AGRICULTURAL ECONOMICS

June 19, 2019

agecon.unl.edu/cornhuskereconomics

# Cornhusker Economics

## Will "Matopiba" Change the Competitive Landscape in the International Grain Market?

| Market Report | Year Ago | 4 Wks Ago | 6-14-19 |
|---|---|---|---|
| **Livestock and Products, Weekly Average** | | | |
| Nebraska Slaughter Steers, 35-65% Choice, Live Weight. . . . . | * | * | 114.00 |
| Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . . | 168.80 | 178.09 | 170.33 |
| Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . .. . | * | * | 150.28 |
| Choice Boxed Beef, 600-750 lb. Carcass. . . . . | 223.52 | 220.23 | 222.11 |
| Western Corn Belt Base Hog Price Carcass, Negotiated . . . . . .. | 82.22 | 81.30 | * |
| Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean. . . . . | 81.73 | 85.26 | 81.75 |
| Slaughter Lambs, wooled and shorn, 135-165 lb. National. . . . . | 156.95 | 157.75 | 163.93 |
| National Carcass Lamb Cutout FOB. . . . . | 379.36 | 384.92 | 392.83 |
| **Crops, Daily Spot Prices** | | | |
| Wheat, No. 1, H.W. Imperial, bu. . . . . | 4.43 | 4.03 | 4.26 |
| Corn, No. 2, Yellow **Columbus**, bu. . . . . | 3.39 | 3.71 | 4.63 |
| Soybeans, No. 1, Yellow **Columbus,** bu. . . . . .. . . | 8.35 | 7.32 | 8.14 |
| Grain Sorghum, No.2, Yellow Dorchester, cwt. . . . . | 5.20 | 5.83 | 7.14 |
| Oats, No. 2, Heavy Minneapolis, Mn, bu. . . . . | 2.81 | 3.29 | 3.23 |
| **Feed** | | | |
| Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . . | * | * | * |
| Alfalfa, Large Rounds, Good Platte Valley, ton. . . . . | 170.00 | 112.50 | 110.00 |
| Grass Hay, Large Rounds, Good Nebraska, ton. . . . . .. . . . | 100.00 | 90.00 | 97.50 |
| Dried Distillers Grains, 10% Moisture Nebraska Average. . . . . | 102.50 | 121.00 | 133.50 |
| Wet Distillers Grains, 65-70% Moisture Nebraska Average. . . . . | 39.00 | 47.25 | 50.00 |

*** No Market**

In a previous article in this space (on 6/20/2018), I discussed changes in the corn market and highlighted how the rapid growth of the Brazilian winter crop has been reshaping the market within Brazil and abroad. However, since corn exported by Brazil comes mainly from the country's center-west, its competitiveness in the international market is grossly impacted by the transportation infrastructure in Brazil. The same issue applies to Brazilian soybeans as well.

The development of a new agricultural frontier in Brazil, in a region known as Matopiba, may help Brazilian grain become more competitive and bring more changes to the world market. Before we talk about this new frontier, let's take a look at some numbers for competitiveness in the world market in order to better understand how the new production area in Brazil may change the landscape.

### *Export competitiveness in corn and soybean markets*

A study from the ERS-USDA illustrates how the notoriously poor infrastructure in Brazil hurts its competitiveness in the world market [1]. They calculated transportation costs of corn and soybeans exported from the United States, Argentina and Brazil (large exporters in the world market) to Egypt and Japan (large importers of corn) and China (the largest importer of soybeans). For each country, they started with farm price (which essentially reflects production costs) and added transportation, handling, and other costs involved in taking the grain from the farm to the export port. Specifically for Argentina, they also accounted for export taxes levied by the Argentine government and other export restrictions occasionally imposed, which represent extra costs for farmers (policy-related costs). Farm price plus the

cost to move grain from the farm to the port gives us the FOB port price, which is the corn price at the port after it has been loaded onto the vessel. Finally, they added ocean transport cost to find the landed cost of grain in the destination country.

Table 1 shows these numbers for corn exported to Japan (numbers for corn exported to Egypt are basically the same). For each exporter, they focused on the main producing areas: Midwest in the United States, Heartland in Argentina, and the state of Mato Grosso in Brazil. Mato Grosso is the main grain producer in the Brazilian center-west region, which is the last agricultural frontier that started developing in the 1980's and was responsible for the large growth of Brazilian grain production and exports. We can see in Table 2 the same calculations for soybeans exported from the United States, Argentina and Brazil to China.

Farm prices are generally lower in Argentina and Brazil, reflecting lower production costs compared to the United States. When it comes to inland transport/handling costs, the numbers are roughly similar between United States and Argentina, but strikingly higher for Brazil (based on Mato Grosso). The distance to the export ports on the east coast is about 1,000 miles, and the grain is hauled mostly by trucks through poorly-maintained highways. The mode of transportation and the poor infrastructure explains the high transportation cost in Brazil. This explains why, despite its competitiveness on the production side, Brazilian grain fails to be as competitive in the world market. On the other hand, competitiveness of Argentine grain is affected by the country's policy-related costs. Finally, ocean transport costs are basi-

**Table 1: Estimated cost of transporting corn to Egypt, 2008-2012 average (US$/metric ton)**

| | From U. S. (Midwest) | From Argentina (Heartland) | From Brazil (Mato Grosso) |
|---|---|---|---|
| Farm Price | 204 | 138 | 182 |
| + *Inland transport/handling cost* | *39* | *43* | *102* |
| + Policy-related costs | - | 104 | - |
| = **FOB port price**(*) | **243** | **285** | **284** |
| + Ocean transport cost | 34 | 37 | 37 |
| **= Landed cost** (**) | **277** | **322** | **320** |

Source: USDA [1]. (*) Corn price at the port in the country of origin after it has been loaded onto the vessel. (**) Corn price at the port in the destination country.

**Table 2: Estimated cost of transporting soybeans to China, 2008-2012 average (US$/metric ton)**

| | From U. S. (Midwest0 | From Argentina (Heartland) | From Brazil (Mato Grosso) |
|---|---|---|---|
| Farm Price | 426 | 266 | 387 |
| + *Inland transport/handling cost* | *57* | *50* | *98* |
| + Policy-related costs | - | 177 | - |
| = **FOB port price**(*) | **483** | **493** | **485** |
| + Ocean Transport cost | 51 | 50 | 57 |
| **= Landed cost** (**) | **534** | **543** | **542** |

Source: USDA [1]. (*) Soybean price at the port in the country of origin after it has been loaded onto the vessel. (**) Soybean price at the port in the destination country.

cally the same across the table and have no significant impact on the relative competitiveness of the three countries

In sum, the numbers tell us that U.S. corn and soybean producers manage to be more competitive in the world market because of the relatively low-cost and efficient transportation system in the United States (as opposed to the high-cost and inefficient transportation system in Brazil) and the absence of policy-related costs as in Argentina.

***Matopiba: the new agricultural frontier in Brazil***

The region known as Matopiba in Brazil encompasses parts of four states in the north-east side of the country: Maranhao (MA), Tocantins (TO), Piaui (PI) and Bahia (BA). Figure 1 shows the Matopiba region highlighted in red in the map on the right side. In order to compare geographical location, the map on the left side of Figure 1 shows the center-west region of Brazil, which is formed by three states: Mato Grosso, Mato Grosso do Sul and Goias. As can be seen in the maps, the Matopiba region is much closer to the coast (and hence to export ports) than the center-west region.

Agriculture is not new to Matopiba, but harvested area and production of corn and soybeans are still lower than levels observed in the center-west region (Table 3). Although it still does not compare to the powerhouse center-west, crop production in the Matopiba region has been growing rapidly in the recent past. In the last 20 years, harvested area for soybeans increased from approximately 2.2 million acres to 10.5 million acres, while production rose from approximately 80 million bushels to 2 billion bushels. For corn, harvested area increased from approximately 1.2 million acres to 4.4 million acres, while

**Figure 1: Agricultural areas in Brazil – Center-west (left) and Matopiba (right)**

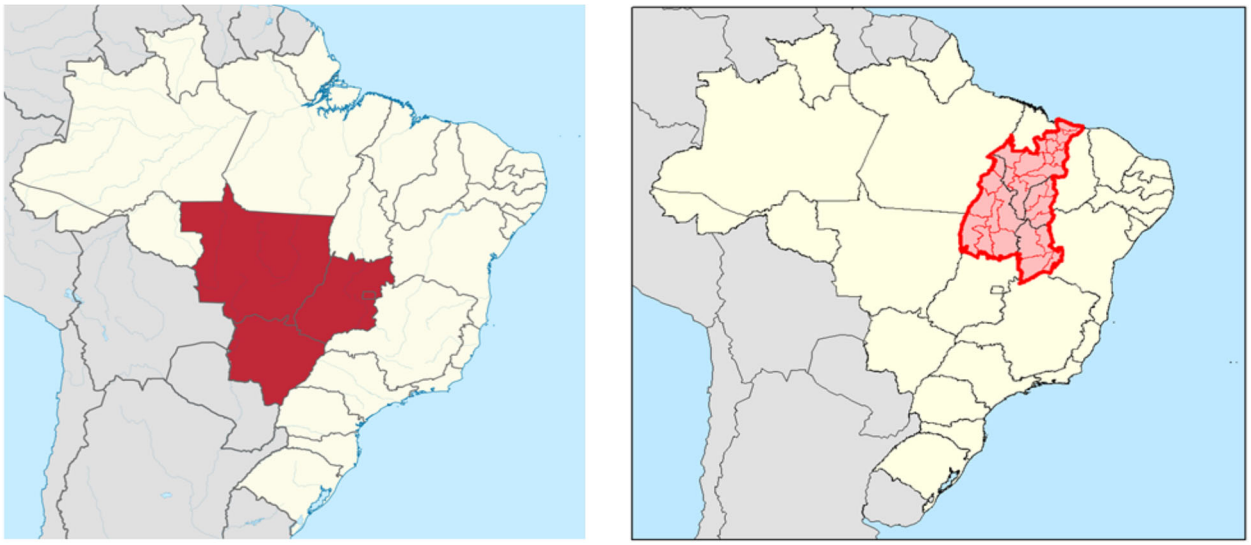

**Table 3: Comparison between center-west region and Matopiba in Brazil – 2017/18 crop year**

| | Harvested area (million acres) | Aerage Yield (bu/acre) | Production (million bu) |
|---|---|---|---|
| Corn - 1st crop | 0.7 | 127.6 | 89.8 |
| Center-west region, Matopiba | 2.9 | 72.0 | 206.5 |
| Corn – 2nd crop | 18.4 | 83.7 | 1,542.1 |
| Center-west region, Matopiba | 1.5 | 30.7 | 46.9 |
| Soybeans | 38.7 | 51.2 | 1,982.2 |
| Center-west region, Matopiba | 10.5 | 51.3 | 549.1 |

Source: CONAB[1]

[1] CONAB (Brazilian Food Supply Company) is a public agency under the Brazilian Ministry of Agriculture, Livestock and Supply (MAPA), responsible for the execution of Brazilian agricultural policies related to price support, public storage, market supply and foreign trade. In addition, CONAB participates in the formulation of Brazilian government agricultural policy.

production grew from approximately 51 million bushels to 250 million bushels. Significant growth has also been observed in yields. Soybean yields increased from about 36 bu/acre in the early 2000's to 50 bu/acre now, which is already comparable to center-west yields (Table 3). Corn yields have also improved, but are still lagging behind yields recorded in the center-west (Table 3).

In terms of logistics, the region has some relative advantages compared to the center-west. It is closer to the coast and hence to export ports in the Brazilian north-east, reducing the distance and time that it takes to ship grain to the port (thus potentially reducing inland transportation costs). In addition, the ports on the northeast coast are closer to the European market than the ports on the south-east coast (which have traditionally been used to export grain), whaichcan help reduce ocean transport cost. Besides, there are 41 inland ports along the region's waterways and 2 ports located on the coast that can be used to export grain.

However, just like in the rest of the country, infrastructure is also a challenge in Matopiba. Some of the ports need further investments to be able to efficiently handle all the grain shipped out of the region. Further, in many cases the grain still needs to be hauled by trucks through poorly-maintained highways until it reaches the ports. Investments have been made to improve highway conditions and also to develop a larger railway system, but more still needs to be done.

***Final thoughts***

Matopiba is the new agricultural frontier in Brazil and has significantly expanded in the recent past based mostly on corn and soybeans. In 2017/18, soybean production in Matopiba accounted for approximately 13% of the total soybean production in Brazil. Corn has expanded more slowly. Still, the region already accounts for approximately 7% of total corn production in Brazil.

There is still potential to expand grain production in the region, but growth is limited by indigenous land and conservation areas that cannot be used for large-scale agriculture. Still, production can also keep increasing through investments in technology to improve yields, particularly for corn.

Another challenge is the infrastructure to handle the increasing production in the region, especially in terms of transportation. Geographically, Matopiba has some advantages compared to the center-west, but more investments are needed for the region to fully develop this potential. Little research is available showing inland transport/handling costs in Matopiba compared to the center-west. Market participants estimate that these costs in Matopiba can be even 50% lower than in the center-west.

Going back to Table 1 and Table 2, Brazilian corn and soybeans coming from Mato Grosso loses competitiveness because of the high inland/transport/handling costs to get the grain to export ports. It remains to be seen the magnitude of these costs for grain coming out of Matopiba. If these costs are indeed lower in Matopiba, Brazilian grain may be able to gain some competitiveness in the world market. For example, Table 2 shows that even relatively small reductions in inland transportation costs can make Brazilian soybeans more competitive than U.S. and Argentine soybeans.

The main objective of this article is to call attention t o recent changes in Brazilian agriculture that may have impacts on the international grain market. At this point, there is not enough information and research to make final statements about this point. More data needs to be collected and more research needs to be done to assess the true competitive edge that the region may have. In the meantime, it is worth following closely how grain production and infrastructure develop in Matopiba, because it has the potential the change the dynamics of the world market in a not-so-distant future.

**Reference**

[1] Birgit Meade, Estefanía Puricelli, William McBride, Constanza Valdes, Linwood Hoffman, Linda Foreman, and Erik Dohlman, **"Corn and Soybean Production Costs and Export Competitiveness in Argentina, Brazil, and the United States"**, EIB-154, U.S. Department of Agriculture, Economic Research Service, June 2016.

Fabio Mattos,
Assistant Professor
Department of Agricultural Economics
University of Nebraska-Lincoln
fmattos@unl.edu
(402) 472-1796