World Pulse Outlook

Report to The Saskatchewan Pulse Growers

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The future for Canada's pea and lentil industry is good and the opportunities to expand exist. Even without an overall increase in per capita pulse consumption around the world, import needs will grow. Overall pulse consumption is expected to grow 10% in the coming decade and 23% from current levels by the year 2030. Consumption is expected to grow most rapidly in Asia and Africa.

FUTURE DIRECTIONS

The mix of crops which will be grown around the world in the future is clearly linked with government policy. Countries like India may use price support mechanisms to try to encourage production of one crop or group of crops over others. Similarly, evolving attitudes about bio-energy will have a clear impact on the level of subsidy available to that sector and type of ingredients that will be used. Right now, the focus is on corn because of the buildup of the ethanol industry in the United States. Oilseed crop production has also been encouraged to feed the growing bio-diesel market. There has been some consumer backlash against both concepts and this is slowing expansion in the bio-fuel sector.

The rise in field crop values witnessed since 2006 is a direct result of bio-energy policy in Europe and the United States. To the extent interest in the bio-fuel sector subsides, crop values may subside. This would have a direct impact on future pulse crop values, because markets only need to be competitive enough at the grower level as well as at the consumer level to sustain production and sustain demand. If prices are too high to farmers relative to other crops, there is over production. If consumers think prices are too high relative to other crops, usage drops.

Most pulses are consumed where they are grown. Many of those same countries tend to have fully developed agriculture sectors. To grow more pulses, they generally need to grow less of something else. Canada is one of the few countries which has room to expand the amount of land in pulses and total production. The only significant impediment to future agriculture development in Canada is transportation infrastructure and the level of commitment to agriculture by the railways. The public commitment of the railways to handling grain is strong, but their internal commitment is unknown. Canada's rail freight revenue cap legislation may be impeding development and increasing overall transportation costs as the railways slowly eliminate "under-performing" branch lines.

Essentially, under the Revenue cap legislation, Transport Canada calculates the average freight rate that each railway is allowed to charge to move western Canadian grain and it multiples that by the number of tons handled to come up with the gross revenue each railway is allowed to generate from moving grain. The calculation takes into account all direct costs of moving grain and some indirect costs such as equipment maintenance and replacement. Revenue, however, does not include demurrage and other non-freight fees levied by the railways. The formula does not penalize railways for becoming more efficient nor does the formula consider actual rates charged by the railways during the year. If gross revenue exceeds that amount calculated by Transport Canada, the excess revenue is clawed back. If gross revenue falls below that number, nothing happens.

By withdrawing from rate making, the Canadian government made it possible for the railways to negotiate rates with individual shippers and incorporate more factors in rate making than was possible when they were set by legislation. As a result, there can be wide differences in rates charged individual shippers, even on the same line and/or the same distance from port. Rates are lowest for high volume shippers and/or high capacity facilities. Logically, rates should be highest for companies and individuals only capable of loading one or a couple of cars at a time and/or on the most difficult to service lines. Under this scenario, Canada's specialty crop industry generally understands that its average freight rate may be higher than those assessed on bulk wheat, barley, or canola moving through efficient, high capacity bulk facilities. With the exception of bulk field peas, most specialty crops move through local seed cleaning plants where they are cleaned and shipped in bulk or bags by rail or truck. Most of these facilities are unable to handle large numbers of railcars at a time and several must still truck product to sidings to load into railcars. It is hard for such shippers to handle large number of cars at a time and therefore harder to negotiate preferential service and/or freight rates.

To the extent freight rates paid to move specialty crops are above the average for those paid to move major grains and oilseeds, specialty crop make the largest contribution toward nudging rail revenue past any revenue cap established by Transport Canada at the end of each calendar year. Handling more grain at locations which pay higher than average rates increases the risk of exceeding the year end revenue cap and seeing some of that gross income clawed back. When that happens, the railways are effectively fined for handling too much grain from less efficient shippers and locations. Over time, such events can create a subconscious institutional bias against small shippers and low volume crops. There is a risk this will affect car availability, the overall level of service, and the desire to find ways to move revenue out of the freight column by converting it into demurrage fees and other levies. In this way, the legislation can limit growth in the processing side of the pulse industry and development of niche crops and markets, as well as increase the overall operating cost of the specialty crop industry.

Regardless, pulse production in Canada should continue to expand in response to trade opportunities. Even without an overall increase in per capita pulse consumption around the world, import needs will grow. Overall pulse consumption is expected to grow 10% in the coming decade and 23% from current levels by the year 2030. Consumption is expected to grow most rapidly in Asia and Africa.

African consumption could rise 27% within the next decade and another 50% by 2030. The growth in African consumption is directly related to population growth forecasts in the region. The U.S. Department of Census expects population to jump from one billion in 2010 to 1.25 billion by 2020 and almost 1.52 billion by 2030. Development of drought hardy varieties of pigeon pea and other pulses will help improve domestic production levels. However, imports are likely to remain strong. If civil unrest and drought remains a feature of the African landscape for the coming two decades, imports should continue to be dominated by food aid. If civil unrest moderates and local agricultural output improves, more commercial demand will emerge, perhaps at the expense of food aid volumes.

Southern Asia is probably the most important market, from a Canadian perspective, because this includes India, Pakistan, Bangladesh and Sri Lanka. Total pulse consumption is expected to grow 11.6% by 2020 and 23.6% by 2030. Per capita pulse consumption is expected to ease slightly from 5.48 kilograms today to 5.33 kilograms in the future. India will remain the dominant producer, consumer and importer of pulses in the region. From a Canadian perspective, India is the most important field pea buyer. Imports totaled 1.046 million metric tons in the 2008 calendar year and could reach 1.175 million metric tons this year. Reaching that target will require a solid improvement in shipment volumes in the August through September period as shipment between January and July totaled 632,806 metric tons.

Demand is, and always has been, volatile. Import demand from Canada is affected by the size of each major harvest in India, the summer or kharif crop and the winter or rabi crop. Pigeon peas are the most important kharif season pulse and a poor crop encourages imports of green lentils from Canada, because the dehulled product is an acceptable substitute. Gram or chickpeas are the most important rabi season pulse and field peas are an acceptable substitute for that crop. A large rabi harvest can have a negative effect on demand for field pea from Canada. However, it is sometimes the case that if India's domestic prices for pulses are high, a large rabi season crop can improve import demand because the country's farmers have more money. Most farmers in India are poor and the first place they put extra money is on food. This implies that a large harvest and poor internal prices may have a negative impact on import demand.

India's supply and demand situation is more complex than in countries with much higher per capita incomes. Predicting future price movement within India's domestic market is beyond the scope of this report. It involves predicting future price movement for rice, wheat, corn and soybeans to develop a picture of the price trends which would be expected in pulses. Because pulses compete for land use, pulse values ultimately follow the price trend for the world's major grains and oilseeds, finding a level at which enough land can be secured to produce enough to cover nominal annual needs.

Assuming that products will maintain nominal relationships, pulse import needs in India would be expected to increase from roughly one million to around 1.5 million metric tons of peas by 2020 and to around two million metric tons by 2030. Import demand for red lentils is not expected to experience as much growth, largely because Canada faces significant direct competition from Australia, which normally has a lower shipping cost to the Indian subcontinent than Canada. Green lentil demand is directly related to pigeon pea crop prospects, making it hard to predict future demand potential. This will be easier if a preference begins to emerge for green lentil in some regional markets in India, suggesting green lentil demand could benefit from direct market development efforts.

Canada has the land base to respond and enough of an absence of government policy favoring one crop sector over another to allow farmers to pick crops based on world demand signals.

PER CAPITA PULSE CONSUMPTION

World pulse consumption has been steadily declining in recent decades. This trend is expected to continue because of competition for farm land use from other crops, government policy aimed at moving farmers into more visible "food security" crops and bio-energy uses. As production falls behind domestic needs, imports rise. Imported pulses are not always cheaper and do not always have the same flavor and cooking characteristics as locally grown pulses. That can hurt overall per capita usage rates. These are difficult issues to overcome. If the issue is cooking time, education should solve most of the problem. Taste is a more difficult problem to overcome, unless flavor is also given priority in plant breeding efforts. However, Canadian success in Latin America suggests that dominating a market helps overcome perceived differences in taste over time. The same effect is seen in fruit and vegetable markets, where consumers complain that tomatoes do not taste as good as in the past, but high availability of an “inferior” product at a good price changes attitudes and taste memories.

Relying on imports also leaves countries vulnerable to supply shocks, which can periodically have a negative effect on the amount people buy. Rising incomes do not always have a positive impact on demand for traditional foods, which may include pulses. A recent example is Japan, where rising per capita incomes saw demand for traditional, pulse-based confectionaries migrate toward western-style confectionaries. There is anecdotal evidence some of India’s emerging middle class are trying non-traditional foods and breaking from their religious traditions by including formerly banned foods in their diets. Foods such as pasta or Chinese, which can be made in a vegetarian style without pulses, could benefit from efforts to experience new tastes. Interestingly, wheat gluten and tofu, made from soybeans, are important ingredients in vegetarian Chinese cooking.

Initially, higher incomes allow people to buy more basic foods, stimulating demand. Once discretionary income grows, dining patterns evolve, typically resulting in some movement away from traditional foods. What is most remarkable about the downward trend in per capita pulse consumption is that per capita food production and consumption has been growing. Since 1961, the world's average annual field crop harvest has grown around 1.02% per year, advancing from 757 kilograms per person between 1961 and 1965 to 868 kilograms between 2001 and 2005.

Major policy emphasis on the biofuel sector since 2006 has not created a shortage of food available to the human population. However, it has created competition for a share of the food supply. During the last half of the 1990s, very little grain and oilseeds were diverted to biofuel uses. Per capita field crop production in that period was 851 kilograms per year. Total field crop output has risen to over 900 kilograms per year, but the biofuel sector is consuming around 7.5%, reducing the net amount available for food and other uses to 838 kilograms per year. Per capita field crop production is expected to grow more quickly than the biofuel sector, suggesting that average world grain and oilseed prices will decline in the coming decade.

Nutritionists believe a healthy average for per capita calorie consumption is 2000 per day for women and 2700 per day for men. If the half the people are women, then the average human needs 2350 calories per day to pursue normal levels of activity and maintain a healthy weight. The last time the average human being consumed 2350 calories per day was in 1966. By 1999 that had reached 2803 calories per day and if this trend is not reversed the average human being will consume 2940 calories per day by 2015 and 3050 calories by the year 2030. Through the 1980s, the average human being consumed around 2655 calories per day. This allowed average per capita caloric intake in Asia and the developing world to rise above 2350 calories per day to 2559 and 2450 respectively. Caloric intake in the industrial world was well above actual needs at 3206 calories per day. During that period, the world's farmers produced 831 kilograms of field crops per human being for all purposes -- food, feed, biofuel, and industrial. This represents the minimum per capita field crop output the world needs to reach in order to guarantee enough food is actually grown each year for every person on the planet to have an adequate diet.

There are two factors which influence the price which can be obtained for pulses:

- How much farmers can earn from growing pulses instead of other crops;
- How much consumers can gain by eating pulses instead of other foods.

It appears these factors have not been on the side of pulses during the past half century. While there has been an explosion in output in countries like Canada and Australia, this has not entirely offset declines on the Indian subcontinent and Africa. The net result is that per capita pulse production has trended lower, falling from 13.6 kilograms between 1961 and 1965 to just 9.24 the first half of the current decade. Interestingly, the most severe drop was in the 1960s, when the "green revolution" resulted in big yield improvements in cereal grains, which made those crops more competitive on farms.

Over the next couple of years the world will grow enough field crops to cover the needs of the biofuel sector and the fundamental needs of the people (Table 1). But, field crop demand is not only driven by needs. It is also driven by desires. People consume 19% more calories than they need. Until 2016, it looks like biofuel will compete for some of this 19%.

Table 1: Biofuel Diversion and Net Food Forecasts
(kilograms per capita)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Field Crop Output	904	909	914	919	924	929	934	939	944	949
Biofuel Diversion	66	71	74	76	78	81	84	87	90	94
Net Food and Other Uses	838	838	840	843	846	848	850	853	854	855

Source: FAO, FAPRI, STAT Publishing

The period between 1996 and 2003 offers insight into the current "minimum" production needed to satisfy the current consumption patterns of the human race. Field crop output during that period was around 848 kilograms per person. Per capita output in 2009 is expected to end up around 904 kilograms, with about 66 kilograms per person or grains, oilseeds and sugar diverted into biofuel production. That leaves 838 kilograms for all other uses -- for a shortfall of about 10 kilograms per person. A similar shortfall is likely in 2010, but by 2015 per capita field crop production left after the biofuel diversion will be back up to 850 kilograms. By 2018 it will likely rise to 855 kilograms, which should mark the return of a declining trend in field crop values. The implication for the pulse industry is that competition for land use should remain an important feature of the market until at least 2016, which will tend to support prices for pulses and other specialty crops. During that period markets may tend to react more strongly to harvest problems than signs of over production because of an underlying tension between supply and demand. Once biofuel mandates are met, however, competition for land use will begin to ease and the depth of demand should become an increasingly important issue for growers and exporters.

FEED PULSES

Domestic pulse consumption in Oceania is larger than other parts of the world on a per capita because most of the lupins grown in the region are consumed as livestock feed. It is one of the two regions where dry pulses are still consistently used in large quantities as animal feed. The other is Europe, where a large proportion of the domestic field pea and bean crops are still diverted into livestock feed markets.

European pulse production has collapsed from its peak in the 1990s because of changes in the crop subsidy system. This has had the unexpected consequence of resulting in an overall decline in the amount of pulses bought by Europe's compound feed industry. Having said that, a large part of the peas grown in central and eastern Europe are consumed by the compound feed industry. Spain also remains an important consumer, though demand clearly rises and falls with the fate of feed grain crops grown on the Iberian Peninsula.

Will western European pulse production increase with changes to the EU crop subsidy program? The reintroduction of subsidies in France for pulse production for protein for the livestock sector could result in an increase in production. According to CICILS, *The UNIP Service Technique confirmed that end of June 2009, the Ministry of Agriculture has revealed the following details on the help plan of 40 million Euro for protein crop (including feed pulses), announced earlier in February this year: a 'help plan' to protein crops (dry peas, fababeans, lupins) has been decided by the French government for 2010, 2011 and 2012 (at this stage no news for further years), with an envelope of 40 million Euros per year. The amount per hectare has not yet been fixed. It will depend on the seeded hectares. It will be for example of 150 euros per hectare if surface areas reach 267,000 hectares, because 40 million euro divided by 267,000 give 150 Euros per hectare. For your guidance in 2009, surface areas have reached 190,000 hectares (SCEES figures not yet final).*

To the extent this is successful, France will be in a better position to compete for available demand on the Indian subcontinent. It should also result in an improvement in the volume of peas being consumed as livestock feed on local markets. From a Canadian perspective, if rising European pulse production results in greater use by the compound feed industry, it should help rekindle future interest in buying larger quantities of peas from Canada by those users. From time to time, Canada will undoubtedly grow more peas than needed by human consumption markets, and having a well developed feed market for pulses will be critical to quickly removing surplus production from the market.

As much as there are environmental and social issues surrounding factory style meat production systems, intense meat production operations will remain a fact of life in Europe and elsewhere out of land and economic considerations. Those plants will more likely be converted over time into closed loop systems, which produce electricity from the methane and manure and potentially attach greenhouses and aquatic systems to "clean" any remaining solid and liquid wastes. To the extent pulses can be demonstrated to have positive environmental qualities, usage might be incrementally affected.

The livestock feed market for pulses is impossible to forecast. The industry operates on a least cost basis. Pulses are only used when they are cheaper than buying lysine and/or energy and/or protein from other sources. Some pulses are used in livestock feed in most countries at all times. This is especially true of production areas, where off grade pulses and those which are lost into screenings when crops are commercially cleaned are routinely sold to local feeders and feed mills. Local competitive environments may not be the same as the global market, and local livestock feed users may be able to compete with human consumption markets for supply.

Demand for pulses, especially peas, will surge from time to time in the future. This will happen when peas are over-produced relative to the needs of human food markets and prices fall low enough to make them a cheap replacement for competing grains, meals and/or other compound feed ingredients. It is important to realize that this means Canada will need to periodically rebuild knowledge and interest in a product which it will not consistently supply. The implication is that the relative price which works in the future will probably be lower than the relative price which worked in the past.

CLOSING THOUGHTS

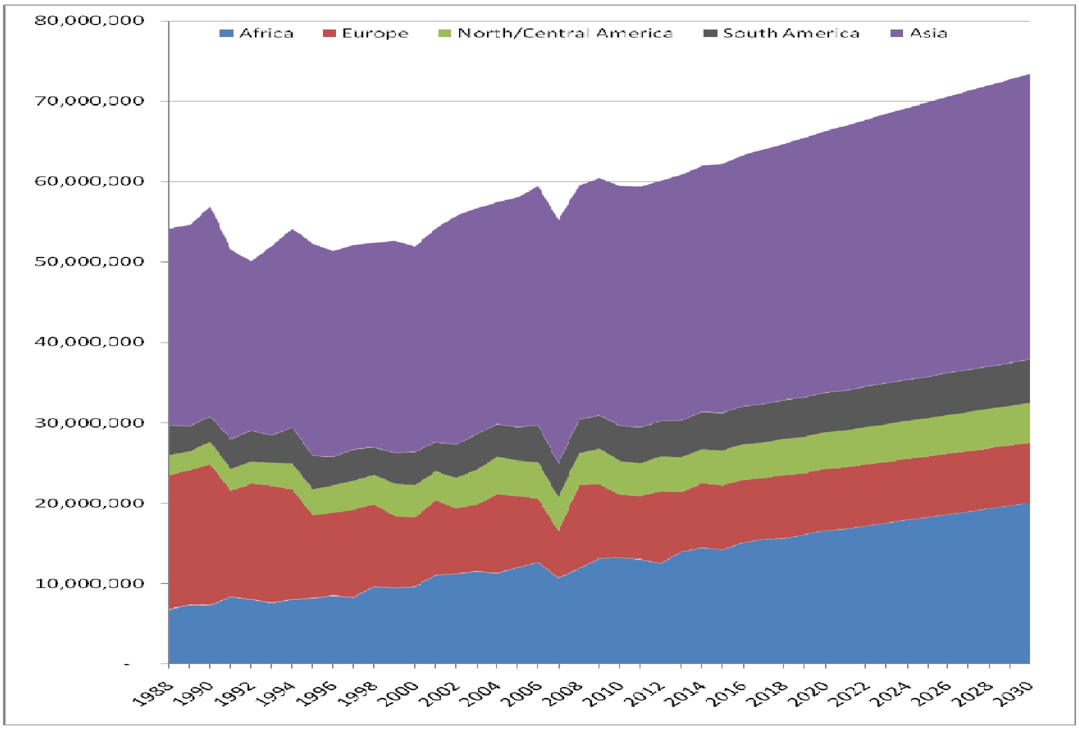
From a Canadian perspective, the fact that demand for our pulses is steadily growing masks the fact that world demand for pulses is slowly decreasing. Reversing that trend is probably more than just a marketing issue. Around the world, there are clear links between what people eat and what they produce locally. In areas without a tradition of pulse consumption, building interest is a marketing challenge. In areas where pulse production is declining and people are moving away from the crop, it may be a more complex problem. If imported pulses do not have the same cooking and taste characteristics, consumers may not be as keen to eat as much as in the past. If imported pulses cost more, the poorest consumers may eat more of a cheaper food alternative. If local farmers grow less pulses, less are consumed on the farm, and "traditional" cooking will evolve away from foods which incorporate pulses into foods which may not include pulses.

Historically, whenever Canada has increased output of a specific pulse beyond what was believed to be the needs of the market, the lower prices have resulted in an overall increase in the size of the market. Demand in individual countries has risen because of the availability of lower priced Canadian peas and lentils in retail markets. This has also had the effect of reducing the income potential to local farmers from those crops, and some markets have evolved to importing virtually all they need. This has happened in both Colombia and Chile. Interestingly, Chilean farmers have switched to growing higher value fruits and vegetables for export to Canada and other destinations.

Similar opportunities exist on the Indian subcontinent. Canadian yellow peas have become a consistent part of the Indian diet and there is no reason to believe this will change. It may be the case that green lentil becomes a more accepted part of the Indian diet in substitution for pigeon pea and this is a market which could benefit from direct educational and promotional efforts. Canadian dominance in red lentil production could begin to discourage regional growers in the Middle East, giving Canada a bigger share of the market in that region. At the moment, a large part of the business is covered through re-export from regional traders in Turkey and the United Arab Emirates. That could remain the trend into the future, as our industry takes advantage of their regional knowledge and historic ties to the buyers in countries such as Iraq and Iran.

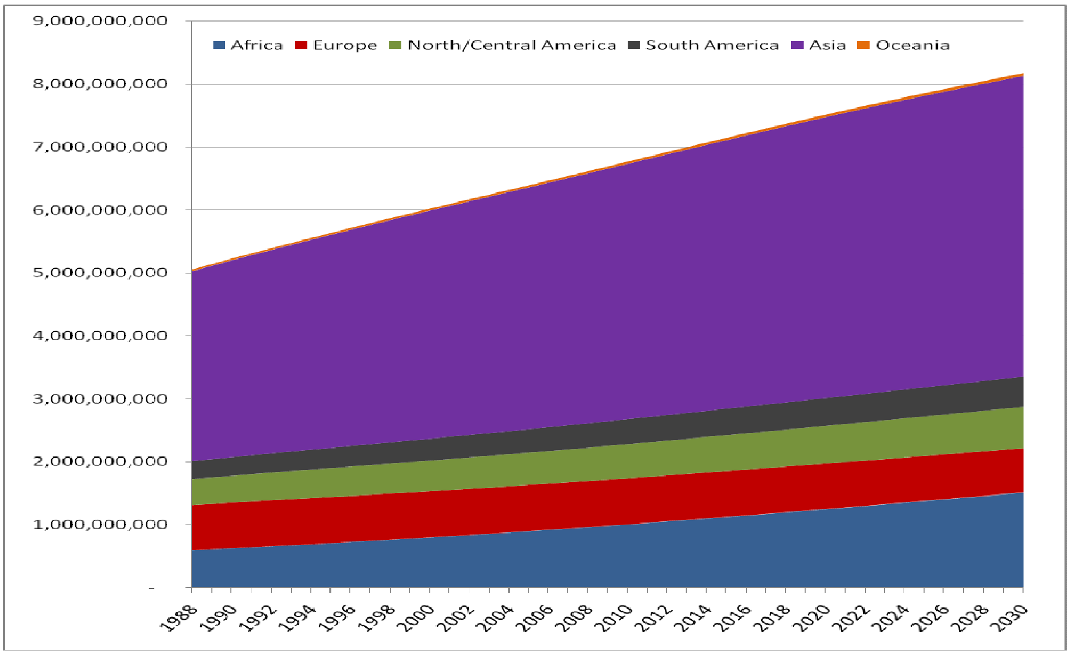
The future for Canada's pea and lentil industry is good and the opportunities to expand exist.

Figure 1: World Pulse Consumption Projections (metric tonnes)



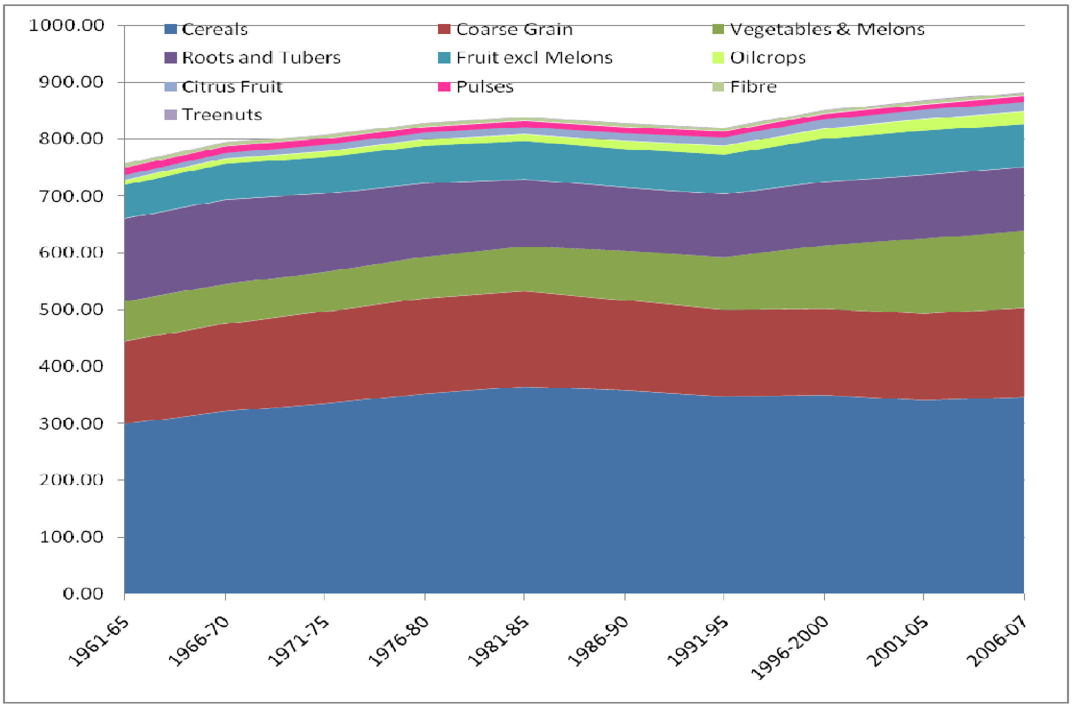
Historical Data Source: FAO

Figure 2: Population Growth Projections by Region



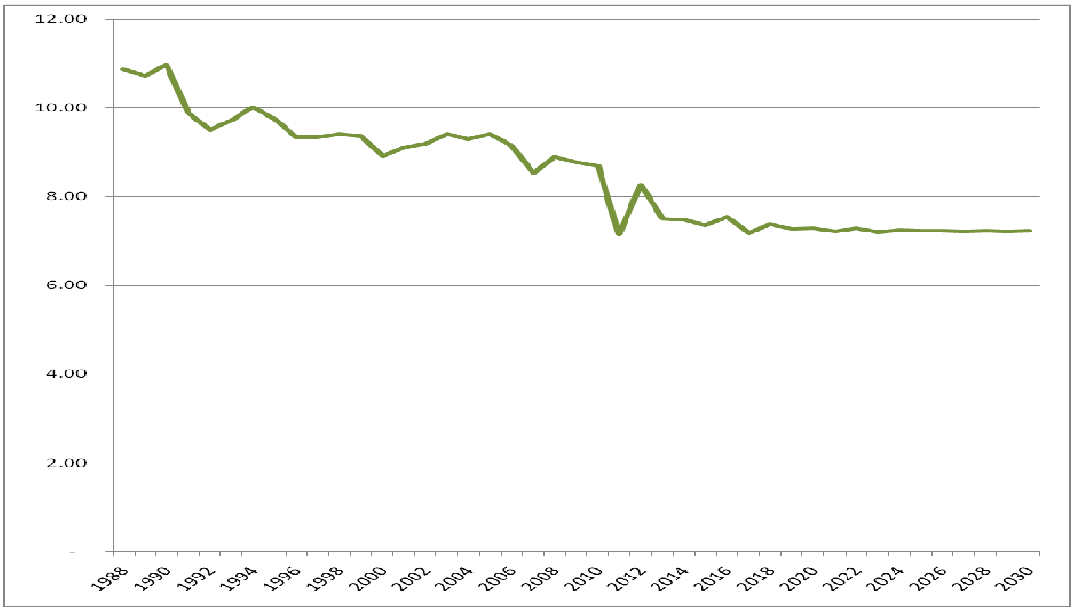
Data Source: FAO

Figure 3: World Per Capita Consumption of Major Crops (kg/person/year)



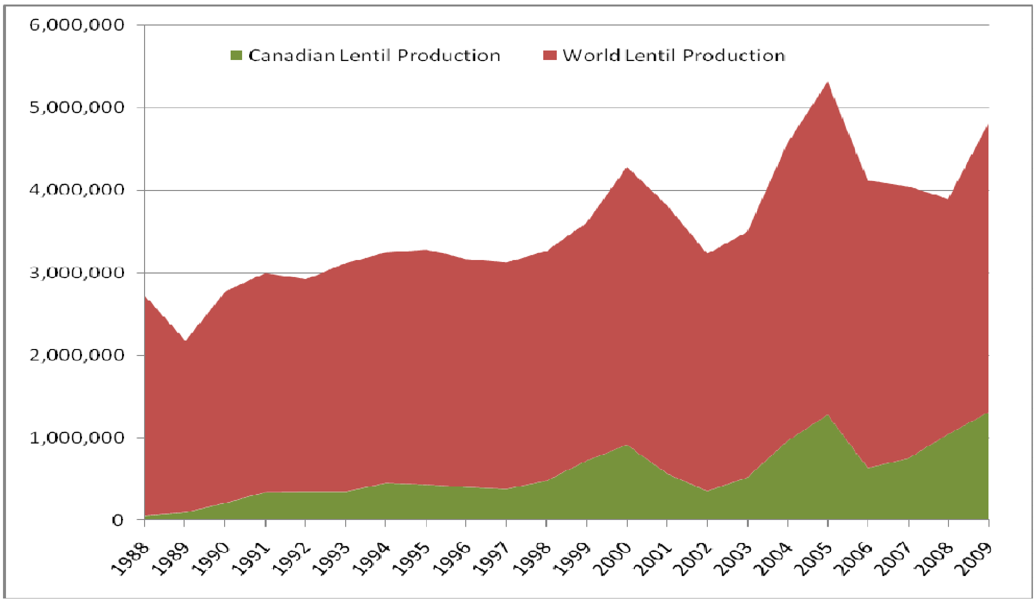
Data Source: FAO

Figure 4: World Per Capita Pulse Consumption Projections (kg/person/year)



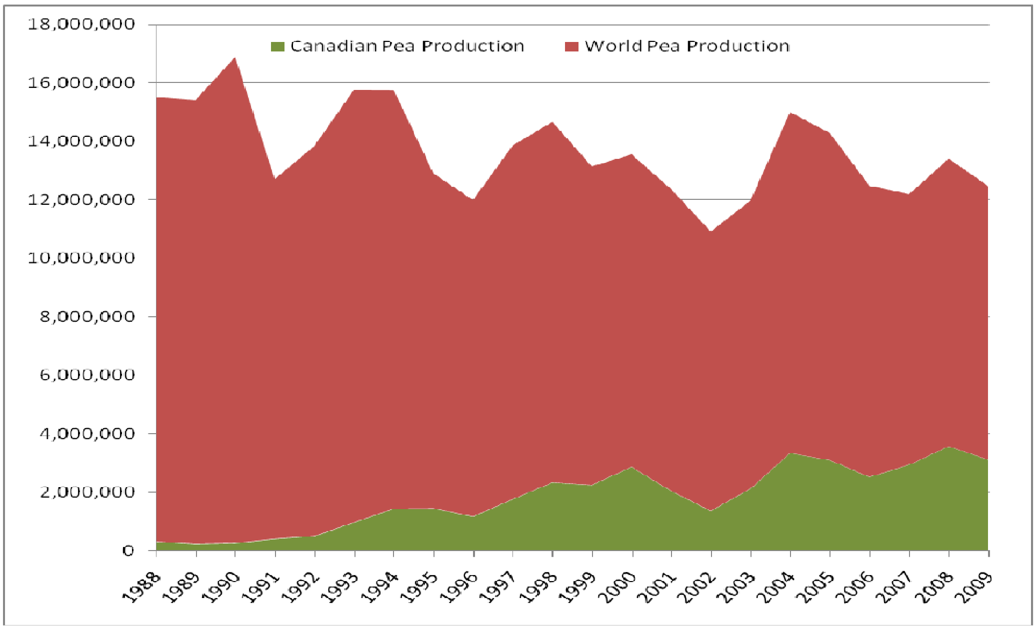
Historical Data Source: FAO

Figure 5: Historical World Lentil Production (metric tonnes)



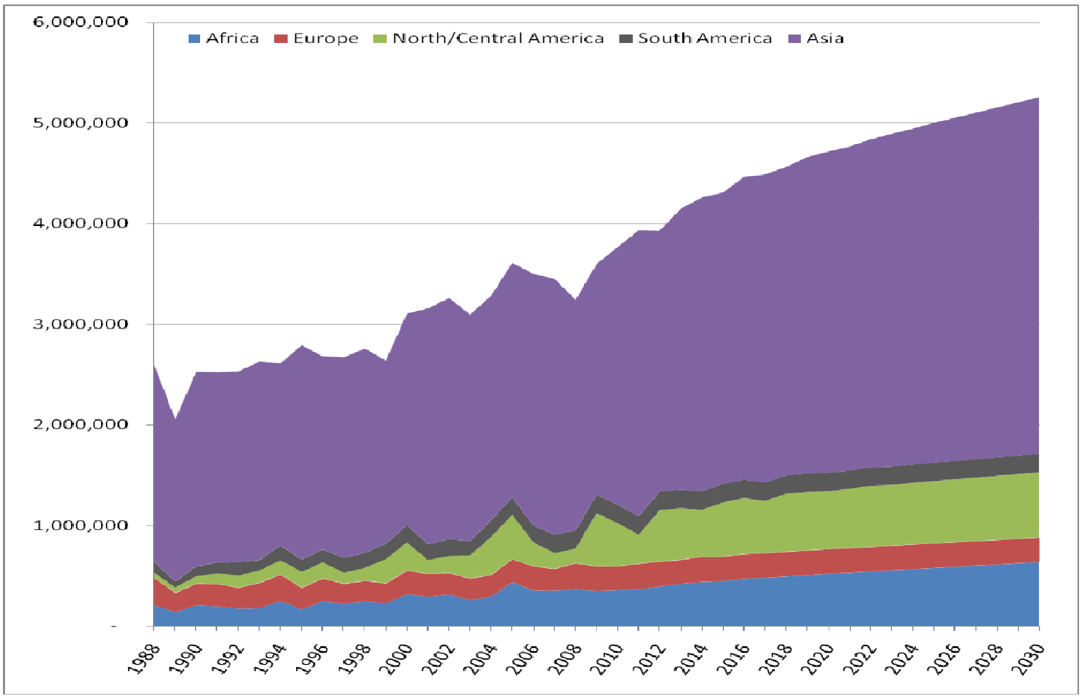
Historical Data Source: FAO, Statistics Canada

Figure 6: Historical World Pea Production (metric tonnes)



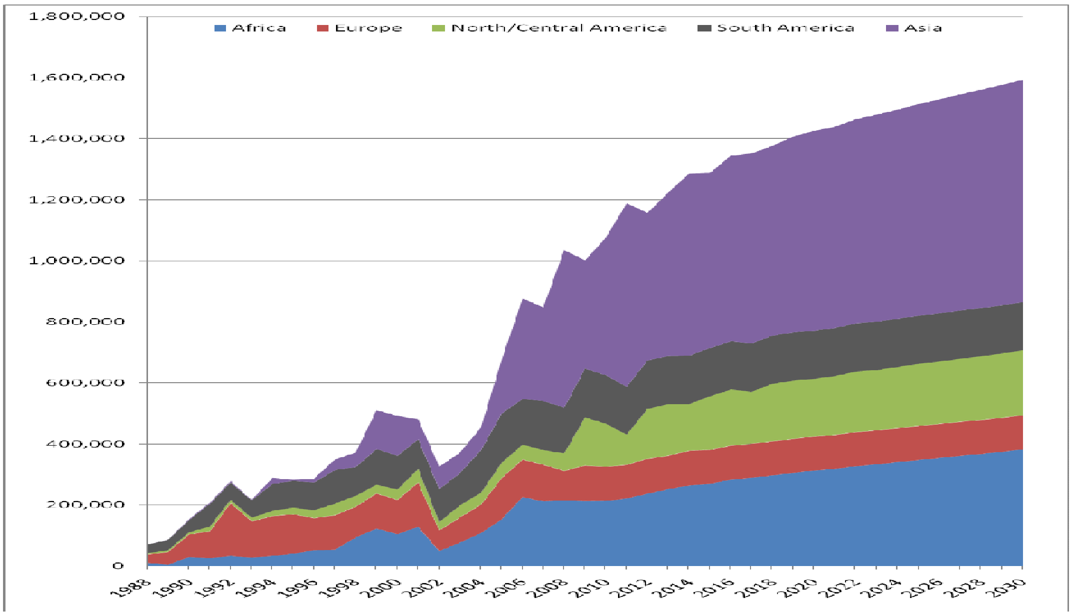
Historical Data Source: FAO, Statistics Canada

Figure 7: World Lentil Consumption Projections (metric tonnes)



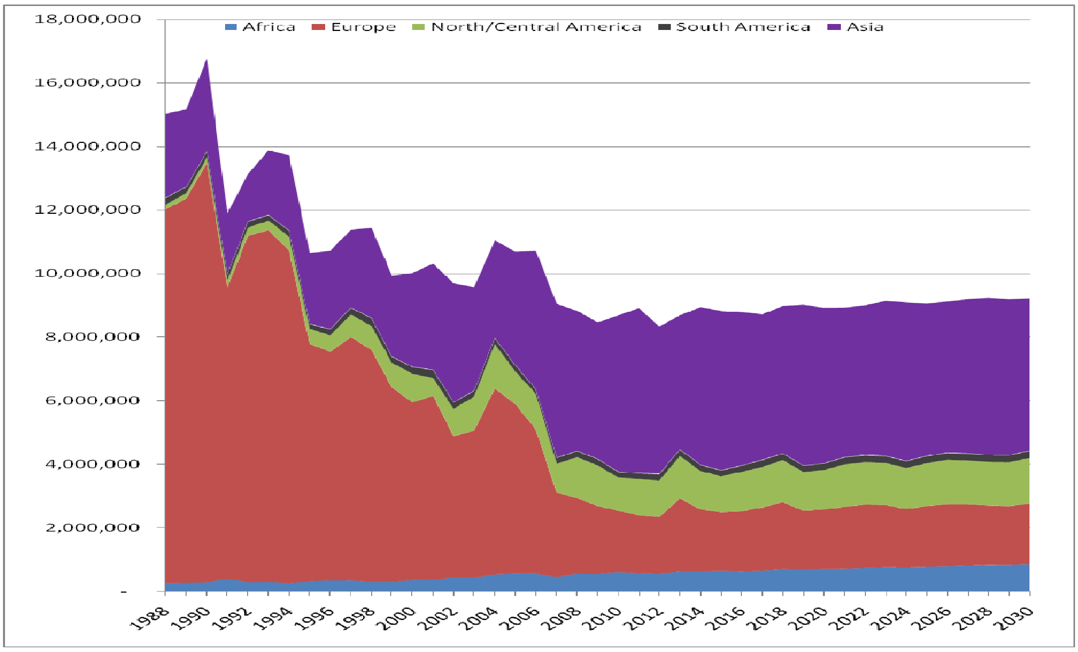
Historical Data Source: FAO

Figure 8: Canadian Lentil Export Projections (metric tonnes)



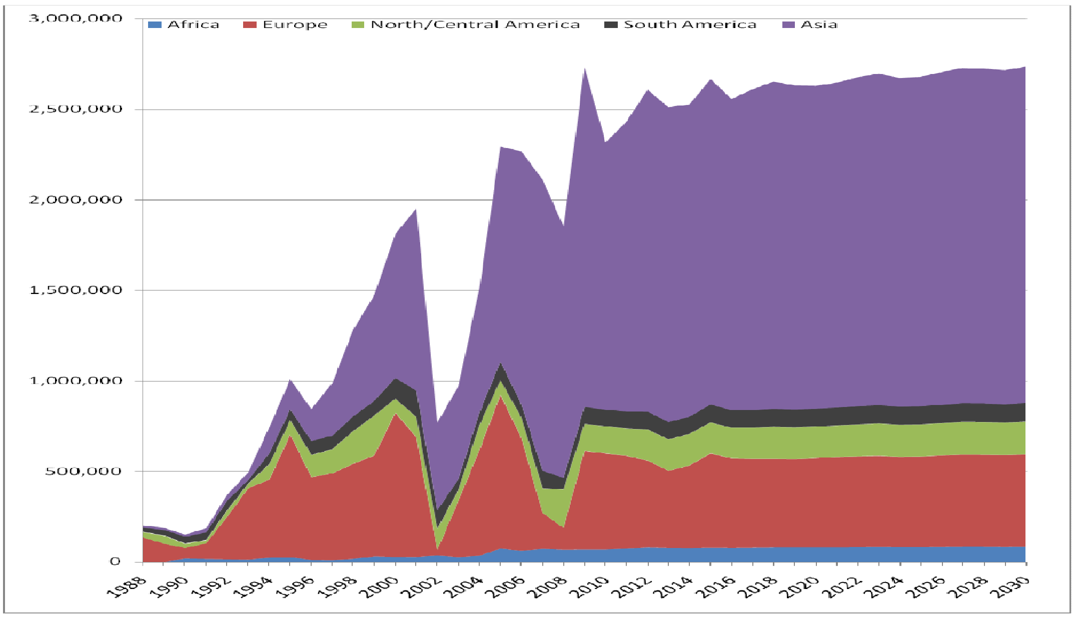
Historical Data Source: Statistics Canada

Figure 9: World Pea Consumption Projections (metric tonnes)



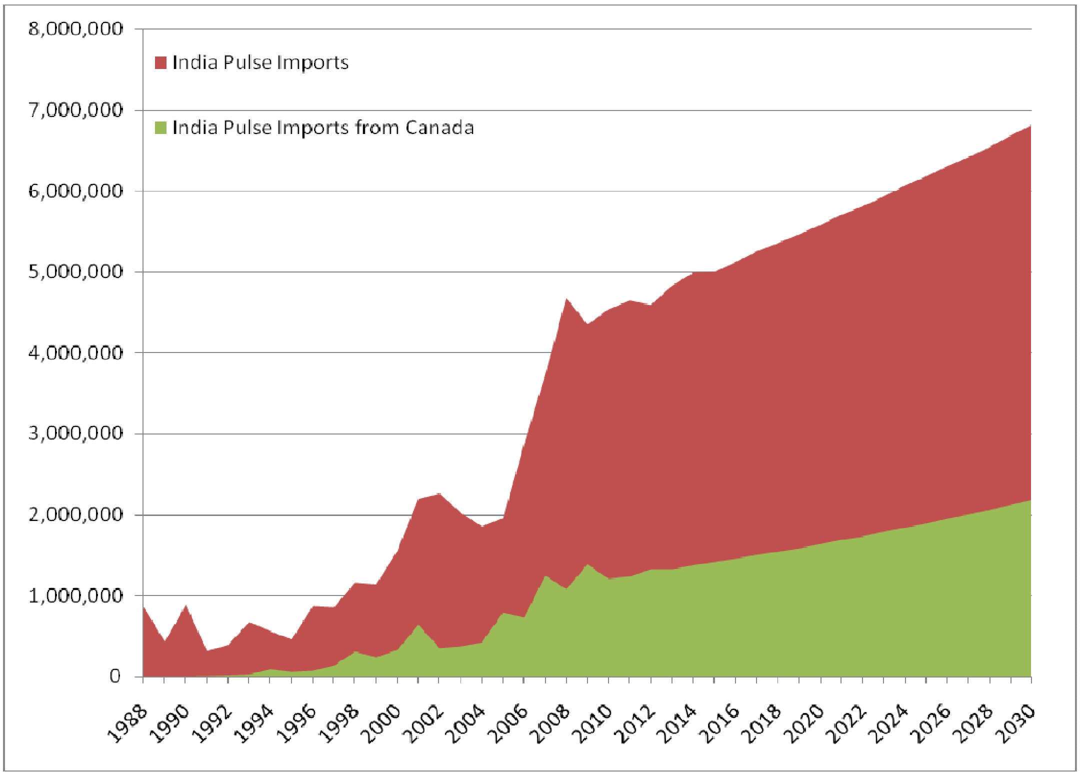
Historical Data Source: FAO

Figure 10: Canadian Pea Export Projections (metric tonnes)



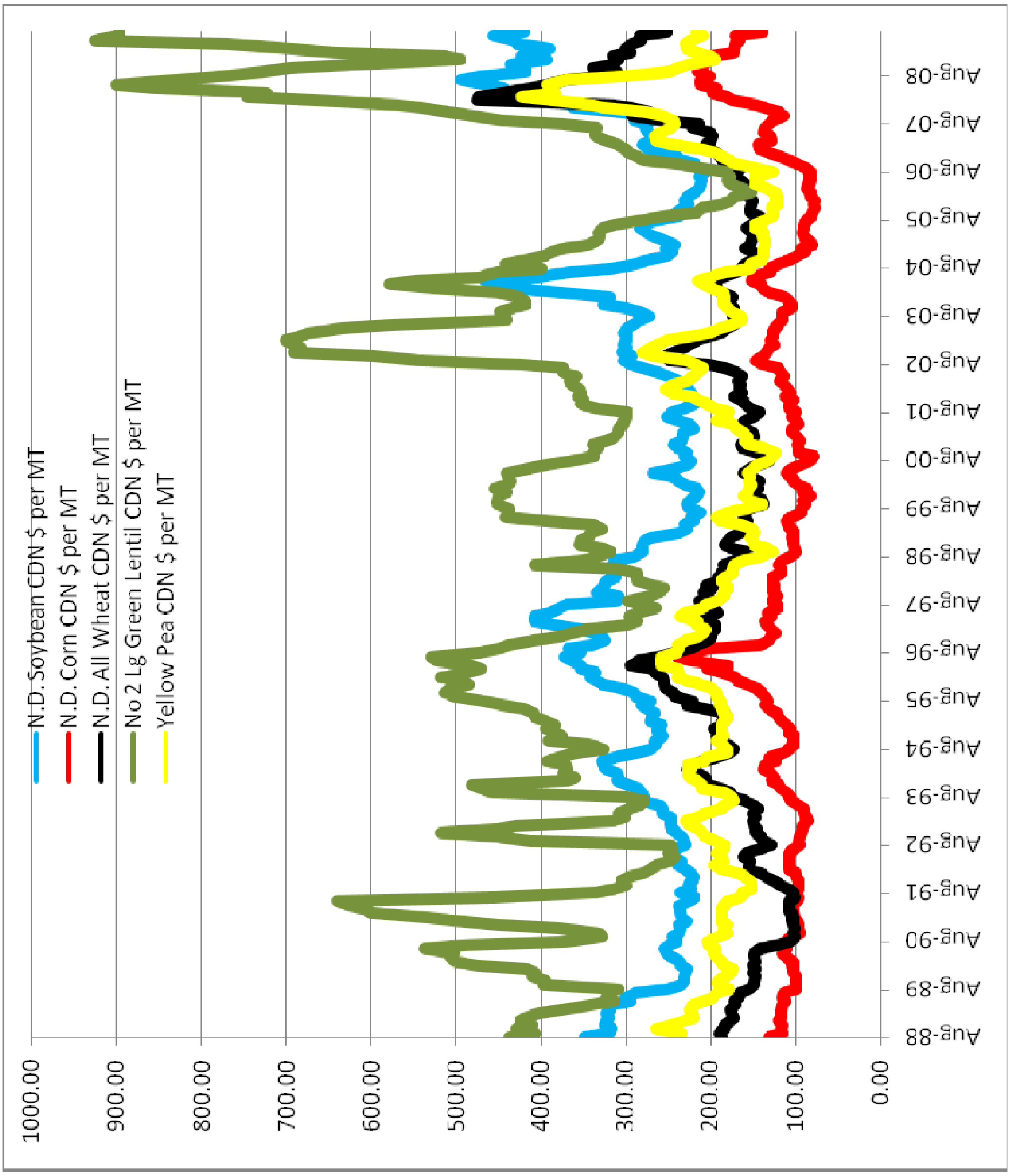
Historical Data Source: Statistics Canada

Figure 11: Canadian Pulse Exports to India Projections (metric tonnes)



Historical Data Source: Statistics Canada

Figure 12: Historic US and Canadian Crop Prices ($Cdn/metric tonne)



Data Source: USDA, STAT Publishing