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SUPPLY AND PRICE IMPACT OF THE ARP AND PIK PROGRAMS

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The 1983 Payment In Kind (PIK) option was offered to farmers in early 1983 in an effort to reduce carryover grain supplies enough to bring up farm prices and incomes while reducing government grain storage costs. Farmer response was greater than anticipated, with total intentions of idling over 73 million acres of corn, sorghum, wheat, oats and barley land--or approximately 36 percent of the total base acreage of these crops.

The purpose of this paper is to estimate the impact of this high level of participation on expected 1983 crop production and price levels. Any such estimate will depend upon answers to the following questions: (1) How much slippage will occur between currently reported acreage reduction and actual reductions? (2) Will the ratio of harvested acreage to planted acreage increase significantly? (3) Will the high yield levels of last year be maintained, decreased or increased? (4) Will higher prices in 1983 dampen exports and domestic use enough to reduce prices again during the 1983-84 marketing year? We discuss each of these for both the corn crop and the wheat crop, plus making a few observations on the likely impacts upon the soybean crop.

CORN

USDA reported that 78.824 million acres of corn and sorghum were enrolled in the government feedgrain programs. This represents 78 percent of the total 101.06 million base acres of these two crops. We have estimated the base acreage of corn to be 82 percent or 83.2 million acres and sorghum to be 17.8 million acres.

Planned Idle Acres

A total of 39.43 million acres of these corn and sorghum acreages were reported to be signed up by producers to be idled in 1983. Since this was the total for both corn and sorghum, an estimate must be made for corn by applying the 82 percent factor mentioned above. The amount estimated for corn as planned idle acres would then be approximately 32.5 million acres. However, we adjust this up to 33.5 million acres since whole farm base bids were much more prevalent in corn states than in sorghum producing areas. For example, Texas has fewer acres set aside in the whole farm base PIK option than in the regular 20 percent option. By contrast, Minnesota has four times as many acres idled in the whole farm PIK option than in the initial 20 percent option--while Illinois and Indiana accepted six times as many idle acres in the whole farm option. This total would break down among the various farm programs as follows by again applying the 82 percent factor to total corn and sorghum figures.

* Staff Papers are published without formal review within the Department of Agricultural and Applied Economics

Estimated U.S. 1983 Farm Program Planned Idled Acres By Program Option*

	<u>Million Acres</u>
ARP and Paid Diversion	3.2
10-30 PIK	17.9
Whole Base PIK	<u>12.9</u>
Total	33.5

* U.S. total corn and sorghum idled acres times 82 percent (plus 1 million).

Actual Idled Acres (How Much Slippage?)

Even though corn producers signed up to idle an estimated 33.5 million acres, the chances are good that the actual reduced production in corn acreage will be significantly less than that amount. The major reasons for this expected difference results from (1) some corn producers who signed up to idle 3.2 million acres in the ARP and paid diversion program will choose not to follow through (this is allowable), (2) corn producers who do not participate in the program will likely increase corn acreage on their farms, and (3) normal slippage between what corn producers say they will idle and what they actually idle.

Estimates of expected idled acres made under different assumptions range from 28 million to 33 million acres. We are estimating that the actual idled corn acreage will be 30 to 31 million acres. This estimate of about 3 million slippage acres is less than what has occurred in past government set-aside programs. However, the penalty for backing out of a PIK contract is 57¢ per bushel of PIK corn. This is strong enough to deter most producers from changing their mind because of currently higher corn prices--especially if they have more than a 10 percent PIK sign-up. However, perhaps over half of those who signed up only for the ARP portion will change their minds since many did not receive the early partial payments.

Planted Acres

Assuming 30.5 million acres of idled corn, but an increase of 4.3 million acres by the non-participants (a 15 percent increase taken from beans and other crops), planted corn acres in 1983 would then total approximately 57 million acres. This represents a 31 percent reduction in planted acres from the total base acreage of 83 million.

Harvested Acres

Harvested acres for corn are less than acres planted because of acres harvested for corn silage, grazed or abandoned. In 1982 this accounted for 8.7 million acres. We are assuming that this will be significantly less--perhaps at about 7.5 million acres in 1983. This would put estimated harvested corn acreage at 49.5 million acres in 1983.

Corn Yields

The amount of corn produced on each of the approximately 50 million acres of corn estimated to be harvested next fall will have a great impact on the final production figures for 1983. Assuming normal weather conditions, we expect corn yields in 1983 would average between 110 and 120 bushels per acre. With the large set-aside, very few "poor" acres will be planted and timeliness of operations should also improve. Therefore, we are using 115 bushels--approximately the same as the record yield established in 1982--but we would not be surprised if average yields surpass the 120 bushel mark or drop below 110 given either excellent or poor growing conditions.

1983-84 Marketing Year Corn Supply

Estimates of the size of the 1983 corn crop range between 5.15 billion bushels and 6.0 billion bushels. USDA analysts estimated in the USDA Supply and Demand Report issued on March 23, 1983, that the corn crop would total 5.64 billion bushels. Our estimate of 5.69 billion bushels agrees closely with the USDA estimate. This compares with the 1982 corn crop of 8.397 billion bushels--a production cut of almost a third.

In addition to our 5.69 billion bushel production estimate, we add USDA's current estimate of 3.43 billion bushels of corn to be carried into the 1983-84 marketing year. This will mean that just over 9 billion bushels of corn will be available for feeding, exporting or carrying into the following crop year in 1984-85.

Corn Utilization In 1983-84

USDA, in its March 23 Supply and Demand Report, estimated a utilization of 7.2 billion bushels of corn in 1983-84, or about the same as in 1982-83. We are not very comfortable with this usage level since it implies no reduction in use as a result of the high corn prices that have resulted from the PIK program. If the USDA use estimate is correct, corn carryover at the end of the 1983-84 marketing year (October 1, 1984) would project at 1.9 billion bushels of corn, about 1.5 billion bushels less than the October 1, 1983, estimated level of 3.43 billion bushels. However, under our assumption of both reduced domestic and foreign demand for corn--and thus lower utilization--carryover at the end of the 1983-84 marketing year would still be over 2.0 billion bushels.

Corn Price Outlook

Given the assumptions of this analysis, we estimate that the short term impact of the PIK program on corn prices will be in the 40¢ to 50¢ per bushel range. Much of that rise is already in the future contract prices which stand at about \$3.15 per bushel for contracts for July 1983 and May 1984. These contracts are about 40¢ per bushel higher than they were prior to the announcement of PIK in early January--and they could move higher before spring planting is completed.

USDA projects corn prices to average, on a national average basis, about \$2.55 per bushel in 1982-83--about 10¢ more than would have been likely without PIK. Given the current market tightness and the probable earlier orders of foreign buyers concerned over future supplies, we think high spring-summer prices may push the 1982-83 price up another 5¢ to 10¢.

USDA expects corn prices to average around \$2.90 per bushel for the 1983-84 marketing year. This could be too optimistic if higher 1983 prices curtail exports and feeding below the 7.2 billion bushel use level projected by USDA. If corn prices do average from \$2.80 to \$2.90 next year versus the \$2.45 pre-PIK expectation for the current marketing year, the increase can be attributed to the reduced production and carryover resulting from the 1983 ARP and PIK program. Thus, the total PIK-KICK in corn prices is currently about 40¢ per bushel--a much greater impact on current corn price levels than crop price forecasters had expected when the PIK program was first announced. However, if higher prices push usage levels down in the 1983-84 marketing year, the longer term impact on corn prices and incomes will be less than current prices suggest. If our analysis is correct, the prudent manager will forward price some corn this spring.

WHEAT

USDA reported that 78.309 million acres of wheat were enrolled under the various wheat government programs. This represented 86.2 percent of the total wheat base acres of 90.806 million acres.

Planned Idle Acres

A total of 32.052 million acres was reported to be signed up by producers to be idled in 1983. This total breaks down among the various farm programs as follows:

Estimated U.S. 1983 Farm Program Planned Idle Acres By Type Of Program

	<u>Million Acres</u>
ARP and Paid Diversion	6.3
10-30 PIK	18.0
Whole Base PIK	<u>7.7</u>
Total	32.2

Actual Idled Acres

Actual idled acres is assumed to be somewhat less for wheat just as it was for corn. However, we are assuming that the slippage would not be as great. Our estimate of actual idled acres is 30.1 million acres.

Planted And Harvested Acres

Based on the estimated idled acres and the base wheat acreage, the planted and harvested acres of wheat in 1983 would then be approximately 60.7 million, a decrease of 30 million or one-third from the base acreage.

Yield

We are assuming an average yield of 36 bushels to the acre, slightly over the 1982 yield.

Production

Given our assumptions on harvested acres and yield, we project the 1983 wheat crop to be 2.19 billion bushels. This represents a 700 million drop from a year earlier.

Total Supply Of Wheat

An estimated 1.53 billion bushel carryover is expected. When this amount is added to the estimated production, a 3.72 billion bushel supply of wheat can be projected for 1983-84.

Utilization And Carryover

USDA, in its March 23 Supply and Demand Report, projected a 2.41 billion bushel utilization of wheat in 1983-84. As was the case with corn, this could be high. However, if this materializes, wheat carryover stocks at the end of the 1983-84 marketing year will total about 1.31 billion bushels. This is down some from the 1.53 billion bushel carryover in 1983. A drop in utilization could leave carryover nearer to 1983 levels--or the expected price increase could be less than now predicted.

Wheat Price Outlook

Given the assumptions of this analysis and the resulting supply and demand estimates, we estimate that the total impact of the ARP and PIK program on wheat prices could range from 20¢ to 30¢ per bushel. Much of the expected strength is already bid into the price of wheat and the contract prices. All of these contracts are about 20¢ per bushel higher than they were in late December when the PIK program was first announced.

Spring wheat prices are expected to average in Minneapolis about \$3.80 to \$3.90 for the 1982-83 marketing year and approximately \$4.15 to \$4.30 per bushel in the 1983-84 year if estimates in our analysis materialize.

SOYBEANS

Current relatively strong corn prices will prompt some farmers who are not participating in the government program to increase corn acreage at the expense of soybean acreage. Thus, total bean acreage may drop 6 to 8 percent below the 1982 planted acreage of 72.2 million.

If harvested acreage is about 66 million and the yield is close to the 1982 yield of 32.2 bushels per acre, total production would be equal to the 2.1 billion bushels shown in USDA's March 23 estimates.

USDA estimates that this would raise soybean prices from the \$5.55 average expected this year to a range centered on \$6.40 next year.

SUMMARY CORN ANALYSIS

Base Acreage	83.2 million acres
Signed Up Idled Acres	33.5 million acres
Actual Idled Acres (estimate)	30.5 million acres
Planted Acres	57.0 million acres
Harvested Acres	49.5 million acres
Average Yield (110 - 120)	115.0 bushels per acre
Total Production	5.69 billion bushels (vs. 8.3 in 1982)
1982-83 Carryover	3.43 billion bushels
1983-84 Supply	9.10 billion bushels
1983-84 Utilization	6.8 to 7.2 billion bushels
1983-84 Carryover	1.9 to 2.3 billion bushels

Prices

1982-83 Average	\$2.60
1983-84 Average	\$2.75-\$2.90
Price Impact Of PIK	.30 to .50 per bushel

SUMMARY WHEAT ANALYSIS

Base Acreage	90.8 million acres
Signed Up Idled Acres	32.1 million acres
Actual Idled Acres (estimate)	30.1 million acres
Planted Acres	60.7 million acres
Harvested Acres	60.7 million acres
Average Yield	36.0 bushels per acre
Total Production	2.2 billion bushels (vs. 2.8 in 1982)
1982-83 Carryover	1.5 billion bushels
1983-84 Supply	3.7 billion bushels
1983-84 Utilization	2.1 to 2.4 billion bushels
1983-84 Carryover	1.3 to 1.6 billion bushels

Prices

1982-83 Average U.S.	\$3.45	Minneapolis	\$3.80-\$3.90
1983-84 Average U.S.	\$3.75	Minneapolis	\$4.15-\$4.30
Price Impact Of PIK	.20 to .30 per bushel		

SUMMARY SOYBEAN ANALYSIS

Reduced acreage in 1983 by 6 to 8 percent to 66.0 billion harvested acres.

Total production estimated at 2.1 billion bushels, down approximately 170 million from year earlier.

Total supply of beans in 1983-84 estimated at 2.48 billion bushels.

Utilization estimated at 2.20 billion bushels.

Ending stocks 285 million compared with about 385 the previous two years.

Prices

1982-83 Average \$5.55

1983-84 Average \$6.50