Supply/Demand Factors in the Global Fertilizer Market

The Fertilizer Institute
Nourish. Replenish. Grow

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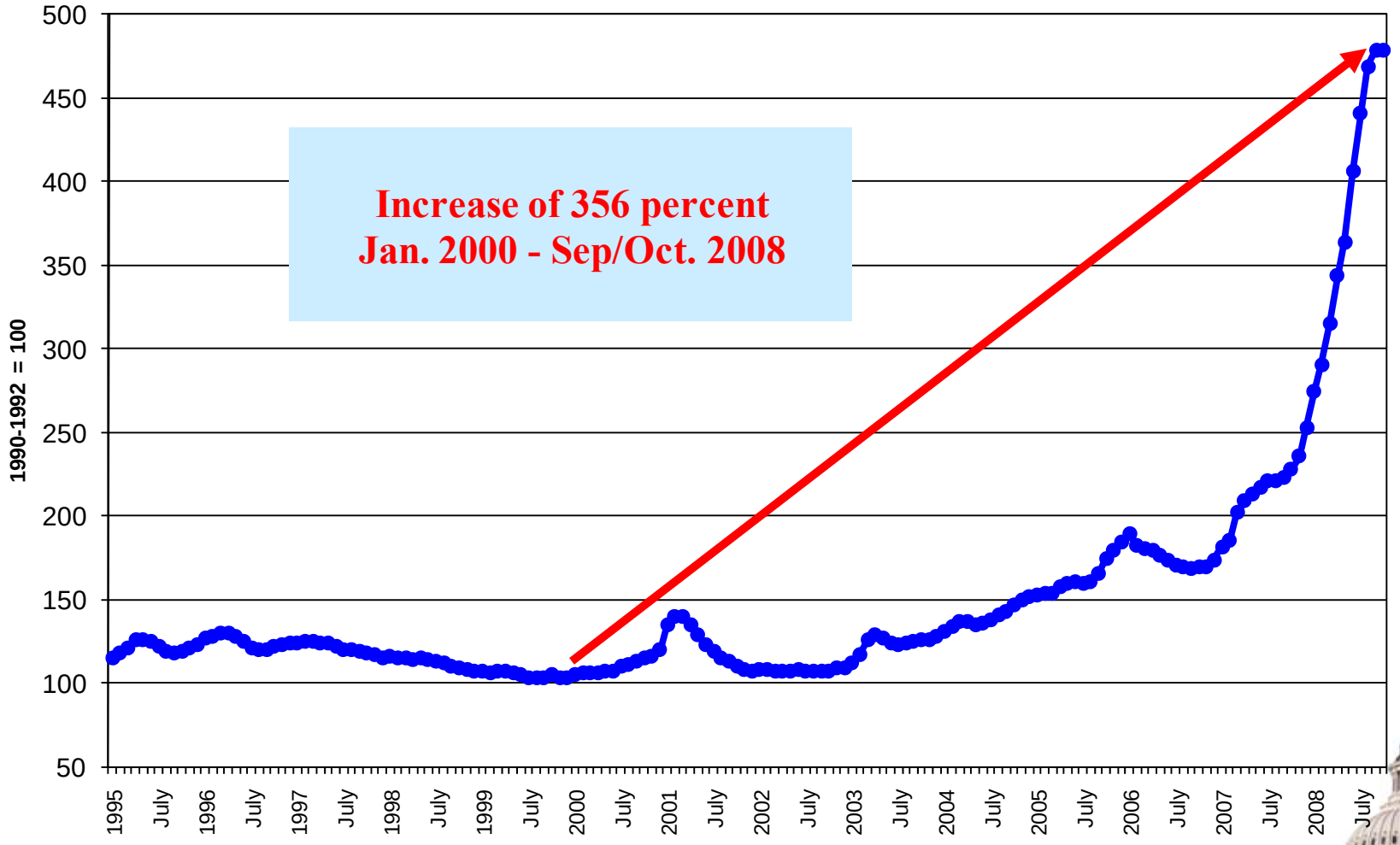
www.tfi.org

U.S. Fertilizer Prices Reach Record Levels



Source: National Agricultural Statistics Service, USDA.

What We'll Cover

- Background
- What caused prices to rise
- What has changed?

NPK

NITROGEN (N)

is a primary building block for all organisms. It is essential to making proteins, helps keep plants green and is a critical component of soil structure.

COMES FROM THE AIR

PHOSPHORUS (P)

is found in every living cell. Phosphorus is a component of DNA and it also plays vital roles in capturing light during photosynthesis, helping with seed germination, and helping plants use water efficiently. Plants also use phosphorus to help fight external stress and prevent disease.

COMES FROM ANCIENT SEA LIFE

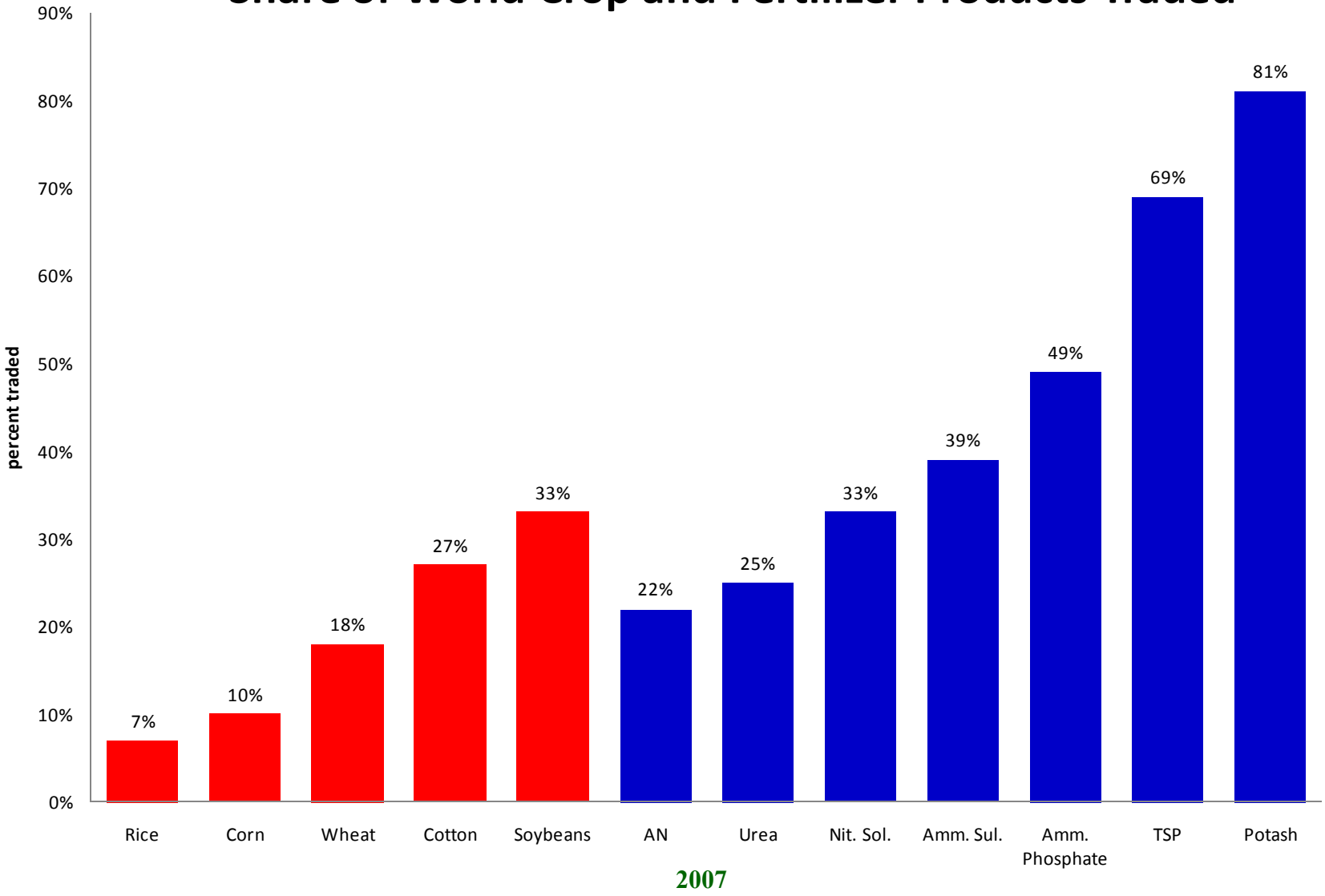
POTASSIUM (K)

is essential to the workings of every living cell. It plays an important role in plant's water utilization and also helps regulate the rate of photosynthesis. Other aspects of plant health influenced by potassium include the growth of strong stalks, protection from extreme temperatures, and the ability to fight stress and pests such as weeds and insects.

COMES FROM EVAPORATED OCEANS

	N	P_2O_5	K_2O
USA	1.00	: 0.35	: 0.39

Share of World Crop and Fertilizer Products Traded



Source: USDA, IFA.

Why did nutrient prices increase?

Many of the *Same* fundamentals which caused record grain prices

=> Combination of demand-pull and cost-push factors

- Extraordinary nutrient demand growth
- Cost pressures from higher energy and raw materials prices

- Higher costs of transporting raw materials and fertilizer materials
- Falling value of the U.S. dollar
- Export curbs and taxes

Commodity Markets!

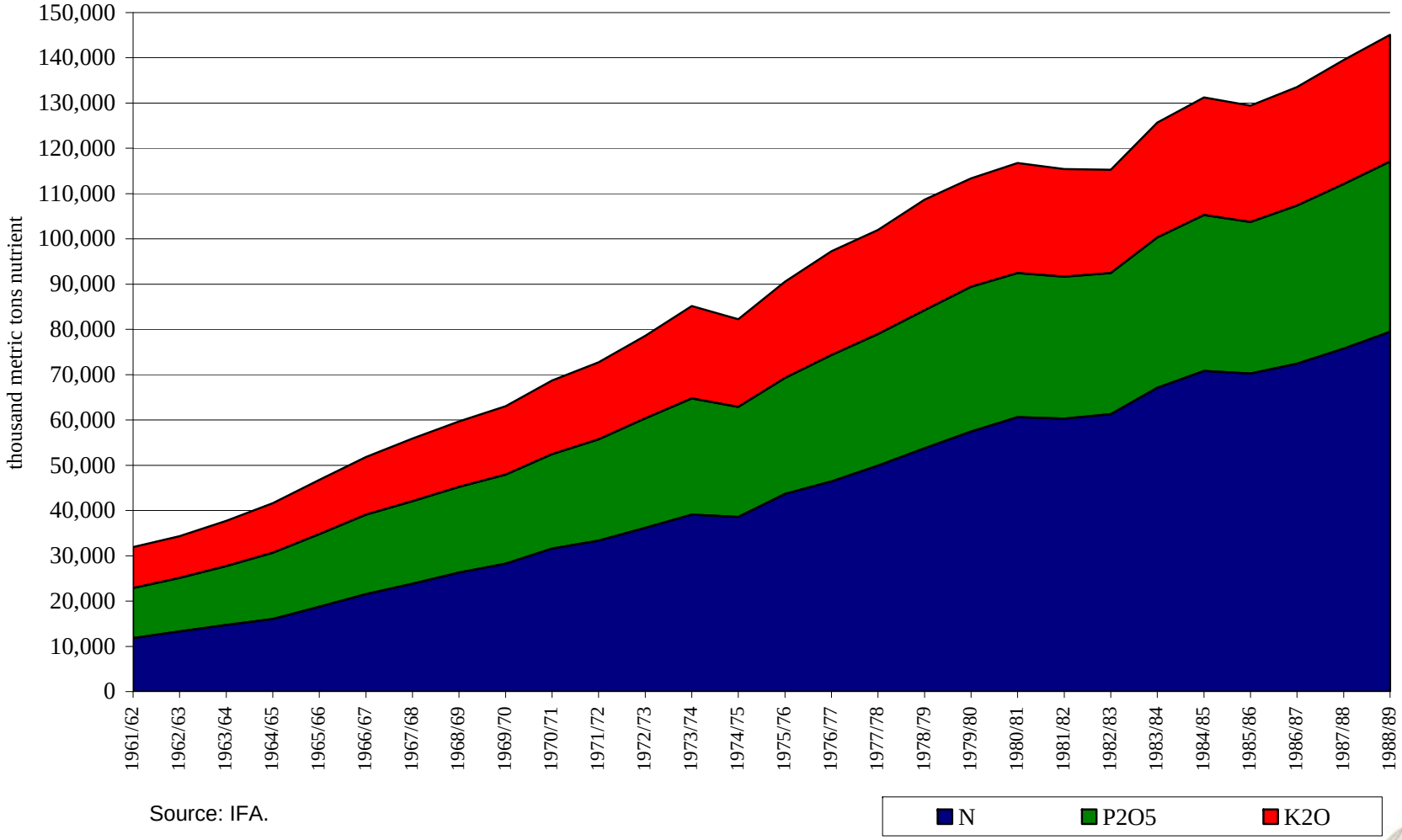
FERTILIZER DEMAND

=> Historical

=> FY2000/01 – FY2006/07

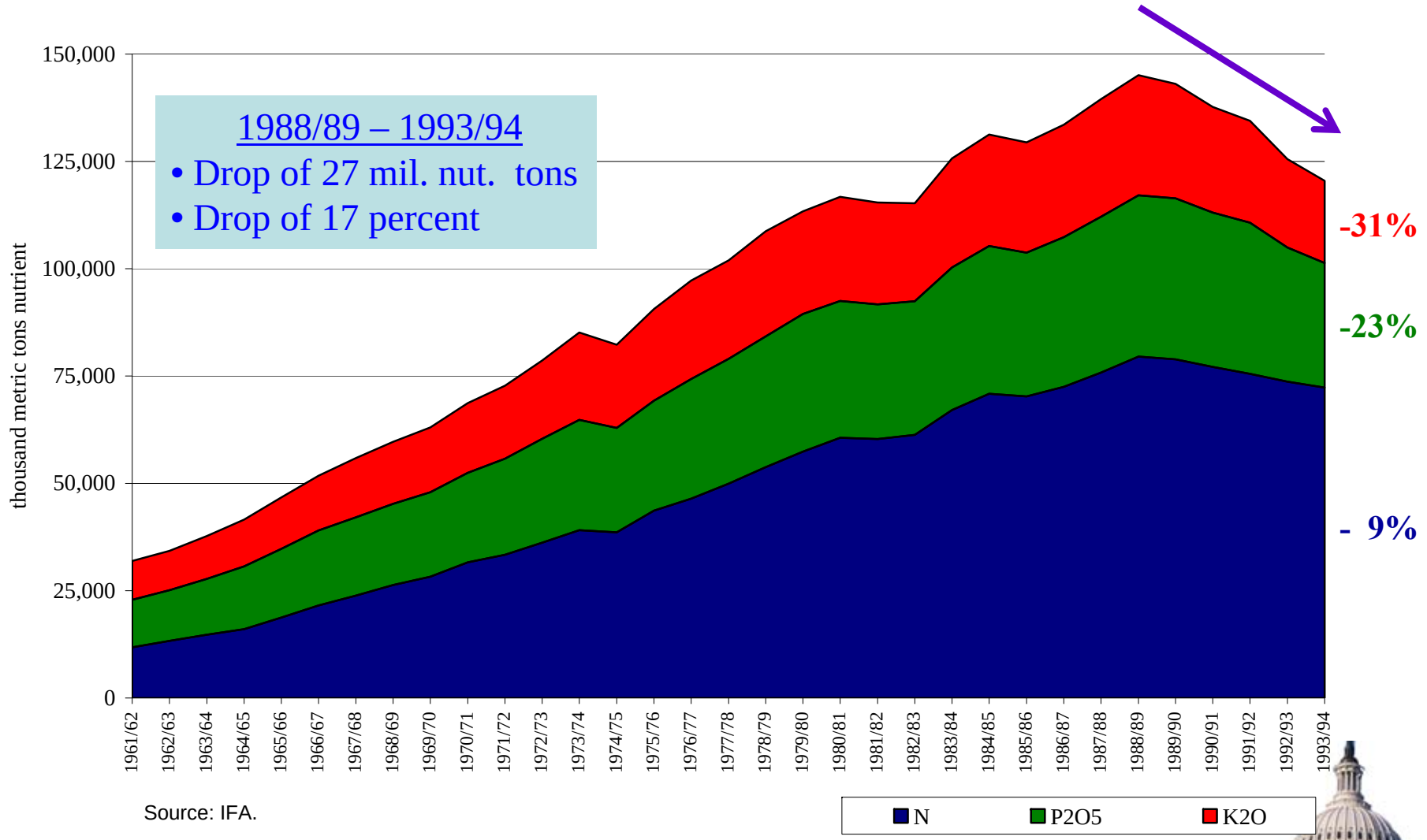
- World
- Domestic

World Fertilizer Consumption



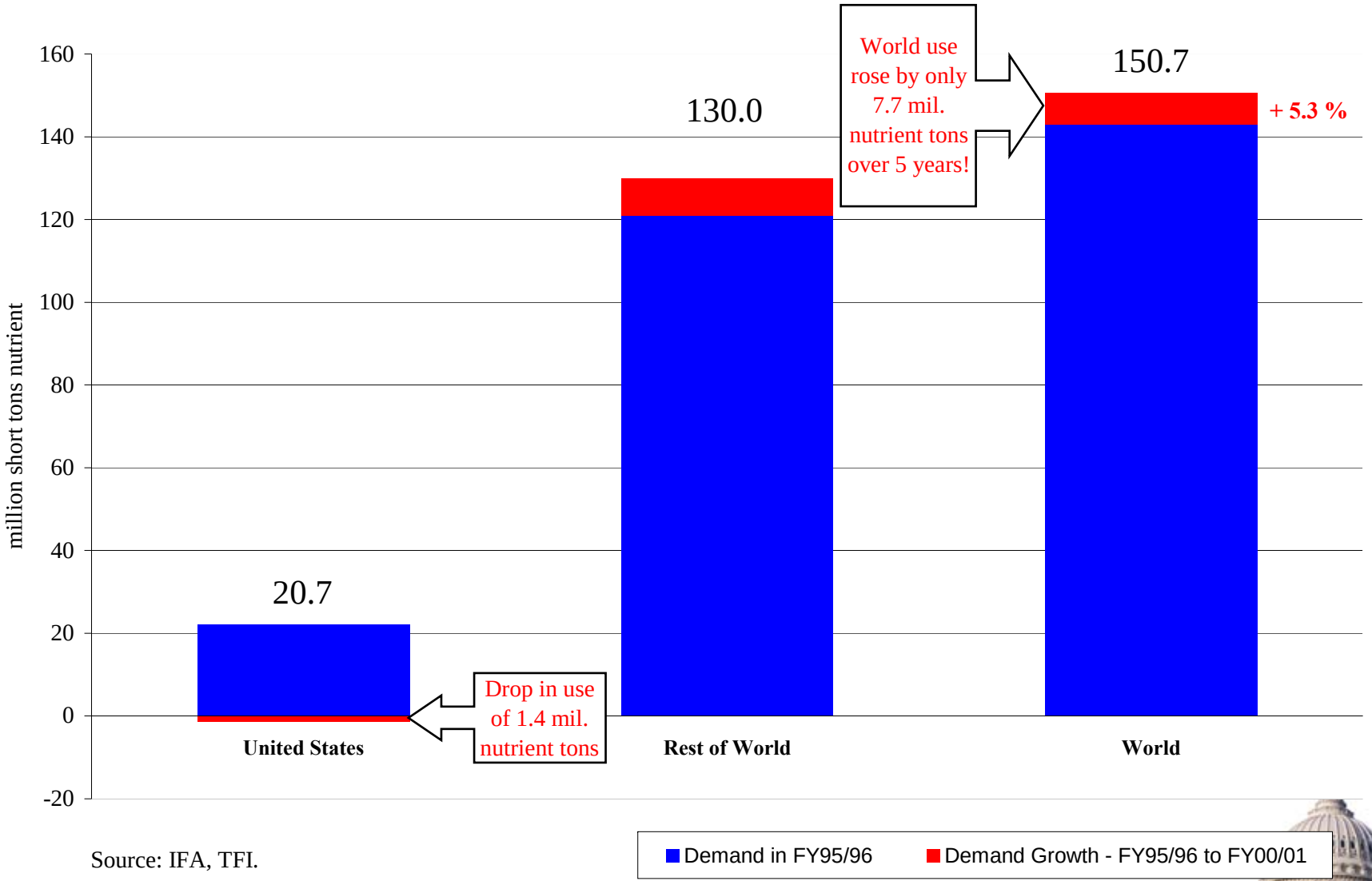
Source: IFA.

World Fertilizer Consumption



Source: IFA.

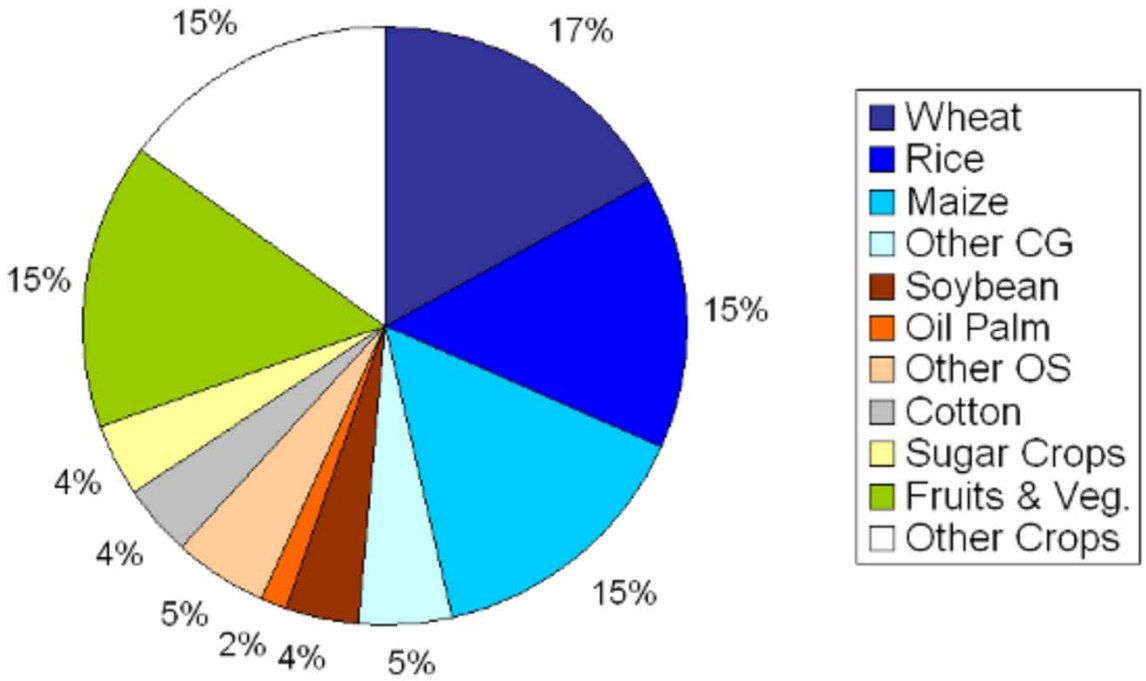
Fertilizer Nutrient Demand, FY95/96 and FY00/01



Source: IFA, TFI.

Agriculture → Fertilizer Demand

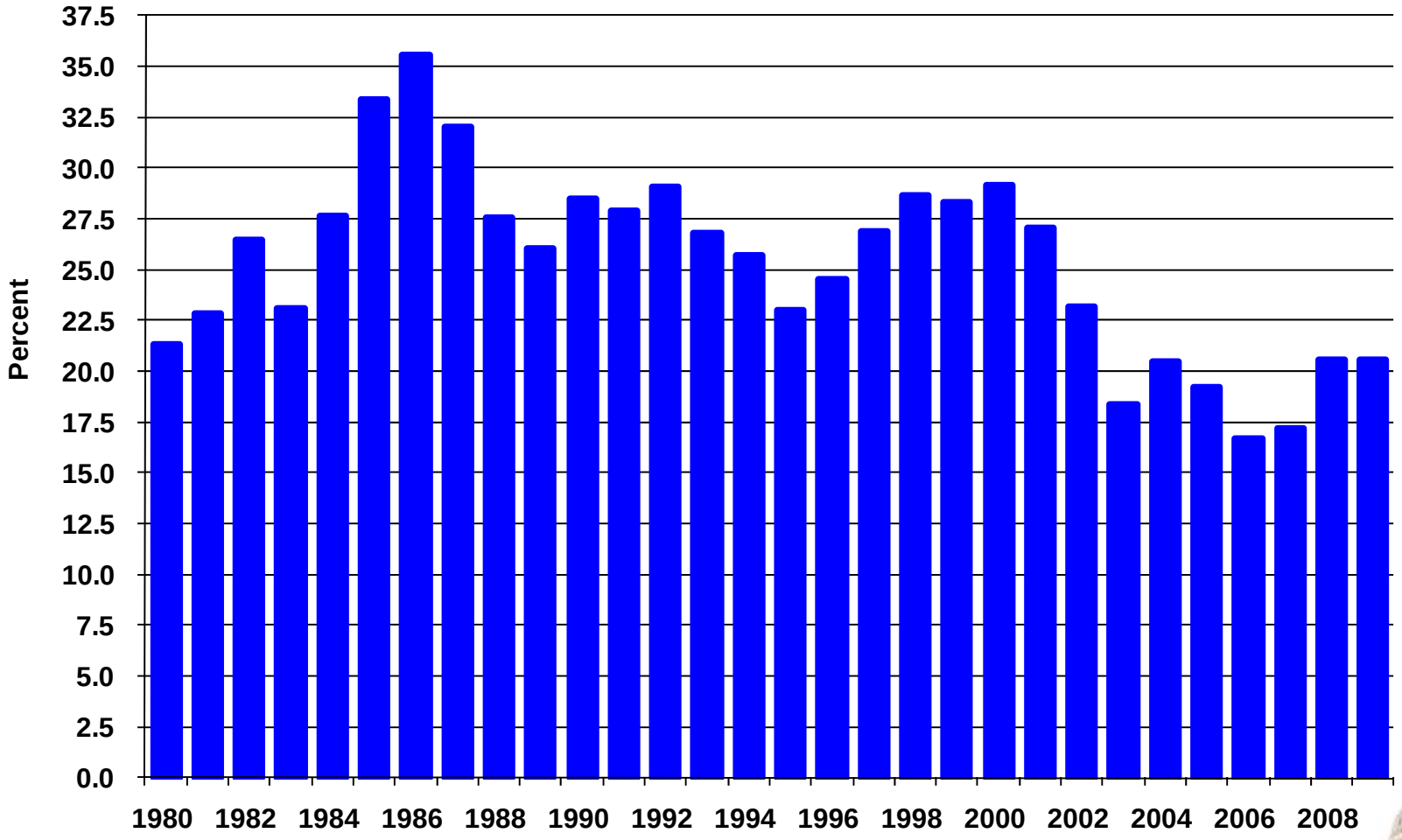
World Fertilizer Nutrient Use by Crop – FY2006/07



Source: International Fertilizer Industry Association.

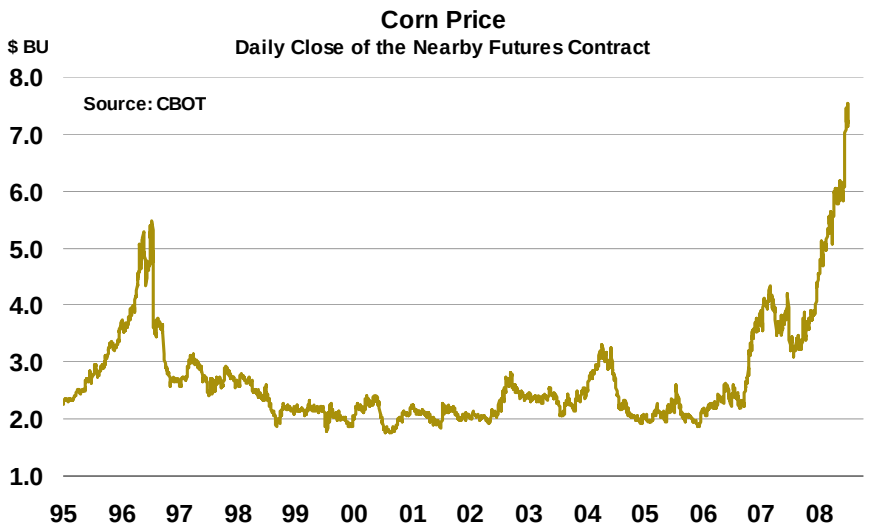
What Changed?

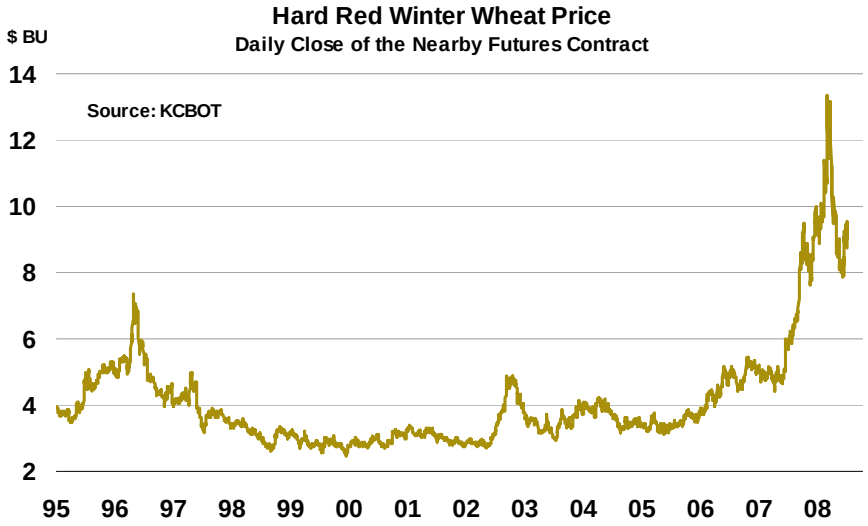
World Grain Stocks-to-Use Ratio

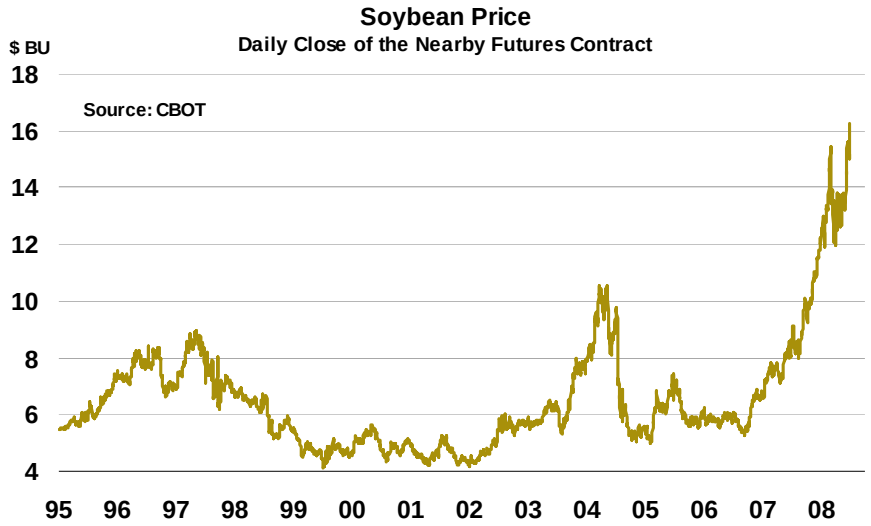


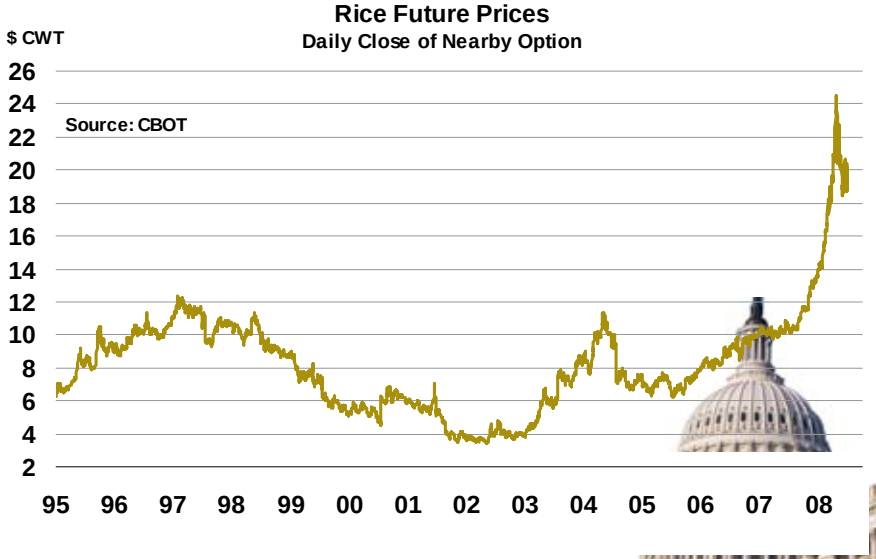
Source: WASDE, USDA.

Markets were signaling farmers to produce more!









U.S. Crop and Fertilizer Prices
April 2008 vs. April 2007

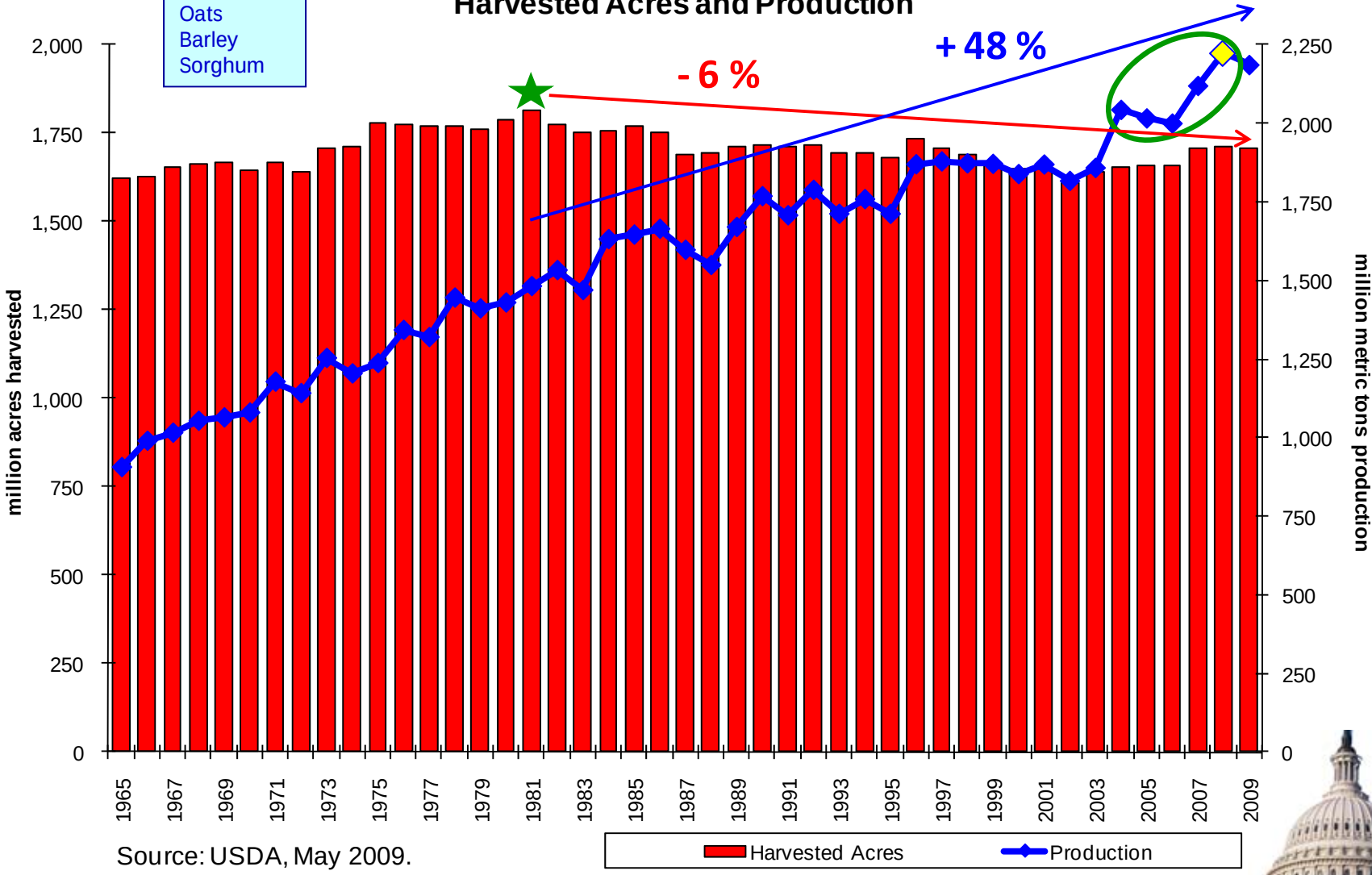
Commodity	Price Change
Wheat	+ 104 %
Soybeans	+ 74 %
Fertilizer	+ 65 %
Corn	+ 52 %
Cotton	+ 31 %

Source: Prices received (crops) and paid (fertilizer) by farmers, National Agricultural Statistics Service, USDA.

Total World Grains

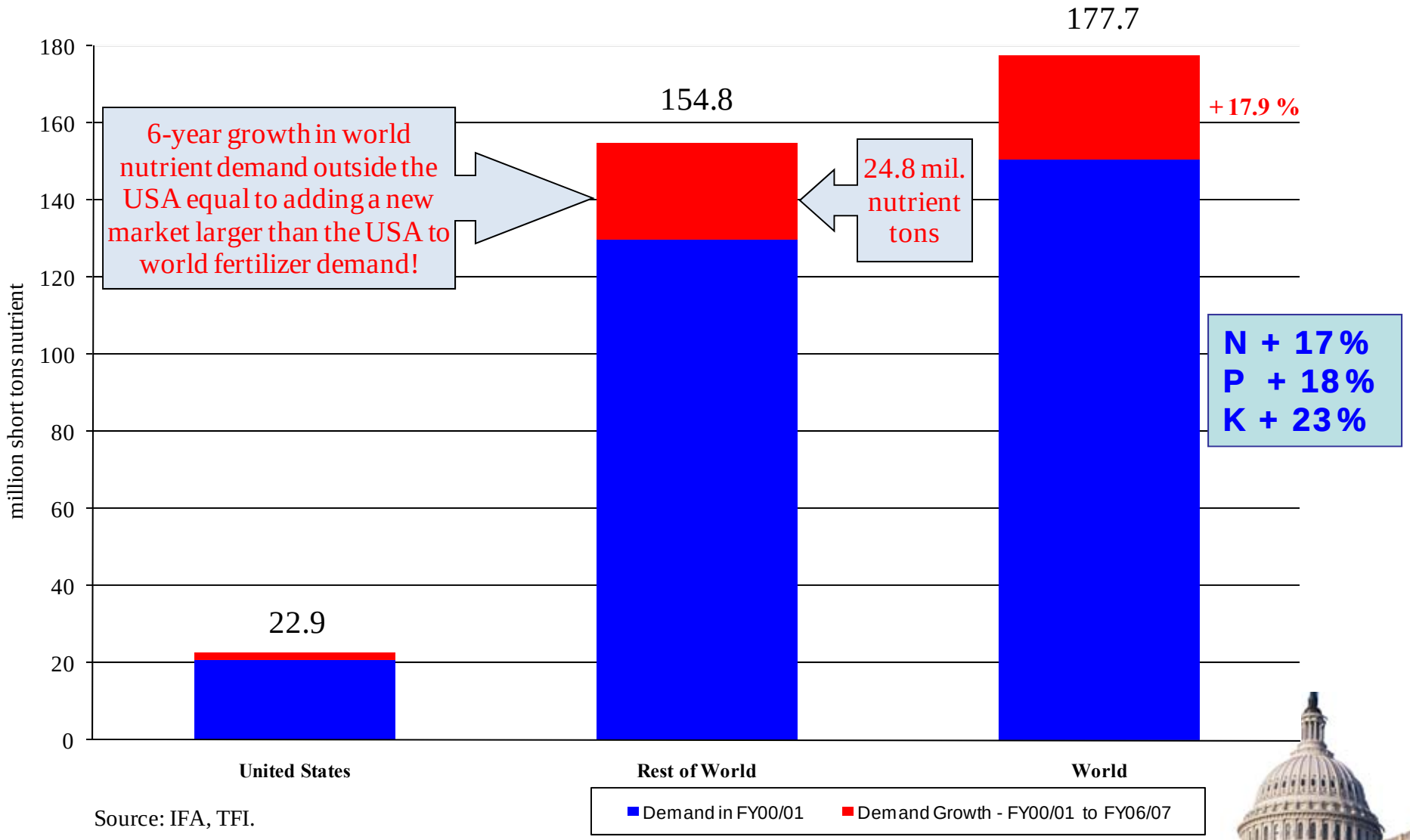
Harvested Acres and Production

Wheat
Rice
Corn
Oats
Barley
Sorghum



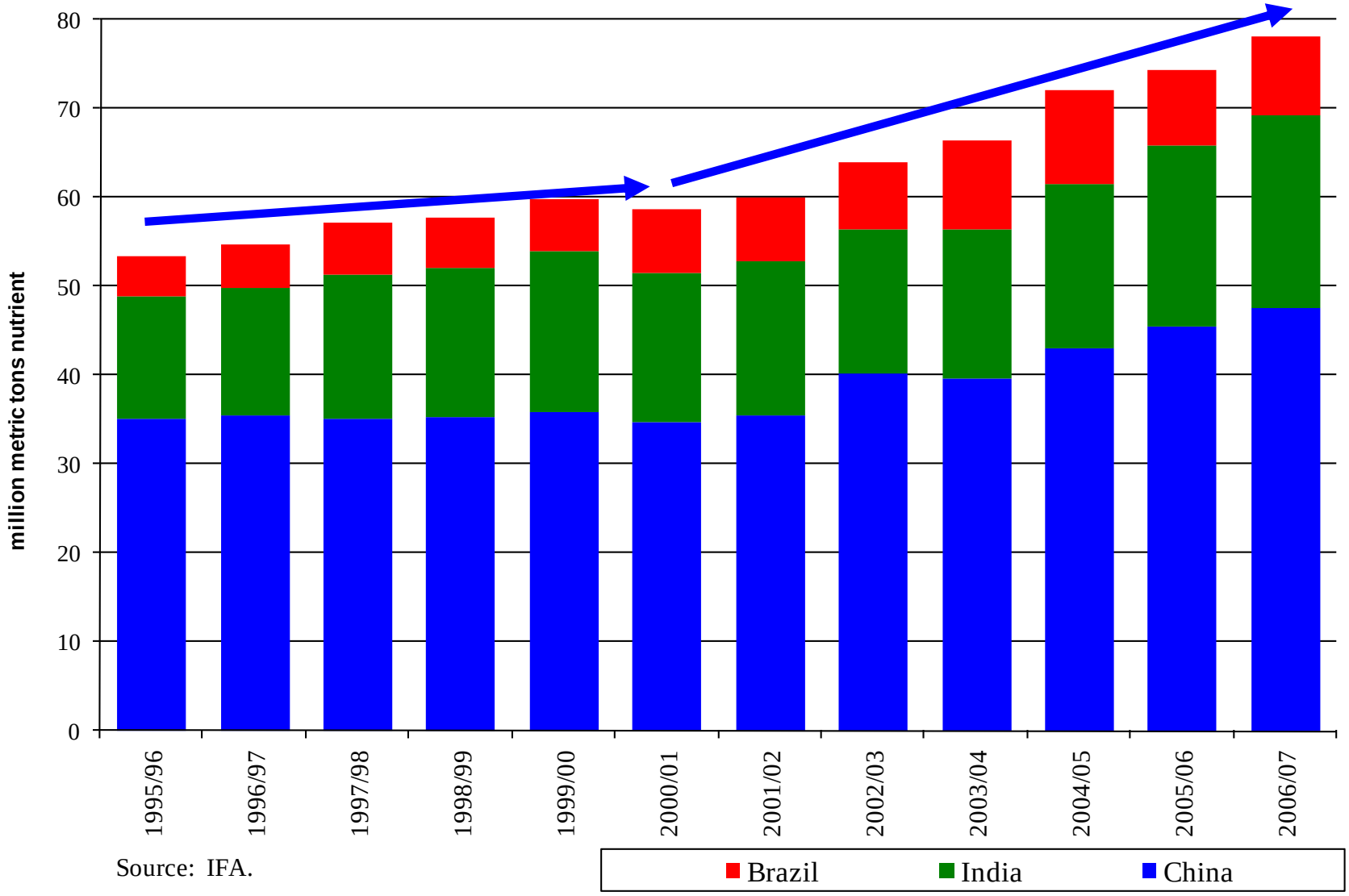
Source: USDA, May 2009.

Fertilizer Nutrient Demand, FY00/01 and FY06/07



Source: IFA, TFI.

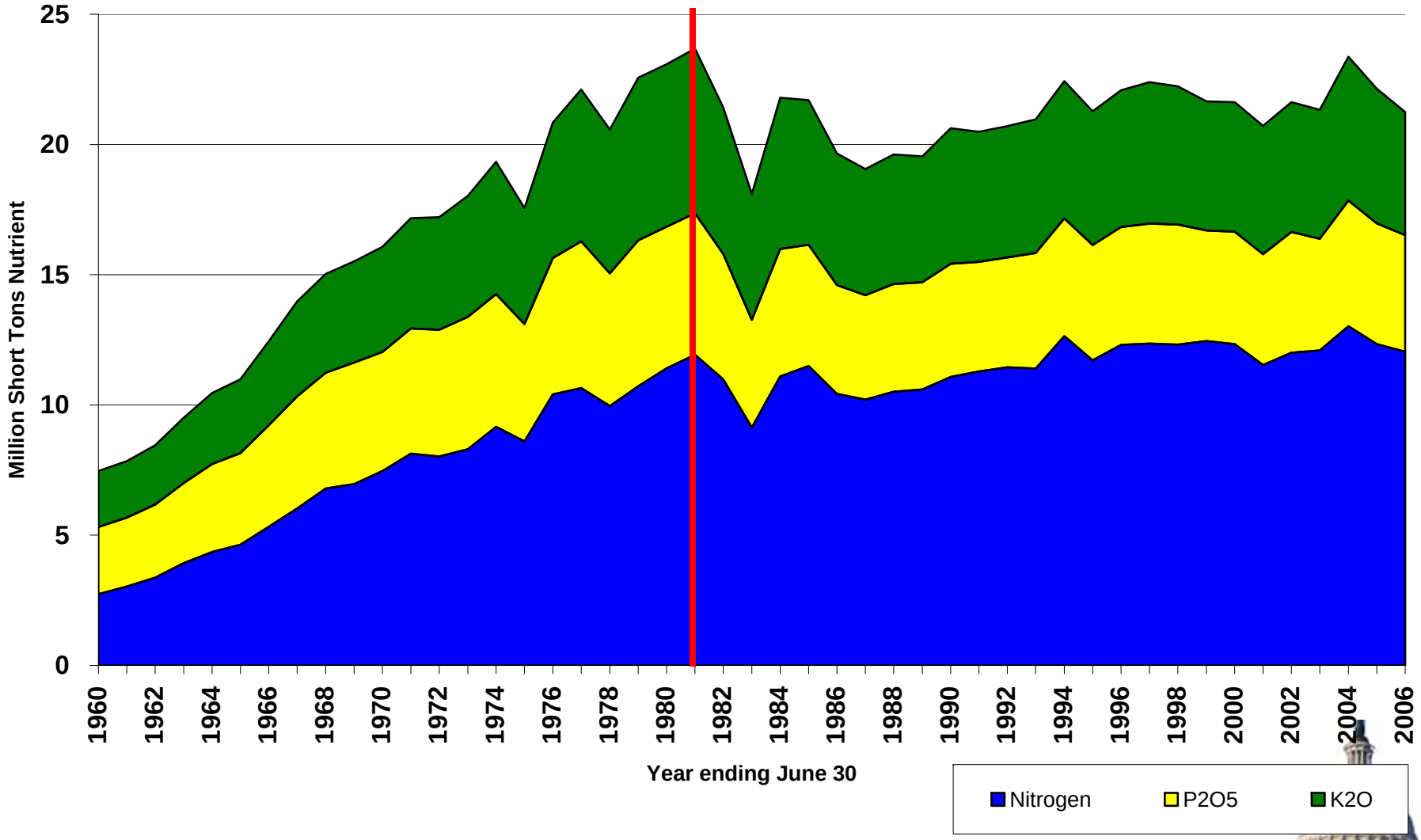
Nutrient Consumption: China + India + Brazil



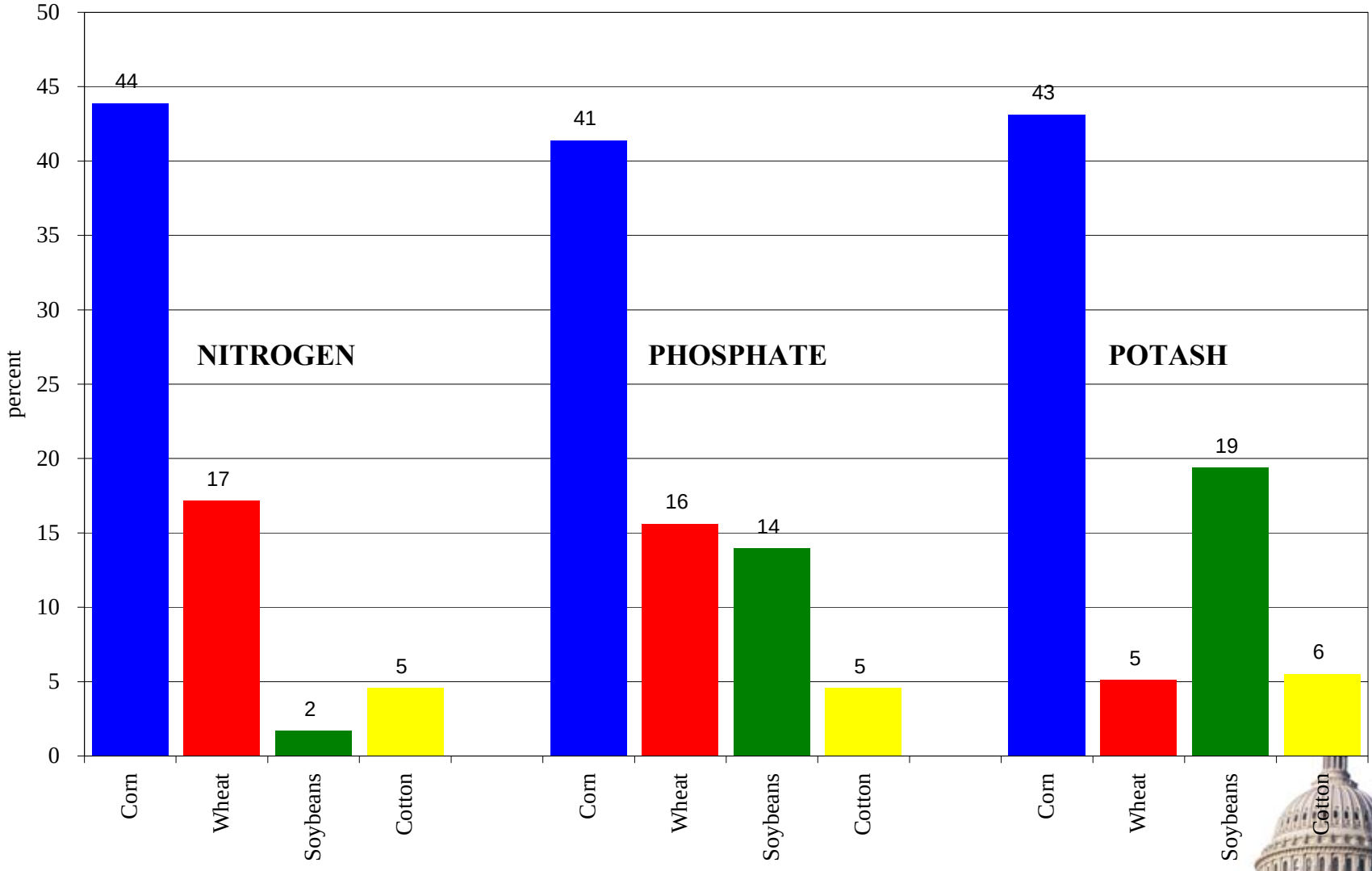
Source: IFA.

U.S. Nutrient Demand

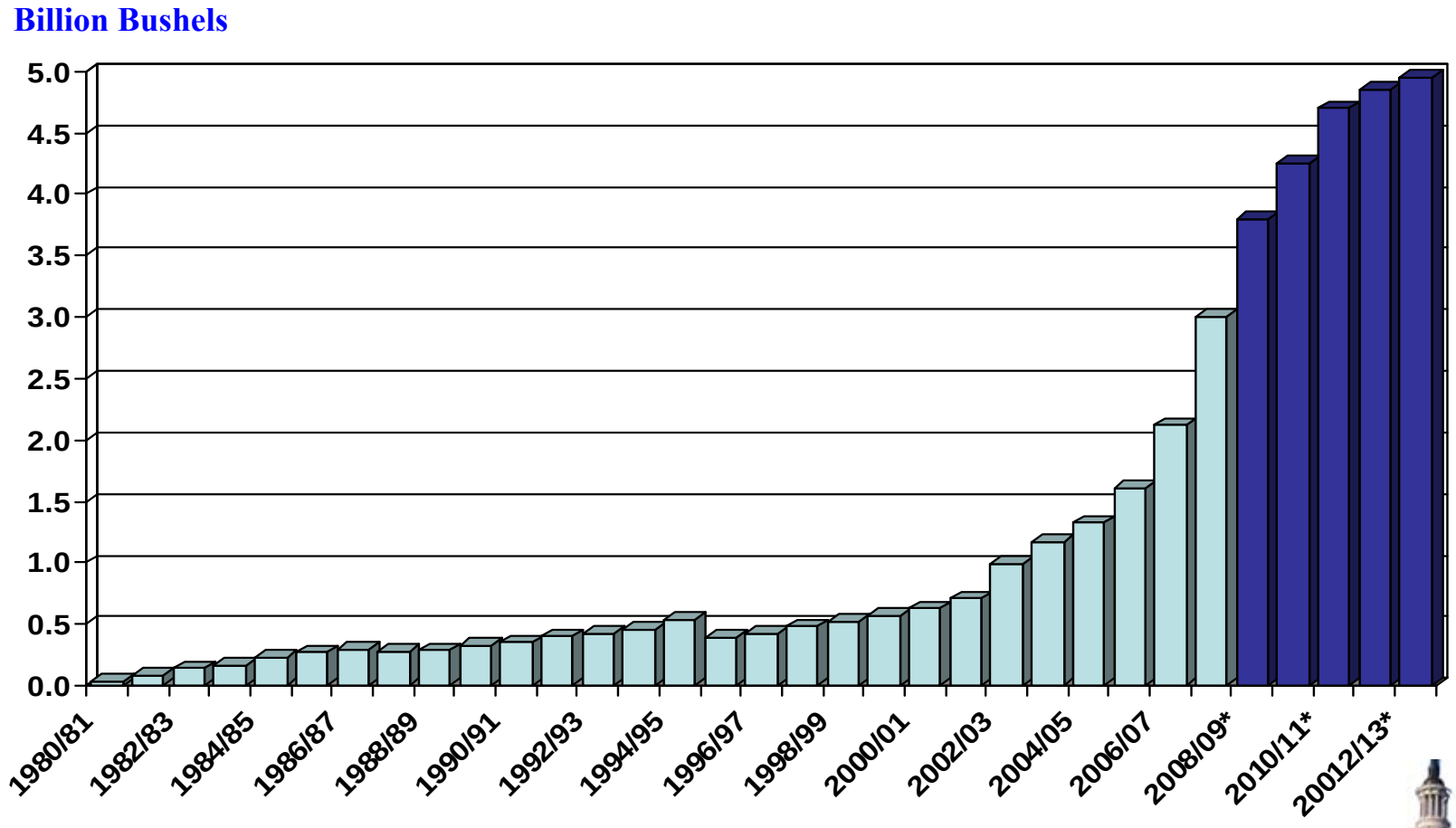
U.S. Consumption of Primary Plant Nutrients



U.S. Nutrient Use by Crop, FY2004/05

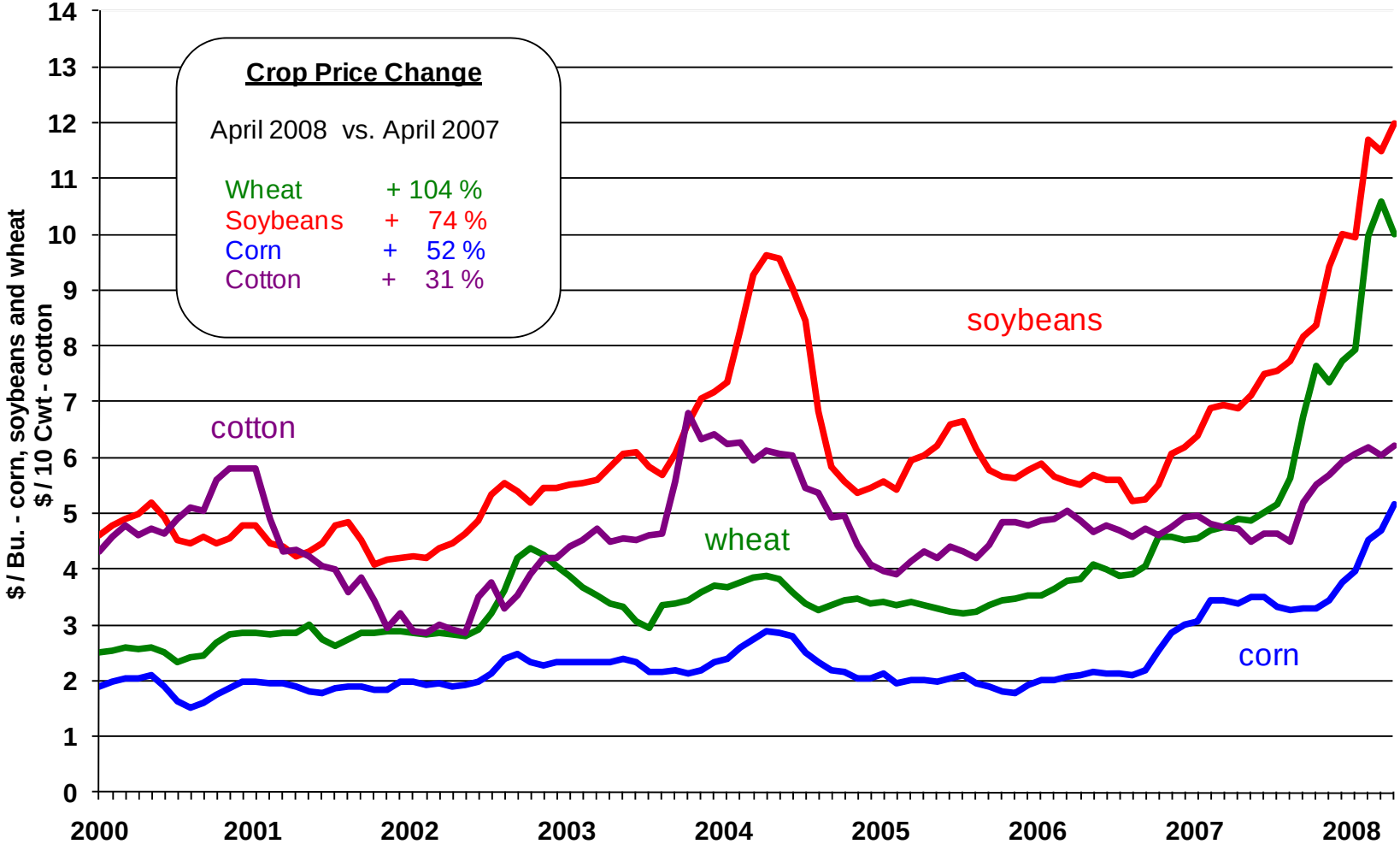


Corn: Used for Ethanol Production



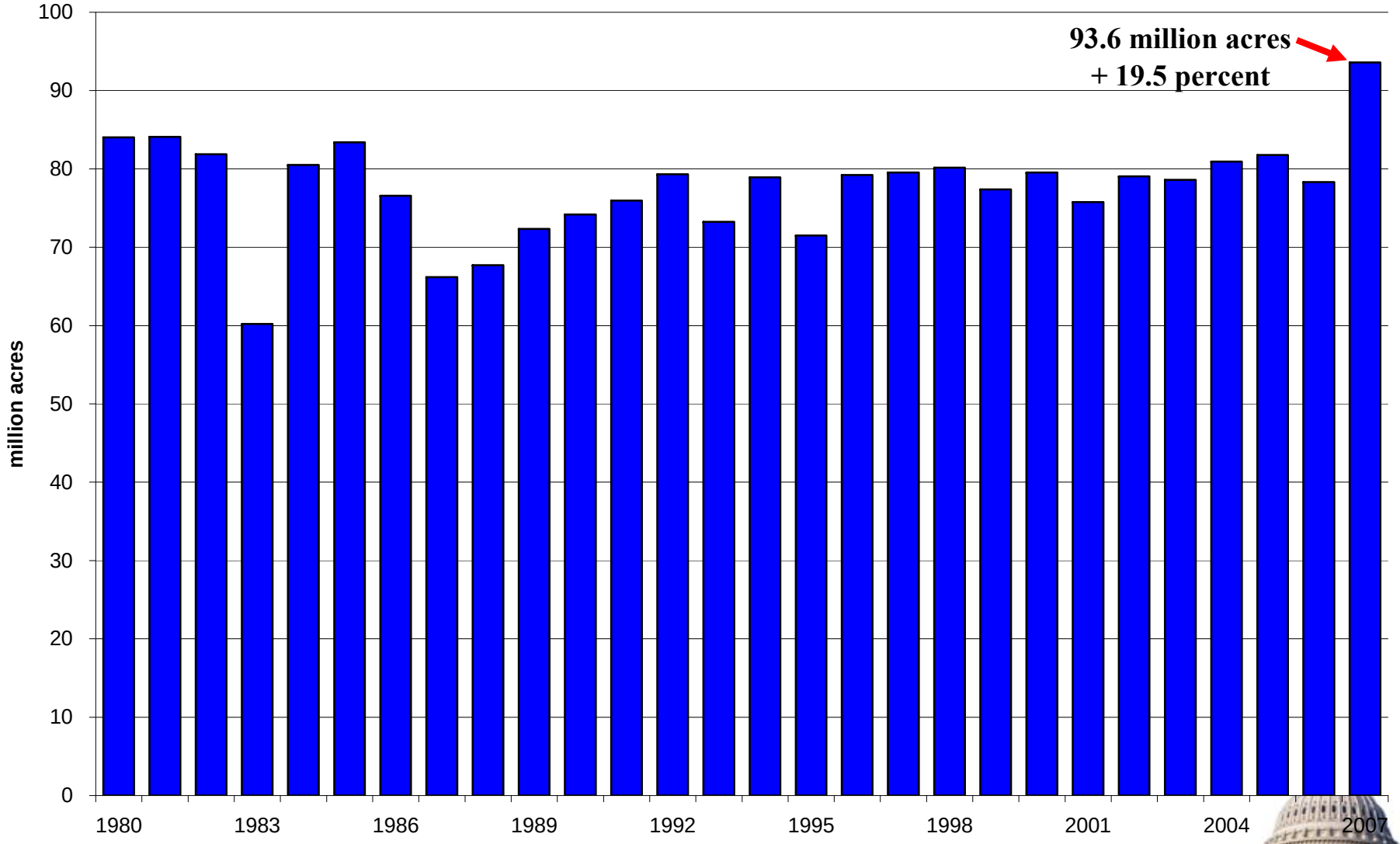
Source: USDA
***Doane Projection**

U.S. Crop Prices Received by Farmers

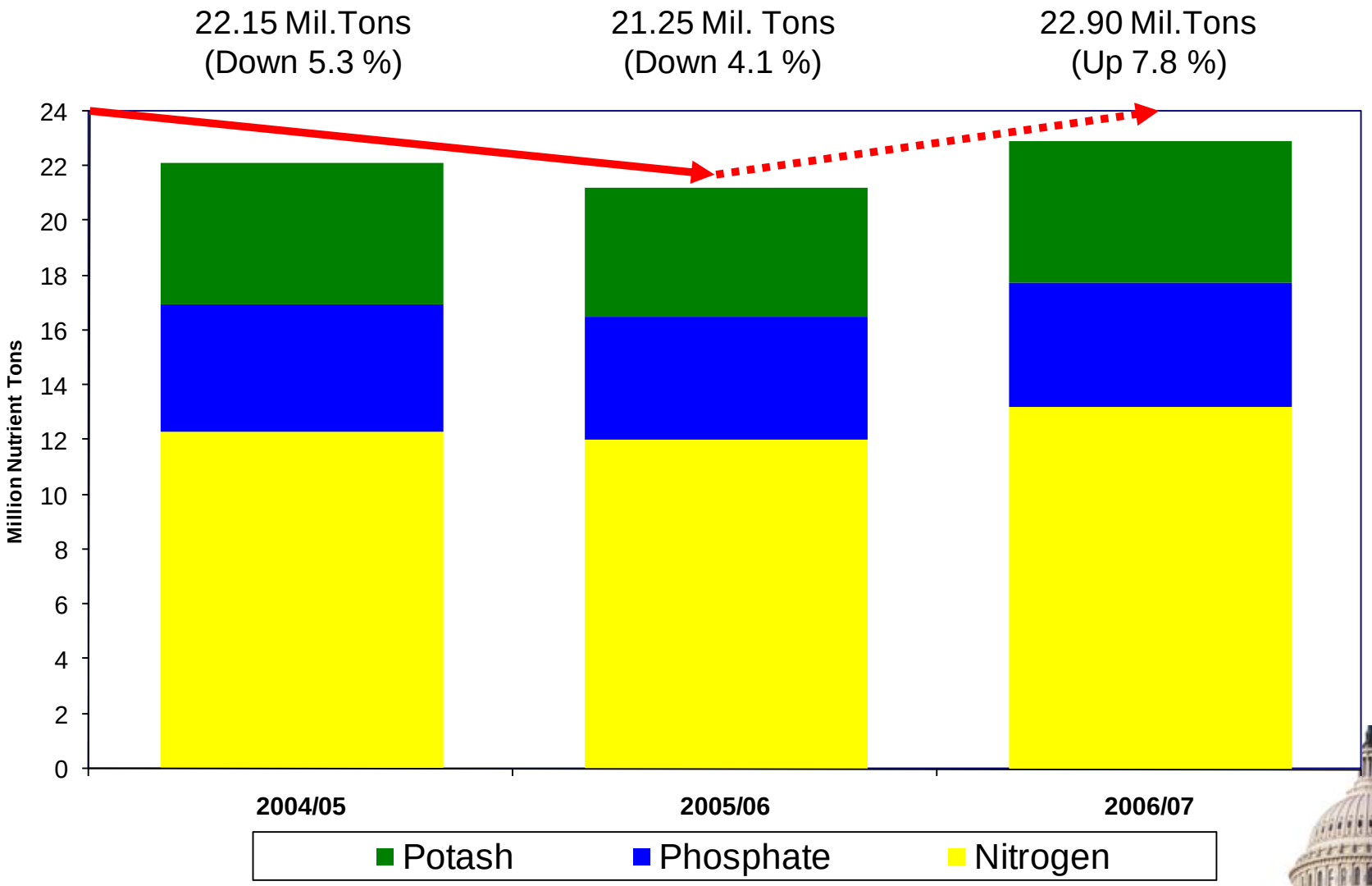


Source: USDA, NASS

U.S. Corn Acres Planted



U.S. Nutrient Use



Recap - Demand Factors

Recent Growth in U.S. Demand ...

... On Top of Extraordinary World Demand Growth !

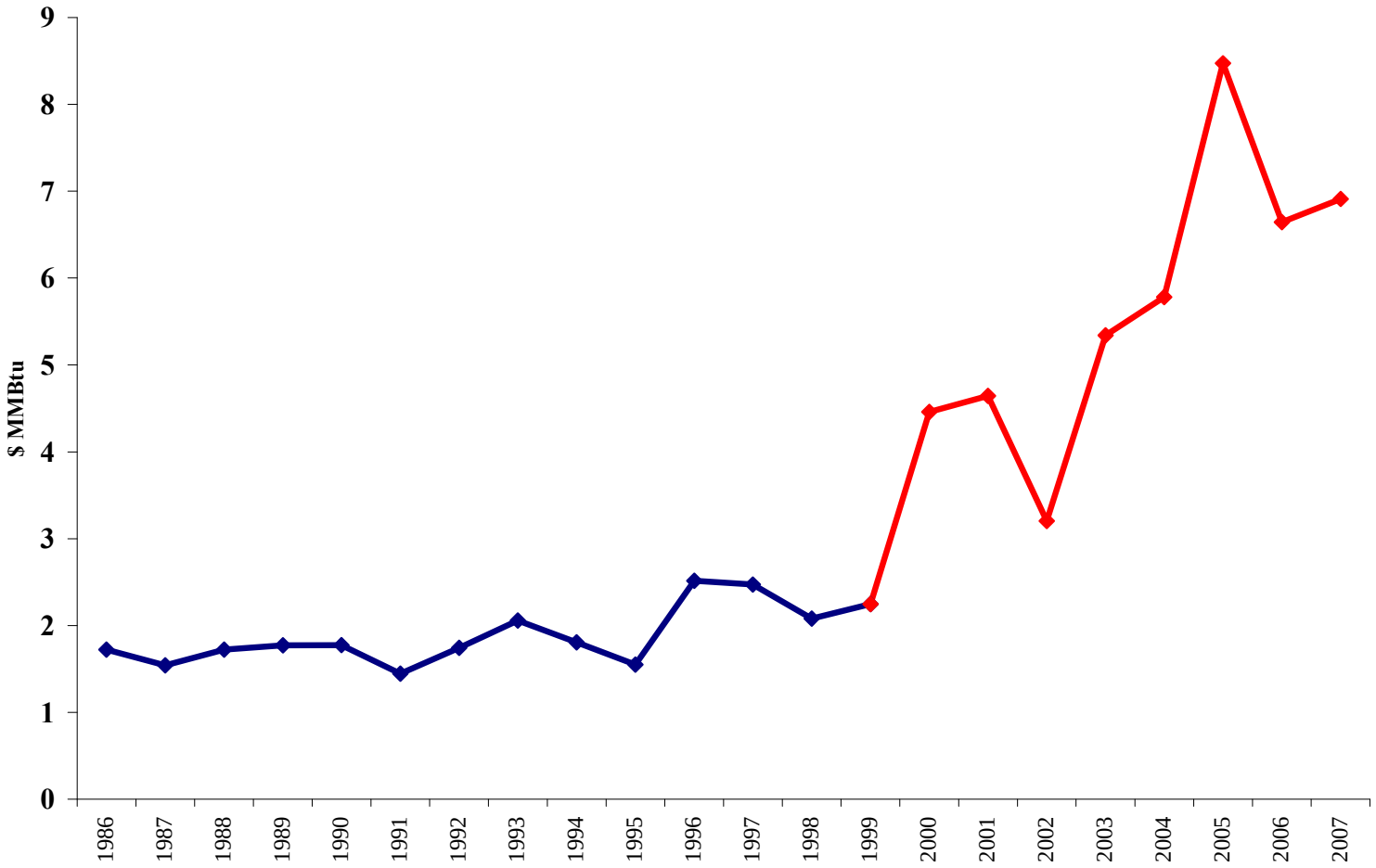
Supply Factors

Energy Costs !

Raw Material Costs !

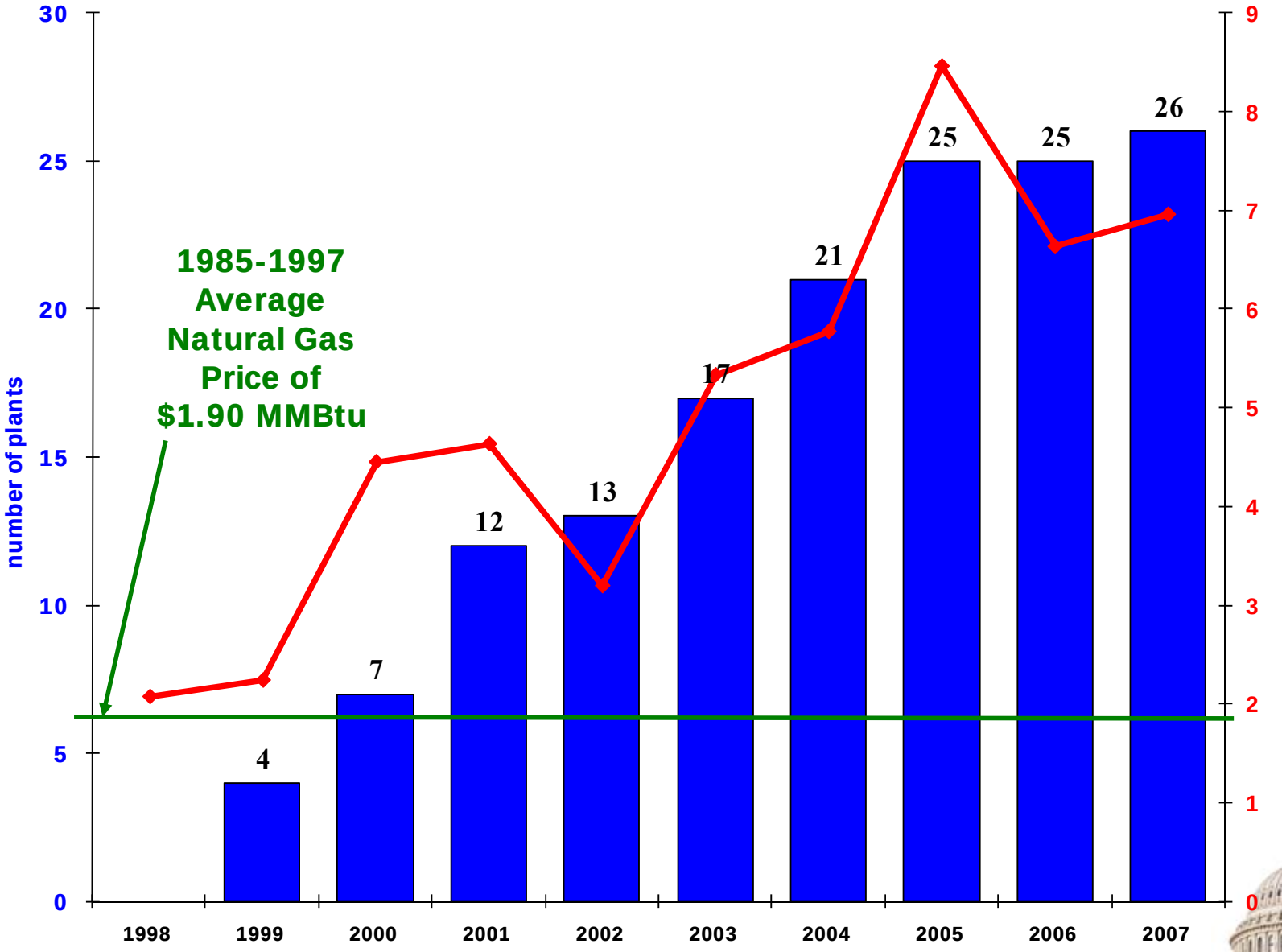

NH_3
ANHYDROUS
AMMONIA
INHALATION HAZARD
Crop Production Services
1005
Dalton

U.S. Ave. Annual Natural Gas Price

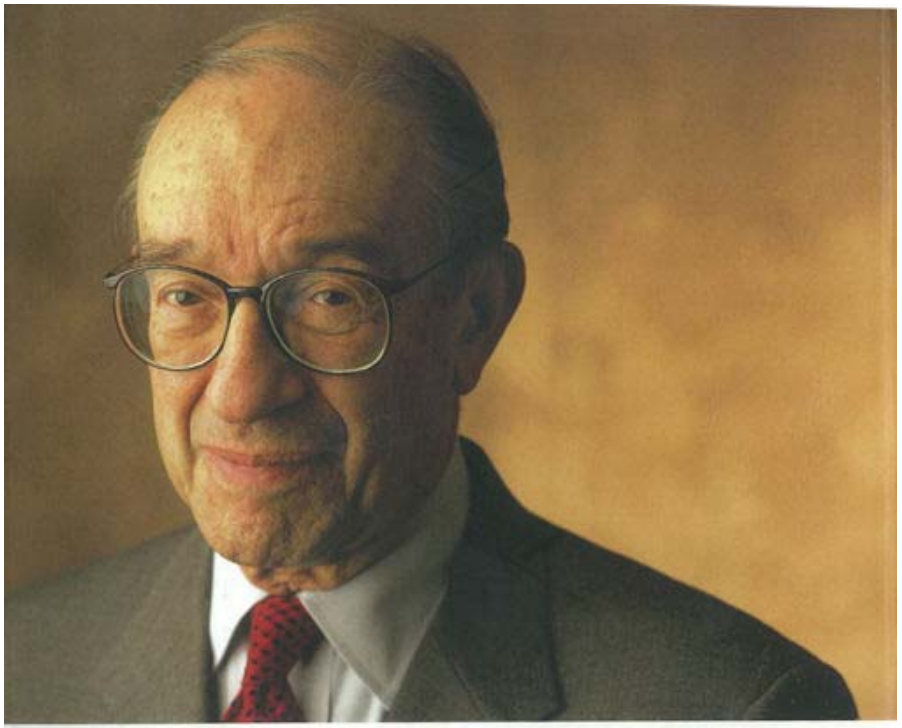


Source: Spot-delivered-to-pipeline price, Natural Gas Week.

Cumulative U.S. Ammonia Plant Closures vs. Natural Gas Prices



Source: Blue, Johnson and Associates, IFDC, Natural Gas Week and The Fertilizer Institute.



Alan Greenspan

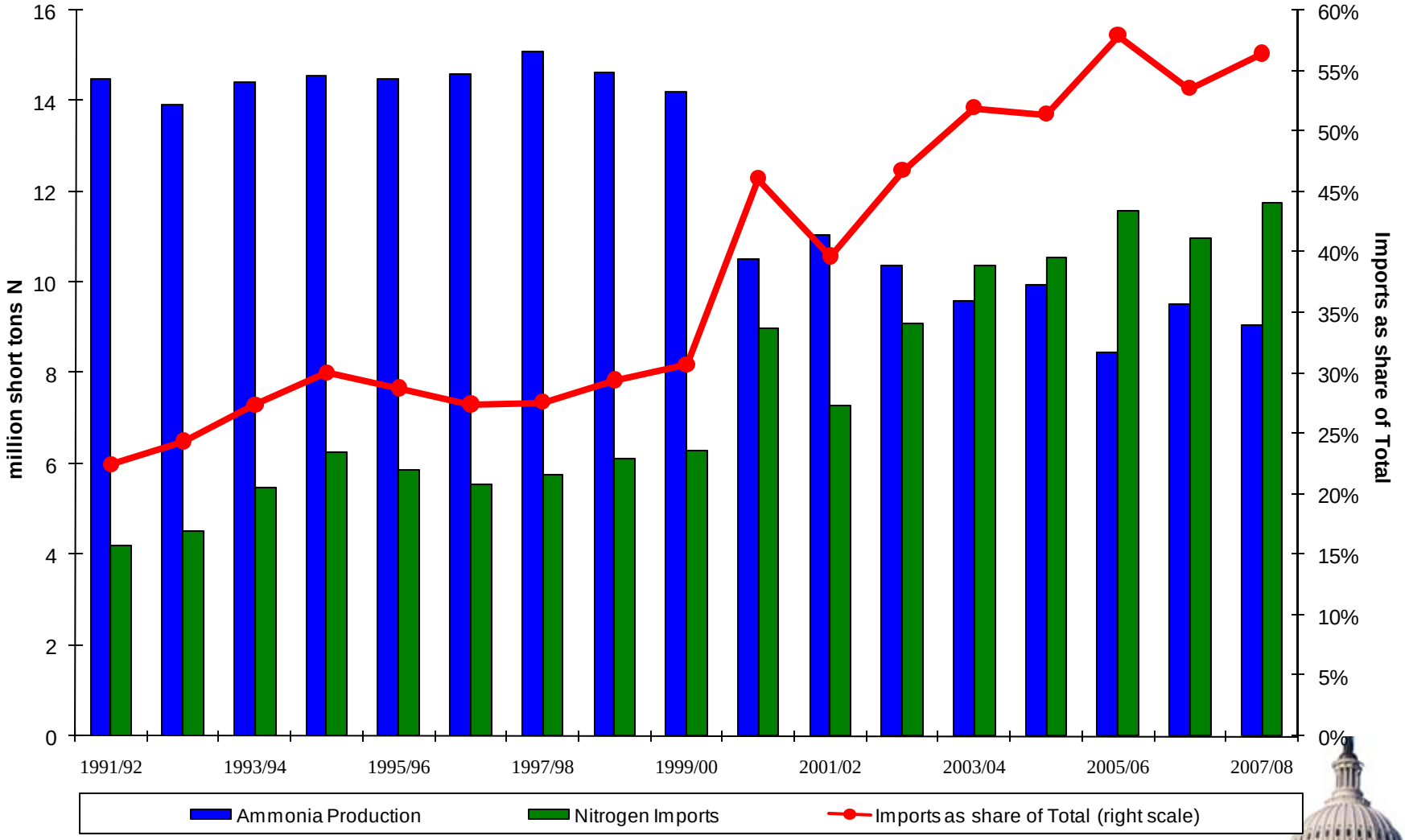
THE AGE OF TURBULENCE

ADVENTURES IN A NEW WORLD

The Age of Turbulence, page 451
Alan Greenspan

"North America's still-limited capability to import LNG has effectively restricted our access to abundant gas supplies elsewhere in the world. Because of that limitation (in 2006, LNG supplied only 2 percent of U.S. consumption); we have been unable to continue to compete effectively in such industries as ammonia and fertilizer when natural-gas prices spike in the United States and not in other countries."

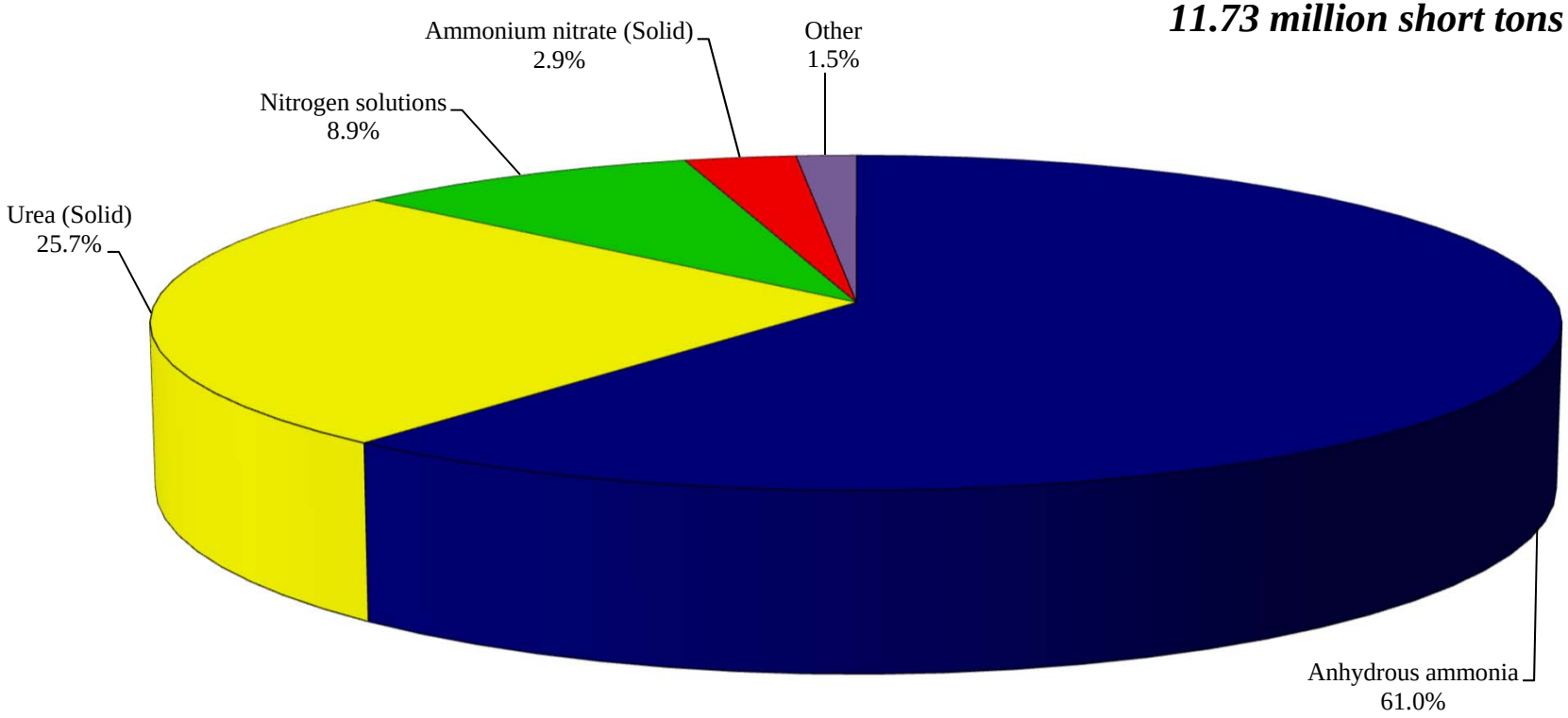
U.S. Nitrogen Sources - Ammonia Production and N Imports



Source: U.S. Department of Commerce and The Fertilizer Institute.

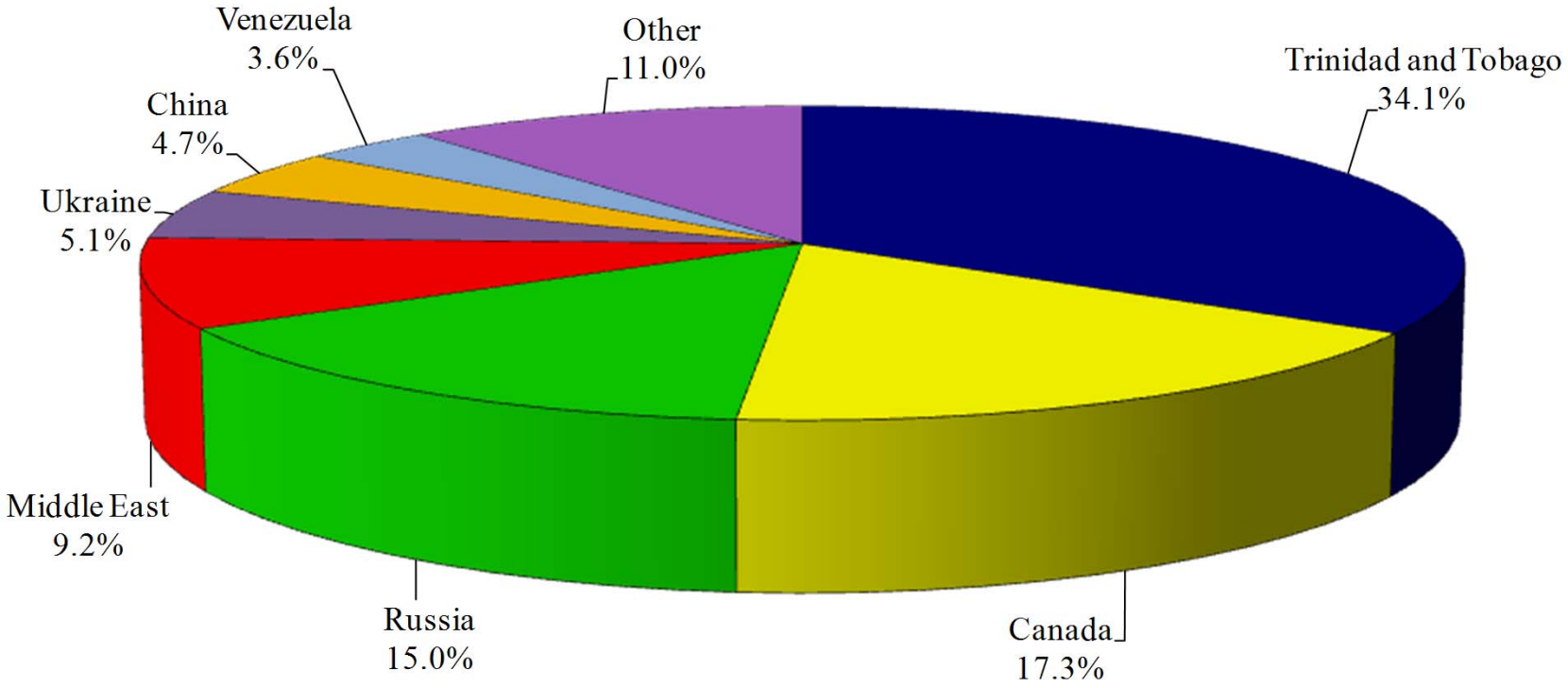
U.S. N Imports by Material, FY 2007/08

11.73 million short tons N



Source: The Fertilizer Institute and the U.S. Department of Commerce.

U.S. N Imports by Country, FY 2007/08



Source : The Fertilizer Institute and the U.S. Department of Commerce

11.73 mil. tons N

Top Fertilizer Importing Countries

FY05/06 Rank	Country	Share of World Imports	Share of Country Consumption
(5)	France	4.2 %	79 %
(4)	India	8.0 %	26 %
(3)	Brazil	9.0 %	68 %
(2)	China	11.4 %	16 %
(1)	United States	16.1 %	56 %
	Top 5	48.8 %	

Source: International Fertilizer Industry Association.

Rising Energy and Feedstock Costs

PRODUCTION COST IMPACTS

Ammonium Phosphates

=> higher energy prices

=> higher phosphate rock prices

=> higher sulfur prices

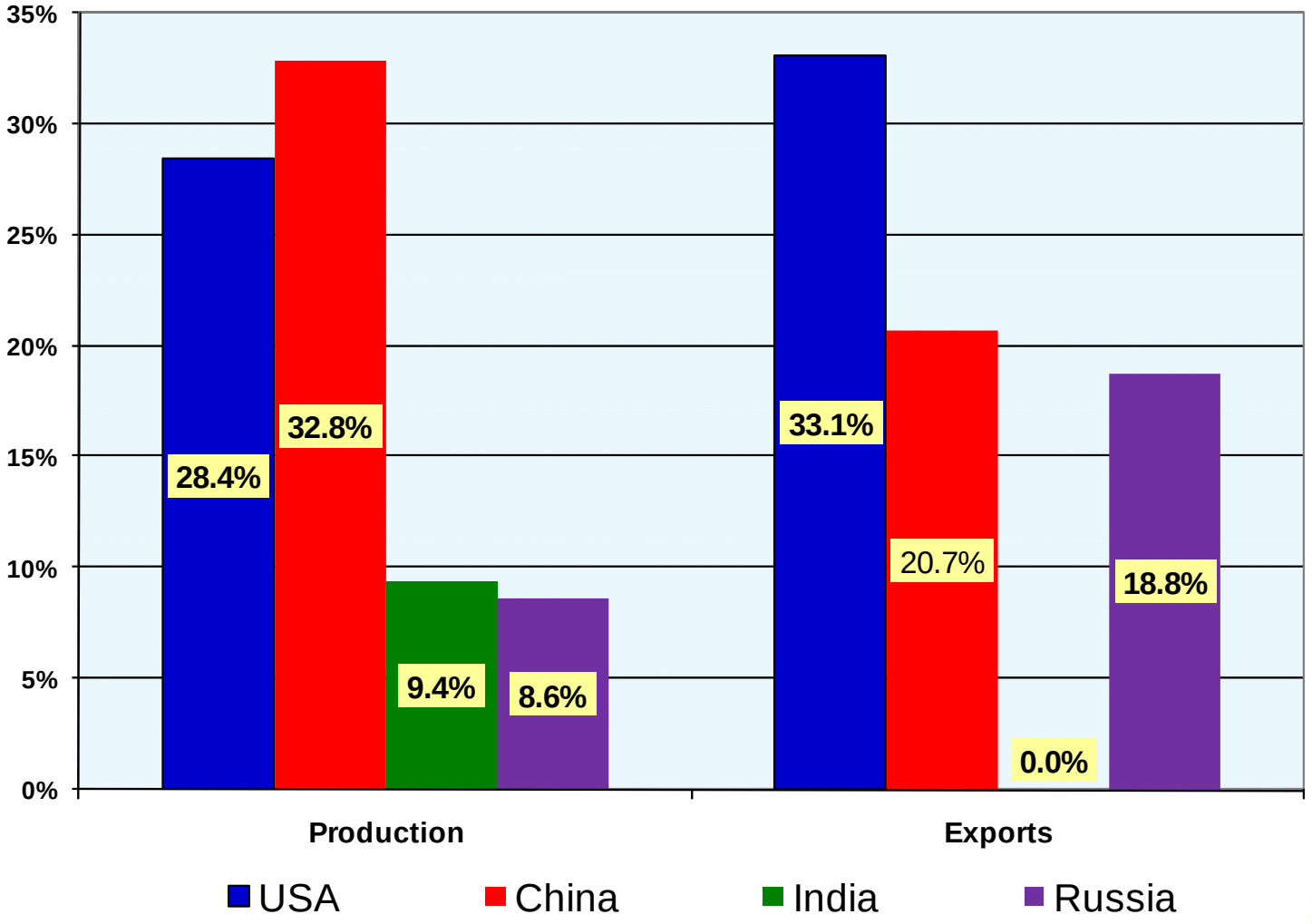
=> higher ammonia prices

Potash

=> higher electricity and natural gas prices

Phosphate

2007 Ammonium Phosphate Production & Exports
World Share by Country

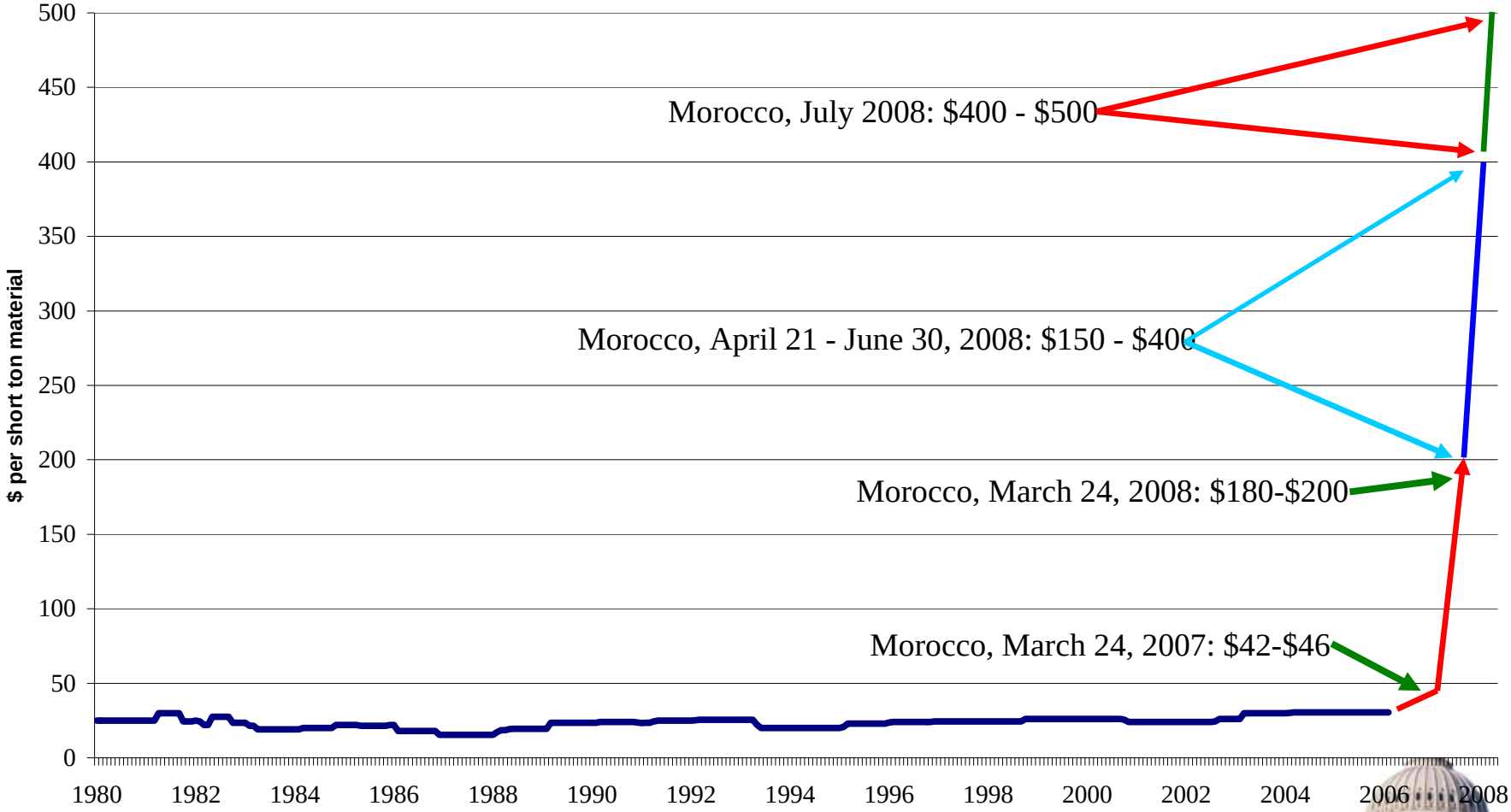


Source: International Fertilizer Industry Association.

Ammonium Phosphate Production
Major Inputs

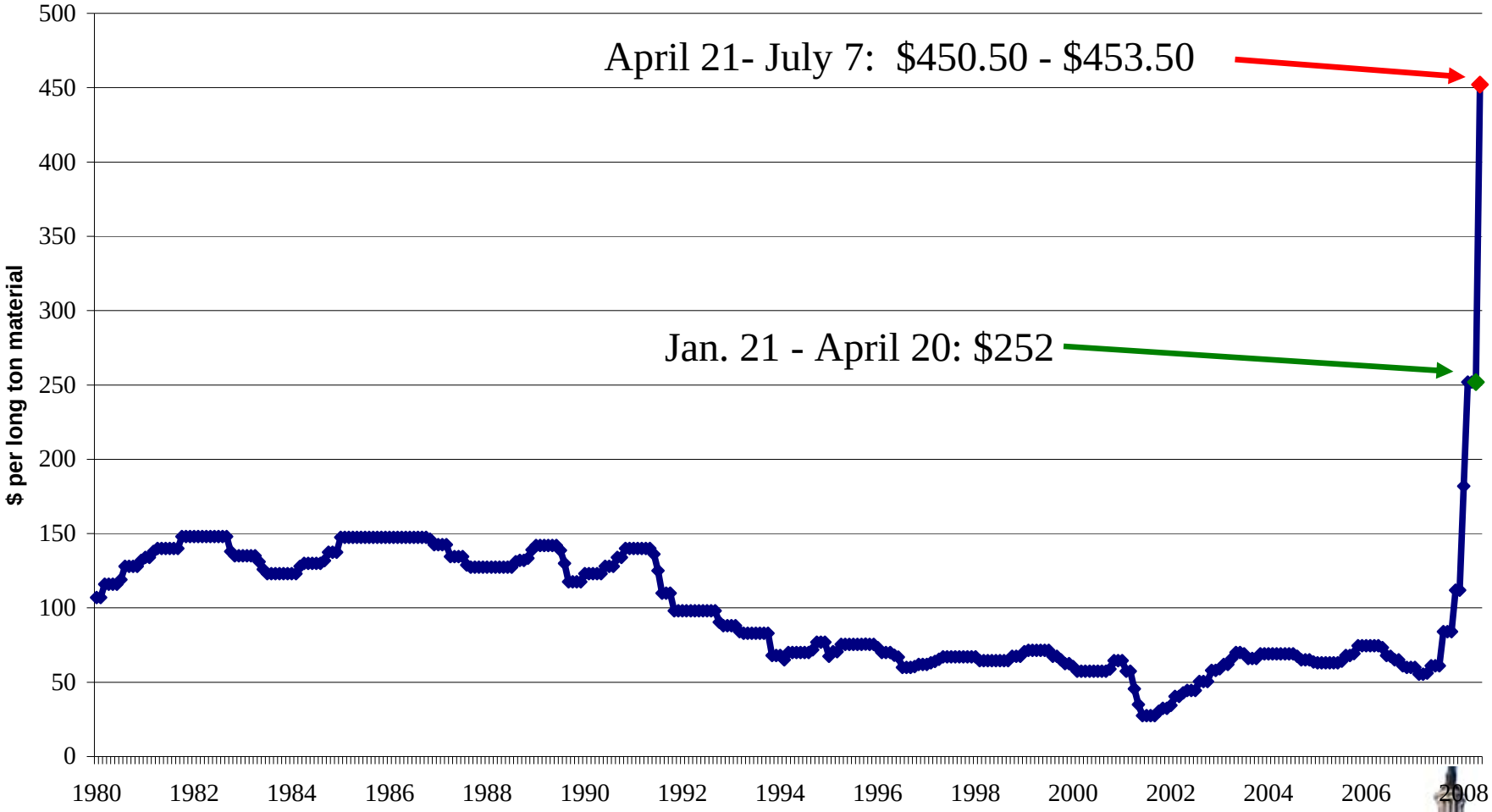
	Phosphate Rock	Sulfur	Ammonia
	Short tons material per ton of DAP/MAP		
DAP	1.72	0.43	0.22
MAP	1.91	0.48	0.13

Phosphate Rock - Tampa (1980-2006); Morocco (2007-08)



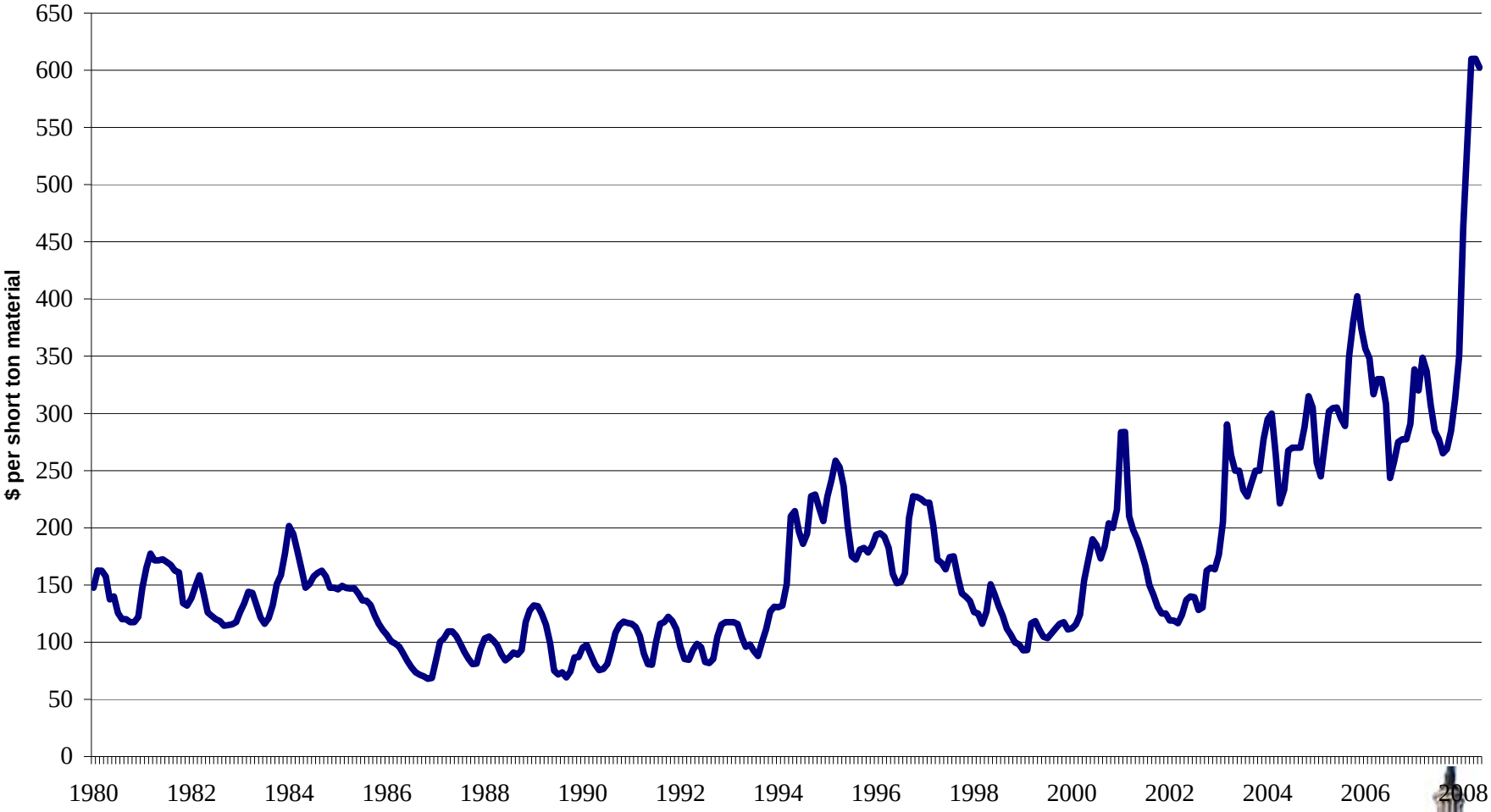
Source: Green Markets.

Recovered Sulfur - Tampa



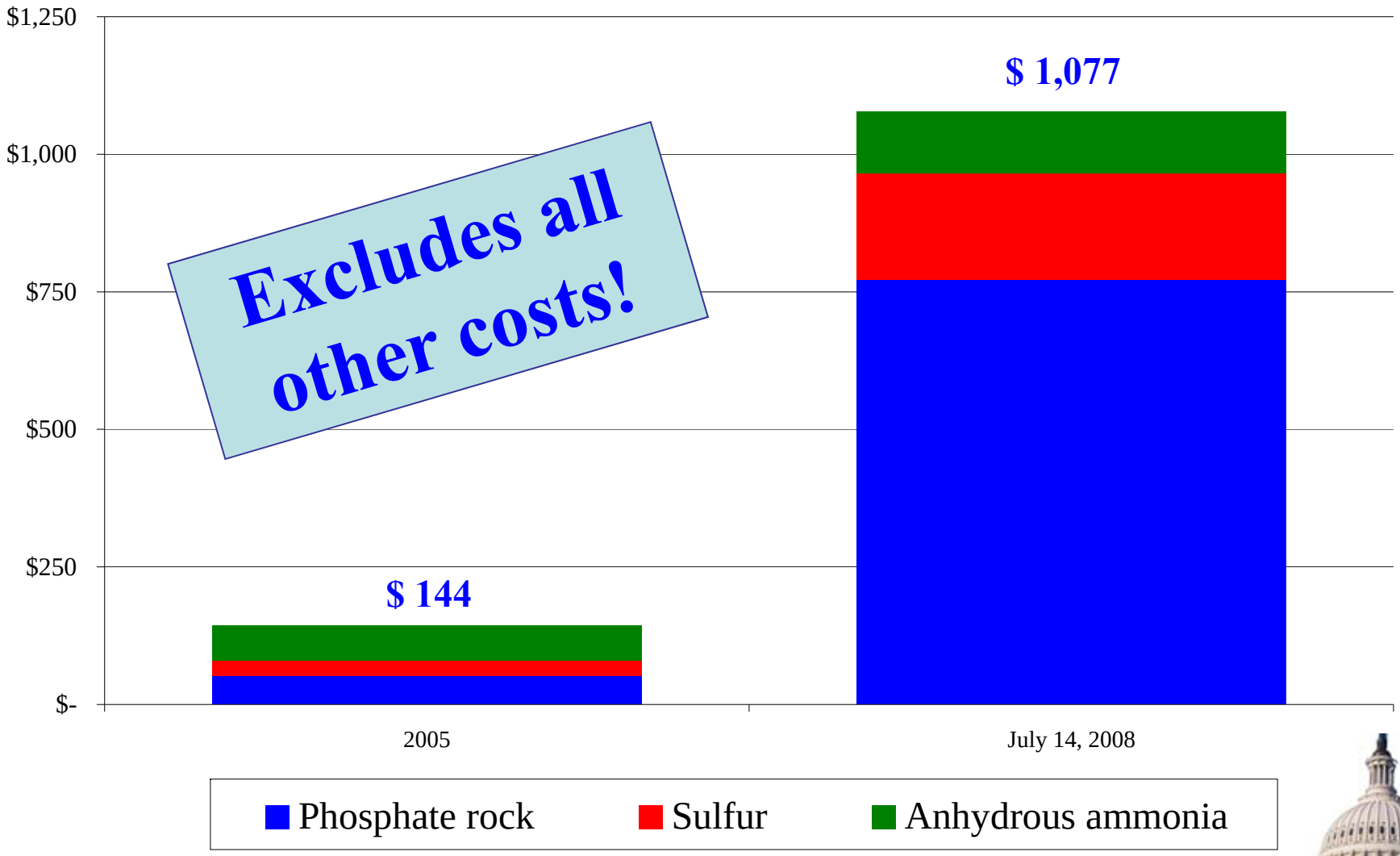
Source: Green Markets.

Ammonia - U.S. Gulf



Source: Green Markets.

Cost of Major Inputs into DAP Production

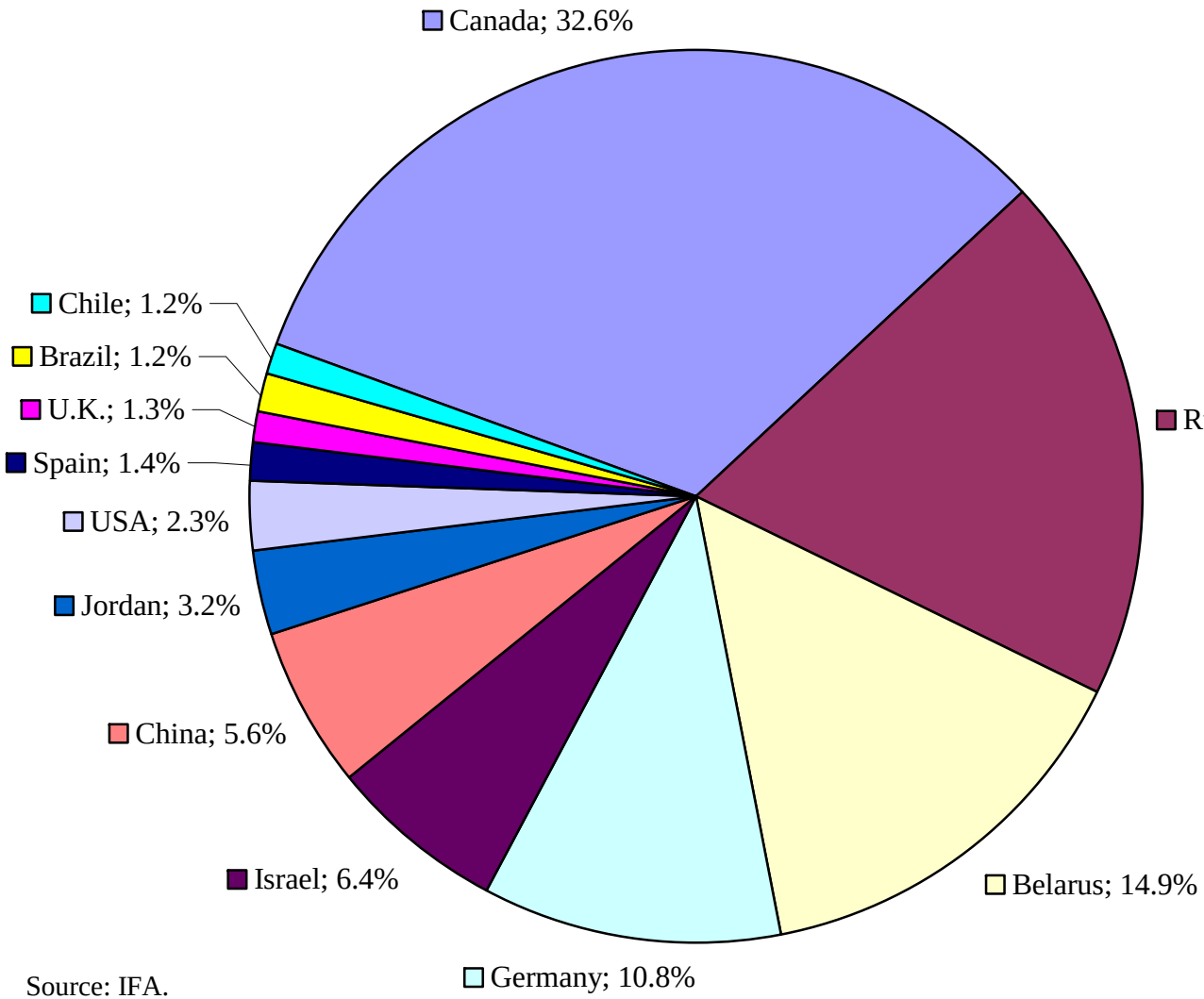


Source: Computed from wholesale price data reported in Green Markets, various issues.

Potash

Source: Mosaic.

World K2O Production - 2007



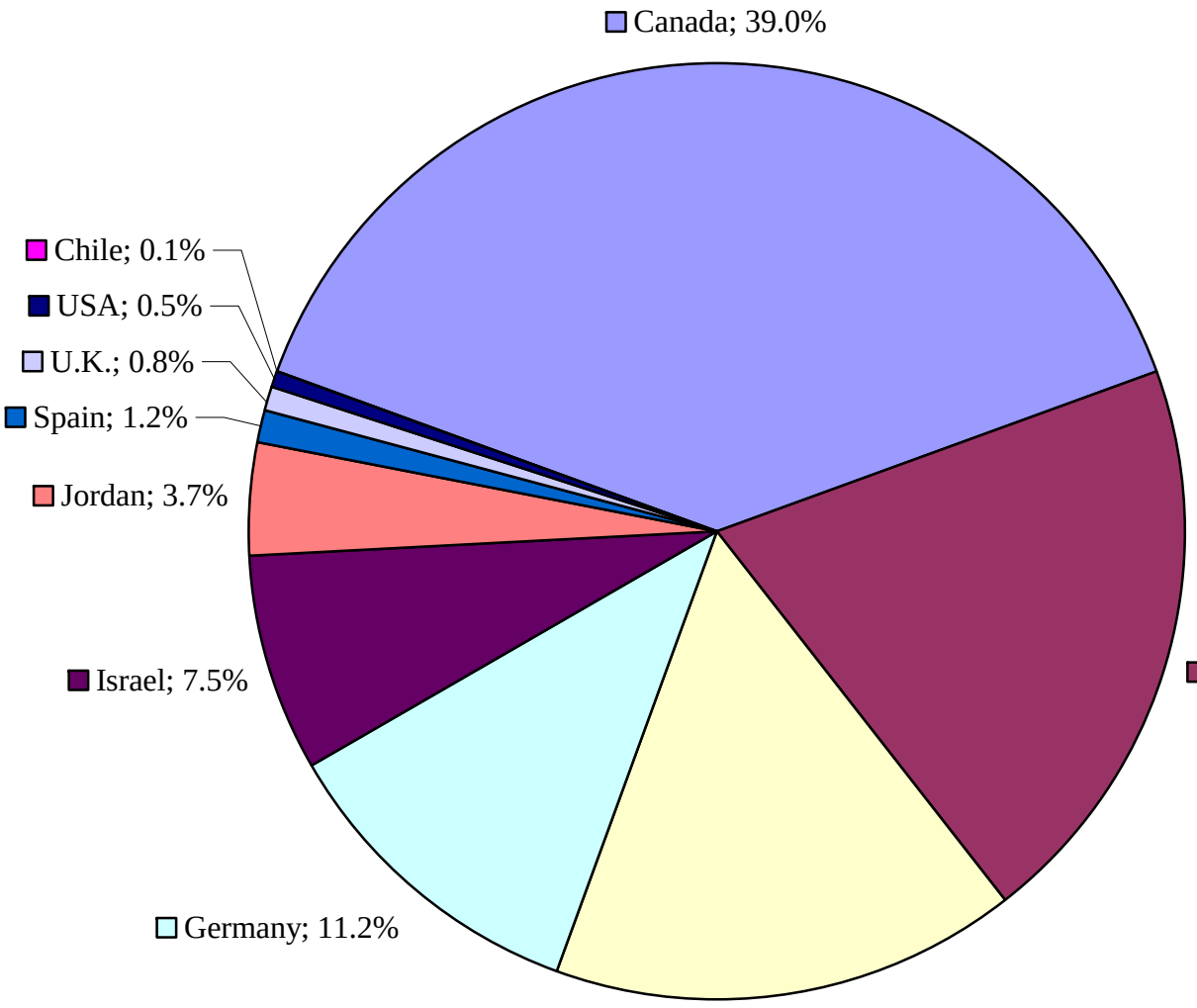
33.4 million metric tons K2O

Concentration

Top 1 - 33 %
Top 2 - 52 %
Top 3 - 66 %
Top 4 - 77 %

Source: IFA.

World K2O Exports - 2007



27.2 million metric tons K2O to over 100 countries

Over 80% of production exported compared to 12.5% for world grains

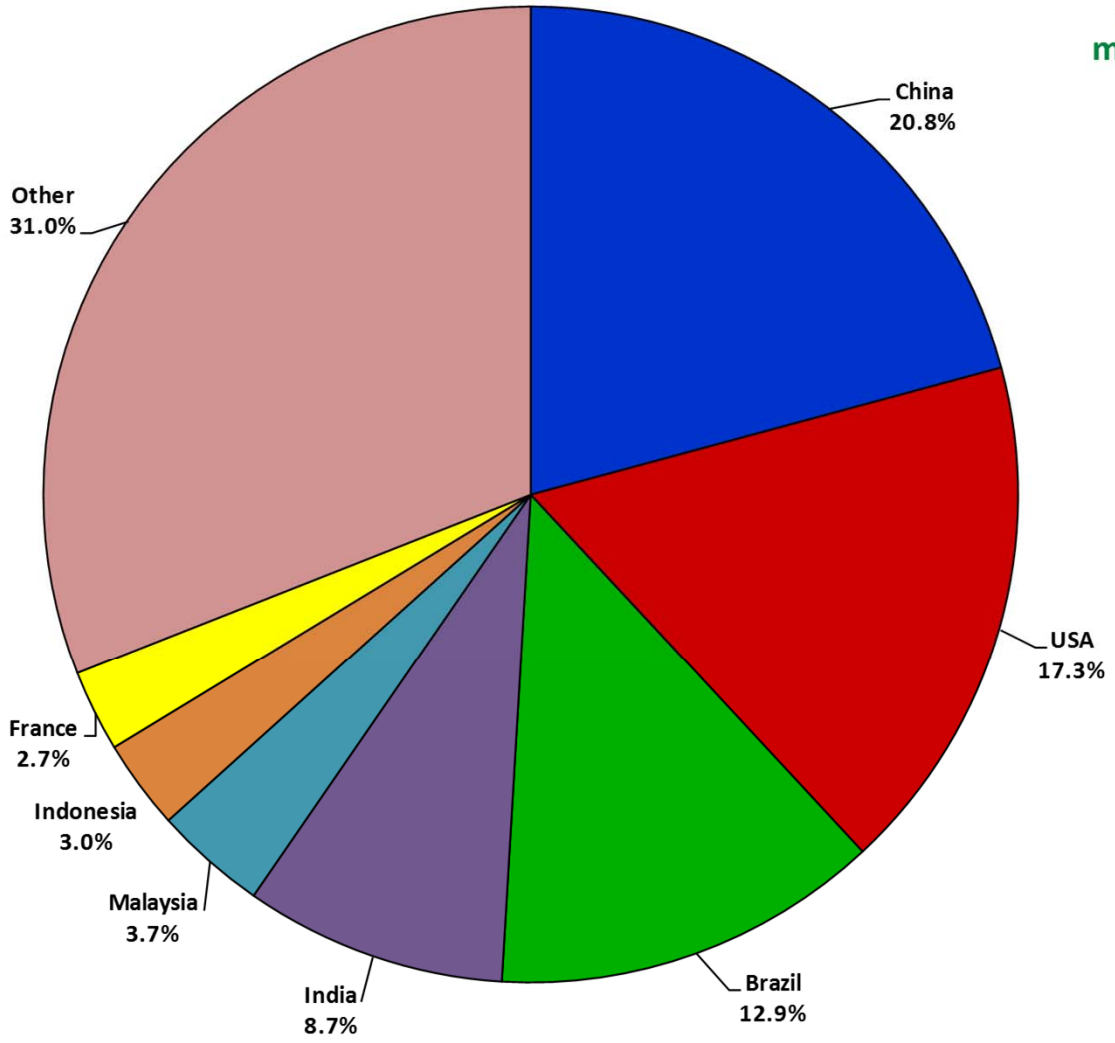
Concentration

Top 1 - 39 %
Top 2 - 59 %
Top 3 - 75 %
Top 4 - 86 %

Source: IFA.

World K_2O Consumption- 2006/07

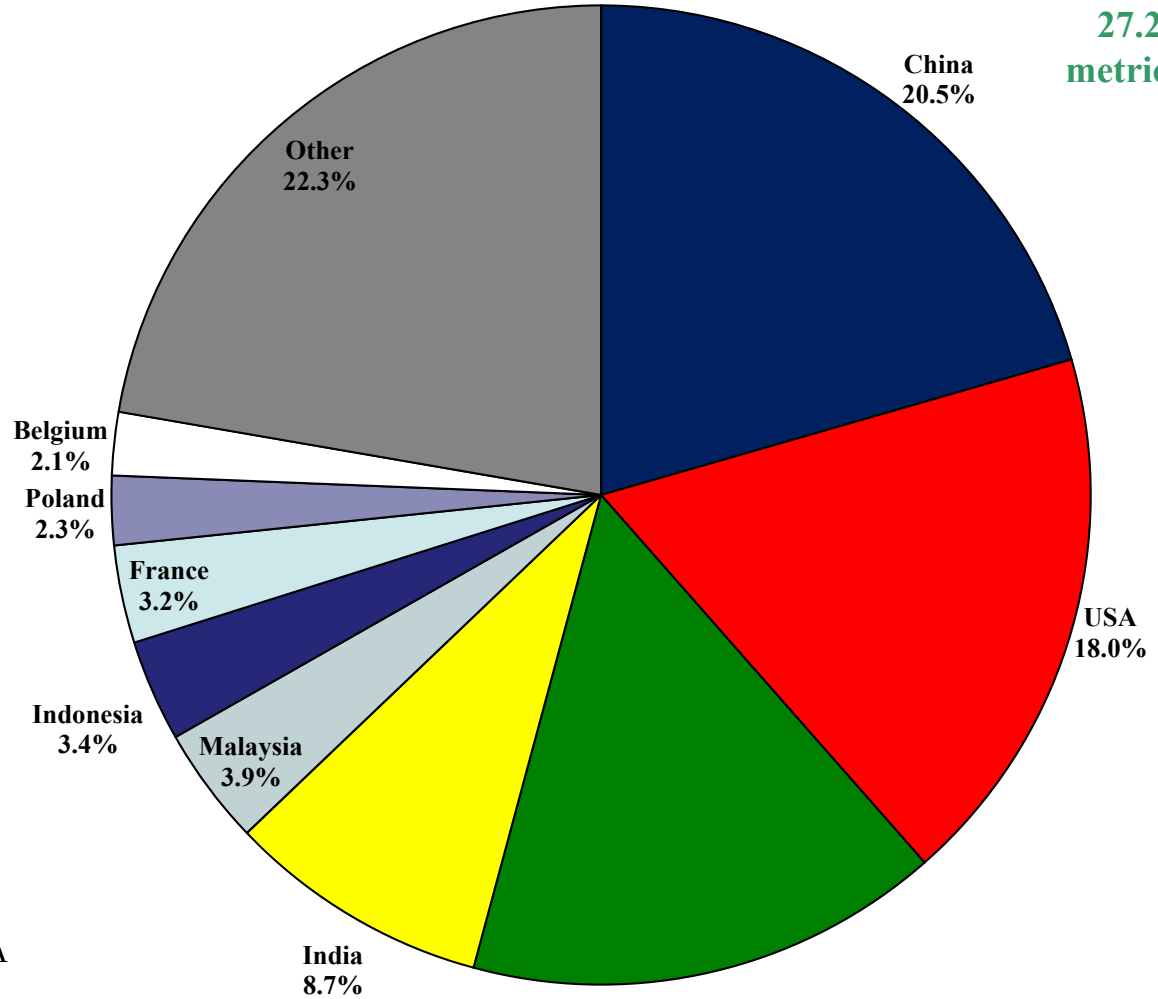
26.9 million metric tons K_2O



Concentration
Top 1 - 21%
Top 2 - 38%
Top 3 - 51%
Top 4 - 60%

Source: IFA

World K_2O Imports - 2007



27.2 million metric tons K_2O

Concentration
Top 1 - 21%
Top 2 - 39%
Top 3 - 54%
Top 4 - 63%
Top 5 - 67%

Source: IFA

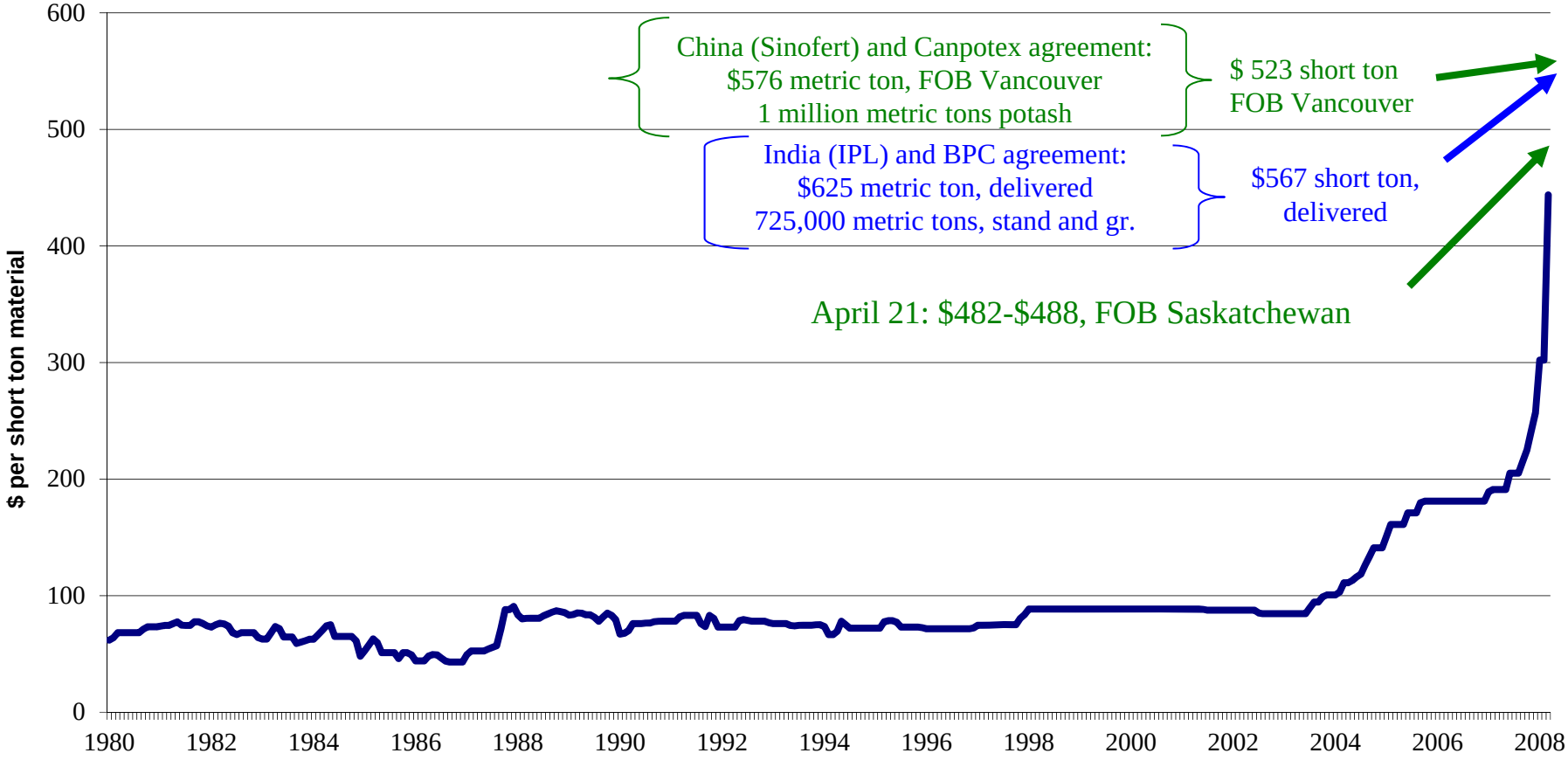
Some Major World Potash Buyers/Sellers

The 3 major Chinese potash buyers are:
- China National Agricultural Means of Production Corporation (CNAMPGC)
- China National Chemical Corporation (CNCCC)
- Sinofert (a vertically-integrated fertilizer company which is a subsidiary of Sinochem Corp.)

The main India potash buyer is Indian Potash Limited (IPL). IPL is a private company with equity partners from private, public and cooperative sectors of the fertilizer industry. While IPL has been around for more than 50 years (formally called the Indian Potash Supply Agency or IPSA), the organization was set up by the then Indian Ministry of Commerce and Industry in 1955 and became the sole agency for importing, marketing and promotion of potash in India.

Canpotex is the key distributor for the Canadian potash producers. Canpotex is the world's largest exporter of potash, an international marketing and distribution company wholly owned by the Saskatchewan potash producers: Agrium Inc., The Mosaic Company, and PotashCorp. Mosaic, along with Intrepid Potash, also produces potash in the United States. U.S. producers have limited exports, primarily to South America, but most of their U.S. based production is sold domestically.

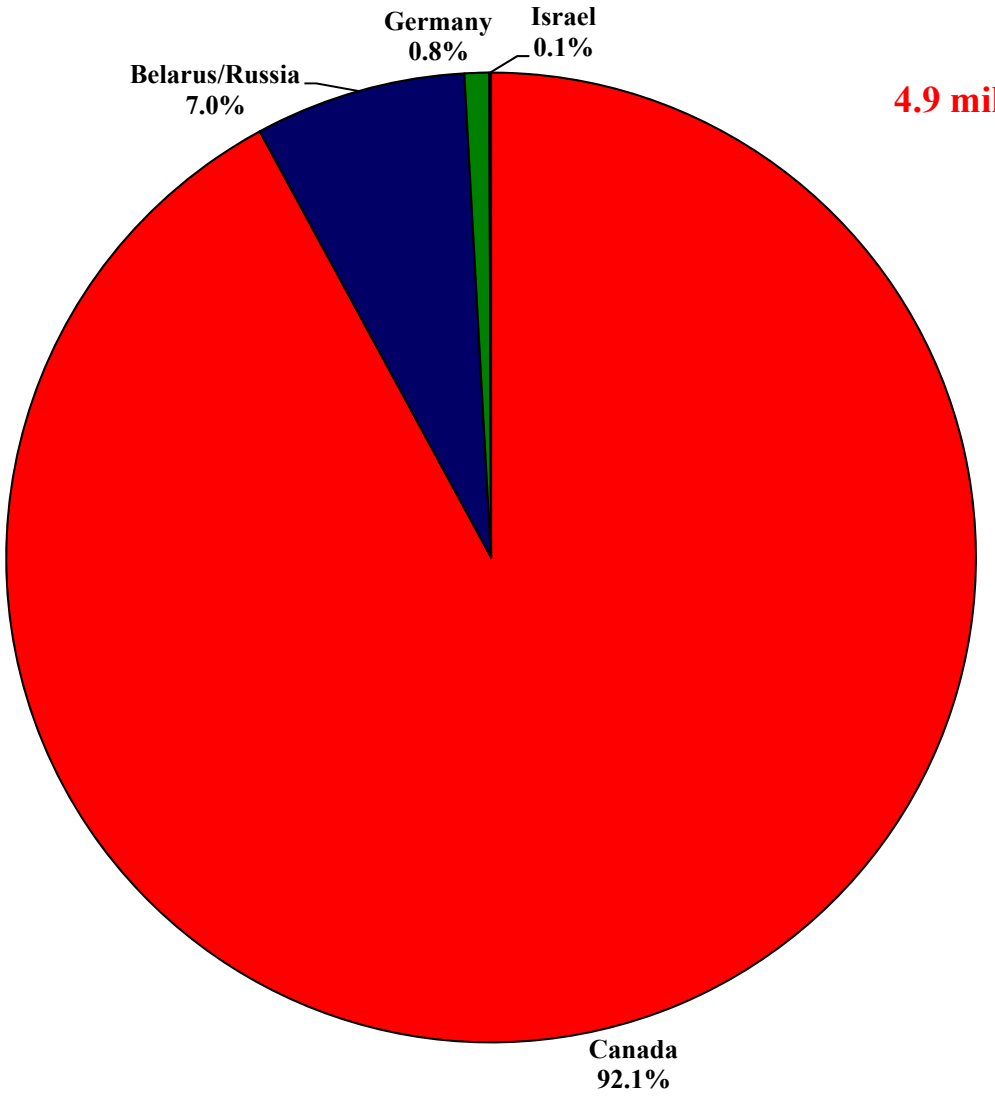
Potash Prices



Source: Green Markets.

USA

K_2O Imports by Country - 2007

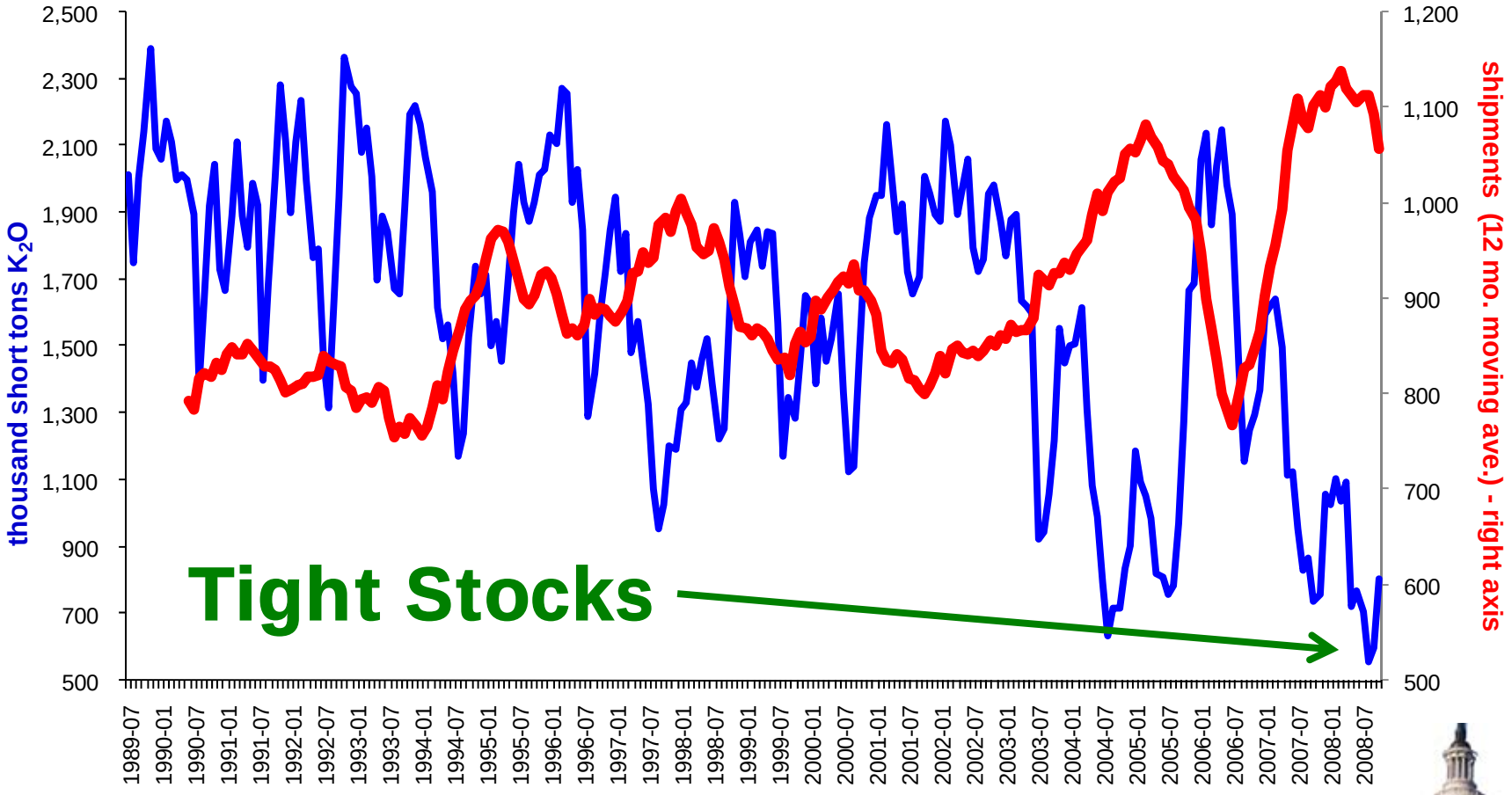


Total imports:
4.9 million metric tons K_2O

Source: IFA

North American Potash Producers

Monthly Ending Inventory and Shipments



Source: IPNI and TFI.

OTHER FACTORS

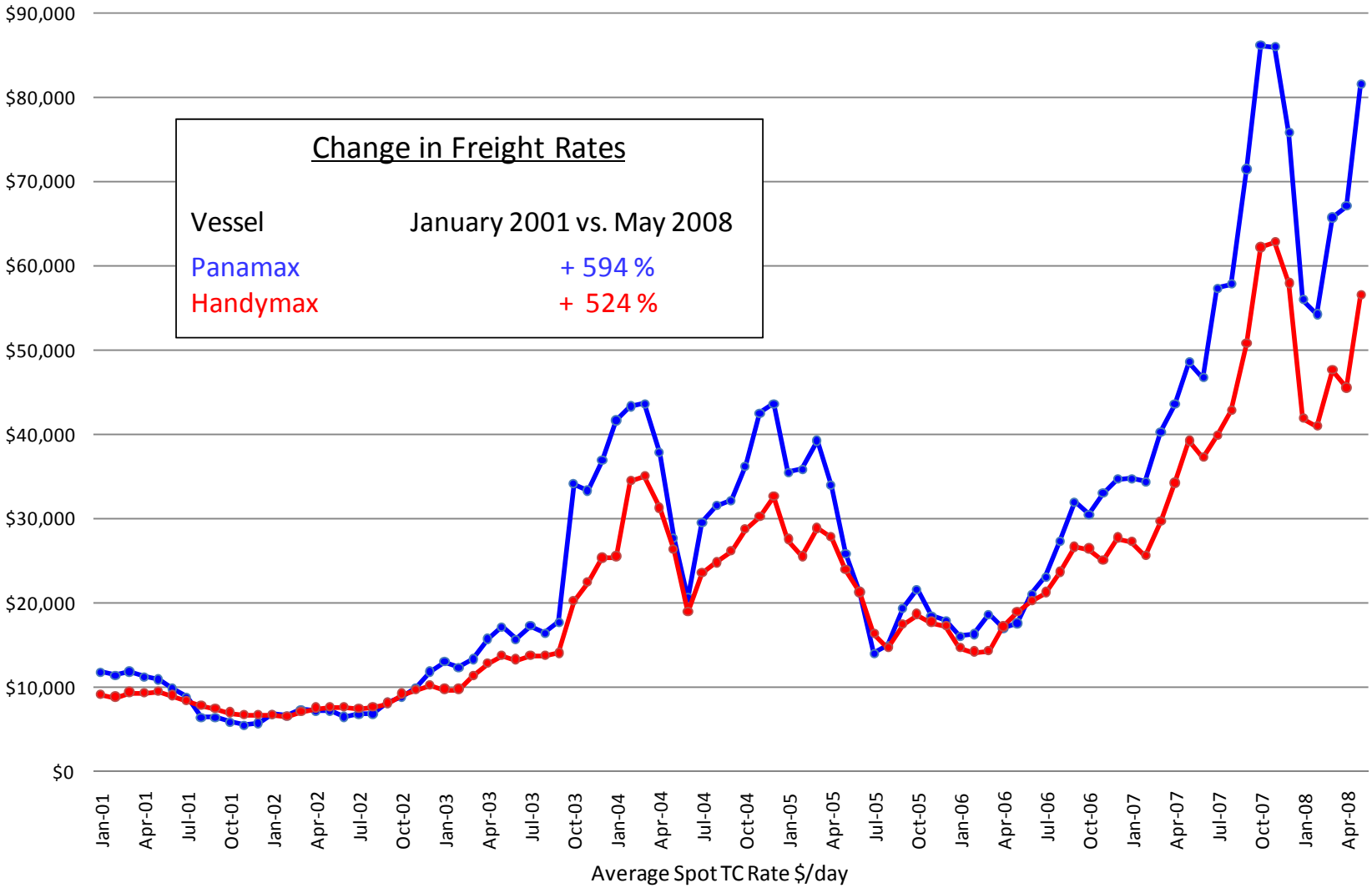
- Shipping/Distribution Costs
- Value of the U.S. Dollar
- Food and Fertilizer Export Curbs/Taxes

Shipping/Distribution Costs Were UP!

RISING:

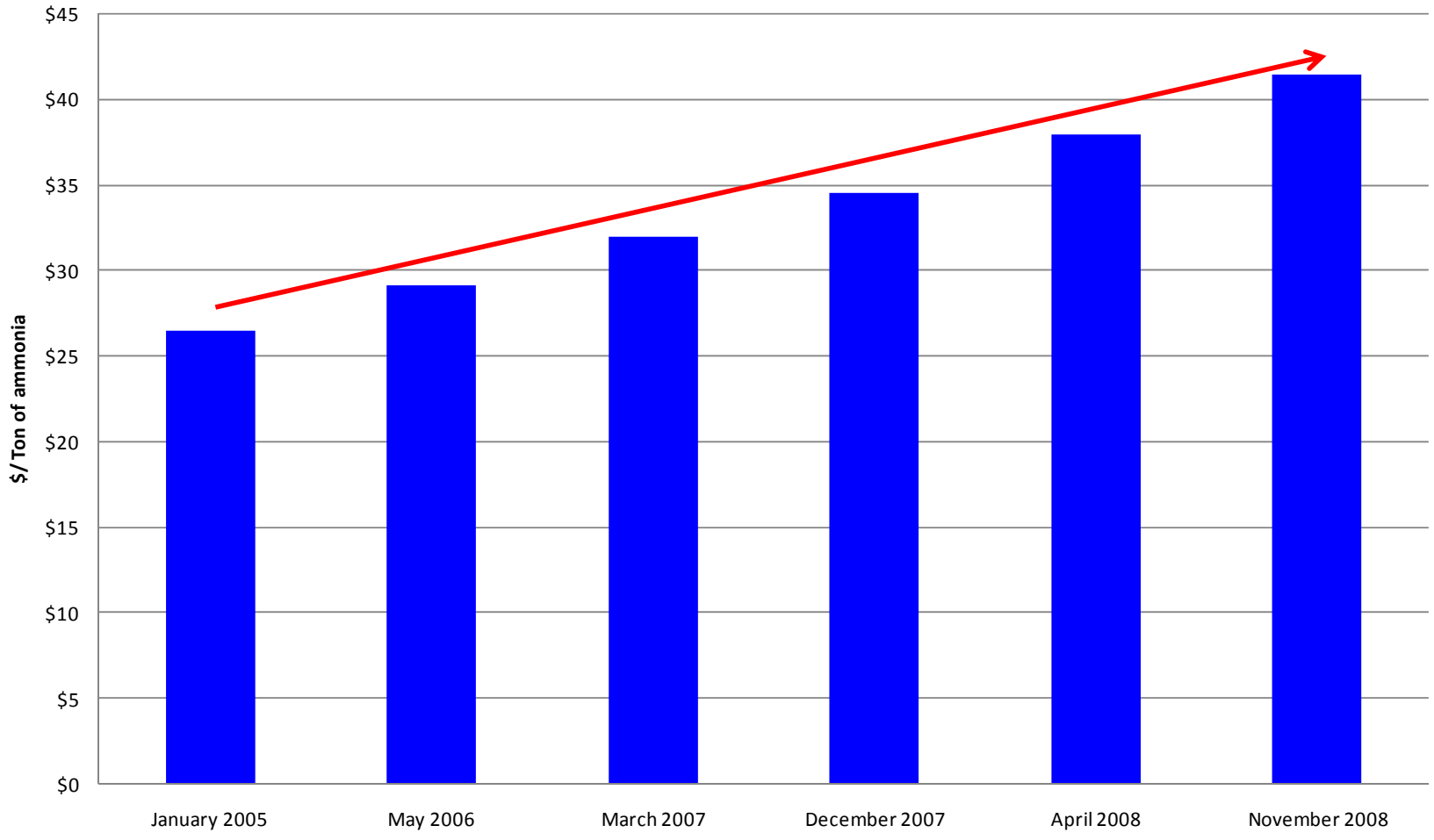
- Ocean Freight Rates
- Rail Rates, especially for ammonia
- Barge Rates
- Truck Rates

Ocean Freight Rates



Source: Overseas Marine Service (Baltic Exchange) and ICAP Shipping

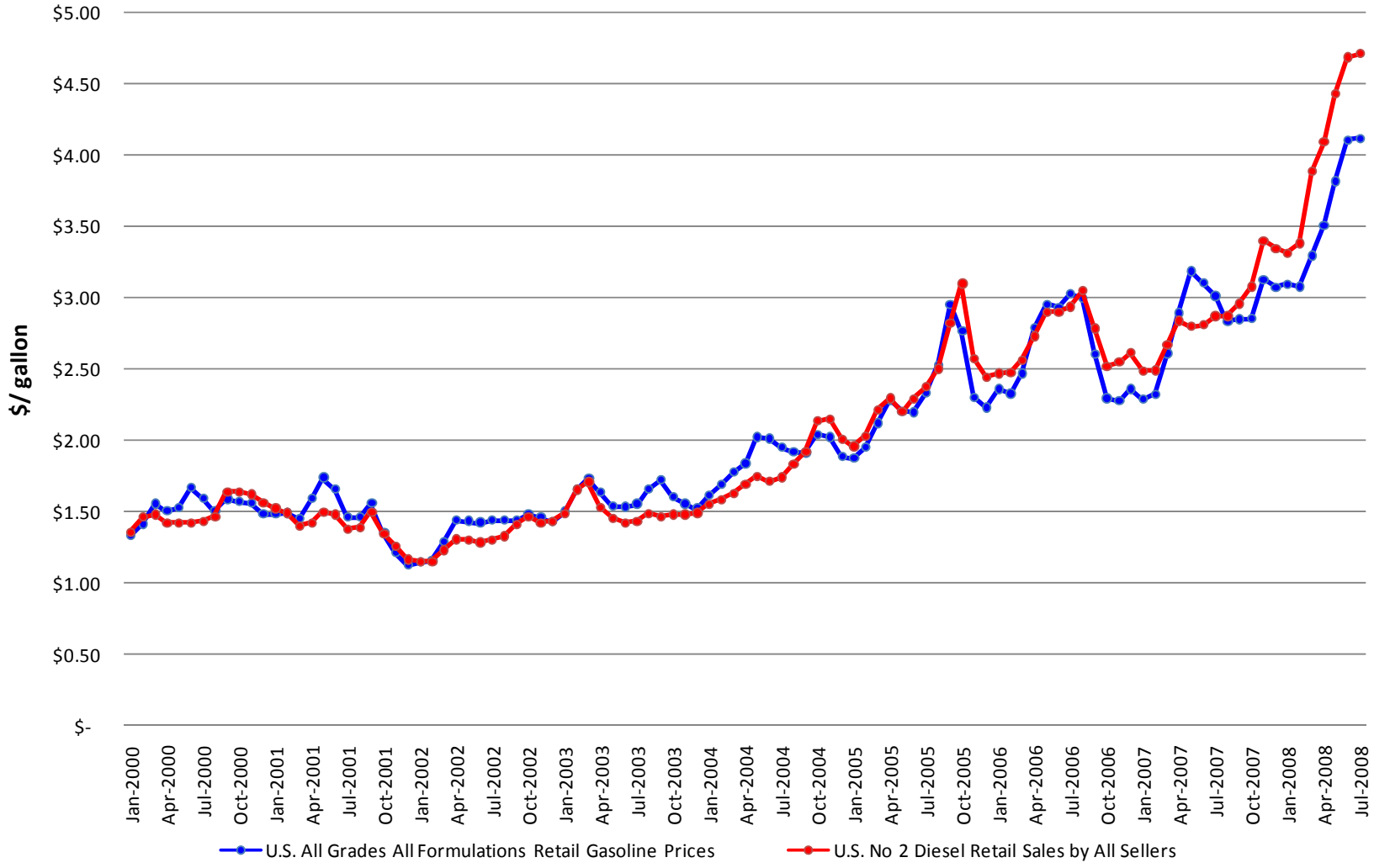
Rail Rates
Anhydrous Ammonia Tarrif Rates - BNSF



300 Mile Haul*

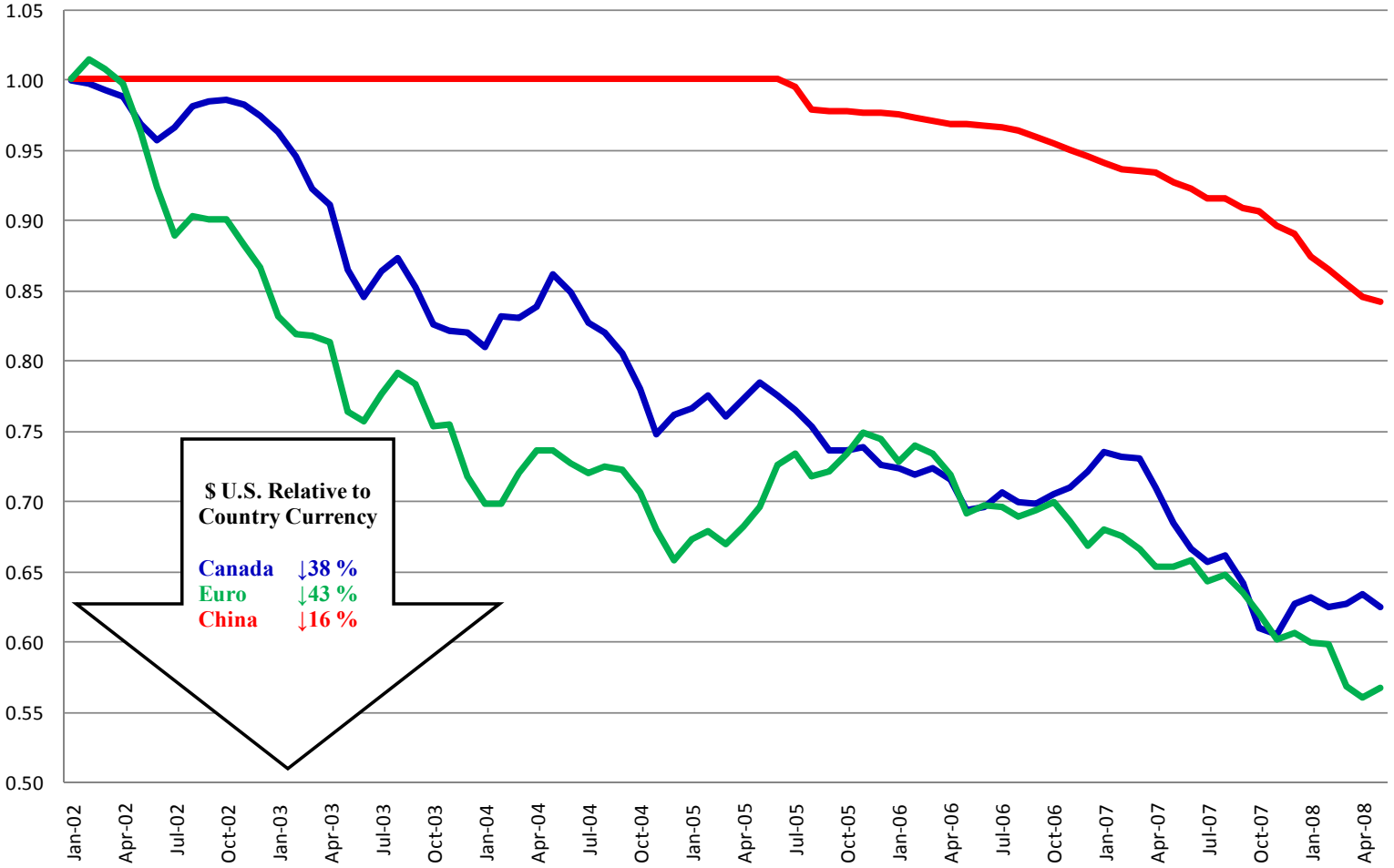
*Does not include fuel surcharge

Retail Gasoline and Diesel Prices through July 2008



Source: Energy Information Administration

Value of U.S. dollar, Jan. 2002 - May 2008



Source: Computed form data reported by the Federal Reserve Statistical Release

Canadian Exchange Rate Example

	January 2003	May 2008	Change
Exchange Rate: $ CAN/$ US	1.5410	0.998	- 35%
Price of Product X	$ 100.00	$ 100.00	0%
Receipts in $ CAN	$ CAN 154.10	$ CAN 99.80	- 35%
Price Rise in $ U.S. Necessary to Maintain Receipts in $ CAN:			
Price of Product X	$ 100.00	$ 154.41	+ 54%
Receipts in $ CAN	$ CAN 154.10	$ CAN 154.10	0%

The New York Times

THE FOOD CHAIN

Hoarding Nations Drive Food Costs Ever Higher

By KEITH BRADSHER and ANDREW MARTIN
Published: June 30, 2008

BANGKOK — At least 29 countries have sharply curbed food exports in recent months, to ensure that their own people have enough to eat, at affordable prices.

When it comes to rice, India, Vietnam, China and 11 other countries have limited or banned exports. Fifteen countries, including Pakistan and Bolivia, have capped or halted wheat exports. More than a dozen have limited corn exports. Kazakhstan has restricted exports of sunflower seeds.

The restrictions are making it harder for impoverished importing countries to afford the food they need. The export limits are forcing some of the most vulnerable people, those who rely on relief agencies, to go hungry.

“It’s obvious that these export restrictions fuel the fire of price increases,” said Pascal Lamy, the director general of the World Trade Organization.

Chinese Fertilizer Export Tariffs Increased and Extended

Material	Original Tariff Rate	Special Tariff Rate April 20 2008	Tariff rate April 20 - August 31 2008	Special Tariff Rate and Rate Extension	Tariff rate Sep.1 - Dec. 31 2008
	percent				
Ammonia	0	100	100	50	150
Urea	35	100	135	50	185
Ammonium Sulfate	0	100	100	0	100
Ammonium Nitrate	0	100	100	0	100
Potash	30	100	130	0	130
DAP	35	100	135	0	135
MAP	35	100	135	0	135
NPK	35	100	135	0	135

Source: The Chinese Finance Ministry.

May 12 earthquake: Sichuan Prov. urea & MAP production!

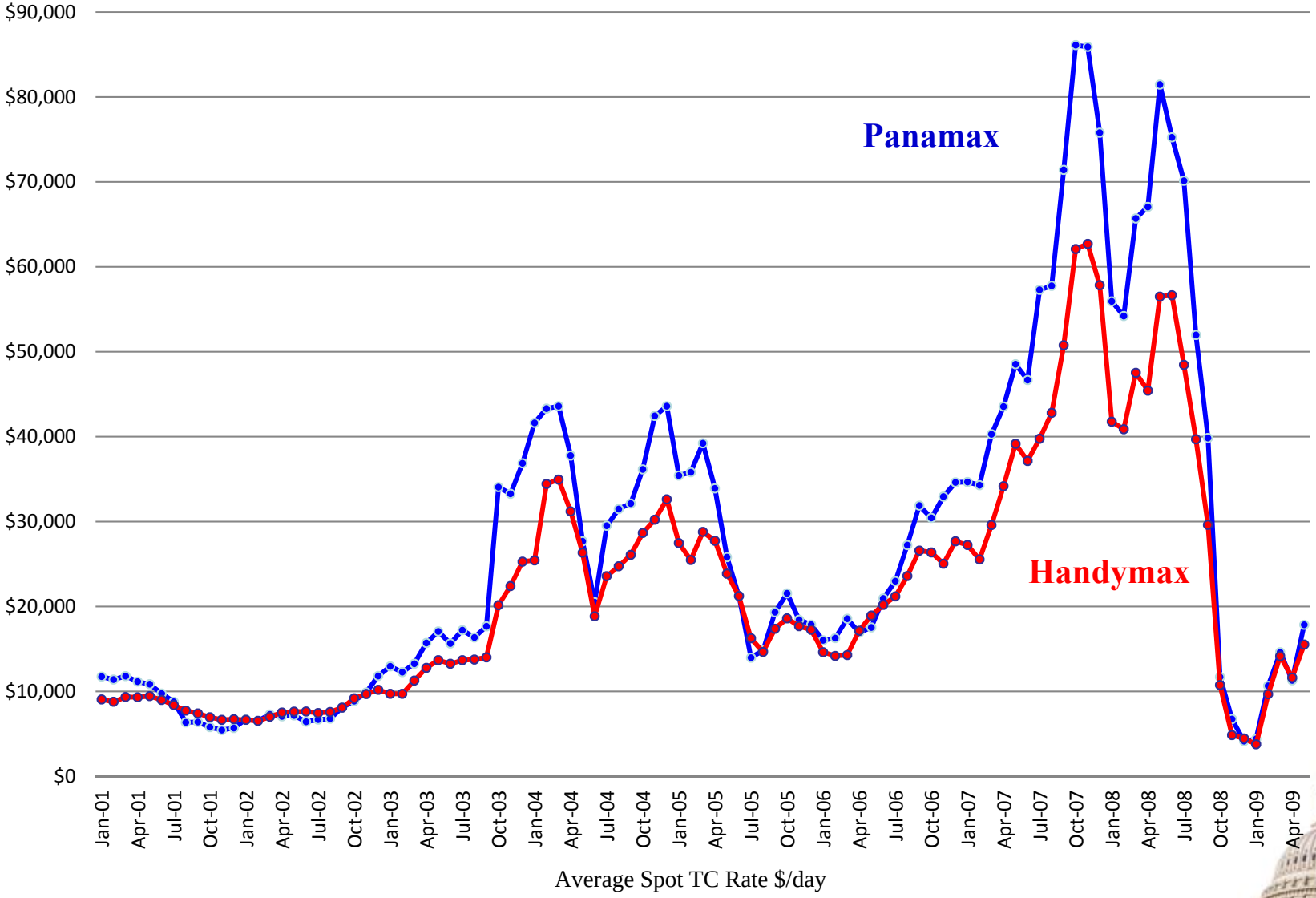
Recap: Factors Resulting in Record Fertilizer Prices

- Dramatic Increase in World Nutrient Demand
- More Recently, Rise in U.S. Nutrient Demand
- Decline In Domestic N Supply – Natural Gas prices!
  ➔ Which resulted in Increased U.S. Imports of Nitrogen
- Rising Energy Prices => Higher Production Costs
- Rising Raw Material Prices => Higher Production Costs
  ➔ **Tighter supplies of all nutrients!**
- Increased Shipping/Distribution Costs
  (ocean freight; rail; barge; truck)
- Falling Value of the U.S. Dollar
- Curb on food and fertilizer exports by selected countries

What's Changed – Supply Side

- Partial recovery in the value of the US Dollar
- Changing Shipping and Distribution Costs:
  1. Ocean freight rates have collapsed;
  2. Gasoline and diesel fuel prices have declined; but
  3. Rail rates to move ammonia remain high and are expected to continue to climb.
- P's of some raw material have declined – ammonia & sulfur
- Natural Gas P's have declined; June 2008 > $12 MMBtu; May 2009 < $4 MMBtu
- We see some of the curbs on food and fertilizer exports by selected countries being lowered or removed

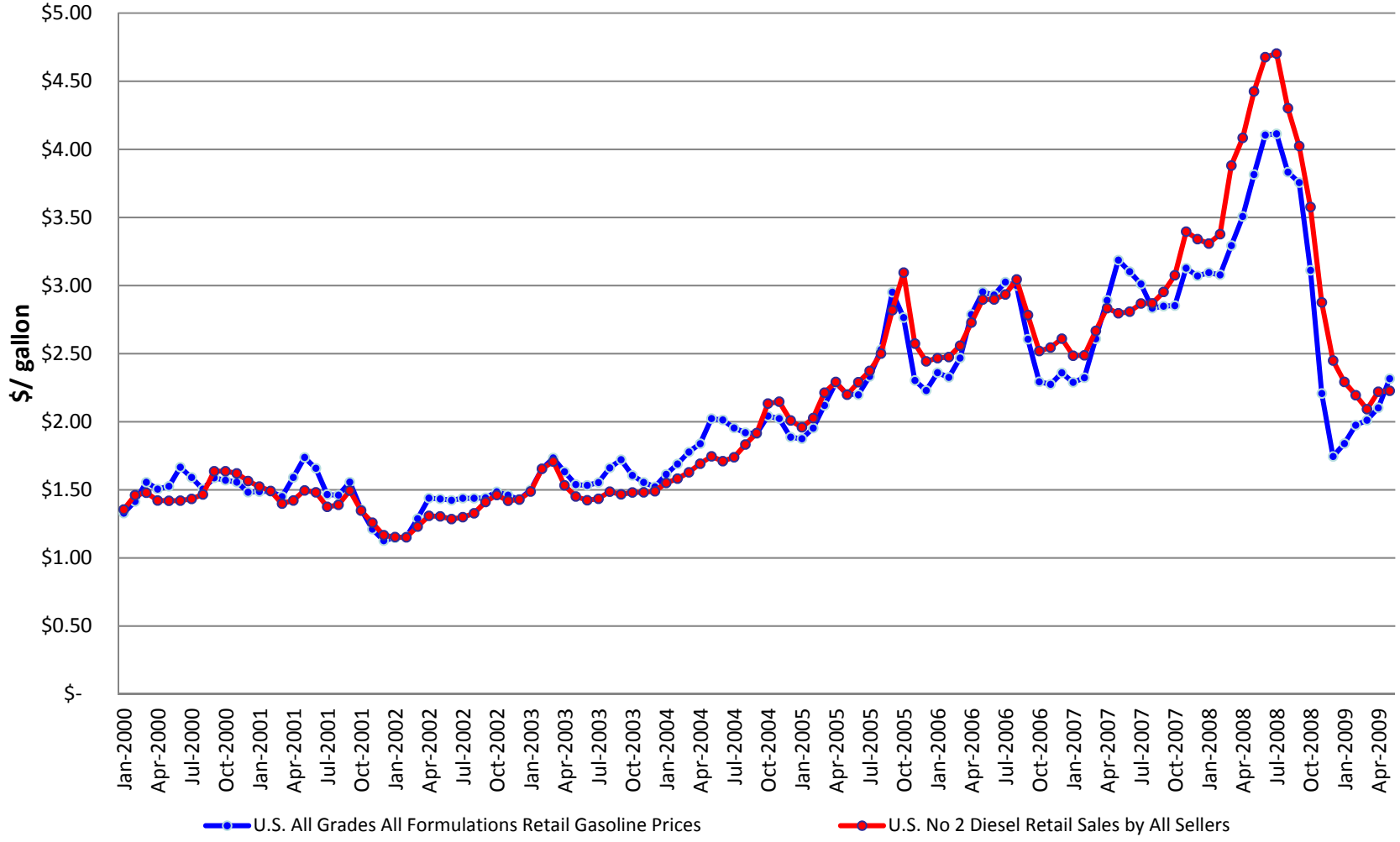
Ocean Freight Rates - through May 2009



Average Spot TC Rate $/day

Source: Overseas Marine Service (Baltic Exchange) and ICAP Shipping.

Retail Gas and Diesel Prices
2000 - May 2009



Source: Energy Information Administration

GREEN MARKETS ALERT - June 2, 2009

China Alters Export Regime

- The Chinese government announced on June 1 the elimination of all export duties on TSP until the end of the year. Urea will also have an extended period of lower export duties. The announcement modifies the export duty plan released November 2008. Under the original plan TSP exports would have been taxed at 110 percent February through May and 10 percent for the rest of the year. Today's announcement eliminates the duty on TSP for the rest of the year.

- The DAP export duty will remain at 10 percent for June and July as originally planned.

- Urea exports were scheduled to be taxed at 10 percent for only July and August. The government extended the lower-rate season to include September.

- Sources in Asia say the government has been concerned that growing stockpiles of phosphates, especially TSP, could cause local producers to shut down operations unless exports were encouraged.

- Likewise, urea stockpiles are building in the country with the specter of similar layoffs in the industry.

- Industry observers had expected some action on Chinese export duties. Some had speculated the period for reduced taxes on urea would be longer and that all phosphates could be shipped duty free for at least the third quarter.

- The move is expected to put more Chinese TSP and urea in play in the global market. Helm and Swiss Singapore have already nailed down deals for DAP shipments to India.

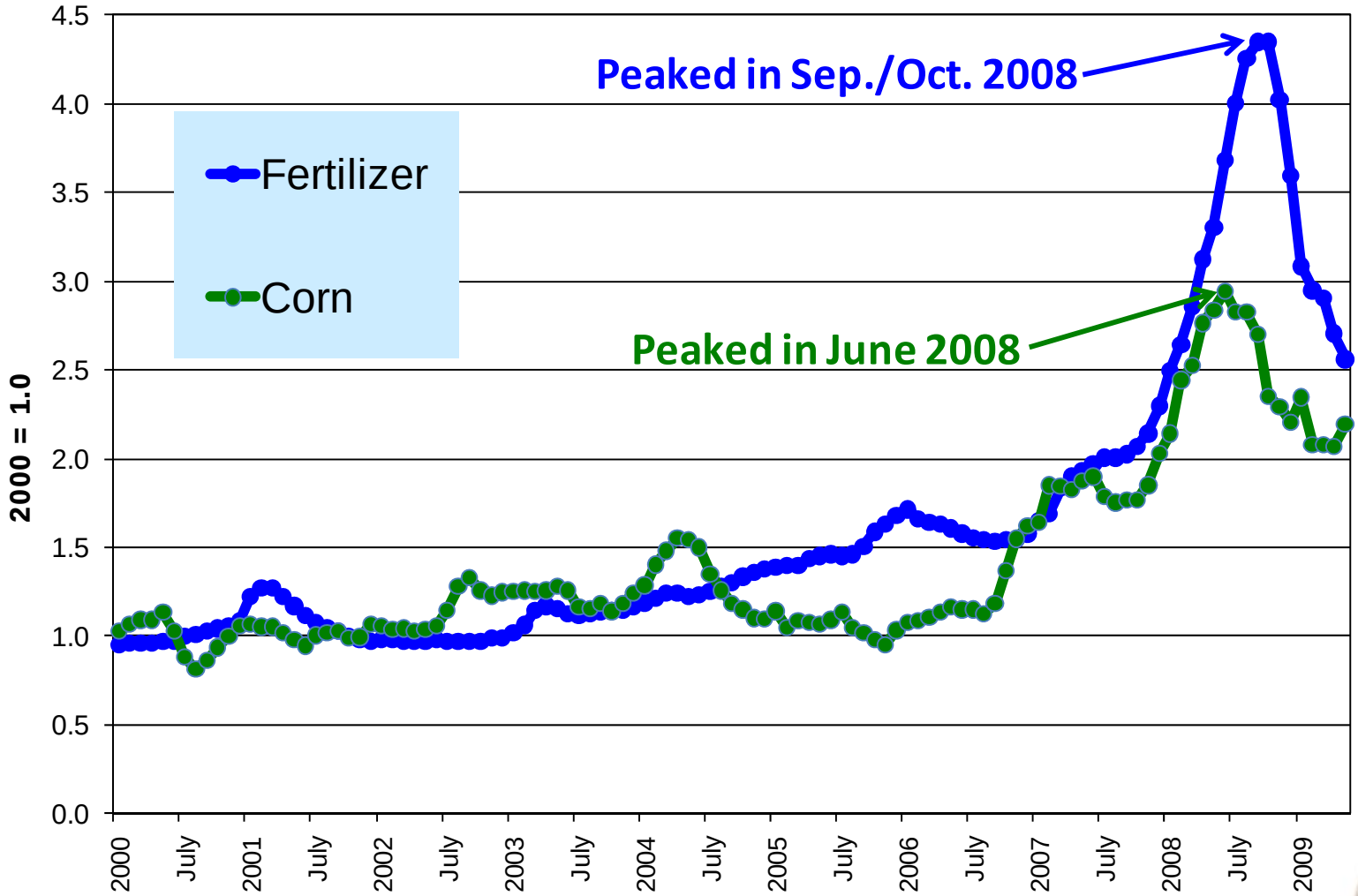
What's Changed – Demand Side

U.S. Crop and Fertilizer Price comparisons

Commodity	Price Change		
	April (08 vs. 07)	Nov. (08 vs. 07)	May (09 vs. 08)
Wheat	+ 104 %	- 15 %	- 32 %
Soybeans	+ 74 %	0 %	- 11 %
Fertilizer	+ 65 %	+ 88 %	- 23 %
Corn	+ 52 %	+ 24 %	- 23 %
Cotton	+ 31 %	- 7 %	- 27 %

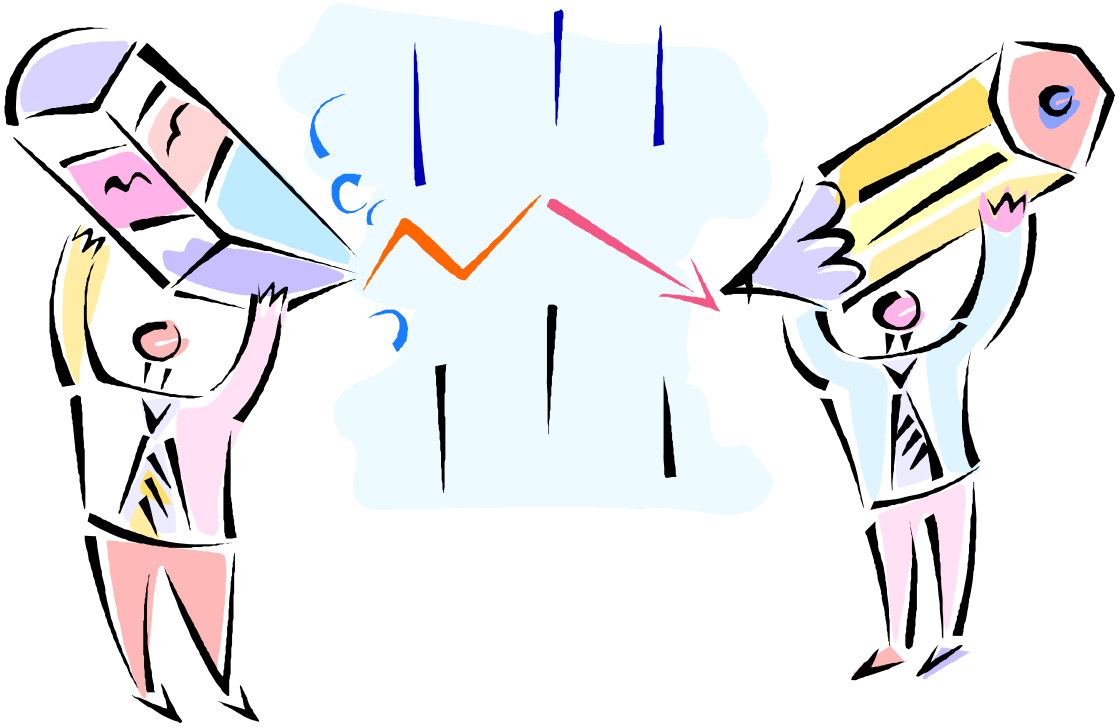
Source: Prices received (crops) and paid (fertilizer) by farmers, National Agricultural Statistics Service, USDA.

Index of Corn and Fertilizer Prices, Jan. 2000-May 2009

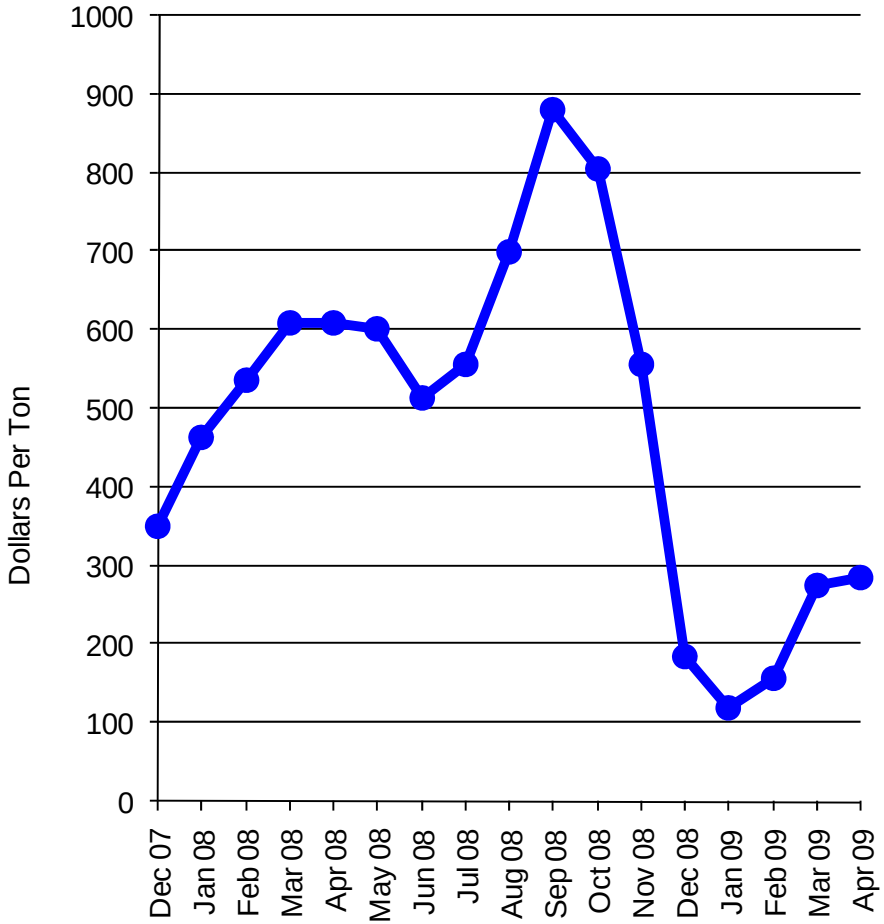


Source: Computed from data reported by the National Agricultural Statistics Service, USDA.

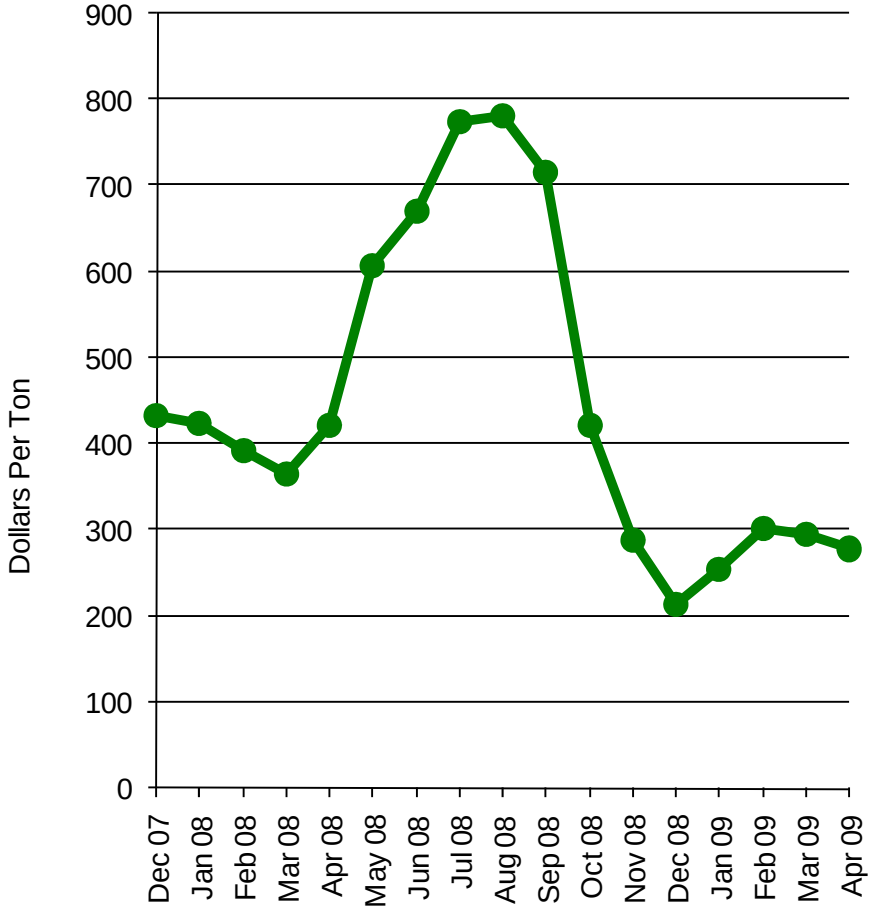
Recent Change in Fertilizer Prices



U.S. Ammonia Price, f.o.b. Gulf Coast

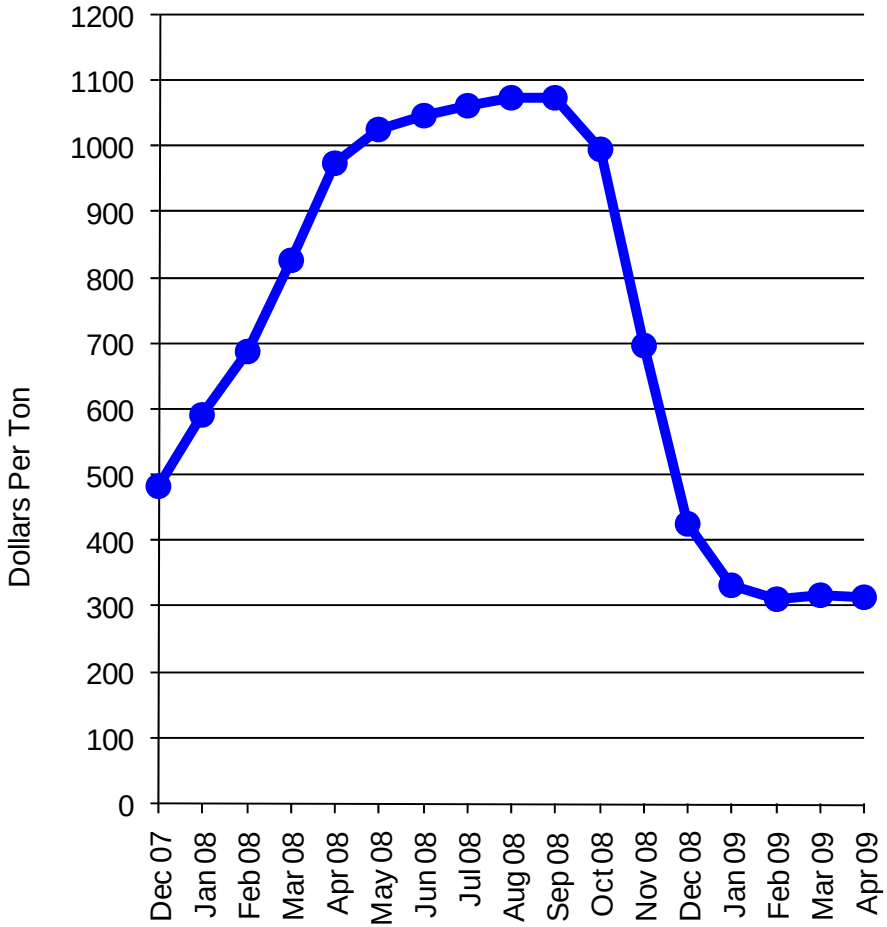


U.S. Urea Price, f.o.b. Gulf Coast

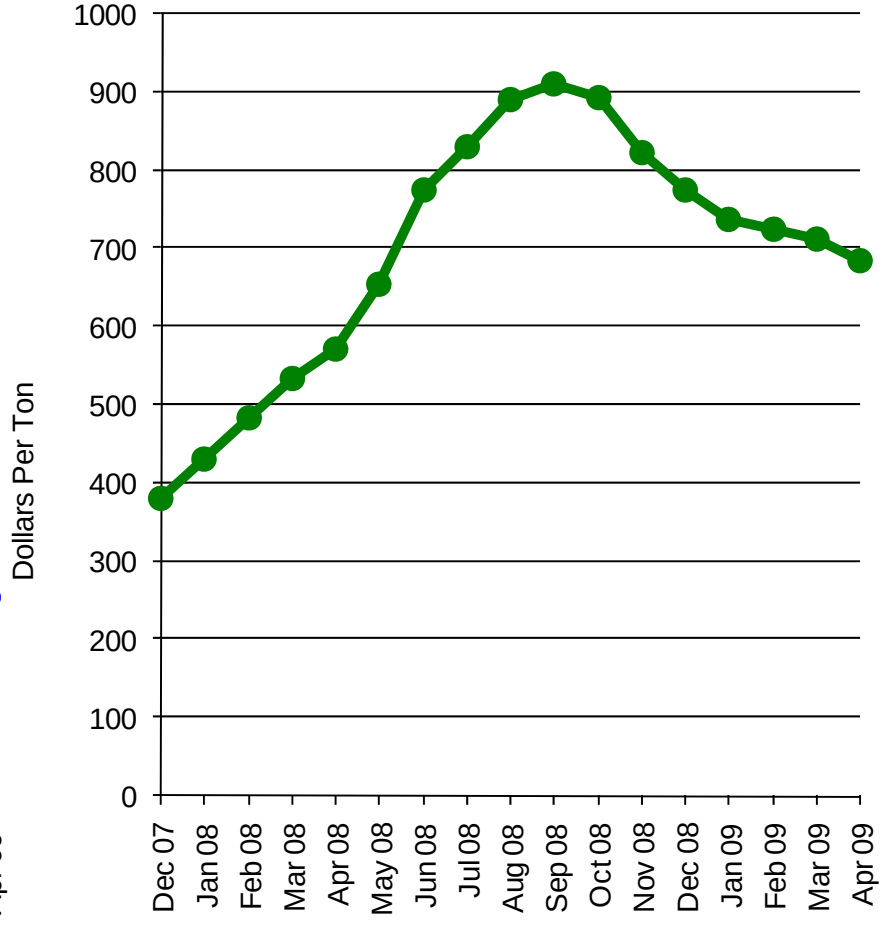


Average Monthly Wholesale Prices.
Source: Green Markets, published by Pike and Fischer.

U.S. DAP Price, f.o.b. Central Florida



Potash Price, f.o.b. Midwest

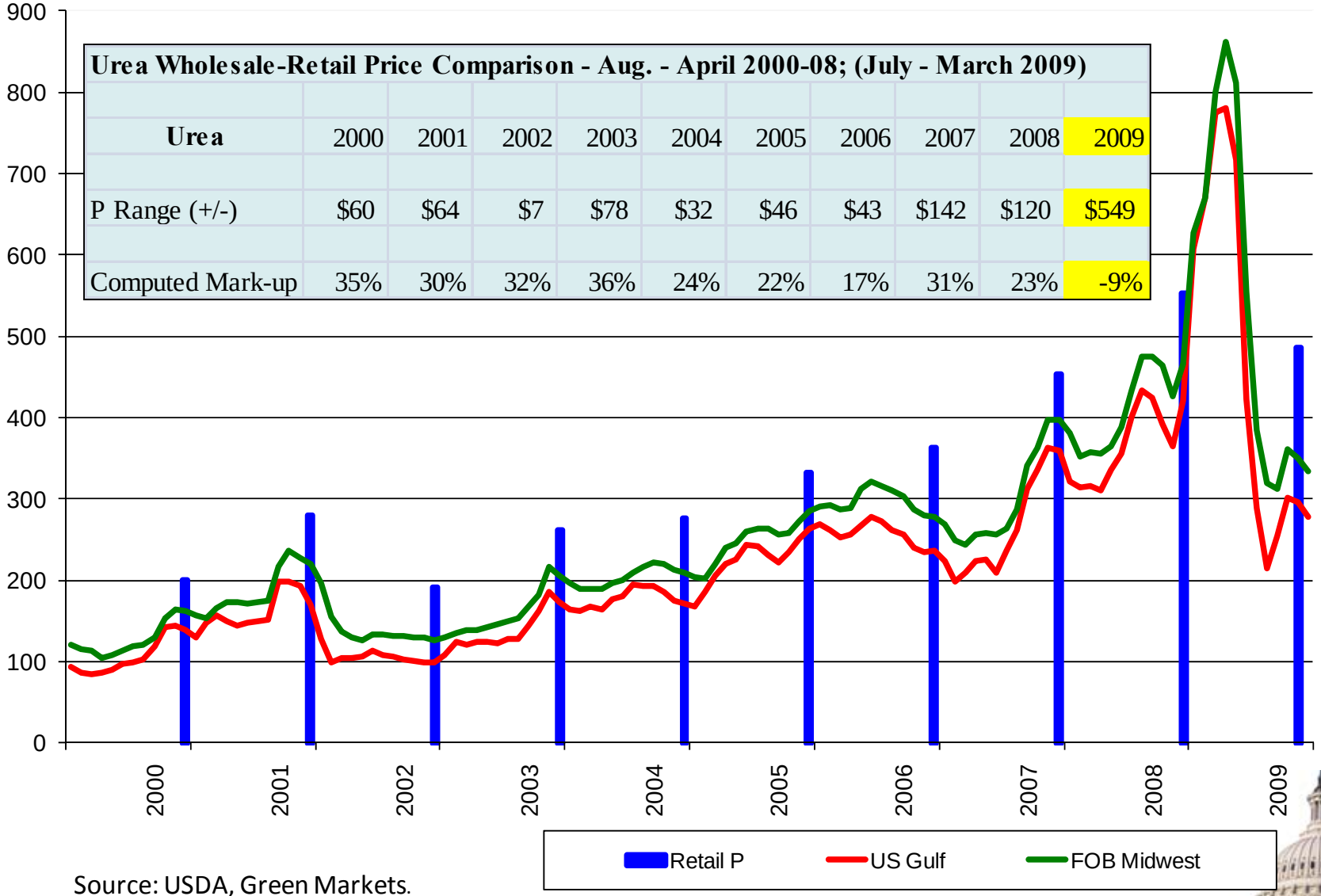


Average Monthly Wholesale Prices.
Source: Green Markets, published by Pike and Fischer.

Urea: Wholesale vs. Retail Prices

Urea Wholesale-Retail Price Comparison - Aug. - April 2000-08; (July - March 2009)

Urea	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
P Range (+/-)	$60	$64	$7	$78	$32	$46	$43	$142	$120	$549
Computed Mark-up	35%	30%	32%	36%	24%	22%	17%	31%	23%	-9%



Source: USDA, Green Markets.

Delayed/deferred purchases
grower – retail level

↓

Delayed/deferred purchases
retail – wholesale level

↓

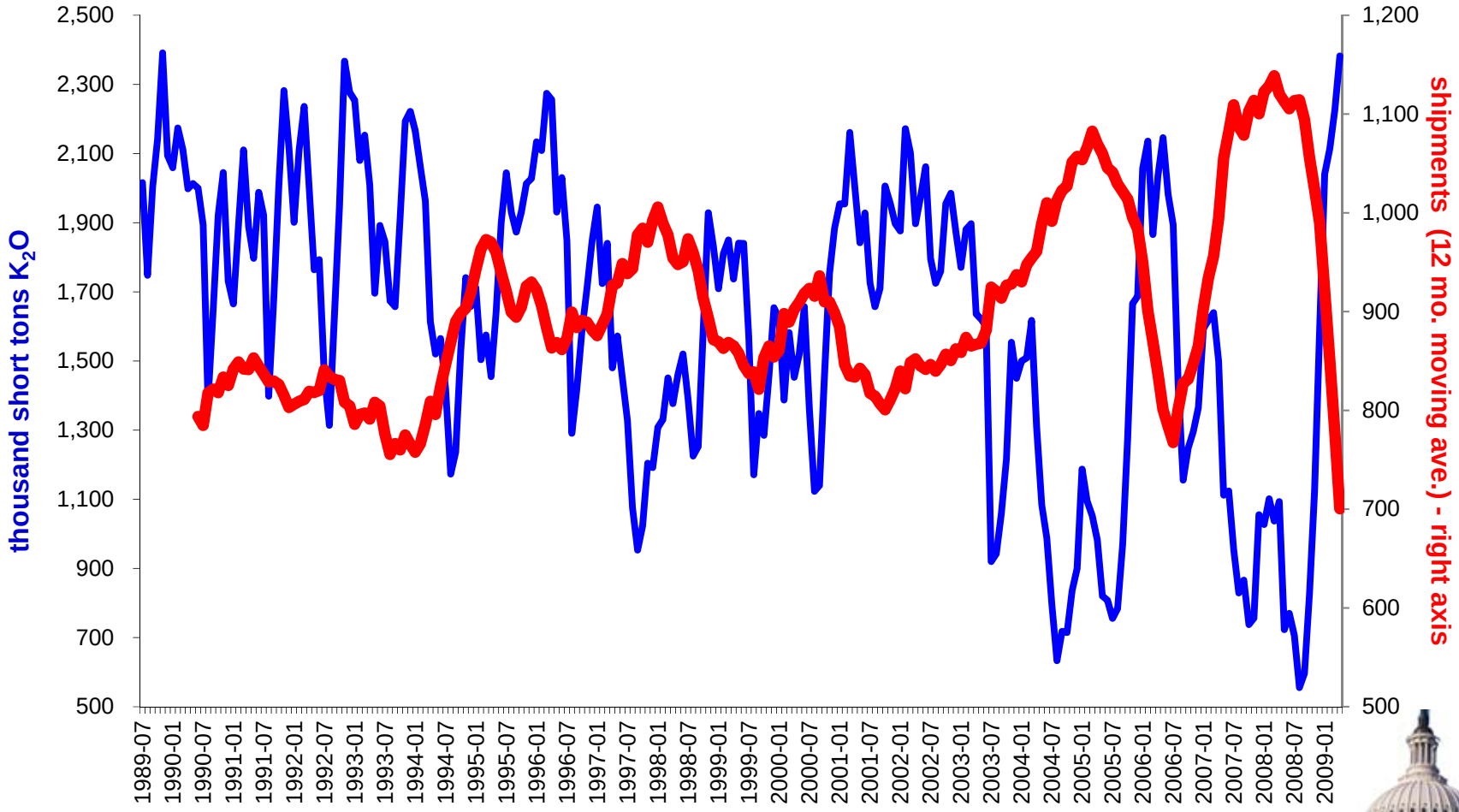
Fertilizer Inventories Build

↓

Producers Reduce Production

North American Potash Producers

Monthly Ending Inventory and Shipments, July 1989 - May 2009



Source: IPNI and TFI.

Fertilizer Producers Respond to Lower Demand in Short Run

- Capital Costs Remain High
- Capital More Difficult to Get Due to Economic Meltdown

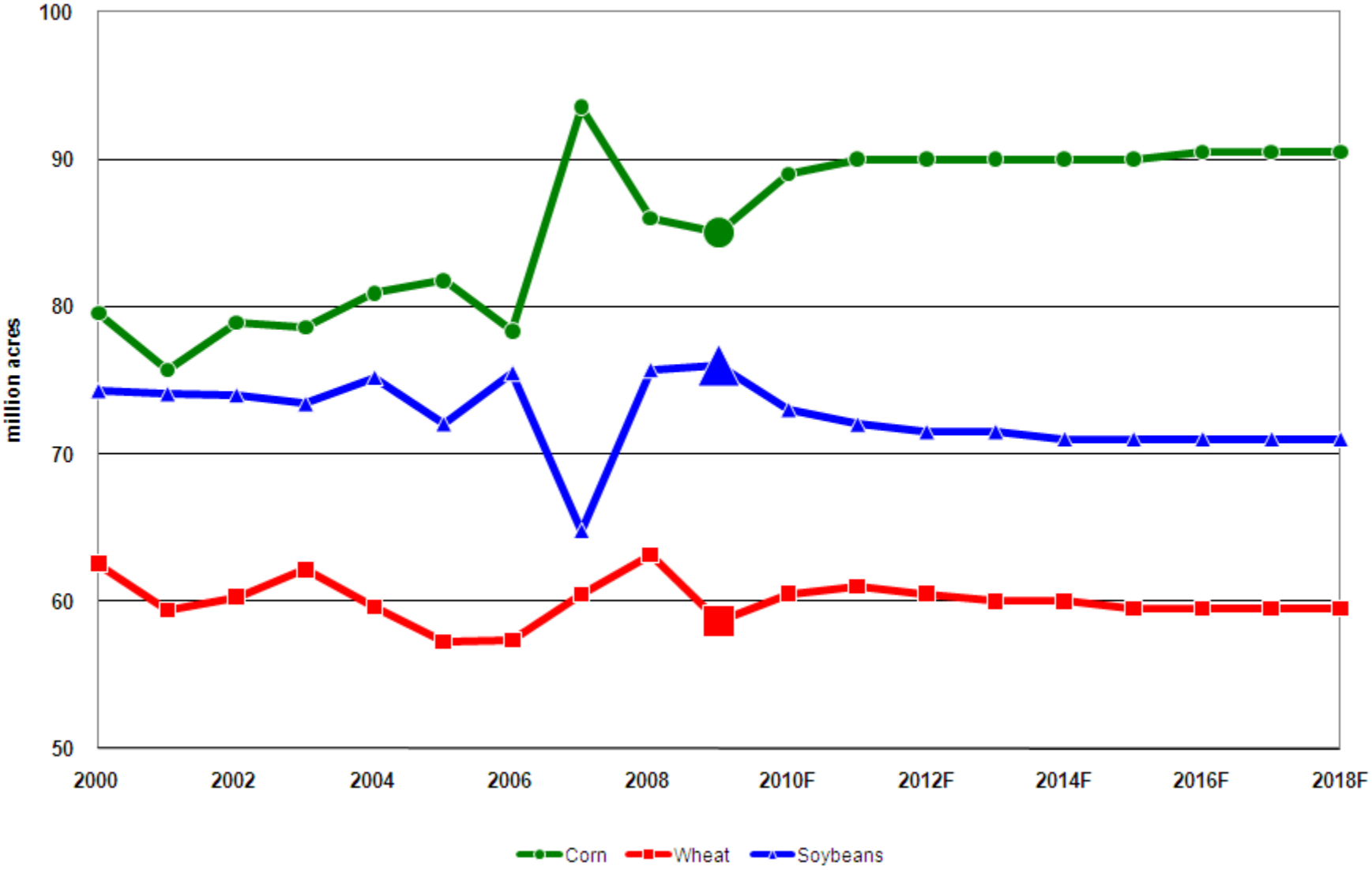
  ➔ Plant and Mine Expansions Delayed and/or Scrapped!

- Fertilizer Production Cutbacks and Shutdowns:
  - Nitrogen:
    - United States, Trinidad, Russia, Ukraine, Italy, Romania , Estonia, Libya, Turkey, Hungary, United Kingdom, Poland, and Germany
  - Phosphate:
    - Morocco, Russia, Tunisia, Lithuania, and the United States
  - Potash:
    - Russia, Germany and Canada

FERTILIZER DEMAND

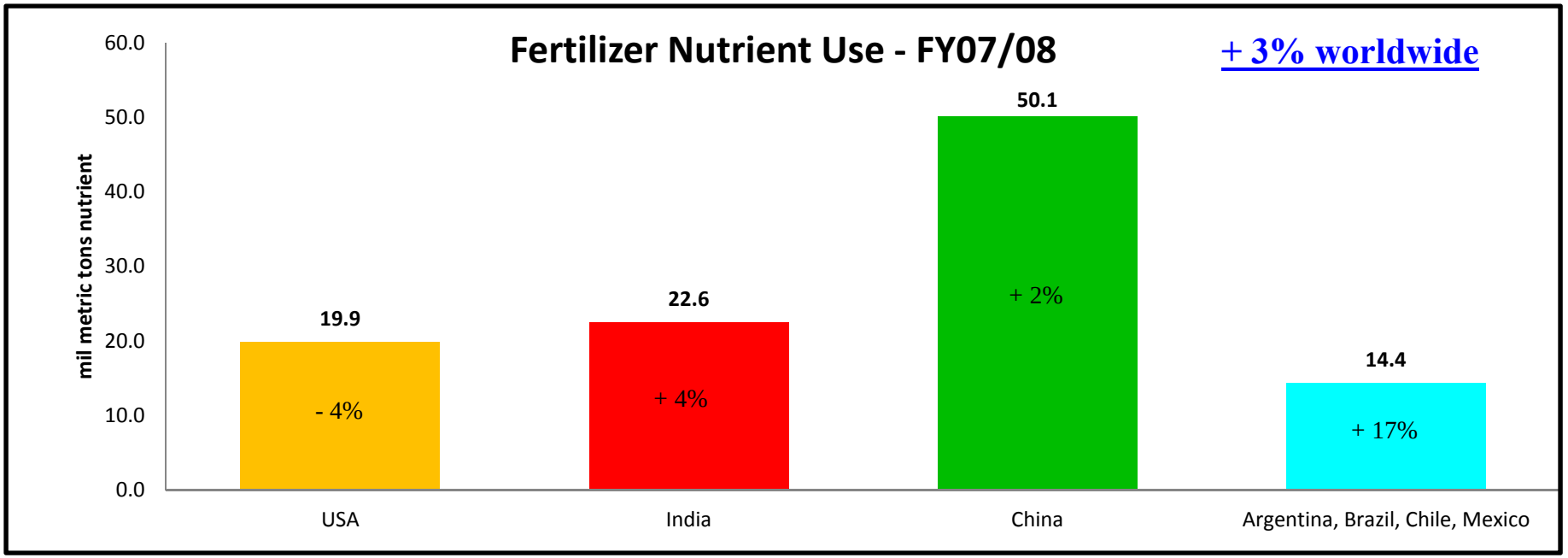
Where do we go from here?

U.S. Planted Acreage of Corn, Wheat, and Soybeans



Source: USDA.

Changing Fertilizer Demand Forecasts Worldwide



FY 08/09 Nutrient Use Estimate/Forecast				- 5% worldwide
	USA	**India**	**China**	**Argentina, Brazil, Chile & Mexico**
IFA - May 08	+ 4%	+ 4.3 %	+ 3.3%	+ 3.4%
IFA - Nov 08	- 1%	+ 3.8%	- 2%	-8%
Likely Scenario	**- 13 to 15%**	**+ 11 %**	**- 2 %**	**- 15% or more**

Source: IFA, TFI.

World Fertilizer Nutrient Demand

After declining in FY08/09,
World Fertilizer Demand Growth
Should Resume in FY09/10 (Up 3 - 4%?):

- **World grain stocks remain low**
- **80 + million new mouths to feed annually**
- **World GDP growth in 2009, 2010, 2011?**
- **Potash: NPK ratios – India and China**

Thank you!
Any questions?