

## Agricultural Situation Spotlight

*Editor's Note: Beginning with this issue, our Iowa's Agricultural Situation report will move beyond a synthesis of past USDA reports. Each feature, now called Agricultural Situation Spotlight, will provide in-depth analysis of an important topic in production agriculture.*

### Weak Spots in the Agricultural Safety Net

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Congress added new programs under the 2002 farm bill to expand the safety net for agricultural producers. Countercyclical payments and marketing loan benefits compensate for low prices. Crop insurance and non-insured crop disaster assistance programs reduce risks from low yields. Direct payments provide income support. But the call for additional support to cover pricing and production emergencies has not subsided. Why?

While some of the calls for disaster assistance have centered on devastating crop losses (mainly from drought), others have called for compensation for shallow losses (partial crop losses). Why might farmers request assistance to cover shallow losses? An examination of returns under the new farm bill is revealing.

#### NET RETURNS UNDER VARIOUS SCENARIOS

One way to examine the ability of current farm programs to deal with a variety of production and pricing scenarios is to calculate the net returns to an example farm over many different price and yield combinations. Consider, for example, an Iowa corn farm that has been taken through 5,000 price and yield simulations. Table 1 shows the assumed settings on the farm for the direct, countercyclical, and crop insurance programs, along with assumptions on the per acre costs on the farm and the ability of the producer to use the

marketing loan program. The producer-paid insurance premium is the actual premium rate for a corn producer in Boone County, Iowa, with an actual production history (APH) yield of 148 bushels/acre for Revenue Assurance (with the harvest price option) of 65 percent coverage.

For each price and yield draw, we can calculate the net return per acre to the farm. Figure 1 shows the relationship between price and market receipts less variable costs. The natural hedge that Iowa corn farmers enjoy is nicely illustrated. Notice that as the market price increases, the average return remains at about \$150/acre. Higher yields tend to coincide with lower prices and vice versa. Negative returns are possible. But the average return across the prices is roughly the same.

Figure 2 shows the relationship between price and net returns after the inclusion of government payments. This net return is equal to the sum of market receipts, direct payments, countercyclical pay-

ments, net crop insurance payments, and marketing loan benefits less variable costs. What does Figure 2 teach us about the effects of the government payments?

#### GOVERNMENT PROGRAMS: GRAPHING THE EFFECTS

First, government programs remove the possibility of not covering variable costs. In one sense, government payments have largely taken the risk out of farming. Second, the marketing loan and countercyclical payment programs provide a great deal of support at low prices (lifting the points on the left side of the graph). Third, revenue insurance coverage provides income support in cases of low yields (lifting the points on the right side of the graph) and low prices (providing additional lift on the left side).

Fourth, the combination of programs creates a "V"-shaped floor for net returns. It is this floor (and particularly the bottom of the V) that illustrates the idea of a shallow loss. These points have prices between \$2.00 and \$2.60 per bushel and yields between 70 to 100 bushels per acre. At these points, market receipts are somewhat below average, and all of the government program payments are small or nonexistent.

The critical point for this farm is a price of \$2.32 per bushel and a yield of 86 bushels per acre. This combination results in the lowest

**TABLE 1. FARM AVERAGES AND GOVERNMENT PROGRAM SETTINGS**

Variable	
	(bushels/acre)
Direct payment yield	103
Countercyclical payment yield	120
APH yield	148
	(dollars/bushel)
National loan rate	1.98
Direct payment rate	0.28
Target price	2.60
	(dollars/acre)
Variable costs per acre	176.83
Producer-paid insurance premium	3.96



FIGURE 1. MARKET RECEIPTS LESS VARIABLE COSTS

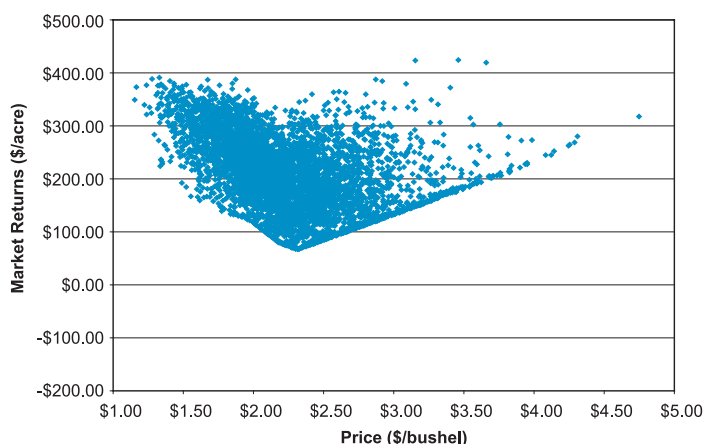


FIGURE 2. NET RETURNS

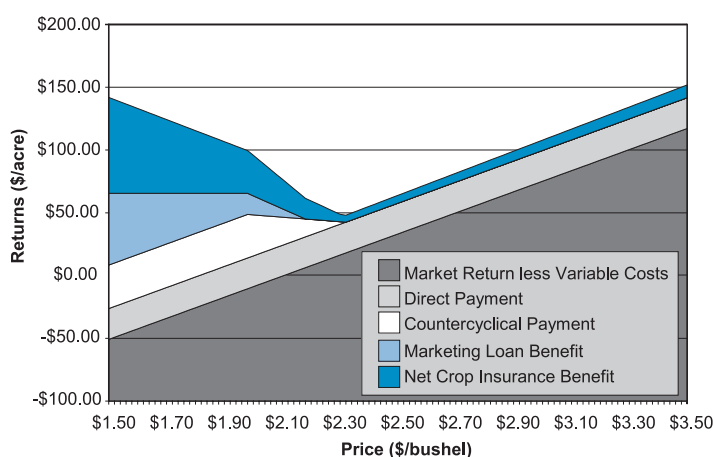


FIGURE 3. BREAKDOWN OF NET RETURNS FOR AN 84 BUSHEL PER ACRE YIELD

net returns, as prices are fairly low but still high enough to prevent any marketing loan and countercyclical payments and yields are low but again high enough to prevent most crop insurance payments. Any movement of prices and/or yields away from these points results in higher net returns. The critical point juncture changes with the type and coverage level of the crop insurance on the farm. For revenue insurance products with harvest price options, the critical point yield is equal to the farm's APH yield times the coverage level. For yield insurance products and farms with no crop insurance, the critical point yield is zero. The critical point price level depends on the county loan rate for the farm.

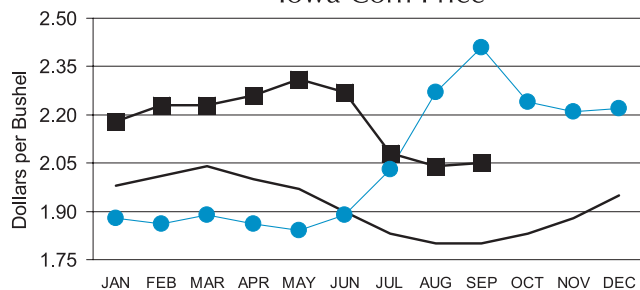
Figure 3 shows how this pattern arises. Tracking the various components of net returns over a range of prices for a given yield (84 bushels per acre) shows the impact of each of the programs and the market. The dark gray area represents the returns from market receipts less variable costs. It takes prices over \$2.10 per bushel for market receipts to cover variable costs. The light gray shows the direct payment. For this example, direct payments provide roughly \$25 per acre in support. The white area represents countercyclical payments. These payments are maximized at prices below \$1.98 per bushel and are equal to zero at prices above \$2.31 per bushel. The light blue represents the returns from the marketing loan program. Marketing loan program returns increase with lower prices. The dark blue illustrates the returns from crop insurance—in this case, Revenue Assurance with the harvest price option. Given the set-up, a yield of 84 bushels per acre is just low enough to trigger crop insurance payments at any price. The harvest price option allows crop insurance payments to increase at lower prices. As Figure 3 shows, the combination of returns is the lowest at prices around \$2.32 per bushel.

### SHALLOW LOSSES TAKE THE HARDEST HIT

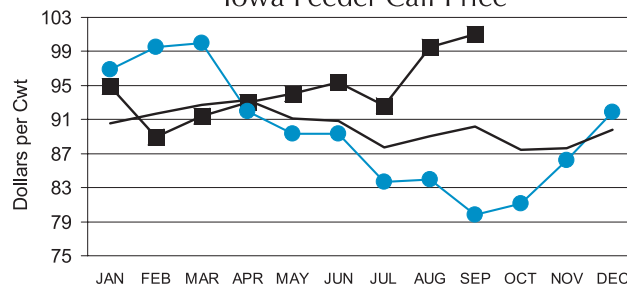
Similar patterns emerge when soybean markets are plotted. Prices near \$5.35 per bushel result in the lowest returns. The season-average prices for Iowa corn and soybeans in 2002 were \$2.25 and \$5.40 per bushel. So returns from government programs were low and those farmers who suffered shallow yield losses were the hardest hit in returns. The situation for 2003 looks similar for corn. Current new-crop December corn futures prices are in the \$2.25–\$2.30 range. Thus, those farmers who suffer shallow yield losses again this year due to the dry conditions throughout the summer could face a second year of limited returns, in which any other combination of prices and yields would have left them better off. ♦

*Iowa commodity prices located on page 11*

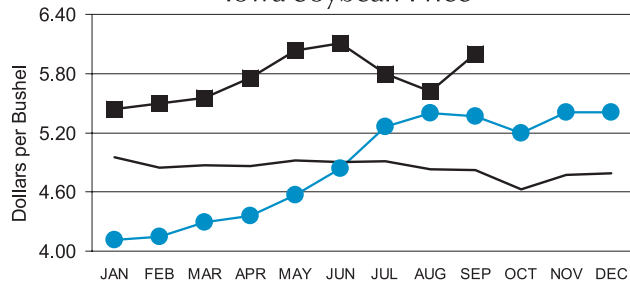
Iowa Corn Price



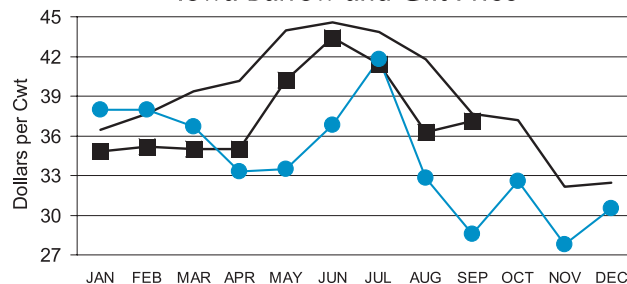
Iowa Feeder Calf Price



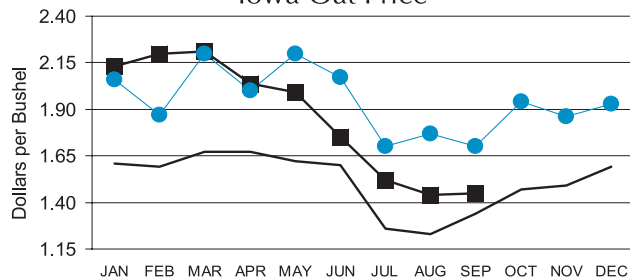
Iowa Soybean Price



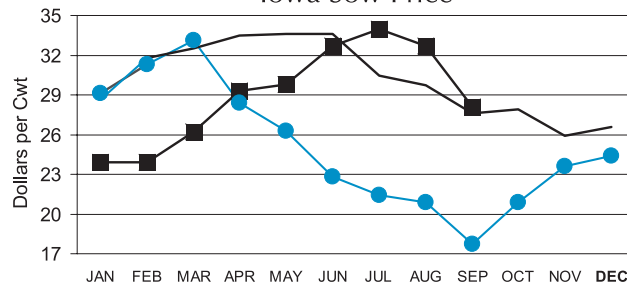
Iowa Barrow and Gilt Price



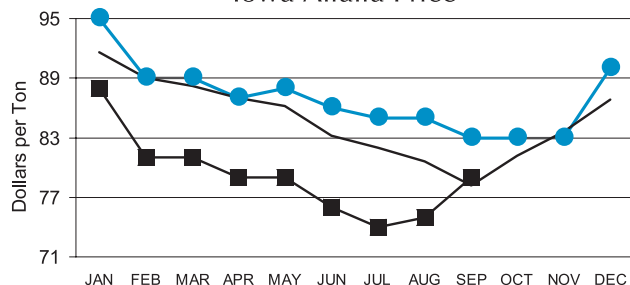
Iowa Oat Price



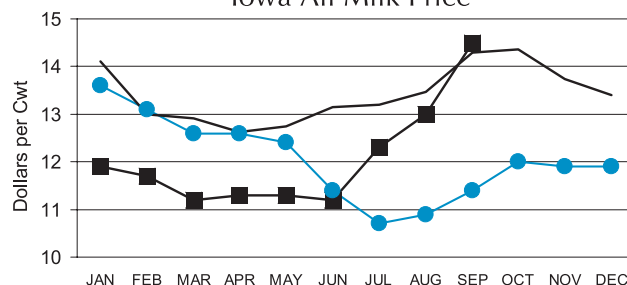
Iowa Sow Price



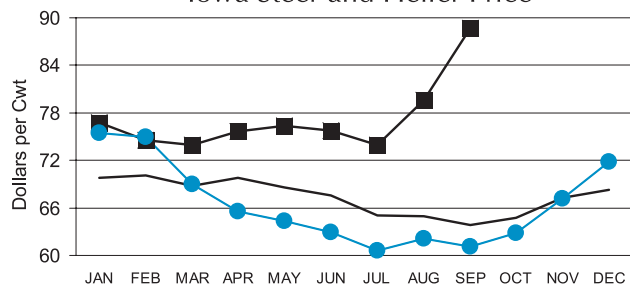
Iowa Alfalfa Price



Iowa All Milk Price



Iowa Steer and Heifer Price



■ 2003 ● 2002 — Avg 98-02