

# 1996 FARM BILL: PLANNING AND MARKETING GRAINS AND OILSEEDS

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My task today is talk to you about the impact of the Farm Bill on grain prices. I am going to talk about wheat, corn, and soybeans. You have received a tremendous amount of useful information this morning. I learned a number of things. The total amount of information that has been thrown at you is a little overwhelming. I am going to try to hit five or six things in the sea of numbers that you will see that I think are really important and that, hopefully, you will be able to remember.

#### **BALANCE SHEET**

I have organized my presentation around what is called the "balance sheet," which is used to analyze all grain prices (Figure 1). USDA puts out a new one of these every month. Many of you have heard me do this before. By way of review, let me tell you the essence of this so that when you see all the numbers I am going to give you, you'll have some idea how they fit together. Start up here in the upper left with beginning stocks, which is what is left over from the previous year. The important thing for where we are right now is these levels. They are the lowest they've been in a long, long time. We do not have much up here in this corner ("beginning stocks"), in the U.S. or in the world. It is very, very low. Then you add acreage planted, harvested, and yield. I would argue that, at least in the short run, for the next couple of years, this is the box that is really going to drive what happens to price. I am going to spend a lot of time talking about this because I agree with Jim Pease that the Conservation Reserve Program (CRP) and some of the things related to those conservation issues are really important to what happens in this total supply box. But once you take the beginning stocks and once you have production, that is the total available supply in grains for a 12-month period. Out of that you have the uses-the feed, the food and industrial, and the exports. Depending upon the commodity, the uses have different levels of significance. Based on what you have available, what gets used, that tells you what's left at the end of the season that did not get used.

The key price relationship that we use for analyzing price comes out of this ending stocks measure. There is a very reliable, predictable pattern: **if this ending stock number goes up, and especially if it goes up by any significant amount, the price will go down compared to the previous year**. That is the relationship that you find. I will work through the three commodities to show how ending stocks come out and from that make some statements about prices for these commodities.

I do not expect you to be able to read the numbers on this overhead (Figure 2). All I expect you to be able to see is that stock levels are going down and price level is going up. Each one of these charts has the last six years on it, and you can see that all of them fit this pattern. If you use this kind of data for the last 20 years for each of these commodities, this ending stocks number will explain 75 percent of the variation in the price from year to year. I want you to understand that when you see ending stocks going up, especially in significant amounts, you can anticipate that the price is going to come down. That is the relationship that I am using in the analysis that I am doing, and as I said, I think acreage is key.



#### WHEAT

I am going to start with wheat. Of these three commodities, the government has been most heavily involved in wheat. Having the government back away from wheat and its involvement in price and acreage is going to have a significant impact on the wheat market. I want you to see the far left column (Figure 3). Notice I skipped years; 1981 is the first one there. I wanted you to see that at a time when there was no Acreage Reduction Program (ARP), when there was no CRP, and when there was no 0-50/92, we planted 88 million acres of wheat. That is the high if you look back through the data at the number of acres planted. Five years later, from 1981 to 1986 we had cut wheat acres planted by 15 million acres. In 1986 we started the CRP program. You'll see we put 0.6 million acres into the CRP program, and we took 15.8 million acres out of production through ARP. We only planted 72 million acres. Then from 1986 to 1991, the acres in CRP from the wheat base went up: 10.4 million acres of land that was considered wheat base went into CRP. Obviously, it could not be planted. In 1991, we again had a large ARP. The other thing that is important is the column labeled "0-50/92." That was a program where you could plant from 0 up to 50 percent of your acres and get a partial deficiency payment. In wheat that program had 4 to 5 million acres in it for the last 4 to 5 years. It no longer exists in 1996.



In the fall of 1995 when they were debating the Farm Bill, they did not let producers put any acres in that program because they did not know how the legislation was going to come out. That explains why in 1995 we had 69.1 million acres planted, and in 1996 we had 75.6 million acres. Most of that land came out of 0/92, land that they could not put back in that program. It is important to remember, for what I am going to say further on down the road, that 0/92 land was primarily marginal land. If you are going to put land in a government program, you put in the most marginal land. Consequently, land that has come back into production is marginal land.

Figure 3.					
		WHEA?	Γ ACRES		
YEAR	BASE	ARP	CRP	0-50/92	PLANTED
81	84.5	0.0	0.0	0.0	88.3
86	92.2	15.8	0.6	1.3	72.0
91	89.6	10.1	10.4	5.5	69.9
92	89.6	3.3	10.6	4.0	72.2
93	89.6	0.0	10.8	5.4	72.2
94	88.9	0.0	10.8	4.2	70.4
95	88.5	0.0	10.8	5.5	69.1
96	87.9	0.0	10.8	0.0	75.6

For wheat, the thing that is really important is, when do the CRP acres (remember there are over 10 million of them) come out? Under the new program, there is no automatic renewal, you have to rebid. In 1995, there were a half a million acres scheduled to come out. This year and in 1997, 1998, and 1999 there are over 10 million acres, which is nearly all of it, coming out (Figure 4). The big debate is how much of that will go back into production? How much of that will go back into CRP? The reports that I have seen, so far, indicate that a least a third of it is not even qualified to go back under the new CRP rules. That would argue that a third of these 10 million acres will eventually end up in production. That is another 3 to 4 million acres. How much producers will choose not to put into production is an open question. I have seen some studies that say as much as 60 percent of it will be farmed when it comes out. I have not used a number that high in my calculations, but some people think that 60 percentmay happen.

The answer to these questions have long run implications for wheat. Under the current structure, and assuming we do not have any really significant changes, there are going to be more acres of wheat. There are likely to be lower prices, unless they are offset by some change on the demand side.

Figure 4.					
WHEAT CRP CONTRACT EXPIRATIONS					
YEAR	ACRES (MIL.)				
1995	0.554				
1996	3.616				
1997	2.930				
1998	1.710				
1999	1.465				
2000	0.100				
2001	0.243				
2002	0.214				

This is what we planted last year—75.6 million acres (Figure 5). There are about a million acres of 0/92 out there, that in talking with USDA employees, they think will show up in wheat this year that did not show up last year, given the uncertainty. Some 3.6 million acres are going to come out of CRP. A third of it is not eligible to go back into CRP, which is at least 1.2 million acres, potentially leaving 77.8 million acres that can be planted. If you use a normal ratio of planted to harvested and a normal yield for the last 5 years, you will have 2.5 billion bushels produced and a supply of 3 billion bushels of wheat. If you look at historical wheat yields, you find that there have been several times in the last 10 years when we have gotten close to 40 bushels per acre. There are 3 or 4 years that we were at 34 bushels per acre. You can see that production, if we stay on trend, will be 2.5 billion bushels. If we have a really good crop, we are talking 2.7 billion bushels. If we have a poor crop, we are talking 2.3 billion bushels.

I think some (and other people have alluded to this this morning) interesting things are going on with yield. These are U.S. wheat yields since 1960 and going through 1996 (Figure 6). If you fit a trend line to this yield data, the trend line fits reasonably well until about 1980. But the interesting portion of this graph is since 1980: there really is no trend. The trend is coming based on these low yields prior to 1980. For the last 12 to 15 years, we have not had much improvement in wheat yields. It is been pretty flat. I want you see the level of variability from 1960 to 1980 versus the level of variability from 1980 on. I do not know if it is global warming. I do not know if it is changing weather patterns. I do not know if it is that we have our technology to the point that if you do not do everything exactly right you pay for it in a big way in terms of yield. Which of these three is it? It is probably a combination of all three. Whatever is causing it, yields are getting much more variable. I do not see

anything on the horizon to change this.	Obviously, this much variability in the yield is going to	induce
price variability.	n	

Figure 5.	
1997/98 WHEAT	[
	MIL.
Planted 1996	75.6
0-92 Acres	1.0
CRP (33% x 3.6 MIL)	_1.2
POTENTIAL PLANTED 1997	77.8
HARVESTED (87%)	67.7
YIELD (LAST 5 YEARS)	37.5
PRODUCTION	2538
BEGIN STOCKS	435
Imports	70
SUPPLY	3043
IF YIELD = $40$ , PRODUCTION =	2708
IF YIELD = $34$ , PRODUCTION =	2302

Rather than show you the same chart again later, I want to make the point now: these are corn yields (Figure 7). Here are the 1960s; look at the variability since the 1970s. (These are not Virginia yields for these three commodities, wheat, corn, and soybeans; they are U.S. yields. I should have said at the very beginning, I am analyzing U.S. data for all three of these crops because we produce less than 1 percent of the U.S. total. What we do in Virginia makes no difference in price. It will make some difference in local basis (cash price – futures price), but it is not going to make any difference in the national price level.) This equation at the top says that an increase of 1.7 bushels per acre per year has been the long-term trend. What I want you to see is that it has become very variable in the last few years.

Figure 7.

Corn Yield, 1990 - 1996.

The same thing is true of soybeans (Figure 8). Look at the early years, then look at the later years: much more variability.

Figure 8.

### Soybean Yield, 1960 - 1996.

**One of your major sources of variability in price is increasing variation in yields over time**. That variability is going to have a big impact on price, especially when we have low stocks and especially when we join the world market and have to compete globally.

The numbers in the next to last column are the year we are in right now (1996/97) and the last column, 1997/98, are as of Tuesday this week when we got a new table (Figure 9). The total available supply in 1996 was 2,728 million bushels. Estimated use is 2,293 million bushels. The report says we will have 435 million bushels left, and it says we will have a price of \$4.30. That is the current estimate for this year.

I just went through how I came up with my acres and production estimate. You need to realize this is way out on a limb. The people are out there planting wheat like crazy right now. It is not even in the ground yet. But this last column (1997/98) is not USDA; this is not *Pro Farmer*; this is my guess from piecing together information from various sources. This says we have a potential supply of 3 billion bushels. (If we have a poor yield it will be 2.7; if we have a good yield, it will be 3.2.) My estimate of use is 2.4 billion bushels. If you look across the four years, you will notice that my estimate of use is at the higher end of what we have had in recent years. The result of these total supply and total use estimates will be an increase in stocks up to 583 million bushels.

Figure 9.						
WHEAT						
	94/95	95/96	96/97	97/98		
Plant	70.3	69.1	75.6	77.8		
Harvest	61.8	60.9	62.9	67.7		
YIELD	37.6	35.8	36.3	37.5		
PRODUCTION	2321	2183	2382	2538		
BEG STOCKS	568	507	376	435		
IMPORTS	92	68	70	70		
SUPPLY	2981	2757	2728	3043		
Food	853	884	910	925		
SEED	89	104	108	125		
Feed	344	152	325	300		
Export	<u>1188</u>	<u>1140</u>	<u>95</u>	<u>1100</u>		
USE	2475	2381	2293	2460		
END STOCK	507	376	435	583		
PRICE	3.45	4.55	4.30	3.30		

I will come back and talk about the price implications in a minute. This is where we may have some very interesting conversations.

# **Exports**

Γ

I am going to talk about this overhead that shows exports (Figure 10). I think this is one of the most important things I have to say. The three lines on the bottom are exports, the lowest line is exports of soybeans, the middle one is wheat, the top one is corn. Are those going up over time or are they flat? They are flat. You can run a regression line through them and there is no slope to these lines. I ran the regressions. They are flat. I want you to remember this the next time you hear somebody talk about China or the former Soviet Union or Mexico or somebody else and all the grain they are going to buy from us. It has not happened yet. It may happen in the future, but it has not happened yet.

Figure 10.

#### **Exports**

I have to clarify this and say this is bulk commodity; this does not include value added. Here sits John Johnson representing the poultry industry, and they are exporting 17 to 18 percent of their product now. The pork people have gone from net importers to net exporters of their product. The beef people are beginning to get some significant exports. There are more exports, but they are in value added products, they are not in bulk commodities. I think some of the farm press has led some of our producers astray by wanting them to believe that we are going to have this huge quantity of exports that are going to keep the price up. In one of the farm publications that I read this summer in the height of \$4.50 to \$5 corn, I put a big circle around a comment and said, "NO!" It said corn will not go below \$2.50 again. It is \$2.35 in the Midwest now, in the real surplus areas.

You just remember this chart. Ron Trostle told us this morning, and I thought it was an excellent presentation, that there is going to be an increase in exports over time. I do not disagree with that. But it has not happened yet. Do not bank on it until you see it happen because these are the numbers. Unless the numbers are wrong, it isn't happening. The export levels are not increasing over time, they are flat.

I really appreciated Ron's pointing out that we are not the only country that can produce, and especially when it comes to wheat, there are lots of other countries. This is China's wheat yields since 1960 (Figure 11). Remember ours are kind of flat since 1980? Look at theirs. If you look at the coefficient up there in front of year, it is saying that they get a 1.47 bushel increase per year, and it does not look to me like its flattening out yet. We are not the only people who can produce wheat, and I think Ron said that very plainly. **You get some of these prices in a range that are historically relatively high, and there are other countries out there that can produce exports too, not just us.** You have to take that into account and not get carried away with the exports everyone's saying will increase.

Figure 11.

#### **China Yields**

I am back to this overhead (Wheat, Figure 9). If we get just typical yields, a few more million acres planted, and total use near the upper end of recent years, the result will be an increase in stocks and prices will come down. If you have watched recently, you have observed this. If you go back to this relationship with my estimate of 583 million bushels ending stocks, on this price relation line, you'll find that it is about \$3.30. Just this past summer (1996) we had \$6. That is how fast this situation can turn around. If exports are flat and they stay flat or just grow slowly, our production capacity is such that in the short run, we can swamp the use capacity, which will end in more stocks, which is going to end up in lower prices. Longer run, three to five years, the use may pick up and help build this price back up. For the next couple of years with normal crops, we are looking at some much lower prices, unless we get some kind of shock from the use side that we do not anticipate at this point in time.

#### CORN

Here is corn (Figure 12). Base acres in corn have been between 82 and 84 million acres. Notice the first row is 1980. I put that one on there to show you we planted 84 million acres in 1980. In '85 we planted 83 million acres, and we put 4 million acres of corn base into CRP during the 10-year program when farmers could sign up for CRP. There has been an average of 4 million acres in CRP. In 1996 we could not sign up any land in 0/92, and the program is gone now. The 7.5 million acres is the one that got us in trouble with 1996 prices. We took 4.7 million acres out of production in 1995. We had a lot of acres that were prevented from being planted; we only planted 71.2 million acres in 1996. We had poor yields on top of that, all of which generated the \$5 prices this summer. Notice in 1996 when 0/92 was not available, those acres immediately went back into production. We jumped back up to 79.6 with no setaside.

Figure 12.					
		CORN ACRES			
YEAR	BASE	ARP	CRP	0-50/92	PLANTED
80	84.1	0.0	0.0	0.0	84.0
85	84.2	5.4	0.0	0.0	83.4
90	82.6	6.1	3.8	4.6	74.2
94	81.5	0.0	4.3	2.4	79.2
95	81.9	4.7	4.3	7.5	71.2
96	82.1	0.0	4.1	0.0	79.6

What can we expect producers to do in the spring of 1997 (Figure 13)? This is what they did in 1996, 79.6 million acres. The general consensus was farmers wanted to plant about 82 million acres of corn, but just weren't able to get it done because it was so wet. I added that 2½ million acres back, assuming that if they wanted to plant that much given last year's prices, under this year's prices they'll want to plant it even more. If one-third of the acres that come out of CRP can't be enrolled again, that is another 1.4 acres available. My estimate is 83½ million acres will get planted. If we go through here as I did with wheat, we will have 10.9 billion bushels available in the fall of 1997. If yield goes to 140 bushels per acre, that increases the production from 9.7 to 10.7 billion bushels. If we drop down to 115 bushels per acre, which we have had several times in the last 8 years, we lose a billion bushels. An estimate of plus or minus a billion bushels is only 10 percent on 10 billion bushels.

Figure 13.				
1997/98 CORN				
	MIL.			
Planted 1996	79.6			
Prevented planting 1996	2.5			
CRP (33% x 4.1)	1.4			
POTENTIAL PLANT 1997	83.5			
HARVEST (92%)	76.8			
Yield	127.1			
Production	9761			
BEGIN STOCK	1107			
Import	10			
SUPPLY	10878			
IF YIELD = $140$ , PRODUCTION =	10752			
IF YIELD = 115, PRODUCTION =	8832			

Ending stocks for the current season were 426 million bushels and the season average price, according to USDA, was \$3.24 (Figure 14). The year before we ended with nearly 1.6 billion bushels and the price was \$2.26, a dollar less. Assume you have this 10.8 billion bushels that I calculated.

There could be a lot of argument about this 9.0 billion bushels for corn use. In 1994 when corn was really cheap, we used 5.5 billion bushels as feed. Last year with the reduced acres and reduced yields, the total supply available when we began the year was only 8.9 billion bushels. The use the year before was 9.4 billion bushels. Something had to happen. The price went up to ration it. If you raise supply to 10.8 billion bushels and raise feed use back up to 5.3 billion bushels (notice USDA is only raising their estimate by about 250 million bushels), assuming the price goes down, considerably more will get used. But even with a pretty hefty estimate of use, ending stocks are at 1.9 billion bushels. You look at that number compared to 1.558 billion bushels in 1994/95 which generated an average price of \$2.26.

Figure 14.	CORN					
	94/95	95/96	96/97	97/98		
Plant	79.2	71.2	79.6	83.5		
HARVEST	72.9	65.0	73.3	76.8		
YIELD	138.9	113.5	126.5	127.1		
PRODUCTION	10103	7374	9265	9761		
BEG STOCK	850	1558	426	1107		
IMPORTS	10	17	10	10		
SUPPLY	10962	8949	9702	10878		
Feed	5536	4725	4975	5300		
Food, Ind	1691	1583	1670	1725		
EXPORT	<u>2177</u>	<u>2215</u>	<u>1950</u>	<u>2000</u>		
USE	9405	8522	8595	9025		
END STOCK	1558	426	1107	1853		
PRICE	2.26	3.24	2.70	2.15		

If you use the ending stocks relationship, you are talking \$2.15 by the fall of 1997. That is very possible. That is a yield of only 127 bushels per acre. A couple of years ago we produced 138 bushels per acre. Ending stocks, then, would be about 2.5 billion bushels, and your prices are at \$2 or under. This situation can turn around very fast—**all** it takes is a few more acres and good yields.

It can also turn around very fast the other way because we currently have very low stock levels. If we were to have another poor year, we could be right back in the same situation of high prices because we do not have any stocks to fall back on. It is going to be very variable. Essentially, as the weather goes is how the market is going to go, and weather is very hard to predict, even harder than prices.

#### **SOYBEANS**

This overhead is soybeans (Figure15). I expect soybean acres to stay about the same. If you look at the ratio of corn prices to soybean prices it is right about 2.4 which is the break-even point. If it goes above 2.4, farmers add soybean acres. If it goes below, they decrease soybean acres. It is right at 2.4 now, and so it does not look like there'll be much of a change. There were not very many soybean acres in CRP; consequently, there aren't additional soybean acres available from CRP for planting.



I will have to interpret this overhead for you (Figure 16). The left axis is change in soybean acres from year-to-year, and the units are million acres. The -8 at the very bottom is a decrease of 8 million acres compared to the previous year; the top is +10 or an increase of 10 million acres from the previous year. Before we got some very restrictive government programs in the last few years and soybean acres changed only 1 or 2 million acres a year, it was not uncommon for soybean acres to change 4 to 8 million acres from one year to the next. (Note the variation prior to the 1985 Farm Bill.) My

prediction is that we are going back to a very variable situation. When people respond to the market and not to government programs, you will get much bigger shifts in acreage which leads to more variability in price.



Lest you forget, we are not the only people who produce soybeans. South America produces soybeans and their yield line just keeps going up (Figure 17). You can expect 5 percent more this year than last year. Brazil and Argentina will harvest some 40 million metric tons in the spring of 1997 (almost 1.5 billion bushels.) Our line across the top is flat. What's getting produced in South America just keeps increasing. They compete with us very effectively in the export market. I expect soybean prices to stay in the same general area that they are in right now.

#### SUMMARY AND CONCLUSIONS

What I have tried to communicate to you is: stocks are low right now but they are going to increase rapidly (Figure 18). Given normal yields, acres are going to increase as they come out of government programs. There is more land available to be farmed. Acres are going to shift back and forth between crops based on economics, not government programs. There is going to be more shifting of acres from year to year from various crops. Yields are very variable and have been for the last 10 to12 years. In the short run, export growth is going to be flat to slow; I do not see any big surge in exports. Domestic use will increase, but the increase in supply for one or two years with normal yields is going to be much more rapid than the increase in use. Stocks will mushroom, and as a result of that, we will get lower prices.



What I am expecting is lower prices, much more volatile prices, and, of course, given my job, you wouldn't expect me to come to any conclusion other than this one: you need to learn more about marketing.

Most of you that I am speaking to today, I have spoken to before. You are the people that are in tune with these relationships. There is a large segment of the agricultural community out there that I do not think knows what's coming. What I predict is coming is a lot more variability in the price, a lot more. You are going to have to know how to manage that price risk which involves various marketing tools (Figure 19). There are several new crop revenue contracts or arrangements out there that I do not even have up here. There are new things coming along. One of the things that is really important if prices are going to be this variable and you are going to have to be involved in some sort of forward pricing arrangements, be it cash contracts, be it futures, be it options, be it revenue contracts, be it hedge-to-arrive, whatever, **you must know your cost of production**. I was absolutely flabbergasted the other day to get a call from a former student, who said, "Should I lock up my feed prices for dairy at \$195 a ton for the next year?" I said, "What level of milk price do you have to have if you lock in at \$195?" He said, "I do not know." I give up! You know you have to know some of these basic relationships.



You also have to know marketing costs. Hedge-to-arrive is a perfect example. I do not know how many of you know about it, but it has been in the farm press all summer. People got into these contract, did not really realize what was in the fine print, and ended up with some tremendous margin calls and some tremendous expenses, and now we have law suits. It is because they did not understand what they were doing. It was all right there. They just did not understand. If you have all this variability and are borrowing any money, you are going to need to have this all understood and agreed upon between you and the bank.



This last item, "Think margins," involves keeping perspective. This overhead (Figure 20) is a distribution of December corn futures prices since 1980, there are about 7,000 prices behind this chart. Do you realize this summer when Dec. corn was trading above \$3.60, that in the last 15 years only 3 percent of the prices have ever traded that high? What were producers doing? Waiting for \$4.50. *Do not lose perspective*. You have to keep this in perspective. Here are producers this year, getting 175 bushels to 200 bushels per acre, selling it for \$4.00 per bushel or \$800 an acre, and it may cost them \$300 to produce it, all costs, and they want a higher price. Of course, I would too. I'd like a bigger salary, but my boss sits right here and he knows I am not worth it. He's not going to give it to me. The market knows your corn is not worth \$6.00 a bushel on a continuous basis either. *So do not lose perspective on these things*.



## QUESTIONS

If grain prices are declining and land is coming out of CRP, isn't it logical that some of that land is going to go into forages rather than back into grain?

That is probably true. It does not make any difference in Virginia because we only have about 7,000 acres in CRP in the state. It may make a difference in the Plains where all the wheat acres are going to come back. Some of those wheat acres may be used for grazing cattle rather than producing grain—especially if my estimates are right, and prices are \$3.30 or \$3.50 for wheat. Producers won't be too excited about growing wheat at those prices. They may be more excited about raising cattle. I have seen no estimates, so I really do not know.

Why have not feeder cattle rallied?

They have rallied. How high did you want them to go?

Back to 1992 prices.

That is corn. In 1992 corn was \$2.00, this past year it averaged \$3.25 for the whole year. All the poultry and swine people in southeast were paying \$5, \$5.50 some as high as \$6 in May, June, and July, before wheat came in. That is what drove those feeder cattle prices in a hole.