

1 Global Markets for Agricultural Products 2003 - 2012

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Introduction

Every year the Food and Agricultural Policy Research Institute brings together agricultural analysts from several universities to develop a long-term, constant policy baseline for the agricultural sector. This baseline is developed in the late fall, subjected to extensive peer review by other analysts, literally from around the world, and then finalized in late January subsequent to release of official reports on the previous year's crop production levels. Over 25 different researchers contribute to the development of this baseline. As part of the FAPRI-Ireland partnership, a relationship that is now in its 7th year, the baseline is updated and specific EU-15 adjustments made to allow for the development of the FAPRI-Ireland baseline presented in this document. It too is subjected to considerable peer review before being finalized and represents extensive collaboration between researchers at Teagasc and the University of Missouri.

The 2003 global baseline reflects a variety of the short-term issues that have and will continue to affect the sector. These range from crop short-falls in the northern and southern hemisphere to the continued economic weakness, from the continuing sanitary and phytosanitary (SPS) difficulties in a number of countries around the world, to the unfolding agricultural policy and trade reform process.

There are three major macroeconomic drivers of this baseline projection. They are (i) continued weakness in Latin American economies, (ii) recovery in most of the rest of the world -- particularly central Europe and several members of the Former Soviet Union, and (iii) a significant devaluation of the United States dollar relative to many of the other major currencies including the euro.

In general, after the short-term price spikes in the grains and oilseed sectors brought on by the production difficulties in countries such as the United States, Canada and Australia, world grain and oilseed prices are expected to return to levels observed in the 1999- 2002 period.

Global meat production is anticipated to rise by 18% in the coming decade. Consumption in meat deficit regions is expected to rise even more. World beef trade displays a 3% annual rise over the next 10 years. International dairy product prices have already shown some signs of recovery this year relative to the depressed values seen in 2002.

Milk production is expected to decline in 2003 in both Australia and Argentina relative to 2002 levels. Prices of the major dairy products are projected to rise in 2003 with respect to their depressed 2002 levels, but for the most part remain below their 2001 levels for the duration of the projection.

Box 1-1 – The Nature of a Baseline

This section of the report provides a description of the constant policy baseline developed for analysis purposes for the FAPRI-Ireland partnership. It is very important to understand the baseline does not represent a specific forecast of what will develop. The baseline is conditioned on the key assumption that policies currently in place, remain as such throughout the projection period.

Not only are support prices, tariffs, and the like held at current or previously agreed levels, but governments are assumed to implement programs in a manner consistent with current practice. For example the baseline assumes the European Commission continues to balance a variety of concerns in setting export restitution rates or selection of set-aside rates in crops.

In short, this baseline can be seen as the control in a set of policy analysis experiments that will be conducted by FAPRI-Ireland staff for the year to come. The point has been made in several FAPRI baseline documents in the past, but needs to be placed squarely up-front. That being said, the baseline does give strong guidance as to where the sector is likely to head, absent policy change.

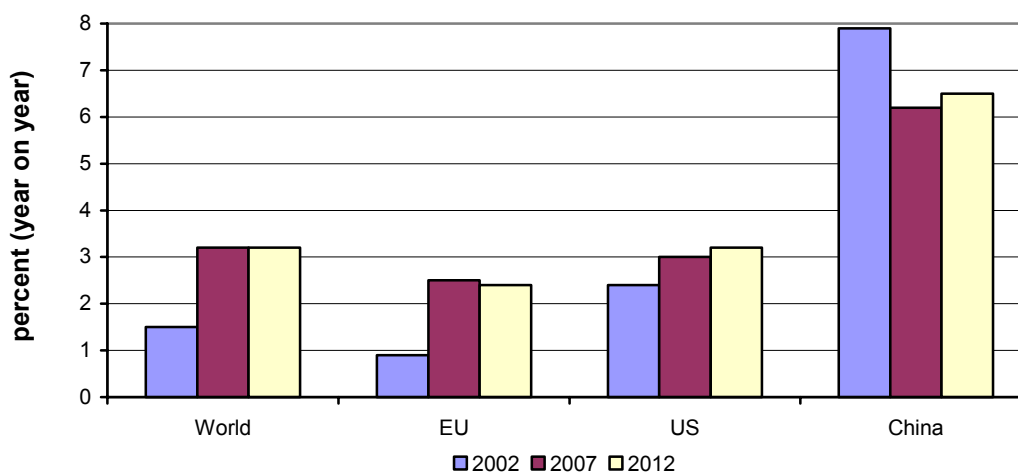
1.1 The General Economic Outlook

The FAPRI-Ireland partnership draws its general economic projections from Global Insight. Global Insight, under a variety of different names and ownership, has been developing projections of the general economy for over 25 years. The figures used in the analyses in this publication are drawn largely from the January forecast which is used to generate the FAPRI global baseline. Since then, the short-term outlook has changed considerably, highlighting the fact that macroeconomic uncertainty is an important consideration when interpreting the baseline.

In general EU-15 member countries experienced economic slowdowns in 2002 and the recovery anticipated for 2003 is expected to be fairly weak at less than 2%. There are a variety of causes for this economic weakness ranging from the lack of productivity growth, the frequently cited 'restrictive' labor laws, and under-investment in capital. These issues being taken on board, the region is still expected to show increased economic activity in 2004, when growth rates are expected to reach 2.4%. In subsequent years EU-15 growth should slow only slightly to average 2.3% per year for the rest of the projection period.

Closely tied to the EU-15 are the Central European countries. Poland, Hungary and the Czech Republic in particular were affected by the slow-down in the EU-15. Poland's GDP actually only grew by 1.1% per year in 2001 and 2002. Some of the limitations to growth in these countries have been associated with efforts to prepare for accession to the EU. Now that much of the negotiations associated with their entry are well underway or even completed, it is expected that their economies will show noticeable improvements.

Figure 1-1: Selected Country/Region Real Economic Growth



Source: Global Insight

The United States economy has certainly operated in a mixed picture during late 2002 and early 2003. Uncertainty on the international scene, significant weakness in the equity markets and sharply rising federal deficits have all contributed to the noticeable declines in consumer confidence. Given the size of the contribution of consumer spending to the general economy in the United States, anything that puts pressure on consumer spending will quickly cause the overall economy major concerns. Even so, there have been some bright spots in the picture. Some corporate earnings reports are suggesting that costs are being brought under control and that profits may actually come in higher than expected in 2003. With reduced uncertainty around the Persian Gulf, oil prices have dropped off considerably, lessening that inflationary pressure. The productivity gains of the late 1990's and early 2000's also appear to be continuing and labor costs for several industries are being held in check. In total, the United States economy should show significant growth by 2004, with a real increase of 4% expected. Subsequent years should see a more sustainable growth level, with year-on-year improvements of 3-3.2% expected.

Staying in North America, the Canadian economy is expected to show noticeable growth in 2003, reaching 3.5%. Their economy did not dip to the same extent as the United States in 2001, and thus recovers somewhat more quickly. Mexico, very dependent on the other members of the North American Free Trade Agreement, saw its economy slip into a recession in 2001, but also showed

recovery in 2002. While there are certainly several regional areas of concern, particularly in the rural areas, the overall Mexican economy is expected to show year-on-year growth of over 4.5% in the coming decade.

Japan's economy continues to struggle. While Japan is expected to emerge from the 2002 recession in 2003, it is anticipated to show weak economic growth throughout the projection period, displaying less than 2% annual improvement for much of the future.

This weakness in the Japanese economy will affect several other Asian countries, especially Korea, Singapore, Hong Kong and Taiwan. The region as a whole was still able to post 3% growth rates for 2002, with strong internal consumer demand, export expansion and more stable political environments. Investment spending, however, is not expected to show rapid growth, given the amount of current production capacity that is now underutilized.

China, the other major player in the region's economy, is expected to remain a significant economic engine with annual growth expected to be about 7%. While some of the reported data may be unreliable, the continued structural reform and accession to the WTO should help reinforce Chinese economic growth. Certainly the country requires growth near this range, just to provide enough new employment for the growing population. Also, the transition of power with the old guard remaining in positions of strong influence, suggests that the continuation of economic reform policies.

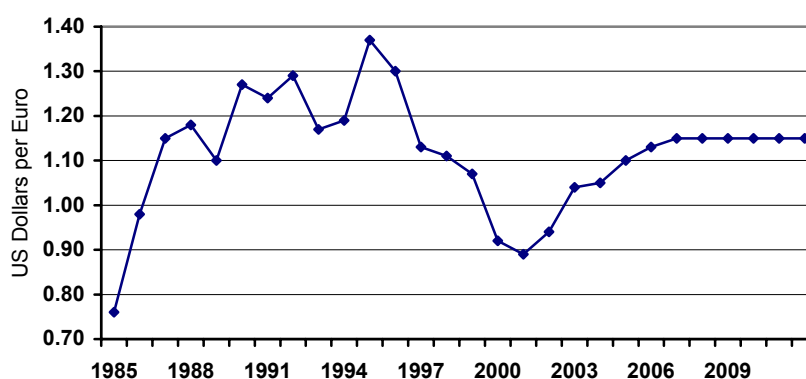
Driven in part by some of the oil price spikes observed in the last several months, Russia has shown considerable growth. While oil price declines may dampen some of this growth, the country as a whole and indeed several of the other states of the former Soviet Union are expected to do fairly well over the next several years. With improved political stability, Russia, Ukraine, and the Baltic countries in particular are expected to demonstrate 4-5% annual economic growth from 2004 through the rest of the projection period.

The outlook for several Latin American countries remains clouded. While possessing considerable natural resources, the region's political and economic policies have severely dampened growth prospects. Heavy debt and political instability have certainly put pressure on the system. The Argentine economy contracted at a rate of 13.7% in 2002 and Uruguay also went through severe down-turn. The political turmoil in Venezuela continues to affect the economy there. Brazil has managed to dodge some of the difficulties experienced in many other Latin American countries. Over the last four years the economy there has grown by 0.9%, however this is expected to dip further in 2003 with growth of only 0.5%. Assuming a return to political stability in the region, their economies are expected to display 3-5% annual GNP growth through much of the rest of the projection.

African economies have also been through a period of turmoil due partly to political instability. South Africa should continue to grow in the 2-2.5% range over the projection. Nigeria, however, is expected to see economic growth approach 4% and above by the end of the period. Egypt as well should show improvement over current conditions by the middle of the decade, reaching 5% growth rates by 2007.

Almost as important from a trade standpoint as general economic growth are anticipated shifts in exchange rates. The Euro has depreciated relative to the dollar since its introduction, but started to appreciate in 2002. It is expected to continue to appreciate over the next 6 years, making European products more expensive on world markets. The yen also depreciated in 2001 and 2002 relative to the United States dollar, but it has shown some appreciation in 2003. Over the remainder of the projection period, the yen is expected to continue to increase in value relative to the U.S. dollar.

Most currencies moved lower relative to the United States dollar in 2001, but recovered value in 2002 as the United States economy weakened and several other economies improved. Further, the low interest rates in the United States have also helped contribute to the weak dollar. For the most part, the dollar is expected to weaken relative to most of the major economies throughout the projection. Conversely, the dollar continues to appreciate in nominal terms relative to all of the Latin American currencies. Argentine currency devalued by 215% relative to the dollar in 2002. The Brazilian real is also expected to devalue at double digit rates early in the period, and to continue to devalue down to an annual rate of 4% by the end of the period. These projected rates of currency devaluation in Brazil and Argentina are lower than projected inflation rates, however, implying that the real value of their currencies is actually rising. This is one factor that may dampen area expansion in these countries.

Figure 1-2: U.S. Dollar per Euro

Source: Global Insight

Many of the Asian currencies are also expected to devalue relative to the United States dollar through the projection, although Thailand and Taiwan are expected to move in the other direction. African and Middle East currencies should also decline in value relative to the dollar.

1.2 Agricultural Policy Assumptions

Like previous FAPRI baselines, this one assumes that all current government programs and international trade agreements remain in place throughout the projection period. The major policy change in this baseline relative to last year's is the adoption of the Farm Security and Rural Investment Act of 2002 in the United States. This bill will govern agriculture in the United States through the 2007 crop year. Major provisions of the bill are presented in Box 1.

The Uruguay Round Agreement for Agriculture (URAA) specifies country-specific commitments related to export subsidy limits, tariff rate quota (TRQ) expansion, import duty reduction and domestic support limitations. Developed country commitments for 2001 are assumed to remain in place throughout the projection period. The URAA gives developing countries until 2004 to implement certain commitments and the baseline holds these commitments fixed from 2004 through 2012. China became a member of the WTO in December 2001 with Taiwan following in January 2002. This baseline includes all of the policy provisions associated with the accession of these countries to the WTO. This baseline does *not* include any further trade related policy adjustments such as may result from the Doha round of trade discussions.

Probably the biggest policy change that will occur during the next year will be the formal accession of the 10 candidate countries (Poland, Hungary, Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Cyprus and Malta) to the European Union. Development work associated with the baseline occurred well before the April signing of the accession agreement, consequently their accession is *not* incorporated in this baseline. However, provisions in the zero-for-zero and double profit agreements between the EU and the individual incoming members are included in the baseline.

Beyond the issue of the incoming countries, provisions of Agenda 2000 are incorporated in the baseline, including the dairy sector reforms from 2005 to 2007. The core spirit of the reform is mainly to substitute price support with decoupled compensatory payments. The cereal and oilseed compulsory set-aside is set at a constant 10% rate in the baseline. Import tariff reductions included in the "Everything But Arms" initiative are implemented under the pre-set schedule.

The Over-Thirty-Month-Scheme in the United Kingdom is assumed to be phased out from 2004. Only the private storage aid and safety net intervention at €1,560 per metric ton is included for the beef regime in the long run. Dairy in the EU-15 continues to operate on the quota system. Quotas for most countries are increased by 1.5% over the three-year period beginning in 2005 (a 1.2 percent EU increase overall). Butter and SMP intervention prices are dropped by 15% in three equal steps beginning in 2005 as well.

2000 saw the dismantling of the Australian Dairy Market Support scheme, however market price support for butter and SMP remain intact and are assumed to extend throughout the baseline.

A full listing of the policy assumptions with regard to policy prices, subsidized export limits, access commitments, TRQ's and other policy parameters is available at www.fapri.iastate.edu/outlook2003.

1.3 Crops Sector Outlook

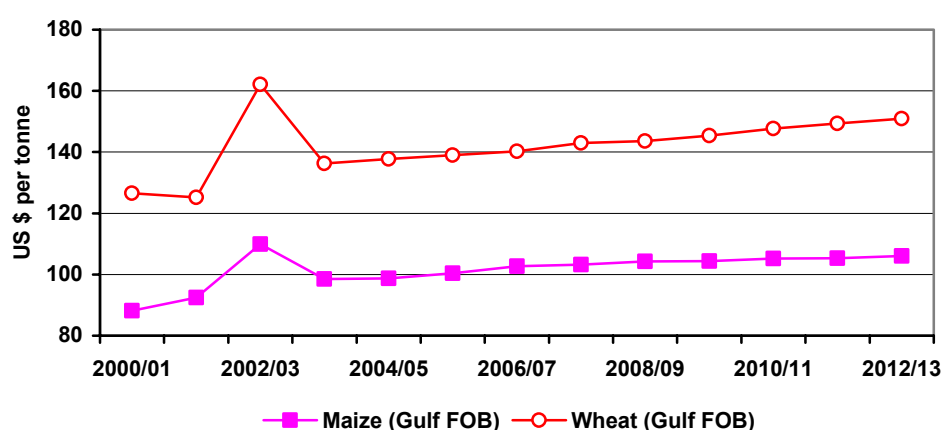
The price spikes observed in many world grain markets for the 2002/03 marketing year should dissipate with the coming Northern Hemisphere growing season. In reaction to those higher prices, total global area for wheat in particular but also for most other crops should rise in 2003/04. With a return to normal weather assumed in the baseline, this should raise grain and oilseed supplies and lead to downward price pressure in world markets. Longer term, grain prices are expected to display slight increases through much of the projection period. On the other hand, oilseed prices, soybeans in particular, are expected to peak in the middle years of the projection and then actually show declines in the latter half.

1.3.1 Wheat

Lower world area, stock draw-downs, drought induced production shortfalls in the United States, Canada and Australia and continued strong world demand all contributed to a substantial increase in U.S. dollar denominated world wheat and other grain prices for the 2002/03 marketing year. The world wheat price is expected to average \$162 per tonne (fob Gulf Ports) for the current year, the highest level since 1996/97. Assuming a return to more normal rainfall patterns, and an increase in area in response to higher prices, 2003/04 marketing year prices are expected to fall 18% back to \$136 per tonne, only slightly above prices observed in the previous five years. With continued strong demand and limited production expansion, wheat prices are expected to show slight upward pressure through much of the projection period.

A brief review of history shows that world wheat area has been declining year-over-year since the 1996/97 growing season. In 2002/03 world wheat area totaled only 212.2 million hectares, a record low. For 2003/04 however, production is expected to recover due in part to the higher prices, but also due to a recovery in Australian and Canadian plantings in response to more normal weather patterns. Together these factors should boost 2003/04 plantings by 8.7 million hectares. Over the projection period however, area is expected to return to the downward trend observed for the last several years, dipping to 218.4 million hectares by the end of the period.

Figure 1-3: Gulf Port Wheat and Maize Price



Source: FAPRI (2003)

Box 1-2 – U.S. Agricultural Policy – The New Farm Bill

One of the major policy differences relative to last year's baseline is the incorporation of the Farm Security and Rural Investment Act (FSRIA) otherwise known in the United States as the 2002 farm bill. This replaces the 1996 Federal Agricultural Improvement and Reform Act, often referred to as the Freedom To Farm Bill. In several respects, the new bill continues many of the 1996 provisions, but there are some important differences. Most of these changes will have a greater effect on the crop sector and thus on other member countries of the EU-15, but there are some provisions that will directly affect Ireland.

Carried over from the old farm bill are fixed payments and marketing loan programs for program crops. Fixed payments are now referred to as "direct payments" and are not tied to either current production or market prices. Marketing loan provisions provide support if actual prices dip below specific levels set for each crop. These marketing loan payments are directly tied to both production and current market prices. Given that a producer may elect the day that they wish to determine the payment rate, these marketing loan gains are the most "coupled" of all the programs.

A major new provision under the FSIRA is known as the Counter-Cyclical Program (CCP) payments. Like the old deficiency payment program, CCP payments will be made only if prices for a given commodity are below a mandated level. Unlike marketing loans, these CCP payments will be made on a farmers' historical production and thus are not tied to current production. In this sense, the CCP is a hybrid between the direct payments and marketing loan programs. They are determined by market prices, but are not affected by an individual producer's planting decisions.

Another major provision of the new bill allowed producers a one-time opportunity to update the acreage upon which payments were made. Previously farmers were paid based on acreage decisions and yield levels set in the late 1970's through the early 1980's. This update provision is theoretically a one-time option, but it does beg the question of whether future farm bills will allow renewed updates. The bill also makes soybeans, sunflowers and peanuts eligible for the same payment programs as grains. This is a major shift for peanuts, which had operated under a quota program in the past.

The sugar program continues very close in form to the previous farm bill with the loan rate for raw cane sugar set at \$0.18 per pound.

The dairy price support program continues, again with the milk support price set at \$9.90 per hundred pounds. In addition, the bill establishes the Milk Income Loss Contract (MILC). Payments are made on 45% of the difference between 16.94 and the Boston price on up to 2.4 million lbs. per farm. Over 40% of the country's milk supply will not receive these payments. This program is set to terminate September 30, 2005, and the baseline includes this policy assumption. The baseline also continues full funding of the Dairy Export Incentive Program (DEIP) for non-fat dry milk.

A significant amount of new monies were provided for conservation programs in the new bill. Among existing programs, the Conservation Reserve Program will be expanded to allow up to 39.2 million acres into the system. Funding for the Environmental Quality Incentive Program, which provides support to producers to meet the cost of complying with environmental regulations has been increased significantly. Livestock operations are earmarked to receive 60% of these new funds. The major new addition is the Conservation Security program. This program will provide for an increasing set of payments to producers as they select from an escalating set of environmentally supportive production practices.

Also important from a livestock standpoint is the adoption of a Country of Origin Labeling program. This program requires retailers to label most meat and several other agricultural products as to their country of origin. Only animals born, raised and processed in the United States will be allowed to carry the United States source label. The program will be voluntary until October 2004 at which point it is scheduled to become mandatory. While retailers will face considerable fines if they are found to mislabel product, the Secretary of Agriculture is precluded from establishing a mandatory traceability program. Needless to say, the development of the final rules around this program is the source of considerable debate.

To keep up with growing world demand, it will be very important for yields to grow with population and general consumption increases. Over the coming ten years it is expected that wheat consumption will grow by 101.3 million tonnes.

World wheat net trade is expected to grow at 3-4% annually, reaching 104.2 million tonnes by 2012/13. Asia, Africa and the Middle East account for most of this growth due to growing demand and only limited ability to supply these markets. Conversely, net imports by Latin American countries are expected to decline slightly due to increased Argentine production.

Probably the most significant wild-cards in the projection for wheat markets are the future behaviors of Russia and Ukraine. Emerging as major exporters in the last few years, they have forced significant reform of trade policies in the EU. Their production is expected to decline in 2003/04, which should also reduce their export levels. Recent market information available after the development of this baseline suggests that 2003 supplies in Russia and Ukraine will be even smaller because of adverse growing conditions. The baseline projects both Russia and the Ukraine to be exporting countries throughout the projection, albeit at lower rates than were observed in the 2002/03 marketing year. Russia exports are expected to remain in the 4-5 million tonnes range with the Ukraine shipping 5-6 million tonnes.

East Asian countries together with China are projected to show the strongest growth in net imports. China is expected to be a net importer starting in 2003/04. Imports should grow rapidly in subsequent years, although macroeconomic conditions are expected to lead to a slowdown after 2007/08. Chinese wheat imports are expected to peak at 6.8 million tonnes in 2007/08 and then dip to only 4.7 million tonnes by 2012/13.

India has also emerged as a significant wheat exporter, expected to ship 9.5 million tonnes in 2003/04. In later years however, internal consumption is expected to offset production growth, limiting exportable supplies. This should lead to Indian wheat exports falling through the projection period to a low of 3.4 million tonnes by the end of the baseline.

Australian production is expected to jump back to 22.4 million tonnes in 2003/04 as both area and yield recover. Primarily due to yield improvements, overall production should hit 25.5 million tonnes by the end of the projection. Exports will follow a very similar path moving from 15 million tonnes in 2003/04 to 17.4 million tonnes by 2012/13. Australia is expected to regain market share in 2003/04, but then lose share in later years as this limited production growth does not keep track with growing world demand. Wheat area is projected to decline as barley area and sheep production increase.

Canada is also expected to recover from weather difficulties in 2003/04. Production should hit 22.7 million tonnes in 2003/04 and then grow by 4% annually thereafter. This should generate production of 32.9 million tonnes by 2012/13. The recovery should let Canada begin to recover market share, but it will be a number of years before it returns to its 2001/02 proportion. Exports are expected to rise by 13.6 million tonnes over the projection period, reaching 21.3 million tonnes by the end of the baseline.

1.3.2 Coarse Grains

The 2002/03 marketing year has seen some fairly high coarse grain prices due to area declines and lower stock levels. Like wheat, these higher prices are expected to lead to a 3.7 million hectare boost in area in 2003/04. This rise in production should lead to lower prices for the 2003/04 marketing year again pushing area back down. Over the projection period, world coarse grain area should remain under pressure, dipping to 231.2 million hectares by 2012. This is still higher than the levels observed for 2002/03. Corn should gain share slightly at the expense of barley and sorghum on a global basis, reaching 60% of all coarse grains planted by the end of the period. Over the projection period production rises by 143 million tonnes to 917 million tonnes in 2012/13, due mainly to yield growth. Consumption is expected to rise by 13% in the baseline due to strong demand from Asian countries and higher livestock production. World coarse grain trade is then projected to grow at an average rate of 2%. Canadian and Australian barley markets should recover from last year's shortfall and show the strongest growth of all coarse grain exports. This should lead to an increase in their market share from 14.5% to 18% of world coarse grain trade by 2012/13.

Coarse grain prices indicated by maize averaged \$110 per tonne for the 2002/03 marketing year. This occurred in the face of a 4% decrease in the global stocks-to-use ratio. In 2003/04 the nominal Gulf FOB maize price is expected to drop 12% due to a recovery in production. In subsequent years maize prices are expected to rise at an annual rate of 0.8% getting back to \$106 per tonne by the end of the period. The main demand pull for coarse grains in general and maize in particular comes from feed use. Global feed use for maize is expected to hit 500 million tonnes by 2012/13, a 67 million tonne increase from current levels. This growth in feed utilization should contribute to growing trade in maize, with trade expected to hit 81 million tonnes by 2012/13.

Barley trade is also expected to grow steadily at an annual rate of 4%. This should come mainly from higher demand in China as well as Saudi Arabia. World barley prices are expected to dip 16% in 2003/04 relative to 2002/03 levels, but then should move up through the remainder of the period to hit \$118 per tonne in 2012/13. Australian barley production and exports should return in 2003/04 as should Canada. Canadian barley trade is expected to begin to show declines in the middle of the projection period due to rising internal demand for feed.

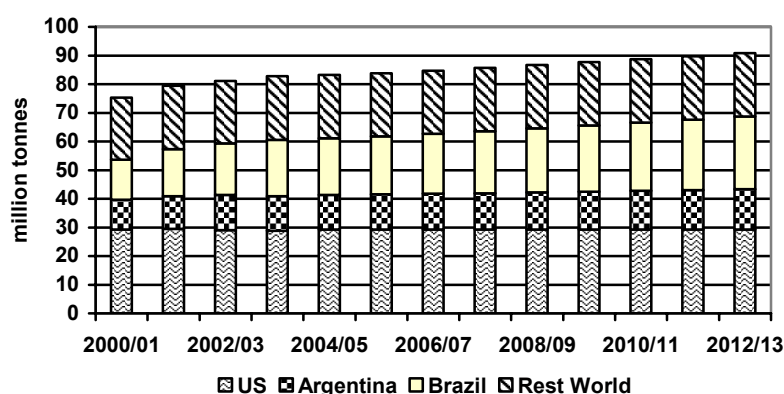
1.3.3 Oilseeds

Like wheat and coarse grains, world soybean prices jumped strongly in 2002/03 due to strong demand growth and limited supplies. And like wheat and coarse grains, prices are expected to dip significantly in 2003/04, as production returns to more normal levels and as area expands slightly in response to the higher prices. High oil demand has also helped boost prices in the recent past, as have reductions in rapeseed production. This shortfall in rapeseed production has caused prices for that commodity to increase for the third year in succession. In the long run, the historical relationships between the various oilseeds are expected to re-emerge.

Increases in rapeseed and sunflower area growth, as well as continued South American expansion should lift oilseed area by 14.3 million hectares through the life of the baseline. More than 60% of this expansion is likely to come in the South American soybean sector.

Total oilseed production should hit 354 million tonnes in 2012/13 with the increase in production coming both from expanded area and higher yields. Oilseed crush is expected to grow by 25% over the baseline to meet rising demand for both meal and oil. Developing country economic expansion should boost demand for oil for human use and for protein meals as an animal feed. World oilseed trade is expected to rise by 45%, while trade in the products is anticipated to increase by 25% and 27% for meal and oil respectively. This is due in part to importing country policies to stimulate their own employment opportunities by crushing the oilseeds internally, rather than import the product and leave the development opportunities in the exporting country.

Figure 1-4: World Soybean Area



Source: FAPRI (2003)

Not surprisingly, soybeans account for much of the growth in import demand, followed by rapeseed and sunflower seed. Most of the increase in soybean imports comes from China and other smaller importers in the Middle East and North Africa. In 2008/09, China is expected to surpass the EU to

become the largest importer of soybeans again as result of both strong oil and meal demand. Chinese soybean net imports almost double over the baseline, moving from 13.7 million tonnes in 2002/03 to 26.2 million tonnes in 2012/13. Over the baseline, the EU is expected to only increase its imports by 1.1 million tonnes.

Brazil captures 61% of the expansion in soybean trade, with the United States and Argentina limited to only 9% each. Canada dominates the export market for rapeseed with China and Japan taking more than 60% of the total imports.

1.4 Meat and Livestock Sector Outlook

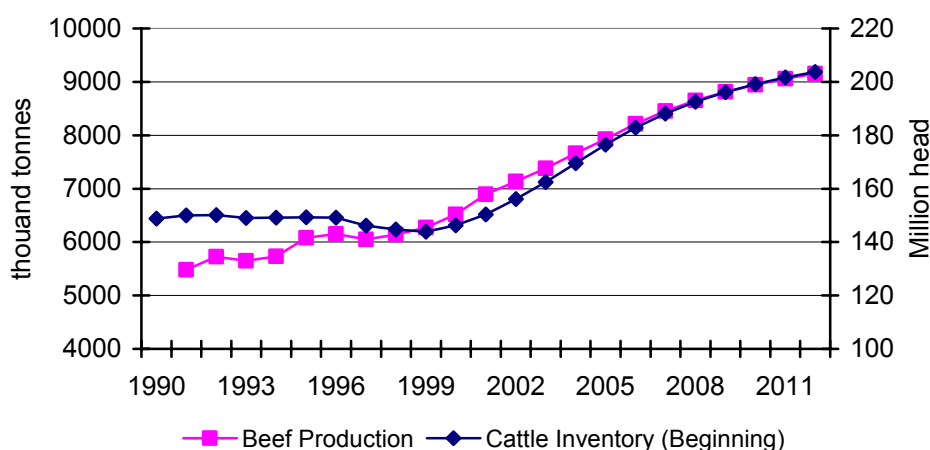
Animal diseases from BSE (Bovine Spongiform Encephalitis) to Foot and Mouth Disease (FMD) in livestock to avian flu in poultry, have played dominant roles in disrupting traditional production and trade patterns for the world livestock sector over the last several years. The baseline does not include projections of future animal health problems.

1.4.1 Beef and Cattle

The two-year decline in beef trade due to BSE and FMD should reverse itself with trade growing by an annual rate of 3% in the next ten years. Beef production also recovers, and should grow by 1.5% per year over the same period. This should take world beef production to 54.7 million tonnes by 2012. Production expansion in some of the major importing countries such as Mexico and Russia should lead to slight reductions in trade growth by the end of the period, but overall world beef trade should reach 4.1 million tonnes by the end of the period.

The Brazilian cattle herd has been steady to slightly down over the last several years. With more economic stability and continued emphasis on promotion of Brazilian products in world markets, the herd there is expected to grow considerably during the projection period. At an average growth rate of 2.2% over the life of the baseline, the Brazilian cattle herd is expected to hit 191 million head by 2012. With that growth in the size of the herd, beef production is expected to grow to 9 million tonnes in the same year. This translates into a 24% rise in beef production, which is coupled with a 15% rise in per capita consumption or a 21% rise in total domestic utilization. Productivity gains and a rise in the size of the cattle herd should allow Brazil to significantly increase market share in beef trade over the coming decade.

Figure 1-5: Brazilian Cattle Herd and Beef Production



Source: FAPRI (2003)

Also affected by FMD outbreaks, Argentina has faced delays in the opening of the United States, Canadian and Chilean markets, also limiting its beef export recovery. Currency devaluation over the life of the coming baseline is expected to keep Argentine beef very competitive, allowing net exports of 480 thousand tonnes by the end of the period. While a significant increase from current levels, this would still be less than the 1995 peak of 530 thousand tonnes.

The same poor weather that limited wheat production in Western Canada also limited its exportable surplus of both beef and live animals. This was particularly true of Alberta and Saskatchewan. Over the life of the projection period however, with the normal weather assumption built in, Canada's net exports of both cattle and beef rise by 2% and 5% respectively on an annual basis. By 2012, Canadian live cattle exports are expected to reach 1.7 million head while at the same time exporting 384 thousand tonnes of beef.

Asian markets are likely to see increased imports of live cattle due primarily to a combination of growing demand for beef and tariff policies that favor the importation of live cattle. Because of location and other advantages, Australia tends to dominate which should lead to a boost in Australian live cattle shipments, which should reach 1.2 million head by 2012.

Japan's weak economy and a lack of consumer confidence due to BSE scares and mis-labeling have led to a noticeable decline in per capita consumption of imported beef. As demand recovers and internal production continues to decline, beef imports should once again show significant growth over the projection period. By 2012, beef imports are expected to reach 1.1 million tonnes.

The outlook for U.S. beef prices is that they are set to rise for the next few years. After declines in 2002, prices for cattle have improved significantly so far in 2003. The price decline in 2002 came from higher supplies of almost all meats. Beef production rose by 500 thousand tonnes in 2002 relative to 2001 levels due in large part to a 9 kg/head increase in slaughter weight. Pork and poultry supplies were also up, with the restriction on poultry trade to Russia pushing a significant supply of broilers into the domestic market. With the number of cattle slaughtered down by 800,000 head in 2003 relative to 2002 and slaughter weight dipping slightly from last year's levels, production is expected to dip 2.7% in 2003. It is expected to continue to decline in 2004 and 2005 as animals are held for breeding herd buildup and slaughter weights remain unchanged. In subsequent years, the increase in the herd size should lead to higher year-on-year supplies through the remainder of the projection.

While difficult to project a 'world price' for beef, the next three years should see price increase on beef markets, particularly for the high quality cuts, as the United States continues to move through a cyclical decline in supplies associated with the early stages of a herd rebuilding effort. This increase in prices is likely to continue over the next three to four years with downside pressure extending through much of the remainder of the projection.

1.4.2 Pigs and Pigmeat

The transformation of the pork sector from a back-yard, scrap feed based systems into the highly technical, confinement production systems has greatly expanded the productive capacity for pork around the world. Rising incomes in countries that are not major pork-producing regions are expected to increase demand for pork and for pork imports. This will generate world pork trade over the period to 2012. Like beef, it is difficult to describe a specific world price for pork, however the United States market does set the tone for global pork prices. In the recent past, a boost in pork production and other meat supplies caused a decline in pork prices in 2002. Reacting to those low prices, production is expected to decline, leading to upward price pressure in 2003. These prices are expected to move in a cyclical fashion through the projection period, hitting peaks in 2005 and 2011.

The Brazilian pig sector is expected to grow by nearly 3% per year during the baseline, led by both strong exports and domestic demand. Per capita pork consumption is expected to rise by 13% over the coming decade. Expanded production and strong market promotion by the Brazilian government should also contribute to stronger exports even into previously untapped markets (such as Russia). Brazil should boost pork exports by 5.5% per year to a total of 599 thousand tonnes by the end of the period.

East Europe, primarily led by Poland, should also increase exports toward the end of the decade, even with zero-for-zero agreements in place. As these countries go through the structural adjustment needed to comply with the sanitary standards required by the EU, their exports are also expected to pick up.

Japanese consumers, like those in Europe, also switched to pork from beef due to food safety concerns in 2002. This boosted per capita pork consumption and imports by 3 and 5% respectively.

Consequently, safeguards to limit explosive growth in meat imports were triggered in August 2002. Domestic production is expected to decline slightly on a year-over-year basis throughout the projection period, while consumption is expected to grow at 1% per year. This should prompt pork imports to grow by 16% over the projection period, reaching 1.3 million tonnes in 2012.

China's net pork exports have declined steadily since 1995. While China has the potential to be a huge market for pork imports, the baseline is structured along a more middle path due to the large portion of China's pork supply that still comes from backyard producers. Demand for low value cuts is projected to require imports of 210 thousand tonnes by 2012. On the other side, due to the continued quantity of the less commercialized production units and their associated sanitation challenges, it will be difficult for China to emerge as a major exporter. Hong Kong is also expected to see significant import growth, reaching 379 thousand tonnes in 2012.

Staying in Asia, South Korea has gained a significant share of the Japanese market as all of the animal health concerns have rolled through the market. In particular it has captured significant markets from Taiwan. Outbreaks of FMD in the South Korean production system restricted their shipments to Japan. Similar to Japan, a weak economy and depreciating currency reduced 2001 imports by South Korea. Given that South Korea must import most of its feed and the resulting higher cost of production and further sanitary concerns, South Korea's export recovery is expected to be modest relative to historical trade prior to the FMD problem.

Mexican demand for pork is expected to increase considerably over the projection. Annual average increase in consumption should be 2.7%. Even though the industry is attempting to integrate, and there is foreign direct investment, limited availability of low cost feeds and credit are expected to limit growth in domestic pork production to just over 1% per year. This will keep Mexico as a major pork importer, with annual imports peaking at 539 thousand tonnes by the end of the projection.

Russian production is beginning to come on line as an improved overall economic situation begins to develop. Production is expected to grow by an average of 2.2% per year but pork is expected to face significant competition from beef and poultry products. Consequently, pork imports are expected to dip slightly falling from 699 thousand tonnes in 2002 to only 546 thousand tonnes by the end of the projection.

The North American partnership in pork production between the United States and Canada is expected to continue to provide a major source of expanded pork production over the period. Canada should expand production and exports of pork while at the same time shipping considerable number of feeder animals into the United States. Pork export increases should average 5.8% over the projection, reaching 1.2 million tonnes by the end of the period. At the same time, exports of live animals are also expected to grow by 1% per year, reaching 5.8 million head by 2012. United States pork production growth is expected to exceed increases in domestic consumption, allowing for export expansion of 5.8% annually allowing the United States to boost trade share.

1.4.3 Poultry

In addition to being very price competitive, poultry also has the perception of being healthier than some of the other meats, making for very strong consumption growth in many countries. On the production side, the advanced technologies associated with poultry production and the integrated supply chain, have all contributed to making for a very dynamic industry. Over the life of the projection period, global poultry production is expected to rise by 22.1%. Given that several countries have limited production capabilities, this leads to an increase in world poultry product trade of 40.3% over the projection period, while at the same time, world poultry prices are expected to grow by less than 1% per year.

China again has the potential to be a major importer of poultry products, and is expected to be a net importer of broilers by 2004. Imports are expected to reach 311 thousand tonnes by 2012, but again, could be much higher, should the small difference between consumption and production that currently exists favor demand over supply. Chinese exports of poultry products on the other hand are facing challenges in world markets due to phytosanitary concerns primarily. Live exports to Hong Kong for example have been stopped due to reported cases of avian flu.

Taiwan has traditionally been a minor importer of poultry products, even though they face fairly high production costs. In the past imports have stayed around 12 thousand tonnes, due to the 19 thousand tonnes import quota program operated by Taiwan. With the entry into the WTO, these quota programs are eliminated and the import tariff drops from 40% to 25%. Consequently Taiwan is expected to boost imports by 32% over the baseline.

East Europe is also expected to see an increase in poultry imports as higher income growth levels should contribute to increased internal consumption. At the same time, production is likely to grow as well, but not by enough to offset the demand rise. Shipments into the region are expected to increase by 7% per year during the baseline.

Russian poultry production essentially collapsed in the early 1990's, forcing a reliance on imported poultry products to fill the domestic demand. With an improving general economic picture their internal production system has begun to come back on line, and is expected to rise by 5% per year in the projection. This coupled with a demand growth of only 2.6%, should help to stabilize their trade needs in the 1.2 to 1.3 million tonne range.

Mexican poultry consumption surpassed beef consumption in 2002, making it the leading meat in the food basket there. There are prohibitive out-of-quota duties in place to limit trade in poultry products, but the Mexican government has regularly revised the quota upwards to avoid the higher duties and allow the imports. The quotas are to be terminated in 2003, which may well boost imports that have already been growing at 6% per year in order to keep up with the consumption growth of 3% per year.

Brazil also has the potential to emerge as a strong exporter of poultry products, and is expected to raise its market share by more than 13% over the coming decade. Primarily focused on the Center-West region in the country, significant government incentives have been provided to develop a world-class poultry sector. Production is expected to grow by 3% over much of the coming decade. With domestic consumption increasing at only 2.2%, this should leave a fair amount of exportable product. As a consequence of the recent devaluation of the currency and improved market promotion, Brazil should become one of the major players in world poultry markets, second only to the United States. Russia, China and the EU will probably continue to be primary destinations for Brazilian poultry.

United States broiler production, consumption and trade all grow over the coming decade. While the rapid growth in domestic consumption seen in the 1980's and 1990's has diminished somewhat, domestic use will remain strong. The challenges created by the Russian ban on U.S. broiler shipments partly explains the 12% drop in exports in 2002, but with abundant feed grains, vegetable protein meals, integrated production systems and transportation infrastructure, the United States is expected to see broiler trade grow by 2.8% annually hitting 2.9 million tonnes by the end of the period. Brazilian competition however, will reduce United States market share from 55% to 49% over the same period.

Japan's poultry consumption has been under some pressure due to the weak economy, leading to a reduction in poultry imports in 2001. However, imports grew in 2002 due to some consumption shifts and are expected to grow at around 0.7% for the projection period. This coupled with a 0.2% annual decline in production should contribute to increased imports of 2% per year. Hong Kong poultry consumption is supplied primarily by imports which make up 81% of the total supply. Poultry meat imports are expected to continue to rise by 1% per year through the projection. Indonesia, the Philippines and South Korea combined are expected to raise their import needs from 92 TMT in 2001 to 217 thousand tonnes in 2012 for an annual growth rate of 8%. Thailand's poultry sector is expected to recover as productivity improves and investment in productivity and genetics continues. Appreciation of the bath should hurt their competitive advantage, limiting their export growth to only 3% per year for the projection.

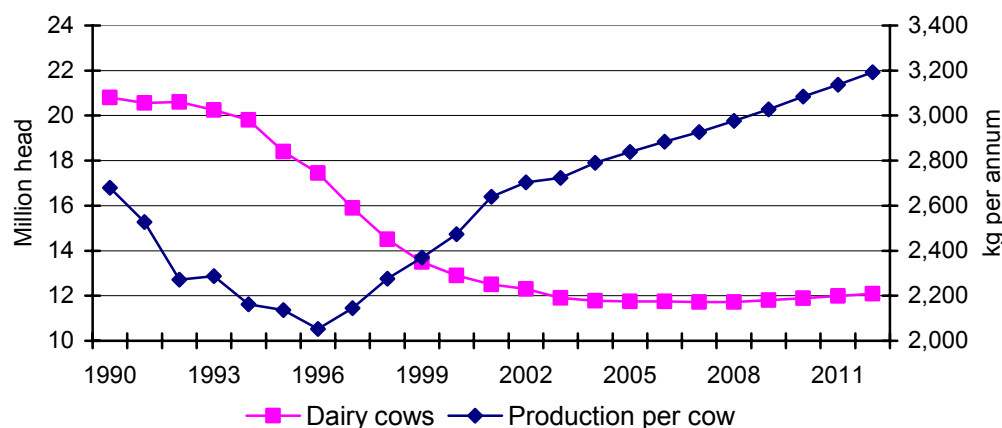
1.5 Dairy

Dairy product prices averaged less than 80% of the previous 4 year average in 2002. World prices seem to be recovering significantly in 2003 and are expected to come in at 90-100% of the 1998-2001 average, exact relationships depending on the product in question.

Reduced production in Australia, and higher growth in demand for cheese seem to be pulling prices back to these historical averages. For most of the projection period, cheese products are expected to continue the tradition of establishing the demand base and giving the price strength to the underlying milk.

Details of the European market situation are described in detail in subsequent sections of this document and so are not examined here. The quota program, however, is expected to limit growth in the EU-15, with the policy increase in quota being the source of expanded production.

Figure 1-6: - Russian Dairy Herd and Production Per Cow

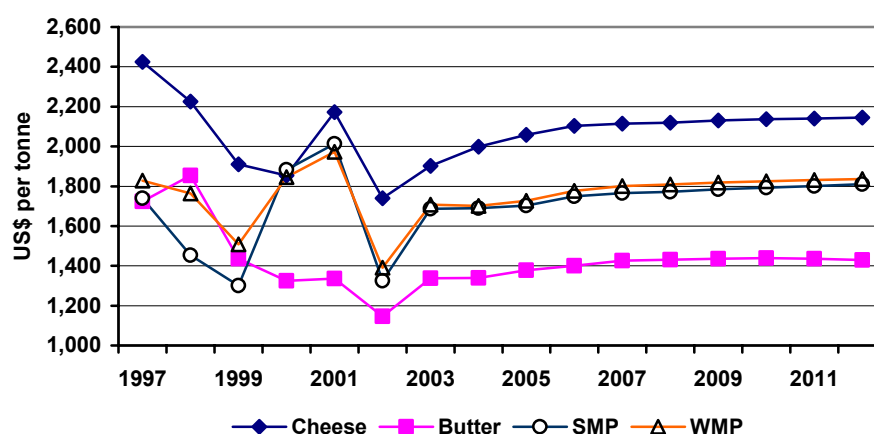


Source: FAPRI (2003)

Milk production in the countries analysed here is expected to grow by 61 million tonnes (14%) over the coming 10 years. Of this growth, the United States is expected to account for 10 million tonnes, the largest single country growth in the system. Russian milk production should rise by 9 million tonnes with Brazil adding another 7 million tonnes. China's milk production will show one of the strongest percentage increases, rising 60% between 2002 and 2012. Australia and New Zealand are also expected to boost production at almost double the rate of the rest of the countries taken as a group. There should be a slight shift of this growth in production toward cheese in the coming decade as cheese output grows 15.4% as opposed to butter's growth of 13.8%.

In absolute terms, the United States should show the largest single country growth in cheese production, with Argentina and Russia showing some of the largest percentage increases at 51% and 49% respectively. Global trade in cheese is expected to increase at a faster rate than the growth in production. From a low starting point, Argentina, for example, is expected to raise cheese exports more than four-fold from 22 thousand tonnes to 103 thousand tonnes. This is small relative to more traditional cheese exporters such as the EU, but does demonstrate the possibility that Argentina may be ready to seriously enter international markets in dairy products. Australia and New Zealand should continue to capture 40% of the world cheese trade.

Mexico, Russia and Japan should continue to be major importers of cheese and should dominate much of the growth in cheese imports. Russia will be operating somewhat of a balancing act as its increase in milk and cheese production is not expected to keep up with the rise in domestic demand, leading to an increased import requirement. Mexico's rise in demand stems mainly from the stronger economic growth and limited expansion of milk production.

Figure 1-7: F.O.B. Northern Europe Dairy Product Prices (U.S. \$)

Source: FAPRI (2003)

Indian butter production is expected to rise significantly over the next ten years. Starting from an already large base, Indian butter production should grow by more than 500 thousand tonnes. Europe, Australia and New Zealand should continue to capture most of the growth in world butter trade with Argentina also playing a minor role.

Australia and New Zealand should demonstrate the largest increase in SMP production, but here as well, Russia, India, Brazil and the Ukraine will also make gains. Probably most notable in SMP is the reduction in production by Europe.

1.6 Overall Issues

The baseline indicates some areas of interest as to the future of the agricultural sector. Certainly the continued expansion in oilseed and grain production from South America will continue to weigh on these markets. The rate at which land in South America comes into production will go a long way in determining the future path for maize and oilseed prices on a global basis for some years to come.

China remains the equivalent of the '900-pound gorilla' in agricultural markets. This is certainly the case in the grains markets, but also has significant potential in several of the meat and possibly dairy markets. China currently has relatively low per capita consumption of dairy products, but given the size of the population, would require only small increases on an individual basis to lead to major shifts in demand.

Russia, Ukraine and other formerly planned economies are also major causes of uncertainty. The baseline has taken a somewhat middle of the road approach to these countries in the grains, oilseeds, meat and dairy markets. The last few years however, have shown how changes in agricultural markets in these countries can affect the rest of the world. A key question is whether these countries will emerge as reliable suppliers or whether they will continue to bounce in and out of export markets. On the dairy side, the baseline suggests that Russian milk production will rise significantly relative to current levels, but that even so, domestic consumption growth is expected to outpace this supply increase. This leads to higher import needs for Russia. Here again, it would not take a major change in the story for their trade needs to shift significantly.

In general, the agricultural sector looks to be in a 'side-ways' position for much of the projection period. Production growth through technological gains or through area expansion from South America should keep supply in line with the demand expansion created by general economic growth. There will be a greater reliance on the Southern Hemisphere however for nearly all agricultural commodities, from oilseeds to poultry. Anything that disrupts the rate of growth in either direction there will lead to noticeable deviations from the price paths shown here.

Appendix 1: Baseline World Commodity Prices to 2012

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World prices in dollars											
	U.S. dollars per tonne										
Wheat, U.S. Gulf	162.1	136.3	137.7	139.0	140.2	143.0	143.6	145.4	147.7	149.3	150.9
CWAD durum, Canada	169.0	168.3	172.8	173.8	178.4	180.6	183.8	186.4	190.8	192.7	191.3
Barley, U.S. Portland	139.8	123.4	120.8	122.6	124.3	124.4	124.9	124.8	125.5	125.7	126.6
Maize, U.S. Gulf	109.9	98.5	98.7	100.4	102.7	103.2	104.3	104.4	105.2	105.3	106.0
Rapeseed, Hamburg	293.0	258.9	266.0	267.1	269.3	271.4	271.6	272.2	271.7	273.0	273.1
Rape meal, Hamburg	133.0	112.1	116.4	119.7	123.1	125.2	125.4	125.6	125.6	126.1	126.9
Rape oil, Hamburg	610.0	596.3	608.1	610.5	613.0	615.1	614.6	613.5	610.4	609.5	605.8
Sun seed, Lower Rhine	300.0	285.7	287.9	292.2	292.1	291.9	291.8	291.7	289.3	288.3	285.1
Sun meal, Rotterdam	110.0	103.6	106.0	109.7	111.4	111.8	111.7	111.7	111.3	111.0	110.0
Sun oil, NW Europe	650.0	636.8	648.8	657.7	661.7	662.3	662.4	662.1	658.2	655.8	650.5
Soybeans, Rotterdam	240.0	222.6	222.4	228.7	232.7	234.4	234.0	232.8	231.8	231.1	230.4
Soy meal, Rotterdam	183.0	167.6	168.9	174.9	180.1	182.4	182.5	181.8	181.4	181.0	181.9
Soy oil, Rotterdam	585.0	602.7	609.1	613.4	612.1	608.4	603.9	599.8	595.5	592.4	585.9
Steers, Nebraska											
	U.S. dollars per 100 pounds										
Hogs, U.S. 51-52% lean	67.0	74.5	76.7	78.2	76.3	73.5	71.0	69.5	68.7	68.3	68.5
Broilers, U.S. 12-city	32.4	36.5	40.2	42.4	38.7	37.1	35.3	38.6	41.8	44.4	40.5
World prices in euro											
	euro per tonne										
Cheese, FOB N. Europe	1,739.6	1,901.8	1,998.5	2,058.5	2,103.0	2,114.6	2,118.4	2,130.0	2,137.5	2,140.4	2,144.7
Butter, FOB N. Europe	1,146.9	1,336.9	1,339.8	1,378.5	1,401.0	1,425.5	1,431.2	1,435.1	1,438.6	1,435.5	1,429.7
SMP, FOB N. Europe	1,325.6	1,686.2	1,689.8	1,702.6	1,748.9	1,765.0	1,772.2	1,784.8	1,792.6	1,800.3	1,809.9
WMP, FOB N. Europe	1,390.6	1,707.9	1,700.8	1,726.3	1,776.6	1,800.3	1,808.7	1,817.9	1,825.1	1,831.0	1,836.3
World prices in euro											
	euro per tonne										
HRW wheat, U.S. Gulf	172.7	130.9	131.3	126.7	124.0	124.6	124.9	126.5	128.4	129.9	131.2
CWAD durum, Canada	180.0	161.5	164.9	158.5	157.8	157.3	159.8	162.1	165.9	167.6	166.3
Barley, U.S. Portland	149.0	118.5	115.3	111.7	110.0	108.4	108.6	108.5	109.1	109.3	110.1
Maize, U.S. Gulf	117.1	94.6	94.1	91.5	90.8	89.9	90.7	90.8	91.5	91.6	92.2
Rapeseed, Hamburg	312.2	248.6	253.8	243.5	238.1	236.4	236.1	236.7	236.3	237.4	237.5
Rape meal, Hamburg	141.7	107.6	111.1	109.1	108.9	109.1	109.0	109.2	109.2	109.7	110.4
Rape oil, Hamburg	650.0	572.4	580.2	556.5	542.1	535.9	534.4	533.5	530.8	530.0	526.8
Sun seed, Lower Rhine	319.7	274.3	274.7	266.3	258.3	254.3	253.7	253.6	251.5	250.7	247.9
Sun meal, Rotterdam	117.2	99.4	101.1	100.0	98.5	97.4	97.2	97.1	96.8	96.5	95.6
Sun oil, NW Europe	692.6	611.3	619.0	599.5	585.1	577.0	576.1	575.8	572.4	570.3	565.7
Soybeans, Rotterdam	255.7	213.7	212.2	208.4	205.8	204.2	203.5	202.4	201.6	200.9	200.3
Soy meal, Rotterdam	195.0	160.9	161.1	159.4	159.3	158.9	158.7	158.1	157.7	157.4	158.1
Soy oil, Rotterdam	623.3	578.6	581.1	559.1	541.3	530.1	525.1	521.6	517.8	515.2	509.5
FOB Bangkok 100% B Grade	206.7	202.4	216.0	211.4	208.7	209.6	215.7	222.2	228.5	234.6	240.7
World prices in euro											
	euro per 100 kilograms										
Steers, Nebraska	157.5	157.7	161.3	157.2	148.7	141.2	136.2	133.2	131.7	131.0	131.3
Hogs, U.S. 51-52% lean	76.2	77.2	84.6	85.1	75.5	71.2	67.7	74.0	80.1	85.2	77.6
Broilers, U.S. 12-city	130.6	122.3	121.8	117.6	115.1	114.3	114.2	114.7	115.3	116.0	116.5
Cheese, FOB N. Europe	185.4	182.6	190.7	187.6	186.0	184.2	184.2	185.2	185.9	186.1	186.5
Butter, FOB N. Europe	122.2	128.3	127.8	125.7	123.9	124.2	124.5	124.8	125.1	124.8	124.3
SMP, FOB N. Europe	141.2	161.9	161.2	155.2	154.7	153.8	154.1	155.2	155.9	156.6	157.4
WMP, FOB N. Europe	148.2	164.0	162.3	157.4	157.1	156.8	157.3	158.1	158.7	159.2	159.7

Source: FAPRI (2003)