HEARING TO REVIEW STRUCTURAL CHANGES THAT ARE TAKING PLACE IN THE AGRICULTURAL ECONOMY AND THEIR IMPACTS

HEARING

BEFORE THE

COMMITTEE ON AGRICULTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

OCTOBER 18, 2007

Serial No. 110–31

Printed for the use of the Committee on Agriculture
agriculture.house.gov

U.S. GOVERNMENT PRINTING OFFICE

50–024 PDF WASHINGTON : 2009

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON AGRICULTURE

COLLIN C. PETERSON, Minnesota, *Chairman*

TIM HOLDEN, Pennsylvania, *Vice Chairman*
MIKE McINTYRE, North Carolina
BOB ETHERIDGE, North Carolina
LEONARD L. BOSWELL, Iowa
JOE BACA, California
DENNIS A. CARDOZA, California
DAVID SCOTT, Georgia
JIM MARSHALL, Georgia
STEPHANIE HERSETH SANDLIN, South Dakota
HENRY CUELLAR, Texas
JIM COSTA, California
JOHN T. SALAZAR, Colorado
BRAD ELLSWORTH, Indiana
NANCY E. BOYDA, Kansas
ZACHARY T. SPACE, Ohio
TIMOTHY J. WALZ, Minnesota
KIRSTEN E. GILLIBRAND, New York
STEVE KAGEN, Wisconsin
EARL POMEROY, North Dakota
LINCOLN DAVIS, Tennessee
JOHN BARROW, Georgia
NICK LAMPSON, Texas
JOE DONNELLY, Indiana
TIM MAHONEY, Florida

BOB GOODLATTE, Virginia, *Ranking Minority Member*
TERRY EVERETT, Alabama
FRANK D. LUCAS, Oklahoma
JERRY MORAN, Kansas
ROBIN HAYES, North Carolina
TIMOTHY V. JOHNSON, Illinois
SAM GRAVES, Missouri
JO BONNER, Alabama
MIKE ROGERS, Alabama
STEVE KING, Iowa
MARILYN N. MUSGRAVE, Colorado
RANDY NEUGEBAUER, Texas
CHARLES W. BOUSTANY, JR., Louisiana
JOHN R. "RANDY" KUHL, JR., New York
VIRGINIA FOXX, North Carolina
K. MICHAEL CONAWAY, Texas
JEFF FORTENBERRY, Nebraska
JEAN SCHMIDT, Ohio
ADRIAN SMITH, Nebraska
TIM WALBERG, Michigan

PROFESSIONAL STAFF

ROBERT L. LAREW, *Chief of Staff*
ANDREW W. BAKER, *Chief Counsel*
APRIL SLAYTON, *Communications Director*
WILLIAM E. O'CONNER, JR., *Minority Staff Director*

CONTENTS

WITNESSES

HEARING TO REVIEW STRUCTURAL CHANGES THAT ARE TAKING PLACE IN THE AGRICULTURAL ECONOMY AND THEIR IMPACTS

THURSDAY, OCTOBER 18, 2007

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Washington, D.C.

The Committee met, pursuant to call, at 10 a.m., in Room 1300 of the Longworth House Office Building, Hon. Collin C. Peterson [Chairman of the Committee] presiding.

Members present: Representatives Peterson, Holden, Etheridge, Boswell, Cardoza, Herseth Sandlin, Cuellar, Costa, Salazar, Boyda, Kagen, Pomeroy, Davis, Barrow, Goodlatte, Lucas, Moran, Graves, Neugebauer, Foxx, Fortenberry, Smith, and Walberg.

Staff present: Claiborn Crain, Nona Darrell, Adam Durand, Alejandra Gonzalez-Arias, Craig Jagger, Scott Kuschmider, Clark Ogilvie, John Riley, Sharon Rusnak, Anne Simmons, Kristin Sosanie, Bryan Dierlam, Alise Kowalski, Josh Maxwell, Rita Neznek, and Jamie Weyer.

OPENING STATEMENT OF HON. COLLIN C. PETERSON, A REPRESENTATIVE IN CONGRESS FROM MINNESOTA

The CHAIRMAN. The Committee will come to order. We are going to get going here because we are going to have a vote about 10:30 or so. It is just one vote, so we may try to keep the Committee going during that process so we can get finished up. This hearing is to review the structural changes that are taking place in the agricultural economy and their impacts. I want to thank everyone, especially our witnesses, for being here today.

I welcome all of you to today's hearing on the impact and structural changes in agriculture. The witnesses, who I appreciate being with us, include Dr. Keith Collins, the Chief Economist at USDA. He has testified before this Committee numerous times and also on this very same topic. Dr. Gruenspecht, with the Department of Energy, who is also on the panel. We combined the two panels into one so we could expedite the process. The witnesses were fine with that arrangement. And also Dr. Pat Westhoff, the Research Associate Professor for the Food and Agriculture Policy Research Institute from Columbia, Missouri is our last witness. So welcome to the witnesses.

The Committee has been quite busy since we last heard from you on this issue. We have held many hearings in advance of the farm

bill, both here and across the country, trying to gain as much input as we possibly could. We heard from producers, processors, consumers, and researchers to write a farm bill that we felt served American agriculture well, now and also into the future. And it is that next generation of agriculture, and beyond that, we are looking at with today's hearing. A lot of us on this Committee have seen with our own eyes how agriculture has changed in recent times and it is changing today. American farmers and ranchers are more productive today than ever before. They are meeting the needs of a growing global population with changing food preferences. They are serving newer and fast-growing markets with organics, local foods, value-added products, and increasingly farmers are eager to meet our nation's growing fuel challenges.

Taking those factors into account, we will hear today about structural changes that are taking place in the farm economy and examining what this Congress might be able to expect in the future. We are especially interested in the distinction between long-term changes that we would expect to hold in the future and short-term changes that are subject to variability.

In today's hearing, we will examine the indicators of economic performance for the U.S. agriculture sector; the outlook for prices of major crops and livestock and their products; the farm sector's financial health including farm and ranch incomes, debt-to-asset ratios and input costs; broad macroeconomic factors influencing commodity markets; and the structural factors that determine American agriculture's efficiency, returns, and competitiveness in the world market. So I appreciate each of you being with us here today and sharing your thoughts with the Committee on the economic factors that influence this farm policy, and I look forward to your testimony.

The Chair would request that other Members submit their opening statements for the record so the witnesses can begin their testimony with one exception, and that is my good friend, the Ranking Member Mr. Goodlatte. We now recognize him for an opening statement.

[The prepared statement of Mr. Peterson follows:]

PREPARED STATEMENT OF HON. COLLIN C. PETERSON, A REPRESENTATIVE IN CONGRESS FROM MINNESOTA

Thanks to everyone for being here today. I welcome all of you to today's hearing on the impact of structural changes in agriculture. I want to welcome today's witnesses. Dr. Keith Collins, the Chief Economist at USDA, has testified before this Committee numerous times, and also on this very same topic, along with Dr. Gruenspecht with the Department of Energy, who is also on the first panel.

This Committee has been quite busy since we last heard from you on this issue. We held many hearings in advance of the farm bill, both here and across the country, trying to gather as much input as we possibly could from producers, processors, consumers, and researchers, to write a bipartisan farm bill that would serve American agriculture well now and into the future.

And it is that next generation of agriculture—and beyond—that we are looking at with today's hearing. A lot of us on this Committee have seen with our own eyes how agriculture has changed in recent times and how it is changing today. American farmers and ranchers are more productive today than ever before. They are meeting the needs of a growing global population with changing food preferences. They are serving newer and fast-growing markets with organics, local foods, and value-added products. And increasingly, farmers are eager to meet our nation's growing fuel challenges.

Taking those factors into account, we will hear today about structural changes that are taking place in the farm economy and examining what this Congress might be able to expect in the future. We are especially interested in the distinction between long-term changes that we would expect to hold in the future and short-term changes that are subject to variability. In today's hearing, we will examine:

- The indicators of economic performance for the U.S. agricultural sector;
- The outlook for prices of major crops and livestock and their products;
- Farm sector financial health, including farm and ranch incomes, debt-to-asset ratios, and input costs;
- Broad macroeconomic factors influencing commodity markets; and
- The structural factors that determine American agriculture's efficiency, returns, and competitiveness in world markets.

I appreciate each you for being here today and to share your thoughts with this Committee on the economic factors that influence farm policy. I look forward to your testimony.

OPENING STATEMENT OF HON. BOB GOODLATTE, A REPRESENTATIVE IN CONGRESS FROM VIRGINIA

Mr. GOODLATTE. Mr. Chairman, thank you for calling this hearing to discuss changes that are taking place in the agricultural economy and their impact. Over the past couple of years we have discussed new opportunities in rural America. Much of that discussion has been about energy and the growth of renewable fuels. We have made significant progress in developing a robust industry using agricultural crops, as well as animal waste, to produce ethanol and biodiesel. In 2006 alone, the renewable fuels industry added more than 1.05 billion gallons of new ethanol to the marketplace. It is projected that without any new technological breakthroughs the industry already has the potential to produce more than 11 billion gallons within the next decade. The current tax credits and renewable fuel standard along with the phase out of MTBE, have helped fuel investment in new ethanol and biodiesel plants and created more markets for agriculture products. It is obvious that current policies have successfully established a thriving renewable fuels market, but to what extent to do we continue these new policies and what effect have they had on all sectors of agriculture.

Last year, 20 percent of the U.S. corn crop was used for ethanol production, and that amount is expected to rise significantly over the next few years. With feed stocks currently tasked, to me our renewable fuels initiatives, the livestock sector, which relies on those same feed stocks, is facing a significant increase in their input costs. Is there a balance between having a reliable and affordable supply of feed for our livestock industry and developing a reduced reliance on foreign energy sources, stabilizing energy prices, and creating new markets for agricultural products without a risk of increased input costs for livestock producers?

Even though energy has received much attention, it should not be our only focus. The testimony we will hear from Dr. Keith Collins, Chief Economist at the USDA, mentions a number of factors that are driving some of the changes we have seen in the agriculture sector and deserve the attention of this Committee. Corn prices were driven high early in the year due to a strong growth in ethanol demand, but now prices for both corn and ethanol have moderated, putting pressure on ethanol production facilities. None-

theless, corn prices are still relatively high by historical standards and continue to place pressure on livestock producers who need corn for their rations. Simultaneously, wheat production has fallen globally due to drought and production problems in Australia, Canada, Eastern Europe, and the Black Sea region. This is good news for U.S. producers who have experienced the highest wheat prices ever. The only bad news for wheat farmers is that they don't have more wheat to sell. That will change as farmers respond to this demand for wheat by expanding production. Soybean producers will also expand production to meet this growing demand.

In the midst of these changes in supply and demand for agricultural crops has been the activity in financial markets. The U.S. dollar has depreciated in value, which will help increase our agricultural exports, but will make imported input for farmers and ranchers—such as crude oil, fuel, and fertilizer—more expensive. That said, it is great news to have strong demand and high prices for our nation's agricultural production, and much of this has been driven by strong domestic and export demand, the declining dollar, and production problems in some parts of the world. I have no doubt that farmers will respond to the price signals given by the market and will plan their operations accordingly. Their decisions will continue to influence this dynamic cycle.

I appreciate the witnesses bringing to the attention of the Committee all of the domestic and international events that will impact our domestic agricultural economy. I hope you can help us understand the impact these events will have on farmers, ranchers, livestock producers, and consumers. It is critical that the Committee understand the big picture so that we can all put in place the policies that allow all of our constituents to compete in an ever-changing global marketplace. Your testimony today will help us in this regard. Thank you, Mr. Chairman.

[The prepared statement of Mr. Goodlatte follows:]

PREPARED STATEMENT OF HON. BOB GOODLATTE, A REPRESENTATIVE IN CONGRESS FROM VIRGINIA

I appreciate the Chairman calling this hearing to discuss changes that are taking place in the agricultural economy and their impact. Over the past couple of years when we have discussed new opportunities in rural America, much of that discussion has been about energy and the growth of renewable fuels.

We have made significant progress in developing a robust industry using agricultural crops, as well as animal waste, to produce ethanol and biodiesel. In 2006 alone, the renewable fuels industry added more than 1.05 billion gallons of new ethanol to the marketplace. It is projected that, without any new technological breakthroughs, the industry already has the potential to produce more than 11 billion gallons within the next decade.

The current Tax Credits and Renewable Fuels Standard, along with the phase out of MTBE, have helped fuel investment in new ethanol and biodiesel plants and created more markets for agriculture products. It is obvious that current policies have successfully established a thriving renewable fuels market. But to what extent do we continue these new policies and what effect have they had on all of sectors of agriculture?

Last year twenty percent of the U.S. corn crop was used for ethanol production and that amount is expected to rise significantly over the next few years. With feedstocks currently tasked to meet our renewable fuel initiatives, the livestock sector, which relies on those same feedstocks, is facing a significant increase in their input costs. Is there a balance between having a reliable and affordable supply of feed for our livestock industry and developing a reduced reliance on foreign energy sources, stabilizing energy prices, and creating new markets for agricultural products without a risk of increased input costs for livestock producers?

Even though energy has received much attention, it should not be our only focus. The testimony we will hear from Dr. Keith Collins, Chief Economist at USDA, mentions a number of factors that are driving some of the changes we've seen in the agriculture sector and deserve the attention of this Committee.

Corn prices were driven high early in the year due to strong growth in ethanol demand, but now prices for both corn and ethanol have moderated, putting pressure on ethanol production facilities. Nonetheless, corn prices are still relatively high by historical standards and continue to place pressure on livestock producers who need corn for their rations. Simultaneously, wheat production has fallen globally due to drought and production problems in Australia, Canada, Eastern Europe and the Black Sea region.

This is good news for U.S. producers who have experienced the highest wheat prices ever. The only bad news for wheat farmers is that they don't have more wheat to sell. That will change as farmers respond to this demand for wheat by expanding production. Soybean producers will also expand production to meet this growing demand.

In the midst of these changes in supply and demand for agricultural crops has been the activity in financial markets. The U.S. dollar has depreciated in value which will help increase our agricultural exports but will make imported inputs for farmers and ranchers—such as crude oil, fuel and fertilizer—more expensive.

That said, it is great news to have strong demand and high prices for our nation's agricultural production and much of this has been driven by strong domestic and export demand, a declining dollar and production problems in some parts of the world. I have not doubt that farmers will respond to the price signals given by the market and will plan their operations accordingly. Their decisions will continue to influence this dynamic cycle.

I appreciate the witnesses bringing to the attention of the Committee all of the domestic and international events that will impact our domestic agricultural economy. I hope you can help us understand the impact these events will have on farmers, ranchers, livestock producers and consumers. It is critical that this Committee understand the big picture so that we can put in place the policies that allow all of our constituents to compete in an ever-changing global marketplace. Your testimony today will help us in this regard.

The CHAIRMAN. I thank the gentleman. I would request that Members would submit their statements for the record.

[The prepared statements of Messers. Kagen, Graves, and Smith follow:]

PREPARED STATEMENT OF HON. STEVE KAGEN, A REPRESENTATIVE IN CONGRESS FROM WISCONSIN

Thank you Chairman Peterson and Ranking Member Goodlatte for calling this important hearing to review the infrastructure of today's agricultural economy. I am eager to hear what our witnesses have to say and welcome the opportunity to continue our dialogue.

The House Committee on Agriculture, as well as anyone with a vested interest in agriculture, has been very busy this past year. With the reauthorization of the farm bill, or as I like to call it—the Food and Nutrition bill—the Committee, USDA, farmers, producers and consumers have all been actively participating in finding ways agriculture policy can best support a healthy economy and environment.

This discussion has largely centered around factors that are top news items on the nightly news. America is excitedly trying to find an alternative to energy processing as usual, to a portfolio of renewable fuels, of alternative energy and of efficient processes of production. In very obvious ways this has a large impact on the economy of today's agriculture. We cannot change the price of gasoline without expecting it to change the way farmers buy gas and diesel and fill up their tractors. We cannot choose one source for an alternative type of fuel and drastically increase the value of that crop over others and think that farmers will not choose to plant that "cash crop." We cannot turn our heads when we make it easier to buy a cheap, unhealthy food over a more expensive fresh fruit or vegetable, and then wonder why obesity rates are soaring. It is simply cause and effect. The things we do in this Committee affect the food, fiber, energy, environment and economy across the nation.

I urge you to share with us your numbers and your detailed findings so that we may internalize this information and use it in the best interest of northeast Wisconsin and for America. We must remember that our influence has far-reaching ef-

fects, but that we have the ability to strengthen and support our agricultural economy by assessing what has been done in the past and how that might better our choices for the future.

Thank you, again, Chairman Peterson and Ranking Member Goodlatte for holding today's hearing. I look forward to the testimony of our witnesses.

PREPARED STATEMENT OF HON. SAM GRAVES, A REPRESENTATIVE IN CONGRESS FROM MISSOURI

Thank you, Chairman Peterson and Ranking Member Goodlatte for holding this hearing.

And I want to recognize Dr. Pat Westhoff from the Food and Agricultural Policy Research Institute at the University of Missouri in Columbia. Pat will be testifying on the next panel. As some of you may know I am a graduate of the Agriculture School at Mizzou. FAPRI does a great job and has provided me and this Committee with a lot of important data over the years, and I think it is important that we make sure to support FAPRI and similar institutes so they can continue to provide us with this valuable information.

I have always been an advocate for farmers having choices. Judging by the positive letters of support that the *National Corn Growers Association* sent to Secretary Chuck Conner and the leadership of this Committee, it was great news for corn farmers to learn that the Federal Crop Insurance Corporation recently approved the biotech yield endorsement pilot crop insurance product.

As I understand it, this product is predicated on the simple notion that farmers using triple stack corn with traits proven effective at controlling pests and weeds have been objectively shown to have quantifiably less yield loss risk, and so the crop insurance premiums they pay can be lowered.

This makes real sense to me and I applaud USDA's innovative approach to encourage these kinds of best farmer practices. I would be particularly interested to learn from Dr. Collins a few things about this program:

- How does this approval advance the goal of increasing participation in the crop insurance program and improving the existing safety net for our farmers?
- Will this program be widely available both to growers in the pilot states and to approved insurance providers that serve these farmers?
- Is there anything about this pilot that otherwise interferes with other priorities of the crop insurance program?
- What distinguishes this crop insurance product from others introduced in the past?

Thank you again to the Chairman and Ranking Member.

PREPARED STATEMENT OF HON. ADRIAN SMITH, A REPRESENTATIVE IN CONGRESS FROM NEBRASKA

Good morning and thank you, Chairman. I am so pleased we are holding this hearing today.

This hearing will give us the opportunity to explore the impacts and economics of recent and current structural changes in agriculture. Agriculture in the United States is in exciting times. We face both great challenges and great opportunities.

My principal goals are to create policies which will strengthen American agriculture and provide long-term stability for our nation's producers, and to promote economic policies which will foster sustained growth in rural communities. An important component of that policy should be to strengthen foreign demand for our products, by aggressively pursuing new markets and breaking down barriers to trade.

And as we look to the future, we must remain mindful of the barriers to new farmers. I want to keep sharp and enthusiastic young people involved in agriculture and in Nebraska's Third Congressional District. Beginning farmers often lack the access to land and financing tools to succeed. As we face an aging farming population, we must ensure young people are ready and able to prosper in our agricultural economy.

I want to thank our witnesses for coming here today to provide testimony for the Committee, and I look forward to hearing from you.

I appreciate the Committee for holding this hearing as an important step to meeting our goals.

Mr. Chairman, I look forward to continuing to work with you, and I thank you for your time.

The CHAIRMAN. Again, we welcome the panel to the witness table. Dr. Collins, if you are ready we invite you to begin.

STATEMENT OF KEITH COLLINS, PH.D., CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C.

Dr. COLLINS. Okay. Thank you very much. Mr. Chairman, Mr. Goodlatte, Members of the Committee, thanks for the opportunity to be here today to talk about recent changes in the farm economy. As you know, for several years the U.S. farm economy has been setting records for exports, for prices, for production, for total use, for income, and for net worth. I would like to highlight in a couple of minutes here a few of the developments behind these changes and the implications for sustaining growth.

The global economy is an important factor sustaining the U.S. farm sector. For example, in developing economies, which account for half of our agricultural exports, real GDP is expected to rise a strong seven percent this year. The U.S. dollar, which has depreciated 25 percent since 2002 against major foreign currencies, has also helped raise U.S. exports to an all-time high. With strong demand, and constrained supplies, farm cash receipts are expected to be a record high this year pushing net cash farm income to the third record high in the past 4 years.

Beneath these broad indicators there are new trends that are both consoling and, as well, disconcerting. One concern, as was just mentioned by Mr. Goodlatte, is the adequacy of wheat supplies to meet global food demand. Production problems in a number of countries, particularly Australia 2 years in a row, are reducing global wheat stocks relative to use this year to the lowest level we have ever recorded. But strong prices and some land coming out of the Conservation Reserve Program could raise U.S. wheat-planted area by five to seven percent in 2008. This would significantly raise next year's carry-over stocks of wheat.

It was about a year ago that corn prices began soaring, creating anxiety about corn shortages. But, producers shifted from soybeans and cotton to corn and are now harvesting a record crop which is expected to raise corn stocks by 50 percent this year. Wheat and soybean prices are now much stronger relative to corn than they were a year ago, and with fertilizer prices at very high levels, we expect many more soybean acres and fewer corn and cotton acres in 2008. These shifts will help replenish the tight grain supplies and reduce the more abundant soybean and cotton supplies. Looking ahead to next year, supply-demand balance for major crops will improve but it will remain tight, and farm prices will be near or above record levels.

This expectation of sustained-type markets continues to hinge on a growing biofuel production. U.S. ethanol capacity is now estimated at 6.9 billion gallons. That is 2 billion more than a year ago, and it is likely to rise to over 13 billion gallons by late 2009. As production has grown, we have seen ethanol prices drop like a rock. Plant margins are now thin, but returns appear sufficient to bring most plants that are under construction online when completed. Thus, the 3.2 billion bushels of corn we expect to use for ethanol

this year could rise by another billion or more for the 2008/09 year. And if corn acres go down, as I mentioned corn stocks would likely drop and corn prices rise again in 2008/09.

Regarding livestock, U.S. production and exports are setting records. Pork and broiler production are on the rise despite higher grain prices, while flat beef supplies will help maintain livestock prices near this year's strong levels. The all-milk price will be a record high this year reflecting strong demand, and the high-milk feed price ratio is expected to raise milk production in 2008, but prices should remain well above average.

In summary, Mr. Chairman, U.S. agriculture is in dynamic change driven by bright prospects for global food and fuel demand. Acreage changes and normal weather should improve supply-demand balance in grain markets. With biofuel demands still expected to grow, although slower in the future, a big challenge will be to produce on more acres, produce more per acre, protect the environment, deal with feed availability and costs, and ensure sufficient farm labor. Prospects are also highly subject to technology changes, such as new biotech varieties of seed and improved biofuel production methods, and possible key legislative changes in biofuel, farm, or trade policy. Fortunately, the U.S. farm economy is profitable while capitalized, skilled, and flexible—all qualities that should help it deal with the weather and policy disruptions in cyclical down-turns that are likely to be inevitable. Thank you, Mr. Chairman.

[The prepared statement of Dr. Collins follows:]

PREPARED STATEMENT OF KEITH COLLINS, PH.D., CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C.

Mr. Chairman, Members of the Committee, thank you for the invitation to discuss recent developments in and prospects for change in the farm economy. As we conclude 2007, the farm economy has witnessed unprecedented increases in income and asset values the past few years. With strong food and fuel demand, prospects overall look bright, but they are also generating a range of issues related to the consequences and sustainability of the forces driving the current prosperity. Several key factors are shaping the current situation, including global economic growth; the foreign exchange value of the dollar; new production and processing technologies; global weather patterns; rising input costs for energy, labor, and land; and new product markets, particularly bioenergy. I will describe these developments in output and input markets and the challenges and opportunities they present for U.S. agriculture.

Macroeconomic and Trade Developments

Global macroeconomy supporting U.S. farm markets. Strong global economic growth and population increases have helped drive higher food consumption over the past several years. World Gross Domestic Product, or GDP, continues to look strong, despite a slowing U.S. economy. Foreign economies grew by an estimated 4.1 percent in 2006, the third highest rate in the last 20 years and substantially stronger than the weak growth of less than two percent experienced earlier in this decade. This year, we estimate foreign economic growth to be 4.0 percent, with a slight decline to 3.8 percent in 2008. A little slower growth in the EU and developing countries is expected next year, but developing country growth is still likely to be a strong 6.5 to 7.0 percent, compared with 7.0 percent expected this year.

The U.S. economy grew nearly 3.0 percent in 2006, but is expected to decline this year and remain slow through a good part of 2008. Macroeconomic forecasts are variable, as some forecasts call for slow growth based on continued housing market fallout, slower employment growth, and more modest consumer spending. Advocates of stronger growth cite the stimulative effects of the recent interest rate reduction

of the Federal Reserve and strong export growth, as well as low rates of unemployment and inflation.

For U.S. agriculture, despite lower domestic economic growth, strong foreign economic growth and the reduced value of the dollar are likely to support global commodity demand, keeping pressure on global supplies and prices particularly for meats, grains, dairy products, fruits and vegetables and processed products.

U.S. agricultural exports setting records. With strong foreign economic growth particularly in developing countries, crop production shortfalls around the world, and sufficiently available U.S. supplies, U.S. agricultural exports are likely to continue to expand this year. USDA's forecast for U.S. agricultural exports for FY 2008 is a record high $83.5 billion, up from $79 billion in FY 2007. Imports, too, continue to grow and are expected to be $75 billion this fiscal year compared with $70.5 billion a last year. Nearly half of imports are horticultural products and another fifth are sugar and tropical products such as cocoa, coffee and rubber. This year, the agricultural trade balance is forecast to be +$8.5 billion, the same as last year.

Wheat exports are forecast to be up in volume and value due to less foreign competition. Corn exports are forecast up in volume and value due to a record-large corn crop and less competition, while higher cotton export volume and value reflects large, available U.S. cotton stocks and strong Chinese demand. Livestock exports are forecast to rise as the volume and value of beef exports increases. Horticultural exports are being helped by the decline in the value of the dollar. Canada and Mexico continue to be our number one and two markets, accounting for 32 percent of expected exports this year. Japan is number three with an expected 12 percent share, while for the first time, China has moved up to number four, with an expected 10 percent share, slightly above the European Union our number five export market.

U.S. Dollar depreciation spurs exports and farm prices. The U.S. dollar has depreciated almost 25 percent on average against major foreign currencies, since 2002. This year alone, the dollar has dropped 15 percent against the Brazilian real, 13 percent against the Canadian loonie, seven percent against the euro, four percent against the Chinese yuan, and 12 percent against the Australian dollar. This depreciation has helped boost U.S. exports to an all-time high, and kept prices higher than they would otherwise be.

An excellent illustration of the relationship between agricultural prices and exchange rates occurred during the week of September 17, when the Fed cut its Federal Funds rate target by 50 basis points. The result was a decline in the value of the dollar relative to other currencies, by about two percent on average. Very little other news that week directly affected agricultural commodity markets—no unexpected USDA reports, no abrupt weather changes, no policy changes, etc. Nonetheless, wheat cash prices rose by 1 percent, corn by 3.5 percent, soybeans by six percent, and cotton by 5.5 percent.

Despite record exports, the positive impact of the dollar's long-term depreciation is limited by a number of factors. Trade restrictions in many countries and imperfect market conditions in developing countries limit the ability of a dollar decline to translate into lower prices for U.S. agricultural products. In addition, the weak market infrastructure and lack of market information that often characterizes the broader food and fiber systems in developing and transition economies limits the price signals that would translate into higher demand for imported goods.

U.S. farm income now consistently strong. Cash receipts for producers are forecast at a record $276 billion in 2007, up $37 billion from 2006 and $60 billion from 2003. Cash production expenses are forecast to be a record $222 billion in 2007, up $17 billion from 2006 and $45 billion from 2003. With receipts rising faster than expenses, net cash farm income is forecast at $86 billion this year, up sharply from last year and 4 years ago. The three highest farm income years ever have occurred during the past 4 years. While some states on the East Coast, in the Southeast, and in the Mountain region faced drought this year, production losses were not enough to significantly affect national income measures.

For most field crops, 2007 cash receipts are forecast to be a record high. For example, cash receipts for wheat, corn, soybeans, and rice are all expected to rise to all-time highs. In contrast, cash receipts for cotton and fruits and nuts are expected to decline this year due to large cotton supplies and weather problems for tree fruits like peaches, pears and oranges. Cash receipts from all livestock species are forecast to exceed $100 billion for the fifth straight year and exceed the previous record high set in 2005 by $14 billion. Receipts for cattle, dairy, and poultry are all expected to set record highs. Government payments to producers in 2007 are expected to total nearly $14 billion, down only $2 billion from 2006. In 2007, producers are forecast to receive $5.3 billion in direct payments, $3.1 billion in conservation payments, $2

billion in disaster payments, and $1 billion in tobacco transition program payments. In addition, producers are forecast to receive $2.2 billion in counter-cyclical payments and marketing loan assistance benefits, with upland cotton accounting for nearly all of these payments.

The $45 billion increase in cash production expenses since 2003 is mainly due to an $13 billion increase in farm origin inputs (livestock, feed), $12 billion more in energy-based input costs (fuel, fertilizer, electricity, and pesticides), $4 billion more in labor expenses, and $10 billion more in other operating expenses.

The balance sheet of U.S. agriculture is also expected to strengthen again in 2007. Consistent with recent trends, increases in debt are forecast to be offset by larger increases in farm asset values, with farm real estate values expected to rise 14 percent in 2007. As a result, the farm sector's debt-to-asset ratio should drop further to new a historic low level of 10.7 percent in 2007. Annual increases in farm equity continue to greatly exceed annual net cash farm income, with the increase in equity in 2007 expected to be $236 billion compared with $86 billion in net cash farm income.

Developments in Farm Output Markets

Major crops: global supplies tight. For the 2007/08 marketing year, global wheat demand is again forecast to exceed global production causing global wheat stocks as a percent of use to fall to the lowest level on record. Record world production of coarse grains in 2007/08 is expected to maintain global coarse grain stocks at near last year's level, while declining world oilseed and cotton production and increasing demand are forecast to lead to lower global stocks of both commodities. In the United States, supplies of feed grains are expected to increase in 2007/08 leading to a rebound in carryover. In contrast, U.S. carryover of wheat, soybeans, rice and cotton could all decline in 2007/08 as total use is forecast to exceed production.

For the United States, good grain, oilseed and cotton harvests and strong demand have supported above average farm income in recent years. Market fundamentals continue to look strong as growth in demand, particularly for producing biofuels, has led to much higher prices for corn. Reduced plantings of soybeans and cotton in response to strong grain prices along with increasing demand have also pushed soybean and cotton prices higher while weather problems in several foreign countries have caused wheat prices to surge.

Corn supplies up in 2007/08. Producers responded to higher prices and returns for corn in late 2006 increasing corn planted acreage by 15.3 million acres in 2007 to 93.6 million acres, the largest area planted to corn in over 60 years. Much of this increase in corn plantings came from soybeans. Area for cotton, hay, and other crops also declined to meet the demand for more corn production. With higher acreage and improved yields, corn production is forecast at a record 13.3 billion bushels in 2007/08, 26 percent more than last year. Total corn use is forecast to reach a record 12.6 billion bushels in 2007/08, reflecting the expanding ethanol industry, continued strong global demand for corn and increasing U.S. corn supplies. Despite greater total use, stocks of corn at the end of 2007/08 marketing year are forecast to increase by over 50 percent to 2.0 billion bushels. The farm price of corn is forecast to average $3.20 per bushel during 2007/08, compared with $3.04 per bushel in 2006/07 and the record high of $3.24 in 1995/96.

Corn acreage likely down in 2008/09. Corn planted area for 2008 is expected to fall as prices and returns for competing crops, such as wheat and soybeans, have improved relative to corn in recent months. December 2008 futures prices for corn are currently more than 30¢ per bushel below the peak of December 2007 futures last February. Current cash prices are more than $1 per bushel below their levels in late February. Although world demand remains strong for feed grains, record U.S. corn supplies are expected to put downward pressure on corn prices over the coming months. Given the current outlook for the 2008 crop corn and competing crop prices, corn planted area next spring could decline six to eight percent from 2007 to around 87 million acres. Even with the potential for a six to eight percent reduction in planted area next spring, 2008 corn area would still be eight to 12 percent above the 1997/06 average. Lower production combined with continued growth in the corn-based ethanol industry could reduce carryover stocks adding additional support to prices in 2008/09.

More ethanol growth expected, but plant margins now much thinner. U.S. ethanol production capacity is now estimated at 6.9 billion gallons, up 2 billion gallons from a year ago. Production capacity is expected to increase sharply over the coming 18–24 months, if the 76 plants currently under construction are completed. The new construction would add 6.7 billion gallons of additional ethanol production capacity, bringing total capacity to 13.6 billion gallons potentially as early as late 2009.

Ethanol prices have weakened since mid-summer as additional plants have come on line adding to ethanol supplies and contributing to some infrastructure bottlenecks. For example, prices at ethanol plants in Iowa and Nebraska have fallen nearly 50¢ per gallon since late July 2007. During the same period, futures prices on the nearby contract have lost about 40¢ per gallon. Historically, ethanol prices have been at a premium to gasoline. Until recently, ethanol premiums averaged 50¢ per gallon compared with unleaded gasoline. This situation has suddenly reversed, with wholesale ethanol prices in Nebraska, for example, 39¢ per gallon below the wholesale price for gasoline during September. The outlook for ethanol prices appears even less favorable in the futures market, with the nearby Chicago Board of Trade contract for ethanol trading 50¢ per gallon below the nearby New York Mercantile Exchange contract for reformulated gasoline blendstock. This shift in the ethanol/gasoline price relationship has sharply reduced returns for ethanol producers. With current retail gasoline prices at $2.80 per gallon, wholesale prices without Federal and state excise taxes would be about $2.20 per gallon. Nearby futures for ethanol are trading at $1.57 per gallon, 71 percent of the $2.20-per-gallon estimated wholesale gasoline price and about equal to ethanol's energy value relative to gasoline.

The recent declines in ethanol prices have sharply reduced profitability for ethanol producers. This year's record corn production is bringing some relief to declining ethanol producer margins. However, despite the expected record corn harvest, corn prices remain strong supported by strong demand, record-high wheat prices, and strong soybean prices. We estimate that a 40 million gallon Midwest ethanol plant, receiving the late September price of $1.52 per gallon for ethanol and paying $3.00 per bushel of corn, was earning 17¢ per gallon above variable costs of production and 3¢ below total variable plus capital costs of production. In the current price environment, the 51¢-per-gallon ethanol tax credit is important in sustaining ethanol demand and prices at levels that are forestalling some plant shut-downs.

Soybean supplies down in 2007/08. High corn prices relative to soybeans caused soybean planted area to drop by 16 percent to 63.7 million acres this year. Lower planted area, combined with slightly lower yields, is forecast to lower soybean production to 2.6 billion bushels, down 19 percent from last year's record production. Total soybean supplies in 2007/08 are projected to decline about 13 percent from last year record, as high carry-in stocks partially offset the decline in this year's production. With lower exportable supplies, U.S. soybean exports are expected to drop about 13 percent from last year's record 1.1 billion bushels. Despite lower total use, carryover levels are forecast to decline by over 60 percent. The farm price of soybeans is forecast to average a record $8.35 per bushel for the 2007/08 marketing year, compared with $6.43 last year and the previous record high of $7.83 in 1983/84.

Soybean area forecast to rebound in 2008/09. U.S. soybean planted area is forecast to rebound to 70 million acres in 2008, regaining more than half of the 11 million acres lost primarily to corn in 2007. The soybean to corn price ratio, which declined to below 2 in the spring of 2007, strongly favored corn planting. In contrast, current March 2008 futures imply a soybean to corn price ratio of 2.7, favoring soybeans over corn. Rotation practices also favor a switch back to soybeans.

Returns to Biodiesel shrink. U.S. biodiesel production continues to rise, setting new production records each month. Twenty percent of 2007/08 soybean oil production is expected to be used to produce about 580 million gallons of biodiesel. This compares with only eight percent of soybean oil production being used for biodiesel in 2005/06 when about 200 million gallons were produced. Similar to ethanol, biodiesel profit margins are eroding due to sharply rising soybean oil prices. Soybean oil is the feedstock for 85–90 percent of domestically produced biodiesel. The price of soybean oil has increased over 40 percent over the past year causing biodiesel returns above soybean oil costs plus other variable costs to decline from around 80¢ per gallon to near zero. Vegetable oil prices are expected to remain strong due to strong demand, particularly for biodiesel in the EU, which is likely to keep biodiesel production capacity low and slow expansion.

Although EU demand for vegetable oils will continue to pressure the profitability of U.S. biodiesel production, the EU also presents an export opportunity. Due to the $1 per gallon tax credit for blending, U.S. produced biodiesel is competitive in the EU biodiesel market. Since March 2007, net exports of biodiesel have accounted for more than 25 percent of U.S. biodiesel production. As long as U.S. biodiesel remains competitive in world markets, U.S. production is likely to grow despite weak margins.

Wheat prices record high in 2007/08. For 2007/08, wheat acreage, which had been trending downward over the past 25 years, increased by over 3 million acres to 60.3 million, the highest since 2003. U.S. wheat production is estimated at 2.1 billion bushels, up from 1.8 billion bushels in 2006. Although U.S. production recov-

ered from last year's drought-reduced level, the 2007 crop failed to live up to early expectations as an early April freeze and heavy harvest time rains reduced production. Production prospects have also fallen sharply in several major wheat producing countries. Heavy harvest rains affected wheat production in Northern Europe and extreme drought and heat have reduced the 2007 wheat crops in Australia, Canada, Eastern Europe and parts of the Black Sea region. Higher expected exports, reflecting the lower production in competitor countries, are expected to push up U.S. wheat total use from 2.0 billion bushels in 2006/07 to 2.3 billion bushels in 2007/08, causing U.S. ending stocks to decline to 307 million bushels, the lowest in nearly 60 years. Reflecting this tight market, the average farm price of wheat is forecast to be a record $6.10 per bushel in 2007/08, compared with $4.26 per bushel for the 2006/07 crop.

Wheat area to expand in 2008/09. Producers are expected to respond to record high prices by increasing wheat plantings again in 2008. In addition, contracts on 2.5 million acres enrolled in the Conservation Reserve Program expire on September 30, 2007. A large portion of these expiring CRP acres are located in wheat producing States. Given the current outlook for wheat prices next summer and the amount of expiring CRP acres, wheat area is expected to increase five to seven percent in 2008, to around 64 million acres. Plantings of wheat should also be up in the EU in 2008 as producers will not be required to fallow the usual 10 percent of cropland. Many analysts anticipate that this will add an additional 1–2 million hectares to world wheat area in 2008. Prospects for sharply larger world wheat area and production in 2008 are already being reflected in futures prices for next summer's crop. July 2008 futures for winter wheat are trading at about $2 per bushel below the nearby contract price.

Cotton area and production shrinks in 2007/08 in face of low relative prices. In 2007/08, strong grain and improved soybean prices reduced cotton plantings 29 percent to 10.85 million acres, the lowest area planted since 1989. The Southeast and Delta regions each cut cotton plantings by more than 30 percent and North Carolina, South Carolina, Virginia, Louisiana, Mississippi, and Oklahoma experienced reductions of 40 percent or more. Lower acreage and production are projected to keep total cotton supplies in 2007/08 about unchanged from the previous year. With the prospect of stronger exports due to rising world demand, ending stocks are projected to decline about ⅓ to 6.4 million bales.

More cotton area declines in store for 2008/09. With lower domestic production and an improved export outlook, cotton futures prices increased to a 3 year high this summer. At the same time, world prices have risen as world stocks are declining about nine percent, putting a floor under prices. Given prospects for continued improvement in prices and returns, foreign production may increase in 2008/09, especially in Brazil and India. However, rising cotton prices likely will not be sufficient to attract acreage back to cotton production in the United States, given the continuation of very favorable returns for soybeans and corn. Thus, cotton planted area in the United States could decline as much as eight percent to about 10.0 million acres in 2008.

Rice market tightens. For 2007/08, rice planted area dropped to 2.75 million acres, down from 2.84 million acres the previous year and the lowest rice plantings since 1989. Higher net returns for competing crops—soybeans, soft red wheat and some corn, restrictions on the planting of long grain varieties Cheniere and Clearfield CL131, and low government payments contributed to the reduction in rice plantings. Despite the decline in rice area, total rice production is up about two percent from last year to 197 million cwt, reflecting a record yield of 7,215 pounds per acre. Total supplies are about unchanged from last year while total use is forecast to increase by six percent in 2007/08, primarily reflecting much improved export prospects. Strong world rice prices are expected to continue to support U.S. rice prices. World 2007/08 ending stocks of rice are projected at 71 million tons, down 6.2 million tons from last year and the lowest world carryover since 1983/84. The farm price of rice is forecast to average $10.50 per cwt in 2007/08, up from $9.74 per cwt in 2006/07.

Sugar to open to Mexican market. In 2007/08, U.S. sugar production is estimated at 8.45 million short tons, nearly unchanged from last year's crop of 8.49 million tons. Sugar ending stocks are forecast to increase about nine percent to 1.9 million tons resulting in a stock-to-use ratio of 18.2 percent, up from 16.7 percent last year. Import quotas for sugar have been announced at the minimums established under the WTO. On January 1, 2008, the tariff on Mexican exports of to the U.S. falls to zero, generating uncertainties in the market and affecting USDA's ability to operate the sugar program at no net cost to taxpayers. The U.S. Sugar Program currently depends on the U.S. Government controlling domestic sales and imports to support prices above loan forfeiture levels. Free trade in sweeteners between the

United States and Mexico will commence in January 2008, which could prevent the United States from imposing domestic marketing allotments, if Mexican imports causes total sugar imports to exceed the trigger for imposing domestic marketing allotments of 1.532 million tons. Over the next several years, Mexican food and beverage producers will have a strong economic incentive to use corn-based sweeteners, rather than more expensive sugar from domestic sugarcane. While Mexico is a large untapped market for U.S. corn-based sweetener manufacturers, displacement of Mexican sugar could pressure North American sugar market prices as the U.S. and Mexico adjust to free trade in sweeteners.

Specialty crop sales stabilize. Excluding greenhouse/nursery crops and mushrooms, U.S. fruits and vegetables harvested area will total about 11 million acres in 2007. Vegetables, potatoes, and pulses account for about 65 percent, and the remainder is citrus and non-citrus fruits and tree nuts. In 2007, specialty crops will continue to provide a significant source of cash revenues for U.S. producers. Cash receipts for fruits, nuts, vegetables, and nursery/greenhouse products in 2007 are forecast at $53 billion, up $1.2 billion or two percent from 2006, while total U.S. agriculture will increase $37.1 billion, or 16 percent. Higher cash receipts for vegetables and greenhouse/nursery crops are more than offsetting lower values for fruits and tree nuts. While per capita consumption of fruits and vegetables has seen little or no growth for several years, limited production of these commodities has raised farm and retail prices. In 2007, grower prices through September are up six to seven percent from a year earlier and retail prices are up about four percent.

Livestock & livestock products: U.S. production and exports setting records. U.S. red meat and poultry exports are expected to reach a record high in 2008. Pork exports are forecast to lead the way, reaching record high of 3.1 billion pounds carcass weight, or 14 percent of production. After stalling in early 2006, poultry sales increased as foreign concerns about AI abated. Broiler exports are forecast to increase to 5.6 billion pounds in 2008, equally the previous record high set in 2001. Beef exports are expected to increase with the gradual expansion of exports to Japan and Korea. However, Korea's import restrictions and Japan's age limits on imported beef from the United States continue to limit growth. Although total beef exports are expected to increase 29 percent to 1.9 billion pounds in 2007, the level of exports will remain below the 2003 pre-bovine spongiform encephalopathy level of 2.5 billion pounds.

Total U.S. production of meat and poultry is forecast to be record-high in calendar year 2008, but nearly flat growth in supplies of beef are expected to help maintain livestock prices near this year's levels. For livestock and poultry producers, feed prices will be an important component of producer production decisions in the upcoming year.

Cattle prices record high this year and strong again in 2008. Beef production is currently forecast to increase 0.4 percent in 2008, following a 0.7 percent decline in 2007. Steer prices are expected to average a record-high $92.11 per cwt this year and average $91.50 per cwt in 2008, compared with $85.41 per cwt in 2006. Poor forage conditions resulted in increased cow slaughter during 2006 and 2007 as many producers lacked sufficient forage resources to support their herds. During the last several months, relatively larger numbers of heavier cattle have been placed on feed. With improved forage supplies in the Plains this year and higher grain prices, cattle are remaining on pasture longer and coming into feedlots at heavier weights. These heavier feeder cattle will generally be fed for shorter periods, consuming less feed. The *Cattle* inventory report released on July 20, 2007, showed a total July 1, 2007, cattle-and-calf inventory of 104.8 million head, 400,000 head below the July 1, 2006, inventory, suggesting that cattle inventory growth has stalled.

The 2007 U.S. cattle import forecast is 2.2 million head. Adequate precipitation in Mexico has allowed ranchers to keep more of their cattle on pasture and has kept imports of Mexican cattle below last year's levels. Imports from Canada through July are above the year earlier levels due to higher feed costs in Canada and restructuring of their slaughter industry. The recently announced minimal risk rule expanding Canadian cattle eligible for import to the United States is expected to increase U.S. cattle imports late in 2007 and 2008.

Hog slaughter reaches record high. Pork production in 2007 is estimated up 2.9 percent, marking the 7th year of expansion. During the first week of October, weekly hog slaughter was estimated at a record 2.32 million head, and slaughter is expected to remain large into early 2008. The estimated weekly average carcass weight was 199 pounds, unchanged from the previous week and a year ago. The most recent *Hogs and Pigs* report released on September 28, 2007, suggests continued expansion in pork production in 2008. U.S. inventory of all hogs and pigs on September 1, 2007, was 64.6 million head, up three percent from September 1, 2006. The increase in 2008 production primarily will reflect increased slaughter as weight

gains will be limited as producers respond to higher feed prices. Hog prices are expected to reflect the increased production, declining slightly from 2007's $47.73 per cwt to $46 per cwt in 2008.

Broiler production to rebound in 2008. Broiler producers have endured several periods of low returns due to relatively low broiler prices in 2005 and 2006 and higher feed costs. Consequently, producers reduced chicks placed and broiler production is expected to fall by 0.2 percent in 2007. With tighter broiler meat supplies, whole bird prices are estimated to average a record-high 76.6¢ per pound in 2007, up from 64.4¢ per pound in 2006. Higher broiler prices and improved returns are expected to lead to 2.4 percent increase in broiler production in 2008. In 2008, broilers prices are forecast to average 75¢ per pound.

Milk prices record high. Milk production is estimated to increase by 2.0 percent in 2007, reflecting a modest expansion in the dairy cow herd and below average growth in milk production per cow. High feed costs and tight supplies of high quality forage especially during the first half of 2007 reduced the growth in milk production per cow. Demand for dairy products, both domestically and for export, has been very strong reflecting very limited supplies from competing exporters, especially Australia and the EU. Prices of cheese, butter, nonfat dry milk, and whey are all up sharply in 2007 boosting the all-milk price to a record $19.00 per cwt. With product prices above support, no Commodity Credit Corporation net removals of dairy products are forecast.

In 2008, milk production is forecast to increase by 2.6 percent as high milk feed price ratios are expected to encourage producers to continue to expand production. Domestic and export demand are forecast to remain strong in 2008 with drought continuing to adversely affect milk production in Australia. For 2008, the all-milk price is forecast to average $18.15 per cwt, the second highest on record.

Food prices rising. In 2007, the Consumer Price Index (CPI) for all food is forecast to increase 3.5 to 4.5 percent. The annul CPI for all food increased an average 2.6 percent during the past 4 years, with a low of 2.1 percent and a high of 3.4 percent. Higher commodity and energy costs are driving the CPI increase. Future increases will depend on energy price increase and the extent to which agricultural market prices stabilize.

Developments in Farm Input Markets

Fuel prices and farm expenditures up, but effects cushioned by high farm output prices. As crude oil prices have increased from $19 per barrel in 1999 to $80 today, farmers and others have been paying increasingly higher fuel prices. The annual average fuel price paid by farmers during 2007 is likely to reach a new high for the fifth consecutive year. However, this year's increase is more restrained, with the September 2007 gasoline price index up 8.2 percent from a year ago and the diesel price index up 6.7 percent. Total expenses for fuels were $6.8 billion in 2003, accounting for 3.6 percent of total cash production expenditures. In 2007, fuel expenditures are estimated at $11.6 billion, accounting for 5.6 percent of total cash production expenses. Of all types of fuels, expenditures on diesel fuel have increased the most. In the aggregate, fuel expenditures are not a major component of farm production expenditures, and with strong commodity market demand and prices, their increases have not had a significant effect on U.S. farm income. However, energy expenses vary by farm type and farm location and may be more significant in specific situations.

High energy prices cause restructuring of fertilizer marketplace. In 2000/01, the International Fertilizer Development Center reported that U.S. anhydrous ammonia production capacity was 16.5 million tons of nitrogen. By 2006/07, capacity had dropped by nearly 40 percent to 9.6 million tons. Prices of natural gas, the major component of nitrogen, rose more in the United States than in other key regions causing a shift in both ammonia and urea nitrogen production to overseas suppliers. Nitrogen imports now account for more than 50 percent of available U.S. supplies, compared with only 21 percent of available supplies in 1996/97.

Nutrient demand by U.S. and foreign farmers is expected to remain strong over the next several years reflecting high global commodity prices and expanding crop production. Thus fertilizer prices, and nitrogen in particular, are expected to remain at or near record-high levels. The U.S. demand for fertilizer expanded during the most recent fertilizer year ending June 30, 2007. This year's high corn prices and 93 million planed corn acres led the increase in demand for all three nutrients: nitrogen use is estimated to be six to eight percent higher than the previous year; phosphate use, up four percent; and potash, up five percent. For the past 3 years, farmers have paid record prices for fertilizer materials. This past spring, during April 2007, farmers paid on average $523 per ton for anhydrous ammonia, up only

slightly from $521 per ton in 2006, reflecting a slower rate of increases in energy prices.

Fertilizer prices are likely to remain strong, supported by energy prices and global fertilizer demand. India and China are purchasing large volumes of nitrogenous, phosphatic, and potassic materials. Brazil is also a strong market for phosphates. Although U.S. farmers have increasingly relied on imports, and thus have to pay additional handling and transportation costs, supplies should be adequate. Domestic production of nitrogen is estimated to be up in 2007, as the fertilizer industry is currently realizing very strong margins. For example, it takes 33 million Btus of natural gas to produce a ton of ammonia, so with natural gas prices now at $6 per million Btus, the natural gas cost is $200 for a ton of ammonia, which is now selling to Midwest farmers for about $575 a ton.

Farm labor supply remains a question for the future. Total costs for hired and contract farm labor are estimated at $26.3 billion in 2007, representing about 12 percent of total farm cash expenses. In July 2007, the peak month for hired farm labor, there were 1.2 million hired workers on the Nation's farms and ranches, a one percent increase compared with July 2006. The average wage rate paid by farm operators increased to $10.04 per hour, $0.32 per hour higher than July 2006.

It is difficult to determine the extent to which labor shortages are currently affecting agricultural production. Data show that U.S. production is forecast to increase in 2007 for most commodities, including those sectors of the farm economy that rely heavily on hired farm labor, such as specialty crops. For example, fresh vegetable and melon production is forecast to increase by two percent in 2007, while processed vegetable production is forecast to increase by 10 percent over 2006 levels. The U.S. pear crop is expected to be four percent larger than last year's crop and seven percent above the 2005 crop. The 2007 U.S. grape crop is forecast to be nine percent larger than a year ago, but 11 percent smaller than the record-large crop in 2005. Alternatively, the 2007 U.S. apple crop is forecasted to be seven percent smaller than the 2006 crop, the third smallest since the 1990s.

Farmers are concerned about current and potential labor shortages in the future. Data collected through the National Agricultural Worker Survey (NAWS) conducted for the U.S. Department of Labor (DOL) found that in 2005/06, 53 percent of the hired crop labor force lacked authorization to work in the United States. Replacing 53 percent of the hired agricultural work force with workers with proper documentation would represent a significant adjustment within certain parts of the agricultural sector. Should employment conditions tighten, the H–2A program should provide some relief.

Under the H–2A program, agricultural employers who anticipate a shortage of domestic workers are allowed to hire nonimmigrant foreign workers to perform agricultural labor or services of a temporary or seasonal nature. Complexity, cost, and historical lack of enforcement against individuals without proper documentation employed in agriculture resulted in only limited use of the H–2A program. In FY 2006, employers requested 64,000 workers under the program and DOL certified 59,000 workers. The 59,000 certified workers represent only five percent of the number of hired workers in U.S. agriculture. California, the state with the greatest demand for farm labor, requested only about 4,000 H–2A workers in FY 2006. For the existing H–2A program to replace the current agricultural work force without proper documentation, the number of workers certified by the program would need to increase by a factor of 10. Such an expansion would be a serious challenge for the current program. Thus, the Administration is now revising the H–2A program rules to provide farmers with an orderly and timely flow of legal workers while protecting the rights of both U.S. workers and foreign temporary workers.

Farmland costs continue to soar. For 2007, USDA expects the value of farm real estate to increase by 14 percent from 2006, increasing to slightly over $1.9 trillion. If farm real estate values meet their forecast, they will have more than doubled since 2000. Farm real estate is the major asset on the farm sector balance sheet and is expected to account for 86 percent of total U.S. farm assets in 2007. Farm real estate is the principal source of collateral for farm loans and enables farm operators to finance the purchase of additional farmland and equipment or to finance current operating expenses. While a benefit for existing landowners, high farm real estate values make it difficult for individuals who may wish to enter farming and increases operating expenses for individuals who rent farmland. For example, the U.S. average cropland cash rent increased from $79.50 per acre in 2006 to $85 per acre in 2007.

Conclusion

As we conclude 2007, the U.S. farm economy is coming off unprecedented increases in income and asset values the past few years. Prospects for expanding glob-

al food and fuel demand look bright. More normal weather and farm production increases worldwide should lead to improved supply-demand balance in key markets, such as wheat. With biofuel demand expected to continue growing, although at a slower pace in the future, a big challenge will be responding to that demand by producing on more acres, producing more per acre, protecting the environment while expanding production, and dealing with feed availability and costs for the livestock sector. Market prospects are also highly subject to technology changes, such as for crop yields or biofuel production, and possible key legislative changes affecting biofuel, farm and trade policy. Fortunately, the U.S. farm economy has evolved into a profitable, well capitalized, skilled, and flexible sector that should be able to successfully deal with macroeconomic events, changing foreign competition, or reasonable policy changes.

Mr. Chairman, that completes my statement.

Attachments

Farm Economic Indicators

Ag. Trade (Bil. $)	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07F	FY08F
Total exports	50.7	52.7	53.3	56.0	62.4	62.5	68.6	79.0	83.5
Asia	19.7	20.1	19.4	21.6	24.3	22.5	24.9	28.7	30.6
Canada	7.5	8.0	8.6	9.1	9.5	10.4	11.6	13.1	13.6
Mexico	6.3	7.3	7.1	7.7	8.4	9.3	10.4	12.6	13.2
Total imports	38.9	39.0	41.0	45.7	52.7	57.7	64.0	70.5	75.0
Farm Income (Bil. $)	2000	2001	2002	2003	2004	2005	2006	2007F	2008F
Cash receipts	192.1	200.1	195.0	215.6	237.3	240.7	239.3	276.4	N/A
Gov't payments	23.2	22.4	12.4	16.5	13.0	24.4	15.8	13.6	N/A
Gross cash income	229.0	237.4	222.3	247.8	267.4	281.3	272.5	308.0	N/A
Cash expenses	171.7	175.2	170.8	177.6	185.2	195.5	204.7	222.1	N/A
Net cash income	57.4	62.2	51.5	70.2	82.2	85.8	67.9	85.9	N/A
Commodity Prices [1]	Unit	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08F
Wheat	$/bu	2.62	2.78	3.56	3.40	3.40	3.42	4.26	5.80–6.40
Corn	$/bu	1.85	1.97	2.32	2.42	2.06	2.00	3.04	2.90–3.50
Soybeans	$/bu	4.54	4.38	5.53	7.34	5.74	5.66	6.43	7.85–8.85
Rice	$/cwt	5.61	4.25	4.49	8.08	7.33	7.65	9.74	10.30–10.70
Cotton (Upland)	¢/lb	49.8	29.8	44.5	61.8	41.6	47.7	47.3	[2] 44.9
		2001	2002	2003	2004	2005	2006	2007F	2008F
Hogs	$/cwt	45.81	34.92	39.45	52.51	50.05	47.26	47.73	44–48
Steers	$/cwt	72.71	67.04	84.69	84.75	87.28	85.41	92.11	88–95
Broilers	¢/lb	59.1	55.6	62.0	74.1	70.8	64.4	76.6	72–78
Milk	$/cwt	15.05	12.18	12.55	16.13	15.19	12.97	18.95–19.05	17.70–18.60
Gasoline	$/gallon	1.47	1.39	1.60	1.89	2.31	2.62	2.80	2.87
Diesel	$/gallon	1.40	1.32	1.50	1.81	2.41	2.71	2.82	2.96
Natural gas (wlhd)	$/K cu. ft.	4.01	2.95	4.89	5.50	7.45	6.41	6.34	6.95
Electricity	$/kwh	8.62	8.45	8.70	8.97	9.45	10.40	10.60	10.90

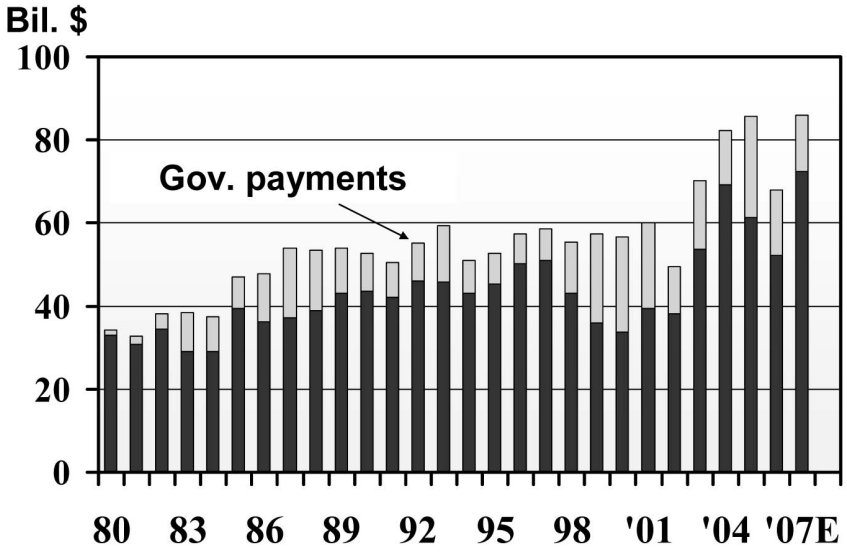
[1] Agricultural commodity price forecasts are from USDA, World Agricultural Supply and Demand Estimates report, October 2007. Energy prices are from Energy Information Administration, Short Term Energy Outlook, October 9, 2007.

[2] Average price for August 2007.

F=forecast.

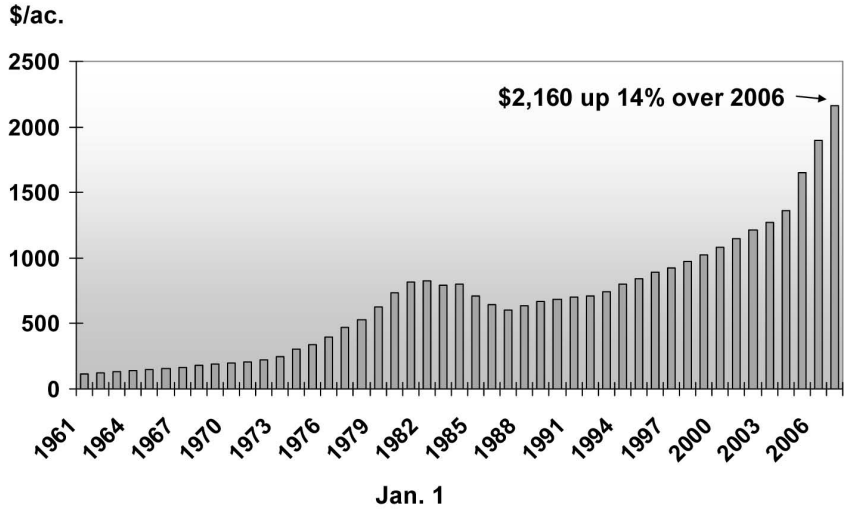
U.S. Net Cash Farm Income:

Reaching New Levels

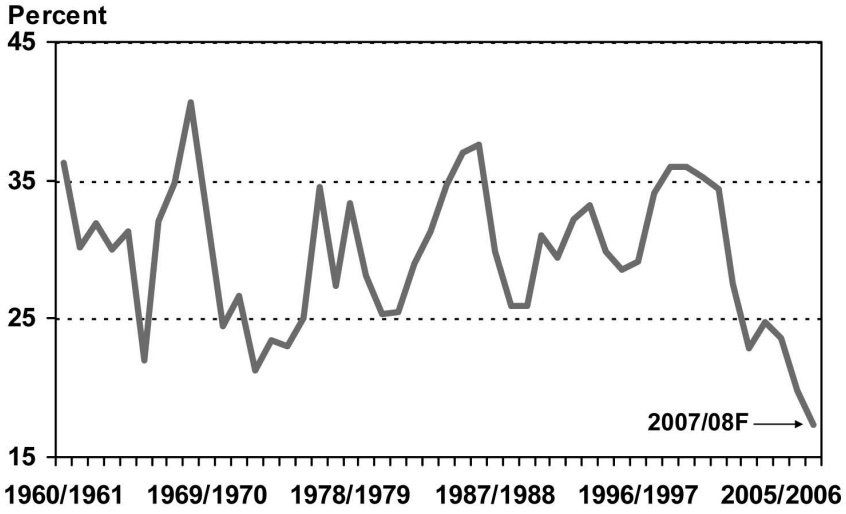


Value of Farm Real Estate:

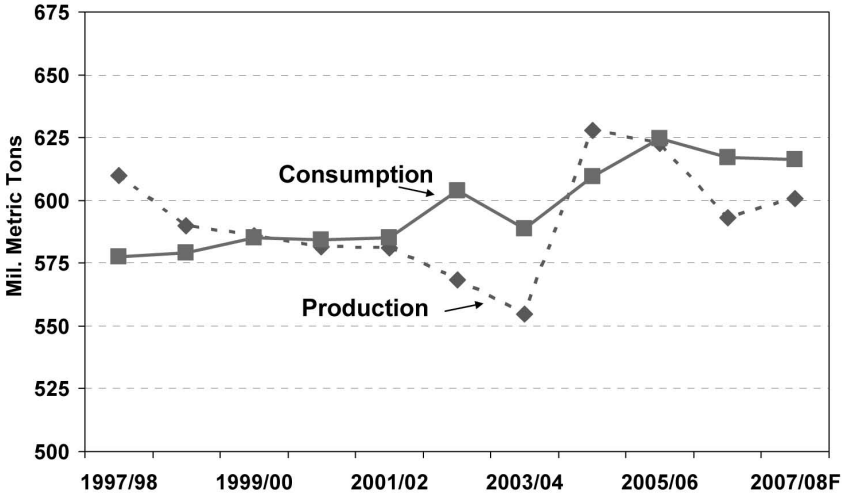
Reaches $2,160 on 1/1/07



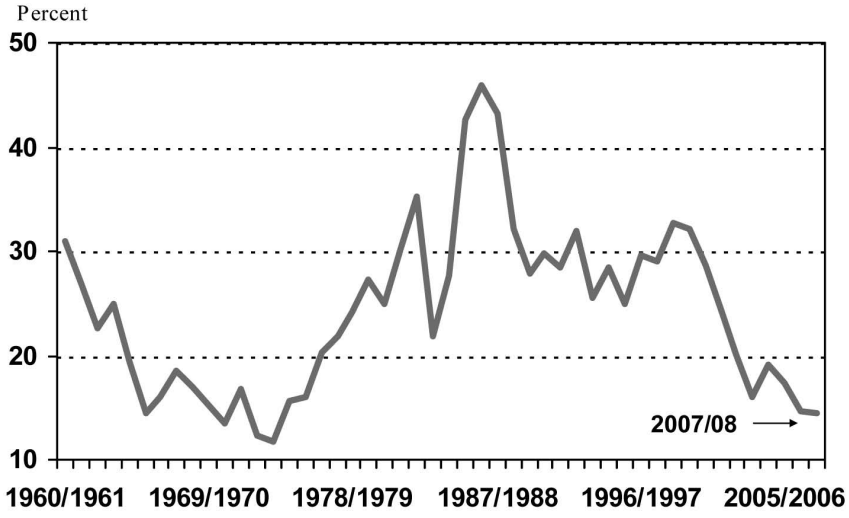
World Wheat: *2007/08 Ending Stocks-to-Use at 17% to be Lowest on Record*



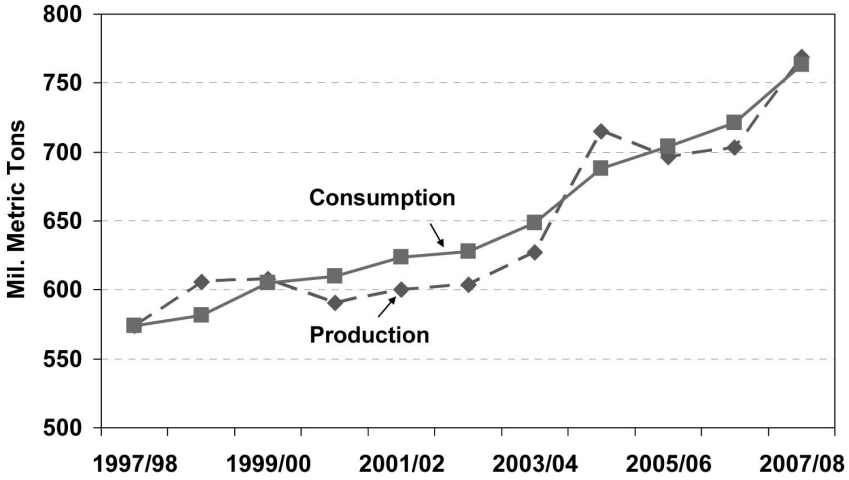
World Wheat: *Consumption Exceeds Production in 7 of Last 8 Years*



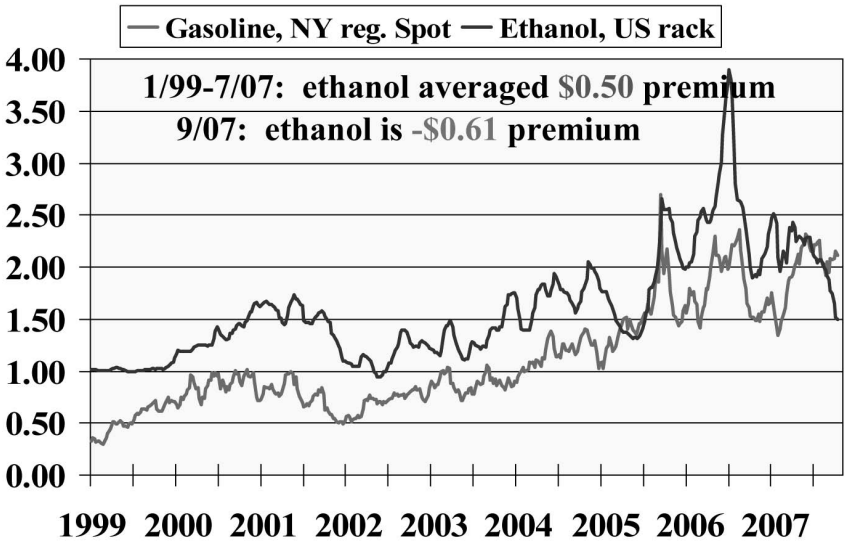
World Corn: *2007/08 Ending Stocks-to-Use to be 4th Lowest on Record*



World Corn: *Consumption Exceeds Production in 6 of the Last 8 Years*

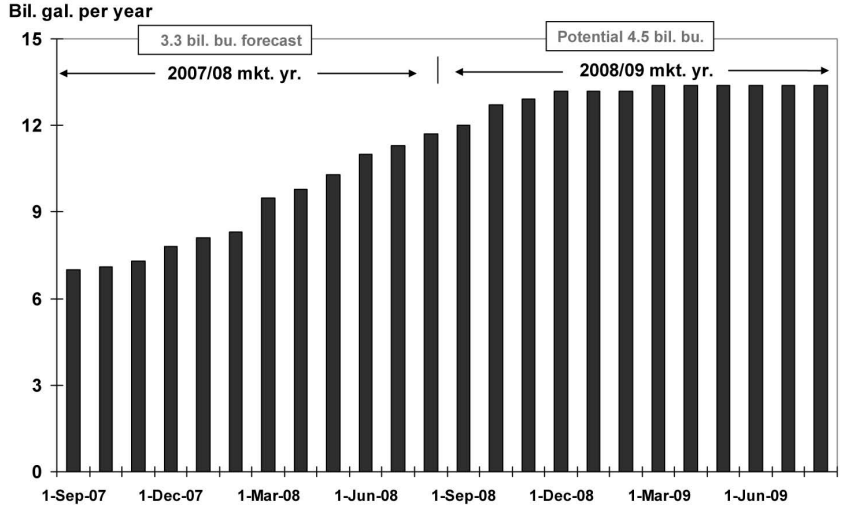


Ethanol and Gasoline Prices



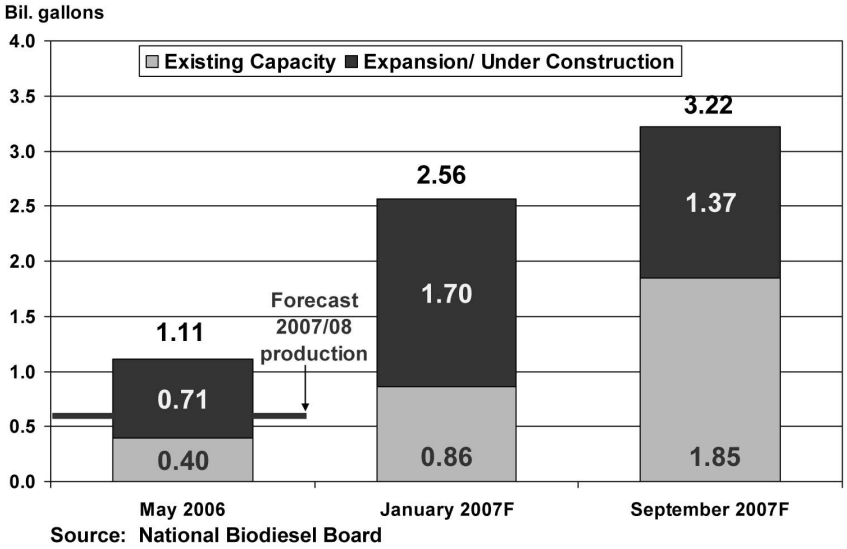
Sources: U.S. Department of Energy and Renewable Fuel News

Annual Ethanol Plant Capacity by Month: *with Utilization Alternatives and Corn Use*



Sources: USDA and Renewable Fuels Association

Biodiesel Production Capacity



Source: National Biodiesel Board

Four Major Crops: *Planted Area for and Carryover Stock Levels*

	2000	2001	2002	2003	2004	2005	2006	2007F 1/	2008P 2/
Wheat									
Planted area (mil. ac.)	62.5	59.4	60.3	62.1	59.7	57.2	57.3	60.4	64.0
Stocks (bil. bu.)	876	777	491	546	540	571	456	307	515
Corn									
Planted area (mil. ac.)	79.6	75.7	78.9	78.6	80.9	81.8	78.3	93.6	87.0
Stocks (bil. bu.)	1,899	1,596	1,097	958	2,114	1,967	1,304	1,997	1,157
Soybeans									
Planted area (mil. ac.)	74.3	74.1	74.0	73.4	75.2	72.0	75.5	63.7	70.0
Stocks (bil. bu.)	248	208	178	112	256	449	573	215	210
Cotton									
Planted area (mil. ac.)	15.5	15.8	14.0	13.5	13.7	14.2	15.3	10.8	10.0
Stocks (mil. bales)	6.0	7.4	5.4	3.4	5.5	6.1	9.5	6.4	4.0

1/ As of 10/12/07. 2/ Projected based on recent futures prices; subject to continual revision. USDA's earliest official acreage projections for 2008 crops will be released with the President's Budget in 2/08 and at the 2008 USDA Agricultural Outlook Forum.

U.S. Meat Production and Prices

Item	2007	Change from last month	Change from 2006	2008	Change from last month	Change from 2007
Production	*Billion pounds*		*Percent*	*Billion pounds*		*Percent*
Beef	**25.96**	-0.05	**-0.7**	**26.08**	-0.04	**0.4**
Pork	**21.67**	0.07	**2.9**	**22.33**	0.25	**3.0**
Broilers	**35.67**	-0.03	**-0.2**	**36.53**	0.00	**2.4**
Turkey	**5.88**	0.03	**3.4**	**5.91**	0.03	**0.5**
Total meat	**90.00**	0.05	**0.6**	**91.65**	0.24	**1.8**
Prices	*Dollars/cwt*		*Percent*	*Dollars/cwt*		*Percent*
Steers	**92.11**	0.22	**7.8**	**91.75**	1.00	**-0.4**
Hogs	**47.73**	-1.04	**1.0**	**45.75**	-2.25	**-4.2**
	Cents/pound		*Percent*	*Cents/pound*		*Percent*
Broilers	**76.6**	-1.3	**19.1**	**75.3**	-0.5	**-1.8**
Turkey	**82.4**	0.3	**7.1**	**78.0**	0.0	**-5.3**

Source: USDA World Ag. Supply and Demand Estimates, 10/12/07

The CHAIRMAN. Thank you, Dr. Collins, for that testimony. Dr. Gruenspecht.

STATEMENT OF HOWARD GRUENSPECHT, PH.D., DEPUTY ADMINISTRATOR, U.S. ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY, WASHINGTON, D.C.

Dr. GRUENSPECHT. Mr. Chairman, Mr. Goodlatte, Members of the Committee I appreciate the opportunity to appear before you today. The Energy Information Administration is the independent statistical and analytical agency within the Department of Energy. We do not promote, formulate, or take positions on policy issues, and our views should not be construed as representing those of the Department of Energy or the Administration.

Agriculture is a major energy user. It also plays a very significant current role as an energy supplier, as exemplified by the rapid growth in the use of ethanol as an older fuel and will likely play an even larger future role. Starting with our outlook through the end of 2008, the current world oil market is characterized by rising consumption, moderate supply growth outside of the Organization of Petroleum Exporting Countries, falling inventories, and rising demand for OPEC oil—all of which have contributed to high oil prices. While EIA expects some easing in crude oil prices by winter's end, the expectation of continued consumption growth at recent levels suggest that tight global oil market conditions will like-

ly persist for 2008. Specifically, we expect monthly average prices to remain above $70 per barrel through the end of 2008.

Turning to distillate fuels, retail diesel prices in 2008 are projected to average nearly $3 per gallon, up about 20¢ from their 2007 level. This winter, heating oil is expected to be about 40¢ per gallon higher than last winter. These projected increases are consistent with higher crude oil prices and projections of lower distillate fuel inventories than last year going into the heating season. There have also been some regional supply issues in the Upper Midwest.

Turning to ethanol, EIA projects continued market growth. In July 2007, ethanol provided about 4½ percent of 2007 average daily gasoline consumption volume, or about three percent of the energy consumed by gasoline-fueled vehicles, taking account of the difference in BTU per gallon between ethanol and gasoline. Ethanol plants operated at or near their designed capacity through mid-July. However, based upon plants currently under construction, ethanol production capacity is expected to increase substantially over the next 15 months. That increase has really already begun. Actual ethanol production is also expected to increase but at a slower rate than capacity, reaching a projected average level of 8.7 billion gallons per year in December 2008. As discussed in my written testimony, the projected slowdown in ethanol demand growth reflects the existence of several distinct segments in the fuel ethanol market, each with a different sensitivity to market price and infrastructure limitations.

Before shifting to a long-term perspective, I should note that any projections are necessarily very uncertain since long-term energy supply and demand trends are affected by many factors that are difficult to predict, such as energy prices, economic growth, advances in technology, changes in weather patterns, and future public policy decisions. The EIA 2007 *Annual Energy Outlook* reference case released last December projects increased consumption of biofuels and other non-hydro renewable energy sources between now and 2030. The growing use of alternative fuels reflects both the higher prices projected for traditional fuels and the support for alternative fuels provided in recently enacted Federal legislation. Ethanol use in our reference case grows to 11.2 billion gallons in 2012 and to 14.6 billion gallons in 2030. Domestically grown corn is expected to be a primary ethanol source accounting for 13.6 billion gallons of ethanol production in 2030. The reference case that I just discussed assumes that current laws and policies continue indefinitely. Other recent EIA analyses suggest that various policy proposals, including caps on greenhouse gas emissions, an increased renewable fuel standard, or a renewable portfolio standard for electricity sellers, could significantly increase reliance on biomass as an energy source. Agricultural products and residues, as well as dedicated energy crops, are key parts of the overall biomass supply.

The two main concerns that appear to motivate many recent energy policy proposals are energy security, reliance on oil imports, and reduction of greenhouse gas emissions. EIA's recent policy analyses suggest there are both synergies and conflicts between these objectives. For example, improvements in vehicle efficiency

and other end-use efficiency would tend to advance both objectives, while the adoption of coal-to-liquids conversion without carbon capture and sequestration would reduce our dependence on oil imports but would tend to increase greenhouse gas emissions.

The situation with respect to agriculture and biomass is particularly complex. A policy focused on reducing oil imports would likely emphasize the use of biofuels to reduce reliance on imported petroleum. Such a policy would also serve to reduce greenhouse gas emissions. However, if greenhouse gas emissions were the primary policy focus biomass could alternatively be used as a substitute for coal-fired electricity generation to provide significantly larger emission reductions. While biomass from agriculture and other sources has an important role to play in either case, the way in which biomass can best be deployed will depend on how the objectives of reduced reliance on imported oil and emissions reduction are prioritized. This concludes my statement. Mr. Chairman, I would be happy to answer any questions you or the other Members might have. Thank you.

[The prepared statement of Dr. Gruenspecht follows:]

PREPARED STATEMENT OF HOWARD GRUENSPECHT, PH.D., DEPUTY ADMINISTRATOR, U.S. ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY, WASHINGTON, D.C.

Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you today to discuss developments in energy markets and their possible implications for agriculture.

The Energy Information Administration (EIA) is the independent statistical and analytical agency within the Department of Energy. We do not promote, formulate, or take positions on policy issues, but we do produce objective, timely, and relevant data, projections, and analyses that are meant to assist policymakers, help markets function efficiently, and inform the public. Our views are strictly those of EIA and should not be construed as representing those of the Department of Energy or the Administration.

Energy Use in Farming and Farming-Related Sectors

Agriculture is a major user of energy. For 2006, EIA estimates that energy use on farms totaled about 910 trillion British thermal units (Btu) or almost one percent of total U.S. energy consumption of 99.5 quadrillion Btu. The components of farm energy consumption are as follows: diesel accounts for 51 percent of total use, motor gasoline accounts for 16 percent, natural gas accounts for nine percent, liquefied petroleum gas (LPG or propane) accounts for nine percent, electricity accounts for 13 percent, and other fuels account for two percent. In addition to direct farm use of energy, agriculture is indirectly affected by energy requirements in the fertilizer industry, specifically in nitrogenous fertilizers. In 2002, the energy requirements of this industry, in terms of thermal content, were about 500 trillion Btu, of which 97.5 percent (471 billion cubic feet) was natural gas and virtually all of the remainder (3.5 billion kilowatthours) was electricity. Domestic nitrogenous fertilizer production, however, fell by 20 percent from 2002 to 2006. Consequently, energy inputs are likely to have fallen a similar amount.

Based on energy use on farms and in closely-related sectors, every dime added to the price of gasoline and diesel oil, sustained over a year, costs U.S. agriculture $400 million annually. Every dollar added to the price per thousand cubic feet of natural gas costs agriculture over $75 million annually in direct expense. Every penny increase in the price per kilowatt-hour of purchased electricity costs agriculture about $343 million annually in direct expense. The farm sector would probably also incur increased nitrogenous fertilizer costs as the higher prices incurred by the fertilizer industry are passed through to end-users.

Agriculture as an Energy Supply Source

Testimony on the interaction between energy markets and agriculture would once have focused exclusively on agriculture's demand for energy. Today, however, the recent increase in the use of ethanol in motor fuels has focused attention to agri-

culture's current and potential role as an energy supplier. Ethanol use in motor fuels has grown from 1.7 billion gallons per year (bgy) in 2001 to an estimated 6.9 bgy in 2007. This growth has had a substantial impact on corn demand, commodity and land prices, and planting decisions. However, notwithstanding its recent growth, ethanol still accounts for a relatively small share of overall fuel use by gasoline-powered vehicles, which is projected at about 140 billion gallons in 2007.

While ethanol from grain is by far the most important current energy supply activity in agriculture, other energy supply opportunities are also receiving increasing attention. Production of biodiesel fuel from oilseed crops has grown substantially in recent years, supported by Federal incentives. Farm wastes are increasingly being recognized as an energy resource, and their development is being promoted by Federal incentives and renewable energy portfolio mandates in many states. Farm operators are also benefiting from the growth of wind power, which is providing extra income from leases and royalties to farm operators in areas with attractive wind resources.

The forward-looking sections of this testimony, which follow, offer EIA's perspective on the future for ethanol and other energy supply opportunities in agriculture.

Short-Term Energy Outlook

Turning first to the outlook through the end of 2008, I will be relying on EIA's *Short-Term Energy Outlook,* which is updated each month. The October edition, which was released last week, also includes our annual *Winter Fuels Outlook*.

Global Oil Markets. The current world oil market is characterized by rising consumption, moderate supply growth in the non-Organization of Petroleum Exporting Countries (OPEC), falling inventories, and rising demand for OPEC oil. However, the combination of OPEC's recent announcement of increased supply and lower seasonal crude demand in the United States over the next 2 months points to crude oil prices easing slightly over the winter. Although some OPEC members, including Angola and Saudi Arabia, are expected to raise production capacity next year, spare capacity levels are expected to remain fairly low once demand growth is considered. As a result, if consumption growth continues at recent levels, as expected, tight global oil market conditions will likely persist through 2008. Continued low surplus production capacity, weak petroleum inventories, and strong demand worldwide have all contributed to recent high crude oil prices.

Crude Oil Prices. While crude oil prices are projected to decline from their recent peak above $80 per barrel, monthly average prices are expected to remain above $70 per barrel through the end of 2008. The main reason for the year-over-year increase is the tight world oil supply and demand balance. West Texas Intermediate (WTI) crude oil prices are projected to average over $73 per barrel in 2008, up from a projected average of under $69 per barrel in 2007. Assuming continued tight global supplies, slower U.S. economic growth of 1.9 percent projected for both 2007 and 2008 (compared to 2.9 percent in 2006) may be a mitigating factor for even higher crude prices.

Diesel Fuel and Heating Oil Prices. Turing to distillate fuels, retail diesel fuel prices in 2008 are projected to average $2.96 per gallon, up from a projected $2.82 per gallon in 2007, while residential heating oil prices are projected to average $2.88 per gallon during the 2007–2008 winter season compared to $2.48 per gallon last winter. The projected increase is consistent with higher crude oil prices and projections of lower distillate fuel inventories than last year going into the heating season. As of September 30, the start of the winter fuel season, distillate fuel inventories were an estimated 136 million barrels, down 13 million barrels from the previous year, but close to the average of the last 5 years. Total distillate inventories at the end of March 2008 are expected to be 115 million barrels, down 4.5 million barrels from March 2007 but still within the normal range. However, if refiners produce more gasoline than expected over the next few months to rebuild gasoline inventories, this could result in lower distillate supplies.

Natural Gas Production, Inventories, and Prices. Total U.S. marketed natural gas production is expected to rise by 1.3 percent in 2007 and by 0.9 percent in 2008. Working gas inventories by the beginning of November are projected to reach 3,444 billion cubic feet, slightly below the all-time high for natural gas storage inventories recorded at the end of November 1990.

The Henry Hub spot price averaged $6.26 per thousand cubic feet (mcf) in September, which marked the fourth consecutive decline in the monthly average spot price since May. On an annual basis, the Henry Hub spot price is expected to average about $7.21 per mcf in 2007 and $7.86 per mcf in 2008.

Propane. Spot propane prices are strongly influenced by both crude oil and natural gas prices. Retail propane prices are projected to average $2.13 per gallon in 2007 and $2.20 per gallon in 2008. With current inventories well below year-ago lev-

els, however, propane markets are likely to remain relatively tight this winter, with the potential for additional upward pressure on residential propane prices if the U.S. experiences severe weather. As of September 30, U.S. inventories of propane were an estimated 59.3 million barrels, 7 million barrels below the average over the last 5 years. These inventories are expected to recover as higher prices draw in imports, ending the winter season at 27.7 million barrels—near the average over the last 5 years.

Ethanol. EIA projects that the market for ethanol will continue to grow. In July 2007, the ethanol industry produced an average of 421,000 barrels per day, providing about 4.5 percent of 2007 average daily gasoline consumption volume, or about three percent of the energy consumed by gasoline-fueled vehicles. Ethanol plants operated at or near their design capacity limit during this period.

Based on plants currently under construction, ethanol production capacity is expected to increase substantially over the next 15 months. Actual ethanol production is also projected to increase, but at a slower rate than capacity, reaching a projected average level of 570,000 barrels per day (8.7 billion gallons per year) in December 2008. The projected average monthly increase in ethanol production over the period from August 2007 through December 2008 is 8,700 barrels per day per month, compared with an average increase of 9,300 barrels per day per month over the first 7 months of 2007.

The projected slowdown in ethanol demand growth reflects the existence of several distinct segments in the fuel ethanol market, each with a different sensitivity to market price and infrastructure limitations. The reformulated gasoline market, which is subject to the strictest environmental limits, is the least price-sensitive market segment for ethanol. Demand for ethanol in this type of gasoline, where it is used in blends of six to 10 percent, increased significantly with the phase-out of methyl tertiary butyl ether (MTBE), which was completed in 2006. Since that time, virtually all reformulated gasoline has been blended using ethanol.

The next most attractive market segment for ethanol is as a volume extender for conventional gasoline in blends of 10 percent. Current and projected high oil prices, the availability of a 51¢-per-gallon blenders' tax credit through 2010, and the "consumer illusion" that leads choices between gasoline blended with and without low percentages of ethanol to be made purely on the basis of their price per gallon without consideration of the lower miles-per-gallon using fuel incorporating ethanol, all support the use of ethanol as a volume extender in excess of requirements of the currently enacted Renewable Fuel Standard (RFS). While the current level of 140 billion gallons per year in national sales for all types of gasoline could, in theory, accommodate roughly 14 billion gallons of ethanol in blends of 10 percent or less, many regions currently lack the transportation and blending infrastructure to use ethanol. EIA's projection of ethanol demand in 2008 reflects this limitation.

The final market segment for ethanol is use in high-percentage blends such as E85. Currently, high-percentage blends account for well under one percent of the overall U.S. market for fuel ethanol. Expanded use of high-percentage blends is necessary if total ethanol use is to grow beyond the level of 12 to 15 billion gallons per year that would saturate the market for low-percentage blends. Based on the Brazilian experience, consumers would generally expect high-percentage ethanol blends to be price-competitive with petroleum-based alternatives on an energy-content basis.

One implication of the slower rise in ethanol production rates relative to capacity is that the average capacity utilization factor for ethanol producers is likely to decline substantially in 2008. Although farmers should continue to benefit from increasing corn demand, the availability of underutilized ethanol production capacity will tend to put downward pressure on the margin earned by ethanol producers over their variable production cost.

Energy Trends to 2030

Turning now to the longer-term outlook, I will be relying on EIA's *Annual Energy Outlook 2007* (*AEO2007*) and on several recent EIA analyses of energy and environmental policy proposals that could have a significant impact on agriculture's role as an energy supply source.

Overview. Longer-term trends in energy supply and demand are affected by many factors that are difficult to predict, such as energy prices, U.S. economic growth, advances in technologies, changes in weather patterns, and future public policy decisions. It is clear, however, that energy markets are changing gradually in response to such readily observable factors as the higher energy prices that have been experienced since 2000; the greater influence of developing countries on worldwide energy requirements; recently enacted legislation and regulations in the United States; and changing public perceptions of issues related to the use of alternative fuels, emis-

sions of air pollutants and greenhouse gases, and the acceptability of various energy technologies.

The *AEO2007* reference case projects increased consumption of biofuels (both ethanol and biodiesel) and other non-hydroelectric renewable energy sources, some growth in nuclear power capacity and generation, and accelerated improvements in energy efficiency throughout the economy. The growth in biofuels and other non-hydroelectric renewable energy consumption roughly offsets the projected decline in the share of total primary energy supplied by nuclear power and hydroelectricity between 2005 and 2030. Therefore, oil, coal, and natural gas still are projected to provide roughly the same 86 percent share of the total U.S. primary energy supply in 2030 that they did in 2005, assuming no changes in existing laws and regulations.

Alternative Fuel Use. The use of alternative fuels, such as ethanol, biodiesel, and coal-to-liquids (CTL), is projected to increase substantially in the reference case as a result of the higher prices projected for traditional fuels and the support for alternative fuels provided in recently enacted Federal legislation. Ethanol use grows in the *AEO2007* reference case from 4 billion gallons in 2005 to 11.2 billion gallons in 2012—exceeding the required 7.5 billion gallons in the RFS that was enacted as part of the Energy Policy Act of 2005 (EPAct2005)—and to 14.6 billion gallons in 2030 (about eight percent of total gasoline consumption by volume). Ethanol use for gasoline blending grows to 14.4 billion gallons and E85 consumption to 0.2 billion gallons in 2030. Domestically-grown corn is expected to be the primary ethanol source, accounting for 13.6 billion gallons of ethanol production in 2030. Consumption of biodiesel, also supported by tax credits in EPAct2005, reaches 0.4 billion gallons in 2030.

Renewable Fuel Consumption and Supply. Total consumption of marketed renewable fuels in the *AEO2007* reference case (including ethanol for gasoline blending, of which 1.2 quadrillion Btu in 2030 is included with liquid fuels consumption) is projected to grow from 6.2 quadrillion Btu in 2005 to 9.9 quadrillion Btu in 2030. The robust growth is a result of state renewable portfolio standard programs, mandates, and goals for renewable electricity generation; technological advances; high petroleum and natural gas prices; and Federal tax credits, including those in EPAct2005.

The Potential Impact of Possible Future Policies on Energy Supply From Agriculture

As previously noted, the *Annual Energy Outlook* reference case assumes that current laws and policies continue indefinitely. Other recent EIA analyses suggest that various policy proposals, including caps on greenhouse gas emissions, an increased renewable fuel standard, or a renewable portfolio standard for electricity sellers, could significantly increase reliance on biomass as an energy source. Agricultural products and residues, as well as dedicated energy crops, are a key part of the overall supply of biomass in some of our recent policy cases.

The two main concerns that appear to motivate many recent policy proposals are energy security and reduction of greenhouse gas emissions. Our recent policy analyses suggest that there are both synergies and conflicts between these objectives. For example, improvements in vehicle efficiency would advance both objectives. In contrast, the adoption of coal-to-liquids conversion without carbon capture and sequestration would advance energy security while increasing emissions.

The situation with respect to agriculture and biomass is particularly complex. A policy focused on energy security would likely emphasize the use of biofuels to reduce our reliance on imported petroleum. Such a policy also would serve to reduce greenhouse gas emissions. However, if greenhouse gas emissions were the primary policy focus, biomass could be used as a substitute for coal-fired electricity generation to provide significantly larger emissions reductions. While biomass from agriculture and other sources has an important role to play in either case, the way in which biomass can best be deployed will depend on how the objectives of energy security and emissions reduction are prioritized.

This concludes my statement, Mr. Chairman, and I will be happy to answer any questions you and the other Members may have.

The CHAIRMAN. Thank you, sir. Dr. Westhoff.

STATEMENT OF PATRICK WESTHOFF, PH.D., RESEARCH ASSOCIATE PROFESSOR AND PROGRAM CO-DIRECTOR, DEPARTMENT OF AGRICULTURAL ECONOMICS, FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE, UNIVERSITY OF MISSOURI—COLUMBIA, COLUMBIA, MO

Dr. WESTHOFF. Mr. Chairman and other Members of the Committee, thank you for the opportunity to talk with you today about some of the major changes in the agriculture economy. My name is Pat Westhoff. I am a Research Associate Professor at the University of Missouri and a Program Director with the Food and Agricultural Policy Research Institute, FAPRI. FAPRI is a joint institute at the University of Missouri and Iowa State University. For the past 20 years, we have received Federal funding to provide objective analysis of agricultural markets and policies. We have enjoyed the opportunity to work with you and Committee staff in looking at issues related to the 2007 Farm Bill debate, biofuel policies, international trade negotiations, and more. Each year, FAPRI prepares a 10 year baseline outlook for the agricultural economy. We are just starting the process for the 2008 baseline at this point. In 2006, our outlook showed average corn prices that increased slowly over time, but remained below $2.50 per bushel through 2015. In the 2007 outlook, our average baseline corn price never dropped below $3.00 per bushel.

So what is going on? Why do we keep changing our mind about the outlook? The obvious answer is biofuels. In 2006, we expected biofuel production to increase, but the actual pace of expansion has been much more rapid than we anticipated. Using more corn to produce ethanol puts upward pressure on corn prices. Higher corn prices encourage producers to shift the acreage away from other crops to satisfy the growing demand for corn. Higher U.S. prices also encourage crop producers in South America and elsewhere to expand production. Livestock producers face higher feed costs. This is a now familiar story. Many have said and our projections suggest that we are experiencing a major structural shift in the agricultural economy. We expect that average grain and oilseed prices will consistently be higher over the next 10 years than they were over the last decade.

The basic outlines of this story remain believable. However, events of recent months remind us that we still have a lot to learn about biofuel markets and about how they interact with agricultural markets. Furthermore, we have been reminded that factors unrelated to biofuels continue to have major impacts on the farm economy. Ethanol prices that exceeded $3.00 per gallon in the summer of 2006 have now dropped well below $2.00 per gallon. These lower ethanol prices have squeezed ethanol plant profit margins. By our estimate, net returns over operating costs averaged $1.56 per gallon for the 2005/06 corn mark in a year and 95¢ per gallon in 2006/07. With those kinds of returns, a plant built in 2005 could be fully paid for today. Current futures, in contrast, suggest a return over operating costs of just a few cents per gallon, and that is before considering capital costs. As a result, the future of the ethanol industry is now much less certain than it seemed just a few months ago.

So what does this all mean for the agricultural sector? First, there has been a fundamental shift in the demand for agricultural products. Increased demand for corn and soybean oil translates into higher prices for corn, soybeans, and other farm products. Second, energy markets and agricultural markets are becoming increasingly intertwined. This does not mean that every time the price of petroleum changes by a dollar the price of corn will change proportionally on the same day. It does mean that it is unlikely that grain and petroleum prices will move in opposite directions for extended periods of time. Third, biofuel subsidies matter. The FAPRI outlook assumes an indefinite extension of the 51¢ per gallon tax credit, the ethanol tariff, and the tax credit for biodiesel. Earlier this year we estimated that letting those subsidies expire would reduce average corn prices by 30¢ per bushel. And, finally, biofuel use mandates can matter as well. Suppose there is a drought that severely limits corn supplies. Without a binding mandate, corn prices would rise until ethanol production becomes unprofitable. Plants would close and the reduction in corn use would moderate the increase in corn prices. Suppose instead that there is a binding mandate that requires blenders to continue to use biofuels regardless of the price. Ethanol production would continue in spite of high corn prices, forcing greater reductions in feed use, exports, and other uses of corn.

Biofuels are extremely important to U.S. agriculture, but the last few months have demonstrated the importance of several other factors affecting agricultural markets. I would draw your attention to my written statement for a discussion of factors ranging from global economic growth and exchange rates to weather and policy.

In conclusion, FAPRI's projections suggest that average prices for many ag products are likely to remain above the average levels that have prevailed prior to 2006. It would be premature to conclude that we are in a new world and there is no chance that we will ever see $2.00 per bushel corn again. I remind you of the experience of the mid-1990s where we thought we were in a new plateau and things changed unexpectedly and we were back down to lower prices once again. One thing I have learned in 20 years of making agricultural market projections is that someone in this business either needs a lot of humility or a very short memory. We do not have a crystal ball, but we believe that our annual baseline outlook provides a reasonable and useful snapshot of the agricultural economy under a particular set of assumptions. The baseline outlook then serves as a point of comparison for other analyses, such as work we have done at the request of this Committee to examine farm bill options. Thank you again for this opportunity. I would be happy to answer any questions.

[The prepared statement of Dr. Westhoff follows:]

PREPARED STATEMENT OF PATRICK WESTHOFF, PH.D., RESEARCH ASSOCIATE PROFESSOR AND PROGRAM CO-DIRECTOR, DEPARTMENT OF AGRICULTURAL ECONOMICS, FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE, UNIVERSITY OF MISSOURI—COLUMBIA, COLUMBIA, MO

Mr. Chairman and other Members of the Committee:

Thank you for the opportunity to talk with you today about some of the major changes in the agricultural economy.

My name is Patrick Westhoff. I am a Research Associate Professor in the Department of Agricultural Economics at the University of Missouri—Columbia and a Program Director at the Food and Agricultural Policy Research Institute.

FAPRI is a joint institute of the University of Missouri—Columbia and Iowa State University. For the past 20 years, we have received Federal funding to provide objective analysis of agricultural markets and policies. We have enjoyed the opportunity to work with you and Committee staff in looking at issues related to the 2007 Farm Bill debate, biofuel policies, and international trade negotiations.

Each year, FAPRI prepares a 10 year baseline outlook for the agricultural economy. The outlook we prepared for release in February 2007 looked a lot different than the one we issued a year earlier:

- In 2006, our outlook showed average corn prices that increased slowly over time, but remained below $2.50 per bushel through 2015. In the 2007 outlook, our average baseline corn prices never drop below $3.00 per bushel.
- Our projected prices for soybeans, wheat, and many other products also were much higher in the 2007 baseline than in the one prepared a year earlier.
- In the 2006 baseline, projected farm program outlays by the Commodity Credit Corporation exceeded $14 billion in every year through Fiscal Year 2012. In the 2007 baseline, CCC spending is always below $12 billion per year.

We are just now beginning the process that will lead to the FAPRI 2008 baseline outlook for the farm economy. I suspect that baseline will also show major changes from the 2007 projections.

What's going on? Why do we keep changing our mind about the outlook?

Biofuels and U.S. Agriculture

The obvious answer is biofuels. In 2006, we expected biofuel production to increase, but the actual pace of expansion has been much more rapid than we anticipated. The combination of high petroleum prices and supportive policies has encouraged massive new investment in ethanol and biodiesel production capacity.

All those new ethanol plants could use a lot of corn. The 2006 outlook called for almost three billion bushels of corn to be used to produce ethanol by 2015. In the February 2007 outlook, we said four billion bushels by 2009.

Using more corn to produce ethanol puts upward pressure on corn prices. Higher corn prices encourage producers to shift acreage away from other crops to satisfy the growing demand for corn. The resulting reduction in supplies of soybeans, wheat, cotton and other crops results in higher prices for those commodities.

Higher U.S. prices also encourage crop producers in South America and elsewhere to expand production. Livestock producers around the world face higher feed costs. These higher costs slow the rate of expansion of livestock production and eventually raise the price of meat and dairy products.

This is a now-familiar story. Many have said and our projections suggest that we are experiencing a major structural shift in the agricultural economy. We expect that average grain and oilseed prices will be consistently higher over the next 10 years than they were over the last 10 years.

The basic outlines of this story remain believable. However, events of recent months remind us that we still have a lot to learn about biofuel markets and the impacts of biofuels on agricultural markets. Furthermore, we've been reminded that factors unrelated to biofuels continue to have major impacts on the farm economy.

Ethanol prices that exceeded $3.00 per gallon in the summer of 2006 have dropped below $2.00 per gallon. On October 11, ethanol futures traded on the Chicago Board of Trade closed at or below $1.60 per gallon for all 2007 and 2008 contracts.

This drop in ethanol prices has occurred in spite of petroleum prices around $80 per barrel this fall and NYMEX futures prices that remain above $70 per barrel as far as the eye can see. Earlier this year most of us would have thought that $80 petroleum should imply ethanol prices well above $1.60 per gallon.

These lower ethanol prices have squeezed ethanol plant profit margins. By our estimate, net returns over operating costs averaged $1.56 per gallon in 2005/06 and $0.95 per gallon in 2006/07. With those kinds of returns, a plant built in 2005 could be fully paid for today. Current futures, in contrast, suggest a return over operating costs of just a few cents per gallon, and that's before considering capital costs.

As a result, the future of the ethanol industry is now much less certain than it seemed just a few months ago. We expect plants under construction to be completed. However, it is less certain whether they will all operate at full capacity, and the pace of new investment seems sure to slow dramatically.

Similarly, profit margins to biodiesel producers have been declining sharply in recent months. In contrast to ethanol, however, the change is primarily caused by ris-

ing feedstock costs for vegetable oil, rather than declining prices for biodiesel. We currently expect vegetable oil prices to remain high by historical standards, which could slow or even stop expansion of the industry.

In the long run, we expect ethanol to sell for roughly its value as a fuel. That would be a much lower price than ethanol sold for in 2006, but higher than it is trading for today. In our August 2007 baseline update, we projected a 2012 ethanol price (FOB Omaha) of $1.72 per gallon, compared to a petroleum price (West Texas Intermediate) of $69 per barrel.

Those projections, of course, are based on a long series of assumptions, some of which will certainly prove to be wrong. To take the most obvious example, the price of petroleum could be much lower or higher than $69 per barrel.

Analysis we conducted earlier this year showed that the ethanol industry and agricultural markets look very different at low petroleum prices than at high petroleum prices. For example, we estimated that 2015 ethanol production under current policies could be less than 8 billion gallons if the refiners' acquisition price for petroleum falls to $30 per barrel or over 20 billion gallons if the oil price consistently exceeds $80 per barrel.

What does all this mean for the agricultural sector?

1. First, there has been a fundamental shift in the demand for agricultural products. Increased demand for corn and soybean oil translates into higher prices for corn, soybeans, and other farm products. Most affected are commodities that are close substitutes for corn and soybeans in supply or demand; less affected are fruits and vegetables.

2. Second, energy markets and agricultural markets are becoming increasingly intertwined. This does not mean that every time the price of petroleum changes by a dollar the price of corn will change proportionally on the same day. It does mean that it is unlikely that grain and petroleum markets will move in opposite directions for extended periods of time. If corn prices are low, relative to petroleum prices for a long time, more ethanol plants will be built and that will drive up prices for corn and other crops. If corn prices are high enough relative to petroleum prices, ethanol production becomes unprofitable, moderating corn demand.

3. Third, biofuel subsidies matter. The FAPRI outlook assumes an indefinite extension of the $0.51 per gallon ethanol tax credit, the $0.54 per gallon ethanol tariff, and the $1.00 per gallon tax credit for biodiesel made from virgin vegetable oil. If those subsidies are reduced or allowed to expire, the result will be less biofuel production and lower prices for corn, soybean oil, and other farm commodities. For example, earlier this year we estimated that letting those subsidies expire would reduce average corn prices by $0.30 per bushel.

4. And, finally, biofuel use mandates can matter, too. Biofuel use in 2012 is likely to far exceed the 7.5 billion gallons mandated by the 2005 energy bill. If the mandate is set at a high enough level, it could be important. For example, suppose there is a drought that severely limits corn supplies. Without a binding mandate, corn prices would rise until ethanol production becomes unprofitable. Plants would close and the reduction in corn use would moderate the increase in corn prices. Suppose instead that there is a binding mandate that requires blenders to continue to use biofuels regardless of the price. Ethanol production would continue in spite of high corn prices, forcing greater reductions in feed use, exports, and other uses of corn.

Other Factors Driving Agricultural Markets

Biofuels are extremely important to U.S. agriculture, but the last few months have demonstrated the importance of several other factors affecting agricultural markets.

Global Economic Growth

Milk prices have increased dramatically in 2007. Higher feed prices caused by ethanol production and weather conditions are only a small part of the story. More important has been strong global demand for dairy products, led by consumers in Asia. Rising incomes have contributed to the sharp increase in demand for dairy products and many other commodities as well.

Exchange Rates

The weakness of the U.S. dollar has had mixed effects on the U.S. economy as a whole, but it has been beneficial for most U.S. agricultural producers. By making U.S. goods less expensive when prices are expressed in foreign currency, the weaker dollar encourages foreign consumption of U.S. products and discourages competing

exporters. While prices of grains and oilseeds have increased around the world, the increases are much larger when measured in U.S. dollars than when measured in Canadian dollars or Brazilian reais. This is one of the reasons why the foreign supply response to high commodity prices has not been as great as one would normally expect.

Population Growth

The world's population continues to grow, but at a declining rate. In general, this means population will decline in importance as a driver of increases in food demand. However, population growth rates remain high in Africa, a major export destination for commodities like wheat and rice.

Technology

When we develop the FAPRI outlook, we assume that the average rate of growth in crop yields and other productivity indicators will generally be in line with past trends. Usually that is a reasonable assumption, but not always. Current high prices for many commodities provide an incentive to producers to increase input usage and make them more willing to pay for new technologies. Growth in demand has made it hard for crop supplies to keep up with demand in 2007, but that may not always be true. If the pace of yield growth increases in the years ahead, commodity prices could fall even if demand continues to grow.

Weather

As important as biofuels and other developments are, the main factor driving crop prices in any given year is the weather. This is seen most clearly in the case of wheat, where poor weather has reduced 2007 yields in Europe, Australia, and North America. Because consumer demand for wheat is not very responsive to price changes and global stocks were at the lowest level in decades, reduced supplies have resulted in remarkably high global wheat prices. Drought in Australia has also limited the ability of that country's producers to respond to current high dairy prices.

Supply Response

That producers around the world respond to changes in market conditions is hardly new. However, it is worth noting just how strong the U.S. producer response was in 2007 to price incentives. At planting time, corn prices were very high relative to prices for soybeans and other crops. U.S. producers responded by expanding corn area planted by 15 million acres, with most of that increase accounted for by reduced production of soybeans, cotton, rice, and other crops. At least for now, it appears that relative prices at planting time in 2008 will be very different than they were in 2007. The result is likely to be increased U.S. and world acreage devoted to wheat and soybeans, and corn acreage may actually decline.

Policy

Current high commodity prices make many U.S. Government programs less important to producers and to market outcomes than would have been true just a few years ago. The outcome of the farm bill debate, of course, could have important implications for producers, as could the outcome (if any) of the Doha Development Agenda negotiations. In other countries governments have adjusted policies in response to high commodity prices. For example, the European Union is suspending land set-aside programs and China is limiting growth in biofuel use of grain.

Land Markets

The value of agricultural land depends on a wide range of factors. To a large extent, recent increases in land prices and rental rates are a function of the expected profitability of agricultural production. In that sense, land prices and rental rates are a result of developments in the agricultural economy, including agricultural policies. However, it is also true that land prices are strongly affected by a wide range of factors largely external to the sector, ranging from interest rates to the housing market to tax policies. How important these various factors are in determining land values varies greatly across the country.

Other Commodity-Specific Concerns

Livestock

Livestock, dairy, and poultry producers are paying much more for feed now than they were in mid 2006. For the animal agriculture sector as a whole, however, the increase in feed costs in 2007 relative to 2006 is much less than the increase in cash receipts. Prices for milk, poultry, and beef have all been substantially higher than generally anticipated earlier this year, largely because demand has been stronger than expected for many products. Part of the strength in demand can be explained

by income and population growth, but some is also due to other factors. Recent declines in hog prices are a reminder that feed market changes have not eliminated livestock cycles. Looking forward, we expect producers to continue to respond to changes in returns. For example, current high milk prices are likely to cause a supply response here and around the world that will lead to lower prices.

Cotton

The domestic cotton milling industry has been in decline for the last 10 years and there are few prospects for a reversal. As a result, domestic cotton producers have been increasingly dependent on export markets—exports now account for about ¾ of U.S. cotton use. Reduced purchases by China and other factors caused a sharp reduction in U.S. cotton exports in 2006/07, resulting in large carryover stocks. The combination of low cotton prices, high production costs, and competition from high corn prices resulted in a sharp reduction in 2007 cotton area and production. In the long run, global growth in demand for cotton will determine the size and shape of the U.S. cotton industry.

Concluding Comments

Prices for grains, oilseeds and many other agricultural products are above their historical average levels. Growing biofuel production is much of the reason, but the weather and a variety of other factors also play important roles.

FAPRI's projections suggest that average prices for many agricultural products are likely to remain above the average levels that prevailed prior to 2006. But, it would be premature to conclude that we are in a new world and that there is no chance that we will ever see $2.00 per bushel corn again.

The last time the "conventional wisdom" said we were on a new higher price plateau was the mid-1990s. Demand from China and the rest of developing Asia was expected to cause a permanent upward shift in commodity prices. Then the Chinese unexpectedly reduced grain imports and a financial crisis caused a sharp reduction in import demand in other Asian countries. Grain and other agricultural commodity prices fell sharply.

There are sound reasons to expect agricultural commodity prices to remain relatively strong over the next decade. Indeed, one can easily tell stories where FAPRI's current price projections are too conservative. However, many things could lead to prices falling again. Petroleum prices could decline from current levels, domestic and foreign crop supplies could grow more rapidly, or a global economic slowdown could weaken demand.

One thing I've learned in 20 years of making agricultural market projections is that someone in this business either needs a lot of humility or a very short memory. Things never work out exactly as our projections indicate, because it is impossible to anticipate everything that can and does affect agricultural markets. We do not have a crystal ball, but we believe that our annual baseline outlook provides a reasonable and useful snapshot of the agricultural economy under a particular set of assumptions. That baseline outlook then serves as a point of comparison for other analyses, such as work we've done at the request of this Committee to examine farm bill options.

Thank you again for this opportunity. I would be happy to answer any questions.

Mr. ETHERIDGE [presiding]. I thank the gentleman for his comments and we are going to stall for just a minute, but we aren't going to recess. The Chairman should be back very shortly. Let me go ahead and ask a question, Dr. Collins, of you and if I walk out the staff will get the answer for me. How about that? We will keep it going, because Chairman Peterson will be back in a minute. Let me thank you for being here, and I have three maps here that you are familiar with. One that the Secretary has declared a disaster; one the President has had a disaster; and the combination of the two. My question to you is if you combine these, while some of these are covered by the Agriculture Disaster Assistant package that we enacted earlier this year, a lot of it is. So my question is, and we will give you several so you can answer them all at one time. When USDA forecasts record receipts of $276 billion for 2007, is that despite all the losses that are anticipated in the amount? Number two, do you have estimates of the agricultural losses represented in the amount, and has the Department given any

thought as to the need to extend the cut-off date for the current disaster package to cover these that are now in there? And I know I am throwing a lot at you, but let me add one more piece to it because I just spoke to the Department in the last few days. Certainly in my state we are facing the worst drought in 100 years. We have two poultry plants that are now currently operating on a half-week, may shut down because it doesn't have water in reserves to operate. And we have sent a letter to the White House signed with 55 Members, both Democrats and Republicans, asking for some drought assistance to help these farmers, so I appreciate you commenting on that. I am going to slip out, Mr. Chairman, and turn it over to you and run back and I will get your answer from the staff if you will just share it with all of us.

Dr. COLLINS. All right. Thank you, Mr. Etheridge. Should I go ahead and respond to that, Mr. Chairman, then? I will wait until you get back.

The CHAIRMAN. Okay. That is fine. I have a few other questions, and we apologize. You know how this place is. You have been around it.

Dr. COLLINS. I do.

The CHAIRMAN. I would like both Dr. Gruenspecht and Dr. Collins to expand a little bit on the uneasiness that is being written about the ethanol sector. You know, we have a lot of stories showing up in different papers. My sense is that we have a lot of folks with agendas that are ginning up some of this stuff. I have been getting some information from some of the folks that are in the business back home that tell me that it is not so much an issue of the over-production, it is more of an issue of getting into the system. There are problems with inadequate infrastructure for blending. I would like your perspective on what is going on here with ethanol right now in terms of whether you think the production has exceeded the demand or whether there are problems in actually getting the production into the systems, whichever of you would have a perspective on that.

Dr. COLLINS. I am sure, Mr. Peterson, we both do, so I will start and Howard can fill in the blanks. I think that this is an issue of an enormous expansion in production. You know, in any commodity where you see the kind of increase we have seen in ethanol production, which is a 2 billion gallon increase over the past year, it is going to put some strains on the whole distribution system. I think that economists have long expected that as production of ethanol continues to increase, at some point the long-standing premium that it has enjoyed relative to gasoline, the price premium, would disappear. There are a lot of reasons for that: the saturation of the 10 percent blend market, for example; movement into E85 where you have to price based on BTU value if consumers are really going to pick ethanol for their E85 vehicle. We have long expected some price adjustment. The shock has been that it has come so rapidly. We were running at quite a price premium to gasoline until the mid-summer and then all of a sudden we are selling it at quite a discount.

The CHAIRMAN. Can I stop you right there?

Dr. COLLINS. Yes.

The CHAIRMAN. Are you talking about this price premium in relation to the spot market?

Dr. COLLINS. Spot market, right.

The CHAIRMAN. But very little of this ethanol is actually sold on the spot market, is it?

Dr. COLLINS. I have a chart in my testimony which plots the rack price of ethanol *versus* the spot price of gasoline, and it is those two series that I am comparing when I talk about a premium.

The CHAIRMAN. When you are talking about the rack price, that is what is actually being paid——

Dr. COLLINS. To plants.

The CHAIRMAN.—to the plants——

Dr. COLLINS. Right.

The CHAIRMAN.—based on these long-term contracts and so forth.

Dr. COLLINS. Right.

The CHAIRMAN. And because a lot of what was being reported in the press in terms of what the price of ethanol was, none of the plants in my district, that I am aware of, were getting that price. They were all out of long-term contracts.

Dr. COLLINS. They were getting less.

The CHAIRMAN. Yes, quite a bit less, and now when they report the lower amount they are actually getting more. So, I mean, this whole argument is not—am I wrong?

Dr. COLLINS. No. Ethanol price discovery is still early in its history. If you were to look at the published rack prices for ethanol, for example, just recently I saw about a 50¢ difference between the price in Indiana and the price in Ohio. Now, how do you explain a 50¢ difference in price when the transportation cost is far less than that from one state to the other? So I can't tell you that I fully understand the relationship among all the quoted ethanol prices that are out there, so we tend to use an average and something that is typical. You know, we have seen futures prices of ethanol, for example, that is one market that you could look at where you could deliver a product. Those prices have dropped very sharply in Chicago. Recently, they have been running in the $1.55 range or something like that, so there is no question that the price complex has come down. But, to the extent that individual plants have long-term contracts, they may or may not be seeing that. Their adjustments may lag. So I do think that the lower prices do reflect a big increase in production; probably the saturation of some niche markets or specialty markets or local markets. You know, we have states that are already using ethanol near full capacity so the more you produce it has to go somewhere else if states are close to using it at a 10 percent level. You also, perhaps, could saturate the octane market or the RFG market or the special uses for ethanol and some of that may be what is going on; some of it may be the infrastructure problems that you mentioned. I think those have those been widely reported. They have been widely reported by blenders as well as ethanol plants. They are anecdotal but I tend to believe them. You can look at the backlog of orders for ethanol tank cars. The Department of Agriculture just recently published a study on transportation and infrastructure for ethanol. It was put out by the Agricultural Marketing Service, and they tracked the backlog of orders for ethanol railcars and it has gone up dramatically over the

last couple of years, so there is pressure on the rail system. Sixty percent of all ethanol from plants is shipped by rail, and of course there has been a tremendous demand for railcars in the United States because the rail industry has not really expanded. It went through a couple of decades of fairly low returns and very little capital expenditure. It has only been the last couple of years that they have really started to increase, and a lot of those capital expenditures have gone to maintenance. So there is pressure on the distribution system, the storage system, pumps at blending facilities, and so all of those things are probably combining to cause this price to decline to the extent that it has. My own thought is that over time that we will start to see the price pick back up until we get closer to the 10 percent level of total gasoline consumption in the United States. We could move back up closer to the price of gasoline and even above it again at some point. After all, we still have a 51¢ tax credit. The 51¢ tax credit ought to enable blenders to bid against one another to bid up the price of ethanol. So I am of the mind that this very low price that we are seeing on things like the Chicago Board of Trade is something that is going to come up a little bit in the future. And it also may get help from the very strong crude oil prices that we have been seeing, which I guess would translate into higher gasoline prices into the future.

The CHAIRMAN. Dr. Gruenspecht?

Dr. GRUENSPECHT. I think Dr. Collins could come and work at the Department of Energy, but I think he has it about right. Over the last 12 months ethanol has clearly expanded its reach into the domestic gasoline market. If you look at penetration at the 10 percent blend market, on a national basis the penetration has increased from 35 percent to about 47 percent of all gasoline sold. In early 2006, as Dr. Collins pointed out, there were very significant increases in the ethanol market penetration and the reformulated gasoline markets as MTBE was phased out. Initially, some of that ethanol came from pulling ethanol out of the Midwest where it was being used as a mix with conventional gasoline. It is really the Midwest that has used a lot of the ethanol and conventional gasoline and that penetration is very high, so ethanol has the entire RFG market. As ethanol production capacity increased most of the Midwest conventional market settled back at 10 percent blends.

There is some ethanol market share growth in the Rockies, but the volume growth has been small because the Rockies are a pretty small volume market. Ethanol's market share in other conventional gasoline regions—conventional gasoline outside of the Midwest and the Rockies is where there is the greatest potential for ethanol market penetration to grow. The East Coast, particularly the Southeast and the Gulf Coast states, are what we in the, I guess, in the energy business would call PADD 1C and PADD 3—the Gulf Coast and the South Atlantic—however, these regions also have the greatest barriers to market entry because of gasoline fuel quality regulations and other impediments. There are issues with meeting an evaporation standard that some of these states have. I guess the bright news is that there is really a tremendous incentive for increased penetration to occur. Between the price difference that you have cited, wholesale gasoline is up above $2; the spot price of ethanol is in the $1.50–$1.60 range. Then there is also a 51¢

blenders' credit that is currently about a $1 per gallon difference between the price of ethanol after tax credit and the price of gasoline. That gives terminal operators a tremendous incentive to overcome some of their issues with infrastructure. You can pay off an investment in preparing a blending terminal to blend ethanol very quickly. The blending market might now be sort of like the ethanol market was when the RFG MTBE phase out occurred, where you could make back your capital costs of an ethanol plant very quickly. I think right now we have an ethanol-on-ethanol competition effectively. It takes about 6 to 24 months to convert facilities to handle more ethanol, and as we see that we should see greater demand for ethanol.

The CHAIRMAN. I have taken away more time than I should have, but if the Members would indulge me. I have been asking for the last year or so that given the fact that there looks like there is this opportunity in this blending business, why don't the people in the ethanol industry build blending facilities and buy the gasoline and sell it themselves? I mean, wouldn't there be an opportunity to make money to flip this thing around instead of letting the oil companies be the ones that do this? Why wouldn't the ethanol guys get into this and buy the gasoline and blend it and market it themselves? Is there some reason that is not happening or is some impediment to that happening?

Dr. COLLINS. I don't have a good answer to that other than that buying, storing, handling, distributing a gasoline-blended product is not the business the ethanol plants are in. They would have to learn a new——

The CHAIRMAN. Well, I understand they are not in it. I just said——

Dr. COLLINS. It is that they have these barriers to overcome. They have the transaction cost to learn the business, to build the facilities. I think right now they have—with the profits they have been drawing in ethanol, the investments they have had to make, and the education to acquire to get better at ethanol—I think you specialize in what you do best at this point. Maybe that is something that they would do down the road.

The CHAIRMAN. Yes. Well, thank you very much. Mr. Etheridge was in the middle of asking questions when he had to leave to vote. I am going to get a question that he had asked on the drought. Mr. Etheridge, we will have them respond to your question.

Mr. ETHERIDGE. Do I have to repeat that, Dr. Collins?

Dr. COLLINS. I wrote it down, Mr. Etheridge, so if I don't get it right you can remind me.

Mr. ETHERIDGE. If you could make it rain in the Southeast that would settle a lot of our problems, but I am not sure I am going to call on you to do that today.

Dr. COLLINS. No. I actually was at a European meeting 2 weeks ago where there were experts on cloud seeding, and they are doing a lot of cloud seeding in Greece. But what they were telling me is that they are very successful with moving the paths of storms but not necessarily creating more rain, so there is a little status report on clouds.

Mr. ETHERIDGE. Well, the problem we have is we can't get any clouds.

Dr. COLLINS. Right. Your first question was regarding all of the Presidential and Secretarial disaster declaration areas. Do we take into account in our farming forecasts the losses that underlie those disaster declarations? And the answer to that is yes, we do. It turns out that where most of those disaster declarations are the crop losses have not been that big a contribution to reducing national farm income. And also, a lot of those losses are in forage areas where—we don't put forage directly into our farm income accounts. I also would mention despite the map that you held up which shows most of the continental United States covered by a disaster declaration area, we now, at this point, in the fall season have a pretty good estimate of what our losses look like under crop insurance. And as you know, 80 percent of major crops are covered by crop insurance, and our losses right now look like we are on track to have the second lowest loss ratio in history. Our current internal projection is about .64, with the record being about .6, which means that from a national perspective despite the color of that map the losses are not that significant—at least judged from the crop insurance data.

Mr. ETHERIDGE. But we haven't paid the losses in most cases, have we, in the Southeast?

Dr. COLLINS. We have not.

Mr. ETHERIDGE. Production is not yet in.

Dr. COLLINS. We are paying some of them now. The peak period will be in October and November, but nevertheless, we still make loss ratio projections based on the NASS production data reports and the crop condition reports. That loss ratio estimate is based on those inputs. Your second question was do we have specific estimates of those losses in those areas. We have what the National Agricultural Statistics Service would put out and so you can come up with losses by state. For example, most of Georgia or Alabama is covered, and we would have crop-by-crop estimates of those losses which we could develop. Your third question was have we considered moving the cut-off from February 28? The current disaster assistance legislation allows producers to pick 2005, 2006, or 2007 losses. For 2007 the crop has to be planted before February 28. The answer is no, the USDA has not considered trying to move that date. That date is legislatively mandated.

Mr. ETHERIDGE. Why have they not?

Dr. COLLINS. Well, the——

Mr. ETHERIDGE. I mean, USDA has responsibility over agriculture, and I would think they would be concerned about the farmers.

Dr. COLLINS. We are concerned about farmers. We have responsibility over agriculture. My recollection of the February 28 date was that it was set as a necessity to limit the budget exposure of the disaster assistance bill. And so, relaxing that February 28 would add to the cost of disaster assistance. From a general perspective, as you well know, the Administration has usually opposed ad hoc disaster assistance and prefers to rely on crop insurance. In truth, ad hoc disaster assistance looks like it is going to be a reality and it is going to eventuate. The Administration has always taken the position that it should be offset in the budget. And so those would be two qualifications to try and move the February 28 forward.

Mr. ETHERIDGE. Let me help you with that a little bit. I am informed that the reason for that date was the threat of a Presidential veto. Of course, we allow those now and again, but for my farmers in North Carolina, when the whole State of North Carolina has now been declared a disaster area, they are not really excited about that because they are not going to be able to remedy it. And as I said earlier some of these things are beyond your control and mine, when our water supply is gone and we are going to shut down plants, which in turn will affect the farmer in production. I mean, for our folks this is as serious as anything for those who had to cut off in February. They are not going to be eligible for any of these benefits for the people in the Southeast, so I look forward to working with you on that as we move forward because this is something that we are going to have to get engaged with the Department and with the White House to get done. Thank you, Mr. Chairman. Thank you for your indulgence now you are back.

The CHAIRMAN. At this time the Chair recognizes the gentleman from Oklahoma, Mr. Lucas.

Mr. LUCAS. Thank you, Mr. Chairman, and I would like to turn to our panel and discuss under the title of structural changes that have gone on, discuss the effect of the last 10, now almost 12 years of farm policy on rural America. Clearly in the 1930s to 1990s period we had a more supply-oriented management style of Federal farm bill. The flexibility that has been available to our producers for the last decade is the same flexibility that at one time there was much discussion they would not use. I guess, Dr. Collins, my question is this shifting from one crop to another as country ag economists, those farmers and ranchers respond to the price changes, do you see that accelerating over time?

Dr. COLLINS. Mr. Lucas, I don't know that I see it accelerating. I think the shift that we saw in 2007 was staggering. We now have revised our acreage estimates as of last week, and the increasing corn acreage now, from last year to this year, is up over 15 million acres, something I never thought I would see. It is hard for me to say that that is going to accelerate and get even bigger. But I do think it shows a tremendous ability to shift on the part of American producers to increase their income. I think that we are in a period over the next couple of years of having some oscillation as we move from crop to crop as things sort out. I think we are going to see probably less corn acreage in 2008, but I certainly don't expect a 15 million acre decline. I think the effect will be dampened, so I continue to expect to see shifting back and forth by producers, that increases their income, and that increases their profits. That is a good thing for producers, and it also helps address the supply-demand imbalances. And I don't know that I see it accelerating, but I see this type of a pattern continuing.

Mr. LUCAS. So clearly those producers out there are making decisions that will reflect their best economic interest, and we have seen them move in that fashion very aggressively. You remember, 10 years ago there was some debate about would the world come to an end when we went to this system of producers deciding how to use their property in the most sufficient fashion. And so far they appear to be trying very aggressively to maximize their return. Another question, Dr. Collins, and maybe for Dr. Westhoff also. At

what price level do commodities have to stay before we see real changes in the size of the CRP pool out there. Is there a cost in taking land back into production, an opportunity cost, a structural cost? Producers have to believe under the contracts we have that expire over various periods of time that to put it back into production the rate of return will be sufficient to cover all of those costs before they will make the decision. How close from an economist's perspective are we to that? Are we over that point? Will we see trends in CRP acreage change?

Dr. COLLINS. Well, that is a complicated answer to that question.

Mr. LUCAS. Well, you are a complicated guy.

Dr. COLLINS. Yes, thank you. Off the top of my head on that, I think at the kind of wheat prices they are looking at right now, and understanding that most of the land in the CRP is in wheat country. It is in spring wheat or winter wheat country. And the kind of wheat prices that we are looking at right now, the CBOT wheat price is now $8.50 a bushel for December delivery which is extraordinary. I think that kind of a wheat price would encourage people who don't have extraordinarily environmentally sensitive land to exit the CRP and go back into wheat production. Now, I don't expect the wheat price to stay at $8.50, but I think in this $5 to $6 range, that is going to be very attractive for an awful lot of land that is in the CRP. Now, the impediments to exiting are that do people want to farm this land, or are they using this as an income stream as part of their portfolio. They may be retired for all we know. In fact there are a lot of retirees that are in the CRP, so there are other factors that would prevent land from coming out. Also there is a fair amount of land that is very highly environmentally sensitive land. The land capability classes, III, IV, V, VI, VII, and VIII which aren't going to have good yields, which are going to have problems with a conservation plan, and are going to be high cost to farm, and they may remain in the CRP. I think we were a little surprised at the percent of producers that accepted the re-enrollments and extensions when we offered them last year. Particularly, not so much for the 2007 exits, but for the producers' contracts who are going to expire in 2008, 2009, and 2010. We gave them until December of last year to decide whether to do that or not. Prices had already shot up quite a bit by then, and yet most of them took the re-enrollment or extension. The 2.5 million acres that we had come out on September 30 were those who consciously chose not to stay in the CRP because they wanted to presumably put that land back into production. If prices stay at these kind of levels for a sustained period of time, I think we will see more acreage come out of the CRP. Now, of course, the other side of that is what kind or enrollments will USDA offer and how aggressive will USDA be on the rental rate that it is offering producers? The higher prices go, if we offer higher rental rates we can bid that land into the CRP. So that is another factor that is going to determine what the net exits look like.

Mr. LUCAS. And I think it is worth noting, Mr. Chairman, with our acreage limitations as those acres that are perhaps not so environmentally sensitive come out it creates opportunities for potentially millions of acres of greater sensitivity to come out. Thank you, Mr. Chairman.

The CHAIRMAN. Well taken. I thank the gentleman. The gentleman from North Dakota, Mr. Pomeroy.

Mr. POMEROY. Thank you, Mr. Chairman. I apologize for missing some of the hearing during the break, so if these questions are redundant forgive me. I want to direct my questions to Dr. Collins, because back in North Dakota we are having an unbelievable year. The pricing for commodities, the debate ranges from well, "Is this the best in 10 years," or, "Is it the best since Nixon sold grain to the Soviet Union," thinking more along that line. Once in a generation maybe you see a year like this one. I would like your initial observations on nationally is it as good as it looks in parts of North Dakota this year, and what does that mean in terms of things that we know are going to cycle from the kind of fall that we are having.

Dr. COLLINS. That is a very good question, Mr. Pomeroy, and it caused me to re-write the last line of my opening statement to caution about the coming cyclical down-turn. As easy as it is to get mesmerized by the fact that we have had record high net cash farm income in 3 of the last 4 years, the history of the agricultural economy is that it is cyclical and down-turns come, as we are seeing in ethanol prices right now. But I do think that this is historic in an unusual period of time, and the extent to which it lasts is really going to depend on the whole bioenergy equation. There are a lot of factors driving the record high prices. The global economy has been extraordinarily strong. Exchange rates depreciated dramatically. We have seen unprecedented growth in developing countries. We have seen some bad production in many countries around the world the last couple of years. We have been in, since 1999, a pretty historic drought in the western states of the United States, the third most significant in the last 100 years which has really destroyed forage and capped the expansion of the cattle sector. So there are a lot of factors going on that have driven these higher prices which can turn. But if biofuel production from row crops, major crops, continues to grow and continues to grow steadily, then I think that that is going to keep upward pressure on prices. It is going to continue to keep prosperity in North Dakota and in other states as well. That is going to be a function of what happens with crude oil prices over time and what kind of production response we get in the United States and the rest of the world. And one of the key factors in production response is going to be output per acre. We are seeing some startling things with the latest generation of biotech seeds, and so all of these things are going to work themselves together. The world economy could slow down, crude oil prices could decline, biotech seed yields could grow dramatically, weather in the United States could be poor, any one of those things could cause this to start to roll over. So it could happen. For right now I would say enjoy it and make sure the producers of North Dakota are adding to their savings accounts.

Mr. POMEROY. That is it, pay down debt. I appreciate your response. It is what I think also, and when times get really good and begin to feel like boom times then you know look out, you have rough water ahead. And I am wondering about ethanol. We have ethanol plants under construction, increased North Dakota production ten-fold, but at the same time we have one of our older plants closed because profitability wasn't there. What are we to make of

ethanol futures being as low as they are; and what are we going to see in terms of a stabilizing or maybe even a shakeout of this upstart ethanol industry?

Dr. COLLINS. Well, I think the future depends on what happens to crude oil prices and gasoline prices and it will very much depend on what happens with Federal renewable energy policy. There is quite a range of policy options on the table from eliminating the tariff on ethanol to eliminating or reducing the 51¢ tax credit for ethanol to mandating the use of ethanol to as much as 36 billion gallons by 2022, or under the President's proposal, 35 billion gallons by 2017. These are dramatic policy changes and could all affect what happens with ethanol. Abstracting from that, ethanol is progressing now on the basis of the existing tax preferences and the price of gasoline. And we talked a little bit before you came in about the slump in ethanol prices right now being a result of ethanol fulfilling the demand in a lot of the mandated markets, the seven states that mandate minimum ethanol consumption as well as the reformulated gas market. And ethanol now having to push out into the opportunities which are the Mountain states, the Southeast, and so on where the infrastructure is not there to handle it. But as Dr. Gruenspecht noted the financial incentive right now, because ethanol prices are low, the financial incentive for blenders are to make that investment in those facilities and move that ethanol into blending. And so I think those kinds of things, Dr. Gruenspecht said that kind of investment could take 6 to 24 months, as they happen should provide some strength to the ethanol price and then ethanol runs up against this so-called blend wall. When you start to move toward the full 10 percent of the 140 billion gallons or so of gasoline that is consumed in the United States, unless the E85 market is really taking off, you have that constraint as well. So there is no simple answer to your question. It looks to us like we are going to see continued sharp growth over the next 12 to 18 months because of the plants that are under construction now, where permits have been pulled, concrete has been poured. We think that most of those will come online, but then we would expect some much slower growth after that based on ethanol prices coming down relative to gasoline, relative to their historical relationship, and higher corn prices reducing the margin on production. But as that continues to grow steadily, as long as that yield growth doesn't outstrip that growth in corn going to ethanol production, it will keep prices looking fairly robust.

Mr. POMEROY. Very interesting. Thank you very much, Mr. Chairman.

The CHAIRMAN. The Chair recognizes the Ranking Member of the full Committee, the gentleman from Virginia, Mr. Goodlatte.

Mr. GOODLATTE. Thank you, Mr. Chairman. Dr. Gruenspecht, on the issue of cellulosic ethanol, ethanol made from cellulosic materials, what is your anticipation of how quickly that sector will develop and come online, and what effect do you think that will have on ethanol prices?

Dr. GRUENSPECHT. As I described in my testimony, in our reference or baseline case we do see corn ethanol and possibly imported ethanol from sugar as being by far the dominant sources of ethanol. I have also noted that any kind of long-run projection is

really very dependent upon these technology factors. There certainly could be a break through in technology. There can also be policy factors as Dr. Collins just discussed that could certainly lead to a larger role for cellulosic ethanol. Absent technological break through or absent a policy change that dramatically increases the amount of liquid renewable fuels that are used, the combination of the large amount of corn ethanol plants that are already under construction and what Dr. Collins described as the blend wall, if you add them up, they kind of take you to about the same place and don't leave a lot of room for significant penetration of cellulosic ethanol. If you are going to get past that blend wall then you are looking at E85, which the Chairman noted and I think Dr. Collins as well, that will need to compete with gasoline on an energy-content basis, not a dollars-per-gallon basis, but a dollars-per-BTU basis. I guess, the $64,000 question for cellulosic ethanol is can cellulosic ethanol compete on a dollars-per-BTU basis with gasoline? And as Dr. Collins pointed out that is going to depend a lot on the crude oil price, but that is a pretty tall order, and we don't have that in our reference case scenario, but we recognize there is certainly a possibility of that.

Mr. GOODLATTE. One of the major inhibiting factors for forest biomass to be used as a renewable fuel are the transportation costs associated with hauling trees and waste from remote places to facilities that can use the material, and particularly in places like my district in western Virginia, this means the difference between forest biomass being used for energy or not. Do you see any changes in the near future that would reduce these energy costs and make these projects economical?

Dr. GRUENSPECHT. I think that is really a great question. Yes, transportation considerations are really important for fuels with relatively low energy density and relatively low economic value, such as forest biomass. However, this is not a unique problem for forest biomass. If you look at fossil fuels like coal from the Powder River Basin, transportation cost represents ⅔ of the delivered cost of that coal to power plants in the East. Ultimately, I think it is the availability of what market opportunity can encourage advances in technologies to collect and move material. That is certainly what happened in the Powder River Basin, for example: made that coal competitive in the East. Another option is to disburse the facilities that use renewable fuel to limit the need for expensive transportation. I mean, this is one reason that corn ethanol refineries are sized at about 50 million gallons a year, maybe 50, 100 million gallons a year which are sort of 1/60 the size of a medium-sized oil refinery. A 200,000 barrel-a-day oil refinery does 3.1 billion gallons a year. Similarly, in power generation we would expect a new-build biomass plant to be 1/10 to 1/20 the size of a typical new coal-fired plant. The smaller plants could be more widely disbursed and that would reduce the average transportation cost for biomass fuel to fuel the plant. Of course, as in the ethanol sector there is a need to find, what you would call the sweet spot that strikes a balance between scale efficiencies and operation and the minimization of transport costs. But, I guess, I am maybe more optimistic about the opportunity for some combination of collection and transportation improvements with some dispersion of the fa-

cilities that use the fuel to help overcome the problem that your question identifies.

Mr. GOODLATTE. Thank you. Dr. Collins, let me switch over to another issue and ask if you might comment on some problems we have with fertilizer production. I am told that the U.S. fertilizer industry in the last 7 years has permanently closed 25 nitrogen plants, or about 40 percent of the capacity, primarily due to high and volatile natural gas costs. Your testimony states that U.S. anhydrous ammonia production capacity was 16.5 million tons in 2000. It is only 9.6 million tons today. Ten years ago U.S. farmers imported only 15 percent of the fertilizer they use today. More than 50 percent of fertilizer use is imported. For some fertilizers, such as urea, we import more than 70 percent of what farmers use. I wonder if you might comment on two things. First of all, address the factors that are causing this decline in fertilizer production in the U.S. and second, with domestic fertilizer production already in decline does $1.25 per million BTU tax on some domestically-produced natural gas, a tax I might note has been added to several bills including the farm bill, would that increase or decrease our dependency on foreign sources of natural gas to make fertilizer for our farms?

Dr. COLLINS. Mr. Goodlatte, in response to the reduction in production capacity of particularly ammonia nitrogen fertilizer in the United States, I would trace that to one primary factor. That really accelerated beginning around 2000, 2001, when natural gas prices prior to that were running at $2 per million BTU and in the early part of this decade soared to in the range of $13 per million BTU. Meanwhile, in many other countries around the world natural gas prices were $1, $1.50, $2, $3 while ours were three and four and five times that, so it put our domestic fertilizer, hydrogen fertilizer industry at a disadvantage and plants began closing. And that is correct since 2000, about 40 percent of the capacity has closed. The second part of your question is this $1.25 charge on some natural gas. You know, obviously if that raises the natural gas price to domestic fertilizer plants, that raises their cost of production. I think a ton of anhydrous ammonia has about 33 million BTUs of natural gas in it, so $1.25 times 33 is roughly $40 a ton increased production cost. Anhydrous ammonia right now is selling for about $550 or so a ton in the Upper Midwest. Now, I don't know to what extent. I haven't studied that $1.25. I don't know how much of the natural gas supply that is going to affect. The number may be a heck of a lot less than the $40 or so I mentioned because the $1.25 only applies to some of our production.

Mr. GOODLATTE. Thank you.

The CHAIRMAN. I thank the gentleman. The gentleman from Kansas.

Mr. MORAN. Mr. Chairman, thank you very much. Thank you to the economists for joining us today. Let me ask first, I don't know whether—the topic of this hearing is structural changes. I don't know whether this qualifies as a structural change, but our inability to export beef to South Korea and Japan has been around now a long time. I assume that that lack of market has been built into the price structure for livestock. I am looking for your analysis of where we are in regard to the economic consequences of our failure

to open that market. And perhaps, Dr. Collins, if you know anything from your relationship at USDA as to whether there is any light at the end of the tunnel. And then my second question is related to WTO. We have seen some evidence of a decision at WTO since the passage of the House farm bill related to enforcement or implementation of the decision related to cotton. I would be delighted to hear your thoughts as to what this latest decision in regard to WTO means for the structure in which we operate in agriculture. Also particularly what it means to us as policy makers as we continue to try to determine what farm policy should be. And finally, the International Monetary Fund has been complaining in a study that our increasing reliance on corn, on grain-based fuels, is fueling an increase in the cost of food around the world, complaining about increasing food prices in poor countries. That is an unusual charge by the international community of the United States. Usually we are increasing commodity prices as a result of our farm program, so I would be interested in knowing if you have any take on what it is we should learn from the international community's continual complaining about prices too high, prices too low in our policies.

Dr. COLLINS. Okay. Mr. Moran, those are three very different questions. Let me try and do those quickly. On the first question, yes, our cattle industry has absorbed and adjusted to the loss of export sales as a result of the closure of principally Asian markets due to BSE. In 2003, we exported about 2½ billion pounds of beef. This year we expect to export about 1½ billion pounds of beef, so in the absence of ever having found BSE, we would probably be well above 2½ billion pounds and now we are only at 1½. However, we are making some progress. Two years ago we were only at 700 million, so we are twice the level we were 2 years ago. And for 2008, our official projection is exports of 1.9 billion pounds, so we are making some progress. Part of that 1.9 billion pounds are increases to Japan, one of the key countries that we have not been exporting to. So we have increased our sales to Japan. It is at a slow rate, but our beef has been going there. Now, with respect to Korea, I am afraid I don't have anything very positive to report on that. We have some sales to Korea. So far this year, I think, in the neighborhood of $75 million—very tiny. And then, of course, most recently there was another discovery in a box of beef of a vertebral column and they shut off all of our trade, all the trade with us. And so we are now back in negotiating with Korea again to try to establish a protocol to resume trade.

Mr. MORAN. Dr. Collins, on the point of South Korea or even Japan, in the absence of U.S. beef exports to those two countries are there other countries that are filling that gap or is there less beef consumed in those countries?

Dr. COLLINS. There are other countries that are filling that gap and there are other species that are filling that gap. We are setting record levels for pork exports, which are going to those markets as well, for example. And we have also been able to offset some of these losses by exporting much more to other countries around the world, such as Mexico and even Canada has been taking a lot of our beef. The second question you asked about was the findings of the compliance panel in the WTO with respect to the ongoing cot-

ton case. I really can't say anything about the specifics of that finding. At this point the finding has been provided to us by the WTO. It is confidential until they make it public. I know that there have been public comments made by the other side, and there have been some general comments made in response to that. I would only go back to the original finding which had concluded that we were not in compliance, that we had not adjusted our domestic programs and our GSM program to ameliorate the serious prejudiced charge that we were found to have violated, the price depression charge along with respect to our domestic programs causing lower cotton prices in the world. We will just have to wait and see what comes out when the final report is issued, which is probably still several weeks away. I can only tell you the process then. A decision will have to be made as to whether to appeal that report. If it is appealed and the final report that would come after that and be adopted by the WTO would be the end of the compliance process. Then at that point presumably if we were to lose this case, then the Brazilian Government would seek to establish damages and retaliate, seek to establish damages and achieve compensation from us. Short of receiving compensation they could then retaliate. So there is still a lot yet to unfold on this and no matter how it works out I am sure we will have implications for our domestic farm policy. The third question you raised was about an IMF comment that food prices are rising because of policies and events here in the United States. Food prices are rising for people around the world and isn't this kind of an *in contradistinction* to the general claim that our farm policies depress world prices which is the basis for the cotton case against us. I guess, my only observation about that is that whenever prices go to extremes people come out of the woodwork to complain about it, whether it is very low prices like cotton reaching 29¢ in 1999 and 2000 which precipitated the Brazilian challenge against our program or with wheat prices reaching $6 or $7 which presumably precipitated IMF's comments. There is a wide range for markets to work and for prices to vary and resources to adjust efficiently. And when prices start to move toward those bounds then people start to get concerned. I guess, I would say let this thing play out. We were early. American producers, and not just American but global producers, are adjusting to this. We were just talking about fertilizer. One of the things that has struck me about fertilizer is the incredible global demand for fertilizer over the last couple of years. It is soaring, and that is because countries all over the world are trying to increase their yields. Their yields are much lower than ours in general. And you can look at places like China or India or Brazil or Argentina and demand for fertilizer is soaring there, and that is another factor behind the high price of fertilizer. So we are going to see a production response around the world to these prices. And the other thing I would say to the IMF is a lot of these developing countries are agriculturally-oriented countries. They have large agricultural sectors that are poor and higher prices are going to help their agricultural sectors, and oh by the way, renewable energy might give their farmers a new opportunity to produce as well. So I think there are a lot of factors to take into account here. Whenever prices go to the extremes they are certainly worth monitoring and being sure that

Federal policy is not intervening in some adverse way and it is time to think about that. But on the whole, I think that this can represent an opportunity for the economies of developing countries.

Mr. MORAN. Thank you, Dr. Collins. I always appreciate when you are a witness. It makes my mediocre questions even seem intellectual based upon your answers, so I am grateful for that. Thank you.

Dr. COLLINS. Thank you.

The CHAIRMAN. The gentleman from Nebraska, I wanted to follow up on this and then I will go to you if that is okay. You know, Dr. Westhoff and Dr. Collins, following up on this discussion, clearly the United States ag policy is not the reason we have high wheat prices.

Dr. COLLINS. Absolutely.

The CHAIRMAN. Canada is complaining about corn subsidies when it was not the U.S. subsidy system that has caused the corn prices to go up. How did we get into a situation where we have allowed ourselves to become involved in a WTO process that uses outdated data, and actually allows them to cherry-pick years. So they can go after us for people's agendas whether it be the poor African countries that claim that it is us that causes them all the trouble when it is actually the French Government and those people that run that system. Am I out of line here when I say we have a WTO system that is dysfunctional? It is based on data that has no reality to what is going on, and so here we are fighting cases using timeframes that are completely irrelevant to what is going on today and we are into this system. I mean, I don't see how this serves us as a country to be in this kind of system, so if you would comment on this.

Dr. COLLINS. I would like to comment. I am sure Dr. Westhoff will have something to say. But I think stepping back and looking at our involvement in the WTO is really an indispensable affiliation for our country. It is through the WTO that trade liberalization, not just in agriculture but in everything, has been achieved, and if you look at the growth of the global economy since the GATT was first founded in 1947 it has been phenomenal.

The CHAIRMAN. I am not arguing about that.

Dr. COLLINS. Okay. You are talking about—oh, wait. Let me go to the specific——

The CHAIRMAN. How did we agree to this process where you can use——

Dr. COLLINS. Okay.

The CHAIRMAN.—timeframes to challenge things that are completely irrelevant to what is going on?

Dr. COLLINS. Well, going back to the Uruguay Round Agreement which we adopted in 1994 and it had a life through 2000, and it was some hope that we would negotiate a successor agreement. Well, we haven't and in the interim the peace clause expired. The peace clause protected our farm programs against challenges. Now, that allowed Brazil to come in and file a complaint under the subsidies code.

The CHAIRMAN. I understand that, but why are we using whatever it is 2000, 1999?

Dr. COLLINS. 1999/2000.

The CHAIRMAN. Well, yeah. I mean, that has no relevance to what is going on today.

Dr. COLLINS. It doesn't have any relevance to what is going on today. I can't remember when this case was first filed but it was some time ago and it was closer to that period when it was first filed. The WTO is not prescriptive. It doesn't anticipate what might happen in the future and cause people to file complaints based on that. People file complaints based on actual historical data.

The CHAIRMAN. Does the WTO court, or whatever it is, take into account what the current situation is when they are using outdated——

Dr. COLLINS. They do not. They cannot.

The CHAIRMAN. Dr. Westhoff, what do you think about all this?

Dr. WESTHOFF. Well, I think you are raising an important point. I don't disagree with anything that Dr. Collins said, but I agree with you that it does seem a bit odd to be looking backwards when policies then may perhaps have very different effects than they have today. And, again, where we are at with markets today we don't expect, the USDA does not expect that we will have much in the way of marketing—cyclical payments over the next 10 years. And if that is the case and those are the points where we seem to be hung up on, it does raise some questions about the process.

The CHAIRMAN. Yes. Well, thank you. And that was part of what spurred this, is that you are saying, Dr. Collins, "It looks like if the biofuel things keep going that these prices are going to be better." We are here fighting these rear-guard actions against some of these folks who, in my opinion, are probably doing things as bad as we are and we seem to kind of turn our eye to that. It just mystifies me how we got into this whole deal. The gentleman from Nebraska.

Mr. SMITH. Thank you, Mr. Chairman. For Dr. Collins, I hear from constituents repeatedly on the high cost of initial operating capital for farmers and ranchers, primarily the cost of land and they see Section 1031 like-kind exchanges as a mechanism that perhaps is creating a false market—that there are folks rushing to make a deal, paying more than they would maybe have to if we extended the timeframe for a 1031 exchange. Do you see increase in values? I know this wouldn't be the solution to that, and, again, strong property values can be a good thing, but not if it is a false market and especially in an area with high property tax.

Dr. COLLINS. The Section 1031 like-kind exchanges have really exploded over the last couple of years as farmland values have been going up in double-digit rates. I have done a little bit of searching of the literature to find a good analysis of what Section 1031 of the IRS Code has meant for farmland values. Quite frankly I haven't found much. I do know that it, for example, economists in Illinois have frequently cited it as a cause for higher farmland values in the State of Illinois where a very high percentage of farmland purchases have involved like-kind Section 1031 exchange. Based on that in the belief that you just expressed, as you probably know, USDA and the Administration in their 2007 Farm Bill proposal had a proposal on Section 1031 like-kind exchanges and that was that if someone were to buy farmland and to defer the capital gains from the sale of other land to buy the farmland, they couldn't get farm program payments on that farmland if they were going to

get a 1031 deferral of capital gains tax treatment. So that in and of itself tells you that the Administration and USDA believe that there is some merit to the argument that like-kind exchanges have increased farmland values, and so the Administration wanted to do something about it. You may know that 2 weeks ago the Senate Finance Committee reported out a bill that would deny the deferred tax treatment on a like-kind exchange if developed property was sold and farmland was bought and there was a stream of farm program payments or CCC loans on that land. So there are several groups then who support the thinking that you just mentioned.

Mr. SMITH. So you are saying that perhaps, and they are wishing to narrow or, I guess, tighten up the like-kind definition, land-for-land.

Dr. COLLINS. Yes, I think the general thinking is people don't care if people engage in a like-kind exchange and sell developed real property for undeveloped farmland. But they just don't want to facilitate that with farm program payments, because that just gives the buyer of the farmland extra income to bid up the price of that farmland. It is fine if it takes place without farm program payments helping in the transaction. I think that is the logic of what the Administration proposed and what the Senate Finance Committee action was 2 weeks ago.

Mr. SMITH. Very well. Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. Thanks, gentlemen. Any other Members seek to be recognized? Hearing none, gentlemen, we appreciate your involvement, being here today, and taking the time out of your schedules, and with that the Committee on Agriculture is adjourned.

[Whereupon, at 11:30 a.m., the Committee was adjourned.]

○