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Brazil

Grain and Feed

Sorghum Production and Exports

2004

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Report Highlights:

Sorghum production is soaring in Brazil from just 319,000 tons in 1995/96 to record 2003/04-production forecast by Post at 2.1 million tons. Producers in the Center-West region are beginning to realize the benefits of the drought-resistant crop that is well suited to the region. Increasing internal demand by feed millers and greater export prospects are also driving area expansion. Post forecasts 2003/04 Oct/Sep exports at a record 450,000 tons.

Includes PSD Changes: Yes
Includes Trade Matrix: No
Unscheduled Report
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Expanding Sorghum Production

Post estimates sorghum production in 2003/04* at 2.1 million tons and area at 900,000 hectares. Next year's crop is expected to be even greater but could be constrained by an expected tight supply of planting seeds. Though this production estimate is above government estimates, post believes it is conservative. Production estimates vary greatly among sources in Brazil. CONAB bases production estimates on field surveys which some in the industry consider low. Meanwhile, trade sources believe the 2003 crop was around 2.7 million tons on more than 1 million hectares, more than 1 million tons greater than CONAB estimates.

* The summer crop harvest begins in early March (Brazil's fall) and the much larger winter crop is harvested in September and October (Brazil's spring). Therefore, it would be more accurate to consider the marketing year to be the same as other winter crops such as wheat (Oct/Sept) in which marketing of the crop begins after the primary harvest. Brazilian government statistics use a March/Feb. marketing year but this year was established when the majority of the crop was harvested in March and produced in the South and Southeast. Currently these two regions comprise less than 30 percent (see chart below) of the national crop while the majority of production is a winter crop produced in the Center-West and harvested in September. However, Post will use a March/Feb marketing year to be consistent with Brazilian government statistics. Currently USDA/Washington uses an April/March marketing year.

Sorghum production in Brazil can be classified into two types; grain and forage. Grain sorghum is a shorter plant and is harvested when the moisture level is low. It is primarily a winter crop (planted in May) with production largely concentrated in the Center-West. Conversely, forage sorghum is taller and harvested green prior to drying in the field and is a summer crop (planted in October). It is used as silage, pasture, green chop, or as a cover crop and produced in the South and Southeast.

Sorghum production has skyrocketed in Brazil over the past four years more than tripling from 1998/99 at just 612,000 tons to 1.9 million tons in 2002/03. In 1995/96 production was only 319,000 tons. As new cropland has opened in the Center-West (Cerrados) so has sorghum area. Goias in the Center-West is now the leading production state while traditional areas in the South and Southeast have increased area only minimally. The Cerrados are generally dryer than cropland in the south and are thus well suited for sorghum, which has a high resistance to water stress. Cerrado soils are also aluminum toxic and sorghum successfully adapts to such soils. Approximately 66 percent of Brazil's sorghum is produced in the Center-West area and all expectations are that further expansion in Brazilian sorghum production will be concentrated in this area.

Percentage of Brazilian Sorghum Production by State				
	Northeast	Southeast	South	Center-West
1992/93	11.9	43.5	32.0	11.8
1995/96	2.0	20.2	21.7	55.7
1999/00	6.0	19.9	8.5	65.4
2003/04	6.6	23.3	4.2	65.8

Source: CONAB

Competition with Corn

Crop expansion in the Cerrados has been driven by soybean and cotton production and sorghum is becoming a popular second crop produced in the winter, which is the dry season in the cerrados. Sorghum competes with corn as a second crop and produces high yields in the Cerrados soils and is better than corn for soil conservation with less runoff observed. Additionally, sorghum straw that is incorporated after harvest adds potassium, calcium, and magnesium to the soil.

Corn is normally planted shortly after the harvest of short-season soybeans in order to avoid dry spells during corn grain filling. Conversely, Sorghum can be planted after medium to long-season soybean varieties since it is much more tolerant to dry spells which are common during the winter months. Sorghum also has the advantage of a lower cost of production than corn and other competing crops, in part due to lower fertilizer costs (see charts below). Many Brazilian producers focus on soybeans as their cash crop and give much less attention to their second crop. Therefore, sorghum's lower cost of production and decreased risk compared to corn is becoming increasingly attractive to producers.

Fertilizer Use in Export Crops				
Crop	Sugarcane	Soybeans	Corn	Sorghum
NPK fertilizers (lbs/ha)	206	145	110	81

Source: Potafos

Somewhat limiting the optimistic outlook for sorghum are a few obstacles. Sorghum yields are only about 65 percent of corn yields and corn generally brings a higher price by about 20 to 30 percent, though sorghum prices over the past few months have soared to 90% of corn prices. Considering the cost of production, profit margins were higher for corn in 2003 (see chart below). Corn also has a better nutritional composition for use in feed rations, though new sorghum cultivars are narrowing the nutritional gap with corn and becoming more popular for swine and poultry feeding. Sorghum also faces the challenge of, while increasing rapidly, very low total national production in comparison to corn and thus end-users are more accustomed to incorporating corn in feed rations. Nevertheless, as exports and internal demand for sorghum increase, and with prices at a 10-year high, production should continue to climb steadily.

Cost of Production for Sorghum and Competing Crops 2003 Cost in \$Reis						
	Sorghum	Corn	Cotton	Soybeans	Wheat	Rice*
Mechanical Operations	166	261	889	241	492	353
Inputs	240	810	1,692	567	793	438
Administration	120	78	158	85	106	126
Post-Harvest Costs	106	155	132	68	67	64
Total Cost per Hectare	632	1,304	2,872	961	1,458	981
Revenue per Hectare	1,005	2,217	4,674	1,486	2,067	1,182
Profit per Hectare	373	913	1,802	525	609	201
Sales Margin	37%	41%	39%	35%	29%	17%

Source: FNP Consultoria and Agroinformativos

* Non-irrigated

- land values and rents not included in costs
- Sorghum, rice, and cotton in Goias, corn and wheat in Mato Grosso, soybeans in Mato Grosso do Sul.

Trade

Brazil has been a sporadic importer of sorghum over the past 20 years. However, in 1999/00 and 2000/01 imports increased to 258,000 tons and 141,000 tons respectively. These relatively large imports were due to feed millers' growing demand for the grain. However, Brazil has imported only 4,000 tons over the past two years as a result of soaring domestic production. Meanwhile, Brazil's first significant exports of Sorghum occurred in 2002/03 with 64,276 tons. In just the three months of the October/September 2003/04 international marketing year, exports have reached 237,851 tons.

The top Brazilian market over the past few months has been the EU with imports of 219,000 tons. Corn and sorghum production in the EU are down dramatically this year and feed millers are looking for cheap protein imports. Brazilian corn exports have benefited from this EU demand but the low price of Brazilian sorghum has made it very attractive as well. Sorghum is entering the EU at a much lower duty (about \$25 less) than corn. Total sorghum imports by the EU are forecast to more nearly triple that of last year and the United States and Brazil are competing for this market. Argentina is not expected to be a major player as its sorghum is reported to have high tannin content. Brazil is also finding a buyer in the Philippines where poultry producers are searching for substitutes to replace feed wheat which is in short supply and priced high on the global market. Due to these factors, Posts forecasts record exports in trade year 2003/04 at 450,000 tons.

Brazilian Sorghum Exports		
Destination	2002/03 (Oct. through Sept.) 12 months	2003/04 (Oct. through Dec.) 3 months
Argentina	27,216	24,494
Bolivia	12,160	6,700
Germany	0	5,357
Holland	0	19,206
Italy	0	92,971
Japan	19,000	0
Philippines	0	17,852
Spain	0	102,431
Others	5,900	0
Total	64,276	237,851

Consumption and Marketing

Due to low profit margins, swine and poultry producers are incorporating sorghum into feed rations in an attempt to decrease feed costs. Sorghum consumption is also increasing due to expanding dairy and beef production, which is consuming sorghum as silage or in pastures. The chart below shows that the pork and poultry sectors are the leading consumers of commercialized sorghum rations. However, about 25 percent of sorghum is consumed on farm and it is difficult to know how it is used. Sorghum supply is increasing rapidly as producers are quick to realize the cost advantage to producing sorghum with only slightly lower nutritional properties. Nearly all sorghum that is commercialized is done so through forward contracts between the producers and the processors. Therefore, it is very difficult to purchase sorghum on the open market.

Brazilian Consumption of Sorghum in 2001				
	Pork	Poultry	Cattle	Pet and Other
Percent of Total Use	39.0	36.8	19.3	4.9

Source: Sindiracao

PRO-SORGO is a Brazilian organization made up of industry representatives, which seeks to improve the marketability of sorghum. Overcoming the negative perception of sorghum is a major challenge for the organization but progress is being made as internal demand and consumption increase. Sorghum can't replace all corn in rations due to its lower nutritional content but it is estimated that up to 30 percent of corn can be substituted with sorghum. EMBRAPA, the Brazilian equivalent to USDA's Agricultural Research Service, estimates internal demand for sorghum could easily reach 4 to 5 million tons, more than double current production. There is a very small amount of sorghum for human consumption in the Northeast and also a minimal amount used for industrial purposes.

Sorghum PS&D

Country	Brazil					
Commodity	Sorghum				(1000 HA)	(1000 MT)
	2001	Revised	2002	Estimate	2003	Forecast
	USDA Official [Old]	Post Estimate [New]	USDA Official [Old]	Post Estimate [New]	USDA Official [Old]	Post Estimate [New]
Market Year Begin		03/2002		03/2003		03/2004
Area Harvested	418	418	600	800	520	900
Beginning Stocks	0	0	0	50	25	50
Production	773	773	1300	1900	1100	2100
TOTAL Mkt. Yr. Imports	2	0	0	0	0	0
Oct-Sep Imports	4	0	0	0	0	0
Oct-Sep Import U.S.	0	0	0	0	0	0
TOTAL SUPPLY	775	773	1300	1950	1125	2150
TOTAL Mkt. Yr. Exports	0	0	225	400	0	350
Oct-Sep Exports	11	11	64	64	175	450
Feed Dom. Consumption	775	700	1050	1472	1100	1725
TOTAL Dom. Consumption	775	723	1050	1500	1100	1750
Ending Stocks	0	50	25	50	25	50
TOTAL DISTRIBUTION	775	773	1300	1950	1125	2150