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Iraqi Agricultural Production and Import Potential

Richard D. Taylor and Won W. Koo

Saddam Hussein is the latest in a long line of rulers who took control and oppressed the population of Iraq. Hussein took control of the government in June of 1979. In September of 1980, he invaded Iran over a border dispute. The war lasted until a cease fire was obtained in August 1988. Iraq quickly rebuilt its military with bank credits and technology from Western Europe and the United States. In August of 1990, Iraq invaded Kuwait, and in January 1991, an international coalition of forces invaded and pushed the Iraqi military out of Kuwait and back into central Iraq. Much of the Iraqi military was destroyed, along with much of the civilian infrastructure. This damage was compounded when the United Nations placed trade sanctions on Iraq in 1990 in response to the invasion of Kuwait. The sanctions had a drastic impact on Iraqi infrastructure because the destruction from the Gulf War could not be quickly rebuilt. In November of 2002, the United Nations resumed inspections for weapons of mass destruction and, in March of 2003, the United States attacked Iraq to remove Saddam Hussein from power.

Trade Sanctions—United Nations trade sanctions on Iraq have had a dramatic impact on food production and imports within the country. The production of cereal grains followed an upward trend until 1994. Since then, it has fallen over 50%. The production of livestock also showed the effect of the trade sanctions. Beef, sheep, and goat production has remained relatively stable throughout the years, but the production of chicken, which expanded rapidly from 1980 to 1990, collapsed due to the Gulf War and has not recovered. The production of goat milk and cheese fell in 1989-90 and recovered in 1997.

Wheat imports have historically been larger than those for other grains. Throughout the 1980s, wheat imports grew from around 2 million metric tons per year to about 3.3 million metric tons in 1990. After the Gulf War, imports fell to less than 1 million metric tons until 1997, when imports of wheat returned to pre-war levels. Most of the wheat imports come from Australia. Feed grain imports varied between 0.5 and 1 million metric tons during the 1980s but have fallen to almost zero since the Gulf War. Rice imports were maintained at 0.5 million metric tons until 1997, when they increased to over 1 million metric tons. The decrease in livestock imports has been more dramatic. Chicken imports fell from 150 thousand metric tons in the early 1980s to almost zero today. Beef imports increased rapidly during the early 1980s, but have also fallen to almost zero. Imports of sheep meat, which totaled about 25 thousand metric tons per year in the 1980s, are zero today.

Production—Yields for cereal grains fell during the 1990s as producers in Iraq were prevented from obtaining agricultural inputs needed for crop production. Early in the 1980s, Iraq imported over $90 million in inputs for agriculture per year. These imports included seed, fertilizer, chemicals, farm machinery, and other technology from foreign countries. Imports fell throughout the 1980s to about $50 million in 1990. Since the Gulf War, these imports have been $5 million per year. Wheat yield averaged 0.91 metric tons per hectare in 1988-90, but has fallen to 0.58 metric tons per hectare in 2000-02. Other grains have followed similar trends.

Food—With less food production and fewer imports, the daily protein and calorie intake of the population has decreased over time. The average calorie intake for Iraq increased from 2,820 in 1980 to 3,294 in 1990. By 2001, that level fell 33% to 2,197 calories per day. Calories from meat products fell 61% during the same time period. Protein levels also increased during the 1980s, but since 1990, protein intake has dropped 39%. The protein obtained from livestock products dropped 65% during the same time period.

Potential—Iraq has the potential to become a major importer of some agricultural commodities. Per capita consumption of cereal grains increased from 339 kg/year in 1980-82 to 480 kg per year in 1988-90. After the Gulf War and the U.N. sanctions, per capita consumption fell to 375 kg per year (Table 1). To return Iraq's total consumption to pre-trade sanction levels will require an additional 1.2 million metric tons of barley, 0.8 million metric tons of corn, and 0.4 million metric tons of wheat. Per capita consumption of livestock decreased slightly from 28.3 kg/year in 1980-82 to 27.8 kg per year in 1988-90. After the Gulf War and the U.N. sanctions, per capita consumption fell 66% to 9.4 kg per year. The additional supply of livestock needed to return Iraq's consumption to pre-Gulf War levels is 86 thousand

metric tons of beef, 31 thousand metric tons of sheep, and 305 thousand metric tons of chicken meat per year. If barley and corn imports increase to pre-embargo levels, chicken production should also increase to pre-embargo levels. Therefore, the increased imports of chicken will be short-term. The Iraqi chicken industry will likely be developed and supply most of the chicken requirements.

Currently, Australia supplies the majority of imported wheat to Iraq. Last year, 2002, Australia exported $484 million of wheat to Iraq under the oil-for-food program. U.S. growers supplied as much as 40% of Iraqi wheat imports in the mid 1980s, although much of that wheat was imported under generous terms due to the support given Iraq because of the Iraq-Iran war. Since the overthrow of the Iraqi government, Australian exporters have been concerned about the potential loss of the Iraqi market given the increased competition among exporting countries. Australia may have a slight advantage in ocean shipping rates when compared to the United States, but the margin is small. There is potential for the United States to capture some of the wheat exports to Iraq. Shipping rates for other exporters are much higher. The cost of exporting from the United States should be competitive with any other exporter, with the exception of India.

Table 1. Historical & Current Per Capita Consumption of Cereal Grains and Livestock in Iraq

	Per Capita Consumption (Kg)		
	1980-82	1988-90	1999-01
Cereal Grains			
Wheat	211.3	264.1	249.4
Barley	75.7	113.8	39.9
Corn	12.4	49.4	5.3
Rice	40.1	52.9	81.1
Total	339.4	480.3	375.8
Livestock			
Beef	6.5	6.8	3.4
Sheep	4.6	3.5	2.1
Chicken	17.2	17.6	3.9
Total	28.3	27.8	9.4

Sources: FAOSTAT, United Nations

Conclusion—Iraq has the necessary resources to recover from the overthrow of Saddam Hussein. Unlike the Gulf War, the infrastructure of Iraq was not targeted in the latest military action. In the short-run, Iraq will begin to import most agricultural commodities, including wheat, feed grains, chicken, beef, and sheep meat. Agricultural technology and inputs will also be imported, which will allow increased production and lower import demand. In the longer-run, the chicken industry, along with other livestock and crop production, will increase, which will increase the demand for feed grains but lower the demand for meat imports. Currently, Iraq obtains wheat from Australia and rice from Southeast Asia. Neither wheat nor rice import levels are likely to increase substantially, but there is potential for the United States to displace some Australian wheat.

Total food consumption, in the near future, could increase 30%-40% when income levels return to pre-Gulf War levels. Part of that increase will be supplied from increased domestic production, but a large portion will need to be imported, especially in the short-term. The main potential for agricultural exports from the United States are feed grains and agricultural inputs and technology.

Potential Impacts of GM Wheat on United States and Northern Plains Wheat Trade

Richard D. Taylor, Eric A. DeVuyst , and Won W. Koo

The potential introduction of Genetically Modified (GM) wheat has been in the news for several years. Currently, Monsanto is expected to introduce a glyphosate-tolerant spring wheat variety in the next 2 to 5 years. Because of consumer concern over the safety of the product, acceptance in overseas markets is questionable.

The objective of this study is to estimate the impact of the introduction of GM wheat on the North Dakota wheat industry, other spring wheat regions both in the United States and Canada, and the hard red winter wheat growing regions. A spatial equilibrium model is developed to evaluate the trade impacts associated with GM wheat introduction and several plausible post-GM adoption scenarios. Hard red spring, Canadian western red spring, and hard red winter wheat are modeled. Hard red spring wheat is further divided into non-GM and GM types.

A baseline scenario is developed with which to compare all other scenarios. The baseline scenario assumes no GM wheat is produced, while GM wheat is produced under the other scenarios. Scenario 1 assumes that the U.S. marketing / transportation system will not be able to develop an affordable and reliable method of segregation. Therefore, under Scenario 1, the EU, Japan, and South Korea will not purchase any wheat from the United States. When segregation is unsuccessful, no combination of the other assumptions provides positive results. The other scenarios all assume successful segregation. Scenario 2 allows GM wheat production in North Dakota and other U.S. spring wheat regions (OSR) but only at the 30% adoption level. Many producers within the production regions, especially in the western areas, may not produce GM wheat because their herbicide cost is less than the cost for GM wheat. Also, rotational concerns will affect the production of a second GM crop. Scenario 3 introduces GM wheat in both the United States and Canada at the 30% adoption level. Scenario 4 places the segregation fee on GM wheat instead of on non-GM

wheat. If the marketing system in the United States treats GM wheat as a minor commodity, it is possible that GM wheat will carry the segregation cost instead of non-GM wheat. The other assumption in Scenario 4 is that GM wheat is produced in the United States at the 30% adoption level, similar to Scenario 2.

At this time, it is unknown whether GM wheat will be segregated from non-GM wheat or if non-GM will be segregated from GM wheat. A segregation fee of $2.23/metric ton is applied to non-GM wheat exported to Japan, the EU, and South Korea. There has been wide debate on what that cost would be. Estimates range from $1.30 per metric ton to over $16 per metric ton, depending on what is included in the cost, e.g., segregation, sampling, testing (both domestically and foreign), reporting, and insurance. If a segregation system is not affordable, GM wheat production will not be profitable. Therefore, a level was chosen that could provide separation but at the same time not prevent GM wheat production.

If segregation is successful, there is little change in export volume. The results change if the U.S. marketing/transportation system is unable to segregate GM wheat from non-GM wheat. Under Scenario 1, North Dakota's exports decrease 2.1%, other spring wheat region exports decline 2.0%, and the winter wheat region exports decrease 2.2%. Canadian exports increase 4.4%, compared to the base scenario.

Producer welfare drops for the spring wheat growing region under Scenario 1. When no trade is allowed with the EU, Japan, or South Korea because of unsuccessful segregation, producer welfare drops $10.56 per metric ton, or about $0.29 per bushel, for spring wheat and $11.06 per metric ton, or about $0.30 per bushel, for winter wheat (Table 2). Producer welfare in North Dakota drops $27.3 million (10.1%) and $32.3 million in OSR. The winter wheat region (WR) also loses producer welfare because HRW is viewed as being mixed with GM spring wheat. The producer welfare for WR drops $150.7 million (12.0%). Producer welfare for the Canadian growers increases $171.2 million (16.7%), or about $0.45 per bushel.

Table 2. Producer Welfare Per Metric Ton of Exported Wheat

	ND	OSR	WR	Man	SK	Alb	BC
				$/metric ton			
Baseline	116.66	116.66	101.69	131.23	119.71	125.24	125.52
Scenario 1	106.10	106.10	90.62	147.76	136.24	141.77	142.05
Scenario 2	117.54	117.54	101.43	131.36	119.84	125.37	125.65
Scenario 3	116.60	116.60	101.63	131.17	119.65	125.18	125.46
Scenario 4	116.67	116.67	101.69	131.24	119.72	125.25	125.53
Difference from Base							
Scenario 1	-10.56	-10.56	-11.06	16.53	16.53	16.53	16.53
Scenario 2	0.87	0.87	-0.25	-0.13	-0.13	-0.13	-0.13
Scenario 3	-0.06	-0.06	-0.05	-0.06	-0.06	-0.06	-0.06
Scenario 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00

When GM wheat is produced in the United States under successful segregation, North Dakota's producer welfare increases by $6.55 million, and the producer welfare for the OSR increases by $7.74 million. Producer welfare for U.S. spring wheat producers increases $0.87 per metric ton under this scenario. The other regions lose producer welfare. When the segregation fee is charged to GM wheat, there is little change from the baseline in producer welfare.

The price of wheat drops $10.56 per metric ton, or about $0.29 per bushel, in the United States when segregation is unsuccessful. With successful segregation, GM wheat is about $2.10 to $2.15 per metric ton less than non-GM wheat. The price difference under the scenario which places the segregation fee on GM wheat is approximately $4.15 per metric ton, which reflects the $2.33 per metric ton segregation fee.

Under Scenario 1, the EU, Japan, and South Korea import wheat from Canada because all U.S. wheat is treated as GM wheat. Under the other scenarios, imports come from both the United States and Canada because there is enough segregated wheat available in both countries.

The total trade volume of exported hard wheat changes very little under the various scenarios. Since import demand is inelastic, imports remain relatively constant with small changes in price, but there is a change in trade flows. When GM wheat is introduced, the countries restricting GM wheat import non-GM wheat from other sources, resulting in little change in volume or price.

The study indicates that the main determining factor for the profitability of GM wheat production is the ability of the marketing/transportation system to develop a segregation system which is affordable, dependable, and acceptable to foreign consumers. If that acceptance cannot be developed, then the introduction of GM wheat, while benefitting a few producers, will lower total producer welfare in the United States.

North Dakota State University
Dept. of Agribusiness & Applied Economics
P.O. Box 5636
Fargo, ND 58105-5636

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CAPTS NEWS

CAPTS' latest conference, Agricultural Competitiveness and World Trade Liberalization, was a great success! Over 100 participants and media attendees engaged in stimulating discussion with conference speakers over vital emerging issues in the liberalizing trade environment. U.S. Senator Kent Conrad opened the conference with a keynote speech, and John Johnson, President and CEO of CENEX Harvest States Cooperatives, was the featured speaker at the conference dinner.

Dr. Won W. Koo, director of CAPTS, was recently recognized by NDSU and the Fargo community. On April 8th, he received the 45th Faculy Lectureship Award from the university, and, on May 21st, he was named the Fargo-Moorhead Chamber of Commerce Distinguished Professor.

Highlights—Dr. Koo has also enjoyed recent success on the golf course! He made an "Eagle" on Hole No. 2 of the Edgewood Golf Course on April 23rd, closely followed by another "Eagle" on Hole No. 4 of the same course on April 24th. Does this make him a "sandbagger" or a skillful player?