

ANALYSIS OF THE PROPOSED RULEMAKING FOR THE EXPANSION OF THE U.S. RENEWABLE FUEL STANDARD

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I. Executive Summary

The Renewable Fuels Association (“RFA”) commissioned Informa Economics (“Informa”) to conduct analyses related to the Notice of Proposed Rulemaking issued by the U.S. Environmental Protection Agency (“EPA”) in May 2009 regarding the Renewable Fuel Standard (referred to as RFS2) expanded by the Energy Independence and Security Act (EISA) of 2007. Specifically, the RFA asked Informa (1) to develop independent forecasts of U.S. and global crop acreage and supply/demand balances, and compare the forecasts to the results of the agricultural economic models used by EPA in the Proposed Rulemaking, and (2) to review the results of the analysis conducted by Winrock for the EPA regarding shifts in land among usage categories in key countries. The following are key findings from Informa’s work.

A. Independent Forecast of U.S. and Global Crop Area and Supply/Demand Balances

- Informa maintains a framework for long-term grain and oilseed forecasts, which are updated as necessary for clients and for internal analytic purposes. Informa’s world baseline is the summation of supply/use analyses of grains and the oilseed complex for 27 individual countries/regions. The 27 elements summed include nineteen individual countries, the European Union and seven geographical regions representing the world.
- In developing the Proposed Rulemaking, the EPA relied heavily on two sets of agricultural economic models: the Forestry and Agricultural Sector Optimization Model (“FASOM”) developed by Texas A&M University, and models maintained by the Food and Agricultural Policy Research Institute (“FAPRI”), which is centered mainly at Iowa State University.
- In its analysis, the EPA utilized the FASOM and FAPRI models to focus on two cases regarding U.S. biofuels production. The reference case reflects biofuel volumes that would have been expected to be produced in the U.S. if the EISA had not been enacted (but the RFS originally established in the Energy Policy Act of 2005 had remained in effect). The EPA’s control case reflects biofuel volumes under the RFS2. The difference in international land use between the two cases is critical since it is a key factor in determining the GHG emissions associated with land-use change that the EPA analysis attributes to the RFS2, and thus the GHG emissions assigned to ethanol.
- Total world corn area is forecast by Informa to be 1.4 million hectares (3.5 million acres) larger in 2022 in the control case relative to the reference case, while FAPRI estimated a 2.5-million-hectare (6.2-million-acre) increase. Total world soybean area is forecast by Informa to decrease by 0.5 million hectares (1.2 million acres) in 2022 in the control case relative to the reference case, while FAPRI estimated an increase of 0.5 million hectares (1.2 million acres). Thus, for the two main crops used as feedstock for biofuel production in the U.S., Informa forecasts that the world’s area will be a total of 0.9 million hectares (2.2 million acres) higher in the control case than in the reference case, compared to a combined increase of 3.0

million hectares (7.4 million acres) simulated by FAPRI. While Informa's forecast shows the additional 2.2 million acres occurring in Brazil and Argentina, it is also plausible that given the small amount of additional acreage needed, it could be accommodated within the United States.

- Regarding crop usage, a key distinction among the Informa, FASOM and FAPRI forecasts is the level of corn exports. For the U.S., there have been long-term trends toward higher soybean exports and flat-to-declining wheat exports; however, corn exports have not exhibited a discernible trend. Informa expects these trends to continue, as reflected in Informa's global crop supply/demand forecast. The rest of the world (outside the U.S.) is essentially expected to be able to meet its grain needs via its own production, although exports from the U.S. will contribute to satisfying the rest of the world's protein meal and vegetable oil needs.

B. Review of Winrock Analysis of Land-Use Transitions

- The EPA used a series of models in conjunction to conduct its analysis of the lifecycle GHG emissions associated with biofuels. While the FASOM and FAPRI models were used to determine the impacts of RFS2 on the agriculture sector, neither is geared toward determining what types of land would be expected to be converted into cropland globally. Accordingly, the EPA commissioned Winrock International ("Winrock") to estimate what classes of land are typically converted into cropland by country and the associated GHG emissions.
- In three key countries – Brazil, China and India – the Winrock findings about whether cropland increased or decreased between 2001 and 2004 were contradicted by data from the U.S. Department of Agriculture ("USDA") and the Food and Agriculture Organization ("FAO") of the United Nations. Based on satellite imagery, Winrock estimated that cropland in Brazil decreased by 1.1 million hectares between 2001 and 2004, falling to 22.5 million hectares from 23.6 million hectares. However, according to USDA data the combined area of major grains and oilseeds increased by 9.0 million hectares during that same time period, to 43.8 million hectares in 2004 from 34.8 million hectares in 2001. The FAO estimated that total arable land and permanent crops increased by a somewhat smaller 335,000 hectares, to 66.8 million hectares from 66.5 million hectares. Thus, the Winrock analysis also arrived at a materially smaller amount of cropland in Brazil than either the USDA or FAO data would indicate.
- Winrock estimated that from 2001 to 2004, cropland in China increased by a significant 14.5 million hectares, which would represent an 8% increase. However, according to the USDA, grain and oilseed area in China fell by 1.7 million hectares from 2001 to 2004; the FAO estimates that total arable land plus permanent crops declined by 313,000 hectares.
- Regarding India, Winrock concluded that cropland increased by a substantial 13.0 million hectares between 2001 and 2004. Similar to the situation in China, this would represent an 8% increase from the 2001 level. However, the USDA estimates that Indian grain and oilseed area declined by 388,000 hectares during that time

period, and FAO data indicate that total arable land plus permanent crops contracted by 128,000 hectares.

- In summary, the conclusions drawn by Winrock using satellite data differ data in some significant ways from the measurements “on the ground” that are reflected in the USDA and FAO data. This is important since, if Winrock’s estimates of the total amount of cropland in each country and the change in cropland between 2001 and 2004 are not accurate, then Winrock’s conclusions regarding how land shifts among land-use classes and associated GHG emissions are also called into question.

II. Introduction

The Energy Policy Act of 2005 established a Renewable Fuel Standard (RFS) that specified for the first time a minimum amount of renewable fuel required to be used in the U.S. gasoline pool. The RFS required at least 4 billion gallons of renewable fuel to be consumed in 2006, and this was scheduled to increase to at least 7.5 billion gallons by 2012. Then, in December 2007, Congress passed the Energy Independence and Security Act (EISA), which significantly expanded the RFS (referred to as RFS2) and separated the volume requirements into four separate categories: cellulosic biofuel, biomass-based diesel, advanced biofuel and total renewable fuel. Within the total renewable fuel category, the volume of corn-based ethanol is scheduled to reach 15 billion gallons per year by 2015 and then remain at that level. The EISA also established key requirements that are not volume related, such as greenhouse gas (GHG) thresholds for biofuels and a definition of renewable biomass that feedstock must meet for the biofuel produced from it to count toward the RFS.

In May 2009, the U.S. Environmental Protection Agency (“EPA”) issued a Notice of Proposed Rulemaking (NOPR) regarding RFS2 and related provisions of the EISA. The NOPR laid out a number of alternative approaches for implementing provisions of RFS2, and in conjunction with a Draft Regulatory Impact Analysis (DRIA), it incorporated analyses of the impact of RFS2 on sectors of the economy such as agriculture and energy, as well as issues such as land-use change and GHG emissions.

Given the importance of the proposed rulemaking to the ethanol industry, the Renewable Fuels Association (“RFA”) commissioned Informa Economics (“Informa”) to:

- Independently forecast U.S. and global crop acreage and supply/demand balances, and compare the forecasts to the results of the agricultural economic models used by EPA in the proposed rulemaking; and
- Review the results of the analysis conducted by Winrock for the EPA regarding shifts in land among usage categories in key countries.

The results of Informa’s analysis are contained in this report.

III. Independent Forecast of U.S. and Global Crop Area and Supply/Demand Balances

A. Introduction

Informa maintains a framework for long-term grain and oilseed forecasts, which are updated as necessary for clients and for internal analytic purposes. Informa's world baseline is the summation of supply/use analyses of grains and the oilseed complex for 27 individual countries/regions. The 27 elements summed include nineteen individual countries, the European Union and seven geographical regions representing the world as defined by the U.S. Department of Agriculture ("USDA") in its Production, Supply and Distribution (PS&D) database. The PSD historical database is the historical foundation on which Informa's baseline supply, use and trade analyses are built.

Informa's forecasts of commodity supplies and usage are derived independently. Trade volumes are inferred from supply-use imbalances. Excess supplies imply net exports. Deficient supplies imply net imports.

According to statistics compiled by F.O. Licht, the U.S. accounted for just over half of ethanol output by significant ethanol-producing countries worldwide in 2008. Brazil accounted for an additional 37% of production. The European Union, China and Canada combined accounted for an additional 8% of production, bringing the cumulative share of these five countries to 98% of global output. Accordingly, these countries/blocs are the focus of the historical estimates and Informa's forecasts of global crop area and supply/demand balances addressed specifically in this report.

For the U.S., Informa developed forecasts of U.S. corn-based ethanol production through 2022, when RFS2 reaches 36 billion gallons. More broadly, Informa constructed forecasts through 2022 of total acreage planted to major crops in the U.S. For this analysis, major crops are defined to include the following: corn, sorghum, barley, oats, wheat, rice, soybeans, peanuts, sunflowers, rapeseed/canola, flaxseed, cotton, hay, dry edible beans, tobacco and sugarbeets. Acres under contract to the Conservation Reserve Program (CRP) also are included in the total.

Outside the U.S., major crops are defined to include the major grains and oilseeds. Specifically, this includes corn, sorghum, barley, oats, wheat, rice, soybeans, peanuts, sunflowers, rapeseed/canola and cotton. Informa developed forecasts through 2022 for major crop area in Brazil, the European Union, China and Canada, as well as a world total (actually a summation of crop area across all major countries).

Finally, Informa developed supply/demand balances (beginning stocks, production, domestic usage, net trade and ending stocks) for corn, wheat, soybeans and rapeseed/canola for the U.S., Brazil, the European Union, China and Canada individually, as well as for a rest-of-world aggregate.

This section summarizes the view of U.S. and global agriculture that are reflected in Informa's forecasts, as well as how Informa's forecasts compare to the results of the FASOM and FAPRI models utilized in the EPA's analysis process. The full set of historical estimates and Informa's forecasts is contained in appendices to this report. Appendix A contains Informa's baseline forecast of U.S. and global agriculture, which includes forecasts of biofuel volumes that are not necessarily identical to RFS2 levels. Appendix B contains Informa's forecast of U.S. and global agriculture conforming to the EPA's reference case, which reflects biofuel volumes that would have been expected to be produced in the U.S. if the EISA had not been enacted (but the RFS originally established in the Energy Policy Act of 2005 remained in effect). Appendix C contains Informa's forecasts conforming to the EPA's control case, which reflects biofuel volumes under the RFS2.

B. Foundation of the Forecasts

1. Macroeconomic Trends

Most of the world's major economies are in the midst of a global recession. The U.S. National Bureau of Economic Research ("NBER") officially announced on December 1, 2008, that the U.S. began its current recession in December 2007. Numerous major global economies (e.g., Germany and the United Kingdom) are facing similar significant economic downturns.

Future global economic growth was forecast by Informa. The following are key assumptions/conclusions of the forecast:

- The global economy is assumed to decline 2.5% in 2009 while the U.S. economy declines by 2.6%.
- The financial crisis and global economic slowdown will constrain U.S. exports in the short to intermediate term.
- The current economic downturn is expected to reverse course in late 2009 with significant improvement in 2010. Opportunities for growth in corn, wheat and soybeans will follow improvements in the global economy.
- Global economic growth is assumed to rebound to an average rate of over 3% for the remainder of the forecast. The U.S. economy resumes growth in 2010 at 1.9%, followed by average rates near 2.5% over the remainder of the projection period.
- Economic growth in developing countries is especially important because food consumption and feed use are particularly responsive to income growth, with movement away from staple foods and increased diversification of diets.

2. Population Trends

Currently, East Asia (which includes China) is the most populous region in the world with approximately 1.53 billion people; South Asia (which includes India) is the second most populous region with 1.49 billion people. These regions have experienced fairly stable/predictable population trends from 1980 to 2007; as such, the expectations of future regional population levels are based heavily on recent growth patterns. Key observations regarding the forecasted growth rates and thus the population levels of certain regions are as follows:

- South Asia (including India) is forecast to eclipse East Asia (including China) as the most populous region in the world. This is in part the result of the Chinese government policy since 1979 imposing a one-child limit for both rural and urban areas, with a maximum of two children in special circumstances.
- The former Soviet Union (FSU) is forecast to see a modest decline in population. Since the fall of the Soviet Union, the Russian Federation, Ukraine and other countries in the region have seen the number of births plummet and deaths increase sharply.
- Populations of the major developed (economic) regions of Oceania, Other Europe, EU-27 and North America are forecast to experience moderate growth. The region with the largest forecasted increase in population is South Asia (India).

3. Assumptions Regarding Biofuels

In addition to the economic and demographic trends described above, an important set of assumptions concerns biofuel production in the U.S. Biofuels have been the most rapidly growing sources of demand for corn and soybean oil during this decade. Accordingly, Informa constructed forecasts of U.S. and global agriculture under three cases:

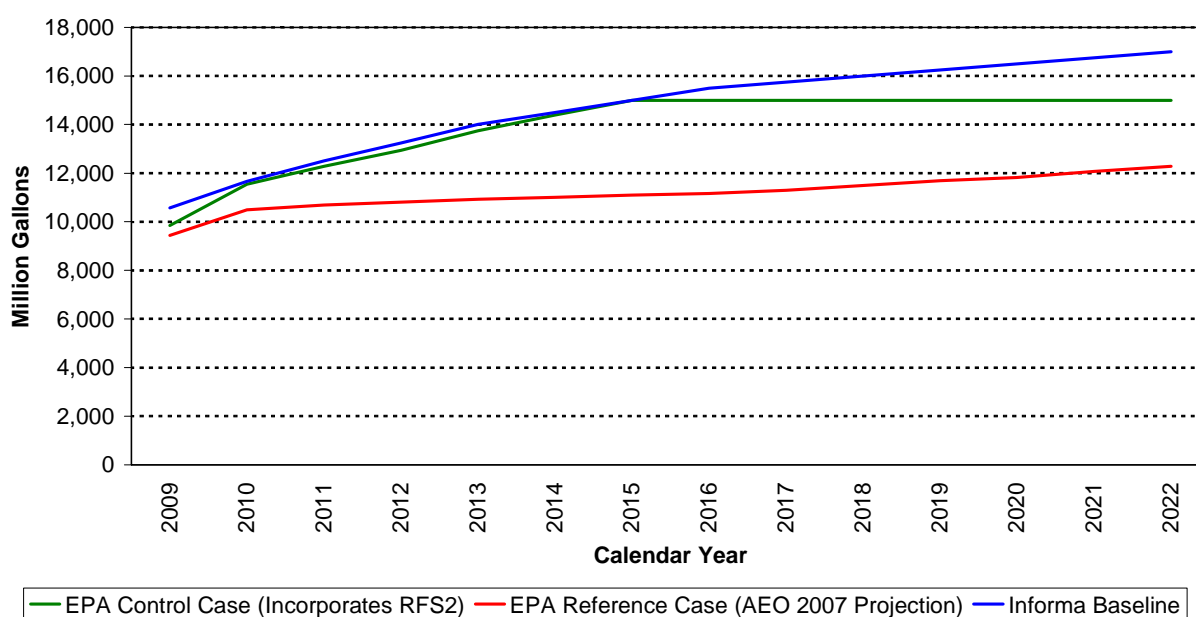
- **Informa Baseline Case:** Informa forecasts that corn-based ethanol production will reach 17 billion gallons by 2022. This is facilitated by two assumptions: that continued corn yield improvements will allow increasing volumes of ethanol to be produced from corn, and that global economic growth will support energy prices that are high enough to allow incremental volumes of corn-based ethanol over the RFS2 level to be produced and sold profitably.
- **Informa Forecast Based on EPA Biofuels Reference Case:** The reference case was defined by the EPA and was intended to reflect biofuel volumes that would have been expected to be produced in the U.S. if the EISA had not been enacted. Ethanol and biodiesel production volumes from the U.S. Department of Energy's ("DOE") *Annual Energy Outlook 2007* (AEO2007) were used as the basis for the reference case. Specifically, in the AEO2007 it was forecast that

U.S. ethanol production (non-cellulosic) would reach 11.1 billion gallons in 2015 and 12.3 billion gallons in 2022.

- **Informa Forecast Based on EPA Biofuels Control Case:** This reflects biofuel volumes consistent with the RFS2. Again, the specific volumes of ethanol and biodiesel in the control case were defined by the EPA. For the EPA analysis, it was assumed that the volume of corn-based ethanol would reach 15 billion gallons by 2015 and remain at that level through 2022.

A comparison of these three ethanol volume cases is provided in Figure 1.

Figure 1: Comparison of Corn-Based Ethanol Volume Assumptions



Informa included its baseline forecast for consideration since RFS2 specifies a minimum volume of renewable fuels that must be used in the U.S., and Informa's baseline reflects the impacts on the agriculture sector of a moderate amount of additional ethanol production. However, in order to have forecasts that could be compared directly to the models utilized by the EPA in its RFS2 analysis, Informa also developed sets of forecasts in which the ethanol volumes matched those specified in the reference and control cases.

4. Corn and Soybean Meal Displacement by Distillers Grains

As ethanol production grows, the volume of corn consumed increases, but this is partially offset by the reduction in corn and soybean meal use in livestock and feed resulting from the production of co-products by the ethanol industry. Distillers grains

(DGs) are the main co-product of dry-mill ethanol production and can be used as a feed substitute, primarily for corn and soybean meal, within livestock and poultry rations.

In developing the proposed rulemaking, the EPA relied heavily on two sets of agricultural economic models: the Forestry and Agricultural Sector Optimization Model ("FASOM") developed by Texas A&M University, and models maintained by the Food and Agricultural Policy Research Institute ("FAPRI"), which is centered mainly at Iowa State University. Both the FASOM and FAPRI models utilize highly oversimplified assumptions regarding the amounts of corn and soybean meal that are displaced by DGs. Both assume that only 1 pound of corn and soybean meal combined would be displaced by each pound of DG used in a feed ration (see Table 1). FASOM assumes each pound of DG displaces 0.9 pound of corn and 0.1 pound of soybean meal, while FAPRI assumes each pound of DG displaces 0.947 pound of corn and 0.053 pound of soybean meal.

Table 1: FAPRI and FASOM Corn and Soybean Meal Displacement Ratios¹

	FAPRI					FASOM				
	Total	Corn	Soy	Weight	Inclusion Rate Assumption	Total	Corn	Soy	Weight	Inclusion Rate Assumption
Beef Cattle	1.000	0.970	0.030	61.0%	41-50%	1.000	1.000	-		30-40%
Dairy Cattle	1.000	0.970	0.030	21.0%	26-30%	1.000	0.450	0.550		20-25%
Swine	1.000	0.890	0.110	9.0%	20.0%	1.000	0.850	0.150	(1)	20.0%
Poultry	1.000	0.790	0.210	9.0%	20.0%	1.000	0.550	0.450		15.0%
Weighted Avg.	1.000	0.947	0.053	100.0%		1.000	0.900	0.100		

1/ Assumed the majority of the DGs is used in the beef cattle market.

Source: EPA "Draft Regulatory Impact Analysis: Changes to Renewable Fuel Standard Program"

Neither of these models took into account feed efficiency gains attributed to feeding DGs in dairy and beef cattle diets. Within the FAPRI model, soybean meal is underrepresented as a feed ingredient, particularly within dairy rations. Additionally, both models, and FASOM in particular, overweight the beef displacement ratios relative to currently reported estimates of the share of DGs actually sold to beef cattle operations.

To determine how the FASOM and FAPRI assumptions could be improved upon, several studies were reviewed that estimate the quantities of corn and soybean meal that are displaced by every pound of DGs fed to U.S. livestock and poultry. Informa chose to utilize the displacement ratios from the 2008 Argonne National Laboratory ("Argonne") report "Update of Distillers Grains Displacement Ratios for Corn Ethanol

¹ Based on Environmental Protection Agency, *Draft Regulatory Impact Analysis: Changes to Renewable Fuel Standard Program*, May 2009, p. 352, and Environmental Protection Agency, *Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program; Proposed Rule*, May 2009, p. 648. However, it is indicated that FASOM uses displacement rates of 0.915 lbs of corn and 0.085 lbs of soybean meal in Beach, Robert H., Bruce A. McCarl and Anthony Lentz. *Agricultural Impacts of the Energy Independence and Security Act: FASOM Results and Model Description*. RTI International. October 2008. p. 2-22.

Life-Cycle Analysis,”² as revised by Dr. Jerry Shurson in March of 2009. Dr. Shurson is a professor in the Department of Animal Science at the University of Minnesota who has been heavily involved for a number of years in various nutritional aspects of feeding DGs to livestock and poultry, particularly swine.

Upon reviewing the adjustments made by Dr. Shurson, Informa considers his estimates to be improvements upon the original Argonne model. Furthermore, upon comparison against other displacement ratio estimates, such as those utilized within the FAPRI and FASOM models, Dr. Shurson’s estimates were deemed to be the best available for determining corn and soybean meal displacement by DGs. Accordingly, Informa utilized these estimates in conducting its forecasts.

Dr. Shurson estimated corn, soybean meal and urea displacement per pound of DGs fed in beef, dairy, and poultry rations. The model weights the results of each specie by its respective market share, as estimated by DGs marketer CHS in 2008. In his review, Dr. Shurson does not make any changes to the displacement ratios estimated by Argonne for beef and dairy rations; however, he does make various adjustments for swine, and he adds poultry to the analysis.

The weighted average corn and soybean meal displacement ratios estimated within the revised Argonne model are 0.895 and 0.334, respectively (see Table 2). These ratios are obtained by weighting the individual displacement ratios estimated for beef, dairy, swine and poultry by each specie’s respective share of total domestic DGs consumption. The Argonne model had weighted each specie by its respective market share, as estimated CHS in 2008. However, because they did not include poultry, the shares of beef, dairy and swine are recalibrated to equal 100%. In his review, Dr. Shurson utilizes updated market share information, also provided by CHS.

While Dr. Shurson’s analysis did not have any significant effect on the total feed displacement ratio from the Argonne analysis, it did shift the corn and soybean meal shares, giving more weight to soybean meal.

The corn and soybean meal displacement ratios developed by Dr. Shurson were utilized in the Informa forecasts. Specifically, the volume of distillers grains that Informa forecasts will be consumed domestically translates into a reduction of the feed-and-residual usage line item in the corn balance sheet and the domestic usage line item in the soybean meal balance sheet. The reduced need for corn in livestock feed results in less pressure for high levels of corn acreage.

As an example, for a 100 million-gallon-per-year ethanol plant, approximately 312,500 tons of distillers grains would be produced. Based on the Shurson displacement ratio, corn feed-and-residual usage would be reduced by 10.0 million bushels, which is similar to what FASOM assumes but lower than the 10.6 million bushels resulting from the FAPRI assumptions. Importantly, however, soybean meal usage would be reduced by

² An update of a 1999 report.

104,375 tons using the Shurson displacement ratio, versus 31,250 tons according to FASOM and only 16,563 tons according to FAPRI.

Table 2: Argonne and Shurson Corn and Soybean Meal Displacement Ratios

	Argonne Estimates ¹					Shurson Revised Argonne Estimates ²				
	Total	Corn	Soy	Weight	Inclusion Rate Assumption	Total	Corn	Soy	Weight	Inclusion Rate Assumption
Beef Cattle	1.196	1.196	-	44.2%	20% DDGS 40% WDGS	1.196	1.196	-	38.0%	20% DDGS 40% WDGS
Dairy Cattle	1.364	0.731	0.633	44.2%	10% DDGS 10% WDGS	1.364	0.731	0.633	42.0%	10% DDGS 10% WDGS
Swine	0.985	0.890	0.095	11.6%	10% DDGS	0.994	0.699	0.295	14.0%	20% DDGS
Poultry	Not included					1.035	0.589	0.446	6.0%	10% DDGS
Weighted Avg.	1.246	0.955	0.291	100.0%		1.229	0.895	0.334	100.0%	

1/ Arora et al. Argonne National Laboratory. "Update of Distillers Grains Displacement Ratios for Corn Ethanol Life-Cycle Analysis" (September 2008)

2/ Shurson, J. University of Minnesota. "Analysis of Current Feeding Practices of Distiller's Grains with Solubles in Livestock and Poultry Feed Relative to Land Use Credits Associated with Determining the Low Carbon Fuel Standard for

C. Informa Forecasts of U.S. and Global Agriculture

In this section (III.C), the comments regarding the U.S. and global agricultural outlook are focused on the results from Informa's analysis using the biofuel volume assumptions from the EPA's control case, since this case reflects both the current policy foundation and the basis for a key part of the EPA's agricultural analysis (as contained in the DRIA). In the following Section III.D, Informa's forecast under alternative scenarios will be compared to the results of the FASOM and FAPRI models.

1. Key Points Regarding the U.S. Forecast

- Conservation Reserve Program (CRP) area is forecast to decline to 32 million acres by 2011/12 and remain at that level through the end of the forecast period in 2022/23. This is consistent with the minimum CRP acreage level specified in the 2008 Farm Bill. It should be noted that if future U.S. Farm Bills set a lower minimum CRP acreage level, this would result in additional crop acreage in the U.S., mitigating the need for additional area in other countries. Another possible source for a portion of this land change is pasture, and this size of change is small enough that it would not significantly affect livestock production.
- The area planted to corn in 2007 was 93.5 million acres; this was the highest planted acreage since the 1940s. The area planted to soybeans that year was 64.7 million acres, which was nearly 11 million acres below the level planted the previous year, as farmers shifted acreage toward corn. It is expected that these were peak corn

and trough soybean plantings, in that corn plantings are expected to hover slightly below 90 million acres in the early years of the forecast and decline to 81.5 million acres by 2022, and soybean plantings are forecast to remain between 75 and 80 million acres during most of the forecast period. The U.S. acreage matrix allows soybean plantings to move above 80 million acres by 2022.

- Wheat seeded area slips lower as even modest yield increases satisfy anticipated usage volume. Wheat area is estimated at just under 60 million acres in 2009, and it is forecast to recede to 57.0 million acres by 2017 and hold at that level for the remainder of the forecast period.
- Cotton acres are expected to continue to decline materially. The area planted to cotton was 15.3 million acres in 2006 but has declined to an estimated 9.1 million acres in 2009. It is forecast that cotton acreage will decline further to 6.7 million acres by 2022.
- Canola will experience substantial acreage growth. Canola is a relatively minor crop in the U.S., with planted area of around 1 million acres in recent years. However, due to its high oil content relative to soybeans and due to the quality characteristics of canola oil, planted area is expected to expand to 1.5 million acres by 2022.
- Corn yields increase on the order of 1.8% annually, allowing sufficient production with sub-90 million acre plantings. Soybean yields benefit significantly from technology that is introduced, as is discussed in more detail in Section III.D.1 below. Wheat yields trend higher, registering annual increases on the order of 0.5% annually.
- Corn use for fuel alcohol will move above 5 billion bushels as ethanol production moves to the 15 billion gallon level in 2015. Corn supplies outside the U.S. will dominantly supply non-U.S. needs, which will result in U.S. corn exports remaining in the low 2-billion-bushel range.
- Wheat food use and export volumes experience little growth.
- Soybean crush increases by an average of 25 million bushels annually as U.S. product needs grow. Exportable soybean supplies grow as production expansion exceeds crushing activity.

2. Key Points Regarding the World Forecast

- There has been and remains an ability for the rest of the world outside the U.S. to meet its grain needs via its own production (and, at times, inventory management) but to depend on imports to meet protein meal and vegetable oil needs.

- The distribution of corn production among the key countries is expected to remain relatively steady over the forecast period. The U.S. is the main producer of corn and will continue in that role.
- World area cultivated for grain and oilseeds will increase only modestly over the coming years. Total crop area for major grains and oilseeds is forecast to increase from 846.8 million hectares (2.1 billion acres) in 2008 to 889.8 million hectares (2.2 billion acres) in 2022 – an annual growth rate of 0.35%.
- Increased oilseed cultivation will dominate in the coming years. For soybeans, this is driven more by meal consumption than by oil demand, as oil accounts for only about 20% of the weight of a bushel of soybeans. Based on forecasts of the volume of soybeans needed to provide protein meal supplies equal to estimated world use, soybean area will need to increase to 119.0 million hectares (294 million acres) by 2022/23. That would be an additional 22.2 million hectares (55 million acres) compared to 2008. The U.S. will contribute 2.4 million hectares (6 million acres) to this total. World coarse grain area is forecast to expand by 8.5 million hectares (21 million acres), but wheat and rice area is forecast to be essentially stagnant.
- Geographically, the most significant increase in crop area is expected to occur in four countries: Brazil, Russia, Argentina and India. Combined grain and oilseed area is forecast to be essentially flat in the EU-27, Canada and China over the forecast period.
- The expansion rate in soybean area needed from Brazil and Argentina is considerably below that of recent years. Over the decade between 1998 and 2007, Brazil's soybean area expanded by 8.4 million hectares (21 million acres), but between 2008 and 2022 its soybean area is forecast to expand by a smaller 6.2 million hectares (15 million acres). Similarly, Argentina's area increased by 8.4 million hectares (21 million acres) between 1998 and 2007 and is forecast to expand by 5.3 million hectares (13 million acres) between 2008 and 2022.
- Governments around the world are expected to continue to put in place biofuel mandates. Because vegetable oil is a key feedstock for biodiesel, and soybeans are a key feedstock for the oil, this will contribute to the global growth in soybean demand.
- Because of its large population and rapidly growing per capita consumption of pork and chicken, China is expected to crush more soybeans than the U.S. by crop-marketing year 2010/11, and that trend is expected to expand by the end of the forecast period. Due to its limited availability of arable land and its policy that favors remaining closer to self-sufficiency in grains than oilseeds, the majority of the growth in China's protein meal demand will need to be met by crushing imported oilseeds. China is forecast to increase its imports of soybeans to 96.5 million metric tons (3.5 billion bushels) in 2022/23 from 39.3 million metric tons (1.4 billion bushels) in 2008/09.

- Currently, China exports more corn than it imports, but it is expected to become a net importer by 2011/12. By 2022, it is forecast that China will have net imports of corn of approximately 6.4 million metric tons (250 million bushels) of corn per year.

D. Comparison of Informa Forecast to FASOM and FAPRI Model Results

Informa compared its forecasts to the FASOM and FAPRI model results. The most direct basis for comparison is to compare the changes that the three models each estimated between the control case and the reference case, since this is the main determinant of land-use change attributable to RFS2 in the EPA analysis, which contributes to the carbon score attributed to ethanol.

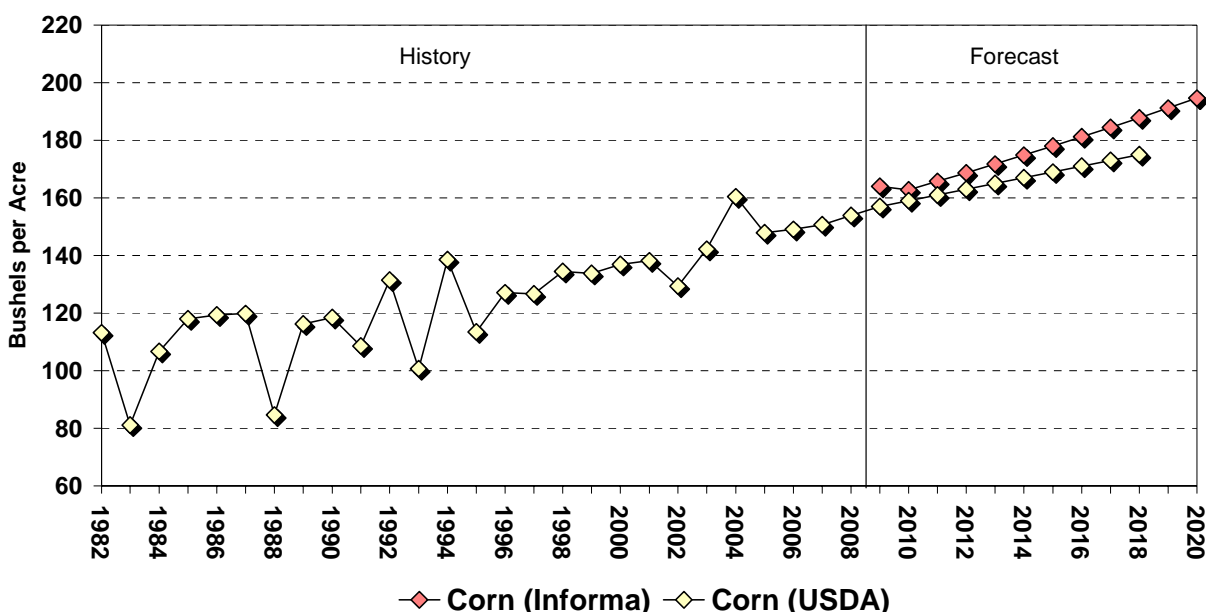
1. Assumptions Regarding Crop Yields

In the EPA analysis, USDA long-term forecasts published in 2008 were used as the basis for crop yield assumptions. According to the DRIA, “Domestic yields were based on USDA projections, extrapolated to 2022. In 2022 we estimate that the U.S. average corn yield will be approximately 180 bushels/acre (a 1.6% annual increase consistent with recent trends) and average U.S. soybean yields will be approximately 50 bushels per acre (a 0.4% annual increase).”³

The first biotech seeds for corn and soybeans were commercialized in the U.S. in 1996, and the genetic attributes of seeds on the U.S. market have been improving ever since. Accordingly, while the growth rate in the corn yield is derived from a review of historical U.S. over the past 30-plus years, the analysis focuses particularly on the last 15 years, and in deriving yields both high- and low-yielding seasons are objectively excluded. As a result of the statistical method Informa uses, the U.S. corn yield is forecast to increase 1.8 percent annually. With that pace of increase, a national average above 180 bushels per acre will be realized in 2016, and one exceeding 200 bushels per acre is forecast for 2022 (see Figure 2). It should be noted that no allowance has been made for new seed varieties developed through biotechnology or other advanced breeding techniques that have not yet been commercialized but might change the trajectory of yield increases in the future.

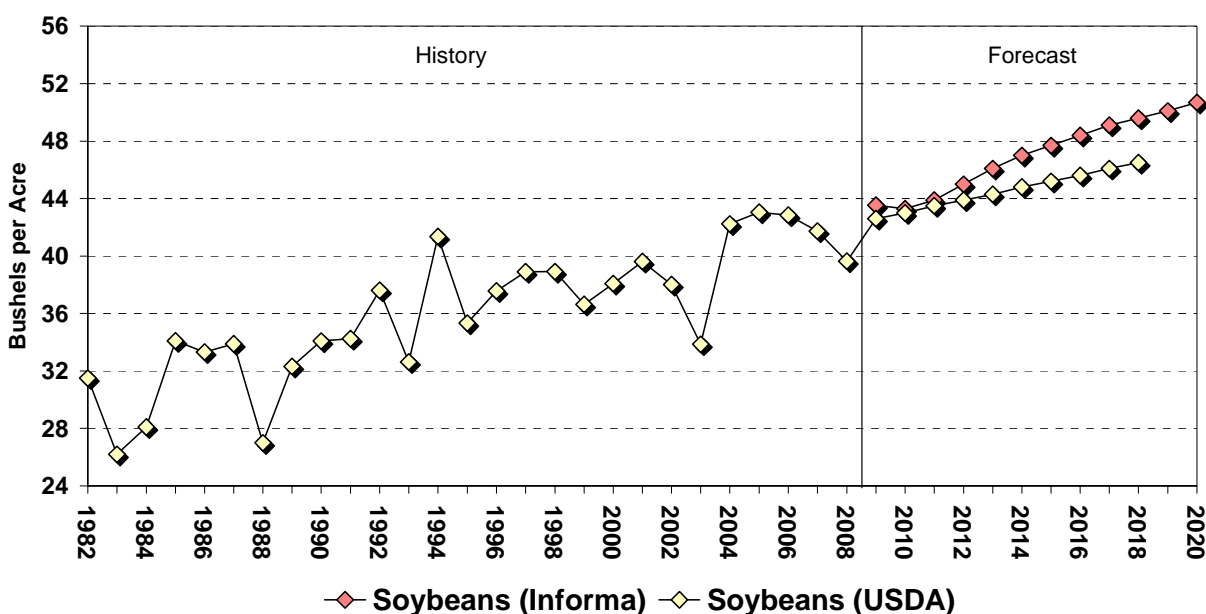
³ Environmental Protection Agency, *Draft Regulatory Impact Analysis: Changes to Renewable Fuel Standard Program*, May 2009, p. 353.

Figure 2: Comparison of Informa and USDA Corn Yield Forecasts



Based on the same methodology, a 1.0 percent annual U.S. soybean yield growth rate is assumed as the foundation for future yield growth based on existing trends. Additionally, unlike the case for the U.S. corn crop, for soybeans an allowance has been made for new technology. Monsanto has publicly indicated that its Roundup Ready 2 Yield® Soybeans achieve 7-11% higher yields than similar lines without the trait, and that it intended to provide farmers with enough seed to plant up to 2 million acres in 2009, with a full launch of 7-8 million acres in 2010. An adjustment for this specific technology is thought necessary, as it is the first industry-wide feature with a yield element focus ever for soybeans. Adjustments for this technology are derived from an assumed adoption path and include 0.37 bushels for 2010, 2.70 bushels for 2015, 3.44 bushels for 2020 and 3.51 bushels for 2022. As a result, U.S. soybean yields are forecast by Informa to reach almost 52 bushels per acre by 2022 (see Figure 3).

Figure 3: Comparison of Informa and USDA Soybean Yield Forecasts



2. Forecasts of Crop Area, Supply and Demand

Since the control and reference cases across the Informa, FASOM and FAPRI forecasts all involved the same volume of ethanol production, the amount of corn used in U.S. ethanol production was similar, with only minor variation due to assumed ethanol yields per bushel of corn. However, this was not true of the volume of soybean oil used in biodiesel in the reference case.

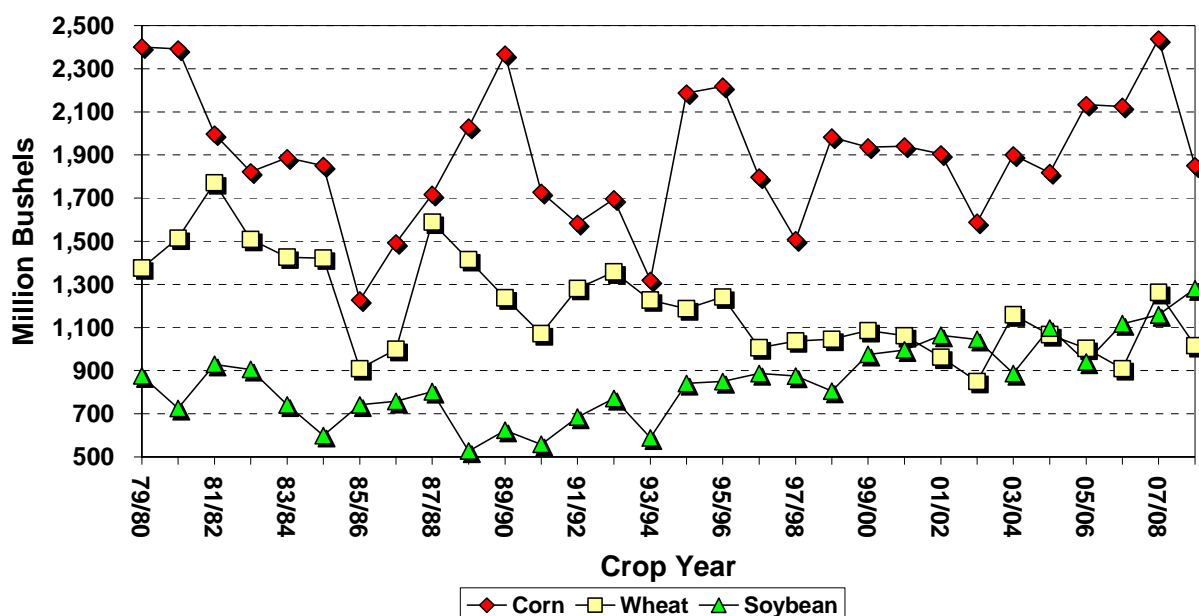
The FASOM model assumed that there would be virtually no soybean oil used in U.S. biodiesel production in the reference case; however, in reality, soybean oil accounted for 80% of the feedstock used by the industry in 2007. To correct for this, Informa assumed that soybean oil should have represented roughly the same share of feedstock use in the reference case in the FASOM model as it did in the control case. As a result, approximately 2 billion pounds more soybean oil are used in 2022 in Informa's reference case than in FASOM's reference case (see Table 3). (Interestingly, the FAPRI model utilized a level of soybean oil in the biodiesel reference case that was close to Informa's assumption.)

Table 3: Comparison of Informa, FASOM & FAPRI Forecasts of Commodity Use in Biofuel Production

	2002	2007	2012	2017	2022	2022 Difference Between Control & Reference Cases:		
						Informa	FASOM	FAPRI
US Corn Use for Fuel Alcohol (mil bushels)								
Informa Baseline	996	3,026	4,850	5,550	5,850	916		
Informa Control Case	996	3,026	4,851	5,359	5,359			
Informa Reference Case	996	3,026	3,967	4,141	4,443			
FASOM Control Case			4,816	5,571	5,571		1,002	
FASOM Reference Case			4,024	4,204	4,569			
FAPRI Control Case		3,190	5,022	5,577	5,577			1,008
FAPRI Reference Case		3,190	4,057	4,248	4,569			
US Soybean Oil Use for Biodiesel (mil lbs)								
Informa Baseline	135	3,245	4,220	4,510	4,510	2,270		
Informa Control Case	135	3,245	4,216	4,390	4,360			
Informa Reference Case	135	3,245	1,567	1,980	2,090			
FASOM Control Case			4,578	4,569	4,478		4,460	
FASOM Reference Case			0	0	18			
FAPRI Control Case		4,443	6,746	6,679	6,565			4,450
FAPRI Reference Case		4,443	1,819	2,029	2,115			

Additionally, regarding crop usage, a key distinction among the forecasts is the level of corn exports. For the U.S., there have been long-term trends toward higher soybean exports and flat-to-declining wheat exports; however, corn exports have not exhibited a discernible trend (see Figure 4). Furthermore, Informa expects these trends to continue, as reflected in Informa's global crop supply/demand forecast. The rest of the world (outside the U.S.) is essentially expected to be able to meet its grain needs via its own production, although exports from the U.S. will contribute to satisfying the rest of the world's protein meal and vegetable oil needs.

Figure 4: Historical Patterns of U.S. Crop Exports



Sources: USDA (History); Informa (2008/09 Forecast)

Informa's U.S. corn export forecast for 2022 is moderately below FASOM's forecast and significantly below FAPRI's. Informa forecasts U.S. corn exports of 2.2 billion bushels in 2022, whereas FASOM forecasts exports of between 2.4 billion bushels (control case) and 2.7 billion bushels (reference case). FAPRI, however, forecasts substantially larger exports of between 3.5 billion bushels (control case) and 3.8 billion bushels (reference case) (see Table 4). Exports of 3.8 billion bushels would be 55% larger than the previous record.

As a result of higher yield and lower export forecasts, the corn balance sheet in Informa's forecast includes lower corn acreage than in the FASOM and FAPRI models. Informa forecasts U.S. corn harvested area of 71 million acres (reference case) to 75 million acres (control case) in 2022, whereas FASOM forecasts harvested area of between 83 million acres (reference case) and 87 million acres (control case), and FAPRI forecasts larger area of between 86 million acres (reference case) and 90 million acres (control case) (see Table 5). (On a planted area basis, Informa's corn acreage would range between 78 and 82 million acres in 2022, depending upon the case referred to.)

Given the need for fewer U.S. corn acres than forecast by FASOM and FAPRI, the U.S. is able to increase soybean acres correspondingly to meet world protein meal and vegetable oil needs. As a result, combined soybean area in Brazil and Argentina is slightly less in 2022 in Informa's forecast than from the FAPRI model.

Table 4: Comparison of Informa, FASOM & FAPRI U.S. Export Forecasts

	2002	2007	2012	2017	2022	2022 Difference Between Control & Reference Cases:		
						Informa	FASOM	FAPRI
US Corn Exports (mil bushels)								
Informa Baseline	1,588	2,436	2,000	2,110	2,160			
Informa Control Case	1,588	2,436	2,000	2,121	2,187	-51		
Informa Reference Case	1,588	2,436	2,049	2,189	2,239			
FASOM Control Case			1,958	2,067	2,396		-263	
FASOM Reference Case			2,212	2,489	2,659			
FAPRI Control Case			2,354	2,920	3,502			-288
FAPRI Reference Case			2,753	3,354	3,790			
US Soybean Exports (mil bushels)								
Informa Baseline	1,044	1,161	1,375	1,580	1,880			
Informa Control Case	1,044	1,161	1,410	1,649	2,007	-390		
Informa Reference Case	1,044	1,161	1,827	2,126	2,397			
FASOM Control Case			915	912	943		-97	
FASOM Reference Case			1,025	1,031	1,040			
FAPRI Control Case			835	807	802			-43
FAPRI Reference Case			862	866	845			
US Soybean Meal Exports (mil short tons)								
Informa Baseline	6.31	9.28	13.75	15.82	15.14			
Informa Control Case	6.31	9.28	12.92	14.20	12.73	7.88		
Informa Reference Case	6.31	9.28	4.51	5.36	4.85			
FASOM Control Case			16.10	16.18	15.39		1.52	
FASOM Reference Case			13.87	13.87	13.87			
FAPRI Control Case			10.55	11.90	13.00			-0.02
FAPRI Reference Case			10.52	12.02	13.01			
US Soybean Oil Exports (bil lbs)								
Informa Baseline	2.26	2.91	1.75	2.50	2.80			
Informa Control Case	2.26	2.91	1.75	2.50	2.80	0.00		
Informa Reference Case	2.26	2.91	1.75	2.50	2.80			
FASOM Control Case			2.37	2.10	2.39		-2.60	
FASOM Reference Case			4.46	4.69	4.99			
FAPRI Control Case			4.14	6.08	7.90			-2.89
FAPRI Reference Case			7.37	8.94	10.79			

Total world corn area is forecast by Informa to be 1.4 million hectares (3.5 million acres) larger in 2022 in the control case relative to the reference case, while FAPRI estimated a 2.5-million-hectare (6.2-million-acre) increase.⁴ Total world soybean area is forecast by Informa to decrease by 0.5 million hectares (1.2 million acres) in 2022 in the control case relative to the reference case, while FAPRI estimated an increase of 0.5 million hectares (1.2 million acres). Thus, for the two main crops used as feedstock for biofuel production in the U.S., Informa forecasts that the world's area will be a total of 0.9 million hectares (2.2 million acres) higher in the control case than in the reference case, compared to a combined increase of 3.0 million hectares (7.4 million acres) simulated by FAPRI. While Informa's forecast shows the additional 2.2 million acres occurring in

⁴ EPA Docket: FAPRI Crop Production Results for All Biofuel Cases (EPA-HQ-OAR-2005-0161-0945.1).xls

Brazil and Argentina, it is also plausible that given the small amount of additional acreage needed, it could be accommodated within the United States.

Table 5: Comparison of Informa, FASOM & FAPRI Crop Area Forecasts

	2002	2007	2012	2017	2022	2022 Difference Between Control &		
						Informa	FASOM	FAPRI
World Corn Area (mil acres)								
Informa Baseline	339	395	400	408	416	3.5		6.2
Informa Control Case	339	395	400	407	414			
Informa Reference Case	339	395	396	402	411			
FAPRI Control Case			403	409	408			
FAPRI Reference Case			397	400	402			
World Soybean Area (mil acres)								
Informa Baseline	203	225	243	264	295	-1.3		1.2
Informa Control Case	203	225	243	264	294			
Informa Reference Case	203	225	243	264	295			
FAPRI Control Case			255	266	277			
FAPRI Reference Case			253	265	276			
World Major Grain & Oilseed Area, Excluding Oats (mil acres)								
Informa Baseline	1,897	2,032	2,083	2,122	2,171	2.2		10.1
Informa Control Case	1,897	2,032	2,083	2,121	2,169			
Informa Reference Case	1,897	2,032	2,079	2,116	2,167			
FAPRI Control Case			2,102	2,134	2,151			
FAPRI Reference Case			2,095	2,122	2,141			
World Area of Major Crops Other Than Corn, Soybeans & Oats (mil acres)								
Informa Baseline	1,355	1,413	1,440	1,450	1,461	0.0		2.7
Informa Control Case	1,355	1,413	1,440	1,450	1,461			
Informa Reference Case	1,355	1,413	1,440	1,450	1,461			
FAPRI Control Case			1,445	1,459	1,466			
FAPRI Reference Case			1,445	1,457	1,464			
US Corn Harvested Area (mil acres)								
Informa Baseline	69.3	86.5	81.0	79.5	76.0	3.5		3.6
Informa Control Case	69.3	86.5	81.0	79.0	74.5			
Informa Reference Case	69.3	86.5	77.5	74.0	71.0			
FASOM Control Case			87.5	88.0	86.6			
FASOM Reference Case			85.5	84.3	83.4			
FAPRI Control Case			88.4	91.4	90.0			
FAPRI Reference Case			85.5	86.4	86.4			
US Soybean Harvested Area (mil acres)								
Informa Baseline	72.5	64.1	74.5	75.5	79.0	-3.5		-0.9
Informa Control Case	72.5	64.1	74.5	76.0	80.5			
Informa Reference Case	72.5	64.1	78.0	81.0	84.0			
FASOM Control Case			74.1	71.1	71.1			
FASOM Reference Case			73.1	72.0	71.5			
FAPRI Control Case			68.9	68.3	69.1			
FAPRI Reference Case			69.4	69.7	70.0			
Brazil Soybean Area (mil acres)								
Informa Baseline	45.6	52.6	51.4	58.3	69.2	1.2		0.7
Informa Control Case	45.6	52.6	51.6	58.3	68.4			
Informa Reference Case	45.6	52.6	49.7	55.4	67.2			
FAPRI Control Case			64.2	70.6	76.0			
FAPRI Reference Case			63.6	69.8	75.3			
Argentina Soybean Area (mil acres)								
Informa Baseline	31.1	41.0	40.5	46.2	55.1	1.0		0.2
Informa Control Case	31.1	41.0	40.5	46.0	53.9			
Informa Reference Case	31.1	41.0	39.0	43.5	52.9			
FAPRI Control Case			45.6	47.8	49.6			
FAPRI Reference Case			45.4	47.6	49.5			

Importantly, Informa envisions a different balance between U.S. soybean and product exports than was simulated by the FASOM and FAPRI models. Given the additional soybean acreage and the larger assumption than FASOM regarding soybean oil usage in the reference case, Informa forecasts that soybean oil exports in the control case would be able to be maintained at the same level as in the reference case, at approximately 2.8 billion pounds. On the other hand, both models envisioned significantly higher soybean oil exports in their reference cases, with FASOM at 5.0 billion pounds and FAPRI at a much larger 10.8 billion pounds, and they forecast that soybean oil exports would be 2.6-2.9 billion pounds lower in the control case than in the reference case.

Informa forecasts U.S. soybean exports at more than double the levels forecast by FASOM and FAPRI in 2022. However, Informa also calculates a greater reduction in soybean exports between the reference case and the control case than either FASOM or FAPRI. This is mostly offset by a significantly higher increase in soybean meal exports between the reference case and the control case than is forecast by either FASOM or FAPRI.

IV. Review of Winrock Analysis of Land-Use Transitions

The EPA used a series of models in conjunction to conduct its analysis of the lifecycle GHG emissions associated with renewable fuels. As mentioned in Section III, the FASOM and FAPRI models were used to determine the impacts of RFS2 on the agriculture sector. However, while these models – the FAPRI model in particular – were used to determine the amount of land that would be expected to be involved in agricultural production, neither model is geared toward determining what types of land would be expected to be converted into cropland globally. Accordingly, the EPA “used data analyses provided by Winrock International to estimate what land types will be converted into crop land in each country and the GHG emissions associated with the land conversions. Winrock has used 2001-2004 satellite data to analyze recent land use changes around the world that have resulted from the social, economic, and political forces that drive land use. Winrock has then combined the recent land use change patterns with various estimates of carbon stocks associated with different types of land at the state level. This international land use assessment is an important consideration in our lifecycle GHG assessment ...”⁵

Informa conducted a review of the Winrock International report *GHG Emission Factors for Different Land-Use Transitions in Selected Countries of the World*. A foundational component of Winrock’s study was the use of satellite imagery to determine the change in cropland during the 2001-2004 period in important crop-producing countries, along with the types of land that tend to get converted into cropland (when cropland increases) in each country. The countries considered in the Winrock analysis included Argentina, Brazil, China, Indonesia, India, Malaysia, the Philippines, Mexico, Russia, the European Union and the U.S. Winrock grouped land use/land cover (LU/LC) categories into six classes: cropland, forest, grassland, savanna, shrubland and mixed.

Informa reviewed Winrock’s estimates of the total amount of cropland in each country, as well as Winrock’s estimate of the change in cropland between 2001 and 2004. The reason for conducting this review is that, if Winrock was unable to determine properly the total amount of cropland and the change between 2001 and 2004, this would call into question the use of the Winrock analysis by the EPA in allocating land-use change among classes of land and the associated GHG implications. Informa utilized estimates of crop area from two main sources: the USDA and the Food and Agriculture Organization (“FAO”) of the United Nations.

For historical data on the area of grains and oilseeds in the countries covered by the Winrock analysis, Informa utilized the USDA’s “Production, Supply and Distribution” (“PS&D”) database. According to the USDA, “The international portion of the data is updated with input from agricultural attachés stationed at U.S. embassies around the

⁵ Environmental Protection Agency, *Draft Regulatory Impact Analysis: Changes to Renewable Fuel Standard Program*, May 2009, p. 293.

world, (Foreign Agricultural Service) commodity analysts, and country and commodity analysts with (the Economic Research Service)."⁶

Additionally, as an upper boundary for the amount of cropland in each country, Informa utilized data reported by the FAO via its FAOSTAT database regarding total arable land plus permanent crop area in each country. FAOSTAT data is derived from a number of sources, most often government agencies in the country for which data is reported. The FAO defines arable land as follows: "Arable land is the land under temporary agricultural crops (multiple-cropped areas are counted only once), temporary meadows for mowing or pasture, land under market and kitchen gardens and land temporarily fallow (less than five years). The abandoned land resulting from shifting cultivation is not included in this category. Data for 'Arable land' are not meant to indicate the amount of land that is potentially cultivable."⁷ The FAO divides crop area into temporary and permanent crops. "Permanent crops are sown or planted once, and then occupy the land for some years and need not be replanted after each annual harvest, such as cocoa, coffee and rubber. This category includes flowering shrubs, fruit trees, nut trees and vines, but excludes trees grown for wood or timber."⁸ Given these broader definitions, the total amount of arable and permanent crop land reported by the FAO is higher than that shown for the major grains and oilseeds in the USDA's PS&D database.

Importantly, in three key countries – Brazil, China and India – the Winrock findings about whether cropland increased or decreased between 2001 and 2004 were contradicted by the data from USDA and FAO, as indicated by the boxes shown in Table 6. Based on MODIS satellite imagery, Winrock estimated that cropland in Brazil decreased by 1.1 million hectares between 2001 and 2004, falling to 22.5 million hectares from 23.6 million hectares. However, according to USDA data the combined area of major grains and oilseeds increased by 9.0 million hectares during that same time period, to 43.8 million hectares in 2004 from 34.8 million hectares in 2001. The FAO estimated that total arable land and permanent crops increased by a somewhat smaller 335,000 hectares, to 66.8 million hectares from 66.5 million hectares. Thus, the Winrock analysis also arrived at a materially smaller amount of cropland in Brazil than either the USDA or FAO data would indicate.

According to USDA data, 6.6 million hectares out of the 9.0-million-hectare increase in Brazilian area of grains and oilseeds, or just over two-thirds of the total, was accounted for by the increase in soybean area. Informa reviewed USDA data regarding Brazilian soybean area starting in the mid-1970s, and the 2001-2004 period saw the second largest increase of any comparable period except for the 2000-2003 period. This rapid increase in soybean area was due in large part to a combination of favorable international prices, denominated in U.S. dollars, and the weakening of the Brazilian real to the dollar, which provided a strong incentive in reals for Brazilian farmers to produce more soybeans.

⁶ <http://www.fas.usda.gov/psdonline/psdabout.aspx>, Accessed September 20, 2009

⁷ FAOSTAT, <http://faostat.fao.org/site/379/DesktopDefault.aspx?PageID=379>, Accessed July 9, 2009

⁸ Ibid

Table 6: Comparison of Winrock/MODIS Cropland Estimates to USDA and FAO Estimates (000 Hectares)

Country	Winrock/MODIS Cropland			USDA Major Grain & Oilseed Area*			Winrock/MODIS % of USDA			FAO Arable + Perm. Crop			Winrock/MODIS % of FAO		
	2001	2004	Change	2001	2004	Change	2001	2004	Change	2001	2004	Change	2001	2004	Change
Argentina	33,695	38,128	4,433	23,968	25,742	1,774	14.1%	148%	250%	29,000	31,500	2,500	11.6%	121%	177%
Brazil	23,640	22,519	-1,120	34,790	43,823	9,033	6.8%	51%	-12%	66,465	66,800	335	36%	34%	-334%
China	177,861	192,314	14,453	108,335	106,661	-1,674	16.4%	180%	-863%	143,355	143,042	-313	12.4%	134%	-4618%
Indonesia	7,405	7,930	525	15,946	16,320	374	4.6%	49%	1.40%	33,300	38,866	5,566	2.2%	20%	9%
India	170,632	183,600	12,968	130,684	130,296	-388	13.1%	141%	-33.42%	169,788	169,660	-128	10.0%	108%	-10131%
Malaysia	1,383	1,229	-154	666	677	11	20.8%	182%	-1396%	7,585	7,585	0	1.8%	16%	
Philippines	4,743	4,937	193	6,597	6,533	-64	7.2%	76%	-302%	9,634	9,850	216	4.9%	50%	90%
Mexico	10,173	11,670	1,497	11,007	10,592	-415	9.2%	110%	-361%	27,500	27,500	0	3.7%	42%	
Russia	179,862	203,777	23,914	45,004	45,217	213	40.0%	451%	11227%	125,718	123,956	-1,762	14.3%	164%	-1357%
EU-27	136,356	153,294	16,938	61,202	61,499	297	22.3%	249%	5703%	125,076	122,532	-2,544	10.9%	125%	-666%
U.S.	134,523	141,568	7,045	92,084	93,161	1,077	14.6%	152%	654%	178,100	176,974	-1,126	7.6%	80%	-626%

* Notes: Includes Corn, Sorghum, Barley, Oats, Millet, Wheat, Rice, Cotton, Soybean, Rapeseed, Sunseed and Peanuts. U.S. is harvested area.

Other anomalies in the Winrock findings occurred for China and India. Winrock estimated that China and India had the second- and third-largest cropland areas, respectively, of any country it studied other than Russia. Winrock further estimated that from 2001 to 2004 cropland in China actually increased by a significant 14.5 million hectares, which would represent an 8% increase. However, the general consensus is that Chinese cropland has been eroding somewhat, due in part to urbanization, and this is consistent with USDA and FAO estimates. According to the USDA, grain and oilseed area in China fell by 1.7 million hectares from 2001 to 2004; the FAO estimates that total arable land plus permanent crops declined by 313,000 hectares.

Regarding India, Winrock concluded that cropland increased by a substantial 13.0 million hectares between 2001 and 2004. Similar to the situation in China, this would represent an 8% increase from the 2001 level. However, the USDA estimates that Indian grain and oilseed area declined by 388,000 hectares during that time period, and FAO data indicate that total arable land plus permanent crops contracted by 128,000 hectares.

It is also notable that in both China and India, Winrock's estimates of total cropland exceeded the FAO's estimate of total arable land plus permanent crops. This also occurred in Argentina, Russia and the EU.

In summary, the conclusions drawn by Winrock using satellite data differ data in some significant ways from the measurements "on the ground" that are reflected in the USDA and FAO data. This is important since, if Winrock's estimates of the total amount of cropland in each country and the change in cropland between 2001 and 2004 are not accurate, then Winrock's conclusions regarding how land shifts among LU/LC classes and associated GHG emissions are also called into question.

Appendix A:
Informa Economics Baseline Forecast

Table 7: INFORMA BASELINE: U.S. PLANTED ACREAGE (thousand acres)

	2002	2007	2012	2017	2022
Corn, All	78,894	93,527	88,000	86,500	83,000
Sorghum, All	9,589	7,712	7,600	7,480	7,170
Barley	5,008	4,018	4,000	3,750	3,500
Oats	4,995	3,763	3,010	2,760	2,510
All Wheat	60,318	60,460	57,500	57,000	57,000
Winter Wheat	41,766	45,012			
Other Spring Wheat	15,639	13,292			
Durum Wheat	2,913	2,156			
Rye	1,355	1,334	1,227	1,177	1,127
Rice	3,240	2,761	2,900	2,700	2,550
Soybeans	73,963	64,741	75,500	76,500	80,000
Peanuts	1,353	1,230	1,210	1,110	1,010
Sunflowers	2,581	2,070	2,250	2,250	2,250
Rapeseed/Canola	1,460	1,176	997	1,247	1,497
Flaxseed	784	354	350	350	350
Cotton, All	13,958	10,827	8,180	7,380	6,680
Cotton, Upland	13,714	10,535	8,000	7,200	6,500
Cotton, Am-Pima	244	292	180	180	180
Hay, All	63,942	61,006	61,500	61,500	61,500
Beans, Dry Edible	1,930	1,527	1,450	1,400	1,350
Tobacco	427	356	313	263	213
Sugar Beets	1,427	1,269	1,140	1,065	990
Double-Counted Acres:					
Soybeans Double-Cropped	4,179	5,046	4,000	4,000	4,000
Spring Reseeding	1,200	700			
Crop Total	319,846	312,385	313,127	310,432	308,697
Government Acres:					
Conservation Reserve	33,890	36,767	32,000	32,000	32,000
Total Government	33,890	36,767	32,000	32,000	32,000
Grand Total	353,736	349,153	345,127	342,432	340,697

Shaded area represents Informa forecast.

Table 8: INFORMA BASELINE: U.S. CORN FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	78.9	93.5	88.0	86.5	83.0
Harvested Area	69.3	86.5	81.0	79.5	76.0
Harvested Yield (bu/acre)	129.3	150.7	168.7	184.5	201.7
Beginning Stocks (mil. bu)	1,596	1,304	1,724	2,259	2,419
Production	8,967	13,038	13,670	14,660	15,330
Imports	14	20	10	10	10
Total Supply	10,578	14,362	15,404	16,929	17,759
Feed Use/Residual	5,563	5,938	5,430	5,620	5,930
Food/Seed/Ind	2,340	4,364	6,160	6,910	7,260
(of which Fuel Alcohol)	996	3,026	4,850	5,550	5,850
Total Domestic Disappearance	7,903	10,302	11,590	12,530	13,190
Exports	1,588	2,436	2,000	2,110	2,160
Total Disappearance	9,491	12,738	13,590	14,640	15,350
Ending Stocks	1,087	1,624	1,814	2,289	2,409
ES: Use Ratio	11%	13%	13%	16%	16%
Futures Price (per bu)	\$ 2.37	\$ 5.15	\$ 3.44	\$ 3.39	\$ 3.39
Farm Price (per bu)	\$2.32	\$4.20	\$3.14	\$3.09	\$3.09
VC for Production, USDA est. (\$/ac)	148.54	231.25	250.00	265.00	293.00

Shaded area represents Informa forecast.

Table 9: INFORMA BASELINE: U.S. SOYBEAN COMPLEX FUNDAMENTALS

	2002	2007	2012	2017	2022
SOYBEANS					
Planted Area (mil. acres)	74.0	64.7	75.5	76.5	80.0
Harvested Area	72.5	64.1	74.5	75.5	79.0
Harvested Yield (bu/acre)	38.0	41.7	45.0	49.1	51.7
Beginning Stocks (mil bu)	208	574	494	554	547
Production	2,756	2,677	3,350	3,710	4,080
Imports	4	10	10	10	10
Total Supply	2,969	3,261	3,854	4,274	4,637
Crush	1,615	1,803	1,805	1,935	1,995
Food/Seed/Residual	132	92	175	194	213
Total Domestic Disappearance	1,747	1,895	1,980	2,129	2,208
Exports	1,044	1,161	1,375	1,580	1,880
Total Disappearance	2,791	3,056	3,355	3,709	4,088
Ending Stocks	178	205	499	565	548
ES: Use Ratio	6%	7%	15%	15%	13%
Futures Price (per bu)	\$5.79	\$12.57	\$8.95	\$8.89	\$9.18
Farm Price (per bu)	\$5.53	\$10.10	\$8.15	\$8.09	\$8.38
HI-PRO Meal, Decatur (per ton)	\$182	\$336	\$254	\$254	\$264
Crude Oil, Decatur (per lb)	\$0.221	\$0.520	\$0.365	\$0.360	\$0.365
VC for Production, USDA est. (\$/ac)	75.34	107.03	114.00	120.00	133.00
SOYBEAN MEAL (000 ton)					
Beginning Stocks	240	346	354	354	354
Production	38,194	42,291	42,820	45,810	47,090
Imports	173	143	150	150	150
Total Supply	38,607	42,781	43,324	46,314	47,594
Domestic Disappearance	32,073	33,207	29,220	30,140	32,100
Exports	6,314	9,280	13,750	15,820	15,140
Total Disappearance	38,387	42,487	42,970	45,960	47,240
Ending Stocks	220	294	354	354	354
SOYBEAN OIL (mil. lbs)					
Beginning Stocks	2,359	3,085	2,318	2,308	2,358
Production	18,430	20,580	20,720	22,410	23,220
Imports	46	65	50	50	50
Total Supply	20,835	23,730	23,088	24,768	25,628
Domestic Disappearance	17,083	18,338	19,010	19,940	20,490
of which Biodiesel	135	3,245	4,220	4,510	4,510
Exports	2,263	2,908	1,750	2,500	2,800
Total Disappearance	19,346	21,246	20,760	22,440	23,290
Ending Stocks	1,489	2,485	2,328	2,328	2,338

Shaded area represents Informa forecast.

Table 10: INFORMA BASELINE: U.S. WHEAT FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	60.3	60.5	57.5	57.0	57.0
Harvested Area	45.8	51.0	50.0	49.5	49.5
Harvested Yield (bu/acre)	35.0	40.2	44.0	45.5	46.9
Beginning Stocks (mil. bu)	777	456	839	784	779
Production	1,606	2,051	2,200	2,250	2,320
Imports	77	113	105	105	105
Total Supply	2,460	2,620	3,144	3,139	3,204
Feed Use/Residual	117	14	200	150	150
Food/Milling and Seed	1,030	1,063	1,070	1,120	1,170
Total Domestic Disappearance	1,147	1,077	1,270	1,270	1,320
Grain Exports	822	1,237	1,050	1,100	1,100
Total Disappearance	1,969	2,314	2,320	2,370	2,420
Ending Stocks	491	306	824	769	784
ES: Use Ratio	25%	13%	36%	32%	32%
KC, HRW, Ordinary Protein	\$4.22	\$8.89	\$5.61	\$5.71	\$5.71
Farm Price (per bu)	\$3.56	\$6.48	\$4.51	\$4.61	\$4.61
VC for Production, USDA est. (\$/ac)	59.60	98.34	104.00	110.00	122.00

Shaded area represents Informa forecast.

Table 11: INFORMA BASELINE: WORLD CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	137.3	159.8	161.8	165.0	168.2
Sorghum	38.0	39.5	38.9	38.7	38.4
Barley	55.6	57.5	55.7	55.1	54.5
Oats	14.0	13.2	12.3	12.1	11.9
Coarse Grains	245.0	269.9	268.8	270.9	273.0
Wheat	214.3	216.9	221.7	221.5	220.9
Rice	146.3	154.7	157.3	158.7	160.4
Food Grains	360.5	371.6	379.0	380.2	381.2
Cotton	30.3	32.5	30.6	30.8	31.0
Soybeans	82.3	91.0	98.3	106.8	119.2
Rapeseed/Canola	22.1	28.1	33.8	36.7	39.7
Sunseed	20.3	21.6	23.7	24.5	25.6
Peanut	21.3	20.9	20.9	20.8	20.8
Oilseeds	176.4	194.0	207.3	219.6	236.3
Total Crop Area	781.9	835.6	855.1	870.8	890.6

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 12: INFORMA BASELINE: U.S. CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn (harvested)	28.1	35.0	32.8	32.2	30.8
Sorghum	2.9	2.7	2.7	2.6	2.5
Barley	1.7	1.4	1.4	1.3	1.2
Oats	0.8	0.6	0.4	0.3	0.2
Coarse Grains	33.4	39.8	37.2	36.4	34.6
Wheat	18.5	20.6	20.2	20.0	20.0
Rice	1.3	1.1	1.2	1.1	1.0
Food Grains	19.8	21.8	21.4	21.1	21.1
Cotton	5.0	4.2	3.1	2.8	2.5
Soybeans	29.3	26.0	30.1	30.6	32.0
Rapeseed/Canola	0.5	0.5	0.4	0.5	0.6
Sunseed	0.9	0.8	0.9	0.9	0.9
Peanut	0.5	0.5	0.5	0.4	0.4
Oilseeds	36.3	32.0	35.0	35.2	36.4
Total Crop Area	89.6	93.5	93.6	92.7	92.1

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 13: INFORMA BASELINE: BRAZIL CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	12.96	14.70	14.70	15.20	15.70
Sorghum	0.80	0.85	0.75	0.75	0.75
Barley	0.11	0.10	0.10	0.10	0.10
Oats	0.27	0.35	0.35	0.35	0.35
Coarse Grains	14.14	16.00	15.90	16.40	16.90
Wheat	2.04	1.82	1.85	1.85	1.85
Rice	3.19	2.87	2.90	2.90	2.90
Food Grains	5.23	4.69	4.75	4.75	4.75
Cotton	0.74	1.08	0.82	0.87	0.92
Soybeans	18.45	21.30	20.80	23.60	28.00
Rapeseed/Canola	0.02	-	-	-	-
Sunseed	0.04	0.07	0.07	0.07	0.07
Peanut	0.09	0.12	0.12	0.12	0.13
Oilseeds	19.33	22.56	21.81	24.66	29.12
Total Crop Area	38.70	43.26	42.46	45.81	50.77

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 14: INFORMA BASELINE: ARGENTINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	2.45	3.41	2.60	2.60	2.60
Sorghum	0.55	0.71	0.65	0.65	0.65
Barley	0.25	0.44	0.52	0.57	0.62
Oats	0.30	0.22	0.25	0.25	0.25
Coarse Grains	3.55	4.79	4.02	4.07	4.12
Wheat	5.70	4.79	5.30	5.30	5.30
Rice	0.13	0.18	0.21	0.21	0.21
Food Grains	5.84	4.97	5.51	5.51	5.51
Cotton	0.15	0.31	0.30	0.30	0.30
Soybeans	12.60	16.60	16.40	18.70	22.30
Rapeseed/Canola	-	-	-	-	-
Sunseed	2.35	2.62	2.30	2.30	2.30
Peanut	0.16	0.23	0.25	0.25	0.25
Oilseeds	15.25	19.76	19.25	21.55	25.15
Total Crop Area	24.64	29.51	28.78	31.13	34.78

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 15: INFORMA BASELINE: EU-27 CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	9.00	8.44	8.80	8.80	8.80
Sorghum	0.12	0.09	0.10	0.10	0.10
Barley	13.99	13.77	14.20	13.95	13.70
Oats	3.23	2.97	2.95	2.95	2.95
Coarse Grains	26.34	25.27	26.05	25.80	25.55
Wheat	26.42	24.78	25.50	25.50	25.50
Rice	0.41	0.42	0.42	0.42	0.42
Food Grains	26.83	25.20	25.92	25.92	25.92
Cotton	0.02	-	-	-	-
Soybeans	0.34	0.34	0.35	0.35	0.35
Rapeseed/Canola	4.27	6.55	7.14	7.99	8.84
Sunseed	3.44	3.34	3.44	3.17	2.90
Peanut	0.00	0.00	-	-	-
Oilseeds	8.07	10.24	10.93	11.51	12.09
Total Crop Area	61.24	60.71	62.90	63.23	63.56

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 16: INFORMA BASELINE: CHINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	24.6	29.5	30.7	31.6	33.2
Sorghum	0.8	0.5	0.4	0.4	0.4
Barley	0.9	0.8	0.8	0.8	0.8
Oats	0.5	0.5	0.5	0.5	0.5
Coarse Grains	26.9	31.3	32.4	33.3	34.9
Wheat	23.9	23.7	21.6	20.8	19.3
Rice	28.2	28.9	28.7	27.7	26.7
Food Grains	52.1	52.6	50.3	48.5	46.0
Cotton	4.5	6.2	5.8	5.8	5.8
Soybeans	9.5	8.8	9.7	10.2	10.7
Rapeseed/Canola	7.1	5.6	7.7	8.2	8.7
Sunseed	1.1	0.8	0.9	0.9	1.0
Peanut	4.9	3.9	3.9	3.9	3.9
Oilseeds	27.2	25.3	28.0	29.0	30.1
Total Crop Area	106.2	109.2	110.7	110.8	111.0

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 17: INFORMA BASELINE: CANADA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	1.3	1.4	1.2	1.2	1.2
Sorghum	-	-	-	-	-
Barley	3.3	4.0	3.2	2.9	2.6
Oats	1.4	1.8	1.4	1.4	1.4
Coarse Grains	6.0	7.2	5.8	5.5	5.2
Wheat	8.8	8.6	9.4	9.0	8.7
Rice	-	-	-	-	-
Food Grains	8.8	8.6	9.4	9.0	8.7
Cotton	-	-	-	-	-
Soybeans	1.0	1.2	1.3	1.4	1.5
Rapeseed/Canola	3.6	6.2	6.7	7.5	8.4
Sunseed	0.1	0.1	0.1	0.1	0.1
Peanut	-	-	-	-	-
Oilseeds	4.7	7.5	8.1	9.0	10.0
Total Crop Area	19.6	23.3	23.3	23.5	23.9

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 18: INFORMA BASELINE: REST OF WORLD CROP AREA (million hectares)
1/

	2002	2007	2012	2017	2022
Corn	58.9	67.4	71.0	73.4	75.9
Sorghum	32.8	34.6	34.3	34.1	34.0
Barley	35.4	37.0	35.5	35.5	35.5
Oats	7.5	6.7	6.5	6.4	6.3
Coarse Grains	134.7	145.7	147.3	149.4	151.7
Wheat	128.8	132.5	137.9	139.1	140.2
Rice	113.1	121.2	123.9	126.4	129.1
Food Grains	241.9	253.7	261.8	265.5	269.3
Cotton	19.9	20.7	20.5	21.0	21.4
Soybeans	11.0	16.8	19.6	22.0	24.4
Rapeseed/Canola	6.5	9.2	11.8	12.5	13.2
Sunseed	12.4	13.9	16.1	17.2	18.4
Peanut	15.6	16.1	16.1	16.1	16.1
Oilseeds	65.4	76.7	84.2	88.8	93.5
Total Crop Area	441.9	476.1	493.3	503.7	514.5

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 19: INFORMA BASELINE: WORLD SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	151.2	109.0	165.7	218.5	245.1
Production	603.3	791.6	863.0	936.3	1010.2
Domestic Supply	754.5	900.6	1028.7	1154.8	1255.4
Domestic Use					
Feed Use	433.2	496.5	510.4	550.4	595.1
Food & Other	193.1	273.2	338.4	377.6	408.4
Exports-Imports	70.5	91.8	78.6	90.7	101.8
Ending Stocks	126.6	130.3	177.7	224.8	246.5
Wheat:					
Beginning Stocks	203.2	127.0	197.9	222.0	231.5
Production	567.9	609.7	667.5	696.2	723.4
Domestic Supply	771.1	736.7	865.4	918.2	954.9
Domestic Use					
Feed Use	111.9	96.2	113.8	113.5	113.9
Food & Other	490.0	517.2	544.7	577.1	606.1
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	166.6	120.1	204.2	225.0	231.8
Soybean:					
Beginning Stocks	12.6	26.2	36.9	35.4	32.9
Production	196.9	221.1	252.5	291.4	343.8
Domestic Supply	209.5	247.3	289.4	326.8	376.8
Domestic Use					
Crush	167.5	198.8	222.8	263.5	312.9
Food & Other	26.6	28.5	30.2	31.9	33.3
Exports-Imports	58.6	72.6	83.4	106.6	135.7
Ending Stocks	15.8	20.8	38.0	34.1	32.9
Rapeseed/Canola					
Beginning Stocks	2.8	4.7	4.6	4.4	4.4
Production	33.3	48.3	63.2	73.2	84.4
Domestic Supply	36.1	53.0	67.8	77.6	88.8
Domestic Use					
Crush	32.8	48.3	60.4	70.2	81.3
Food & Other	2.2	2.4	2.8	2.9	3.0
Exports-Imports	3.9	7.8	9.6	11.5	13.8
Ending Stocks	2.2	4.0	4.5	4.4	4.4

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 20: INFORMA BASELINE: U.S. SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	40.6	33.1	43.8	57.4	61.5
Production	227.8	331.2	347.2	372.4	389.4
Domestic Supply	268.3	364.3	391.0	429.8	450.9
Domestic Use					
Feed Use	141.3	150.8	137.9	142.8	150.6
Food & Other	59.4	110.9	156.5	175.5	184.4
Exports-Imports	40.0	61.4	50.5	53.3	54.6
Ending Stocks	27.6	41.2	46.1	58.1	61.2
Wheat:					
Beginning Stocks	21.2	12.4	22.8	21.3	21.2
Production	43.7	55.8	59.9	61.2	63.1
Domestic Supply	64.9	68.2	82.7	82.6	84.3
Domestic Use					
Feed Use	3.2	0.4	5.4	4.1	4.1
Food & Other	27.3	28.9	29.1	30.5	31.8
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	13.4	8.3	22.4	20.9	21.3
Soybean:					
Beginning Stocks	5.7	15.6	13.5	15.1	14.9
Production	75.0	72.9	91.2	101.0	111.0
Domestic Supply	80.7	88.5	104.6	116.1	125.9
Domestic Use					
Crush	43.9	49.1	49.1	52.7	54.3
Food & Other	3.6	2.2	4.5	5.0	5.5
Exports-Imports	28.3	31.6	37.4	43.0	51.2
Ending Stocks	4.9	5.6	13.6	15.4	14.9
Rapeseed/Canola					
Beginning Stocks	0.1	0.1	0.2	0.2	0.2
Production	0.7	0.7	0.6	0.8	1.0
Domestic Supply	0.8	0.8	0.9	1.1	1.2
Domestic Use					
Crush	0.6	1.0	1.4	1.7	1.9
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.1	-0.4	-0.8	-0.9	-0.9
Ending Stocks	0.1	0.2	0.2	0.2	0.2

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 21: INFORMA BASELINE: BRAZIL SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.5	3.6	9.5	9.5	9.5
Production	44.5	58.6	61.5	71.1	82.1
Domestic Supply	46.0	62.2	71.0	80.6	91.6
Domestic Use					
Feed Use	30.0	36.0	43.0	49.7	57.1
Food & Other	5.8	6.5	7.0	7.3	7.5
Exports-Imports	3.9	7.1	11.5	14.1	17.5
Ending Stocks	6.3	12.6	9.5	9.5	9.5
Wheat:					
Beginning Stocks	0.7	1.0	1.0	1.0	1.0
Production	2.9	3.8	4.2	4.4	4.6
Domestic Supply	3.7	4.8	5.2	5.4	5.7
Domestic Use					
Feed Use	0.3	0.1	0.2	0.2	0.2
Food & Other	9.4	10.2	11.3	12.1	12.9
Exports-Imports	-6.6	-5.9	-7.3	-7.9	-8.5
Ending Stocks	0.5	0.4	1.0	1.0	1.0
Soybean:					
Beginning Stocks	0.3	2.0	2.3	2.3	2.3
Production	52.0	61.0	62.2	74.9	94.7
Domestic Supply	52.3	63.0	64.5	77.2	97.0
Domestic Use					
Crush	27.8	31.9	29.0	31.6	35.7
Food & Other	3.7	4.3	3.0	3.1	3.2
Exports-Imports	19.6	24.8	30.2	40.2	55.7
Ending Stocks	1.1	2.0	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 22: INFORMA BASELINE: ARGENTINA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	0.3	1.7	0.9	0.9	0.9
Production	15.5	22.0	21.1	23.9	27.0
Domestic Supply	15.8	23.7	22.0	24.8	28.0
Domestic Use					
Feed Use	2.5	5.1	4.0	4.2	4.3
Food & Other	1.6	1.9	1.9	2.0	2.1
Exports-Imports	11.2	15.0	15.2	17.7	20.6
Ending Stocks	0.5	1.7	0.9	0.9	0.9
Wheat:					
Beginning Stocks	1.1	1.1	0.3	0.3	0.3
Production	12.3	16.8	15.7	17.1	18.7
Domestic Supply	13.4	17.9	16.0	17.5	19.0
Domestic Use					
Feed Use	0.1	0.1	0.1	0.1	0.1
Food & Other	5.1	5.1	5.2	5.4	5.5
Exports-Imports	6.8	11.2	10.4	11.6	13.0
Ending Stocks	1.5	1.5	0.3	0.3	0.3
Soybean:					
Beginning Stocks	1.2	2.1	2.3	2.3	2.3
Production	35.5	46.2	49.9	60.4	76.8
Domestic Supply	36.7	48.3	52.2	62.8	79.1
Domestic Use					
Crush	24.8	31.7	38.9	45.9	56.0
Food & Other	0.8	1.2	0.6	0.6	0.7
Exports-Imports	8.4	8.9	10.4	13.9	20.1
Ending Stocks	2.7	6.5	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 23: INFORMA BASELINE: EU-27 SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	3.3	7.4	4.7	4.7	4.7
Production	57.7	47.5	60.1	63.2	66.4
Domestic Supply	61.0	54.9	64.8	67.9	71.1
Domestic Use					
Feed Use	45.1	50.6	46.5	48.6	50.9
Food & Other	12.5	12.8	14.6	15.6	16.5
Exports-Imports	-2.1	-13.4	-1.0	-1.0	-1.0
Ending Stocks	5.5	4.9	4.7	4.7	4.7
Wheat:					
Beginning Stocks	18.3	14.1	19.5	19.5	19.5
Production	132.6	120.2	137.2	140.7	144.2
Domestic Supply	150.9	134.3	156.7	160.2	163.7
Domestic Use					
Feed Use	60.0	52.4	62.0	60.6	58.5
Food & Other	65.0	64.1	67.6	69.4	70.9
Exports-Imports	7.4	5.3	7.6	10.8	14.8
Ending Stocks	18.5	12.4	19.5	19.5	19.5
Soybean:					
Beginning Stocks	1.1	1.1	0.4	0.4	0.4
Production	1.0	0.7	0.9	0.9	0.9
Domestic Supply	2.1	1.8	1.4	1.4	1.4
Domestic Use					
Crush	16.5	14.9	12.5	12.5	12.5
Food & Other	1.6	1.2	1.2	1.2	1.2
Exports-Imports	-16.9	-15.1	-12.7	-12.8	-12.8
Ending Stocks	0.9	0.8	0.4	0.4	0.4
Rapeseed/Canola					
Beginning Stocks	0.6	1.4	1.7	1.7	1.7
Production	11.8	18.4	21.9	25.4	29.2
Domestic Supply	12.4	19.8	23.5	27.1	30.9
Domestic Use					
Crush	10.5	18.3	23.9	28.4	33.2
Food & Other	0.7	0.9	0.9	0.9	0.9
Exports-Imports	0.8	-0.3	-2.9	-3.9	-4.9
Ending Stocks	0.3	1.0	1.7	1.7	1.7

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 24: INFORMA BASELINE: CHINA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	84.8	36.6	63.3	69.4	69.4
Production	121.3	152.3	170.3	184.2	203.3
Domestic Supply	206.1	188.9	233.6	253.6	272.7
Domestic Use					
Feed Use	96.0	105.0	117.3	125.9	134.2
Food & Other	29.9	44.0	51.2	62.5	75.6
Exports-Imports	15.2	0.5	-0.8	-4.2	-6.4
Ending Stocks	65.0	39.4	65.9	69.4	69.4
Wheat:					
Beginning Stocks	76.6	38.5	59.8	59.8	59.8
Production	90.3	109.3	103.7	105.0	102.4
Domestic Supply	166.9	147.7	163.5	164.8	162.3
Domestic Use					
Feed Use	6.5	8.0	5.5	5.6	5.7
Food & Other	98.7	98.0	97.1	98.1	95.9
Exports-Imports	1.3	2.8	1.1	1.2	0.8
Ending Stocks	60.4	39.0	59.8	59.8	59.8
Soybean:					
Beginning Stocks	2.1	2.7	10.8	10.8	10.8
Production	16.5	14.0	16.5	17.3	18.2
Domestic Supply	18.6	16.7	27.3	28.1	29.0
Domestic Use					
Crush	26.5	39.5	54.3	75.8	103.5
Food & Other	8.8	10.3	10.6	10.9	11.2
Exports-Imports	-21.2	-37.4	-48.4	-69.4	-96.5
Ending Stocks	4.5	4.2	10.8	10.8	10.8
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.6	0.6	0.6
Production	11.4	11.8	14.8	16.3	18.0
Domestic Supply	11.4	11.8	15.4	17.0	18.7
Domestic Use					
Crush	11.2	12.7	14.3	16.2	18.6
Food & Other	0.6	0.5	0.5	0.6	0.6
Exports-Imports	-0.4	-2.1	-0.1	-0.4	-1.1
Ending Stocks	0.0	0.6	0.6	0.6	0.6

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 25: INFORMA BASELINE: CANADA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.1	1.3	1.6	1.6	1.6
Production	9.0	11.6	11.3	12.1	13.0
Domestic Supply	10.1	13.0	12.8	13.6	14.5
Domestic Use					
Feed Use	10.2	10.2	9.9	11.7	13.6
Food & Other	2.4	3.6	4.5	4.8	5.1
Exports-Imports	-3.6	-2.2	-3.1	-4.4	-5.7
Ending Stocks	1.1	1.5	1.6	1.6	1.6
Wheat:					
Beginning Stocks	6.5	6.9	8.5	8.5	8.5
Production	16.2	20.1	25.8	26.4	26.9
Domestic Supply	22.7	26.9	34.4	34.9	35.4
Domestic Use					
Feed Use	3.7	2.1	4.2	4.3	4.5
Food & Other	4.2	4.2	4.5	4.7	4.9
Exports-Imports	9.1	16.0	17.1	17.3	17.5
Ending Stocks	5.7	4.6	8.5	8.5	8.5
Soybean:					
Beginning Stocks	0.3	0.7	0.2	0.1	0.1
Production	2.3	2.7	3.8	4.2	4.6
Domestic Supply	2.7	3.4	3.9	4.3	4.8
Domestic Use					
Crush	1.8	1.4	1.3	0.9	0.6
Food & Other	0.5	0.4	0.4	0.5	0.5
Exports-Imports	0.1	1.4	2.1	2.8	3.6
Ending Stocks	0.3	0.2	0.2	0.1	0.1
Rapeseed/Canola					
Beginning Stocks	1.2	1.8	1.1	1.1	1.1
Production	4.5	9.5	12.6	15.9	20.0
Domestic Supply	5.7	11.3	13.7	17.0	21.0
Domestic Use					
Crush	2.2	4.1	6.0	7.6	9.6
Food & Other	0.2	0.2	0.4	0.4	0.4
Exports-Imports	2.2	5.6	6.1	7.9	9.9
Ending Stocks	1.2	1.4	1.1	1.1	1.1

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 26: INFORMA BASELINE: REST OF WORLD SUPPLY/USE BALANCE (million metric tons) 1/

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks					
Production	127.5	168.4	191.4	209.4	229.0
Domestic Supply					
Domestic Use					
Feed Use	108.2	138.8	151.7	167.4	184.4
Food & Other	81.4	93.6	102.8	109.9	117.2
Exports-Imports	-63.0	-67.8	-63.1	-67.9	-72.6
Ending Stocks					
Wheat:					
Beginning Stocks					
Production	269.9	283.7	321.0	341.5	363.4
Domestic Supply					
Domestic Use					
Feed Use	38.1	33.0	36.4	38.6	40.8
Food & Other	280.3	306.7	329.7	356.9	384.1
Exports-Imports	-36.5	-56.8	-45.1	-54.0	-61.5
Ending Stocks					
Soybean:					
Beginning Stocks					
Production	14.5	23.6	28.0	32.6	37.6
Domestic Supply					
Domestic Use					
Crush	26.2	30.4	37.7	44.1	50.3
Food & Other	7.6	8.8	10.0	10.6	11.1
Exports-Imports	-18.8	-15.0	-16.9	-18.6	-23.8
Ending Stocks					
Rapeseed/Canola					
Beginning Stocks					
Production	4.9	8.0	13.3	14.7	16.2
Domestic Supply					
Domestic Use					
Crush	8.3	12.2	14.8	16.4	18.0
Food & Other	0.7	0.8	1.0	1.0	1.1
Exports-Imports	-2.9	-3.4	-2.2	-2.4	-2.9
Ending Stocks					

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

**Appendix B:
Informa Forecast Under EPA Reference Case**

Table 27: INFORMA REFERENCE CASE: U.S. PLANTED ACREAGE (thousand acres)

	2002	2007	2012	2017	2022
Corn, All	78,894	93,527	84,500	81,000	78,000
Sorghum, All	9,589	7,712	7,600	7,480	7,170
Barley	5,008	4,018	4,000	3,750	3,500
Oats	4,995	3,763	3,010	2,760	2,510
All Wheat	60,318	60,460	57,500	57,000	57,000
Winter Wheat	41,766	45,012			
Other Spring Wheat	15,639	13,292			
Durum Wheat	2,913	2,156			
Rye	1,355	1,334	1,227	1,177	1,127
Rice	3,240	2,761	2,900	2,700	2,550
Soybeans	73,963	64,741	79,000	82,000	85,000
Peanuts	1,353	1,230	1,210	1,110	1,010
Sunflowers	2,581	2,070	2,250	2,250	2,250
Rapeseed/Canola	1,460	1,176	997	1,247	1,497
Flaxseed	784	354	350	350	350
Cotton, All	13,958	10,827	8,180	7,380	6,680
Cotton, Upland	13,714	10,535	8,000	7,200	6,500
Cotton, Am-Pima	244	292	180	180	180
Hay, All	63,942	61,006	61,500	61,500	61,500
Beans, Dry Edible	1,930	1,527	1,450	1,400	1,350
Tobacco	427	356	313	263	213
Sugar Beets	1,427	1,269	1,140	1,065	990
Double-Counted Acres:					
Soybeans Double-Cropped	4,179	5,046	4,000	4,000	4,000
Spring Reseeding	1,200	700			
Crop Total	319,846	312,385	313,127	310,432	308,697
Government Acres:					
Conservation Reserve	33,890	36,767	32,000	32,000	32,000
Total Government	33,890	36,767	32,000	32,000	32,000
Grand Total	353,736	349,153	345,127	342,432	340,697

Shaded area represents Informa forecast.

Table 28: INFORMA REFERENCE CASE: U.S. CORN FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	78.9	93.5	84.5	81.0	78.0
Harvested Area	69.3	86.5	77.5	74.0	71.0
Harvested Yield (bu/acre)	129.3	150.7	168.7	184.5	201.7
Beginning Stocks (mil. bu)	1,596	1,304	1,762	2,314	2,458
Production	8,967	13,038	13,080	13,650	14,320
Imports	14	20	10	10	10
Total Supply	10,578	14,362	14,852	15,974	16,788
Feed Use/Residual	5,563	5,938	5,650	6,000	6,350
Food/Seed/Ind	2,340	4,364	5,270	5,470	5,800
(of which Fuel Alcohol)	996	3,026	3,967	4,141	4,443
Total Domestic Disappearance	7,903	10,302	10,920	11,470	12,150
Exports	1,588	2,436	2,049	2,189	2,239
Total Disappearance	9,491	12,738	12,969	13,659	14,389
Ending Stocks	1,087	1,624	1,883	2,315	2,400
ES: Use Ratio	11%	13%	15%	17%	17%
Futures Price (per bu)	\$ 2.37	\$ 5.15	\$ 3.41	\$ 3.37	\$ 3.37
Farm Price (per bu)	\$2.32	\$4.20	\$3.11	\$3.07	\$3.07
VC for Production, USDA est. (\$/ac)	148.54	231.25	250.00	265.00	293.00

Shaded area represents Informa forecast.

**Table 29: INFORMA REFERENCE CASE: U.S. SOYBEAN COMPLEX
FUNDAMENTALS**

	2002	2007	2012	2017	2022
SOYBEANS					
Planted Area (mil. acres)	74.0	64.7	79.0	82.0	85.0
Harvested Area	72.5	64.1	78.0	81.0	84.0
Harvested Yield (bu/acre)	38.0	41.7	45.0	49.1	51.7
Beginning Stocks (mil bu)	208	574	494	554	547
Production	2,756	2,677	3,510	3,980	4,340
Imports	4	10	10	10	10
Total Supply	2,969	3,261	4,014	4,544	4,897
Crush	1,615	1,803	1,505	1,645	1,725
Food/Seed/Residual	132	92	183	208	227
Total Domestic Disappearance	1,747	1,895	1,688	1,853	1,952
Exports	1,044	1,161	1,827	2,126	2,397
Total Disappearance	2,791	3,056	3,515	3,979	4,349
Ending Stocks	178	205	499	565	548
ES: Use Ratio	6%	7%	14%	14%	13%
Futures Price (per bu)	\$5.79	\$10.82	\$7.31	\$7.31	\$7.56
Farm Price (per bu)	\$5.53	\$8.35	\$6.51	\$6.51	\$6.76
HI-PRO Meal, Decatur (per ton)	\$182	\$292	\$198	\$198	\$210
Crude Oil, Decatur (per lb)	\$0.221	\$0.450	\$0.325	\$0.325	\$0.325
VC for Production, USDA est. (\$/ac)	75.34	107.03	114.00	120.00	133.00
SOYBEAN MEAL (000 ton)					
Beginning Stocks	240	346	354	354	354
Production	38,194	42,291	35,710	38,950	40,720
Imports	173	143	150	150	150
Total Supply	38,607	42,781	36,214	39,454	41,224
Domestic Disappearance	32,073	33,207	31,350	33,740	36,020
Exports	6,314	9,280	4,510	5,360	4,850
Total Disappearance	38,387	42,487	35,860	39,100	40,870
Ending Stocks	220	294	354	354	354
SOYBEAN OIL (mil. lbs)					
Beginning Stocks	2,359	3,085	2,298	2,408	2,438
Production	18,430	20,580	17,280	19,050	20,080
Imports	46	65	50	50	50
Total Supply	20,835	23,730	19,628	21,508	22,568
Domestic Disappearance	17,083	18,338	15,550	16,590	17,350
of which Biodiesel	135	3,245	1,567	1,980	2,090
Exports	2,263	2,908	1,750	2,500	2,800
Total Disappearance	19,346	21,246	17,300	19,090	20,150
Ending Stocks	1,489	2,485	2,328	2,418	2,418

Shaded area represents Informa forecast.

Table 30: INFORMA REFERENCE CASE: U.S. WHEAT FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	60.3	60.5	57.5	57.0	57.0
Harvested Area	45.8	51.0	50.0	49.5	49.5
Harvested Yield (bu/acre)	35.0	40.2	44.0	45.5	46.9
Beginning Stocks (mil. bu)	777	456	839	784	779
Production	1,606	2,051	2,200	2,250	2,320
Imports	77	113	105	105	105
Total Supply	2,460	2,620	3,144	3,139	3,204
Feed Use/Residual	117	14	200	150	150
Food/Milling and Seed	1,030	1,063	1,070	1,120	1,170
Total Domestic Disappearance	1,147	1,077	1,270	1,270	1,320
Grain Exports	822	1,237	1,050	1,100	1,100
Total Disappearance	1,969	2,314	2,320	2,370	2,420
Ending Stocks	491	306	824	769	784
ES: Use Ratio	25%	13%	36%	32%	32%
KC, HRW, Ordinary Protein	\$4.22	\$8.89	\$5.61	\$5.71	\$5.71
Farm Price (per bu)	\$3.56	\$6.48	\$4.51	\$4.61	\$4.61
VC for Production, USDA est. (\$/ac)	59.60	98.34	104.00	110.00	122.00

Shaded area represents Informa forecast.

Table 31: INFORMA REFERENCE CASE: WORLD CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	137.3	159.8	160.4	162.8	166.1
Sorghum	38.0	39.5	38.9	38.7	38.4
Barley	55.6	57.5	55.7	55.1	54.5
Oats	14.0	13.2	12.3	12.1	11.9
Coarse Grains	245.0	269.9	267.4	268.6	271.0
Wheat	214.3	216.9	221.7	221.5	220.9
Rice	146.3	154.7	157.3	158.7	160.4
Food Grains	360.5	371.6	379.0	380.2	381.2
Cotton	30.3	32.5	30.6	30.8	31.0
Soybeans	82.3	91.0	98.5	106.7	119.5
Rapeseed/Canola	22.1	28.1	33.8	36.7	39.7
Sunseed	20.3	21.6	23.7	24.5	25.6
Peanut	21.3	20.9	20.9	20.8	20.8
Oilseeds	176.4	194.0	207.4	219.6	236.7
Total Crop Area	781.9	835.6	853.8	868.5	888.9

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 32: INFORMA REFERENCE CASE: U.S. CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn (harvested)	28.1	35.0	31.4	29.9	28.7
Sorghum	2.9	2.7	2.7	2.6	2.5
Barley	1.7	1.4	1.4	1.3	1.2
Oats	0.8	0.6	0.4	0.3	0.2
Coarse Grains	33.4	39.8	35.8	34.2	32.6
Wheat	18.5	20.6	20.2	20.0	20.0
Rice	1.3	1.1	1.2	1.1	1.0
Food Grains	19.8	21.8	21.4	21.1	21.1
Cotton	5.0	4.2	3.1	2.8	2.5
Soybeans	29.3	26.0	31.6	32.8	34.0
Rapeseed/Canola	0.5	0.5	0.4	0.5	0.6
Sunseed	0.9	0.8	0.9	0.9	0.9
Peanut	0.5	0.5	0.5	0.4	0.4
Oilseeds	36.3	32.0	36.4	37.4	38.4
Total Crop Area	89.6	93.5	93.6	92.7	92.1

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 33: INFORMA REFERENCE CASE: BRAZIL CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	12.96	14.70	14.70	15.20	15.70
Sorghum	0.80	0.85	0.75	0.75	0.75
Barley	0.11	0.10	0.10	0.10	0.10
Oats	0.27	0.35	0.35	0.35	0.35
Coarse Grains	14.14	16.00	15.90	16.40	16.90
Wheat	2.04	1.82	1.85	1.85	1.85
Rice	3.19	2.87	2.90	2.90	2.90
Food Grains	5.23	4.69	4.75	4.75	4.75
Cotton	0.74	1.08	0.82	0.87	0.92
Soybeans	18.45	21.30	20.10	22.40	27.20
Rapeseed/Canola	0.02	-	-	-	-
Sunseed	0.04	0.07	0.07	0.07	0.07
Peanut	0.09	0.12	0.12	0.12	0.13
Oilseeds	19.33	22.56	21.11	23.46	28.32
Total Crop Area	38.70	43.26	41.76	44.61	49.97

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 34: INFORMA REFERENCE CASE: ARGENTINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	2.45	3.41	2.60	2.60	2.60
Sorghum	0.55	0.71	0.65	0.65	0.65
Barley	0.25	0.44	0.52	0.57	0.62
Oats	0.30	0.22	0.25	0.25	0.25
Coarse Grains	3.55	4.79	4.02	4.07	4.12
Wheat	5.70	4.79	5.30	5.30	5.30
Rice	0.13	0.18	0.21	0.21	0.21
Food Grains	5.84	4.97	5.51	5.51	5.51
Cotton	0.15	0.31	0.30	0.30	0.30
Soybeans	12.60	16.60	15.80	17.60	21.40
Rapeseed/Canola	-	-	-	-	-
Sunseed	2.35	2.62	2.30	2.30	2.30
Peanut	0.16	0.23	0.25	0.25	0.25
Oilseeds	15.25	19.76	18.65	20.45	24.25
Total Crop Area	24.64	29.51	28.18	30.03	33.88

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 35: INFORMA REFERENCE CASE: EU-27 CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	9.00	8.44	8.80	8.80	8.80
Sorghum	0.12	0.09	0.10	0.10	0.10
Barley	13.99	13.77	14.20	13.95	13.70
Oats	3.23	2.97	2.95	2.95	2.95
Coarse Grains	26.34	25.27	26.05	25.80	25.55
Wheat	26.42	24.78	25.50	25.50	25.50
Rice	0.41	0.42	0.42	0.42	0.42
Food Grains	26.83	25.20	25.92	25.92	25.92
Cotton	0.02	-	-	-	-
Soybeans	0.34	0.34	0.35	0.35	0.35
Rapeseed/Canola	4.27	6.55	7.14	7.99	8.84
Sunseed	3.44	3.34	3.44	3.17	2.90
Peanut	0.00	0.00	-	-	-
Oilseeds	8.07	10.24	10.93	11.51	12.09
Total Crop Area	61.24	60.71	62.90	63.23	63.56

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 36: INFORMA REFERENCE CASE: CHINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	24.6	29.5	30.7	31.6	33.2
Sorghum	0.8	0.5	0.4	0.4	0.4
Barley	0.9	0.8	0.8	0.8	0.8
Oats	0.5	0.5	0.5	0.5	0.5
Coarse Grains	26.9	31.3	32.4	33.3	34.9
Wheat	23.9	23.7	21.6	20.8	19.3
Rice	28.2	28.9	28.7	27.7	26.7
Food Grains	52.1	52.6	50.3	48.5	46.0
Cotton	4.5	6.2	5.8	5.8	5.8
Soybeans	9.5	8.8	9.7	10.2	10.7
Rapeseed/Canola	7.1	5.6	7.7	8.2	8.7
Sunseed	1.1	0.8	0.9	0.9	1.0
Peanut	4.9	3.9	3.9	3.9	3.9
Oilseeds	27.2	25.3	28.0	29.0	30.1
Total Crop Area	106.2	109.2	110.7	110.8	111.0

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 37: INFORMA REFERENCE CASE: CANADA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	1.3	1.4	1.2	1.2	1.2
Sorghum	-	-	-	-	-
Barley	3.3	4.0	3.2	2.9	2.6
Oats	1.4	1.8	1.4	1.4	1.4
Coarse Grains	6.0	7.2	5.8	5.5	5.2
Wheat	8.8	8.6	9.4	9.0	8.7
Rice	-	-	-	-	-
Food Grains	8.8	8.6	9.4	9.0	8.7
Cotton	-	-	-	-	-
Soybeans	1.0	1.2	1.3	1.4	1.5
Rapeseed/Canola	3.6	6.2	6.7	7.5	8.4
Sunseed	0.1	0.1	0.1	0.1	0.1
Peanut	-	-	-	-	-
Oilseeds	4.7	7.5	8.1	9.0	10.0
Total Crop Area	19.6	23.3	23.3	23.5	23.9

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 38: INFORMA REFERENCE CASE: REST OF WORLD CROP AREA (million hectares) 1/

	2002	2007	2012	2017	2022
Corn	58.9	67.4	71.0	73.4	75.9
Sorghum	32.8	34.6	34.3	34.1	34.0
Barley	35.4	37.0	35.5	35.5	35.5
Oats	7.5	6.7	6.5	6.4	6.3
Coarse Grains	134.7	145.7	147.3	149.4	151.7
Wheat	128.8	132.5	137.9	139.1	140.2
Rice	113.1	121.2	123.9	126.4	129.1
Food Grains	241.9	253.7	261.8	265.5	269.3
Cotton	19.9	20.7	20.5	21.0	21.4
Soybeans	11.0	16.8	19.6	22.0	24.4
Rapeseed/Canola	6.5	9.2	11.8	12.5	13.2
Sunseed	12.4	13.9	16.1	17.2	18.4
Peanut	15.6	16.1	16.1	16.1	16.1
Oilseeds	65.4	76.7	84.2	88.8	93.5
Total Crop Area	441.9	476.1	493.3	503.7	514.5

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 39: INFORMA REFERENCE CASE: WORLD SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	151.2	109.0	168.2	229.7	263.4
Production	603.3	791.6	848.0	910.6	984.6
Domestic Supply	754.5	900.6	1016.3	1140.3	1248.0
Domestic Use					
Feed Use	433.2	496.5	516.0	560.0	605.8
Food & Other	193.1	273.2	315.8	341.0	371.3
Exports-Imports	70.5	91.8	78.6	90.7	101.8
Ending Stocks	126.6	130.3	182.3	237.2	265.3
Wheat:					
Beginning Stocks	203.2	127.0	197.9	222.0	231.5
Production	567.9	609.7	667.5	696.2	723.4
Domestic Supply	771.1	736.7	865.4	918.2	954.9
Domestic Use					
Feed Use	111.9	96.2	113.8	113.5	113.9
Food & Other	490.0	517.2	544.7	577.1	606.1
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	166.6	120.1	204.2	225.0	231.8
Soybean:					
Beginning Stocks	12.6	26.2	37.1	35.6	33.0
Production	196.9	221.1	252.9	291.4	345.3
Domestic Supply	209.5	247.3	290.0	326.9	378.3
Domestic Use					
Crush	167.5	198.8	220.9	259.8	307.6
Food & Other	26.6	28.5	30.2	31.9	33.3
Exports-Imports	58.6	72.6	83.4	106.6	135.7
Ending Stocks	15.8	20.8	37.9	34.2	33.1
Rapeseed/Canola					
Beginning Stocks	2.8	4.7	4.6	4.4	4.4
Production	33.3	48.3	63.2	73.2	84.4
Domestic Supply	36.1	53.0	67.8	77.6	88.8
Domestic Use					
Crush	32.8	48.3	60.4	70.2	81.3
Food & Other	2.2	2.4	2.8	2.9	3.0
Exports-Imports	3.9	7.8	9.6	11.5	13.8
Ending Stocks	2.2	4.0	4.5	4.4	4.4

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 40: INFORMA REFERENCE CASE: U.S. SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	40.6	33.1	44.8	58.8	62.5
Production	227.8	331.2	332.3	346.7	363.7
Domestic Supply	268.3	364.3	377.0	405.5	426.2
Domestic Use					
Feed Use	141.3	150.8	143.5	152.4	161.3
Food & Other	59.4	110.9	133.9	138.9	147.3
Exports-Imports	40.0	61.4	51.8	55.3	56.6
Ending Stocks	27.6	41.2	47.8	58.8	61.0
Wheat:					
Beginning Stocks	21.2	12.4	22.8	21.3	21.2
Production	43.7	55.8	59.9	61.2	63.1
Domestic Supply	64.9	68.2	82.7	82.6	84.3
Domestic Use					
Feed Use	3.2	0.4	5.4	4.1	4.1
Food & Other	27.3	28.9	29.1	30.5	31.8
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	13.4	8.3	22.4	20.9	21.3
Soybean:					
Beginning Stocks	5.7	15.6	13.5	15.1	14.3
Production	75.0	72.9	95.5	108.3	118.1
Domestic Supply	80.7	88.5	109.0	123.4	132.5
Domestic Use					
Crush	43.9	49.1	41.0	44.8	46.9
Food & Other	3.6	2.2	4.7	5.4	5.9
Exports-Imports	28.3	31.6	49.7	57.9	64.7
Ending Stocks	4.9	5.6	13.6	15.4	14.9
Rapeseed/Canola					
Beginning Stocks	0.1	0.1	0.2	0.2	0.2
Production	0.7	0.7	0.6	0.8	1.0
Domestic Supply	0.8	0.8	0.9	1.1	1.2
Domestic Use					
Crush	0.6	1.0	1.4	1.7	1.9
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.1	-0.4	-0.8	-0.9	-0.9
Ending Stocks	0.1	0.2	0.2	0.2	0.2

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 41: INFORMA REFERENCE CASE: BRAZIL SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.5	3.6	9.5	9.5	9.5
Production	44.5	58.6	61.5	71.1	82.1
Domestic Supply	46.0	62.2	71.0	80.6	91.6
Domestic Use					
Feed Use	30.0	36.0	43.0	49.7	57.1
Food & Other	5.8	6.5	7.0	7.3	7.5
Exports-Imports	3.9	7.1	11.5	14.1	17.5
Ending Stocks	6.3	12.6	9.5	9.5	9.5
Wheat:					
Beginning Stocks	0.7	1.0	1.0	1.0	1.0
Production	2.9	3.8	4.2	4.4	4.6
Domestic Supply	3.7	4.8	5.2	5.4	5.7
Domestic Use					
Feed Use	0.3	0.1	0.2	0.2	0.2
Food & Other	9.4	10.2	11.3	12.1	12.9
Exports-Imports	-6.6	-5.9	-7.3	-7.9	-8.5
Ending Stocks	0.5	0.4	1.0	1.0	1.0
Soybean:					
Beginning Stocks	0.3	2.0	2.3	2.3	2.3
Production	52.0	61.0	60.1	71.1	92.1
Domestic Supply	52.3	63.0	62.4	73.4	94.4
Domestic Use					
Crush	27.8	31.9	34.9	37.1	41.5
Food & Other	3.7	4.3	3.0	3.1	3.2
Exports-Imports	19.6	24.8	22.3	31.0	47.4
Ending Stocks	1.1	2.0	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

**Table 42: INFORMA REFERENCE CASE: ARGENTINA SUPPLY/USE BALANCE
(million metric tons)**

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	0.3	1.7	0.9	0.9	0.9
Production	15.5	22.0	21.1	23.9	27.0
Domestic Supply	15.8	23.7	22.0	24.8	28.0
Domestic Use					
Feed Use	2.5	5.1	4.0	4.2	4.3
Food & Other	1.6	1.9	1.9	2.0	2.1
Exports-Imports	11.2	15.0	15.2	17.7	20.6
Ending Stocks	0.5	1.7	0.9	0.9	0.9
Wheat:					
Beginning Stocks	1.1	1.1	0.3	0.3	0.3
Production	12.3	16.8	15.7	17.1	18.7
Domestic Supply	13.4	17.9	16.0	17.5	19.0
Domestic Use					
Feed Use	0.1	0.1	0.1	0.1	0.1
Food & Other	5.1	5.1	5.2	5.4	5.5
Exports-Imports	6.8	11.2	10.4	11.6	13.0
Ending Stocks	1.5	1.5	0.3	0.3	0.3
Soybean:					
Beginning Stocks	1.2	2.1	2.3	2.3	2.3
Production	35.5	46.2	48.1	56.9	73.8
Domestic Supply	36.7	48.3	50.4	59.2	76.1
Domestic Use					
Crush	24.8	31.7	41.8	47.8	55.5
Food & Other	0.8	1.2	0.6	0.6	0.7
Exports-Imports	8.4	8.9	5.7	8.5	17.6
Ending Stocks	2.7	6.5	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 43: INFORMA REFERENCE CASE: EU-27 SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	3.3	7.4	4.7	4.7	4.7
Production	57.7	47.5	60.1	63.2	66.4
Domestic Supply	61.0	54.9	64.8	67.9	71.1
Domestic Use					
Feed Use	45.1	50.6	46.5	48.6	50.9
Food & Other	12.5	12.8	14.6	15.6	16.5
Exports-Imports	-2.1	-13.4	-1.0	-1.0	-1.0
Ending Stocks	5.5	4.9	4.7	4.7	4.7
Wheat:					
Beginning Stocks	18.3	14.1	19.5	19.5	19.5
Production	132.6	120.2	137.2	140.7	144.2
Domestic Supply	150.9	134.3	156.7	160.2	163.7
Domestic Use					
Feed Use	60.0	52.4	62.0	60.6	58.5
Food & Other	65.0	64.1	67.6	69.4	70.9
Exports-Imports	7.4	5.3	7.6	10.8	14.8
Ending Stocks	18.5	12.4	19.5	19.5	19.5
Soybean:					
Beginning Stocks	1.1	1.1	0.4	0.4	0.4
Production	1.0	0.7	0.9	0.9	0.9
Domestic Supply	2.1	1.8	1.4	1.4	1.4
Domestic Use					
Crush	16.5	14.9	12.5	12.5	12.5
Food & Other	1.6	1.2	1.2	1.2	1.2
Exports-Imports	-16.9	-15.1	-12.7	-12.8	-12.8
Ending Stocks	0.9	0.8	0.4	0.4	0.4
Rapeseed/Canola					
Beginning Stocks	0.6	1.4	1.7	1.7	1.7
Production	11.8	18.4	21.9	25.4	29.2
Domestic Supply	12.4	19.8	23.5	27.1	30.9
Domestic Use					
Crush	10.5	18.3	23.9	28.4	33.2
Food & Other	0.7	0.9	0.9	0.9	0.9
Exports-Imports	0.8	-0.3	-2.9	-3.9	-4.9
Ending Stocks	0.3	1.0	1.7	1.7	1.7

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 44: INFORMA REFERENCE CASE: CHINA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	84.8	36.6	63.3	69.4	69.4
Production	121.3	152.3	170.3	184.2	203.3
Domestic Supply	206.1	188.9	233.6	253.6	272.7
Domestic Use					
Feed Use	96.0	105.0	117.3	125.9	134.2
Food & Other	29.9	44.0	51.2	62.5	75.6
Exports-Imports	15.2	0.5	-0.8	-4.2	-6.4
Ending Stocks	65.0	39.4	65.9	69.4	69.4
Wheat:					
Beginning Stocks	76.6	38.5	59.8	59.8	59.8
Production	90.3	109.3	103.7	105.0	102.4
Domestic Supply	166.9	147.7	163.5	164.8	162.3
Domestic Use					
Feed Use	6.5	8.0	5.5	5.6	5.7
Food & Other	98.7	98.0	97.1	98.1	95.9
Exports-Imports	1.3	2.8	1.1	1.2	0.8
Ending Stocks	60.4	39.0	59.8	59.8	59.8
Soybean:					
Beginning Stocks	2.1	2.7	10.8	10.8	10.8
Production	16.5	14.0	16.5	17.3	18.2
Domestic Supply	18.6	16.7	27.3	28.1	29.0
Domestic Use					
Crush	26.5	39.5	54.3	75.8	103.5
Food & Other	8.8	10.3	10.6	10.9	11.2
Exports-Imports	-21.2	-37.4	-48.4	-69.4	-96.5
Ending Stocks	4.5	4.2	10.8	10.8	10.8
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.6	0.6	0.6
Production	11.4	11.8	14.8	16.3	18.0
Domestic Supply	11.4	11.8	15.4	17.0	18.7
Domestic Use					
Crush	11.2	12.7	14.3	16.2	18.6
Food & Other	0.6	0.5	0.5	0.6	0.6
Exports-Imports	-0.4	-2.1	-0.1	-0.4	-1.1
Ending Stocks	0.0	0.6	0.6	0.6	0.6

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

**Table 45: INFORMA REFERENCE CASE: CANADA SUPPLY/USE BALANCE
(million metric tons)**

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.1	1.3	1.6	1.6	1.6
Production	9.0	11.6	11.3	12.1	13.0
Domestic Supply	10.1	13.0	12.8	13.6	14.5
Domestic Use					
Feed Use	10.2	10.2	9.9	11.7	13.6
Food & Other	2.4	3.6	4.5	4.8	5.1
Exports-Imports	-3.6	-2.2	-3.1	-4.4	-5.7
Ending Stocks	1.1	1.5	1.6	1.6	1.6
Wheat:					
Beginning Stocks	6.5	6.9	8.5	8.5	8.5
Production	16.2	20.1	25.8	26.4	26.9
Domestic Supply	22.7	26.9	34.4	34.9	35.4
Domestic Use					
Feed Use	3.7	2.1	4.2	4.3	4.5
Food & Other	4.2	4.2	4.5	4.7	4.9
Exports-Imports	9.1	16.0	17.1	17.3	17.5
Ending Stocks	5.7	4.6	8.5	8.5	8.5
Soybean:					
Beginning Stocks	0.3	0.7	0.2	0.1	0.1
Production	2.3	2.7	3.8	4.2	4.6
Domestic Supply	2.7	3.4	3.9	4.3	4.8
Domestic Use					
Crush	1.8	1.4	1.3	0.9	0.6
Food & Other	0.5	0.4	0.4	0.5	0.5
Exports-Imports	0.1	1.4	2.1	2.8	3.6
Ending Stocks	0.3	0.2	0.2	0.1	0.1
Rapeseed/Canola					
Beginning Stocks	1.2	1.8	1.1	1.1	1.1
Production	4.5	9.5	12.6	15.9	20.0
Domestic Supply	5.7	11.3	13.7	17.0	21.0
Domestic Use					
Crush	2.2	4.1	6.0	7.6	9.6
Food & Other	0.2	0.2	0.4	0.4	0.4
Exports-Imports	2.2	5.6	6.1	7.9	9.9
Ending Stocks	1.2	1.4	1.1	1.1	1.1

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 46: INFORMA REFERENCE CASE: REST OF WORLD SUPPLY/USE BALANCE
(million metric tons) 1/

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks					
Production	127.5	168.4	191.4	209.4	229.0
Domestic Supply					
Domestic Use					
Feed Use	108.2	138.8	151.7	167.4	184.4
Food & Other	81.4	93.6	102.8	109.9	117.2
Exports-Imports	-63.0	-67.8	-63.1	-67.9	-72.6
Ending Stocks					
Wheat:					
Beginning Stocks					
Production	269.9	283.7	321.0	341.5	363.4
Domestic Supply					
Domestic Use					
Feed Use	38.1	33.0	36.4	38.6	40.8
Food & Other	280.3	306.7	329.7	356.9	384.1
Exports-Imports	-36.5	-56.8	-45.1	-54.0	-61.5
Ending Stocks					
Soybean:					
Beginning Stocks					
Production	14.5	23.6	28.0	32.6	37.6
Domestic Supply					
Domestic Use					
Crush	26.2	30.4	35.2	41.0	47.1
Food & Other	7.6	8.8	9.7	10.2	10.7
Exports-Imports	-18.8	-15.0	-16.9	-18.6	-20.2
Ending Stocks					
Rapeseed/Canola					
Beginning Stocks					
Production	4.9	8.0	13.3	14.7	16.2
Domestic Supply					
Domestic Use					
Crush	8.3	12.2	14.8	16.4	18.0
Food & Other	0.7	0.8	1.0	1.0	1.1
Exports-Imports	-2.9	-3.4	-2.2	-2.4	-2.9
Ending Stocks					

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

**Appendix C:
Informa Forecast Under EPA Control Case**

Table 47: INFORMA CONTROL CASE: U.S. PLANTED ACREAGE (thousand acres)

	2002	2007	2012	2017	2022
Corn, All	78,894	93,527	88,000	86,000	81,500
Sorghum, All	9,589	7,712	7,600	7,480	7,170
Barley	5,008	4,018	4,000	3,750	3,500
Oats	4,995	3,763	3,010	2,760	2,510
All Wheat	60,318	60,460	57,500	57,000	57,000
Winter Wheat	41,766	45,012			
Other Spring Wheat	15,639	13,292			
Durum Wheat	2,913	2,156			
Rye	1,355	1,334	1,227	1,177	1,127
Rice	3,240	2,761	2,900	2,700	2,550
Soybeans	73,963	64,741	75,500	77,000	81,500
Peanuts	1,353	1,230	1,210	1,110	1,010
Sunflowers	2,581	2,070	2,250	2,250	2,250
Rapeseed/Canola	1,460	1,176	997	1,247	1,497
Flaxseed	784	354	350	350	350
Cotton, All	13,958	10,827	8,180	7,380	6,680
Cotton, Upland	13,714	10,535	8,000	7,200	6,500
Cotton, Am-Pima	244	292	180	180	180
Hay, All	63,942	61,006	61,500	61,500	61,500
Beans, Dry Edible	1,930	1,527	1,450	1,400	1,350
Tobacco	427	356	313	263	213
Sugar Beets	1,427	1,269	1,140	1,065	990
Double-Counted Acres:					
Soybeans Double-Cropped	4,179	5,046	4,000	4,000	4,000
Spring Reseeding	1,200	700			
Crop Total	319,846	312,385	313,127	310,432	308,697
Government Acres:					
Conservation Reserve	33,890	36,767	32,000	32,000	32,000
Total Government	33,890	36,767	32,000	32,000	32,000
Grand Total	353,736	349,153	345,127	342,432	340,697

Shaded area represents Informa forecast.

Table 48: INFORMA CONTROL CASE: U.S. CORN FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	78.9	93.5	88.0	86.0	81.5
Harvested Area	69.3	86.5	81.0	79.0	74.5
Harvested Yield (bu/acre)	129.3	150.7	168.7	184.5	201.7
Beginning Stocks (mil. bu)	1,596	1,304	1,765	2,253	2,444
Production	8,967	13,038	13,670	14,570	15,020
Imports	14	20	10	10	10
Total Supply	10,578	14,362	15,445	16,833	17,474
Feed Use/Residual	5,563	5,938	5,450	5,720	6,120
Food/Seed/Ind	2,340	4,364	6,150	6,700	6,750
(of which Fuel Alcohol)	996	3,026	4,851	5,359	5,359
Total Domestic Disappearance	7,903	10,302	11,600	12,420	12,870
Exports	1,588	2,436	2,000	2,121	2,187
Total Disappearance	9,491	12,738	13,600	14,541	15,057
Ending Stocks	1,087	1,624	1,845	2,293	2,416
ES: Use Ratio	11%	13%	14%	16%	16%
Futures Price (per bu)	\$ 2.37	\$ 5.15	\$ 3.43	\$ 3.39	\$ 3.39
Farm Price (per bu)	\$2.32	\$4.20	\$3.13	\$3.09	\$3.09
VC for Production, USDA est. (\$/ac)	148.54	231.25	250.00	265.00	293.00

Shaded area represents Informa forecast.

Table 49: INFORMA CONTROL CASE: U.S. SOYBEAN COMPLEX FUNDAMENTALS

	2002	2007	2012	2017	2022
SOYBEANS					
Planted Area (mil. acres)	74.0	64.7	75.5	77.0	81.5
Harvested Area	72.5	64.1	74.5	76.0	80.5
Harvested Yield (bu/acre)	38.0	41.7	45.0	49.1	51.7
Beginning Stocks (mil bu)	208	574	494	554	547
Production	2,756	2,677	3,350	3,730	4,160
Imports	4	10	10	10	10
Total Supply	2,969	3,261	3,854	4,294	4,717
Crush	1,615	1,803	1,770	1,885	1,945
Food/Seed/Residual	132	92	175	195	217
Total Domestic Disappearance	1,747	1,895	1,945	2,080	2,162
Exports	1,044	1,161	1,410	1,649	2,007
Total Disappearance	2,791	3,056	3,355	3,729	4,169
Ending Stocks	178	205	499	565	548
ES: Use Ratio	6%	7%	15%	15%	13%
Futures Price (per bu)	\$5.79	\$12.37	\$8.75	\$8.70	\$9.02
Farm Price (per bu)	\$5.53	\$9.90	\$7.95	\$7.90	\$8.22
HI-PRO Meal, Decatur (per ton)	\$182	\$330	\$246	\$244	\$258
Crude Oil, Decatur (per lb)	\$0.221	\$0.510	\$0.365	\$0.360	\$0.365
VC for Production, USDA est. (\$/ac)	75.34	107.03	114.00	120.00	64.00
SOYBEAN MEAL (000 ton)					
Beginning Stocks	240	346	354	354	354
Production	38,194	42,291	41,990	44,630	45,910
Imports	173	143	150	150	150
Total Supply	38,607	42,781	42,494	45,134	46,414
Domestic Disappearance	32,073	33,207	29,220	30,580	33,330
Exports	6,314	9,280	12,920	14,200	12,730
Total Disappearance	38,387	42,487	42,140	44,780	46,060
Ending Stocks	220	294	354	354	354
SOYBEAN OIL (mil. lbs)					
Beginning Stocks	2,359	3,085	2,298	2,288	2,318
Production	18,430	20,580	20,320	21,830	22,640
Imports	46	65	50	50	50
Total Supply	20,835	23,730	22,668	24,168	25,008
Domestic Disappearance	17,083	18,338	18,630	19,370	19,870
of which Biodiesel	135	3,245	4,216	4,390	4,360
Exports	2,263	2,908	1,750	2,500	2,800
Total Disappearance	19,346	21,246	20,380	21,870	22,670
Ending Stocks	1,489	2,485	2,288	2,298	2,338

Shaded area represents Informa forecast.

Table 50: INFORMA CONTROL CASE: U.S. WHEAT FUNDAMENTALS

	2002	2007	2012	2017	2022
Planted Area (mil. acres)	60.3	60.5	57.5	57.0	57.0
Harvested Area	45.8	51.0	50.0	49.5	49.5
Harvested Yield (bu/acre)	35.0	40.2	44.0	45.5	46.9
Beginning Stocks (mil. bu)	777	456	839	784	779
Production	1,606	2,051	2,200	2,250	2,320
Imports	77	113	105	105	105
Total Supply	2,460	2,620	3,144	3,139	3,204
Feed Use/Residual	117	14	200	150	150
Food/Milling and Seed	1,030	1,063	1,070	1,120	1,170
Total Domestic Disappearance	1,147	1,077	1,270	1,270	1,320
Grain Exports	822	1,237	1,050	1,100	1,100
Total Disappearance	1,969	2,314	2,320	2,370	2,420
Ending Stocks	491	306	824	769	784
ES: Use Ratio	25%	13%	36%	32%	32%
KC, HRW, Ordinary Protein	\$4.22	\$8.89	\$5.61	\$5.71	\$5.71
Farm Price (per bu)	\$3.56	\$6.48	\$4.51	\$4.61	\$4.61
VC for Production, USDA est. (\$/ac)	59.60	98.34	104.00	110.00	122.00

Shaded area represents Informa forecast.

Table 51: INFORMA CONTROL CASE: WORLD CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	137.3	159.8	161.8	164.8	167.5
Sorghum	38.0	39.5	38.9	38.7	38.4
Barley	55.6	57.5	55.7	55.1	54.5
Oats	14.0	13.2	12.3	12.1	11.9
Coarse Grains	245.0	269.9	268.8	270.7	272.4
Wheat	214.3	216.9	221.7	221.5	220.9
Rice	146.3	154.7	157.3	158.7	160.4
Food Grains	360.5	371.6	379.0	380.2	381.2
Cotton	30.3	32.5	30.6	30.8	31.0
Soybeans	82.3	91.0	98.4	106.9	119.0
Rapeseed/Canola	22.1	28.1	33.8	36.7	39.7
Sunseed	20.3	21.6	23.7	24.5	25.6
Peanut	21.3	20.9	20.9	20.8	20.8
Oilseeds	176.4	194.0	207.4	219.8	236.1
Total Crop Area	781.9	835.6	855.2	870.7	889.8

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 52: INFORMA CONTROL CASE: U.S. CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn (harvested)	28.1	35.0	32.8	32.0	30.1
Sorghum	2.9	2.7	2.7	2.6	2.5
Barley	1.7	1.4	1.4	1.3	1.2
Oats	0.8	0.6	0.4	0.3	0.2
Coarse Grains	33.4	39.8	37.2	36.2	34.0
Wheat	18.5	20.6	20.2	20.0	20.0
Rice	1.3	1.1	1.2	1.1	1.0
Food Grains	19.8	21.8	21.4	21.1	21.1
Cotton	5.0	4.2	3.1	2.8	2.5
Soybeans	29.3	26.0	30.1	30.8	32.6
Rapeseed/Canola	0.5	0.5	0.4	0.5	0.6
Sunseed	0.9	0.8	0.9	0.9	0.9
Peanut	0.5	0.5	0.5	0.4	0.4
Oilseeds	36.3	32.0	35.0	35.4	37.0
Total Crop Area	89.6	93.5	93.6	92.7	92.1

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 53: INFORMA CONTROL CASE: BRAZIL CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	12.96	14.70	14.70	15.20	15.70
Sorghum	0.80	0.85	0.75	0.75	0.75
Barley	0.11	0.10	0.10	0.10	0.10
Oats	0.27	0.35	0.35	0.35	0.35
Coarse Grains	14.14	16.00	15.90	16.40	16.90
Wheat	2.04	1.82	1.85	1.85	1.85
Rice	3.19	2.87	2.90	2.90	2.90
Food Grains	5.23	4.69	4.75	4.75	4.75
Cotton	0.74	1.08	0.82	0.87	0.92
Soybeans	18.45	21.30	20.90	23.60	27.70
Rapeseed/Canola	0.02	-	-	-	-
Sunseed	0.04	0.07	0.07	0.07	0.07
Peanut	0.09	0.12	0.12	0.12	0.13
Oilseeds	19.33	22.56	21.91	24.66	28.82
Total Crop Area	38.70	43.26	42.56	45.81	50.47

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 54: INFORMA CONTROL CASE: ARGENTINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	2.45	3.41	2.60	2.60	2.60
Sorghum	0.55	0.71	0.65	0.65	0.65
Barley	0.25	0.44	0.52	0.57	0.62
Oats	0.30	0.22	0.25	0.25	0.25
Coarse Grains	3.55	4.79	4.02	4.07	4.12
Wheat	5.70	4.79	5.30	5.30	5.30
Rice	0.13	0.18	0.21	0.21	0.21
Food Grains	5.84	4.97	5.51	5.51	5.51
Cotton	0.15	0.31	0.30	0.30	0.30
Soybeans	12.60	16.60	16.40	18.60	21.80
Rapeseed/Canola	-	-	-	-	-
Sunseed	2.35	2.62	2.30	2.30	2.30
Peanut	0.16	0.23	0.25	0.25	0.25
Oilseeds	15.25	19.76	19.25	21.45	24.65
Total Crop Area	24.64	29.51	28.78	31.03	34.28

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 55: INFORMA CONTROL CASE: EU-27 CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	9.00	8.44	8.80	8.80	8.80
Sorghum	0.12	0.09	0.10	0.10	0.10
Barley	13.99	13.77	14.20	13.95	13.70
Oats	3.23	2.97	2.95	2.95	2.95
Coarse Grains	26.34	25.27	26.05	25.80	25.55
Wheat	26.42	24.78	25.50	25.50	25.50
Rice	0.41	0.42	0.42	0.42	0.42
Food Grains	26.83	25.20	25.92	25.92	25.92
Cotton	0.02	-	-	-	-
Soybeans	0.34	0.34	0.35	0.35	0.35
Rapeseed/Canola	4.27	6.55	7.14	7.99	8.84
Sunseed	3.44	3.34	3.44	3.17	2.90
Peanut	0.00	0.00	-	-	-
Oilseeds	8.07	10.24	10.93	11.51	12.09
Total Crop Area	61.24	60.71	62.90	63.23	63.56

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 56: INFORMA CONTROL CASE: CHINA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	24.6	29.5	30.7	31.6	33.2
Sorghum	0.8	0.5	0.4	0.4	0.4
Barley	0.9	0.8	0.8	0.8	0.8
Oats	0.5	0.5	0.5	0.5	0.5
Coarse Grains	26.9	31.3	32.4	33.3	34.9
Wheat	23.9	23.7	21.6	20.8	19.3
Rice	28.2	28.9	28.7	27.7	26.7
Food Grains	52.1	52.6	50.3	48.5	46.0
Cotton	4.5	6.2	5.8	5.8	5.8
Soybeans	9.5	8.8	9.7	10.2	10.7
Rapeseed/Canola	7.1	5.6	7.7	8.2	8.7
Sunseed	1.1	0.8	0.9	0.9	1.0
Peanut	4.9	3.9	3.9	3.9	3.9
Oilseeds	27.2	25.3	28.0	29.0	30.1
Total Crop Area	106.2	109.2	110.7	110.8	111.0

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 57: INFORMA CONTROL CASE: CANADA CROP AREA (million hectares)

	2002	2007	2012	2017	2022
Corn	1.3	1.4	1.2	1.2	1.2
Sorghum	-	-	-	-	-
Barley	3.3	4.0	3.2	2.9	2.6
Oats	1.4	1.8	1.4	1.4	1.4
Coarse Grains	6.0	7.2	5.8	5.5	5.2
Wheat	8.8	8.6	9.4	9.0	8.7
Rice	-	-	-	-	-
Food Grains	8.8	8.6	9.4	9.0	8.7
Cotton	-	-	-	-	-
Soybeans	1.0	1.2	1.3	1.4	1.5
Rapeseed/Canola	3.6	6.2	6.7	7.5	8.4
Sunseed	0.1	0.1	0.1	0.1	0.1
Peanut	-	-	-	-	-
Oilseeds	4.7	7.5	8.1	9.0	10.0
Total Crop Area	19.6	23.3	23.3	23.5	23.9

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 58: INFORMA CONTROL CASE: REST OF WORLD CROP AREA (million hectares) 1/

	2002	2007	2012	2017	2022
Corn	58.9	67.4	71.0	73.4	75.9
Sorghum	32.8	34.6	34.3	34.1	34.0
Barley	35.4	37.0	35.5	35.5	35.5
Oats	7.5	6.7	6.5	6.4	6.3
Coarse Grains	134.7	145.7	147.3	149.4	151.7
Wheat	128.8	132.5	137.9	139.1	140.2
Rice	113.1	121.2	123.9	126.4	129.1
Food Grains	241.9	253.7	261.8	265.5	269.3
Cotton	19.9	20.7	20.5	21.0	21.4
Soybeans	11.0	16.8	19.6	22.0	24.4
Rapeseed/Canola	6.5	9.2	11.8	12.5	13.2
Sunseed	12.4	13.9	16.1	17.2	18.4
Peanut	15.6	16.1	16.1	16.1	16.1
Oilseeds	65.4	76.7	84.2	88.8	93.5
Total Crop Area	441.9	476.1	493.3	503.7	514.5

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 59: INFORMA CONTROL CASE: WORLD SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	151.2	109.0	166.7	218.2	245.0
Production	603.3	791.6	863.0	934.0	1002.4
Domestic Supply	754.5	900.6	1029.7	1152.2	1247.4
Domestic Use					
Feed Use	433.2	496.5	511.0	552.9	600.0
Food & Other	193.1	273.2	338.2	372.2	395.4
Exports-Imports	70.5	91.8	78.6	90.7	101.8
Ending Stocks	126.6	130.3	178.5	225.0	246.1
Wheat:					
Beginning Stocks	203.2	127.0	197.9	222.0	231.5
Production	567.9	609.7	667.5	696.2	723.4
Domestic Supply	771.1	736.7	865.4	918.2	954.9
Domestic Use					
Feed Use	111.9	96.2	113.8	113.5	113.9
Food & Other	490.0	517.2	544.7	577.1	606.1
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	166.6	120.1	204.2	225.0	231.8
Soybean:					
Beginning Stocks	12.6	26.2	37.0	35.5	33.1
Production	196.9	221.1	252.8	291.6	343.2
Domestic Supply	209.5	247.3	289.7	327.1	376.3
Domestic Use					
Crush	167.5	198.8	220.6	260.4	310.7
Food & Other	26.6	28.5	30.0	31.5	33.1
Exports-Imports	58.6	72.6	83.4	106.6	135.7
Ending Stocks	15.8	20.8	38.1	34.1	33.1
Rapeseed/Canola					
Beginning Stocks	2.8	4.7	4.6	4.4	4.4
Production	33.3	48.3	63.2	73.2	84.4
Domestic Supply	36.1	53.0	67.8	77.6	88.8
Domestic Use					
Crush	32.8	48.3	60.4	70.2	81.3
Food & Other	2.2	2.4	2.8	2.9	3.0
Exports-Imports	3.9	7.8	9.6	11.5	13.8
Ending Stocks	2.2	4.0	4.5	4.4	4.4

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 60: INFORMA CONTROL CASE: U.S. SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	40.6	33.1	44.8	57.2	62.1
Production	227.8	331.2	347.2	370.1	381.5
Domestic Supply	268.3	364.3	392.1	427.3	443.6
Domestic Use					
Feed Use	141.3	150.8	138.4	145.3	155.5
Food & Other	59.4	110.9	156.2	170.2	171.5
Exports-Imports	40.0	61.4	50.5	53.6	55.3
Ending Stocks	27.6	41.2	46.9	58.2	61.4
Wheat:					
Beginning Stocks	21.2	12.4	22.8	21.3	21.2
Production	43.7	55.8	59.9	61.2	63.1
Domestic Supply	64.9	68.2	82.7	82.6	84.3
Domestic Use					
Feed Use	3.2	0.4	5.4	4.1	4.1
Food & Other	27.3	28.9	29.1	30.5	31.8
Exports-Imports	21.0	30.6	25.7	27.1	27.1
Ending Stocks	13.4	8.3	22.4	20.9	21.3
Soybean:					
Beginning Stocks	5.7	15.6	13.5	15.1	14.9
Production	75.0	72.9	91.2	101.5	113.2
Domestic Supply	80.7	88.5	104.6	116.6	128.1
Domestic Use					
Crush	43.9	49.1	48.2	51.3	52.9
Food & Other	3.6	2.2	4.5	5.0	5.6
Exports-Imports	28.3	31.6	38.4	44.9	54.6
Ending Stocks	4.9	5.6	13.6	15.4	14.9
Rapeseed/Canola					
Beginning Stocks	0.1	0.1	0.2	0.2	0.2
Production	0.7	0.7	0.6	0.8	1.0
Domestic Supply	0.8	0.8	0.9	1.1	1.2
Domestic Use					
Crush	0.6	1.0	1.4	1.7	1.9
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.1	-0.4	-0.8	-0.9	-0.9
Ending Stocks	0.1	0.2	0.2	0.2	0.2

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 61: INFORMA CONTROL CASE: BRAZIL SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.5	3.6	9.5	9.5	9.5
Production	44.5	58.6	61.5	71.1	82.1
Domestic Supply	46.0	62.2	71.0	80.6	91.6
Domestic Use					
Feed Use	30.0	36.0	43.0	49.7	57.1
Food & Other	5.8	6.5	7.0	7.3	7.5
Exports-Imports	3.9	7.1	11.5	14.1	17.5
Ending Stocks	6.3	12.6	9.5	9.5	9.5
Wheat:					
Beginning Stocks	0.7	1.0	1.0	1.0	1.0
Production	2.9	3.8	4.2	4.4	4.6
Domestic Supply	3.7	4.8	5.2	5.4	5.7
Domestic Use					
Feed Use	0.3	0.1	0.2	0.2	0.2
Food & Other	9.4	10.2	11.3	12.1	12.9
Exports-Imports	-6.6	-5.9	-7.3	-7.9	-8.5
Ending Stocks	0.5	0.4	1.0	1.0	1.0
Soybean:					
Beginning Stocks	0.3	2.0	2.3	2.3	2.3
Production	52.0	61.0	62.5	74.9	93.7
Domestic Supply	52.3	63.0	64.8	77.2	96.0
Domestic Use					
Crush	27.8	31.9	29.8	32.3	37.6
Food & Other	3.7	4.3	3.0	3.1	3.2
Exports-Imports	19.6	24.8	29.8	39.5	52.9
Ending Stocks	1.1	2.0	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

**Table 62: INFORMA CONTROL CASE: ARGENTINA SUPPLY/USE BALANCE
(million metric tons)**

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	0.3	1.7	0.9	0.9	0.9
Production	15.5	22.0	21.1	23.9	27.0
Domestic Supply	15.8	23.7	22.0	24.8	28.0
Domestic Use					
Feed Use	2.5	5.1	4.0	4.2	4.3
Food & Other	1.6	1.9	1.9	2.0	2.1
Exports-Imports	11.2	15.0	15.2	17.7	20.6
Ending Stocks	0.5	1.7	0.9	0.9	0.9
Wheat:					
Beginning Stocks	1.1	1.1	0.3	0.3	0.3
Production	12.3	16.8	15.7	17.1	18.7
Domestic Supply	13.4	17.9	16.0	17.5	19.0
Domestic Use					
Feed Use	0.1	0.1	0.1	0.1	0.1
Food & Other	5.1	5.1	5.2	5.4	5.5
Exports-Imports	6.8	11.2	10.4	11.6	13.0
Ending Stocks	1.5	1.5	0.3	0.3	0.3
Soybean:					
Beginning Stocks	1.2	2.1	2.3	2.3	2.3
Production	35.5	46.2	49.9	60.1	75.0
Domestic Supply	36.7	48.3	52.2	62.5	77.3
Domestic Use					
Crush	24.8	31.7	39.4	46.6	56.6
Food & Other	0.8	1.2	0.6	0.6	0.7
Exports-Imports	8.4	8.9	9.9	12.9	17.8
Ending Stocks	2.7	6.5	2.3	2.3	2.3
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.0	0.0	0.0
Production	0.0	0.0	0.0	0.0	0.0
Domestic Supply	0.0	0.0	0.0	0.0	0.0
Domestic Use					
Crush	0.0	0.0	0.0	0.0	0.0
Food & Other	0.0	0.0	0.0	0.0	0.0
Exports-Imports	0.0	0.0	0.0	0.0	0.0
Ending Stocks	0.0	0.0	0.0	0.0	0.0

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 63: INFORMA CONTROL CASE: EU-27 SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	3.3	7.4	4.7	4.7	4.7
Production	57.7	47.5	60.1	63.2	66.4
Domestic Supply	61.0	54.9	64.8	67.9	71.1
Domestic Use					
Feed Use	45.1	50.6	46.5	48.6	50.9
Food & Other	12.5	12.8	14.6	15.6	16.5
Exports-Imports	-2.1	-13.4	-1.0	-1.0	-1.0
Ending Stocks	5.5	4.9	4.7	4.7	4.7
Wheat:					
Beginning Stocks	18.3	14.1	19.5	19.5	19.5
Production	132.6	120.2	137.2	140.7	144.2
Domestic Supply	150.9	134.3	156.7	160.2	163.7
Domestic Use					
Feed Use	60.0	52.4	62.0	60.6	58.5
Food & Other	65.0	64.1	67.6	69.4	70.9
Exports-Imports	7.4	5.3	7.6	10.8	14.8
Ending Stocks	18.5	12.4	19.5	19.5	19.5
Soybean:					
Beginning Stocks	1.1	1.1	0.4	0.4	0.4
Production	1.0	0.7	0.9	0.9	0.9
Domestic Supply	2.1	1.8	1.4	1.4	1.4
Domestic Use					
Crush	16.5	14.9	12.5	12.5	12.5
Food & Other	1.6	1.2	1.2	1.2	1.2
Exports-Imports	-16.9	-15.1	-12.7	-12.8	-12.8
Ending Stocks	0.9	0.8	0.4	0.4	0.4
Rapeseed/Canola					
Beginning Stocks	0.6	1.4	1.7	1.7	1.7
Production	11.8	18.4	21.9	25.4	29.2
Domestic Supply	12.4	19.8	23.5	27.1	30.9
Domestic Use					
Crush	10.5	18.3	23.9	28.4	33.2
Food & Other	0.7	0.9	0.9	0.9	0.9
Exports-Imports	0.8	-0.3	-2.9	-3.9	-4.9
Ending Stocks	0.3	1.0	1.7	1.7	1.7

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 64: INFORMA CONTROL CASE: CHINA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	84.8	36.6	63.3	69.4	69.4
Production	121.3	152.3	170.3	184.2	203.3
Domestic Supply	206.1	188.9	233.6	253.6	272.7
Domestic Use					
Feed Use	96.0	105.0	117.3	125.9	134.2
Food & Other	29.9	44.0	51.2	62.5	75.6
Exports-Imports	15.2	0.5	-0.8	-4.2	-6.4
Ending Stocks	65.0	39.4	65.9	69.4	69.4
Wheat:					
Beginning Stocks	76.6	38.5	59.8	59.8	59.8
Production	90.3	109.3	103.7	105.0	102.4
Domestic Supply	166.9	147.7	163.5	164.8	162.3
Domestic Use					
Feed Use	6.5	8.0	5.5	5.6	5.7
Food & Other	98.7	98.0	97.1	98.1	95.9
Exports-Imports	1.3	2.8	1.1	1.2	0.8
Ending Stocks	60.4	39.0	59.8	59.8	59.8
Soybean:					
Beginning Stocks	2.1	2.7	10.8	10.8	10.8
Production	16.5	14.0	16.5	17.3	18.2
Domestic Supply	18.6	16.7	27.3	28.1	29.0
Domestic Use					
Crush	26.5	39.5	54.3	75.8	103.5
Food & Other	8.8	10.3	10.6	10.9	11.2
Exports-Imports	-21.2	-37.4	-48.4	-69.4	-96.5
Ending Stocks	4.5	4.2	10.8	10.8	10.8
Rapeseed/Canola					
Beginning Stocks	0.0	0.0	0.6	0.6	0.6
Production	11.4	11.8	14.8	16.3	18.0
Domestic Supply	11.4	11.8	15.4	17.0	18.7
Domestic Use					
Crush	11.2	12.7	14.3	16.2	18.6
Food & Other	0.6	0.5	0.5	0.6	0.6
Exports-Imports	-0.4	-2.1	-0.1	-0.4	-1.1
Ending Stocks	0.0	0.6	0.6	0.6	0.6

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 65: INFORMA CONTROL CASE: CANADA SUPPLY/USE BALANCE (million metric tons)

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks	1.1	1.3	1.6	1.6	1.6
Production	9.0	11.6	11.3	12.1	13.0
Domestic Supply	10.1	13.0	12.8	13.6	14.5
Domestic Use					
Feed Use	10.2	10.2	9.9	11.7	13.6
Food & Other	2.4	3.6	4.5	4.8	5.1
Exports-Imports	-3.6	-2.2	-3.1	-4.4	-5.7
Ending Stocks	1.1	1.5	1.6	1.6	1.6
Wheat:					
Beginning Stocks	6.5	6.9	8.5	8.5	8.5
Production	16.2	20.1	25.8	26.4	26.9
Domestic Supply	22.7	26.9	34.4	34.9	35.4
Domestic Use					
Feed Use	3.7	2.1	4.2	4.3	4.5
Food & Other	4.2	4.2	4.5	4.7	4.9
Exports-Imports	9.1	16.0	17.1	17.3	17.5
Ending Stocks	5.7	4.6	8.5	8.5	8.5
Soybean:					
Beginning Stocks	0.3	0.7	0.2	0.1	0.1
Production	2.3	2.7	3.8	4.2	4.6
Domestic Supply	2.7	3.4	3.9	4.3	4.8
Domestic Use					
Crush	1.8	1.4	1.3	0.9	0.6
Food & Other	0.5	0.4	0.4	0.5	0.5
Exports-Imports	0.1	1.4	2.1	2.8	3.6
Ending Stocks	0.3	0.2	0.2	0.1	0.1
Rapeseed/Canola					
Beginning Stocks	1.2	1.8	1.1	1.1	1.1
Production	4.5	9.5	12.6	15.9	20.0
Domestic Supply	5.7	11.3	13.7	17.0	21.0
Domestic Use					
Crush	2.2	4.1	6.0	7.6	9.6
Food & Other	0.2	0.2	0.4	0.4	0.4
Exports-Imports	2.2	5.6	6.1	7.9	9.9
Ending Stocks	1.2	1.4	1.1	1.1	1.1

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA

Table 66: INFORMA CONTROL CASE: REST OF WORLD SUPPLY/USE BALANCE
(million metric tons) 1/

	2002	2007	2012	2017	2022
Corn:					
Beginning Stocks					
Production	127.5	168.4	191.4	209.4	229.0
Domestic Supply					
Domestic Use					
Feed Use	108.2	138.8	151.7	167.4	184.4
Food & Other	81.4	93.6	102.8	109.9	117.2
Exports-Imports	-63.0	-67.8	-63.1	-67.9	-72.6
Ending Stocks					
Wheat:					
Beginning Stocks					
Production	269.9	283.7	321.0	341.5	363.4
Domestic Supply					
Domestic Use					
Feed Use	38.1	33.0	36.4	38.6	40.8
Food & Other	280.3	306.7	329.7	356.9	384.1
Exports-Imports	-36.5	-56.8	-45.1	-54.0	-61.5
Ending Stocks					
Soybean:					
Beginning Stocks					
Production	14.5	23.6	28.0	32.6	37.6
Domestic Supply					
Domestic Use					
Crush	26.2	30.4	35.2	41.0	47.1
Food & Other	7.6	8.8	9.7	10.2	10.7
Exports-Imports	-18.8	-15.0	-16.9	-18.6	-20.2
Ending Stocks					
Rapeseed/Canola					
Beginning Stocks					
Production	4.9	8.0	13.3	14.7	16.2
Domestic Supply					
Domestic Use					
Crush	8.3	12.2	14.8	16.4	18.0
Food & Other	0.7	0.8	1.0	1.0	1.1
Exports-Imports	-2.9	-3.4	-2.2	-2.4	-2.9
Ending Stocks					

1/ World less US, Brazil, Argentina, EU-27, China and Canada

Shaded area represents Informa Economics forecast.

Based on Northern Hemisphere Crop Year.

Source: USDA