PURDUE UNIVERSITY

Purdue Agricultural Economics Report

October 2011

2012 Agricultural Outlook

The Indiana agricultural economy remains strong in 2011. Even though yields were sharply reduced by a spring that was too wet and a summer that was too hot and dry, prices for corn and soybeans will be high enough to provide near record revenues for the state's two major crops. The driving demand forces for crop agriculture are expected to remain favorable for 2012. These include: the continued growth in corn use for ethanol; the continued expansion in soybean purchases by China; and a general weakness of the U.S. dollar, which tends to strengthen commodity prices.

The biggest concerns will arise from the struggling economies in the U.S., Europe, and Japan. The collapse of world economic growth in late 2008-2009 sent commodity prices into a tailspin. For that reason we open with a discussion of the potential for a double-dip recession in the U.S. in the coming year. Weak economic growth is a formidable threat to high commodity prices.

The bottom line for the crop sector is that high incomes are being bid into land values and cash rents. We see that trend continuing for 2012. Thus, not only are crop farm incomes high, but equity increases from land appreciation are large as well.

The Indiana livestock sector generally had a positive financial year in 2011 as they reduced per capita supplies sufficiently to garner higher prices for their animal products. Early indications of a modest 2012 expansion in animal output puts those returns in jeopardy, depending on how high feed costs are.

U.S. Economy: Are Opportunities Greater Than Threats?

Larry DeBoer

The recovery from the Great Recession is faltering. Gross domestic product grew only 1.5% in the past year. It grew at an even slower pace in the first six months of 2011. Unemployment remains above 9%, where it's been most months since mid-2009. Rising oil, food, and medical prices helped increase inflation to 3.6% over the past 12 months. Federal policy has been deadlocked.

Unfortunately, the economy looks to be headed for more of the same over the next year. Consumers are exceptionally gloomy. The Index of Consumer Sentiment has dropped back toward recession levels.

High unemployment, falling home prices, and financial market uncertainty are weighing consumers down.

In This Issue

Consumer spending has grown only slowly.

Investment in business equipment has grown, and data on new orders indicate that growth will continue. Business building investment may have reached a turning point as well. But the housing market still hinders recovery. Building permits for new homes did not increase over the past year, and housing construction remains near record lows. Home prices continue to fall. Business investment may be a plus in 2012, but housing will continue to hold the economy back.

Despite huge federal government deficits and rising debt, the government sector also has been a drag on economic growth. The federal stimulus programs have mostly run out. State and local governments have been laying-off employees and raising taxes. Tax cuts and added spending from the proposed jobs plan would help some, if it could pass, but overall government spending is likely to add little to growth in 2012.

Both exports and imports are rising, which means the trade sector is not contributing very much to growth. The value of the dollar has fallen steadily against China's yuan, which may help with our exports to China eventually. The dollar is up and down against the euro, depending on the news about European debt troubles. Economies around the world are slowing, however. Trade will only make a small contribution to positive growth over the next year.

With lagging consumer spending, housing investment, and government purchases, and only small boosts from business investment and trade, expect GDP to grow only 1.5% to 2.0% above inflation over the next year. Such growth is too slow to foster an improving economic picture.

GDP growth near 3% is usually required to hold the unemployment rate steady. Less than that, and unemployment tends to rise. Slow growth will mean no progress on unemployment, with the unemployment rate remaining 9.0% or moving higher by this time next year.

High unemployment usually means falling inflation unless oil prices rise. That's what happened in 2010-11. Oil prices have dropped some in the past few months, and Libyan oil may begin to flow again. Barring another oil price hike, the inflation rate should fall. Expect inflation of 1.5% to 2.5% over the next 12 months.

Predicting interest rates should be easy. The Federal Reserve has pledged to keep the federal funds interest rate near zero until mid-2013, where it's been since the end of 2008. The rate on 10-year Treasury bonds has dropped as investors seek refuge from market volatility and the FED has decided to buy more long-term bonds. Interest rates will remain low. Expect the interest rate on 3-month Treasury bills to be 0.2% and the interest rate on 10-year Treasury bonds to remain under 2.5% a year from now.

It's an uneasy forecast at best, with threats may be nearly as large as opportunities.

Farm Policy

Roman Keeney and Amber Remble

The 2008 Farm Bill is scheduled to expire in 2012, meaning that either new legislation must be passed or provisions of the 2008 Farm Bill extended. A hallmark of the 2008 Farm Bill was the option for producers to elect a counter-cyclical revenue program (Average Crop Revenue Election, ACRE) by foregoing 20% of their direct payments. As prices and farm revenues for most crops have been high, ACRE payouts have been relatively small, and few producers selected the program. The concept of a counter-cyclical revenue program was to begin transitioning producers from payments made at a constant level regardless of market and crop prices to one where payments were more in line with the safety net principle of providing higher assistance when revenues were low.

The Republican majority in the House has made deficit reduction a priority. The summer 2011 debt ceiling agreement reached between the White House and Republicans committed the government to approval of a plan for reducing the 10-year projected deficit by at least $1.5 trillion. While eliminating the Farm Bill in total would barely make a dent in that goal, farm state legislators and interest groups that would normally fight to protect agricultural spending levels seem resigned to the fact that cuts are coming. Relatively high farm incomes and the economy in a recession leaves little political room for making the case that agriculture should be exempted from budget reform.

Nearly all public comments made with regard to reduced

agricultural spending quickly turn to direct payments. Direct annual payments amount to about $5 billion annually. The idea behind making direct annual payments arose in the mid-1990s, when the United States was reforming farm programs to be World Trade Organization (WTO) compliant. In WTO terms, a constant direct payment is "decoupled" because the farmer cannot make any decision that will change the level of the payment, and thus the payments should not stimulate over-production, which could affect trade. It is this decoupled nature that makes direct payments difficult to justify to taxpayers when agricultural prices and national net farm income may be at record highs.

Given the public comments of legislators and interest group representatives and the strong stance the Obama administration has regularly taken on reducing farm subsidies in budget requests, it seems a certainty that direct payments will be lower in the next Farm Bill. If we use the 2008 Farm Bill as a guide, we see that there is significant legislative support for transferring producers into counter-cyclical revenue support that is offset with lower direct payments. This is in fact the position that many commodity interest groups have arrived at, putting forth public positions that ask for lower direct payments in exchange for better insurance coverage or a revised ACRE program that is simpler to understand and has a more local basis for determining payments. This type of tradeoff could comprise nearly all of agriculture's expected contribution to deficit reduction. However, these deficit savings would only be relative to "expected" spending. An expanded and mandatory ACRE program would in fact have much larger budget exposure and quickly erase agriculture's contributions to deficit reduction if prices stumble during the life of the next Farm Bill.

While the direct payments-for-ACRE or insurance tradeoff in farm spending seems to be the leading candidate, other options exist as well, and it seems that nothing is "off the table" for the agriculture committees until they know more from the special committee on deficit reduction (the so- called Super Committee). Farm policy followers should expect to hear discussion and debate in the coming year on adjustments to loan rates and target prices, expanded offerings in crop insurance, farmer savings accounts, and getting the government out of agricultural subsidies altogether. One thing is certain, however, and that is that the more options that arise the more likely the passage of the Farm Bill moves from 2012 to 2013, just as it did in 2001 and 2007.

Record Agricultural Trade

Phil Abbott

U.S. agricultural exports for fiscal year 2011 are expected to set a record that surpasses the previous record in 2008 by a wide margin. According to USDA's recent trade outlook, agricultural exports in 2011 will reach $137 billion and are projected to remain at that same high level for fiscal 2012. The previous record in 2008 was $114.9 billion. This strong export demand is contributing importantly to both high agricultural commodity prices and record farm incomes.

Export gains are largely due to high prices, especially for corn and soybeans. Grain and feed exports are up over $11 billion from fiscal 2010 and should increase another $1 billion in 2012. Oilseed exports are up $4 billion in 2011. In the case of wheat, expanded exports in 2011 made up for crop shortfalls in a number of the major exporting countries, and better crops there mean 2012 wheat exports may be lower. But anticipated high prices and strong export demand mean corn and soybean export value will remain high.

Large gains in exports have also been seen for beef, pork, poultry, and dairy products as prices for animal products have increased and export demand remains inelastic. Pork demand is especially robust from China, Japan, and Korea. Livestock, meat, and dairy exports are up $5.5 billion in 2011 from 2010. Animal product exports will remain at about the same value in 2012. Cotton prices and exports have also increased in 2011, by $4.3 billion.

High prices and inelastic food demand mean U.S. agricultural imports will also surpass the 2008 record. Agricultural imports in fiscal 2011 are projected to increase 20% from 2010 to $94.5 billion and increase another $10.5 billion to $105 billion in 2012. Agricultural imports had reached $79.3 billion in 2008, and after falling in 2009 have resumed climbing. In spite of increasing imports, the agricultural trade surplus should reach a record $42.5 billion in 2011, but will fall back to $32 billion in 2012 as import costs grow faster than exports.

One of the external factors contributing to high prices and

strong foreign demand has been increasing imports of soybeans by China. Those imports had been growing steadily since the mid-1990s, but accelerated from 2008 to 2011, in part due to stockpiling by the Chinese as stocks elsewhere dwindled. Because the Chinese have accumulated large stocks, at about a 22% stocks-to-use ratio, it is expected that this factor will no longer expand Chinese soybean import demand. The USDA expects domestic demand and so imports by China to continue to grow, at a slower pace, and competition from Brazil and Argentina-who are responding to high world soybean prices-could mean somewhat lower U.S. soybean export volumes.

There are threats to this robust export outlook. USDA's forecasts are based on an optimistic world economic outlook and a continuing weak dollar exchange rate. Slowing growth in Asia and Europe, seen recently, and European debt concerns could mean a somewhat stronger dollar and weaker export demand. Measures to fight inflation in emerging economies such as China and Brazil will slow future economic growth. Slowing world economic growth now appears to be resulting in weakening commodity prices that would cause final export values to be less than forecast by USDA.

There is little progress evident in WTO negotiations. The WTO Ministerial in Geneva this December is billed as a forum for "doing WTO's business," and progress on Doha Round negotiations is not expected. The bilateral agreements between the U.S. and Korea, Columbia, and Panama that were negotiated at the end of the Bush administration are now being moved forward by the Obama administration.

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Food Prices Keep Moving Higher

Corinne Alexander

After two years of very low food price inflation, shoppers are seeing substantial food price increases in 2011. Food price inflation has been accelerating this year as food manufacturers, retailers, and restaurants are forced to pass on record high ingredient prices. The four primary drivers of food price inflation are:

- strong global demand for commodities largely driven by a growing middle class in developing countries such as China
- major agricultural production problems due to extreme weather events such as the drought in Russia in 2010, flooding the U.S. Midwest, the wet spring that delayed planting, the record U.S. heat wave, drought in the Southern Plains that is affecting both crops and livestock, the early onset of the dry season in Brazil, and Hurricane Irene
- high crude oil prices
- government mandates that use food raw materials for corn ethanol and soy biodiesel production.

As of August 2011, overall food prices were 4.6% higher than August 2010. For all of 2011, food prices are expected to rise by about 3.6%. Food inflation is composed of expenditures at the grocery store and restaurants. Food price inflation at grocery stores was 6.0% higher in August 2011than in August 2010. Grocery store prices are much more sensitive to commodity prices. For restaurants, the largest cost is labor, followed by food costs. With little upward pressure on wages, restaurants have not had to increase their prices as much with restaurant inflation at 2.7%.

Over the last 12 months, the product categories with the largest food price increases have been coffee, dairy, meat, fats and oils. The household staple with the largest price increase is coffee at 46%. Beef prices have also been higher, led by ground beef at 13%. For the dairy sector, whole milk and butter prices are up 12%. In general, the prices of wheat products have increased over the last year, with pasta up 14%, and this trend will likely continue with the flooding faced by farmers in the Northern Plains and the drought faced by farmers in the Southern Plains.

At present, there are very low U.S. and global inventories of food commodities such as food grains, feed grains, sugar, fats and oils. Given the adverse U.S. weather conditions in 2011, which are reducing supplies, U.S. inventories of these commodities will remain low until at least mid-to-late 2012. In order for basic commodity prices to fall, there needs to be large harvests with supply exceeding demand so that inventories can be rebuilt to more comfortable levels. High commodity prices are likely to persist, and retail food prices will continue to be high through 2012. USDA is projecting food inflation of 2.5% to 3.5% for 2012.

The food industry is in a classic costs-price squeeze as consumers make adjustments to a more moderate lifestyle. The food industry will make adjustments as they also learn to manage the financial risks in volatile ingredient prices.

Beef Cattle Numbers Keep Dropping

Chris Hurt

The beef cow herd continues to drop as producers have been discouraged by high priced feed over the past several years and the drought in the Southern Plains keeps cows moving to market. Beef cow numbers have dropped by 12% since 2007. The number of heifers being retained for replacements is down 5%, and cow slaughter has remained high this summer. These are all indications that the cow herd is continuing to decrease.

While less beef is being produced in the U.S., more of it is being exported. Beef exports will be up about 14% in 2011. A weak dollar and strong economic growth in developing countries stimulates demand. Beef exports are expected to be 10% of total U.S. production this year, exceeding the previous record in 2003 prior to the BSE event. Beef imports are also down this year by 5%. This combination of much stronger exports and lower imports means that the U.S. will be a net exporter of beef, an unusual situation.

With production off and trade up per capita, supplies in the U.S. are expected to be down 4% in 2012. Since feed prices began to escalate in 2007, the per capita supply of beef available to Americans is down 15%. This means in 2012 there will only be 55.6 pounds of beef available per person, compared with 65.2 pounds in 2007.

Less beef means much higher prices. Finished steer prices in 2007, before the surging feed prices, averaged $92 per hundredweight. In 2011 they will average about $113 before moving on to around an expected average of $116 for 2012.

Oklahoma City steer calves averaged $125 per hundredweight in the fall of 2010. Those prices are expected to be $5 to $15 higher this fall. Feeder steers at the same location were $111 in the fall of 2010 and are expected to be in the $125 to $135 range this fall. Calf and feeder cattle prices will be sensitive to feed prices. Higher feed costs will quickly lower calf prices.

Prospects for cow-calf operators appear to be positive over the next several years. The breeding herd is not likely to begin expansion until the drought in the Southern Plains fades. If crop yields return to normal in 2012, prices for major feedstuffs and forages will be lower, and finished cattle prices will be very high. This is a combination that can add quickly to calf prices by the fall of 2012. Low beef production is likely to keep calf prices high through at least 2015 and probably beyond.

All this favors Midwestern cow-calf operations that have reasonable forage supplies this year and can hold cows for the longer run opportunities.

Hog Profits Depend on Corn Price?

Chris Hurt

In 2012, live hog prices are expected to be up modestly to about $65 per live hundredweight. Feed prices will be critical to whether pork producers can cover all costs in 2012. Production is expected to rise by nearly 2% as producers keep the herd near the same size, but higher productivity will provide the increase. USDA expects pork exports to rise by 4% in 2012 after being up by 17% in 2011. The U.S. industry is expected to export 22% of production next year. With higher exports, per capita supplies in the U.S. will be nearly unchanged.

Hog producers can pay about $6.75 per bushel for corn and cover all costs. If corn prices are below $6.75 a bushel, then pork producers may be able to have some profits for 2012. Grain markets turned bearish after the September 12th release of USDA grain production estimates. With additional growing concerns over slowing world economic growth, corn and soybean meal prices

dropped to levels that suggest some profitability for 2012. With December 2011 corn futures at $6.50 a bushel, the industry may have a profit of about $10 per head for 2012. The largest of the profits would come in the second and third quarter of 2012, with small amounts in the final quarter of 2011 and first quarter of 2012.

Butter Softens the Squeeze of Dairy Farms Margins

Nicole Olynk, Agricultural Economics and Mike Schultz, Animal Science

Class III (milk for cheese) prices usually drive the overall milk price and have averaged $18.18 per hundred weight for the first eight months of 2011. Despite strong milk prices, volatile-and high-feed costs are threatening to squeeze dairy producer margins. USDA's milk-to-feed price ratio for August 2011 was 1.89, down from 1.92 in July 2011. Despite higher milk prices in 2011, rising feed costs have caused the decline in the milk-to-feed price ratio from 2.36 in August of last year.

Total supplies of wheat, feed grains, and soybeans are currently forecasted by the USDA to be 4.3% smaller than supplies from a year ago. Volatile feed prices have the potential to squeeze producer's margins. Corn and soybean prices are part of the equation, but rapidly rising hay prices also have the potential to challenge dairy farmers this year as forages play a major part in the volatility of dairy ration costs. Alfalfa baled hay was $191/ton in August, up from $189/ton in July and a major increase from the $118/ton from August 2010. Dairy farms better able to control their own feed production, specifically forage production, may be best positioned to survive the volatile feed prices.

Milk production is expected to rise in 2012 by 1.4%, primarily on more production per cow. This will tend to depress milk prices. In 2011, all milk prices averaged about $20.25 per hundredweight and are expected to drop to only $18.30 for 2012. There are reasons for optimism and also for caution. On the optimistic side, butter demand is strong, export markets are continuing to gain steam, and butter inventories are at historically low levels. On the side of caution, cheese stocks are at historic highs.

Dairy policy has been garnering attention, fueled first by the dismal milk prices of 2009 and now the increasingly tight margins felt with high feed prices. Several comprehensive proposals for dairy pricing reform have attracted their own supporters and detractors. Briefly, the plans put forth as the Federal Milk Marketing Improvement Act of 2009 (Specter-Casey Bill) and the Foundation for the Future Plan (National Milk Producers Federation), which was largely adopted in proposed legislation by Colin Peterson (D-MN), have generated much discussion about supply management, margin protection, and Federal Order Reform. Dairy will be an important topic in the U.S. Congress during the Farm Bill debate or sooner. Significant changes to dairy policies are possible, if not likely.

Crop Input Prices Surge

Bruce Erickson and Alan Miller

Growing an acre of corn, soybeans, or wheat in 2012 will likely cost much more than in 2011. Fertilizer prices have been a large part of recent input price swings and continue to be the largest variable cost--second only to land payments or cash rents. Prices for seeds are predicted to be up decidedly, and pesticide costs will be a mixed bag varying by product.

Preliminary 2012 budgets show variable costs for rotation corn increasing by 16%, soybeans by 15%, and wheat up by 12% compared to our January 2011 revised budgets.

Fertilizers: September 2011 survey information from Illinois fertilizer retailers shows anhydrous ammonia for fall application selling for $790-890/ton, diammonium phosphate (DAP) at $680-725, and potassium at $580-665. All of these are more than $100/ton higher than in September 2010, which means their price per pound of nutrient is significantly higher as indicated in Figure 1. Our budget projections for 2012 put corn fertilizer expenses in the $165-211 per acre range, depending on previous crop,

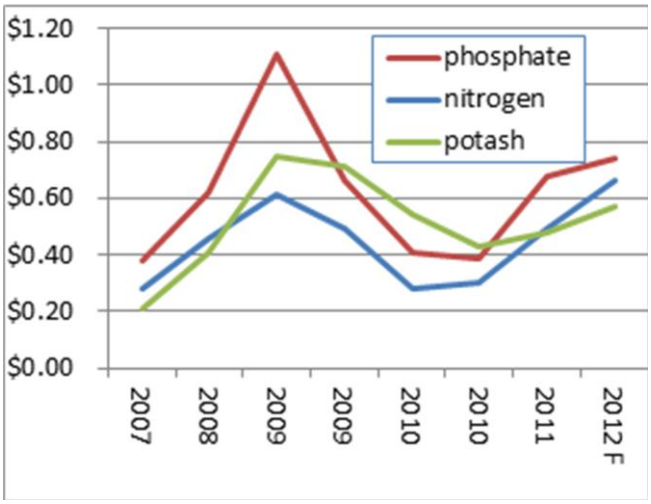
soils, and other factors (includes N as well as P, K, and lime replacement).

The U.S. fertilizer market is strongly tied to the worldwide situation since more than 55% of nitrogen and 81% of potash used in the U.S. is imported (USDA-ERS, 2009), and the U.S. exports 44% of its phosphorus production. The costs to produce and transport fertilizers are highly energy dependent and thus tied to energy costs. Current energy costs for fertilizer producers are mixed, with energy costs overall remaining high but the cost of natural gas, used extensively for N production, declining in recent years.

The optimal rate of a fertilizer to apply is influenced by: cost of the fertilizer, the value of the crop, and other factors. For nitrogen fertilizer on corn, a higher ratio of N price to corn price shifts the economically optimum N rate lower as suggested for 2012 relative to 2011 in Table (1).

Seed/Genetics: Per-acre seed prices after quantity, early-pay, and other incentives are projected to be up for 2012 to $87-107 per acre for hybrid corn in our budgets and $62 per acre for GMO soybeans. The percentage of genetically modified corn acres in Indiana is increasing. According to USDA, 78% of the 2011 corn in Indiana was herbicide tolerant, compared to 15% in 2005, and 63% of Indiana corn acres this year were insect resistant. Ninety six (96) % of 2011 Indiana soybean acres were herbicide tolerant.

Figure 1: Prices per pound of selected nutrients from Purdue budgets. 2012 prices are estimates.



Pesticides: Prices for herbicides, insecticides, and fungicides to protect crops have been relatively flat in recent years. Prices for glyphosate-based herbicides fell in 2010 and again lower in 2011, and that isn't expected to change substantially for 2012. It will be a mixed bag for other pesticides, depending on each particular market, but the overall trend appears relatively flat.

Energy: The Energy Information Administration predicts gasoline and diesel fuel prices to remain relatively flat going into 2012, following the steep uptick that occurred from 2010 to 2011.

Machinery: Farm machinery expenses have been increasing in recent years. Sales of smaller tractors across the industry continue to be affected by lingering housing and construction woes, but larger

Table 1: Nitrogen to Corn Price Ratios. 2012 Ratio is an estimate.

Year	N Price	Corn Price	2012 Ratio
	$/lb.	$/bu	N price/Corn price
2005	.26	2.12	.12
2006	.34	2.31	.15
2007	.28	3.71	.07
2008	.46	5.00	.09
2009	.49	4.00	.12
2010	.30	4.20	.07
2011	.49	5.54	.09
2012 Est.	.54	5.50	.10

horsepower tractor and combine sales remain strong. Purchases remain strong for precision farming devices for efficiency with high-priced crop inputs, such as planter unit controls and sprayer boom section and nozzle controls that minimize overlaps in planting/spraying/fertilizing in turn rows, point rows, and along waterways and field borders.

What to Plant in 2012?—More Corn!

Alan Miller

Returns for crop production in 2012 should be favorable due to relatively high crop prices, although costs of production are expected to increase as well. Overall, variable crop production costs are expected to be up 10% to 16% in 2012. Fertilizer prices, fuel prices, seed prices, and crop insurance premiums are expected to be among the drivers of higher production costs in 2012.

Total costs per bushel for 2012 are expected to be around $4.68 for corn, $10.86 for soybeans, and $7.21 for wheat. These estimated costs include all the variable costs to produce the crop as well as machinery depreciation, cash rent, and family living expenses. However, the cash rent is based on cash rental rates reported in the Purdue Cash rent survey conducted in June 2011. And cash rents are expected to increase significantly this fall in Indiana for many farmers. Overall, fixed costs per acre could increase 10% to15% in 2012 in Indiana due primarily to higher cash rents.

If commodity prices stay above our forecast total costs per bushel, as they are currently, producers have the opportunity to earn an "economic profit" (returns above all costs) once again in 2012. This is the fifth year out of the last six years we have forecast an economic profit for producers of rotation corn and beans on average quality Indiana land.

As shown in Table 2, corn market revenue per acre and corn contribution margin per acre (market revenue minus variable costs) are both high. Using 2012 expected harvest cash prices based on futures market prices from September 22, 2011, the forecast returns above variable costs from a corn–soybean rotation on average land is $420 per acre (($460+$380)/2).

Rotation corn on average yield land shows a $69 per acre advantage over rotation soybeans, signaling that the market continues to encourage higher corn acreage for next year. Single crop wheat has a much lower contribution margin than rotation corn and soybeans. This tends to suggest that single-crop wheat has a much lower return in the northern-half of Indiana unless you have a strong added return for straw. On the other hand, wheat and double-crop soybeans in the southern half of Indiana may be fully competitive with rotation corn and soybeans.

Continuous corn has a contribution margin about equal to rotation beans on average quality soils. This implies that corn returns on average quality land are not strong enough to bring corn into the crop mix if one

Table 2: 2012 Estimated Crop Budget

2012 Estimated Crop Budget:
Indiana: September 22, 2011

Prices	Corn	Beans	Wheat
Harvest Futures 2012	$5.90	$12.80	$6.95
Expected Basis	-0.25	-0.35	-0.35
Expected Cash Price	$5.65	$12.45	$6.60

Estimated Yield/Acre and Returns/Acre Above Variable Costs

	Continuous Corn		Rotation Corn		Rotation Soybeans		Single-Crop Wheat		Wheat/DC Bns
Land Quality	bu./acre	$/acre	bu./acre	$/acre	bu./acre	$/acre	bu./acre	$/acre	$/acre
Low	122	$249	130	$318	39	$272	62	$221	$327
Average	153	$378	161	$449	49	$380	70	$259	$429
High	184	$535	196	$629	59	$492	84	$321	$557

Budget Purdue ID-166 (October 2011)

has to move from a corn-beans rotation to corn-on-corn. Since Indiana's corn/soybean acreage mix is already 53%/47%, the corn price may not be high enough to encourage more corn on rotation acres for average quality soils. However, on the high quality Indiana soils, continuous corn may be more competitive versus rotation soybeans. These numbers suggest a small movement toward added corn acres in Indiana for 2012, and that will be on high quality soils that are moving to a corn-corn-soybean rotation or toward continuous corn.

There is a lot of financial risk per acre if prices or yield outcomes drop from these budgeted results. Crop profitability would change a much greater percentage than would the falling prices or yields. For example, the $420 budgeted return above variable costs used above minus $120 for machinery overhead and $200 an acre for cash rent leaves a profit margin potential of $100 per acre. A 10 % drop in the price of corn and soybeans reduces economic profit for the average yield corn–soybean rotation from $100 per acre to just $21 per acre, a reduction of over 79% in profit margin.

You need to run your own budgets and update them regularly. Crop prices will vary sharply over time, costs can vary significantly from farm to farm, and relative yield potential for corn, soybeans, and wheat varies by farm.

Small Corn Crop Means High Prices

Chris Hurt

Corn remains the crop in shortest supply after a difficult growing season. A disagreeable spring and summer in 2011 cut Indiana yields to just 145 bushels per acre, the lowest corn yields since 143 bushels per acre in 2003. Total state production will only reach 826 million bushels, barely enough to meet internal usage in the state. As a result, there will be little corn shipped out of the state this year.

Nationally, yields were estimated at 148.1 bushels, compared to an expected yield under normal weather conditions of about 162 bushel. Total U.S. production will be only 12.4 billion bushels, down compared to a usage base of 13.1 billion bushels for the 2010 crop. The limited supply of corn means that prices must be high to force cutbacks in usage of about 300 million bushels. Ending stocks are expected to be reduced to 6% of usage in the U.S. and to 13% for the world. Both are extremely low.

Given strong expected demand for ethanol, this means that usage reduction will be in the export market and in domestic feeding.

The small Indiana crop means there will be more storage space than crops to fill the bins. Our estimate is that about 14% of the state's storage capacity will not be used this year. Of course the areas that have the poorest corn yields will have the greatest unused storage. In general, storage space will be readily available this fall in Indiana, and some commercial elevators and processors may reduce their storage charges to try to encourage more bushels to move to their facility.

Abundant storage space also means basis bids at harvest are expected to be strong. Basis is expected to be 15 cents to 20 cents stronger than in a normal yield harvest. Those premium basis levels are likely to continue throughout the marketing year.

USDA is estimating a season's average U.S. price received of $6.70 a bushel at the mid-point of their estimate. The sharp price declines after the release of the September 12th crop report have largely been attributed to concerns over weakening world economic growth and a stronger dollar. Less income means weaker demand for agricultural products. The experience from the 2008 economic collapse is also causing some to have grave concerns in the grain markets. After the collapse of Lehman Brothers in mid-September, the December 2008 corn futures fell from about $5.50 a bushel in mid-September to as low as $3.00 a bushel by December.

Will corn prices recover? The answer to that question will come when end users start to become more aggressive buyers at lower prices. Then some recovery in corn prices can be expected. From a historical perspective, the nearby corn harvest futures have never been above $6.00 a bushel at harvest time.

The current carry in the market (higher bids through the marketing year) suggests there will be enough price gain to offset the costs of on-farm storage. Those bids are currently showing about a 25 to 30 cent per bushel gain above interest costs into the

late-spring and early-summer of 2012. On the other hand, for commercial space, the carry in the current market is not large enough to cover interest costs and the cost or commercial storage fees that were used last year. As mentioned, commercial elevators may reduce their charges in some areas.

Expect another movement toward more corn acres in 2012, as planted acres will need to rise by 2-3 million. Market prices for 2012 will give large premiums to consider more corn acres as compared to wheat and to soybeans. More corn acres will mean more corn-on-corn acres. In Indiana in 2011 there were 5.9 million acres of corn planted relative to 5.3 million acres of soybeans.

Soybeans Supplies Tighten

Chris Hurt

Weather lowered 2011 national soybean yields to just 41.5 bushels per acre in USDA's September estimate, about 2 bushels below trend. In Indiana, the soybean yield estimate was dropped to just 42 bushels per acre, the lowest Indiana yield since 38 bushels in 2003.

The small crop means that usage will have to be cut by about 150 million bushels and prices will have to be high enough to discourage some end users. This will be accomplished primarily in the export market, where shipments are expected to be down by 125 million bushels.

USDA suggests this will leave just 160 million bushels as ending stocks at the end of August 2012. This represents just a 5% stock-to-use ratio and means soybeans will remain in very short supply.

However, South American acreage is expected to rise by nearly 5%, and if yields are also up about 5% from last year's short-crop, then relief in world shortages may arrive by late this coming winter. The biggest factors to impact bean prices in the coming months are probably Chinese imports and the size of the South American crops. China is expected to purchase nearly 9% more soybeans from the world this year, but all that growth is expected to be met by South America. China purchased a record amount of 2010 crop soybeans from the U.S totaling, 955 million bushels, which represented 64% of all our exports.

USDA expects average farm prices to reach a record of $13.15 a bushel for the U.S. average farm price. The previous record was $11.30 from the 2010 crop. Just like corn, there will be abundant storage space available in Indiana for soybeans. This will provide a somewhat stronger basis than normal at harvest time.

Because of the larger anticipated harvest in South America, the current carry in the cash market shows returns to on-farm soybean storage to be positive only through December or January. For commercial storage, the current higher bids for later in the marketing year are not sufficient to cover the interest costs and the commercial storage fees. Unless elevator managers lower these fees, current bids are suggesting selling at harvest time rather than use commercial space. Of course some may be unwilling to sell at harvest because they want more income in 2012, or because they are willing to speculate for higher prices. Higher prices could be linked to more aggressive purchases from China, as some believe, or to weather threats in South America.

Cash Rents Head Upward

Craig Dobbins and Alan Miller

Since 2007, the change in cash rent reported by the Purdue Farmland Survey has been unusually variable. For the years 2007 to 2011, annual statewide cash rent for average land increased 0.6% to 13%. For this five-year period, the increase in annual cash rent averaged 7.6%. The prior five-year period, 2002-2006, the percent change in annual cash rent varied from 0.8% to 3.4% and averaged 2.4%. The 13% increase in cash rent in 2011 is the third largest increase in the 37-year history of the Indiana survey.

Many of the forces behind the 2011 increase are still in place. The domestic and international

demand for U.S. corn and soybeans is expected to remain strong. USDA projects average 2011-12 corn and soybean prices will exceed 2010-11 prices. Indiana farmers are expected to have strong 2011 net farm income. Input prices are expected to be higher in 2012, but grain prices are expected to be strong and interest rates to remain low.

To obtain a 2012 estimate of the margin for paying rent, a 2012 corn/soybean rotation budget was prepared using expected 2012 cash prices based on futures September 22nd and shown in Table 3. Current federal government direct payments were assumed to remain in place. The return that remains to pay for average quality land using a corn-soybean rotation is $327 per acre on average quality land. Using $1.16 per bushel of corn for cash rent from the 2011 Purdue Farmland Value Survey results in a $189 charge for average yield land. Subtracting this land charge leaves an estimated per acre corn and soybean profit of $184 and $92, respectively. For the corn-soybean rotation, the profit is $138 per acre.

The budget attempts to reflect all the costs required to keep resources in their current use, corn and soybean production. Since revenue exceeds total economic costs, economists refer to the rotation profit as "excess profits." Economic theory says that in the long-run, adjustments will occur that result in excess profits being zero. Common adjustments include increased production of corn and soybeans, which tends to reduce grain prices and excess profit decline. Another common adjustment is increasing production costs. This is already occurring with the increased cost of inputs, cash

Table 3. Estimated 2012 Revenues and Expenses for Corn/Soybean Rotation, September 22, 2011 Estimates.

Item	Rotation Corn		Rotation Soybeans	
	Per acre	Per bu.	Per acre	Per bu.
Yield	163		49	
Price	$5.65	$5.65	$12.45	$12.45
Direct payment	$26.0	$0.16	$14.00	$0.29
Gross Revenue	$947	$5.81	$624	$12.73
Production cost	$461	$2.86	$230	$4.69
Contribution margin	$486	$2.98	$394	$8.04
Machinery & labor overhead[1]	$113	$0.70	$113	$2.31
Return to land & risk[1]	$373	$2.29	$281	$5.73
Rotation Return to land and risk	$327			
2011 Cash rent – average land	$189	$1.16	$189	$3.86
Profit	$184	$1.13	$92	$1.88
Rotation profit ($/acre)	$138			

rent, and farmland. In most situations, both adjustments occur.

The estimated rotation profit indicates there will be upward pressure on cash rents this fall. On average, it would not be surprising to see cash rents increase as much as they did in 2011 which was up 13% on average quality land.

How much cash rents change in a specific situation will depend in part on what changes have already occurred. The variation in rainfall around the state and the impact it has on 2011 yields will also exert some influence on cash rent adjustments. If cash rents have been adjusted upward over the past five years though raising the base rent or receipt of bonus payments and yields this year are poor, the change for 2012 may not be large. If the cash rent has been stable because of a long-term lease or other reasons and yields are close to average, the increase could be large.

Budgeted returns are very sensitive to potentially large changes in expected 2012 crop prices. In this volatile environment, it is important for landlords and tenants to have a detailed discussion about crop yields, prices, and cost forecasts used to establish 2012 cash rents.

Farmland Values Have a Strong Base

Craig Dobbins

Over the last five years, farmland values have increased by 71%, which is even more than cash rents. From 2010 to 2011, average Indiana farmland increased 23.7%. The key factors behind the increasing cost of farmland are:

- Current high crop prices,
- Rising yields,
- High net farm income,
- Very low interest rates,
- Expectation for high crop prices,
- Farmland as a relatively favorable investment, and
- A limited supply of land for sale.

The expectations of farmland buyers about the above list of factors are critical. At the current time, the outlook associated with these factors remains bullish. The grain markets continue to wonder if there will be enough corn and soybeans to meet demand, keeping prices strong. Many people expect that it will take more than one year for supply to catch up with demand. Input prices are rising, but there continues to be an opportunity for farm profits to be above all costs. An increasing inflation rate and higher long-term interest rates are a concern, but there does not appear to be much evidence that either is likely in the short-run.

The 2012 estimates in Table 3 indicate an estimated return to land and risk of $307 per acre for a corn-soybean rotation. What does a return of this amount say about farmland values? The 2011 Purdue Farmland Survey reports farmland is priced at 30-times gross rental income. The gross rental income is often used as a proxy for the return to land. If buyers expect the return to land to stay at $307 per acre, this level of income would support a value of $10,233 per acre for average farmland (assuming future returns stay at this level and they are capitalized at a 3.0% annual rate). It is very unlikely the return to farmland will remain at $307 per acre for a long period of time, but it does indicate that current conditions have the capability of pushing farmland values much higher.

Dr. Scott Irwin, University of Illinois agricultural economist, has investigated where corn and soybean prices may settle after adjustments from the increased demand for grain commodities have worked their way through the agricultural economy. This price level is often referred to as the “new price plateau.” His research indicates corn is likely to average $4.60 per bushel and vary from $3.00 to $6.70 per bushel. His research indicates soybeans may average $10.58 per bushel and vary from $7.51 to $17.56.

The new price plateau suggested by Irwin indicates that current expected 2012 prices are well above his averages. What are the implications for land values if prices are only at his averages? Using a corn and soybean rotation and prices of $4.60 and $10.58 per bushel, respectively, and the estimated costs in our budgets, corn-soybeans rotation provides a return to land and risk of $196. Using the value to income ratio of 30 indicates a farmland value of $5,868 for average farmland. This is just $400 per acre higher than the current 2011 value of $5,468 for average land.

Is the Irwin scenario is correct? It is hard to know. If it is, it seems likely farmland values will overshoot the amount that will be supported by this new price plateau. What needs to happen to keep land values moving up?

Here is a list of influences that will help farmland values move higher:

- Strong demand for corn from the ethanol industry because of biofuel mandates
- Strong soybean export demand
- 2011 U.S. corn and soybean crop that is average or below average
- Moderate increases in input costs for corn and soybeans, keeping crop production margins well above historic averages
- Low long-term interest rates
- Little change in the amount of land available for sale
- Influences that could result in steady or declining farmland values include the following:
- Sharp decline in corn and/or soybean export demand with falling prices
- Sudden change in the U.S. policy away from providing biofuel subsidies and mandating usage. Possible loss of direct payments and possible large acreage moving out of the Conservation Reserve Program and back into crop production
- Sharp rise in interest rates because of continued sovereign debt concerns or increased inflation fears
- Surprisingly large 2011 corn and soybean crop causing prices to fall sharply
- Sharp rise in crop input prices reducing crop production margins
- Slowing of world growth and threat of a U.S. or global recession
- Strong global supply response resulting from new capital investments in agricultural production
- Some combination of the above or some unknown development

While the probability of events triggering a decline in farmland values seems low, the important thing is to assess how such an event would impact an individual's business. In an economic environment with big uncertainties, a useful exercise is to perform a stress test. For example, how would the loss of 15% of the business equity affect the business? What would happen to the business if 15% of your free cash flow was lost? Can the business withstand a 15% decline in farmland values? After exploring these and similar questions it will be possible to develop a "Plan B."

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