United States, market adjustments to the ethanol expansion extend well beyond the corn sector.
- Adjustments in the agricultural sector to increased demand for biofuels will continue as interest in renewable sources of energy grows.



Government policy

- The Energy Policy Act of 2005 mandated that renewable fuel use in gasoline (with credits for biodiesel) reach 7.5 billion gallons by calendar year 2012, with gains in later years in line with growth in the volume of gasoline “sold or introduced into commerce.”
- The legislation did not provide liability protection for effects of methyl tertiary butyl ether (MTBE), an oxygenating gasoline additive that has been found to contaminate drinking water.
- As a result, blenders have sharply reduced use of MTBE and switched to ethanol as a fuel additive.

Government policy

- Federal tax laws also provide incentives for biofuels. Under current law, blenders can receive tax credits equal to 51 cents per gallon of ethanol blended with gasoline.
- This makes ethanol more economical to produce, as part of that credit is, in effect, passed back from blenders to ethanol producers.
- Ethanol imports are subject to a tariff of 54 cents per gallon, although imports from designated Central American and Caribbean countries are duty-free up to a maximum of 7 percent of the U.S. ethanol production.



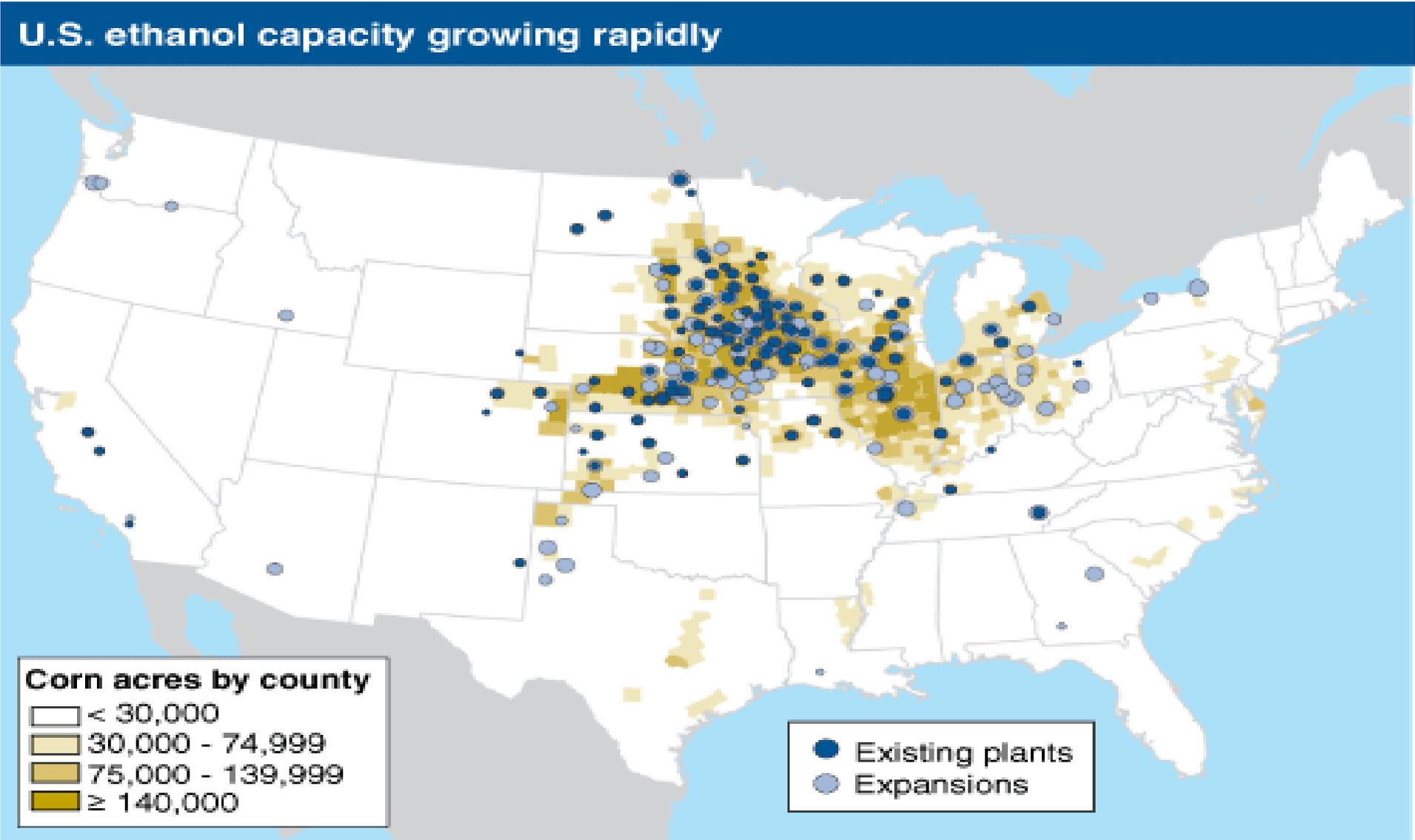
Anticipated growth

- U.S. ethanol production climbed to almost 5 billion gallons in 2006, up nearly 1 billion gallons from 2005.
- Despite the speed and magnitude of this increase, the industry is stepping up the pace of expansion.

Anticipated impact of growth in ethanol production

- The explosive growth of U.S. ethanol production is being felt by nearly every aspect of the field crops sector—domestic demand, exports, prices, and the allocation of acreage among crops—as well as the livestock sector, farm income, government payments, and food prices.

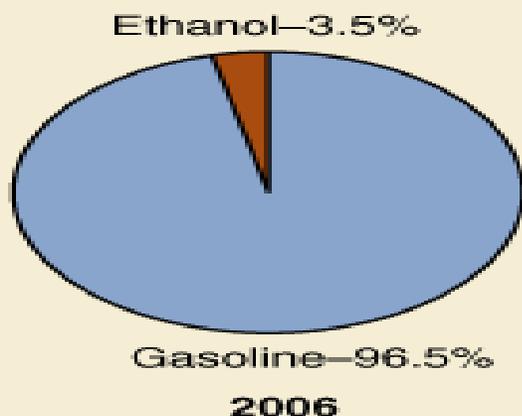
Ethanol and Corn



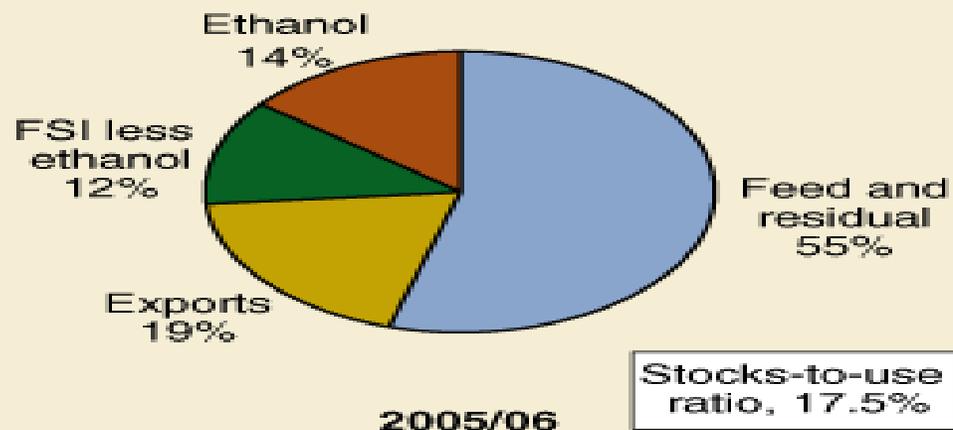
Ethanol plant information, updated April 2007, based on Renewable Fuels Association data.

Current relationships

Ethanol is small relative to overall gasoline use...

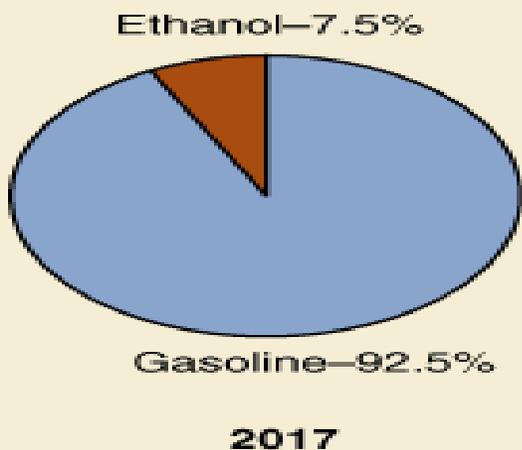


...but it accounts for a growing share of corn use

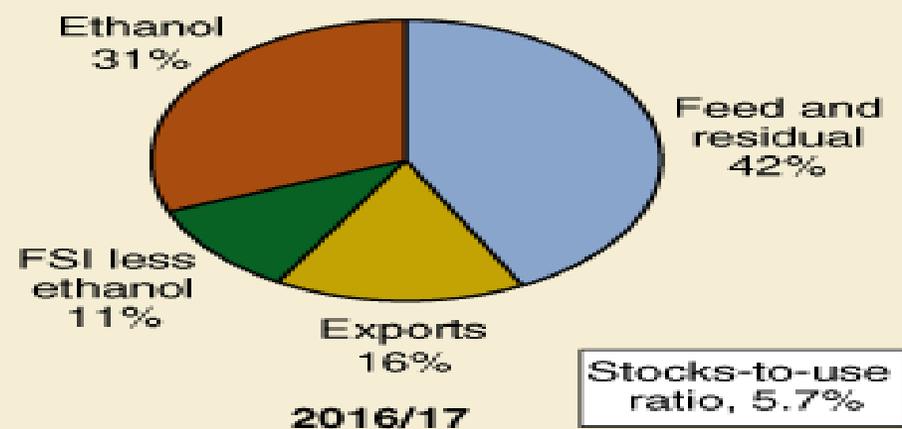


Projected relationships in 10 years

Ethanol still small relative to overall gasoline use...



...but it accounts for over 30 percent of corn use

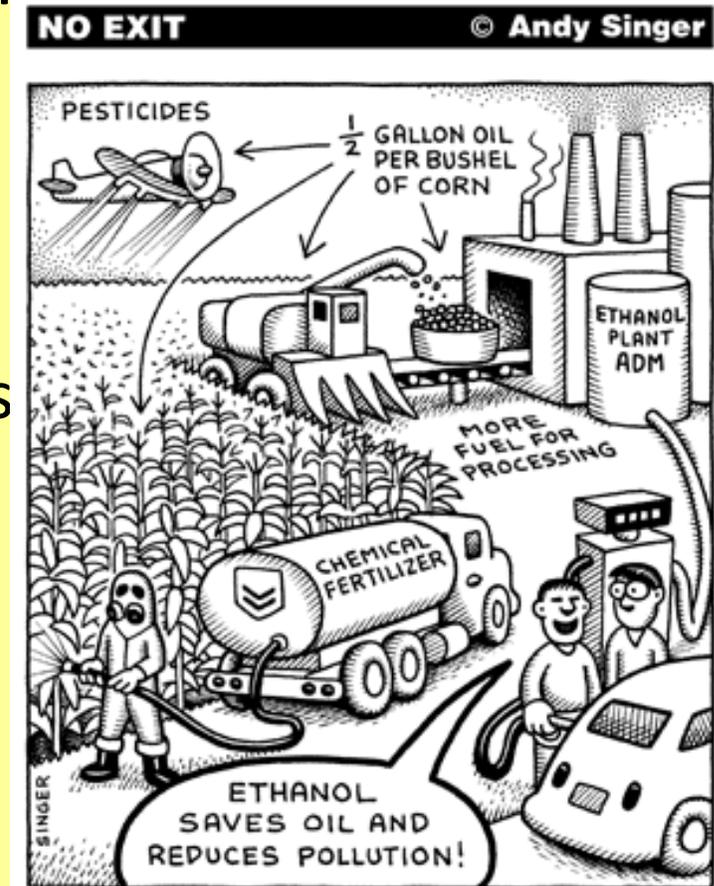


Note: FSI=food, seed, and industrial.

Source: USDA Agricultural Projections to 2016, February 2007.

Environmental impact

- Issues have been raised regarding possible effects on natural resources resulting from the ethanol expansion and changes in farmers' cropping choices.
 - Impact on conservation set asides
 - Soil fertility
 - Water pollution do to increased use of agricultural chemical



Impact on livestock production

- Higher corn prices reduce the profitability of meat production because of corn's importance to the livestock sector as an animal feed.
- In response, red meat production is projected to decline in the United States and growth in poultry output is likely to slow.