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SUMMARY

Record grain harvests and near record production of other major crops in 1981 - combined with slow growth for agricultural exports and domestic livestock feeding - suggest that agricultural commodity prices will not increase sufficiently this crop season to encourage either significant acreage expansion or increased application rates for agricultural chemicals. Interest rates on farm production loans are expected to remain high during the coming planting season, so there seems to be little encouragement for farmers to significantly increase input use. Supplies of fertilizers and pesticides are expected to be ample, so given expectations of nearly stable consumption levels, price increases for these inputs should be moderate, reflecting only increased production and distribution costs.

In 1980/81 wheat area increased around 14 percent, and following record harvests this year, an acreage set-aside program has been announced for the 1981/82 wheat crop. Despite a late, wet planting season in parts of the Corn Belt, a record 8 billion bushel corn harvest is expected this fall. Such a large harvest will discourage increases in corn acres next spring and some analysts believe that acreage could actually shrink, perhaps by as much as a million acres. Since planted grain acreage is a major determinant of agricultural chemical use, expectations of stable or slightly lower wheat and corn plantings suggest that little growth can be expected in fertilizer and pesticide use this crop year.

Material for this speech was contributed by Theodore Eichers and Paul Andrienas, Agricultural Economists, Inputs and Finance Branch, ERS/NED.

PESTICIDES

Consumption

Pesticide demand in 1982 is expected to be about the same as in 1981, estimated at about .75 billion pounds of active ingredients, which was up nearly 5 percent from 1980. Insecticide purchases were up substantially this summer as insect populations built up after 2 successive years of relatively low levels.

Historically, pesticide use increased in the range of 10 to 15 percent annually during the 1960's and 1970's. This growth was largely in increased use of herbicide materials. Growth has leveled off in recent years to around 2 to 3 percent a year. More than 90 percent of the acreage of major crops such as corn, cotton, and soybeans is now treated with herbicides and there is little prospect for much additional growth.

Supplies

Pesticide supplies for 1982 are again expected to be ample with no raw material shortages anticipated. Capacity is more than adequate. Facilities last year were operated at less than 75 percent of rated capacity. Inventories, although down from the previous 2 years, are still above normal.

Prices

Pesticide prices are expected to be up 5 to 10 percent, with somewhat larger increases for some of the newer products. Price increases last Spring averaged between 8 and 10 percent. Herbicide prices were up from one percent for 2,4-D to 22 percent for atrazine. This follows a steady downward trend in the price of atrazine over the last 5 years owing to patent expiration. Insecticide price increases ranged from 5 percent for toxaphene to 15 percent for Furadan.

Regulation

Regulations continue to be an important factor in the farm pesticide decision process. However, the program of major concern to farmers in recent years, The Rebutable Presumption against Registration (RPAR) activity, has slowed down considerably. This is a review process for pesticides registered prior to 1972. As a result of the review, pesticides may be returned to registration, labels may be modified, uses may be restricted, or use of the product may be cancelled. The number of proposed regulatory options issued dropped from 5 in 1980 to one so far this year. However, EPA is relying more heavily on informal negotiations with chemical companies towards voluntarily withdrawing uses with questionable safety aspects. EPA will probably also make greater use of industry data in preparing their regulatory analyses.

Pesticide regulations seem to be a matter of continuing concern to Congress. The pesticide control act, The Federal Insecticide Fungicide and Rodenticide Act of 1972 (FIFRA) has been amended 3 times since 1972, and Congress is currently considering amending the law again. Some amendments now under consideration include: providing greater opportunity for public review of data submitted in support of registration, extending the manufacturers' exclusive data rights period, and limiting the authority of States to establish standards more rigid than those required by EPA.

Mediterranean Fruit Fly

The California Mediterranean Fruit Fly (Medfly) probably drew more attention to pesticides than anything since Rachel Carson's book "Silent Spring" published about 20 years ago. One source reported that more than 15,000 articles were published on the Medfly problem. This episode has demonstrated the importance of pesticides and the importance of proper timing of pesticide applications. The problem surfaced about 15 months ago. However, because of environmental concerns aerial spraying was not started until July, 1981. Approximately 1,500 square miles of citrus, other fruits, and vegetables in Santa Clara, San Mateo, Contra Costa, and Santa Cruz counties are involved in the spray program. The insect pest has not spread to the rich agricultural San Joaquin Valley. Aerial sprays with malathion bait have been made on a weekly basis for a period of about 90 days (sufficient to cover 2 life cycles of the insect). Ground applications were made with diazinon when significant larval areas were observed. Officials estimate that crop losses have been minimal.

Use of malathion in the Medfly program, however, is relatively minor when compared to the 15 to 17 million acres sprayed each year for mosquito control and the 4 to 5 million pounds used annually in agriculture.

Longer Term Forecast

For the longer term pesticides will continue to be essential materials in crop and livestock production. However, improved management practices should enable growers to use pesticides more efficiently and improved production and application methods should also result in more efficient pesticide use. The growing interest in, and adoption of, no-till and reduced tillage practices, will on the other hand, increase the need for both herbicide and insecticide chemicals on such land.

Projections to 1985 made by some industry analysts indicate expected pesticide growth rates of from one to five percent a year in terms of quantities of materials used. Real dollar growth is projected at slightly more because of expected improvements in chemical products used. We anticipate that the growth rates will be at the lower end of this range and that use could even decline as integrated pest management programs are more widely adopted and more effectively used.

FERTILIZER

Consumption

1981/82

Consumption of all three fertilizer nutrients is likely to be close to year-earlier levels in fertilizer year 1981/82* with the possibility of 1 to 2 percent increases for nitrogen and potash. Despite the outlook for no growth in plantings of major crops and for little significant improvement in crop prices, slightly increased fertilizer application rates on existing acreage would be encouraged if fertilizer prices remain near current levels.

Several factors could change 1981/82 fertilizer use from forecast quantities. If adverse crop conditions develop in the Southern Hemisphere, or if other unanticipated world events cause world grain prices to increase significantly, then U.S. fertilizer use could increase more than currently expected.

On the downside, any factor that would significantly reduce corn acres - such as a corn set-aside program - would probably cause fertilizer use to dip below 1980/81 levels.

1980/81

While final consumption statistics are not yet available, preliminary estimates of fertilizer use during the year ended June 30, 1981 indicate that overall consumption was up by perhaps 4 percent, nearing 24 million tons of primary nutrients (N, P₂O₅ and K₂O). Nitrogen use gained the most, probably about 6 percent to around 12 million tons. Phosphate and potash use probably gained 1 to 2 percent from depressed 1980 levels.

More favorable crop/fertilizer price ratios in the 1980/81 fertilizer year were a primary factor behind the increased use of plant nutrients that year. Compared with 1980, crop/fertilizer price ratios for corn and soybeans were more favorable and comparable to 1979 ratios. Ratios for cotton were less favorable for fertilizer use than in 1980, but ratios for wheat were as favorable as in the previous 2 years. A small increase in corn acreage and a 14 percent gain in wheat plantings also contributed to increased fertilizer use last year.

Supplies and Trade

Nitrogen supplies should be adequate this fertilizer year, and phosphate and potash are expected to be plentiful. For two years in a row, domestic phosphate and potash use was lower than the industry expected, and high production levels resulted in a large build-up of producer-held inventories. Exports of phosphate and potash are

* Fertilizer year is July 1 - June 30.

currently down, so inventories have become burdensome. Reductions in production levels are expected to ameliorate the stock excess. In contrast with phosphate and potash, nitrogen supplies are expected to remain in closer balance with anticipated consumption.

International trade in fertilizer products has slowed considerably over the previous year. Overall U.S. exports of fertilizer and fertilizer raw materials during July-September 1981 was down by one-third in volume and one-fourth in value. The recent strength of the dollar has discouraged potential customers for U.S. fertilizer products, as has the generally unfavorable foreign exchange position currently experienced by many developing countries. Exports of all major products were down significantly with the exception of superphosphoric acid (SPA). Shipments of SPA to the Soviet Union recently resumed following the lifting of the embargo on grain and phosphate exports in late April 1981. Overall fertilizer import volumes increased slightly, about 2 percent.

nitrogen

Inventories held by nitrogen fertilizer manufacturers at the end of the 1980/81 fertilizer year were up about 5 percent from a year earlier. A recent Fertilizer Institute survey indicates that, by the end of September 1981, overall nitrogen inventories were only 3 percent ahead of the comparable 1980 levels and anhydrous ammonia stocks were unchanged. The same survey reveals that nitrogen fertilizer production was up only 4 percent while domestic disappearance was up 5 percent. Furthermore, imports of urea and anhydrous ammonia have been lower thus far this fertilizer year compared with last year. For the quarter July-September 1981, urea imports were down by two-fifths and ammonia down by almost 8 percent. Ammonia imports from the Soviet Union were down to about half of last years' level, but increased imports from Canada, Trinidad-Tobago and Mexico partially made up the difference. On the other hand, exports of nitrogen are also considerably behind a year ago. During July-September 1981, U.S. exports of nitrogen solutions fell by 88 percent when compared to the same quarter a year earlier. Anhydrous ammonia, urea and ammonium nitrate exports fell by 67, 43, and 44 percent respectively. The greatest volume of nitrogen is exported as diammonium phosphate (18-46-0), which was down 28 percent.

On balance, domestic nitrogen supplies should be ample to cover domestic requirements, even though the industry is expected to operate at near full capacity in 1981/82 as it did last year, (e.g., 99 percent capacity utilization in January-June 1981).

phosphate

At the beginning of the current fertilizer year (July 1, 1981) manufacturers' inventories of phosphate fertilizers were at record high levels, 14 percent above a year earlier. A more recent survey of most U.S. phosphate firms revealed that, by the end of September, overall phosphate inventories were up by one-fourth.

A survey by the Fertilizer Institute reveals that excessive phosphate inventories have been exacerbated by a 16 percent decline in domestic disappearance of phosphate fertilizer during the quarter July-September 1981. Phosphate producers have responded to falling domestic sales, declining exports, lower prices and burdensome inventories by cutting production 21 percent during the same quarter. Some analysts estimate that about one-fourth of U.S. diammonium phosphate (DAP) capacity has been shut down for prolonged maintenance or has been idled. Manufacturers report that current DAP market prices of around \$160-\$170 per ton, f.o.b. Tampa, are insufficient to cover production costs.

Phosphate exports are also lagging behind the previous year's record levels. Phosphate rock exports during July-September 1981 were 35 percent lower than a year earlier. Exports of superphosphoric acid (70% P₂O₅) to the USSR resumed in June, and July-September 1981 world shipments totalled nearly 225,000 tons compared with 2,700 a year earlier. However, shipments of merchant grade phosphoric acid (54% P₂O₅) fell by around 350,000 tons during the same period. Concentrated superphosphate exports were down by 16 percent while DAP and MAP exports were lower by 28 and 41 percent, respectively. Major customers like India, Pakistan, Brazil, Turkey, and China are all buying less phosphate this year; due to foreign exchange difficulties and/or perhaps they are waiting for the dollar to weaken or the price of phosphates to slip further. Many nations are expected to eventually resume their normal phosphate purchases which would again lead to a strengthening in export prices.

potash

Potash inventories of North American producers were up about 6 percent at the beginning of the current fertilizer year. Combined potash inventories of U.S. and Canadian producers were up by more than two-thirds on September 30, 1981 compared with September 1980. Potash stocks held by U.S. producers on September 30 were equivalent to 63 days production, more than double the year-earlier figure, and the highest level in 4 years.

Potash availability in the United States is greater this year primarily due to increased imports from Canada - up nearly 10 percent during July-September. Increased availability in North America is partially attributable to the sharp drop in offshore potash exports by U.S. and Canadian producers - down by one-half during the same quarter. Foreign potash buyers face the same financial difficulties as phosphate importers.

Prices

Almost flat domestic use and lackluster offshore demand for U.S. fertilizers will dampen fertilizer price increases. Overall fertilizer prices in the 1981/82 Spring season could be up 6 to 7 percent from a year earlier. Nitrogen prices are expected to increase the most, followed by potash. Large carryover stocks of phosphate materials,

continuing into the second quarter of the 1981/82 fertilizer year will discourage phosphate price increases. Phosphate fertilizer price hikes if they occur, will be delayed until the 1982 Spring season.

Retail ammonia and urea prices increased by 1 percent between May and October 1981. Nitrogen prices could exhibit the largest Spring 1981 to Spring 1982 price rise. May 1982 prices could average 10 percent above a year earlier, slightly above the 9 percent increase from May 1980 to May 1981. Relatively low inventories and virtually full capacity utilization of anhydrous ammonia production facilities will encourage nitrogen producers to pass through higher production costs, especially for natural gas. However, almost flat domestic consumption levels, diminished exports, and the potential for increased imports should restrain price increases.

Phosphate prices declined during Fall 1981 because of above average carryover by phosphate fertilizer manufacturers. Average prices paid by U.S. farmers for concentrated superphosphate (TSP) and diammonium phosphate (DAP) fell by 8 percent from May to October 1981.

Prices in Spring 1982 could return to near year-earlier levels as domestic planting activity increases. However, for prices to rise, export trade will have to resume its vigorous pace and continued production cutbacks will be necessary to offset high early-season inventories and stagnant domestic demand. Sudden surging of export demand during the domestic Spring season could cause prices to climb higher than currently anticipated.

October 1981 potash prices were 10 percent higher than a year ago, but equal to May 1981 farm prices. Some increases are foreseen for Spring 1982, averaging about 6 to 8 percent above year-earlier levels. This expected increase is lower than the 15 percent price hike which occurred between May 1980 and May 1981. The current slowdown in world potash demand, plus, the potential for modest increases in North American production will likely restrain further price increases.

Medium Term World Outlook

To place the discussion of the current U.S. fertilizer situation into better perspective, it is useful to consider the outlook for world fertilizer supply and demand and balances for the medium term.

A recent forecast by the FAO/UNIDO/World Bank Fertilizer Working Group indicates that the world's supplies of nitrogen fertilizer may be relatively tight compared with expected consumption for the next 5 years, while phosphate and potash supplies should be ample to meet expected use. Although this forecast is more pessimistic than previous forecasts, it does not represent a fundamental deterioration in the nitrogen supply outlook. Rather, it reflects a different method of accounting for idle ammonia plants (see table).

Nitrogen supply capability is forecast to remain very close to expected consumption through 1985/86. Theoretically, slight deficits could develop beginning in 1982/83, but they account for less than 1 percent of consumption. Last year's forecast predicted nitrogen supply capability surpluses of 2 to 4 million metric tons, but the current forecast points to minimal deficits of 0.1 to 0.7 million tons. Actual physical shortages are not expected, because improved capacity utilization, inventory drawdown, and restarting idle plants are all possible in the short term. However, the forecast does point out the need for early decisions regarding recommissioning idle plants or building new ones.

In preparing its annual forecast this June, the Working Group reversed its former assumptions regarding idle ammonia capacity. In previous years, the group assumed that idled ammonia plants, accounting for almost 5 million metric tons of nitrogen capacity, should be included in the listing of world ammonia capacity as potentially capable of contributing to world nitrogen supplies. However, this year the Working Group agreed that most idle plants in the United States should be excluded from the supply capability list, because many have been closed since 1978 and cannot quickly or easily resume operations. Other idle ammonia plants in Iran, Iraq, and the Soviet Union are also expected to remain inoperative for at least part of the period.

The phosphate supply capability is expected to exceed forecast demand by over 1 million tons of nutrient through 1984/85. This theoretical surplus declines to 0.3 million tons in 1985/86.

Potash supplies are expected to be more adequate relative to consumption than foreseen in last year's forecast. This is due to major capacity expansions in Canada, announced after last year's forecast was prepared. Potash supply capability could potentially exceed consumption by about 2.8 million tons of nutrient in 1984/85.

World Available Supply 1/, Consumption and Balance for Fertilizer 1979/80 to 1985/86
(Million metric tons nutrient)

	-----Forecast-----						
	Actual : 1979/80 :	1980/81:	1981/82:	1982/83:	1983/84:	1984/85:	1985/86
Nitrogen (N)							
Available Supply <u>2/</u>	57.30	60.73	63.35	66.09	68.68	71.13	73.54
Consumption	57.16	60.63	63.27	66.19	68.86	71.43	74.21
Balance	0.14	0.10	0.08	-0.10	-0.18	-0.30	-0.67
Phosphate (P ₂ O ₅)							
Available Supply <u>3/</u>	31.40	33.61	35.38	37.42	39.03	40.19	41.03
Consumption	31.08	32.32	34.22	35.87	37.47	39.02	40.74
Balance	0.32	1.29	1.16	1.55	1.56	1.17	0.29
Potash (K ₂ O)							
Available Supply	23.40	25.70	27.58	28.71	31.90	33.50	33.71
Consumption	23.43	25.70	27.33	28.57	29.64	30.69	31.92
Balance	-0.03	0.00	0.25	0.14	2.26	2.81	1.79

1/ Available supply is derived by adjusting rated plant capacities to reflect effective operating rates; then this potential supply capability is reduced to account for non-fertilizer uses, losses in processing and distribution, normal stock changes, and the time lag between production and consumption.

2/ Ammonia only.

3/ Phosphoric acid and phosphate fertilizers using other feedstocks only.

Source: Actual 1979/80 statistics are preliminary data reported in FAO Monthly Bulletin of Statistics, March, 1981.

Forecasts for 1980/81 through 1985/86 were developed by FAO/UNIDO/World Bank Fertilizer Working Group, June, 1981. Detailed statistics are published in "Current Fertilizer Situation and Outlook", FERT/81/3, FAO Commission on Fertilizers, Seventh Session, 7-10 September, 1981.