

Policy Changes, Trade Tensions, and Disputes: Focus on Grains and Pulses
Parr Rosson and Flynn Adcock¹

Introduction

North American grain trade has doubled since the early 1990s, responding to freer markets after Mexico joined the General Agreement Tariffs and Trade (GATT) in 1986, the implementation of the Canada-U.S. Trade Agreement (CUSTA) in 1989, and the North American Free Trade Agreement (NAFTA) in 1994. In 1993 intra-NAFTA grain trade represented only about nine percent of all grain traded by NAFTA countries. By 2002 this proportion had increased to about 18 percent, reflecting the increasing importance of NAFTA countries as trading partners. Intra-NAFTA grain trade has nearly doubled during this period from 11 million metric tons (mmt) to 21 mmt. These gains in trade have occurred at a time when NAFTA grain trade with the rest of the world has declined by about 15 percent. North American pulse trade has expanded 170 percent since NAFTA, reaching 4.1 mmt in 2001, but falling to 3.3 mmt in 2002. Intra-NAFTA trade accounted for about 11 percent of total pulse trade by NAFTA countries in 2002 compared to about 10 percent in 1993. The purpose of this paper is to identify those grain and pulse sectors likely to experience trade tensions due to new U.S. farm legislation or policy changes in Canada or Mexico.

Intra-NAFTA corn trade accounted for 44 percent of the total NAFTA partner grain trade in 2002, followed by 20 percent for grain sorghum, 11 percent for wheat, four percent for each of rice and oats, three percent for barley, and two percent for buckwheat/millet. This is in contrast to 1993 when grain sorghum (34 percent) and wheat (26 percent) dominated intra-NAFTA grain trade. During that same year, corn represented only 14 percent of grain trade, followed by oats (nine percent), barley (six percent), and rice (two percent). Intra-NAFTA corn trade has been the primary recipient of more open markets, along with rice.

¹ Professor and Extension Economist and Research Associate, respectively, Department of Agricultural Economics, 2124 TAMU, Texas A&M University, College Station, TX 77843-2124, Telephone 979-845-3070, E-mail: prosson@tamu.edu. Prepared for Policy Disputes Information Consortium, April 23-26, 2003, Montreal, Quebec.

The transition to more open grain markets has been less than smooth. One of the first major issues to arise was the U.S.-Canada durum wheat dispute, discussed in this forum. Later came the Mexico-U.S. dispute over high-fructose corn syrup, a by-product of corn wet milling. There has also been scrutiny of U.S. corn exports to Canada and antidumping duties imposed on U.S. rice exports to Mexico. More recently, passage of new U.S. farm legislation in 2002 created more friction and could lead to future trade disputes. Particular attention has been focused on pulse crops and corn.

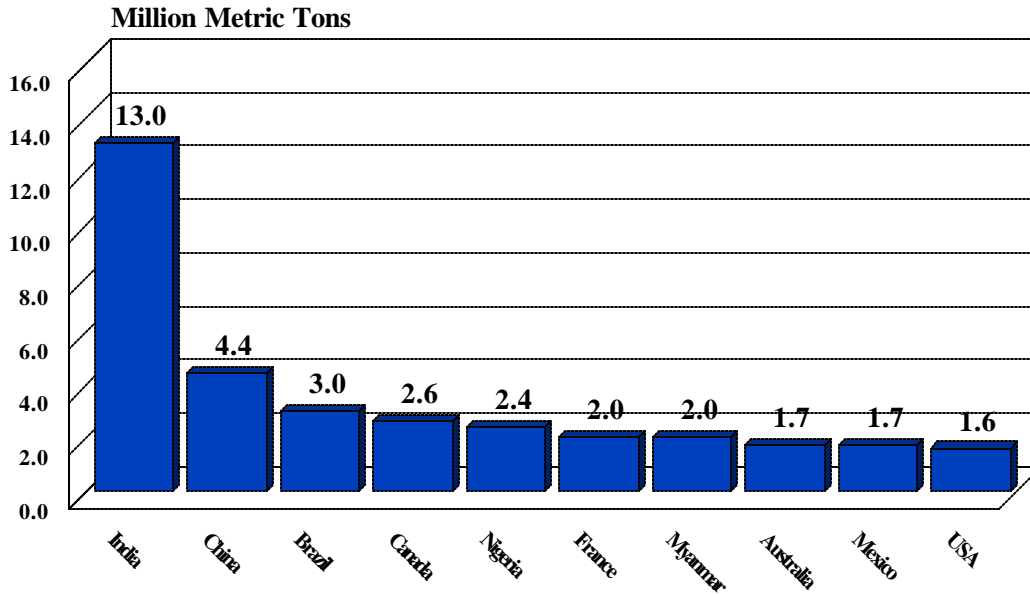
Provisions of the 2002 U.S. farm bill include loan rates for pulse crops of dry peas, lentils, and small chick peas. Loan rates for traditional program grain crops such as corn, sorghum, wheat, rice, oats, and barley are continued, but the law also institutes new target prices and counter-cyclical payment schemes for these same grain crops.

Background

World pulse production averaged more than 55 million metric tons (mmt) during the first half of the 1990s. Since then, production has lagged previous levels, dropping to 52.5 mmt in 2001 and recovering to 54 mmt in 2002. Much of this decline is attributed to drought and reduced output in Canada and Australia (FAO). Developing countries account for 76 percent of world production. Asia dominates with 50 percent of production, mostly concentrated in India, the world's largest producer, China, and Myanmar (figure 1). Brazil is the largest pulse producer in South America, while Nigeria dominates production in Africa. Within NAFTA, Canada is the largest producer, with 2.6 mmt in 2002, followed by Mexico with 1.7 mmt, then the United States with 1.6 mmt.

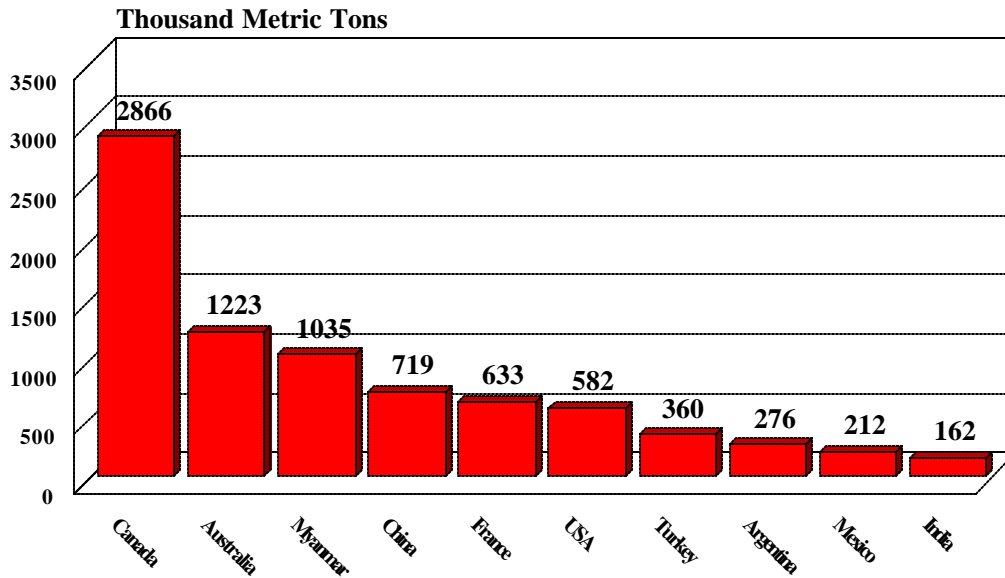
World pulse exports declined in 2001 due to lower production in Canada and Australia, the top two largest exporters (figure 2). Other major exporters are China, Myanmar, France, the United States, and Turkey. India accounts for about 25 percent of world imports, making it by far the largest importer. The European Union is second, followed by Pakistan, Egypt, Bangladesh, China, and the United States. Prices for the four major pulse crops, lentils, green and yellow peas, and dry beans, have trended downward since 1994 (figure 3). Although dry

Figure 1. World Pulse Production, 2002
Top 10 Countries



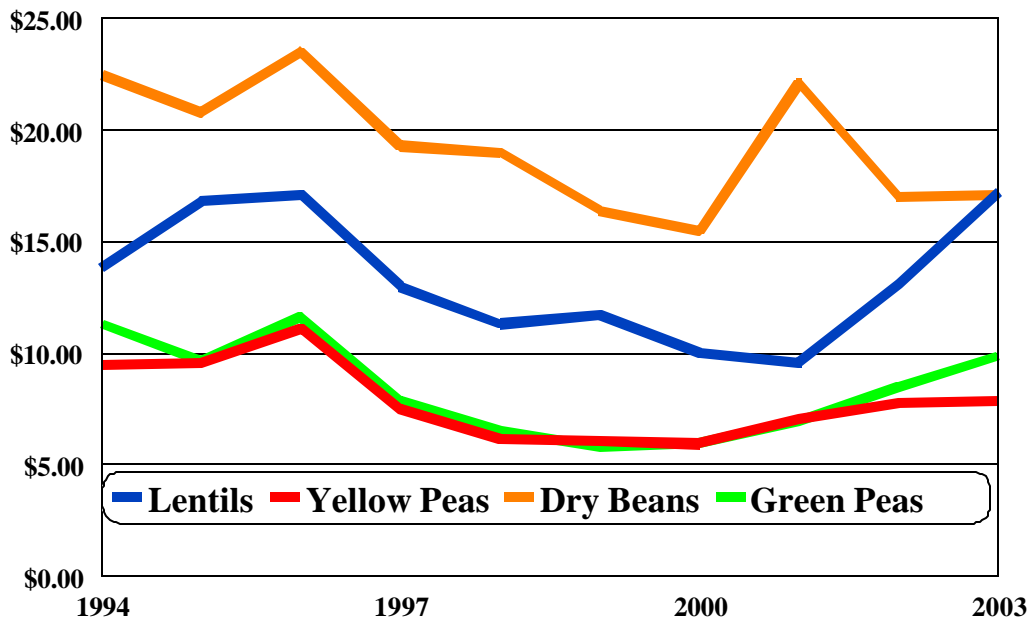
Source: FAO, FAO-STAT 2002

Figure 2. World Pulse Exports, 2001
Top 10 Countries



Source: FAO, FAO-STAT 2002

Figure 3. U.S. Farm Price for Pulses, 1994-03



ERS, USDA, Vegetables/Melons Outlook, VGS-295, Feb. 25, 2003

bean prices recovered in 2001, the downturn resumed in the last two years. Pea prices recovered in 2000 and still exhibit some moderate strength. Lentils have shown the strongest price recovery, moving from \$16.40/cwt in 1999 to \$17/cwt in 2002. This is due largely to a 180 percent increase in purchases by Canada, attributed mainly to drought and growing export demand.

Canada is the world's largest exporter of pulses, increasing shipments 550 percent to 2.9 mmt between 1991 and 2001 and accounting for about one-third of world exports (Gower). Dry peas accounted for 69 percent of total pulse exports from Canada in 2001, followed by lentils (17 percent), dry beans (nine percent), and chick peas (five percent). Cow peas and broad beans account for a small volume of trade. The majority of Canada's pulse exports are used food for human consumption, supplying ten percent of the daily protein needs and five percent of the energy requirements for consumers in developing countries (Gower). Canada's major markets include India, Bangladesh, and Pakistan, the Middle East, North Africa, and Latin America.

In 2002, Canada exported 22,710 mt of lentils to Mexico, 2,790 mt of dry peas, and 2,651

mt of dry beans. All exports to Mexico were down from previous years due to drought. Canada's pulse exports to the U.S. market have been dominated by dry beans, accounting for 55 percent of total exports and 75 tmt in 2002. Kidney beans (30 tmt) and dry peas (26 tmt) account for the rest. The United States exports limited amounts of dry peas, kidney beans, dry beans, and chick peas to Canada, with export volume less than 70 tmt in most years. Dry peas have accounted for about one-half of total U.S. pulse export volume to Canada in recent years, while kidney bean exports have fallen by more than one-half since 1999.

More than 95 percent of Canada's grain exports to Mexico have traditionally been wheat other than durum. Oats is Canada's top grain export to the U.S. market, followed by wheat, durum wheat, and then barley. Canada imports about 67,000 metric tons (mt) of pulses annually, doubling since 1993. Major pulse imports are dry beans (41 percent), dry peas (28 percent), chick peas (14 percent), lentils (seven percent), and other pulses.

Since 1993, pulse production in Canada has expanded nearly 300 percent exceeding 4.0 mmt in 2000, while planted area has increased four fold to 2.4 million hectares. Much of this expansion in area and output was driven by the availability and adoption of early season varieties suitable for the western Canada, mainly Saskatchewan and Alberta. Canada, along with China, Australia, Brazil, and Nigeria account for about one-half of world pulse production. Dry peas accounted for 53 percent of Canadian pulse production in 2002. This was followed by chick peas (17 percent), lentils (16 percent), and dry beans (13 percent).

U.S. grain exports to Canada are primarily corn, accounting for 4.1 mmt in 2002, up one-third from 2001 and more than four times the level of exports prior to NAFTA. Corn, grain sorghum, and wheat are the major U.S. grain exports to Mexico. Corn accounts for about 40 percent, while sorghum represents 36 percent, and wheat (except durum) 19 percent. Barley, seed corn, oats, millet, and buckwheat account for the remainder of U.S. grain exports to Mexico.

U.S. grain imports from Mexico are limited to about 10 tmt of durum wheat and small volumes of corn. U.S. grain imports from Canada are dominated by non-durum wheat and oats,

about evenly split in most years. Durum wheat imports from Canada have averaged more than 300 tmt since the mid-1990s, rising to 595 tmt in 2002. Other major grain imports from Canada are barley and corn. Canada is the major U.S. import supplier of durum wheat, wheat, barley, and corn, accounting for more than 90 percent of imports in most years.

U.S. pulse exports have expanded 18 percent since 1993, reaching 582 thousand metric tons (tmt) in 2001. Dry beans accounted for 57 percent of total U.S. pulse exports in 2001. This was followed by dry peas (18 percent) and lentils (17 percent). Chick peas, cow peas, and other pulses represented the remainder of U.S. exports. U.S. pulse exports to Mexico consist mainly of dry beans (56 percent) and kidney beans (35 percent). Dry bean exports have increased 150 percent since NAFTA, while kidney bean exports have been fairly stable. Small amounts of peas, lentils, and other types of beans are also exported to Mexico, with all but dry peas increasing since NAFTA. U.S. pulse imports have more than doubled to 213 tmt over the same period. Dry beans and dry peas account for 78 percent of all pulse imports, while lentils, chick peas, and other pulses represent about 22 percent.

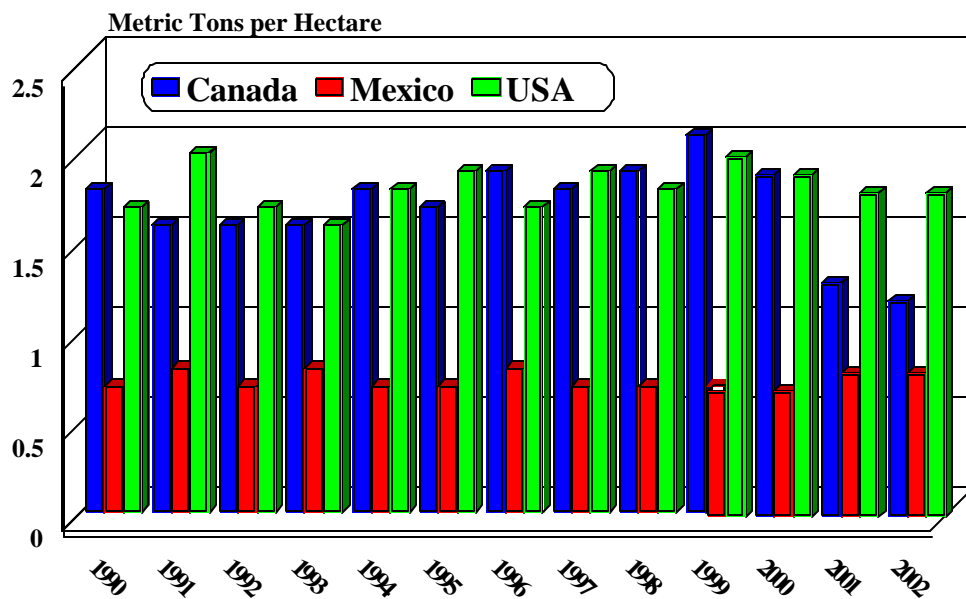
U.S. pulse production was relatively stable during the 1990s, going from 1.3 mmt in 1993 to a peak of 1.9 mmt in 2000, then declining. The same trend is apparent in area harvested. About 78 percent of total U.S. pulse production was dry beans in 2002. The majority of other pulse production was dry peas and lentils.

Pulse exports from Mexico have expanded five fold since 1993 to 212 tmt in 2001. Chick peas account for 98 percent of total Mexican pulse exports, expanding from 33 tmt in 1993 to 207 tmt in 2001 and representing more than Canada and the United States combined. Dry bean exports represent the large majority of the remainder. Mexico exports less than 10 tmt of pulses to the U.S. market in most years, with kidney beans, chickpeas, and dry beans accounting for virtually all of export volume. Mexican pulse imports have doubled to 177 tmt during this same period. It is important to note, however, that Mexican pulse imports were 347 tmt in 1990, but have since declined. Dry beans account for 72 percent of all pulse imports, followed by lentils (12 percent) and dry peas (10 percent).

Pulse production in Mexico has shown little growth in recent years. About 1.8 mmt were produced in 1996, with output declining to 1.67 mmt in 2002. Dry beans account for about 80 percent of Mexican pulse output, followed by chick peas (14 percent) and vetches (five percent). Mexican pulse area was relatively stable during the 1990s. Area harvested ranged from 2.0 million hectares (mh) in 1993 to a peak of 2.2 mh in 1996, but has since fallen to 2.0 mh in 2002.

One major contrast between pulse production in Mexico and that of Canada and the United States relates to yields. Mexican pulse yields are relatively low. Since 1998, for example, U.S. pulse yields have averaged 1.87 metric ton/hectare (mt/ha) (.75 mt/acre), while Canadian yields have 1.70 mt/ha (.70 mt/acre), which includes the low yields during the drought years of 2001 and 2002 (figure 4). Mexican yields, however, have averaged only .75 mt/ha (.3 mt/acre) over the same period. Further, pulse yields in Mexico have exhibited little growth since the early 1990s, rising from .70 mt/ha in 1990 to .79 mt/ha in 1996. Yield differences are likely explained in part by the propensity of *ejidatarios* to plant dry beans as a subsistence crop, regardless of market prices and adverse weather conditions.

Figure 4. NAFTA Pulse Yields



Source: FAO, FAOSTAT Database

Further stimulating Mexican pulse output are the effects of Mexican farm policy under Procampo in the early 1990s and later Alianza para el Campo, which pays farmers with small areas about \$106/ha (\$43/ac) to plant selected crops, one of which is beans, the other corn. Many of these small farms (less than five ha or 12 acres), especially in northern Mexico, are located in regions characterized by semi-arid climate, sandy and rocky soils, limited or no access to irrigation, low input use, overgrazing, and with almost no opportunity to improve efficiency or reach economies of scale. Beans, and to a certain extent corn, appear to be produced with little regard to market conditions or price signals.

Potential for Policy Disputes and Trade Disruption

Passage of the 2002 U.S. farm bill, along with the ten year anniversary of NAFTA when the large majority of agricultural trade became duty free (2003), has spurred social unrest in Mexico and increased trade tensions among NAFTA partners. Concern in Canada has focused on the potential impacts of U.S. loan rates for pulses on prices in general and on Canadian acreage, production, and profitability in particular. In Mexico, most tensions have centered on import surges of U.S. corn, rice, and dry beans.

The United States maintains tariffs on most grains ranging from 2.8 to 10 percent, with duty free access for NAFTA partners. There are no U.S. TRQs on grains or pulses. The United States has, however, requested dispute settlement under the World Trade Organization (WTO) challenging the Canadian Wheat Board and its operations. Also, a 3.94 percent countervailing duty has been imposed on U.S. imports of Canadian durum and hard red wheat. Challenges to U.S. farm program provisions for soybeans and cotton have been mounted by Brazil.

Dry beans is the only pulse crop for which Mexico has farm program payments. Mexico imposes antidumping duties on U.S. rice that range from 3.93 percent to 10.18 percent. The 2003 TRQ for U.S. corn is 3.263 mmt with a 90.8 percent over-quota duty. Since NAFTA took effect, however, U.S. corn exports to Mexico have exceeded the quota every year, and in 2000 U.S. exports were 60 percent above TRQ levels of 3 mmt (Zahniser and Link). The TRQ for dry beans of U.S. origin is 65,238 mt with an over-quota duty of 58.7 percent, while the TRQ for

Canada is 2,016 mt with the same over-quota duty. Dry bean imports from Canada and the United States have been temporarily halted by the Mexican government due to concerns about non-NAFTA beans being transhipped through the United States and Canada and more recently, concerns have been raised about the practice of under-invoicing shipments in order to reduce duty payments. The suspension of imports was initially due to phytosanitary concerns. In December 2002, Mexico imposed a global TRQ for feed grains, alfalfa meal and pellets, and forage seeds.

Canada maintains a wheat TRQ of 226,883 mt for non-NAFTA countries, but NAFTA partners have duty free access. Canada also has a barley TRQ of 399,000 mt, with over-quota duties dependent on the product. NAFTA partners have duty free access.

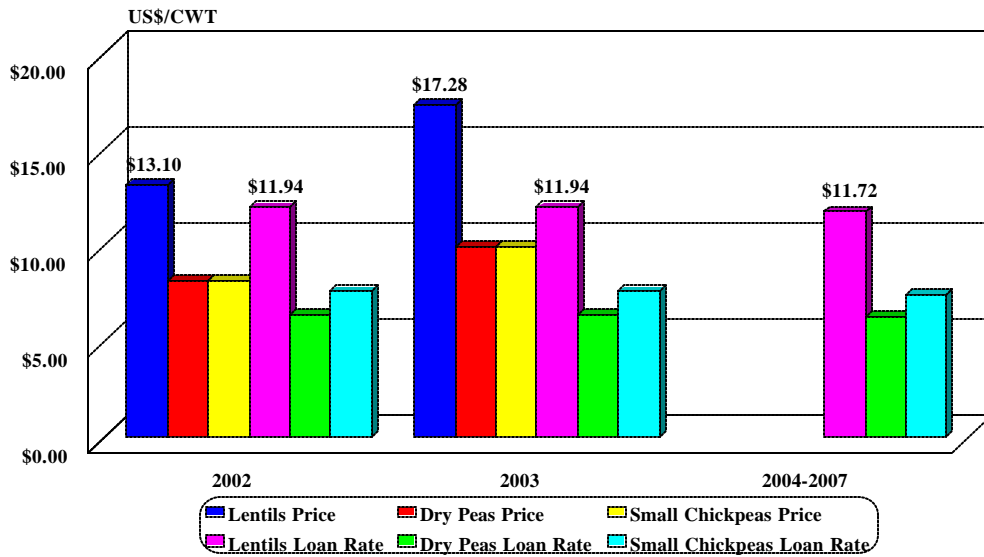
Corn and dry beans are the only grain and pulse crops not currently duty free under NAFTA provisions. Both crops are scheduled to be free of duties and their respective TRQs in 2008. This, coupled with additional farm program support in the United States may lead to additional import competition in Mexico and Canada, thereby spawning more trade disputes.

Pulses

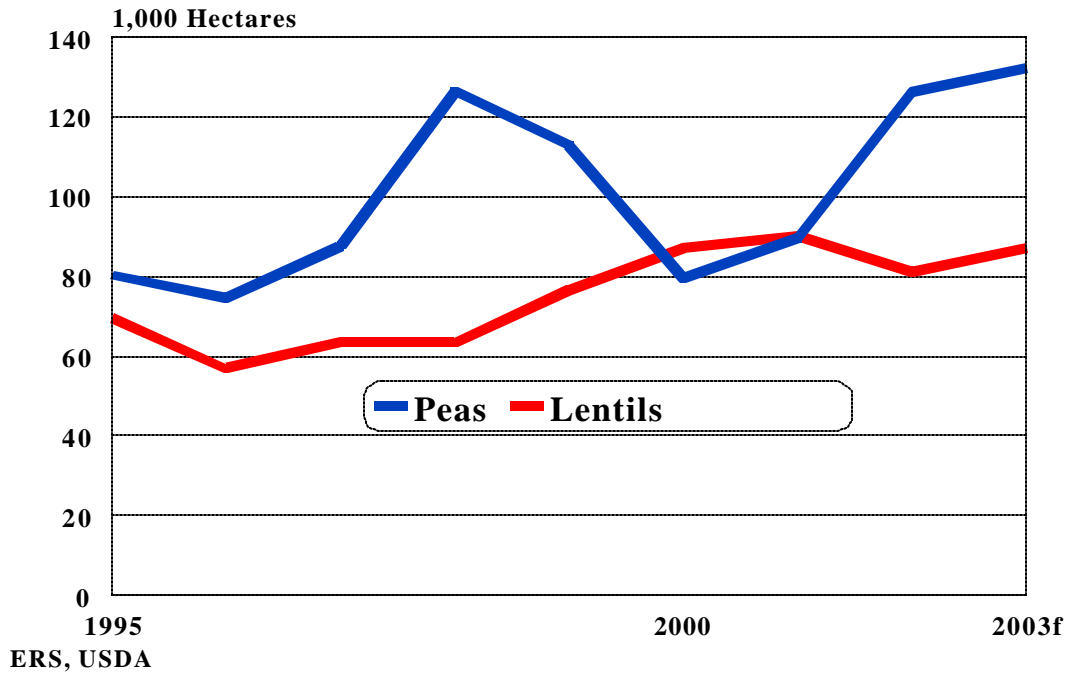
The 2002 U.S. farm bill instituted a marketing loan for dry peas, lentils, and small chickpeas. There are no farm program provisions for dry beans. The loan rates for 2002/2003 are \$6.33/cwt for dry peas but the loan rates vary by region. A loan rate of \$6.68/cwt applies in the West and \$5.89 /cwt applies in the East. The nation-wide loan rate for lentils is \$11.94/cwt, while the loan for small chickpeas is \$7.56/cwt (USDA, 2/25/03) (figure 5). These rates are scheduled to decline slightly for the 2004-07 seasons to \$6.22/cwt for dry peas, \$11.72/cwt for lentils, and \$7.43/cwt for small chickpeas. U.S. grower prices for lentils ranged from \$13.81/cwt in 2002 to \$18.56/cwt in March 2003 (ERS/USDA). Dry pea prices ranged from \$7.34/cwt to \$9.46/cwt over the same period.

U.S. planted area for peas and lentils increased 32 percent from 2000-2003 (figure 6). Dry pea area accounted for virtually all of the 53,000 hectare expansion, with lentil acreage fairly flat. Stronger domestic and export demand and higher prices are responsible for much of

**Figure 5. U.S. Pulse Prices and Loan Rates
2002-03 and 2004-07**



**Figure 6. U.S. Pea & Lentil Planted Area
1995-2003f**



this increased area as market prices far exceeded loan rates.

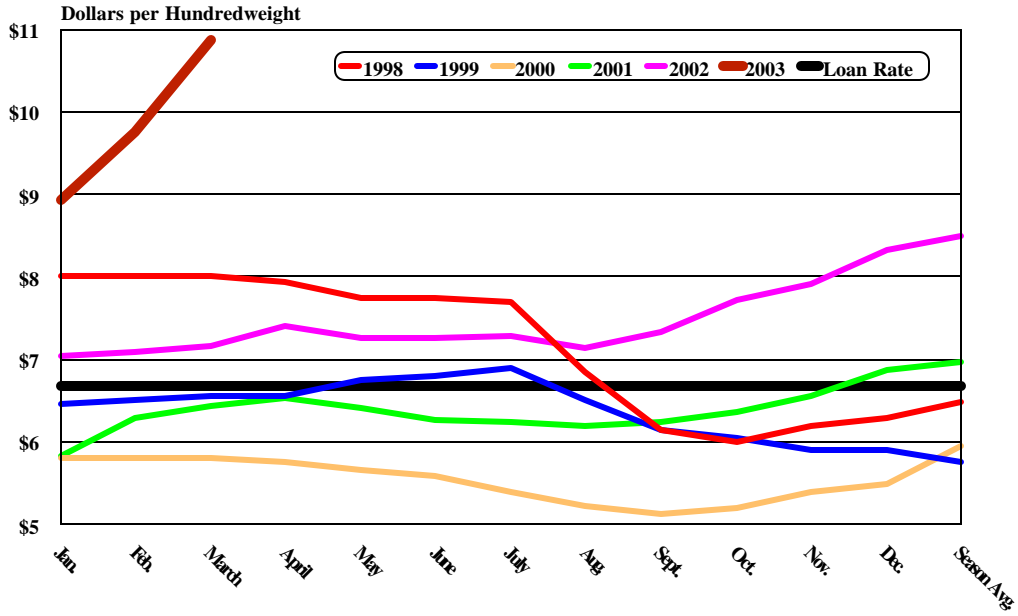
Figures 7 and 8 depict U.S. market prices and loan rates for green dry peas and lentils. In the case of green dry peas, had the 2002/03 loan rate prevailed in 2000 and 2001, it would have likely attracted some acreage, especially since wheat and grain prices were relatively low during those years. For lentils, market prices have generally been at or below the loan rate during each of the past five years with 1998, 2000, and 2001 being the lowest. It is likely that additional area would have gone into lentils under these market conditions. Peas also appear relatively responsive to price signals. It is likely that in years of low market prices, loan payments for peas and lentils will support the expansion of area. How large this expansion is will depend upon relative price and loan payment rates, costs of production, and favorable growing conditions in traditional as well as new potential areas of expansion.

Dry beans, the major non-program pulse crop, has experienced a gradual decline in area since the mid-1990s. The recent upturn in area for 2002 was due to higher prices and stronger export demand. Since then, export and domestic demand have stabilized, resulting in a price decline of \$1.50/cwt which led to a 21 percent drop in planted area for 2003. Planting declined most in North Dakota (24 percent), Michigan (44 percent), Minnesota (18 percent), Colorado (eight percent), California (13 percent), and Nebraska (14 percent). Prices have since rebounded to \$9.40/cwt in February 2003.

Canada is a large net exporter of pulse crops, with a trade surplus of 2.8 mmt in 2001 and net surplus production of 2.25 mmt for 2002. The United States is also a net pulse exporter, with a trade surplus of 369 tmt in 2001. Mexico is a small net exporter of pulses, with exports exceeding imports by 35 tmt in 2001.

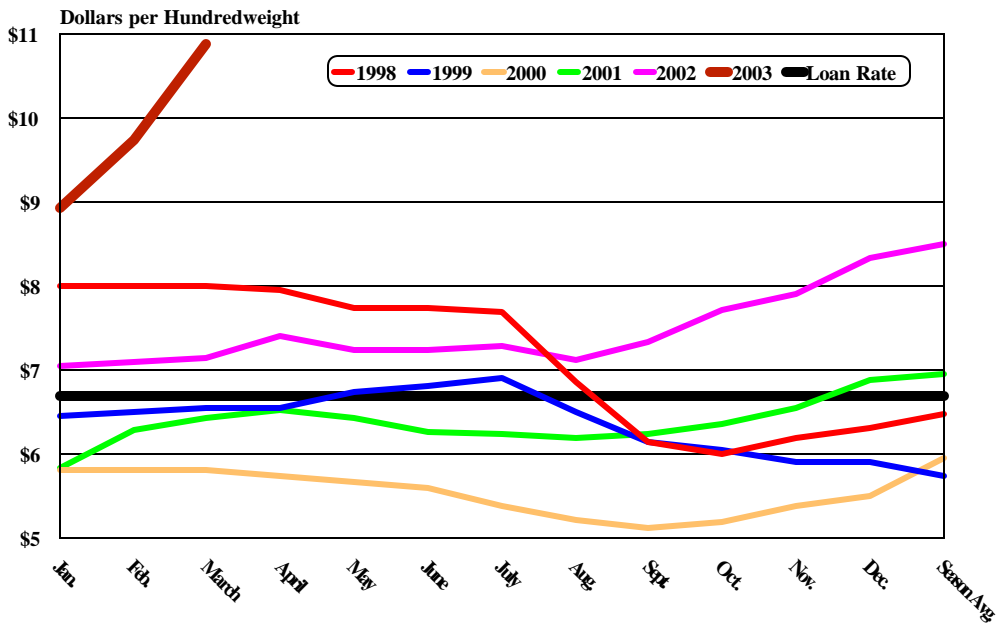
As noted, dry beans, dry peas, and lentils are exported from Canada to Mexico, while dry beans, kidney beans, and dry peas are exported to the U.S. market. The United States exports dry peas, kidney beans, and dry beans to Canada, while exporting dry beans and kidney beans to Mexico. Only small amounts of kidney beans and chick peas are exported from Mexico to the United States.

Figure 7. Dry Green Peas Seasonal Prices



Source: ERS, USDA, Feb. 2003 and Veg. & Melons Outlook, April 17 2003.

Figure 8. Seasonal Lentil Prices



Source: ERS, USDA, Feb. 2003 and Veg. & Melons Outlook, April 17 2003.

Dry beans and chick peas are heavily traded within NAFTA. Dry peas and lentils are traded mostly between Canada and the United States, while Mexico imports but does not export. Mexico's imports of chick peas are also limited. These emerging trade patterns suggest that NAFTA partners may be poised to undergo a new round of trade disputes. Although the trade volumes may be relatively small in some cases, that does not necessarily mean that a trade dispute will not occur. The Durum wheat dispute between the United States and Canada is an example.

What is unclear is the extent to which new pulse crop loan rates in the United States will increase pulse production, and if they do, whether additional land will be brought into production or whether substitution will occur among crops, possibly away from dry beans or program crops and towards the pulses which now have a marketing loan. The use of pulses to fix nitrogen in the soil makes them an attractive crop to be used in rotation, which could have some positive impact on acreage.

Given the high levels of current prices for most pulses relative to loan rates, it appears unlikely that any near term expansion in acreage or production has occurred due to the new program provisions. If U.S. producers place more land in conservation, crop substitution will be the most likely option in the intermediate term to increase pulse output. Factors stimulating pulse expansion may be the fact that loan repayment rates have been changed and are based on U.S. Number 3 lentils and feed grades for dry peas. This change effectively increases the incentive to increase area and expand output. Higher wheat prices and planting flexibility restrictions may limit expansion of some pulse crops in the near term. One set of limiting factors to large expansion of high quality lentils and chickpeas may be the lack of specialized infrastructure, knowledge of cultural practices, and market awareness on the part of producers.

It is also likely that at least through 2007, components of the 2002 farm bill may limit the incentive to shift from wheat and other program crops to pulses. Chickpeas are limited by planting flexibility provisions, limiting production to non-program base acres. If substitution into lentils and dry peas does occur, it will most likely occur in the Pacific Northwest and

northern tier of U.S. states bordering Canada rather than in the South or Midwest since these are cool season crops. The impact on acreage and production could be substantial, but chickpea impacts will likely be small. If grain crop production and stocks increase, leading to lower prices, it is likely that Canadian wheat acreage will fall and producers will switch into other crops, such as pulses, placing downward pressure on prices (Furtan).

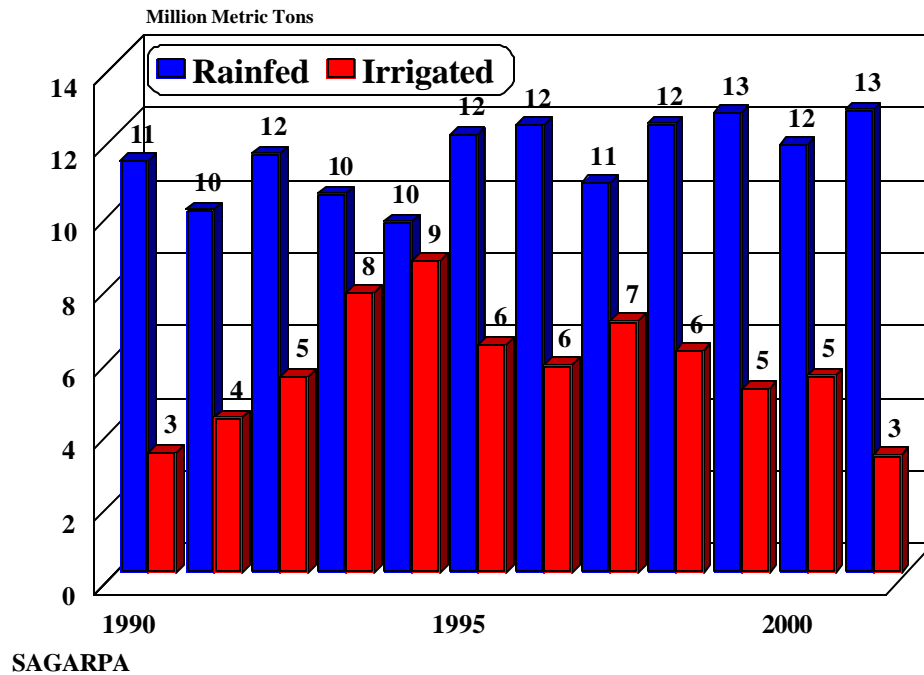
Dry Beans

U.S. exports of dry beans to Mexico increased from 22 tmt in 1993 to 179 tmt in 1998, but have since fallen to around 70 tmt annually for the last two years. At the same time, dry bean exports from Canada to Mexico have increased from 340 mt to 5.2 tmt in 2001 and 2.7 tmt in 2002. During this same time period, Mexico's total dry bean imports have more than doubled to 127 tmt. Mexico's production of dry beans has fallen from 1.35 mmt in 1994 to 887 tmt in 2000, but recovered to 1.33 mmt in 2002 (FAOSTAT). Prices for dry beans have declined about 10 percent since NAFTA (SIEA/SAGARPA), reaching a low of \$24.92/cwt in 2000, compared to \$33.20/cwt in 1992. Mexico's per capita supply of dry beans has fallen ten percent since 1993. As import and price pressures have continued, Mexico has continued to pay producers on small land holdings a premium of 14 percent (\$43/acre compared to \$38/acre) over larger farms. It is likely that with large world production in 2002, political pressure in Mexico will continue. Most of this is directed toward NAFTA partners, but the global supply/demand balance has a major impact.

Corn

There may be no other issue in Mexico that is more sensitive or that has more far reaching implications than corn. Since NAFTA began in 1994, Mexico's total corn production has declined about six percent. What is most significant, however, is that rainfed corn production has actually increased 22 percent, while irrigated production has fallen 37 percent (figure 9). Mexico's total corn output has increased 63 percent since 1980 despite rising imports and falling prices (FAO). Irrigated corn production represents about 20-30 percent of total

Figure 9. Mexican Corn Production



production and virtually all is grown for commercial purposes. Rainfed corn accounts for about 70-80 percent of all corn production and 90-95 percent of the crop is grown in the spring/summer season. Of the spring/summer crop, about 70 percent is produced on commercial farms, while the balance is grown on small ejidos which are usually classified as inefficient subsistence farms. These changes in production have occurred while Mexico's corn yields have increased from 2.2 mt/ha to 2.5 mt/ha, or 14 percent, and area harvested has declined by 13 percent to 7.1 million hectares. Yields are more than double these levels in the state of Jalisco.

The large majority of Mexico's corn imports are yellow corn used as animal feed for poultry, pork, and wet milling. This latter category declined in importance in 2002 due to Mexico's imposition of a 20 percent tax on soft drinks and other beverages produced using high-fructose corn sweetener (HFCS). HFCS production declined 57 percent and is expected to remain about 150,000 mt annually, used mostly in bakery goods, processed foods, fruits, fruit juices, and yogurt (FAS,USDA, Gain MX 2133). A growing share of corn imports are being classified as "cracked corn" and imported outside the NAFTA TRQ. Mexico is expected to

import more than the NAFTA TRQ minimum 3.263 mmt of corn from the United States in 2003 as import demand for both human and animal consumption continues to grow. Corn grain prices have fallen about 38 percent since NAFTA, leading to calls for protection and government support.

The prominence of corn imports in Mexican agriculture has raised several issues worth noting. First, new U.S. farm support, coupled with the elimination of most import duties on January 1, 2003, spurred social unrest in Mexico that led to blocked international bridges and a storming of the Mexican legislature by disgruntled farmers. While a NAFTA TRQ for corn remains in place until January 1, 2008, the presence of more imports, lower prices, and a perception of government indifference has caused many producers and producer groups to demand that NAFTA be renegotiated. While President Fox has resisted these calls, he has announced the formation of a new \$10 billion farm policy in Mexico called “agricultural armor.” The exact types of programs are unclear, but concerns in the United States have been raised about the prospects for higher duties on corn exported to Mexico, higher farm prices in Mexico stimulating production and leading to less imports, and policies making it easier for producers to petition the government to provide antidumping duties or snapback tariffs. Reuters announced on April 16, 2003 that Mexico would seek to negotiate permanent import limits with NAFTA partners to restrict the amount of white corn and beans allowed under NAFTA and that an additional \$280 million in farm support would be provided this year.

Second, at the Second North American Symposium on Assessing the Environmental Effects of Trade in Mexico City, March 25-26, 2003, several papers focused on the potential impacts of imported hybrid or transgenic corn on the traditional land races of corn grown in Mexico. Although the effects of imports on the overall genetic diversity of Mexico’s corn crop are uncertain, more work is being done. This does not appear to be a major issue with Mexican consumers, but is a primary concern among some academics and policy makers. There may also be implications for the acceptance of GMO varieties and products (Ita, Dyer-Leal and Yunez-Naude). Empirical results regarding the impacts of transgenic corn on genetic diversity and

greater corn imports on Mexican production are inconclusive and mixed, but debate continues.

Finally, rising U.S. corn exports to Canada have created concerns as well. After averaging 955 tmt from 1993-99, exports increased to 1.5 mmt in 2000 prompting review by the Canadian government and issuance of a finding that Canadian corn producers were being injured. More recently as U.S. corn exports reached 3.0 mmt in 2001 and 4.1 mmt in 2002, concerns have been raised about the presence of StarLink in shipments. The Canadian Food Inspection Agency is revising its monitoring activities to better reflect risks associated with unapproved imports of StarLink corn. Importers must now present testing documentation prior to the importation of whole grain corn into Canada. Canada has approved the use of rootworm-protected corn. If animal feeding and processing continues at current or increased levels, it is expected that these types of trade issues will continue and even increase in intensity.

Conclusions and Implications

It appears likely that there will be some NAFTA trade frictions related to U.S. farm legislation and the subsequent impacts on production, exports, and prices. The extent of these frictions will depend on several factors. One is the degree to which U.S. producers switch from traditional grain crops or other supported crops to pulses. There is little evidence that this has occurred in the near term since pulse loan rates were announced too late to affect the 2002 crop. Over the intermediate and longer terms, there may be more incentive to switch to pulses as producers evaluate the levels of pulse loan payment relative to other crops, especially wheat. The use of pulses in rotation with other crops to stimulate nitrogen fixation and improved soil tilth are also positive factors for increased plantings.

It is important to separate the global forces affecting the supply/demand balance in pulses from farm program and NAFTA influences. World pulse output is growing and developing countries are supplying the large majority of increased production. Developed country contributions to world pulse production actually have fallen substantially over the last three years. Finally, both Canada and Mexico are also modifying their own farm support systems. Support for pulses in Mexico will not likely disappear, so production will continue and may

expand as new support programs are developed.

There is growing concern in both Mexico and Canada that trade of some genetically modified crops and products, particularly StarLink corn in Canada, may contaminate domestic production or harm the environment. Maintaining traditional land races of Mexican corn has become an especially important issue among some policy makers, academics, and producer groups. The extent to which U.S. farm programs influence production may be debatable, but the perception that these programs cause increased output is widespread and have led to views that farm programs are one factor contributing to the potential for increased trade of transgenic crops and products.

Producer groups in Mexico continue to demand protection from U.S. import competition, especially corn and beans, and more support for the rural sector. The response of the Mexican government has been to work with these groups to enhance farm programs. While the size and scope of the newly designed “agricultural armor” program is uncertain, it is clear that the issue will not be resolved in the near term. President Fox has resisted calls to renegotiate NAFTA. This could lead to trade retaliation by both the United States and Canada, along with calls by some producer groups in those countries to renegotiate certain provisions of NAFTA. Sugar and winter vegetables might be two potential targets.

Finally, it is difficult to assess how likely it may be that any major trade disputes will emerge due solely to the implementation the 2002 U.S. farm program. It appears more likely that farm program support interacting with a host of other factors, such as changes in world supply/demand balance, weather, sanitary and phytosanitary issues, and exchange rates, will be the major reasons for trade disputes to occur.

References

- Agriculture and Agri-Food Canada. Market Analysis Division, Wheat and Pulse/Special Crops Analysts, Glenn Lennox and Stan Skrypetz, data on Canadian Exports to Mexico, 1993-02, E-mail, April 7, 2003.
- Agriculture and Agri-Food Canada. Canada: Pulse and Special Crops Outlook, March 13, 2003.
- de Ita, Ana. Centro de Estudios para el Cambio en el Campo Mexicano, A.C. (CECCAM), *The Socio-economic and Environmental Effects of the Trade Liberalization of Basic Grains within the Context of NAFTA: The Case of Sinaloa*. Presented paper, Second North American Symposium on Assessing the Environmental Effects of Trade, March 25-26, 2003, Mexico City, Mexico.
- Dyer-Leal, George. University of California-Davis and Antonio Yúnez-Naude, Centro de Estudios Económicos, El Colegio de México, *NAFTA and Conservation of Maize Diversity in Mexico*. Presented paper, Second North American Symposium on Assessing the Environmental Effects of Trade, March 25-26, 2003, Mexico City, Mexico.
- Food and Agriculture Organization, United Nations. FAOSTAT Data Base for Agriculture, web site: www.fao.org.
- Food and Agriculture Organization, United Nations. Pulses, Commodity Notes, Economic and Social Department (ES), Pulse Production forecast to increase in 2002, December 2002.
- Furtan, Hartley. "Impact of the U.S. Farm Bill on Canada's Pulse Sector," Saskatchewan Pulse Growers, Pulse Days 2003, Saskatoon, Saskatchewan.
- Gower, Deanna. Pulse Crops in South Asia, Bi-Weekly Bulletin, Agriculture and Agri-Food Canada, Vol. 15, No. 10, May 31 2002.
- Ontario Corn Producers Association. Rootworm-Protected GE Corn Approved for Canadian Growers, March 11, 2003.
- Price, Gregory K. "Will the Farm Act Get Pulses Racing?" Agricultural Outlook, ERS, USDA, November 2002.
- Reuters News Service, Pay Jordan, "Mexico Seeking NAFTA Limits on Corn, Bean Imports," April 16, 2003.
- Servicio de Informacion Y Estadistica Agroalimentaria Y Pesquera (SIEA)/Secretaria de Agricultura, Ganaderia, Desarrollo Rural Y Alimentacion (SAGARPA), Government of Mexico web site data base: www.siea.sagarpa.gob.mx
- U.S. Department of Agriculture, Foreign Agricultural Service. Attache Reports, selected issues.

U.S. Department of Agriculture, Foreign Agricultural Service, Gain MX 2133, Mexico City, Mexico.

U.S. Department of Agriculture, Foreign Agricultural Service, “Mexico Agricultural Situation Mexico’s Agricultural Armor Package,” Gain Report MX 2173, December 19, 2002, Mexico City, Mexico.

U.S. Department of Agriculture, Foreign Agricultural Service, “Mexico Grain and Feed Annual 2003,” Gain Report MX 3028, March 28, 2003, Mexico City, Mexico.

Zahniser, Steve and John Link. *The Effects of the North American Free Trade Agreement on Agriculture and the Rural Economy*, Economic Research Service, USDA, Agriculture and Trade Report, WR-02-01, Washington, D.C.