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Global Agricultural Information Network

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Argentina

Biofuels Annual

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Report Highlights:

Argentine Biodiesel production is projected at a record 3 billion liters due to large investments in the sector. The profitable domestic mandate and exports are encouraging producers to expand capacity. Most contacts believe that Argentina will continue to increase diesel imports, providing good opportunities for the biodiesel sector to supply additional demand. Bioethanol production is also expected to grow, with production at 260 million liters in 2012. This sector has been dominated by the local sugar industry, but by the end of 2012 and 2013 there should be 4-5 new plants in line using grains as feedstock. Once this happens, the 5 percent domestic mandate level could be fulfilled.

Post:

Buenos Aires

Executive Summary:

The biofuel industry in Argentina, supported by the Biofuel Law which was implemented in 2010, is growing steadily. The combination of a growing domestic use mandate and exports are attracting significant investments and expanding production rapidly.

Bioethanol production in 2012 is forecast at 260 million liters, the highest ever. This sector has so far been exclusively in the hands of local sugar mills, but starting in 2012, there will be ethanol production from the first plants using grain as feedstock. There are 4 or 5 new plants in different stages of construction or advanced projects which already have assigned domestic mandate quota. Due to limited supply, the 5 percent mandate is yet not fulfilled, but this could happen in 2013 when the new plants begin to operate.

Biodiesel production for 2012 is projected at a record 3 billion liters, with Argentina becoming one of the world's top producers. A profitable and growing domestic mandate (Argentine imports of diesel continue to grow) and profitable exports continue to attract big investment. Most large-scale companies already in the business have or are projecting to expand their capacity, while a few new players are also coming into the business. Production capacity for the end of 2012 is forecast at 4.4 billion liters. The domestic mandate began in 2010 at 5 percent, soon it went up to 7 percent and there are strong rumors that in the next few months it will go to 10 percent. Exports are also expected to grow in 2012, reaching a record of 1.75 billion liters. Spain, the number one market, with 50 percent share, is threatening to limit imports from countries outside the EU. Nonetheless, local traders are confident that if this happens, they will be able to shift to other markets.

Author Defined:

Policy and Programs

Since 2007, Argentina has in place a regulatory framework to promote the production and use of biofuels. The main objectives of this framework are to diversify the supply of energy, to become more environmentally friendly, and to promote the development of rural areas (primarily nontraditional production areas), especially in benefit of small and medium sized agricultural producers. The government sees the opportunity for biofuels, especially biodiesel, to reduce growing diesel imports. The framework focuses primarily on conventional biofuels, as Argentina already has a large biodiesel industry based on soybean oil and a growing ethanol industry based on sugarcane and more recently grains. Current policy does not specifically focus on second generation or advanced biofuels. However, there are some official, private and university programs already researching in these types of feedstocks and technology.

Law #26,093, of 2006, mandated the use of biofuels beginning in 2010, with an obligatory mix of 5 percent of ethanol in gasoline and 5 percent of biodiesel in diesel. Under this Law, companies which produce biofuels have three alternatives: 1) to produce for the domestic market, taking advantage of various tax incentives; 2) produce for self-consumption, with similar advantages as in 1; and 3) produce for the export market, and not be

eligible to receive tax incentives.

A summary of Argentina's biofuel law and regulations follows:

In April 2006, the Argentine Congress passed Law 26,093, which regulates and promotes the production and sustainable use of biofuels. In February 2007, the Executive Branch, through Decree 109, published the regulations for implementing the above law. Salient points of the Argentine biofuel law (and regulations) are:

Chapter I - Creates incentives for production and use of biofuels in the domestic market with a duration of 15 years (beginning on the date of the enactment of the law). It establishes that the Secretariat of Energy will be the controlling authority. The oversight of tax breaks will be under the control of the Ministry of Economy (every year this Ministry will set the maximum overall amount of the fiscal incentives directed to biofuels, and the percentage of this total that will accrue to individual companies participating in the domestic market). Some of the responsibilities of the controlling authority, in general, are to establish quality levels, security conditions, registration of participating companies, approval of projects that benefit from incentives, and the percentage mix of biodiesel with diesel and ethanol with gasoline for the domestic market. Every year the Secretariat of Energy will establish the volumes of biofuels needed to comply with the law, determine and modify the percentage mixes, set prices of biofuels for the domestic market, establish volumes, terms and conditions for those producing for their own consumption, and approve exports.

Chapter II - provides details concerning the incentives of the biofuels promotional regime for domestic use. To be eligible for incentives, companies have to operate in Argentina and be dedicated exclusively to biofuel production, with the majority of the company's equity in the hands of the government (i.e. government at either the national, provincial, or municipal levels) or agricultural producers (and producers' cooperatives). Companies have to operate under the above regulations and specifications, and will be assigned a percentage of the total tax break granted by the GOA (the law gives priority to small and medium enterprises, farmers, and entities that operate in nontraditional production areas). Biofuels governed by this promotional regime will be exempt from three specific taxes applied to fossil fuels. In addition, biofuel producers for the domestic market will enjoy tax breaks and other advantages (e.g. anticipated reimbursement of the value added tax or accelerated depreciation on capital investment). Eventually, Chapter II leaves open the possibility for producers to receive direct subsidies.

In January 2008, Congress passed Law 26,334, which promotes the production of bioethanol from sugarcane. This law allows sugar mills to participate under the biofuel promotional regime, maintaining the basic norms and regulations of the biofuel law. It also promotes exports of surplus ethanol.

More than ten provinces have adhered to the Biofuels Law, and in some cases, they provide additional tax advantages for investment and construction of biorefineries in their territory.

In July 2010, through Resolution 554, the Secretariat of Energy increased the mandated blending ratio of diesel with biodiesel from 5 to 7 percent.

In late December 2010, through Resolutions 1673 and 1674, the Secretariat of Energy extended for one year (December 2011) the agreement which establishes the blending of gasoline and diesel with ethanol and biodiesel respectively.

Under Law 26,190 of 2006, named National Support for the Use of Renewable Energy Sources, and its regulatory framework established in 2009, the government created program Genren (Renewable Generation). Its objectives are to reduce emissions of carbon dioxide and other GHG, to diversify Argentina's energy matrix and to promote regional economies throughout the country. The Law establishes that eight percent of the country's electricity consumption has to be supplied by renewable energy sources in the next ten years. In 2009, the national energy company opened a bid to purchase 1,015 megawatts of renewable energies (including wind, biofuels, biomass, photovoltaic, solar and small hydro power projects) through 15 year contracts. The government recently announced the winners; of which 110 megawatts will be generated from biodiesel (around 150 million liters could be used). Apart from the Genren program, the government wants to increase further the use of biodiesel to generate electricity and replace imports of diesel. They are currently analyzing the possibility of adapting generators to be used with biodiesel. Sources indicate that Argentina will have to import approximately 5-6 billion liters of fossil diesel in 2011 to meet the demand of the transport and energy sectors.

One of the key factors of the recent large investment in the local biodiesel industry has been the differential export tax on biodiesel vis-à-vis soybean oil. Soybean oil exports are taxed 32 percent while biodiesel exports are only taxed effectively 16.6 percent (nominal tax is 20 percent), and benefit from a 2.5 percent rebate. Export taxes were modified in March 2008, increasing from 5 percent, with a 2.5 percent rebate. The current net difference between the soybean oil export tax and biodiesel export tax is 17.8 percent in favor of the latter.

There are no specific official environmental or social sustainability criteria for biofuels in Argentina. However, being a major exporter of biodiesel, the government closely monitors other country's criteria and regulations in order to avoid any restrictions on Argentine exports. This is the case of the EU, which through its Climate and Energy Package, established that biodiesel from soybean oil does not meet the minimum GHG emissions saving level. Argentina has challenged this decision. The government has presented a study prepared by its Agricultural Research Institute, in which it takes into account the extensive adoption of no-till cropping, the short distance from the farms to the crushing, refining and port facilities, and its modern and efficient industries. CARBIO, the Argentine Chamber of Biodiesel, has presented the EU a voluntary certification scheme addressing all their requirements. They are confident it will be accepted before the end of this year. A similar situation occurred with EPA's Regulation of Fuels and Fuel Additives, and the changes to Renewable Fuel Standards. In mid-2009, the government of Argentina presented comments during the Public Hearing to show that Argentine soy-based biodiesel reduces GHG emissions far more than the established 22 percent. EPA's rulemaking currently establishes that it meets the 50 percent reduction in GHG emissions required to qualify for the biomass-based diesel category.

The biofuel law establishes that the Secretary of Energy will encourage cooperative agreements between the public and private sectors to promote and encourage the development of production technology, and the use of biofuels.

The Ministry of Agriculture, through the research agency INTA, conducts and coordinates most of the research in biofuels in Argentina. The National Bioenergy Program goals are to ensure the supply of sources of bioenergy in support of sustainable development, national energy security, the reduction of poverty, the attenuation of climate change and environmental equilibrium. There are three specific objectives: 1) identification and characterization of the potential of different crops, waste and byproducts to produce energy, 2) the study and development of non-traditional crops with energy potential, and 3) the development of second generation biofuels, through the identification of new enzymes to degrade cellulose, genetic improvement of *Eschechia coli* to optimize ethanol production, and the isolation of fermenting microorganisms.

There are also provincial entities, public and private universities, and the private sector working on different projects. Some of these programs focus on jatropha, algae, castor oil plant, canola, sweet sorghum and miscanthus. Research is primarily focused on feedstocks which can be produced in areas not suited for crop production and which do not compete with food production. A few programs are working on cellulosic biofuels, based on sugar cane, harvest residues, arundo donax (giant reed), sweet sorghum, and switch grass. There are also a few industries which are developing biogas facilities to use waste and reduce the cost of energy they consume.

Argentina in early 2010 joined the Global Research Alliance on agricultural greenhouse gases, established to increase international cooperation, collaboration and investment to help reduce the emissions intensity of agricultural production and increase its potential for soil carbon sequestration.

The National Institute of Agricultural Research (INTA) and an agricultural research station in the north western part of the country are working on life cycle and energy balance at farm level for traditional crops (sugarcane, soybeans) and others (such as sweet sorghum, castor oil plant).

In late 2007, Argentina passed Law 26331 on Conservation of Native Forests to help its conservation, and to regulate the expansion of land for crop use and any other change in land use.

Ethanol

Production

Bioethanol production for 2012 is projected at 260 million liters, a continued increase since the official biofuel mandate began in 2010. The feedstock currently utilized is exclusively derived from the sugar industry, out of molasses or sugar cane crushed directly for ethanol production. Most contacts indicate that it is difficult to make a precise distinction of how much of the production comes from molasses or sugar cane as the total alcohol production has different final destinations. Argentina's total ethanol production in 2011 is projected at 344 million liters (120 million liters for non-fuel purposes), of which 220 million are expected to come from molasses and the balance from sugar cane crushed directly. There are 14 sugar mills expected to produce ethanol in 2011, with production ranging between 5-62 million liters per plant. In the past couple of years there has been extensive investment at the farm level, with cane area growing about 10 percent. In late 2012 there will be two ethanol plants in production using grains as feedstock.

Despite the profitability of the bioethanol program, high sugar prices in 2010 made some companies fail to comply with their quota for the domestic mandate. Therefore, the blend with bioethanol was roughly 2 percent, well below the 5 percent established mandate.

In 2010 and 2011 there were several investments announced in the bioethanol sector using grains as feedstock. There are five plants, ranging between 56-135 million liters, which are expected to be in operation in late 2012 and 2013. Almost all have already received market quotas from the government. The combination of several factors affecting the local corn market provides good prospects for ethanol from grains. The most important are the good ethanol price set by the government (currently at US\$0.80 per liter - which adjusts based on costs or local fuel prices), the revalorization of the use of corn in production areas (which usually suffer big discounts

for commercialization and freight), the good market for co-products in a country with strong feedlot and dairy industries, and the purchase of local corn at prices well below international prices (due to the 20 percent export tax on corn, and government administration of export volumes).

Local energy analysts indicate that Argentina has become a net importer of fuel. The government needs to import diesel, and lately, premium gasoline. Being a large exporter of grains, sugar and vegetable oil, it would be natural to convert part of those exports into energy and reduce fuel imports. The private sector is monitoring closely the ethanol market which could see new investments announced in the near future.

The industry's production capacity is expected at 480 million liters for 2012. However, in 2013, when the new grain ethanol plants begin to operate it could jump to more than 700 million liters.

The local ethanol industry is financially sound. The current producers are all related to the sugar industry which in the past few years has done very well. The new investments announced are mostly local companies which are already into the grain business (cooperatives, traders, exporters, processors) and a few financial funds. The price scheme set by the Secretariat of Energy guarantees good returns.

Consumption

Bioethanol consumption for 2012 is projected at 260 million liters showing an increase as a result of more production available, especially from a couple of new plants which will be in line by mid or late 2012. However, this level of consumption is still below the 5 percent mandate. Actual production and sales to the domestic market are closely followed and published by the government.

Private analysts estimate that the Argentine transport sector in 2011 will increase its consumption to approximately 6.5 billion liters of gasoline and 16.5 billion liters of diesel. The national mandate blend for ethanol is 5 percent, meaning that consumption in 2011 should be about 325 million liters. However, due to limited production, the real blend is expected to go from 2 percent in 2010 to almost 3 percent in 2011. Once the new investments announced are in line, Argentina will be able to fulfill its mandate, which is expected to quickly increase to 8-10 percent.

The local automobile industry is following the biofuels issue very closely as it does not want to run risks with engine warranties. Therefore, they are in constant conversation with the industry and the government. Based on other countries' experiences, there is room to increase the domestic ethanol blend without running into significant problems. There are no GHG sustainability requirements for the domestic market.

In reference to vehicle fleet efficiency, there is very little done. Imported hybrid cars are just beginning to be sold in the market, but their popularity will be very limited due to their more costly purchasing price. Argentina produces several models of flex-fuel vehicles, but they are all exported to Brazil. They are not used domestically.

Trade

Before exporting bioethanol, Argentina still has a long way to go to fulfill its domestic demand, especially when the official mandate increases as a result of the future availability of larger supplies as new plants get in line.

However, there are some investment projects which focus on exporting, taking advantage of being able to source grains in the local market at a low cost.

Before the biofuel mandate began, Argentina exported 80-100 million liters of ethyl alcohol (not for fuel use). Exports dropped to 17 million in 2010 and are expected to continue to drop further.

Ethanol imports from Mercosur countries (including Brazil) are duty free, but from countries outside the region is 20 percent. Exports are taxed 5 percent, but receive a 4.05 percent rebate.

Ending Stocks

Ending stocks are estimated at 24,000 tons, which with the small production in the first semester of the year (the sugar cane harvest begins in May) supply the needs of the first part of the year.

Statistical Information

Ethanol - Conventional & Advanced Fuels (Mil. Liters)							
Calendar Year	2006	2007	2008	2009	2010	2011	2012
Production, Total				23	122	190	260
Advanced Only				0	0	0	0
Imports				0	0	0	0
Exports				0	0	0	0
Consumption				3	118	190	260
Ending Stocks				20	24	24	24
Production Capacity - Conventional							
No. of Biorefineries				3	9	9	11
Capacity (Mil. Liters)				120	270	280	480
Capacity Use (%)				19%	45%	68%	54%
Production Capacity - Advanced							
No. of Biorefineries							
Capacity (Mil. Liters)							
Capacity Use (%)							
Co-product Production - Conventional only (1,000 MT)							
Product Y							
Product Z							
Feedstock Use - Conventional (1,000 MT)							
Molasses				90	470	730	850
Grains							100
Feedstock C							
Feedstock D							
Feedstock Use - Advanced (1,000 MT)							
Feedstock A							
Feedstock B							

Feedstock C							
Feedstock D							

Biodiesel

Production

Argentine biodiesel production for 2012 is forecast at 3 billion liters, the highest ever. This is a result of a growing domestic mandate and a continuously increasing export demand. Good returns in the business continue to attract large investments. Most large companies already in the business have or are expanding their capacity. Contacts indicate that production could be even larger if the demand increases. There will be unused capacity and the sourcing of the main feedstock should not be a problem.

Soybean oil is and will continue to be the main feedstock utilized in biodiesel production. There is currently no other alternative feedstock which can commercially replace soybean oil in volume and cost. Argentina has one of the world's largest and most efficient vegetable oil crushing industry. Meal is the main product and it is primarily exported, while the soybean oil is considered a byproduct. At these levels, Argentina is utilizing between 20-25 percent of its soybean crop to produce biodiesel (soybean meal left is exported). In the past year or so, China, one of the largest customers of Argentine soybean oil stopped several times imports from Argentina. Under this situation, Argentina looked to develop new markets for its oil and at the same time turned more oil into biodiesel.

The production capacity has expanded rapidly and at a very fast rate. Capacity by the end of 2012 is projected at 4.4 billion liters, almost 7 times larger than 5 years ago, when the first large biodiesel plants came on line. Contacts indicate that returns have been so good that the first investments have already been paid. The conjunction of a growing domestic demand (diesel consumption grows every year, while production does not) with good returns, and a strong export market encourage players to expand their business. In 2011-12, production capacity will expand 1.6 billion liters, while there are a few announcements of new large investments (primarily expansions) beyond 2012.

The financial situation of the biodiesel industry is very good in general terms. The large plants, which make approximately 80 percent of the total capacity, are owned by large corporations which in most cases are international grain traders and/or strong local companies which have been operating in the grain sector for many years, are financially sound. The smaller companies (with plants between 10-110 million liters/year) are in a varied financial situation as their efficiency is very different to the large plants which in most cases are integrated to their existing crushing facilities.

Traders indicate that the most profitable alternative is to sell biodiesel under the official mandate, followed by the export of biodiesel and finally the export of soybean oil. Biodiesel exports have a smaller tax vis-à-vis soybean oil. The current net difference between the soybean oil export tax and biodiesel export tax (deducting a small export rebate) is 17.8 percent in favor of the latter. The current price for biodiesel under the official mandate is US\$1195 per ton (equivalent to US\$1.05 per liter).

Consumption

Biodiesel domestic consumption for 2012 is forecast at 1.25 billion liters, the highest ever. This is a result of the current mandate being fulfilled at 7 percent (contacts report that in 2010 and 2011 one of the large local fuel distributors was blending below the mandated mix), and the possibility of the government increasing the biodiesel mandate to 10 percent (rumors indicate that this could happen at the end of 2011 or early 2012).

The government has a strict control on the volumes which are sold under the mandate and publishes the data each month.

Based on a local private report, Argentina is one of the countries with higher relative consumption of diesel in the world, since for each liter of gasoline it consumes 2 liters of diesel. This is primarily explained by the large agricultural production and the fact that most commodities and goods are transported by truck (the excellent train network developed in the early 1900s has been reduced significantly). Argentina produced in 2010 13 billion liters of diesel, consumed 16 billion liters and imported the balance. The report indicates that local diesel production has reached almost its maximum; therefore, any additional demand will have to be supplied with expensive imported diesel or local biodiesel. This situation is aggravated by the reduction of local gas supply and the need to feed electric power stations with diesel (so far very little biodiesel has been used in this industry, but there is testing and research to adjust the technology to different mix levels). The country's energy situation presents great opportunities for the biodiesel industry.

Current blending ratios are unknown. However, private estimations report that in 2010 it was approximately 4.5 percent, in 2011 it will range between 5.5-6.0 percent and in 2012 it will be greater than 7 percent.

As mentioned above, there are reports that the government will increase the biodiesel mandate mix from 7 to 10 percent in the short term. Car manufacturers and the biodiesel industry, through the coordination with a university, are testing engines with 10 percent blend of biodiesel.

At a local level, there are no GHG sustainability requirements. However, it is a very sensitive and important issue which is being addressed for the export market.

Trade

Argentine biodiesel exports are forecast at a record 1.75 billion liters in 2012. The industry reports that it could easily supply additional volumes if the demand is even stronger as Argentina will have significant unused capacity and availability of feedstock.

Biodiesel exports in 2011 are forecast at 1.6 billion liters. Through May 2011, 650 million liters were exported. Spain accounted for 51 percent of the total, followed by Italy (23 percent), Peru (13 percent), and the balance in the hands of other European countries (13 percent).

Despite having to face some challenges in the future, the local biodiesel industry is confident that it will continue to export large volumes, with the possibility of having to change some markets, and opening others. One of the main problems which could arise in the near future is the possibility of having the Spanish government set production and commercialization quotas for their domestic industry and allowing imports only

from EU countries to meet its mandate. If eventually Spain closes its market, Argentina is confident it will be able to shift exports to other European countries.

In late 2010 the European Union also announced the implementation of the Climate and Energy Package, which establishes that biofuels used must reduce GHG emissions by at least 35 percent, and set a default reduction value for soybean oil-based biodiesel at only 31 percent (contacts indicate that some new calculations would set it above this initial level). The Argentine government made several presentations to the EU's Joint Research Center to demonstrate that Argentina's biodiesel production, exclusively based on soybean production, exceeds the 35 percent cap reduction. The local Chamber of Biodiesel has presented to the EU a voluntary certification (CARBIO Sustainability Certification Scheme) which, they expect, fulfills the sustainability requirements established in the Renewable Energy Directive. The local industry expects that by the end of 2011 the EU will accept the Argentine certification.

Local biodiesel traders are also following closely what will happen with the biodiesel Blender's Credit in the U.S., which expires at the end of 2011. They indicate that Argentine product could come in at a competitive price. Canada is also a new potential market with its biodiesel mandate initiated in July 2011.

Statistical Information

Biodiesel - Conventional & Advanced Fuels (Mil. Liters)							
Calendar Year	2006	2007	2008	2009	2010	2011	2012
Production, Total	20	205	860	1,340	2,100	2,560	3,000
Advanced Only							
Imports	0	0	0	0	0	0	0
Exports	0	185	780	1,300	1,540	1,600	1,750
Consumption	20	20	20	30	580	950	1,250
Ending Stocks	0	0	60	70	50	60	60

Production Capacity - Conventional							
No. of Biorefineries	6	9	18	22	30	35	38
Capacity (Mil. Liters)	175	665	1,500	2,300	2,800	3,800	4,400
Capacity Use (%)	11%	31%	57%	58%	75%	67%	68%
Production Capacity - Advanced							
No. of Biorefineries							
Capacity (Mil. Liters)							
Capacity Use (%)							
Feedstock Use - Conventional (1,000 MT)							
Soybean oil	18	180	760	1,180	1,850	2,250	2,650
Feedstock B							
Feedstock C							
Feedstock D							
Feedstock Use - Advanced (1,000 MT)							
Feedstock A							
Feedstock B							
Feedstock C							
Feedstock D							

Advanced Biofuels

There is no production so far.

Biomass for Heat and Power

All sugar mills in Argentina generate part of their energy needs from bagasse. Quite recently, four or five sugar mills have invested in more efficient, new generation boilers which allow them to cogenerate energy for their own needs and to sell to the grid. Other mills have similar plans. There is an experimental station in Tucuman province which is working on evaluating the use of cane stubble to cogenerate electricity. The technology to make use of the stubble has to yet be developed and with this it will stop or limit significantly the burning of cane plantations.