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Ramifications and Consequences of the Ractopamine Protocols on the Canadian Pork Industry

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Executive Summary

The Russian authorities have indicated their desire to only import meat into Russia from animals not fed with ractopamine (pork and beef), as of December 7, 2012. This paper is a high level assessment of the implications for the Canadian hog and pork industry of Russia's ban on presence of ractopamine in meat (pork and beef) imported into Russia. More particularly the purpose of this paper is to examine the ramifications for the Canadian industry if it were to comply with the Russian demands pertaining to ractopamine.

Ractopamine is approved by the Canadian Food Inspection Agency as feed for finishing barrows and gilts in 2006 and in the US in 2000. The Codex Alimentarius Commission, a unit of the Food and Agricultural Organization of the United Nations, has approved a Maximum Residue Limit (MRL) for ractopamine and has set the acceptable daily intake standards. Ractopamine is currently approved in 26 countries.

Paylean is the Elanco Animal Health brand name for Ractopamine Hydrochloride. Paylean or ractopamine is a feed additive that enables taking energy from fat growth and redirects it to promote the increase of muscle fiber diameter and the growth of lean muscle protein. It is used in the livestock industry to increase carcass leanness, dressing percent, and to improve feed efficiency and the rate of weight gain.

There have been over 300 studies conducted on Paylean prior to its approval. Elanco is still funding research to document more and better how Paylean works. The main point is that the product safely helps in produce lean meat product with less grain and water input, less manure, at a lower net cost and higher net revenue with environmental benefits.

The Russian action is a significant development for the Canadian pork industry. In 2012 Statistics Canada reported that Canada sold $492 million of pork to Russia. In 2012, Russia grew to become Canada's third largest export trading partner behind the United States and Japan. While Russia took 17% of Canadian exports, its share of Canada's total pork production amounts to about 10%, assuming 60% of Canada's 21.1 million head slaughter production is exported. Moreover, when considering the 5.6 million live hog exports, the Russian share of Canada's hog marketings amounts to eight percent. By comparison, the US represents over a third of all Canadian hog marketings and Canadian consumption represents less than a third. As a final point, this is largely an eastern Canadian challenge given the very small share of western production that is destined for Russia.

Product is sold to Russia not because it is a premium market, but because as with all markets, at any one time, it is the best alternative for the sale. Russia, like most export markets is a commodity market and extremely price driven. Canada's sales to Russia have grown because Russia was the best alternative at any time, but also because Canada is losing its own market and US market share. Furthermore, Russia has shown itself to be a fickle trading partner. Its practice of utilizing non-tariff barriers and penalties on trading partners is common and widely known. The generally recognized reason for its behavior is the protection and acknowledged desire to become self-sufficient in livestock and poultry production. Dealing with Russian uncertainty is a cost of doing business with Russia. Russian demands are not in compliance with international trade practices and have no merit according to CODEX. This is not a case of meeting customer requests; it is a case of complying with unreasonable and costly demands.

Canada and international importers such as the notoriously cautious Japan accept ractopamine as safe and as a technological advance that provides benefits to the food system and the environment. As of the end of February, the United States has decided that it is not going to accept or provide credence to the Russian demands. As stated earlier the US and Canada know that Russia is using this as a non-tariff barrier in order to support its own industry. The Canadian industry and the government of Canada should continue to stand along with the United States and with the scientific and environmental benefits of ractopamine. For its part, Russia will therefore need to find alternative sources of pork. Already Russia and its consumers are being forced to pay at least two times the prevailing price for racto-free pork such as ham.

Finally there is no doubt among industry participants that if Canada and the US supplied it with racto-free product, that there would be further demands designed to impede the trade flow. In other words, industry participants ask: "What will Russia want next to impede trade?" Furthermore, the so-called premium of the Russian racto-free market would be lost once all or even if just enough of its suppliers fall into line. Racto-free would be commoditized without the imagined "premium" and the industry would be without the margin and environmental benefits of the product.

Finally there is the issue of competitiveness. One of the biggest issues facing the industry is competitiveness relative to the United States. The US had a Paylean advantage from 2000 to 2006 when Canada finally approved its use. If the eastern half of the country succumbs to the Russian demand, it will eventually lose the "premium" and be at an increased competitive disadvantage. This is a very high price given that Russia represents only 8% of Canada's market hog production.

This paper was commissioned by Elanco Canada in order to provide the George Morris Centre assessment of the implications for the Canadian hog and pork industry of the current Russia ban.

1 Introduction

The Russian authorities have indicated their desire to only import meat into Russia from animals not fed with ractopamine (pork and beef), as of December 7, 2012. That would apply namely to imports from Canada, USA, Mexico, and Brazil.

This paper is a high level assessment of the implications for the Canadian hog and pork industry of Russia's ban on presence of ractopamine in meat (pork and beef) imported into Russia. More particularly the purpose of this paper is to examine the ramifications for the Canadian industry if it were to comply with the Russian demands pertaining to ractopamine.

2 Ractopamine Description, History and Rationale

This section provides a short overview of why ractopamine is used and its impact on pork production. This is not meant to be a scientific proof or argument of the research and science of this product. The research and science behind this product is exceptionally well documented and accepted among industry participants and industry researchers. Instead this section provides a short summation of the uses and impact in order to understand its importance and to provide perspective on the magnitude of the debate

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Ractopamine is approved by the Canadian Food Inspection Agency as feed for finishing barrows and gilts in 2006 and in the US in 2000. The Codex Alimentarius Commission, a unit of the Food and Agricultural Organization of the United Nations, is recognized by the World Trade Organization as an international reference point for the resolution of disputes concerning food safety and consumer protection which sets international food standards. The Codex has approved a Maximum Residue Limit (MRL) for ractopamine and has set the acceptable daily intake standards. Ractopamine is currently approved in 26 countries.[1]

The use of ractopamine has a number of production and environmental benefits:

- Previous George Morris Centre research has shown that the use of ractopamine could have increased producers' returns by about $2/hog. During the high feed cost period production returns improved to $3/pig (Hunsberger and Grier, 2012). Users of ractopamine as well as other studies tend to suggest these results as conservative and some show value to $5 per hog.
- Woods et al. (2011), found that the current amount of pork in the U.S. could be produced with up to 6.3% fewer pigs if ractopamine would be added at 5 or 10 mg/kg in all finishing pig diets in the United States. Because of the higher feed efficiency achieved with ractopamine, Woods et al. (2011), estimated that feed input could be reduced (0.35 million hectares of corn and 0.13 million hectares of soybeans), which in turn would lead to reduced fertilizer (annual reduction of

[1] For example: United States, Australia, Hong Kong, Mexico, New Zealand and South Africa.

79 or 97.4 million kilograms), pesticide (0.8 or 1.05 million kilograms) and water (184 or 233 billion liters) input.

- Paylean® has been verified by the Canadian Environmental Technology (ETV) program[2]. The performance claims of Paylean® were verified based on a study conducted by the Prairie Swine Centre. It was verified that: "When Paylean® is administered to swine at a level of 10 ppm in the finishing period, results are (with 95% confidence):
  - Decreased water intake by 11.3% on average;
  - Decreased total water excretion (urine output and fecal moisture) by 15.8% on average;
  - Reduced urinary nitrogen by 18.5% on average; and
  - Reduced total nitrogen excretion by 13.1% on average."[3]

Other benefits include better carcass yields for packers and reduced barn space (2.5% to 3% less space required). With regard to carcass yields for packers, one published study comparing 0, 5 and 7.5 ppm showed, the advantage in total product equated to approximately 9% more lean cutting yield product and 7% more carcass cutting yield product for ractopamine fed pigs when compared to controls.[4]

As noted, however, this section is not meant to argue the merits of the product in detail. There have been over 300 studies conducted on Paylean prior to its approval. Elanco is still funding research to document more and better how Paylean works. That is in addition of course to the fact that it has been in use on farm in North America for over twleve years.

A crude estimate is that from 2009 through mid-2012, it is likely that up to 60% of Canadian market hogs were fed Paylean. This provides both an indication of production efficacy and the wide base of experience and knowledge of the product.

The bottom line is that it creates lean meat product with less grain and water input, less manure, at a lower net cost and higher net revenue with environmental benefits. CODEX has recognized the safety of ractopamine and therefore has approved international food safety standards for its use. Other regulatory and foods safety authorities have also approved it such as the US Food and Drug Administration and the Canadian Food Inspection Agency. It is also approved by regulatory authorities in Australia, Brazil, Mexico, New Zealand, and Japan among many others.

[2] The ETV program has been established by Environment Canada in 1997 to support "the implementation of innovative environmental technologies in Canada in areas that help Environment Canada meet its environmental and regulatory priorities". The purpose of the program is to verify environmental performance claims. The program is delivered by GLOBE Performance Solutions. For more information: http://www.etvcanada.ca.

[3] http://www.etvcanada.ca/Media/file/Verfied_Company_List/Paylean-Elanco.pdf

[4] http://www.animal-science.org/content/early/2011/02/11/jas.2010-3601.full.pdf

3 The Russian Challenge to Ractopamine

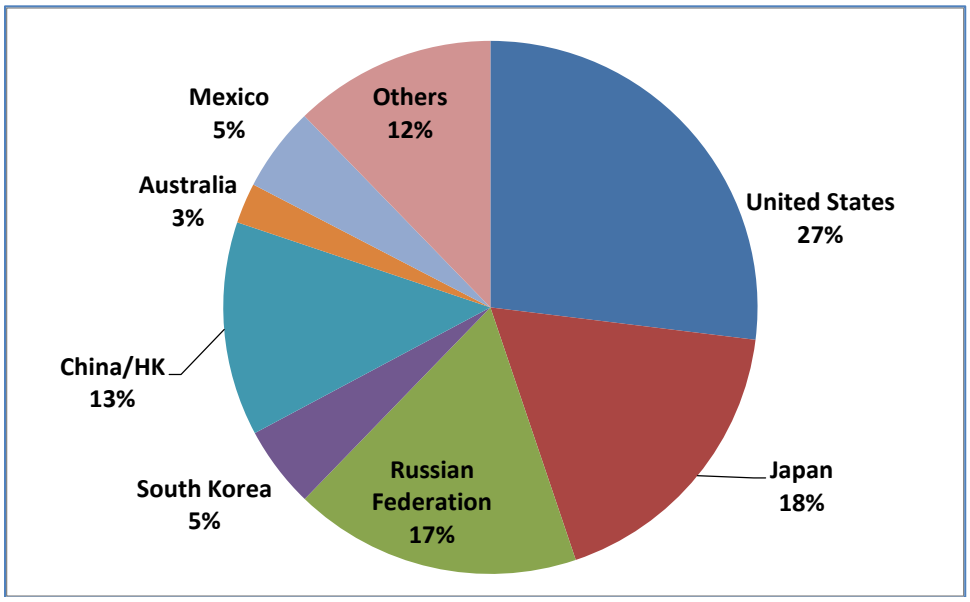
As noted in the introduction to this document, the Russian restriction on importing meat from ractopamine fed animals into Russia went into effect on December 7, 2012. . This section outlines why this is a material challenge to the Canadian pork industry.

3.1 Russian Market Significance to Canada

In 2012 Statistics Canada reported that Canada sold $492 million of pork to Russia. In 2012, Russia grew to become Canada's third largest export trading partner behind the United States and Japan (Figure 1).

Russia's importance at a 17% export share by volume (15% by value) is re-enforced by the fact that it has been growing rapidly from just a three percent share in 2005. Further importance to that market is seen given the loss of market share for exports to the US in recent years.

Figure 1 2012 Canadian Pork Export Market Shares by Volume



Source: Statistics Canada Livestock

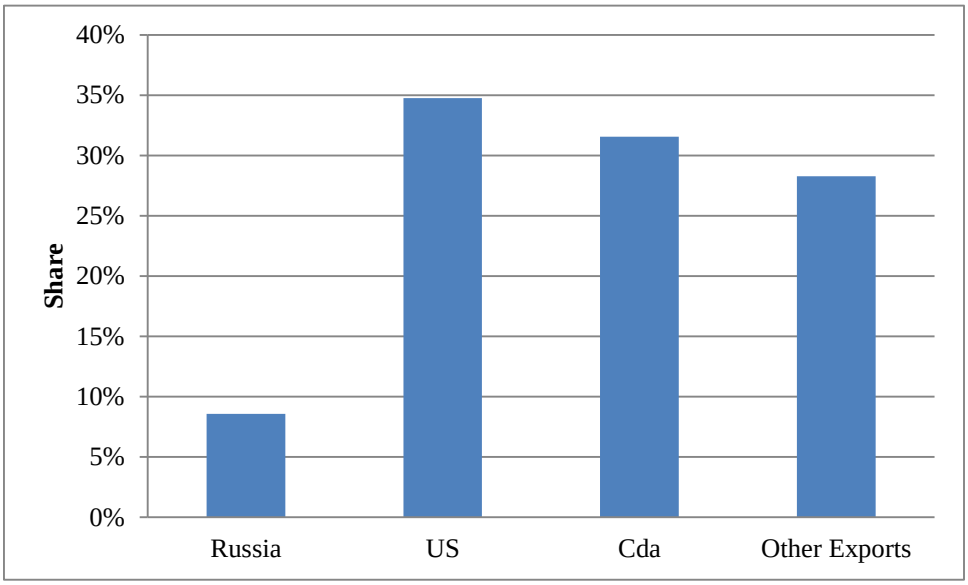
While Russia is a frozen product market, its importance has been growing also in terms of the value of product it imports. In 2006, its imported value per kilogram amounted to just $1.60 while in 2012 the value was $2.38. While Russia is still a lower value market than the US, Japan, Australia and New Zealand, its importance has increased given the greater breadth of products it imports. That is, this is no longer an offal and fat market, although that is important, now it can be counted on as a market for a wider array of carcass cuts.

For these and other market related reasons such as pricing leverage and market diversification, Russia has become in a very short time, a very important pork market for Canada. Its importance is

perhaps even greater given how Canadian packers are losing market share in their own domestic market to US pork.

For further perspective, however, while Russia took 17% of Canadian exports, its share of Canada's total pork production amounts to about 10%, assuming 60%[5] of Canada's 21.1 million head slaughter production is exported. Moreover, when considering the 5.6 million live hog exports, the Russian share of Canada's hog marketings amounts to eight percent. By comparison, the US represents over a third of all Canadian hog marketings and Canadian consumption represents less than a third (Figure 2).

Figure 2 Share of Total Canadian Hog Marketings 2012



Source: Statistics Canada

3.1.1 East-West Differences

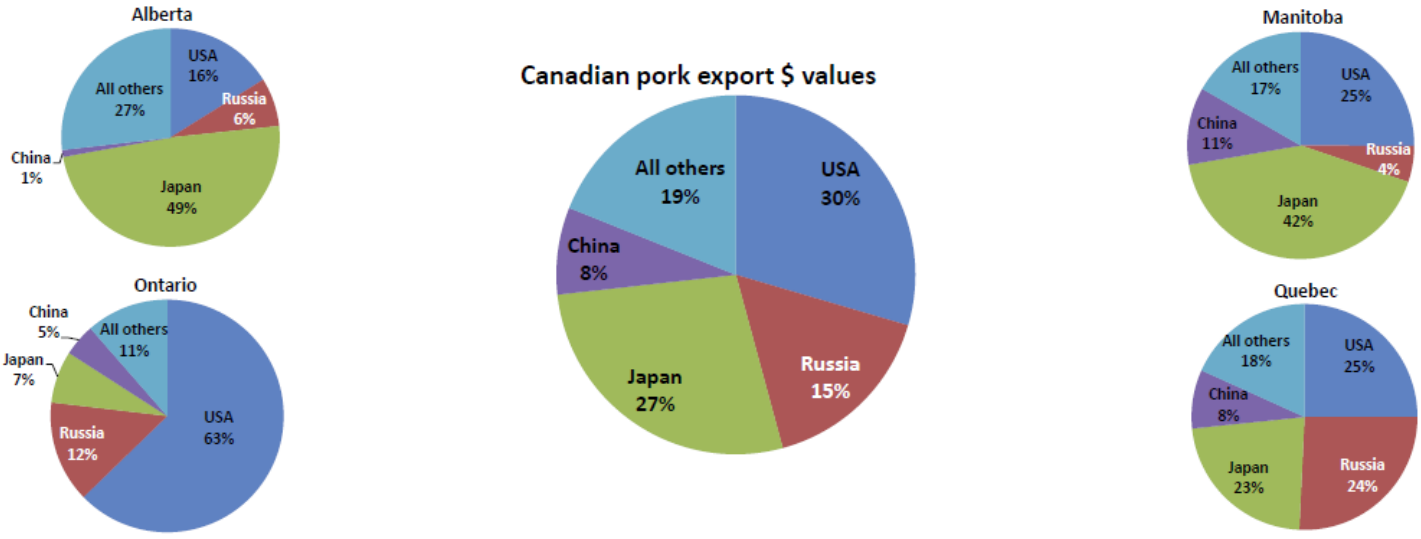
As might be expected, there is a material difference in Russian importance between eastern and western Canada. In fact well over 80% of the value of Canada's pork exports are generated from eastern Canada with the bulk of those from Quebec according to the Statistics Canada trade data. Of the major pork exporting provinces, Russia is by far the most important to Quebec (Figure 3). Given geographic proximity and the access to other markets, the Quebec significance is not surprising.

For further perspective, by volume 27% of Quebec's pork exports go to Russia. Applying the assumption that 60% of production is exported, that means that 16% of Quebec's total slaughter production is exported. A similar calculation for Ontario is 8% of slaughtered production.

In Alberta and Manitoba about 9% and 4% of exports go to Russia respectively. That means that 5% and 2% of slaughtered production moves to Russia and much less when live exports are factored into the equation.

[5] **2008-2011 Statistics Canada data shows exports averaged 60% of Canadian production.**

Figure 3 Canada and Provincial Export Market Shares by Value C$



Source: Statistics Canada

4 Proposed Canadian Response

Given the significance of both ractopamine and the Russian market, it is important to understand the Russian demands and Canada's possible response.

4.1 The Russian Demand

For the purposes of the Russian ban, Rosselkhoznadzor (Russian Federal Service for Veterinary and Phytosanitary Surveillance) gave exporting countries two options:
Option 1) Along with the veterinary certificate, the competent authority of the exporting country must attach a report by an accredited laboratory indicating that the particular shipment has been tested for the presence of ractopamine and the test result is negative or;
Option 2) Along with the veterinary certificate, the competent authority of the exporting country must attach an official guarantee that assures absence of ractopamine residue in the exported meat. This warranty has to be the result of a combination of regulatory and control measures performed on the meat exported to Russia, which would certify that ractopamine is not used in the feed of animals. If ractopamine is not used, then there is no need to check for its residual presence.

4.2 The Canadian Response Protocols

This section of the report provides a brief overview of the proposed response to the Russian demands. The response has been in the development stage through late-February led by Canada Pork International (CPI) and the Canadian Meat Council (CMC). CPI and CMC have submitted a plan to industry representatives that they believe best addresses the options offered by Rosselkhoznadzor. This CPI/CMC plan is titled, "PROPOSED PROGRAM TO CERTIFY RACTOPAMINE FREE PORK MEAT TO BE EXPORTED TO RUSSIA."

(This discussion refers to Version 4 of the effort. As of the end of February another draft is in the works, based on industry input on Version 4).

4.2.1 Option 1

Option 1, as noted above, is essentially what the Canadian industry has been undertaking since late 2012. Under this option, an exporting firm draws a specified sample of frozen product and is sent to one of three Canadian Food Inspection Agency certified laboratories in Canada. Assuming the product tests free of ractopamine, a copy of the certificate accompanies the representative sample to the Russian market.

The cost of the test varies depending on number of samples are urgency. The cost amounts to between $140 and up to $200/sample. The test involves 500g of tissue / per tissue/ container. That is, if the container has more than one type of container such as muscle and liver, then two samples are required and three tests if three types of tissue. A typical container amounting to generally 25-26 tonnes will likely have only one product or tissue type. As such the cost would amount to less than a cent per kilogram. Even a container with three samples required would total just over two cents per kilogram. In 2012, the average value of shipments to Russia amounted to about $2.38/kilogram. Over the course of 2012, the monthly average value shipped to Russia from Canada ranged from a low of $2.24 in September to a high of $2.51 in November. For further perspective on the cost of sampling relative to the product value, it is noted that as of late February, Russia is being forced to pay more than two times the market level to acquire ractopamine free product such as ham.

From a logistical perspective it is too early to state how well the system of certification is working. That is because the number of plants approved for Russia in early 2013 is low relative to the number that are going to want to move product to Russia. In other words, the certification process needs to be tested before it can be judged to be working effectively or not. Furthermore from a logistical perspective, the test, which might have a ten day turn around, is typically completed during the time that the product is trichinosis tested, as Russia demands.

As an aside, the trichinosis test is an example of an unfounded and unwarranted Russian demand given that trichinosis is not present in the Canadian industry.

4.2.2 Option 2

The CPI/CMC document notes that "it has been acknowledged that in the longer term Option 2 will be much cheaper and easier to manage for the Canadian firms interested in exporting pork to Russia. Plants that have already in place an EU ractopamine-free protocol approved by the CFIA can use it as it was confirmed by the Russian Veterinary services that it meets their requirements."

It is true that the plants that already have the EU protocol would be well positioned. The fact is that there are four pork plants in Canada that are EU approved and those plants represent a very small share of production. Furthermore recall that that over the past two years, rough estimates suggest that Paylean is fed to up to 60% of the market hogs in Canada. As such, Option 2 carries very significant ramifications for the entire industry.

Further to that Option 2 imposes very strict processes and procedures on producers, packers and feed manufacturers. Option 2 also forces strict procedural requirements on feed and livestock transporters.

With regard to producers and packers there is consensus that while it might be possible to finish and process racto-free and racto hogs or pork in the same facility, it would prove to be very difficult and costly. The example of US packers' inability to handle Canadian hogs or the procedural hurdles as a result of Country of Origin Labelling (COOL) is an example of the difficulty of segregating and sorting. In the case of the racto-protocol the procedures are far more onerous than those for COOL

For example at the packer level, the protocol requires complete clean-up after processing racto-hogs. Therefore the only option is scheduled slaughter first in the morning. The clean-up includes yards, by which that is likely the barn. During the week barns are rarely if ever empty. Therefore packers would need a separate barn area kept empty and cleaned before new racto-free hogs arrive. Most packers don't have extra barn space. Most would need to expand the barn to accommodate the logistics of producer arrivals for first morning slaughter.

There is some discussion about having one day set aside for racto-free. This would be a severe logistical challenge with producers. In that case packers would have to empty the barn, do a clean-up then have pigs arrive through the evening and night for next day kill.

Cooler requirement is a complete clean up; this would require a separate cooler exclusively for racto-free hogs rather than segregated areas. For cutting operations the document talks about "an evident separation from carcasses derived from pigs fed with feed containing ractopamine must be in place". Of course there are questions regarding the meaning of "evident separation" as stated in the protocol. The meaning is important if it means having to empty the cut floor if non-racto-free hogs come after the racto-free so that CFIA can verify that there is no possibility of non-racto-free meat unintentionally ending up with racto-free.

The same sort of logistical challenges regarding feed and segregation occur at any producer operation that would attempt to do both racto and racto-free production. At the feed mill level, the challenges may be greatest of all participants in the chain. Most feed mills are not aware of the protocols as of the end of February but those that are consider them unworkable. That is, it is doubtful that there is any chance of producing racto and racto-free products at the same feed mill facility. The prospects for those operations that have more than one facility are also daunting as well. The logistical challenges of having a facility go racto-free, while another is not will add to transport and operational costs while reducing efficiency. Mills have not yet worked out the exact added costs of doing both product line,s but the initial analysis has been that it would not be feasible to do both ractopamine and ractopamine free products either at the same mill or in separate facilities.

4.2.3 Implications of Option 2

It appears that it is not practical or financially sensible for operations with single or perhaps in the case of feedmills, with multiple sites, to produce both racto and racto-free product under the conditions imposed by Option 2. In other words, those operations that wish or need to generate racto-free product will need to make the full commitment. Those industry participants that are in that position will have to make the choice to do one or the other.

An entirely logical and foreseeable outcome would be the elimination of ractopamine from eastern Canada as a result of the Russian demands. Option 2 could institutionalize and standardize racto-free production in eastern Canada for practical purposes. This is regardless of the benefits of ractopamine or the fact that in eastern Canada, Russia only represents 10-15% of slaughtered production.

5 Costs, Benefits and Ramifications

This section of the report provides an overview of the issues and the implications of the various paths available to respond to the Russian demands.

5.1 Perspective on the Russian Market

As a starting point, it needs to be re-emphasized that Russia is an increasingly important market to Canada or more particularly eastern Canada and more particularly to Quebec. In addition to the reasons outlined in section 3.1, the obvious fact is that it is typically beneficial that sellers have a variety of market options and alternatives. With that noted, product is sold to Russia not because it is a premium market, but because at any one time, it is the best alternative for the sale. Russia, like most export markets is a commodity market and extremely price driven. Canada's sales to Russia have grown because Russia was the best alternative at any time, but also because Canada is losing its own market and US market share.

Furthermore, Russia has shown itself to be a fickle, unreliable and undependable trading partner. Its practice of utilizing non-tariff barriers and penalties on trading partners is common and widely known. The generally recognized reason for its behavior is the protection and acknowledged desire to become self-sufficient in livestock and poultry production. Dealing with Russian uncertainty is a cost of doing business with Russia.

5.2 Perspective on the Response

The Canadian industry faces a very difficult problem with short and long term consequences. Canadian packers and exporters know the whims of the Russian market. At the same time, however, they fear that the loss of Russia would result in moving product at distress levels to other markets, such as the US. That prospect drives the desire to satisfy this latest demand from Russia.

Standing in sharp contrast to the Russian demand is the fact that Paylean results in a $3 or more/head advantage to producers as well as carcass benefits to packers. The dichotomy between

the need for the Russian market and the lost efficiencies, environmental benefits and producer margin is the issue.

Individual packers have determined that the loss of the Russian market would depress their returns enough to make it worthwhile to either fully or partially attempt to compensate producers. Those decisions are based on the lost margins on sales versus the lost margins for producers without Paylean. This compensation is taking the form of widening the grids to accommodate the poorer Paylean-free results. Compensation also takes the form of higher prices focused on the areas of Paylean improvement.

It is up to individual packers and producers to determine whether meeting the current Russian demands is worthwhile. Of course there is also the Chinese threat to replicate the Russian action which also looms large in the decision making process. The decision making process is particularly focused for Quebec based participants. In the west, this entire issue is barely under any consideration by feed mills, packers or producers. As part of the decision making process, however, the fundamental marketing axiom of customer ranking is also relevant. Generally, marketers take care of their best customers first and the opportunists last. Given Russian buying history it would fall into the opportunist category.

5.2.1 Bigger Picture

For the industry as a whole and for the government of Canada, however, the bigger picture considerations are warranted. To meet Russian demands through Option 2 as written or even in a modified form would codify a racto-free process and legitimize the Russian demand. Russian demands are not in compliance with international trade practices and have no merit according to CODEX. This is not a case of meeting customer requests; it is a case of complying with unreasonable and costly demands.

Canada and international importers such as the notoriously cautious Japan accept Ractopamine as safe and as a technological advance that provides benefits to the food system and the environment. As of the end of February, the United States has decided that it is not going to accept or provide credence to the Russian demands. As stated earlier the US and Canada know that Russia is using this as a non-tariff barrier in order to support its own industry. The Canadian industry and the government of Canada should continue to stand along with the United States and with the scientific and environmental benefits of ractopamine. For its part, Russia will therefore need to find alternative sources of pork. Already Russia and its consumers are being forced to pay at least two times the prevailing price for racto-free pork such as ham.

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Finally there is the issue of competitiveness. One of the biggest issues facing the industry is competitiveness relative to the United States. The US had a Paylean advantage from 2000 to 2006 when Canada finally approved its use. If the eastern half of the country succumbs to the Russian demand, it will eventually lose the "premium" and be at an increased competitive disadvantage. This is a very high price given that Russia represents only 8% of Canada's market hog production.

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