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PROTEIN MEAL: SITUATION AND OUTLOOK

The world market for protein meal continues to grow steadily as demand, stimulated by higher meat and vegetable oil (vegoil) consumption, supports the expansion in output. Geographically, the demand for protein meal has increased most in Asia, particularly China, while the growth in production is occurring in South America and Asia. Trade in protein meal has increased at a slower pace with Argentina remaining the world's largest exporter and the European Union (EU-25) the world's largest importer. The Canadian protein meal market has expanded significantly since 2000 due to increased domestic livestock production and oilseed processing. In 2004-2005, Canada exported 1.3 million tonnes (Mt) of canola meal, valued at CAN$249 million and imported 1.1 Mt of soymeal valued at CAN$292 million. Over the medium-term, prices of protein meal are expected to be pressured because of the rising output of high protein by-products created by the expansion of ethanol and biodiesel production in North America.

This issue of the *Bi-weekly Bulletin* examines the situation and outlook for plant based protein meal, which is affected by conditions in the vegoil and oilseed markets. For a full discussion on vegoil, refer to *Bi-weekly Bulletin Volume 18, Number 11* entitled, "*Vegetable Oils: Competition In A Changing Market*".

SITUATION 2005-2006

Protein meal can be defined as either a co-product derived from the crushing of oilseeds or as a by-product from the processing of livestock. Dried distillers grains (DGG) are high in protein and are substitutable for soymeal and canola meal in livestock rations.

World production and consumption continues to expand

Since 2000-2001, world production of protein meal has increased at a steady pace, largely due to expansion in soybean crushing capacity in South America and China. For 2005-2006, world protein meal production is forecast to rise by about 4%, primarily because of an expected increase in oilseed processing in China, Brazil, Argentina and the US. By type, the projected percentage distribution of protein meal production is: soymeal (68%), canola/rape meal (12%), cottonseed (6%), sunmeal (5%), fishmeal (3%), peanut meal (3%), palm kernel meal (2%) and copra meal (1%).

For 2005-2006, the production of soymeal is expected to increase by 6 Mt while the output of sunflower seed meal rises by 1 Mt. The output of copra meal, cottonseed meal, fishmeal, palm kernel meal, peanut meal and canola/rape meal is forecast to be largely unchanged.

Similarly, world consumption of soymeal is forecast to increase by slightly over 6 Mt, while the usage of sunflower seed meal increases by slightly less than 1 Mt. Consumption of the remaining protein meal types is forecast to remain stable.

Major Exporting Countries

The **US** is forecast to remain the world's largest producer of protein meal, accounting for about 16% of the total world production for 2005-2006. The US is the world's largest producer of soymeal, with production forecast at about 37.0 Mt for 2005-2006. Canola/rape meal production is estimated at 0.7 Mt, assuming a crush of 1.1 Mt.

Domestic consumption of protein meal in the US is forecast to rise by about 1 Mt, to around 35 Mt, with soymeal usage estimated at 31 Mt. The increase is supported by a projected expansion of the US livestock herd. The United States Department of Agriculture's (USDA) projected index of grain consuming animal units (GCAU) is 92 million, up from 90 million in 2004-2005. For 2005-2006, the national pig crop is expected to be up by 1% as an increase in litter size more than offsets a reduction in the number of sows farrowing. For the first half of 2006, US producers report that they intend to increase farrowings from the previous year. As a result, pork production is expected to increase by 2.5% for the 2006 calendar year. Similarly, the feed needs for beef may strengthen for 2006 because of feedlot placements due to drought in the winter grazing areas. Beef production is forecast to increase by nearly 5% in 2006. Poultry production is forecast by the USDA to rise by 3% for 2006 while egg production rises by 2%. In addition, national milk production is projected to rise by 4.7 billion pounds (Glb), to 176.6 Glb.

CANADA: PROTEIN MEAL SUPPLY AND DISPOSITION

	2004 -2005	2005 -2006e	2006 -2007f
	.....thousand tonnes.....		
CANOLA MEAL			
Carry-In Stocks	30.0	35.0	35.0
Production	1,903.8	2,050.0	2,050.0
Imports	1.8	5.0	5.0
Total Supply	**1,935.6**	**2,090.0**	**2,090.0**
Exports	1,343.4	1,480.0	1,500.0
Domestic Use	557.2	575.0	555.0
Total Use	**1,900.6**	**2,055.0**	**2,055.0**
Carry-Out Stocks	35.0	35.0	35.0
SOYMEAL			
Carry-In Stocks	18.0	30.0	30.0
Production	1,230.0	1,450.0	1,450.0
Imports	1,115.0	1,150.0	1,150.0
Total Supply	**2,363.0**	**2,630.0**	**2,630.0**
Exports	87.4	125.0	100.0
Domestic Use	2,245.6	2,475.0	2,500.0
Total Use	**2,333.0**	**2,600.0**	**2,600.0**
Carry-Out Stocks	30.0	30.0	30.0

Note: Flaxseed meal not included due to confidentiality of data.
e: estimate; f: forecast, AAFC, February 2006
Source: Statistics Canada

Canada

US exports of protein meal, however are forecast to decrease slightly, to about 6.3 Mt, due to burdensome South American supplies and slowdowns resulting from ongoing repairs to the Mississippi, adjacent levees and terminal elevators following hurricane Katrina. Exports of soymeal are projected to fall to slightly under 6.0 Mt, versus the 6.7 Mt exported in 2004-2005, with most of the shipments directed to China and the EU-25.

In **Brazil,** the production of soymeal has increased by about 33% since 2000-2001. The growth in production of soymeal is due to an increase in supplies of raw soybeans and an expansion of crushing capacity. According to USDA, the 240,000 soybean producers in Brazil are widely dispersed throughout 17 states. Twenty percent of the country's total agricultural income is derived from soybeans. For 2004-2005, soybeans made up 12% of Brazil's US$10 billion in total exports, and accounted for one-quarter of Brazil's agricultural exports. The evolution of soybean production in Brazil has improved the standard of living and has aided the development of transport infrastructure. Since 2000, about 13 soybean crushing plants have been built or expanded with investment provided by Bunge, ADM, Louis Dreyfus and by various local companies.

For 2005-2006, local marketing year, the production of soybeans is forecast by USDA at a record 58.5 Mt, as an expected return to normal yields offsets the first decline in seeded area since 1998-1999. The production of soymeal is also projected to rise to a record 23.4 Mt, of which slightly over 60% is expected to be exported with the EU-25 being the major customer. The domestic consumption of soymeal continues to grow at a steady pace, increasing by 29% since 2000-2001, as Brazil continues to develop its livestock industry. For 2005-2006, domestic consumption is forecast at 9.3 Mt.

Argentina continues to be the world's largest exporter of soymeal, as higher export tariffs for soybeans than for protein meal or vegoil support the processing of soybeans and export of oil and meal. Since 2000-2001, the production of soymeal has increased by almost 50% and for 2005-2006 is forecast to reach a record 22.9 Mt, most of which is exported, while less than 1.0 Mt is consumed domestically. Argentina also exports a small but steady volume of sunflower seed meal with shipments forecast to increase marginally to 1.2 Mt for 2005-2006.

Major Importing Countries

China is the world's largest consumer and second largest producer of protein meal. For 2005-2006, the total domestic consumption of protein meal is estimated at about 37 Mt, most of which will be consumed as feed. Total production of protein meal has expanded steadily, rising from about 33 Mt in 2003, to an expected 40 Mt for 2005-2006. By comparison, US production is 40 Mt. Total Chinese crush capacity is estimated at 70 Mt per year with 169 crushers capable of crushing more than 200 tonnes per day (t/day). Of the 169 crushers, at least 90 crush at least 1,000 t/day.

By type, soymeal makes up 58% of the protein meal production, followed by canola/rape meal at 19%, cottonseed meal 9.5%, peanut meal 8% with fishmeal and sunflower seed meal accounting for the remaining 5.5%. The trade in protein meal is minor with small quantities of protein meal being imported while exports in 2005-2006 are estimated at less than 1.0 Mt. In 2005-2006, China produced 17 Mt of soybeans domestically and imported 27 Mt of soybeans to crush.

For 2005-2006, the production of soymeal is forecast to rise to 23 Mt, with most of the rise in output consumed by the dairy and aquaculture sectors, with soymeal replacing fishmeal to some degree in the swine sector.

For 2005-2006, broiler production is expected to remain stable, despite an announced 20 million bird cull by Chinese authorities in response to outbreaks of the Asian Bird Flu H5N1. Favorable policies supporting poultry production allowed China's broiler production to recover quickly from the cull during the first half of 2004. The recovery of production was aided by stable consumer demand and China's success in re-opening cooked poultry exports to some countries. In addition, China's poultry egg production is forecast by the US Agriculture Attaché to rise by 5% to over 28 Mt for 2005.

For 2006, pork production is forecast to rise from the expected 49.6 Mt for 2005. One side effect from the exodus of rural residents to urban centers is the expansion of commercial swine operations, away from backyard pens, resulting in increased demand for soybean meal.

Aquaculture requires approximately 5 Mt of soymeal per year in China, with the raising of fresh water fish being the most important consumer of soymeal. Although current production of cage-raised marine species is small relative to pond-raised fresh water species, production is expanding rapidly and the long-term growth potential for soymeal is significant. Soymeal's inclusion rate in aqua feed varies from 20% to 50%, allowing considerable room for substitution for other protein meal such as canola meal.

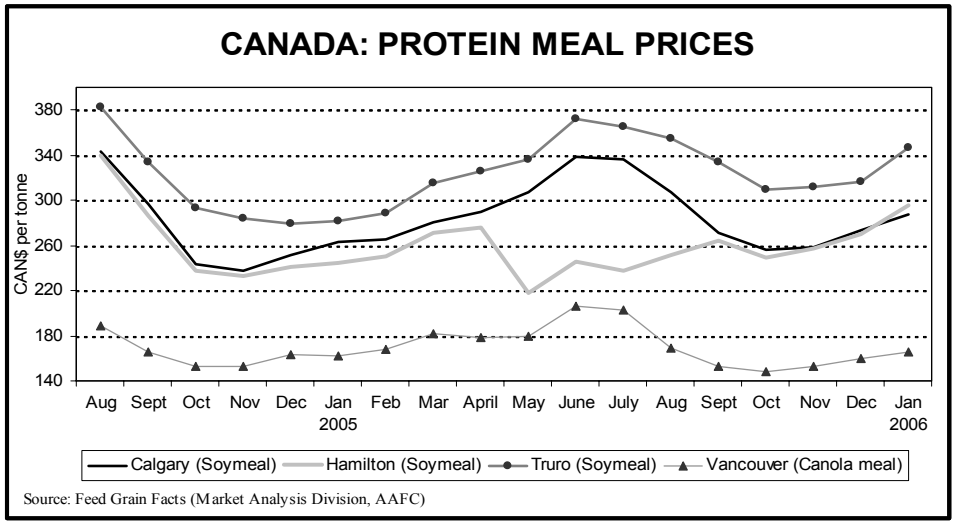
The **EU-25** is the world's largest importer of soymeal, accounting for almost one-half of all the soymeal imported for 2005-2006. Soymeal imports are projected at 22.8 Mt for 2005-2006, up slightly from 2004-2005 and 30% higher than the 17.5 Mt imported in 2000-2001. By comparison slightly less than 15.0 Mt of soybeans are expected to be crushed for 2005-2006, producing 11 Mt of soymeal. Total soymeal feed and waste use is projected at 33.7 Mt for 2005-2006.

The EU-25 has a preference for importing soymeal rather than soybeans because of the low crush margins of EU crushing plants compared to plants in South America. The low crush margins are due to compulsory traceability and labelling set by EU regulations. It is expected that in North West Europe, soybean crushing capacity will be reduced by 3 Mt through plant closures and/or through plant conversions to rapeseed crushing.

WORLD: PROTEIN MEAL SUPPLY AND DISPOSITION

	2004 -2005	2005 -2006e	2006 -2007f
	……million tonnes……		
PRODUCTION			
Soymeal	138.3	144.5	145.0
Canola/Rape meal	24.1	24.7	25.0
Other	42.7	43.1	43.0
Total	**205.1**	**212.3**	**213.0**
TRADE			
Soymeal	46.2	49.9	48.8
Canola/Rape meal	2.2	2.3	2.2
Other	11.4	12.1	12.0
Total	**59.8**	**62.3**	**63.0**
CONSUMPTION			
Soymeal	137.7	143.8	145.0
Canola/Rape meal	24.1	24.5	25.0
Other	42.3	42.6	43.0
Total	**204.1**	**210.9**	**213.0**
CARRY-OUT STOCKS			
Soymeal	5.1	5.2	5.2
Canola/Rape meal	0.3	0.3	0.3
Other	0.7	0.7	0.7
Total	**6.1**	**6.2**	**6.2**
OILSEED PRODUCTION			
Soybean	215.3	222.8	221.0
Rapeseed/Canola	46.1	46.7	43.5
Other	119.1	119.8	119.5
Total	**380.5**	**389.3**	**384.0**
OILSEED CRUSH			
Soybeans	176.0	183.8	187.1
Rapeseed/Canola	41.0	41.5	42.1
Other	85.3	85.9	86.0
Total	**302.3**	**311.2**	**315.2**

Note: Other includes cottonseed, sunflower seed, fishmeal, peanut, copra and palm kernel.
e: estimate, USDA-FAS; f: forecast, AAFC, February 2006
Source: AAFC, USDA



Source: Feed Grain Facts (Market Analysis Division, AAFC)

The increased production of rapeseed meal, forecast at 8.2 Mt, up from the 7.4 Mt in 2004-2005, is partially replacing soymeal in some EU countries. However, in other countries rapeseed meal is expected to replace corn gluten meal. Production of rapemeal is being supported by the rising crush for biodiesel. By mid-2006, EU-25 biodiesel capacity may exceed 4.0 Mt. About 80% of EU-25 biodiesel is made with rapeseed oil and in 2004 one-third of the rapeseed crop was used in the production of biodiesel.

Canada: Net exporter of canola meal and net importer of soymeal

For 2005-2006, the production of protein meal is expected to be at a near record high level, although if not constrained by crush capacity could be higher given highly attractive crush margins and burdensome supplies of canola. Canada is expected to remain a net exporter of protein meal as the exports of canola meal exceed imports of soymeal.

Production of canola meal is projected at 2.05 Mt, up slightly from 2004-2005 but slightly below the record of 2.12 Mt set in 2003-2004. About 1.5 Mt of canola meal, mostly from western Canada, are expected to be exported into the US. Around 0.5 Mt is consumed domestically where it is favoured in dairy rations because of its nutritional properties.

Soymeal production is forecast to rise to a record 1.5 Mt for 2005-2006. However, Canada remains deficient in soymeal, and as a result an additional 1.2 Mt of soymeal is expected to be imported, mostly from the US, with shipments roughly equally split between eastern and western Canada. Total soymeal consumption is expected to increase to a record level on support from higher hog numbers and feedlot placements.

Prices

The benchmark US price for soymeal, in-store Decatur, simple average 48% is projected to decrease to US$165-180 per short ton (/st) (2,000 lb) for 2005-2006, versus the US$183/st received in 2004-2005. This translates to an average price of about CAN$270 per tonne (/t) (2,204 lb), for soymeal in-store Hamilton, based on the 2005-2006 basis of CAN$35/t to-date and an exchange rate of US$1=CAN$1.18. Regionally, the price of soymeal in-store Calgary is expected to be about CAN$280/t while in the Maritimes, the price is forecast at $335/t for 2005-2006. The price of canola meal, in-store Vancouver is expected to fall to about CAN$160/t for 2005-2006, versus the CAN$175/t received for 2004-2005.

2006-2007 AND MEDIUM TERM OUTLOOK

World production of protein meal is forecast to rise slightly on support from strong crush margins, strong demand for ethanol and biodiesel, ample supplies of raw oilseeds and growing livestock populations. Most of the growth is expected to occur in soymeal because of the large supplies of raw soybeans, attractive crush margins and growing world livestock numbers. World production of canola/rape meal is forecast to rise marginally on support from strong demand for canola/rape oil and biodiesel, sharply higher than usual crush margins and large stocks of canola/rapeseed. Much of the potential increase in canola/rape meal production is offset by constrained crush capacity, particularly in the EU-25 and in Canada.

US production of protein meal is forecast to rise by 4%, to about 39 Mt for 2006-2007 on support from growing domestic demand for protein meal, growing demand for ethanol and biodiesel, expected large oilseed and corn supplies and attractive crush margins. Most of the increase in output is expected to consist of rising soymeal production, which is forecast to rise to about 37 Mt for 2006-2007. However, growth will be constrained by the continued burdensome stocks of soyoil of over 1.0 Mt. Exports of soymeal are expected to be constrained, to about 6.0 Mt, due to competition from South America and China.

US production of various corn processing by-products such as corn gluten meal and DDGs is forecast to grow in 2006-2007, to about 13.0 Mt, due to rising demand for fuel-grade ethanol. The production of other protein meal, including canola meal, is forecast to remain relatively unchanged for 2006-2007. Over the medium-term, the production of corn meal and DDGs is expected to continue to grow as new ethanol plants come on stream.

Brazilian production of soymeal is forecast to rise slightly, to about 25.0 Mt for 2006-2007 on support from the rising Asian demand for protein meal and ample supplies of raw soybeans. Exports are projected to rise slightly to about 14.5 Mt, while total domestic consumption of soymeal increases to 9.5 Mt. Over the medium-term, production of soymeal is forecast to increase at a steady pace, with the growth in usage split between rising domestic use and exports.

For **Argentina,** the production of soymeal is forecast to rise slightly to between 23.0 Mt to 24.0 Mt. Exports are expected to increase accordingly as the domestic consumption of soymeal remains stable at below 1.0 Mt. The production and exports of sunflower seed meal are forecast to be unchanged for 2006-2007.

As a result of the sharp expansion in soybean and soymeal output since 2000-2001, bottlenecks in the storage, transport and export of both products have become severe. In an effort to reduce these bottlenecks, investments of over US$600 million to expand the crush capacity have been announced. As a result, Argentine exports of soymeal are forecast to continue increasing at a steady pace, to over 25.0 Mt by 2011.

In the **EU-25**, the demand for protein meal is forecast to rise slightly, to about 49.0 Mt, for 2006-2007. Slightly under half of this demand will be filled by domestic production of protein meal, forecast to rise marginally to 23.1 Mt. In the EU-25, strong demand for bio-fuel is expected to support an expanded crush of oilseeds and production of protein meal; however this growth is being constrained by a lack of crush capacity and availability of non-genetically modified canola/rapeseed. EU-25 imports of protein meal are forecast to rise by 6%, to about 25.3 Mt, mostly consisting of soymeal imports from Argentina and Brazil.

Chinese consumption of protein meal is projected to rise slightly, to just under 40 Mt for 2006-2007. Most of this usage is expected to be supplied through domestic production of protein meal, forecast to rise by 2.0 Mt to almost 42.0 Mt. The main feed stocks, utilized for protein meal production will be soybeans, canola/rapeseed,

cottonseed and peanuts. Of these, soymeal is expected to account for slightly over three-quarters of the protein meal produced while rapeseed/canola meal makes up about one-fifth of total output. China prefers to import soybeans and other oilseeds instead of protein meal and for 2006-2007 imports of protein meal are forecast to fall by about 50%.

Over the medium-term, Chinese consumption is projected to rise steadily, exceeding 45.0 Mt by 2011. Chinese consumption of canola meal, produced from Canadian canola, is forecast to rise over the medium-term as nutritionists continue to demonstrate the nutritional benefits of canola meal in aquaculture, hog and chicken diets.

Canadian production of canola meal is forecast to remain stable for 2006-2007 as support from attractive crush margins and burdensome supplies of canola are offset by constrained crush capacity. For 2006-2007, consumption is projected to decline marginally while exports rise slightly. However, over the medium-term, the consumption of canola meal will be supported through the introduction of specialized canola meals. For example, MCN BioProducts, based out of Saskatoon, is developing a protein concentrate extracted from canola meal with high phosphorous availability. This product is targeted for use in rations for shrimp, salmon and rainbow trout in the aquaculture industry.

Canadian production of soymeal is also forecast to be unchanged as the Canadian crush industry continues to operate at full capacity. Crush margins are expected to remain above the 5 year average given ample soybean supplies for both the crushing and export sectors

Trade

For 2006-2007, world trade in protein meal is projected to rise marginally and by comparison will be about 57% of the world trade in wheat and 63% of the world trade in corn. The pace of growth will be strongly influenced by the growth of the Brazilian and Argentine processing sectors and by EU-25 import demand. Almost all of the growth is expected to occur in higher soymeal trade with shipments of canola meal and the other protein meals remaining stable. It is anticipated that World Trade Organization negotiations will have a minimal impact on the world trade in protein meals in 2006-2007 and over the medium-term.

Prices

For 2006-2007, the price of soybean meal is forecast to range between US$160-180/st, (CAN$205-235/t) under pressure from burdensome US stocks, stable to higher meal output in China, South America and the EU-25 and by stable to slow growth in consumption

For 2006-2007, canola meal prices, in-store Vancouver, are forecast to decline marginally, to about $150/t to $155/t under pressure from burdensome supplies, continued low US soymeal prices and a stable to slightly stronger Canadian dollar. Based on the projected price for US soymeal, in-store Chicago, and the stable to stronger Canadian dollar, the price of Canadian soymeal, in-store Hamilton, is forecast to remain unchanged at about $270/t for 2006-2007.

Increased ethanol and biofuel output pressures prices

Over the medium-term, the expansion of the biodiesel industry will support increased production of protein meal as more oilseeds are processed for the oil. This is expected to create a surplus of protein meal, which is also expected to depress prices based on historic oilseed supply and livestock feed demand factors. This drop in protein meal prices is projected to provide a small, lagged, support for increased livestock and aquaculture production. The rising output of biodiesel is also expected to support the production of high oil content oilseeds, such as canola/rapeseed, rather than the production of soybeans.

By 2009-2010, **Canadian** production of protein meal may rise to slightly under 5.0 Mt. Most of the increase is expected to occur in DDGs production which is forecast to rise to 0.9 Mt based on the processing of 3.3 Mt of corn and wheat for ethanol. The production of canola meal is projected to rise slowly and may approach 2.5 Mt by 2009-2010 while the output of soymeal is expected to remain stable at about 1.5 Mt.

Over the medium-term, the factors to watch in the protein meal market include: the growth of world livestock production, expansion of biofuel production, the rise or fall in disposable incomes and the expansion of oilseed or vegoil production in Brazil, Indonesia and the Former Soviet Union countries.

CANADA: PROTEIN MEAL TRADE BY PROVINCE

	2004 -2005	2005 -2006e	2006 -2007f
	…….thousand tonnes…….		
CANOLA MEAL: EXPORTS			
Alberta	573	625	635
Manitoba	301	350	360
Saskatchewan	259	300	300
Ontario	110	100	100
British Columbia	73	75	75
Quebec	27	30	30
Canada	**1,343**	**1,480**	**1,500**
SOYMEAL: IMPORTS			
Ontario	462	475	475
Manitoba	264	275	275
Alberta	180	185	185
British Columbia	101	105	105
Saskatchewan	57	60	60
Quebec	45	45	45
Maritimes	6	5	5
Canada	**1,115**	**1,150**	**1,150**

Note: Flaxseed meal is not included due to confidentiality of data.
e: estimate; f: forecast, AAFC, February 2006
Source: Statistics Canada

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