PROCEEDINGS
OF THE
33rd ANNUAL MEETING
FERTILIZER INDUSTRY
ROUND TABLE
1983

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Tuesday, October 25, 1983

Morning Session
Moderators:

Harold D. Blenkhorn
Charles H. Davis

Introduction-Keynote Speaker

Gary D. Myers has been president of The Fertilizer Institute (TFI) since February 1983. He joined the Institute's staff as its director of administration in December 1969 and, during the course of his 13 years with the association, he advanced to the position of executive vice president before leaving in August 1982 to become president of the National Council of Farmer Cooperatives. Six months later he returned to the Institute to serve in his current position as the association's chief staff officer.

As Institute president, he serves as spokesman for the nation's fertilizer producers, manufacturers, retailers, brokers/traders and equipment manufacturers. He represents the nation's plant food industry before various governmental agencies and the U.S. Congress.

By voluntary membership, TFI counts more than 320 active member companies among its ranks, and is governed by a 39-member board. Nearly 400 member company representatives serve on the Institute's 12 action committees, which cover key areas of concern to industry and agriculture. Headquartered in Washington, D.C., the Institute's staff (of more than 30 individuals) is responsible for legislative, regulatory and technical matters, as well as information and public relations programs.

Immediately prior to joining the Institute in 1969, Myers had served as director of member services for the National Fertilizer Solutions Association in Peoria, Ill. He has also served as executive vice president for the Illinois Grain and Feed Association.

He is a 1966 graduate of Bradley University, Peoria, Ill. He was born and raised on a large grain farm in central Illinois.

Gary and his wife, Mary, have a son (Brad) and a daughter (Leigh), and make their home in Falls Church, Va.

Keynote Speaker

Gary Myers
President
The Fertilizer Institute

Outline

I. Mood of Industry
- Conversations indicate good fall, excellent spring
- Idled plants are up or gearing up
- Salespeople, retailers are busy.

II. Mood of Farmers
- Mother Nature & PIK teamed up to dramatically boost farm prices
- Growers are ready to plant to the fenceposts and ditches
- Cash flow is much improved; attitude is very good.

III. Overall Outlook
- Grain & fertilizer markets appear to be on leading edge of a 12 to 15-month rebound
- Companies and economists are predicting an 18 to 20 percent increase in fertilizer consumption—and I've heard nothing to disprove that projection.

IV. Long Term Stability
- Working with members to forge long-term farm policy
- PIK was painful but important lesson for the fertilizer industry
- We must have greater input and impact on U.S. ag policy
- New TFI Committee is setting a policy course:
  - — exports promotion/incentive
  - — reduced government role in price mechanisms
  - — encouraging Common Market to back away from supports, also

Outlook for Nitrogen

J. W. Brown
Managing Director
Canadian Fertilizer Institute

The nitrogen fertilizer industry is currently experiencing one of its deepest cyclical downturns worldwide. Economic weakness, excessive supplies

of nutrients, plant closures, record crop production with resulting high grain inventories and low commodity prices, the U.S. PIK program with its greatly reduced crop acreage and the inability of many developing countries to finance purchases and generate exchange earnings and the high value of the U.S. dollar relative to other currencies are all contributing factors to a dismal year.

The last two years have been difficult for world producers and traders in nitrogen fertilizers. World production and consumption for total nitrogen in 1982 actually showed a decline and 1983 will probably be little if any better. As a result, world nitrogen prices have shown a continuous decline, many plants based on high cost feedstock both in the U.S. and abroad have been forced to close.

Changing World Supply-Demand Picture

Western Europe, traditionally a net exporter of nitrogen, became a major net importer of nitrogen fertilizer in 1982. The cost/price squeeze on production of anhydrous ammonia in Western Europe in 1982 led to a reduction in ammonia output of about 12%.

Japan and Korea were likewise caught in the cost/price squeeze on ammonia production. As a result, they reduced exports to less than half of what they had done in 1980. Japan reduced production from 2.1 million nutrient tonnes in 1980 to 1.7 million tonnes in 1982. Exports declined from 700,000 tonnes nitrogen in 1980 to less than 500,000 tonnes in 1982. Korea reduced production from over 1 million tonnes nitrogen in ammonia in 1980 to about 500,000 tonnes in 1982.

India, in 1982 and continuing into 1983, reduced imports of nitrogen by close to half a million nutrient tonnes. India's production, however, showed a remarkable increase during the past three years. In 1982, ammonia production was 62% higher than 1980.

Pakistan and Bangladesh showed the same general trends as India with production from their own plants increasing more rapidly than consumption.

Brazil has reduced its imports significantly in 1982–83. Part of the reduction was due to increased domestic production. However, a significant part of the decline in imports was due to internal economic problems which has resulted in a drop in nitrogen fertilizer consumption of one-third between 1981 and 1982 and probably a further decline this year.

Countries with Increased Exports

Mexican ammonia production has increased dramatically from 1980 to 1982, from 1.5 million nutrient tonnes to over 2 million nutrient tonnes. Consumption has increased but not as the same pace at production.

Eastern Europe and the U.S.S.R. are taking an increasing share of total world traded nitrogen markets. Consumption within this region has grown from 10.8 million tonnes of nitrogen in 1975 to 13.5 million tonnes in 1982. Exports of nitrogen in the same period have increased from 1.7 million tonnes to 4.5 million tonnes. In 1982, the Eastern Bloc countries supplied 25% of the world nitrogen trade.

China's production of fertilizer nitrogen in 1982 of 10.1 million nutrient tonnes was slightly below the previous year. Consumption, however, was down 584 thousand nutrient tonnes with imports down 423 thousand nutrient tonnes.

U.S. Situation

In 1983 fertilizer year, ammonia production of approximately 13.8 million tons was down 22% from the previous year; the lowest level since 1970. This reduced supply came about due to a 15% to 16% reduction in domestic fertilizer consumption (1.8 million tones N) and an 18% reduction in nitrogen exports (460 thousand tons N). In total fertilizer nitrogen demand for domestic consumption and exports declined by 2.2 million tons N or 2.7 million tons ammonia equivalent. Imports, on the other hand, increased by 4% (422.3 thousand tons N) or 160 thousand tons ammonia equivalent.

Canada

Canadian production of anhydrous ammonia increased 3% in fertilizer year 1983 to 2.66 million product tonnes. Domestic consumption increased 5% to slightly more than 1 million tonnes while exports, mainly to the U.S. market, increased 3% to 995 thousand nutrient tonnes.

World Outlook 1983/84

World consumption of fertilizer nitrogen, after two flat years, is forecast to increase by 3.8% in 1984 or 2.36 million nutrient tonnes. A reduction in carryover grain and oilseed inventories with improved prices are the principal reasons for the projected recovery.

U.S. Outlook 1983/84

Demand

In contrast to the two previous years where fertilizer nitrogen consumption declined by 7% and 16% respectively, prospects for increased nitrogen consumption appear particularly bullish at this time. Agriculture demand for nitrogen will increase in the 18–20% range during the current fertilizer year. Improved commodity prices, created by the drought of the past summer, will lower carryover inventories of corn and soybeans to the lowest levels since the early

seventies. Planted corn acreage is expected to rebound from 60 million acres in 1983 to approximately 84 million acres in 1984.

Crop prices across the board have improved dramatically—much faster than nitrogen fertilizer prices. As a result, it takes less bushels of almost any crop to buy a ton of nitrogen fertilizer than at any time since the early seventies.

The corn-nitrogen price ratio is a good example. In the summer of 1982, it took over 100 bushels of corn to buy a ton of ammonia or urea. With changing prices on corn and nitrogen, by August of this year it had changed to 64 bushels. Since August the ratio has improved even further. This ratio now is significantly better than at any time since the early 1970's. The same is true for other crops.

Therefore, the U.S. nitrogen industry can well expect a return on the consumption levels of 1982 or above.

Exports

U.S. exports of nitrogen declined by 18% from 1982 to 1983 or about 460 thousand nutrient tons. The decline was due in most part to greatly reduced shipments of ammonia (−44%) and urea (−25%) while nitrogen exports in D.A.P. and M.A.P. were above the previous year. Increased demand for D.A.P. and M.A.P. will increase the nitrogen moving to international markets during the current fertilizer year whereas ammonia and urea exports are likely to remain at current levels due to low world prices and stepped-up demand domestically.

Supply

In 1983, U.S. ammonia production was the smallest since 1970 (13.8 million tons contrasted with 17.7 million tons in 1982). This sharply reduced output came about due to extended plant turnarounds and permanent and temporary plant shut downs. Natural gas costs going into ammonia production and other down stream products exceeeded the selling price for many producers. The net result was that operating levels as reported by TFI were at the lowest level of the past ten years. We really cannot expect a large increase in this area until ammonia and urea prices climb substantially above current levels.

The question has been asked why some of the plants that are currently closed do not re-open in consideration of the anticipated higher demand this year. It takes only a brief look at the average production costs of ammonia compared to the current average sales price or anticipated price next Spring to provide the answer. The recent TFI ammonia cost survey showed that 38% of the producing plants, producing 31% of the volume, have weighted average gas costs of $3.90 per million BTU, and a weighted average production cost of $173 per ton. Ammonia and urea prices will have to climb well above current levels before these plants will come back on stream. Some plants have renegotiated their gas contracts and are coming back into production but ammonia production will not likely reach the levels of 1981 and 1982.

Imports

Imports of fertilizer nitrogen increased by 4% in 1983 due entirely to a 72% increase in urea imports. Ammonia imports were down slightly (−4%) from the previous year. The current world glut in urea has led to a prolonged period of very depressed prices which may run well into the future. An anticipated pick up in world nitrogen demand in 1984 will tighten the supply and should strengthen prices.

U.S. ammonia imports which have been running at approximately 2.24 million tons in 1980–82 dropped in 1983 to 2.14 million tons with most of the decrease originating in the U.S.S.R. Imports from the U.S.S.R. have dropped from a peak of 1.1 million tons in 1981 to 474 thousand tons in 1983. This is a significant trend. U.S. ammonia imports are increasingly being sourced from Western Hemisphere countries—Canada, Mexico, Trinidad, and Venezuela. We can expect this supply trend to continue.

U.S. imports of nitrogen could reach the 2.8 million nutrient tons level during the present fertilizer year. Some of these increased imports are likely to originate in Canada for both ammonia and urea. Two new world-scale ammonia plants in Canada, with combined annual capacity of over 900 thousand short tons of ammonia and 880 thousand short tons of urea commenced production in the second quarter of 1983. If economics permit, the combined output of these two units could make available an additional 500 thousand tonnes of nitrogen for export markets in 1983/84. With the start-up of a new urea plant in Trinidad later this year, more product will be available to the U.S. market from this source.

Summary

The 1982/83 year was the second consecutive year of declining nitrogen production, consumption, and exports for the U.S. As a result of the Payment in Kind (PIK) program, agricultural consumption in the U.S. plummeted in 1982/83. More than 50 million acres of land was withheld from agricultural production in 1983. Corn acreage planted alone fell from 82 million level in 1982 to 60 million in 1983.

For the first time in two years, the dominant factors affecting nitrogen consumption—acreage, commodity prices, and farm income—are forecast to make a strong recovery in the 1983/84 fertilizer year.

The summer drought significantly reduced yield expectation for corn, soybeans, and other Spring planted crops. Poor yields and the acreage with-

drawn from produciton due to PIK, particularly for corn, will reduce the excess grain inventories, excluding wheat, that have plagued agriculture for the past two years. Commodity prices have strengthened this summer in response to reduced supplies, and the stronger prices will put acreage back into production in 1984.

Agricultural demand and prices are forecast to increase throughout the current fertilizer year. The U.S. nitrogenous fertilizer industry is experiencing some relief on gas costs thus reducing the cost of producing ammonia and its derivatives. Urea imports are expected to decline in 1983/84 relative to prior years' levels. It is believed that with the world nitrogen market recovery, world urea stocks will be reduced and world trade will increase in traditional markets.

Total nitrogen demand is expected to outstrip available supplies in the current year. Ending inventories are expected to decline with nitrogen spot prices strengthening especially in the second quarter of 1984. In total, 1983/84 has all the signs for a much improved year.

WORLD FERTILIZER STATISTICS
(Million Metric Tonnes of N)

	1980–81	1981–82	% Change
Production	62.60	62.04	– 0.9
Imports	13.16	12.46	– 4.4
Exports	13.15	11.60	– 11.8
Consumption	60.60	60.44	– 0.3

U.S. EXPORTS AND IMPORTS OF NITROGEN
1970 TO 1983 FERTILIZER YEARS
(Nitrogen Short Tons)

	Imports	Exports
1970–71	929	1,077
1971–72	843	1,032
1972–73	882	1,508
1973–74	1,068	1,269
1974–75	1,198	1,115
1975–76	1,218	1,239
1976–77	1,842	1,251
1977–78	1,857	1,798
1978–79	2,240	2,467
1979–80	2,565	2,642
1980–81	2,454	3,088
1981–82	2,531	2,498
1982–83	2,654	2,037

U.S. NITROGEN—EXPORTS AND IMPORTS—JULY TO JUNE
1982 vs 1983

	THOUSANDS OF SHORT TONS (N)		
	1982	1983	% Change
Exports	2,497.6	2,037.3	– 18
Imports	2,531.2	2,653.5	+ 1

U.S. ANHYDROUS AMMONIA EXPORTS & IMPORTS DURING FERTILIZER YEARS 1974–1983
(Thousands of Short Tons)

	Exports	Imports
1974	645	438
1975	361	598
1976	326	767
1977	546	960
1978	480	1,054
1979	554	1,735
1980	776	2,219
1981	816	2,161
1982	760	2,244
1983	428	2,144

U.S. IMPORTS OF ANHYDROUS AMMONIA BY COUNTRY—JULY TO JUNE
1982 vs 1983

	THOUSANDS OF SHORT TONS	
	1982	1983
Canada	559.5	636.6
Mexico	608.6	528.2
Trinadad Tobago	332.8	378.1
Soviet Union	733.1	474.1
Others	9.5	127.2
Total	2,243.5	2,144.2

Source: U.S.D.C.

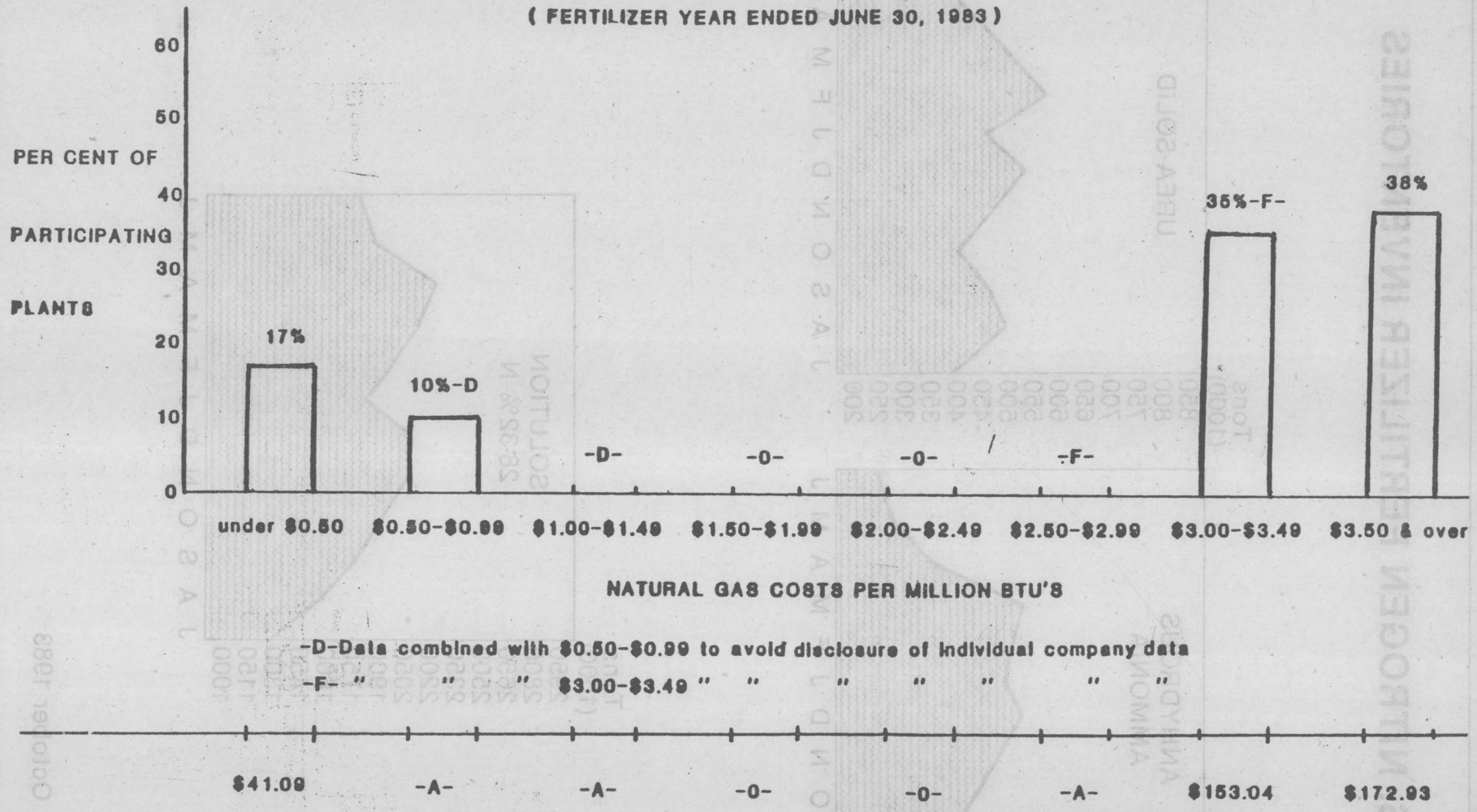
U.S. IMPORTS UREA—JULY TO JUNE
1982 vs 1983

	THOUSANDS OF SHORT TONS	
	1982	1983
Canada	583.8	720.9
Netherlands	208.8	269.0
Venezuela	12.7	122.5
Soviet Union	35.4	261.7
Quator	42.5	69.5
Romania	0	74.9
Others	30.8	107.7
Total	952.4	1,635.9

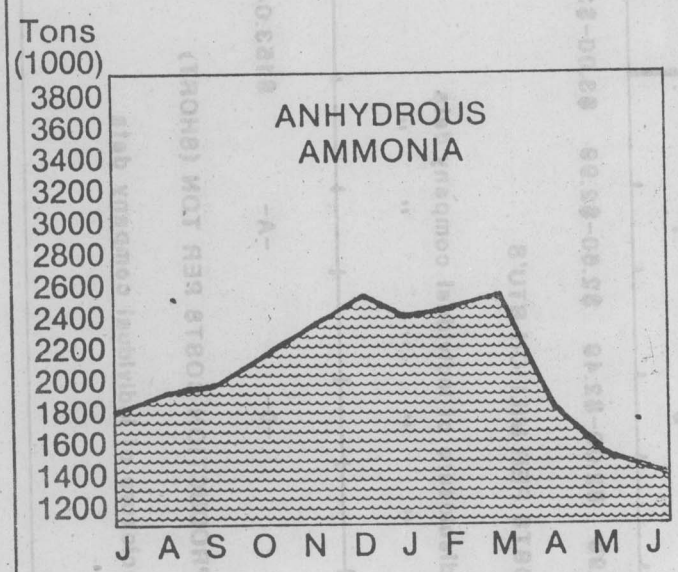
Source: U.S.D.C.

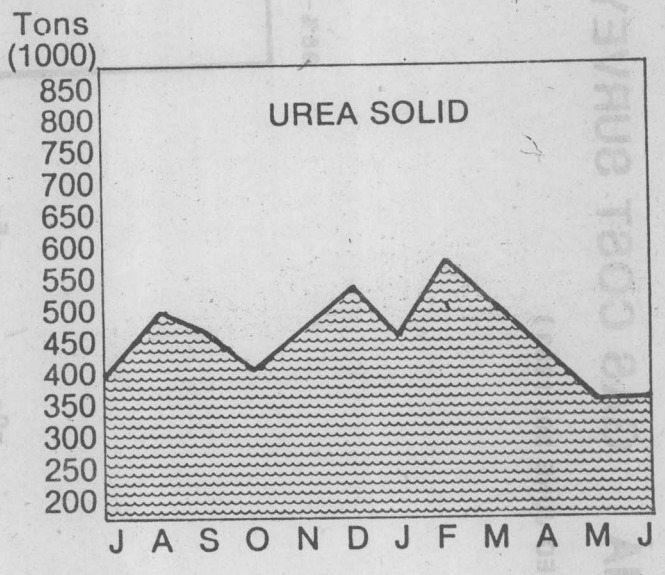
U.S. ANHYDROUS AMMONIA GAS COST SURVEY

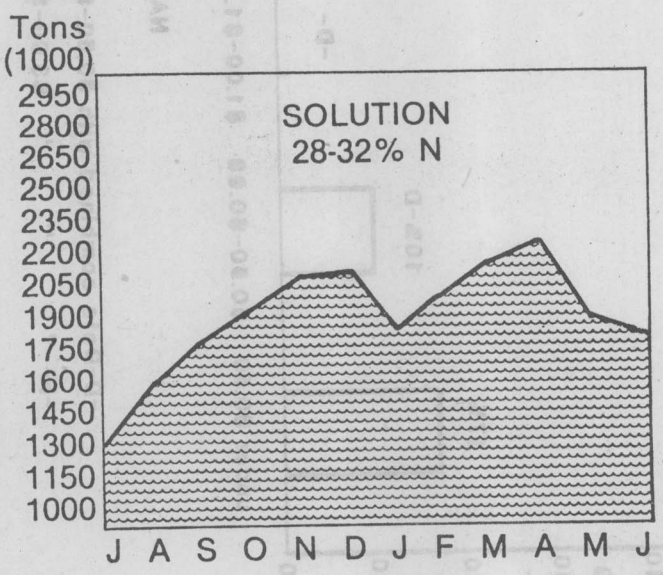
(FERTILIZER YEAR ENDED JUNE 30, 1983)



U.S. NITROGEN FERTILIZER INVENTORIES







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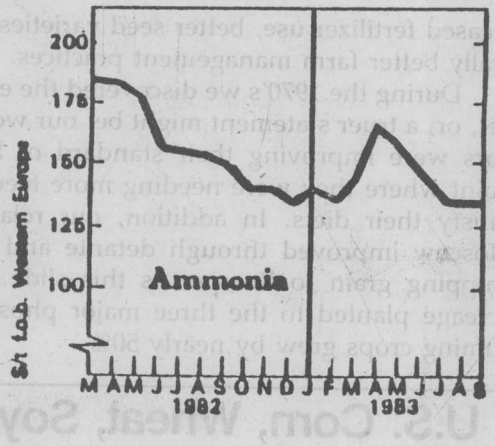
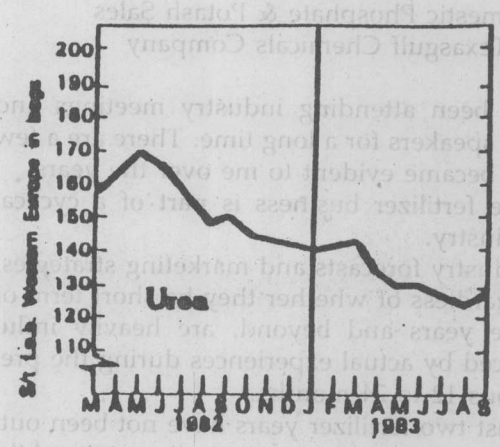
INTERNATIONAL PRICE TRENDS

AMMONIA and UREA

(as at September 20, 1983)





Source – FERTILIZER INTERNATIONAL, Number 172, October 1983

U.S. NITROGEN SUPPLY-DEMAND BALANCE 1983 AND PROJECTED 1984 (Thousands of Short Tons)

	1983	1984
Domestic Production	11,401	13,499
Producers Beginning Inv.	2,056	1,827
Imports	2,654	2,833
Total Agricultural Cons.	9,279	11,286
Exports	2,037	2,173
Producers Ending Inv.	1,827	1,572
Industrial Use Conversion and Down Stream Losses	2,968	3,128

CANADIAN NITROGEN SUPPLY-DEMAND BALANCE 1983 AND PROJECTED 1984 (Thousands of Short Tons)

	1983	1984
Domestic Production	2,405	3,000
Producers Beginning Inv.	111	182
Imports	160	160
Total Agricultural Cons.	1,122	1,210
Exports	1,097	1,500
Producers Ending Inv.	182	180
Industrial Use Conversion and Down Stream Losses	456	456

U.S. COMMODITY PRICES 1983/84	
Corn	+44%
Cotton	+22%
Soybean	+60%
Wheat	+10%

Source: Chase Econometrics

Outlook for Phosphates

Ray W. Rowan
Vice President
Domestic Phosphate & Potash Sales
Texasgulf Chemicals Company

I have been attending industry meetings and listening to speakers for a long time. There are a few things that became evident to me over the years.

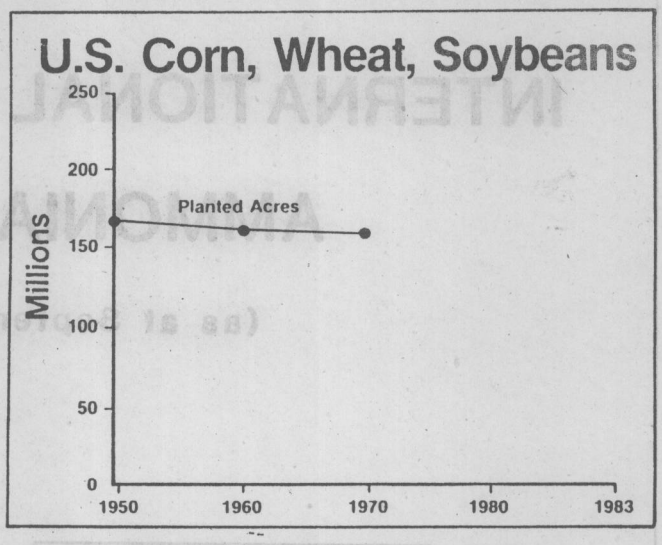
1. The fertilizer business is part of a cyclical industry.
2. Industry forecasts and marketing strategies, regardless of whether they be short term or five years and beyond, are heavily influenced by actual experiences during the previous 12 to 24 months.

The past two fertilizer years have not been outstanding; however, they have been "exceptional." I mean "exceptional" from a negative standpoint. 1981–82 and 1982–83 are exceptional because this is the first time since tonnage records have been kept that U.S. P_2O_5 consumption has been down two years in a row.

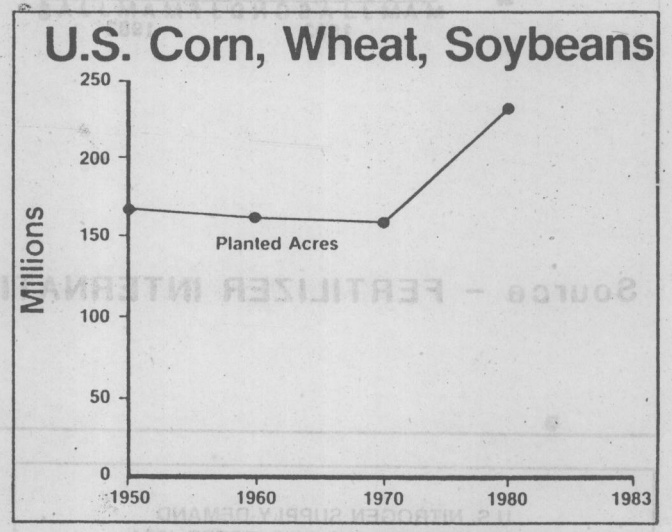
As we study the statistics, I guess we could say there is some "good news" and some "bad news." The "good news" is that the present fertilizer year, 1983–84, is off to a good start on tonnage volume and will easily show an increase over this past year. Obviously, this had to happen sooner or later. The "bad news" is that our preliminary estimate of P_2O_5 consumption in the United States for this past fertilizer year was 4.6 million short tons of P_2O_5, which is comparable to the U.S. P_2O_5 consumption in 1968–69, that's 14 years ago. Yes, we are definitely in a cyclical industry!

At this time, I would like to go through a few slides to help visualize some of the points I will be making as I cover the "Outlook for Phosphates."

Consumption of P_2O_5, as well as nitrogen and potash, is closely linked to the total number of acres planted. The PIK Program this past year clearly demonstrates this fact. As we look at the acres planted to wheat, corn and soybeans during the 50's and 60's, we see a flat line. This is because we were growing our crops for basically domestic consumption. The U.S. farmer was able to increase yields through increased fertilizer use, better seed varieties, and generally better farm management practices.

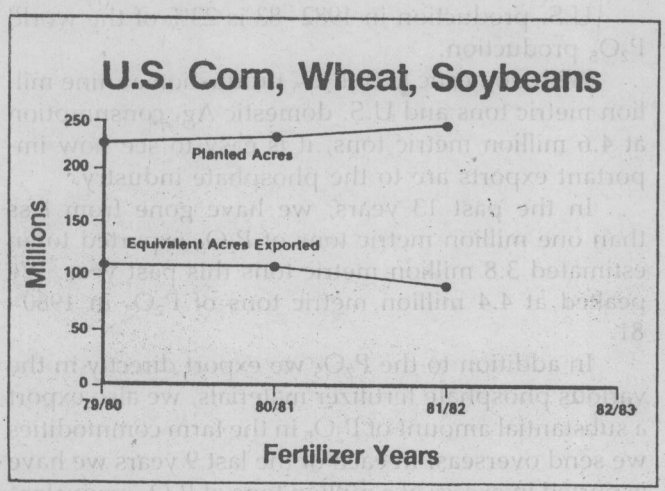


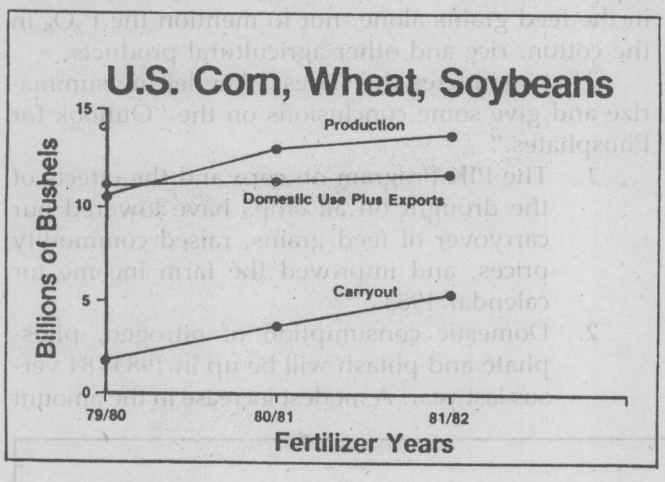
During the 1970's we discovered the export market, or, a truer statement might be, our world neighbors were improving their standard of living to a point where they were needing more feed grains to satisfy their diets. In addition, our relations with Moscow improved through detante and we began shipping grain to Russia. As this slide illustrates, acreage planted to the three major phosphate-consuming crops grew by nearly 50%.



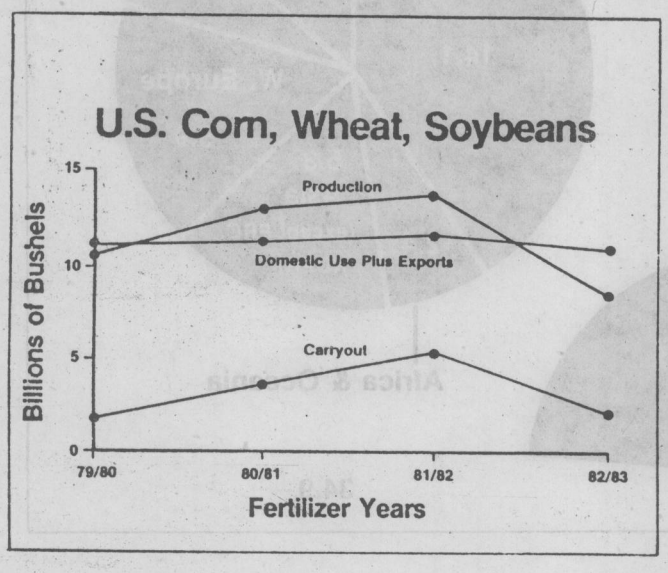
Planted acres continued at fairly high levels in the early 1980's. Our grain exports accounted for 46% of the acres planted in 1979–80. In 1980–81, 45% of the acres planted to corn, soybeans and wheat were exported. In 1981–82, 39% of the acres planted were exported.

The cut back in exports started with the grain embargo to Russia on January 4, 1980. In addition to losing the export sales to Russia, the embargo compromised our dominant role in the world marketplace as a consistent, dependable, long term supplier of wheat and feed grains. Other grain exporting countries were willing to fill the void.



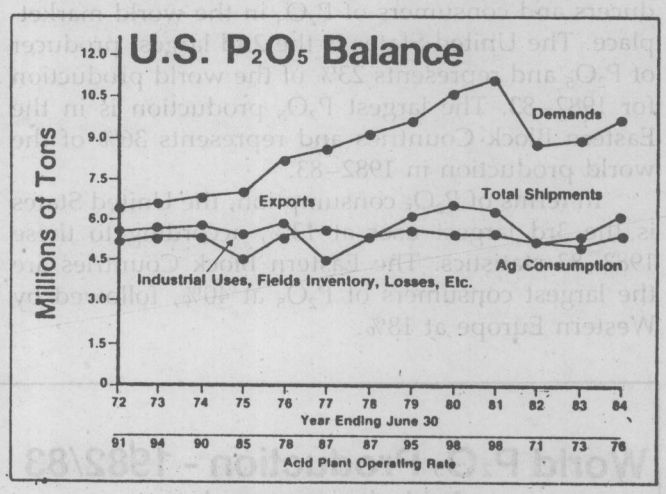


While we were exporting less, our domestic use picked up some, so our total use was staying fairly constant; however, a combination of improved hybrid seeds, fertilizer, excellent weather and good management practices by farmers provided more bushels per acre, which resulted in back-to-back record harvests in 1980–81 and 1981–82. This resulted in increased carryover of grain stocks and set the stage for the PIK Program for the spring of 1983.



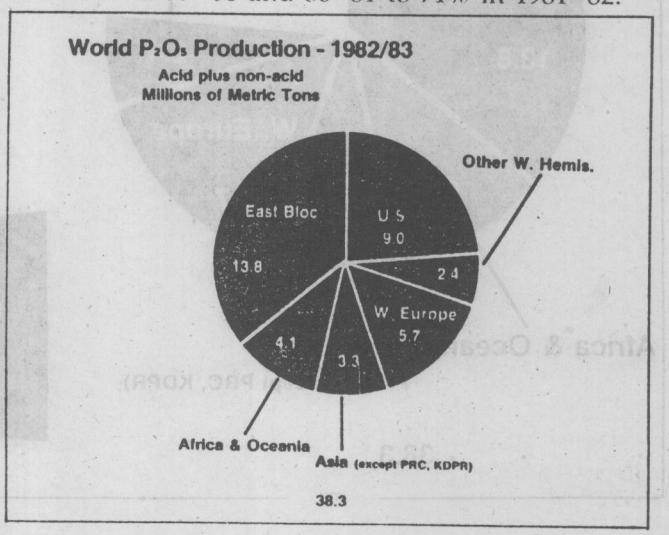
The reduced acres of corn and wheat, due to the PIK Program, coupled with the severe drought, some say the worst drought since the dust bowl years of the mid-1930's, have cut grain production and made a considerable dent in the carryover stocks. Next season we expect planted acres for corn to go from 60 million acres up to 81 million acres, soybeans from 63 million up to 73 million acres, with wheat acres down from 77 to 65 million acres because of the higher carryout stocks of wheat. You will recall that the PIK Program was announced after the winter wheat crop was planted so the impact on acreage reduction was not as great on wheat as it was on corn.

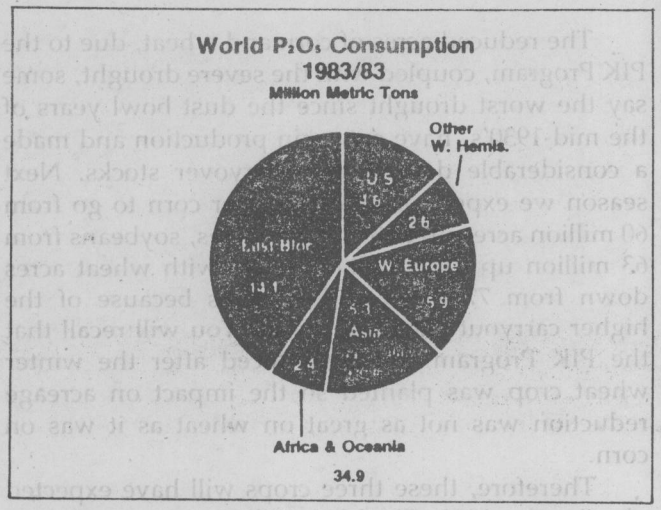
Therefore, these three crops will have expected planting for 1983–84 of 219 million acres versus last year of 200 million acres, or 9½% more acres.



Before I leave the domestic U.S. market and talk about world phosphates, let me review the overall demand for P_2O_5 which is logically satisfied by U.S. production, and compare that demand to the rated production capacity of U.S. producers to calculate the operating rates for the various years.

This slide illustrates the cyclical nature of the fertilizer business. The range of operating rates goes from 98% in 79–80 and 80–81 to 71% in 1981–82.





Let's spend a minute or two looking at the producers and consumers of P_2O_5 in the world marketplace. The United States is the 2nd largest producer of P_2O_5 and represents 23% of the world production for 1982–83. The largest P_2O_5 production is in the Eastern Block Countries and represents 36% of the world production in 1982–83.

In terms of P_2O_5 consumption, the United States is the 3rd largest user at 13%, according to these 1982–83 statistics. The Eastern Block Countries are the largest consumers of P_2O_5 at 40%, followed by Western Europe at 18%.

U.S. production in 1982–83 is 23% of the world P_2O_5 production.

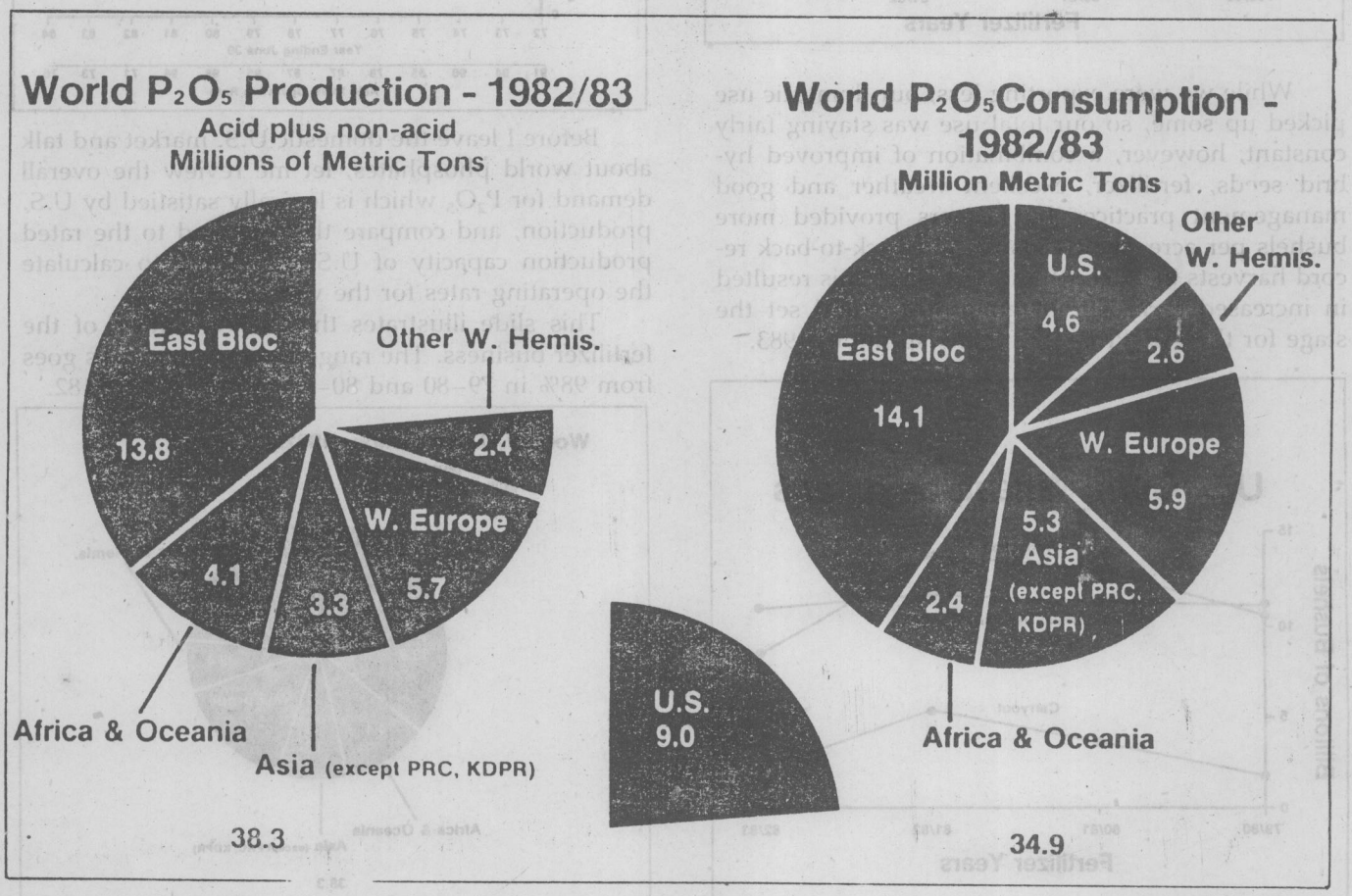
With domestic U.S. P_2O_5 production at nine million metric tons and U.S. domestic Ag. consumption at 4.6 million metric tons, it is easy to see how important exports are to the phosphate industry.

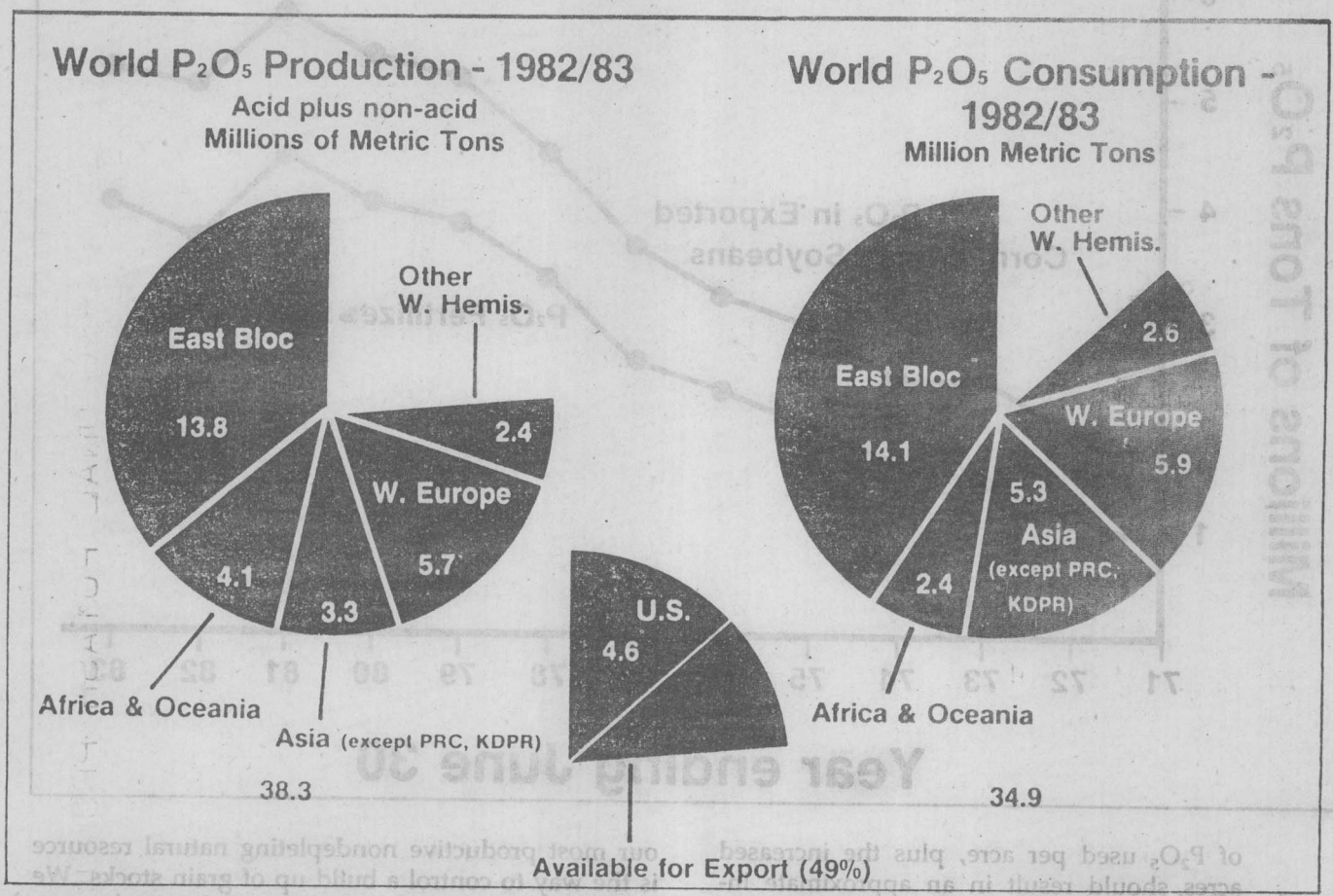
In the past 13 years, we have gone from less than one million metric tons of P_2O_5 exported to an estimated 3.8 million metric tons this past year. We peaked at 4.4 million metric tons of P_2O_5 in 1980–81.

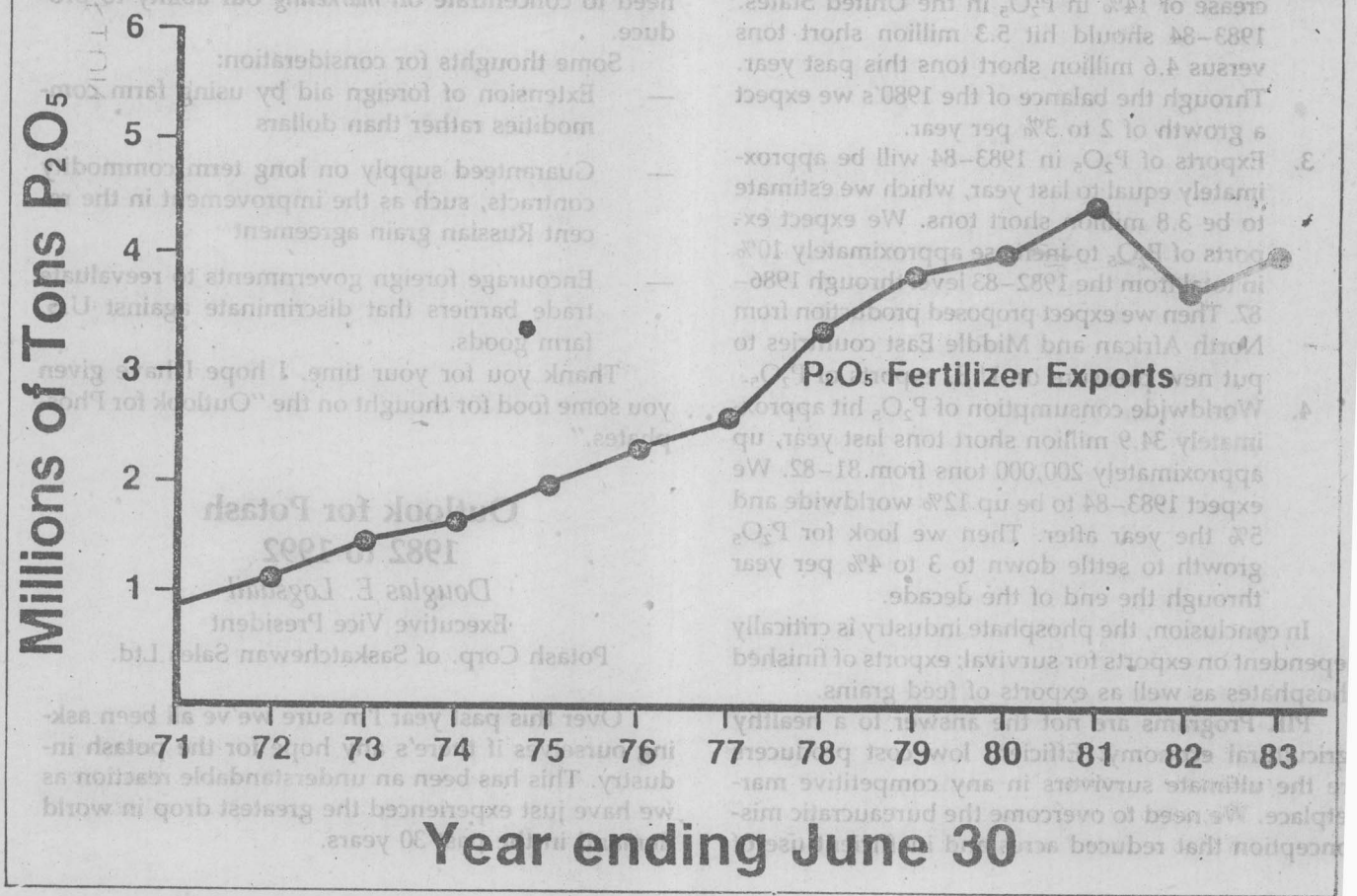
In addition to the P_2O_5 we export directly in the various phosphate fertilizer materials, we also export a substantial amount of P_2O_5 in the farm commodities we send overseas. In each of the last 9 years we have exported in excess of a million tons of P_2O_5 equivalent in the feed grains alone, not to mention the P_2O_5 in the cotton, rice and other agricultural products.

That completes the slides. Now let me summarize and give some conclusions on the "Outlook for Phosphates."

1. The PIK Program on corn and the effects of the drought on all crops have lowered our carryover of feed grains, raised commodity prices, and improved the farm income for calendar 1983.
2. Domestic consumption of nitrogen, phosphate and potash will be up in 1983–84 versus last year. A modest increase in the amount







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