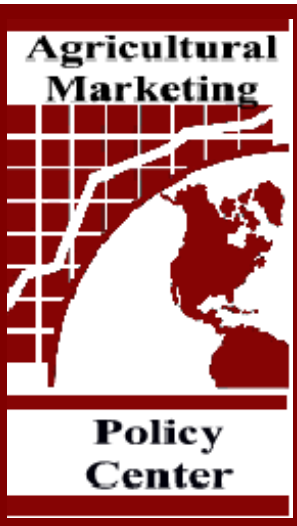

Agricultural Chemical Prices in Canada and the United States: A Case Study of Alberta and Montana

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Agricultural Marketing Policy Paper No. 4

December 2004 (Revised)

Objective Analysis for Informed Decision Making

The Agricultural Marketing Policy Center acknowledges the Montana Department of Agriculture, Alberta Agriculture, Food and Rural Development, the Montana Wheat and Barley Committee, the Montana Agricultural Business Association, and the Montana Grain Growers Association for their collaboration in this project. Funding was provided by the Montana State University Agricultural Experiment Station and grants from the Montana Department of Agriculture and the Montana Wheat and Barley Committee.

Introduction:

Differences in retail prices for similar or identical agricultural chemicals have been a source of controversy in the Prairie Provinces of Canada and the Northern Great Plains States of the United States since the mid-1990s. Such differences may exist because of differing pesticide regulations between the United States and Canada. Different regulations may inhibit trade between the two regions and isolate markets from one another. If this is the case, then regulatory harmonization that allows Canadian and U.S. agricultural producers to purchase agricultural chemicals in Canada or the United States would generally lead to harmonization of agricultural chemical prices.

Data on directly comparable agricultural chemical retail prices have not previously been collected in the Prairie Provinces of Canada and the Northern Great Plains States of the United States. This study reports the results of a new survey of chemical retailers in Alberta and Montana to obtain retail prices that are directly comparable for identical or very similar chemicals. The data are used to examine whether or not agricultural chemical retail prices are the same or different in the two regions and, if different, the extent to which they differ.

Fourteen pesticides (13 herbicides and one insecticide) available in both Alberta and Montana were identified by Alberta and Montana agricultural chemical experts as having formulations that are identical or very similar.

Survey instruments were developed and administered to retail agricultural chemical dealers in southern Alberta and northern Montana where cross border purchases of agricultural chemicals by farmers would be most likely to occur. The surveys asked respondents on both sides of the border to provide current retail prices for "cash and carry" sales of small, medium and large containers of each agricultural chemical. Retailers of agricultural chemicals along or near Canadian Route 3 in Alberta and along or near U.S. Route 2 in Montana were asked to participate by completing a mail survey. Responses were obtained from 14 Canadian and 32 U.S. agricultural chemical dealers.

More than 90 percent of the retail price observations were collected over a two-week period from August 16, 2004 to August 30, 2004, a period in which agricultural chemical markets were relatively stable. During this two-week survey period, the U.S.-Canadian currency exchange rate was also stable. The remaining data (from two U.S. dealerships) were obtained during the following week.

In Alberta, the survey was administered by the Pest Risk Management Unit of the Crop Diversification Division of Alberta Agriculture, Food and Rural Development. In Montana, the survey was administered by the Montana State University Agricultural Marketing Policy Center in collaboration with the Montana Department of Agriculture.

Data Collection Procedures

Agricultural producers purchase chemicals from retailers that have been approved and licensed for the handling, sale and distribution and (in some cases) application of agricultural chemicals. Consequently, the Montana Department of Agriculture and Alberta Agriculture, Food and Rural Development maintain comprehensive lists of these businesses.

For the purpose of this study, prices of specific, comparable agricultural chemicals were required from Canadian and U.S. retail agricultural chemical dealerships that could potentially serve both Alberta and Montana agricultural producers. Dealers from both countries were asked to provide "cash and carry" prices for specific, comparable sizes of containers.

In Montana, retailers considered likely to serve both Alberta and Montana agricultural producers are located along or near U.S. Route 2, an east-west

highway, that runs parallel to and about 35 miles south of the U.S.- Canadian border. In Alberta, retailers considered likely to serve both Montana and Alberta agricultural producers are located along or near Canada Route 3, also an east-west highway that in Alberta runs parallel to and about 50 miles north of the U.S. – Canadian border.

Information on dealership locations provided by the Montana Department of Agriculture indicated that 120 Montana agricultural chemical dealerships were potential outlets for agricultural producers in both Montana and Alberta. Seventy of these retailers were randomly selected for potential inclusion in the Montana sample. Each randomly selected business was contacted by telephone to ascertain whether the business was an applicator dealing in a very limited number of chemicals or an agricultural chemical dealer selling many of the chemicals of concern at retail. Applicators were excluded from the survey both because of the limited number of chemicals they handled and because many applicators did not sell agricultural chemicals to agricultural producers except in a combined chemical/application packages.

The sample selection process was completed when 40 agricultural chemical dealers expressed their willingness to respond to the survey. Each of these 40 randomly selected retailers received survey forms within two working days of being contacted (on August 14 or 16). Thirty survey forms with usable responses were returned within 14 days by these retailers, an initial response rate of 75 percent. The remaining ten retailers were re-contacted on August 30 and two additional responses were received by September 7 resulting in an 80 percent overall response rate.

In Alberta a total of 22 agricultural chemical dealers were identified as potential retail sources of agricultural chemicals for U.S. agricultural producers. All 22 retailers were contacted by Alberta Agriculture, Food and Rural Development, of which 14 responded to the survey between August 17 and August 31. Alberta Agriculture, Food and Rural Development estimates that jointly these 14 retailers represent 80 percent of the agricultural chemical market in southern Alberta.

Separate survey forms, included in Appendix B, were administered to U.S. and Canadian retailers selling agricultural chemicals to producers. The survey forms covered 14 agricultural chemicals (13 herbicides and one pesticide) that are widely used both in Alberta and Montana. The agricultural chemicals included in the two survey forms were selected from a list of chemicals identified by the Montana Department of Agriculture in collaboration with representatives of Montana commodity organizations and agribusiness organizations that includes retailers that sell agricultural chemicals. Alberta Agriculture, Food and Rural Development pesticide experts then identified identical or similar agricultural chemicals on the Montana list that were also registered and used in Alberta. The agricultural chemicals available for use in both Montana and Alberta were included on the survey forms provided to Montana and Alberta retailers.

Agricultural chemical companies market the same or very similar products under different brand names in Canada and the United States. The herbicide and insecticide product names differed in the surveys for Alberta and Montana, but their active ingredients were the same and their formulations either identical or very similar for both Alberta and Montana. Alberta agricultural chemical dealers were asked to report retail prices in terms of Canadian dollars per liter (or other appropriate metric measure). Montana retailers were asked to report prices in terms of U.S. dollars per gallon (or other appropriate measure). Although separate survey forms were provided to Alberta and Montana respondents because of different product names and units of measurements, the two forms had identical formats to ensure that comparable retail price data were obtained. All prices obtained from the survey participants were converted to prices per common units of measurement (gallons or ounces).

Table 1: Agricultural Chemicals and Their Major Target Species and Major Uses

Agricultural Chemicals [A]	Target Species/Major Uses
Mirage and *Roundup Original*	non-selective herbicide for general weed control; fallow and non-cropland areas
Touchdown and *Touchdown iQ*	non-selective herbicide for general weed control; fallow and non-cropland areas
Amine 4 and *2, 4-D Amine 500*	selective herbicide for control of broadleaf weeds; certain crops and non-cropland areas
LV 6 and *2,4-D Ester LV 600*	selective herbicide for broadleaf weed control; wheat, barley and non-cropland areas
Bronate Advanced and *Buctril M*	selective herbicide for certain broadleaf weeds; wheat, barley, oats; rye and flax
Clarity and *Banvel II*	selective herbicide for broadleaf weeds; CRP, fallow, small grains, and farmstead
Starane + Salvo and *Attain*	selective herbicide for control of annual and perennial broadleaf weeds; small grains, fallow, and non-cropland areas
Achieve SC and *Achieve Liquid*	selective herbicide for grassy weeds; wheat and barley
Discover and *Horizon 240EC*	selective herbicide for grassy weeds; wheat
Everest and *Everest*	selective herbicide for wild oats, green foxtail and other grassy weeds and broadleaf weeds; spring, durum , and winter wheat
Puma 1EC and *Puma 120 Super*	selective herbicide for pigeongrass, wild oats and millet and barnyardgrass; wheat and barley
Ally XP and *Ally Toss and Go*	selective herbicide for broadleaf weeds; wheat, barley and fallow
Express EP and *Express Toss and Go*	selective herbicide for broadleaf weeds; wheat, barley and fallow
Warrior (with Zeon) and *Matador 120 EC*	general insecticide

[A] The U.S. product name is listed first and the Canadian product name is listed second.

The average U.S. – Canadian dollar exchange rate over the August 16 through August 29 period (C$1.3065 per $1.00 U.S. dollar as reported by the Board of Governors of the U.S. Federal Reserve System) was used to convert prices to a common currency. The exchange rate ranged from a minimum value of C$1.2964 to a maximum of $1.3123. The range was only 1.2 percent of the exchange rate's average value over the two week period and indicates that the U.S.-Canada exchange rate was stable during the period in which the agricultural chemical price data were collected.

Survey Structure

The 14 agricultural chemicals selected for comparison had very similar formulations and active ingredients on both sides of the border (see Table 1). Two agricultural chemicals, Mirage and Touchdown, are non-selective herbicides used on fallow and some non-cropland areas.[1] Seven agricultural chemicals -- Amine 4 and 2, LV6, Bronate Advanced, Clarity, Starane and Salvo, Ally XP, and Express EP are herbicides used for broadleaf weed control in wheat, barley and other small grain crops and on fallow and some non-cropland applications. Four agricultural chemicals Everest, Puma 1EC, Achieve SC, and Discover are selective herbicides used primarily to control grassy weeds, including wild oats in wheat and barley. One general purpose insecticide with an identical formulation in both regions, Warrior (with Zeon) was also included in the survey.

For each chemical, respondents were provided descriptions of active ingredients and formulations obtained from each chemical's U.S. or Canadian product labels. They were then asked (1) to provide prices for either two or three sizes of containers, (2) to identify the manufacturer of the chemical, and (3) to provide any additional pricing information on quantity or manufacturer program discounts to farmers. Respondents in both Alberta and Montana provided very little information on quantity discounts and, with very few exceptions, respondents from Alberta provided price data only for small containers. In consequence, the results presented in the following section are restricted to comparisons of prices for agricultural chemicals sold in small containers (2.5 gallon jugs in the U.S. and 10 liter jugs in Canada).

Results

Prices reported by survey respondents were used to calculate average "cash and carry" retail prices and the standard deviations of those prices among agricultural chemical dealers for each agricultural chemical in Montana and Alberta on a per gallon or, where appropriate, per ounce basis. These average prices and standard deviations are reported along with the numbers of observations used to obtain each average price (Table A1, Appendix A). The number of observations used to compute average retail prices and standard deviations varies among the agricultural chemicals because dealers in both the Alberta and Montana did not sell all of the 14 chemicals in the survey. The average prices are simple numerical averages and not weighted to reflect differences in quantities sold by the dealerships (Table A1, Appendix A).

Every effort was made to compare products with identical active ingredient formulations, but some differences in formulations did persist. Data from the labels for each agricultural chemical indicated that the amount of active ingredient per gallon (or ounce) of sales was different in Alberta and Montana for 4 of the 14 chemicals in the survey. These four chemicals are Amine 4 (2, 4-D Amine 500), LV 6 (2, 4-D Ester LV 600), Bronate Advanced (Buctril M), and Starane + Salvo(Attain). The active ingredients and formulations for these four chemicals (and the other 10) are presented in the survey forms (see Appendix B). For three of these four chemicals, the ratios of the active ingredients in the Canadian products to the active

[1] Prices were requested for Mirage or for its generic equivalent

Table 2. Estimated Average and Standard Deviations (Prices Adjusted for Differences in Chemical Formulations)

Agricultural Chemicals	Units	Montana			Alberta		
		Average price U.S.$ [A]	Standard Deviation	Number of Observations	Average price U.S.$ [A]	Standard Deviation	Number of Observations
Mirage and Round Up Original	gallon	20.94	3.92	15	21.68	0.69	12
Touchdown and Touchdown IQ	gallon	31.28	5.06	5	23.22	0.57	14
Amine 4 and 24D Amine 500	gallon	12.16	0.46	28	15.05	0.17	5
LV6 and 24D Ester LV 600	gallon	19.36	0.76	29	23.22	2.43	5
Bronate Advanced and Buctril M	gallon	59.43	3.28	26	44.94	1.46	14
Clarity and Banvel 2	gallon	93.47	3.63	29	96.85	1.89	14
Achieve SC and Achieve Liquid	gallon	220.85	11.1	29	208.37	3.48	12
Discover and Horizon 240 EC	gallon	496.37	23.7	31	448.31	5.54	14
Everest and Everest	ounce	23.45	1.25	29	17.50	0.61	14
Puma 1EC and Puma 120 Super	gallon	181.33	7.57	30	128.97	6.21	14
Ally XP and Ally Toss and Go	ounce	23.27	1.14	23	37.37	1.01	13
Express XP and Express Toss and Go	ounce	18.63	1.14	29	14.82	0.23	7
Warrior and Matador 120 EC	gallon	282.76	8.41	21	361.54	13.15	14

[A] The per unit prices are based on prices reported for small containers (2.5 gallon containers in Montana and 10 liter containers in Alberta).

ingredients the comparable U.S. products were used to adjust the Canadian per unit of sale (gallon or ounce) price to an equivalent price for a unit of the product with same amount of active ingredient as in the U.S. product.

To illustrate how these adjustments were made, consider the following example. Each gallon of Bronate Advanced, the U.S. product, contained 2.5 lbs of each of two active ingredients (bromxynil and MPCA Acid). Each gallon of Buctril M, the Canadian product, contained 2.34 lbs per gallon of each of the same two active ingredients. The Canadian price per gallon was divided by the factor 0.936 (2.34/2.5) to reflect the higher concentration of active ingredients in the U.S. product. While Starane + Salvo and Attain had two identical active ingredients, differences in the proportions in which these ingredients were used and differences in packaging prohibited direct price comparisons. Thus price comparisons are not presented for this pair of chemicals.

The adjusted prices and their associated estimated standard deviations are reported for the 13 chemicals for which price comparisons could be made (Table 2). The information on sample means and variances of prices are used to carry out standard student T comparison of means tests for samples of different sizes (Table 2). The null hypothesis is that the price of a given chemical in Montana is equal to the price of that chemical in Alberta. Rejection of the null hypothesis, which occurs when the test statistic takes on relatively large values, implies that the two prices are different at some confidence level, typically 95 percent or 99 percent. If the value for the test statistic exceeds the value associated with a 95 percent level of confidence then there is only a 5 percent chance that the null hypothesis of no difference in the two prices is incorrectly being rejected. If the value for the test statistics exceeds the level associated with a 99 percent level of confidence then there is only a 1 percent chance that the null hypothesis of no difference in the two prices being compared is incorrectly being rejected. The average prices for one of the 13 agricultural chemicals, Mirage (and Roundup Original) were not statistically significantly different in northern Montana and southern Alberta (Table 3). Mirage (and Roundup Original) is a non-selective herbicide for general weed control on fallow and on non-cropland areas.

Average prices of five chemicals were statistically significantly higher in southern Alberta than in northern Montana (Table 3). Four of these chemicals, LV 6 (2, 4-D Ester LV 600), Amine 4 (2, 4-D Amine 500), Clarity (Banvel II)[2] and Ally XP (Ally Toss and Go) – are selective herbicides used to control broadleaf weeds in crops such as wheat and barley and on fallowed land, and on non-cropland areas. The fifth is the general purpose insecticide Warrior with Zeon (Matador 120 EC).

Average prices for the remaining seven agricultural chemicals were statistically significantly higher in northern Montana than in southern Alberta. Touchdown (and Touchdown iQ) is a non-selective herbicide used for weed control on fallow and on non-cropland areas. Bronate Advanced (and Buctril M)[3], and Express XP (and Express Toss and Go) are selective herbicides to control broadleaf weeds in wheat and barley and also for fallow, grasslands and other non-cropland areas. Achieve SC (and Achieve Liquid), Discover (and Horizon 240 EC), Everest (and Everest), and Puma 1 EC (and Puma 120 Super) are selective herbicides used to control grassy weeds, including wild oats and pigeongrass, in growing crops of wheat and barley.

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[2] In Montana, many agricultural producers use Dicamba, generally a lower priced chemical, instead of Clarity.

[3] In Montana, many agricultural producers use Brox-M, generally a lower priced chemical, instead of Bronate Advanced.

Table 3: Agricultural Chemicals in Montana and Alberta: U.S. Dollar Prices and Price Differences Adjusted for Differences in Formulations)

Chemical	Units	U.S. Price (US $) [A]	Canadian Price (US $) [A]	Price Difference (U.S. Price – Canada Price) (US $)	T-test Value	Percentage Price Difference [B]
No Statistically Significant Differences in Average Prices						
Mirage and Roundup Original	gallon	20.94	21.68	-0.74	-0.65	-3.5%
Average Prices Statistically Significantly Different						
Montana Prices Lower						
LV 6 and 2, 4-D Ester LV 600	gallon	19.36	23.22	-3.86 [C]	-7.15	-19.9%
Amine 4 and 2,4-D Amine 500	gallon	12.16	15.05	- 2.89 [C]	-13.71	-23.8%
Clarity and Banvel II	gallon	93.47	96.85	- 3.38 [C]	- 3.26	-3.6%
Ally XP and Ally Toss and Go	ounce	23.27	37.37	-14.10 [C]	-37.09	-60.6%
Warrior (Zeon) and Matador 120 EC	gallon	282.76	361.54	-78.78 [C]	-21.68	-27.9%
Alberta Prices Lower						
Touchdown and Touchdown iQ	gallon	31.28	23.22	8.06 [C]	6.17	25.8%
Bronate Advanced and Buctril M	gallon	59.43	44.94	14.49 [C]	15.56	24.4%
Achieve SC and Achieve Liquid	gallon	220.85	208.37	12.48 [C]	3.79	5.7%
Discover and Horizon 240 EC	gallon	496.37	448.31	48.06 [C]	7.45	9.7%
Everest and Everest	ounce	23.45	17.50	5.95 [C]	16.80	25.4%
Puma 1EC and Puma 120 Super	gallon	181.33	128.97	52.36 [C]	22.54	28.9%
Express XP and Express Toss and Go	ounce	18.63	14.82	3.81 [C]	8.70	20.5%

[A] These per unit prices are based on prices reported for small containers (2.5 gallon containers in the Montana and 10 liter containers in Alberta).

[B] The percentage price difference is computed as the ratio of the difference between the U.S. and the Canadian price to the U.S. price. A negative sign implies that the U.S. price is lower and a positive sign implies that the U.S. price is higher.

[C] The symbol B denotes that the difference is statistically significant at the 99 percent confidence level.

Although the average prices of a chemical may be statistically significantly different in Montana and Alberta, it is useful to consider the economic significance of such differences. If price differences are small either in absolute terms or proportional terms, then Canadian and U.S. farmers may have little to gain from the harmonization of pesticide regulations. The price difference for each chemical as a percentage of the U.S. average price for the chemical is shown in the last column of Table 3. In three cases the price differences are relatively small and amount to less than 6 percent of the U.S. price (Table 3). However, in eight cases, the price differences lie in the range of 19 to 31 percent of the U.S. price. For one chemical, Ally XP (Ally Toss and Go), the Canadian price is about 60 percent higher than the U.S. price. Conversely, for another chemical, Puma IEC (Puma 120 Super), the Canadian price is about 29 percent lower (a difference of $52.36 per gallon).

Summary

This study provides new information on the prices of 12 agricultural chemicals in Canada and United States using cash and carry retail price data obtained from surveys of agricultural chemical dealers in southern Alberta and northern Montana. The results of the study indicate that average prices for at least 13 of the individual herbicides and pesticides are statistically significantly different in the two markets. For some chemicals, prices are lower in the United States; for others, prices are lower in Canada. While in some cases these differences are small, in others they are large, amounting to 56 percent of the U.S. price in one case. For eight chemicals, some of which were lower priced in Canada and some in the United States, price differences amounted to between 19 and 30 percent of the U.S. price.

APPENDIX A:
Unadjusted Price Data

Table A1. Estimated Average U.S. Dollar Prices and Standard Deviations: Prices Unadjusted for Differences in Chemical Formulations

Agricultural Chemicals	Units	Montana			Alberta		
		Average price U.S.$ [A]	Standard Deviation	Number of Observations	Average price U.S.$ [A]	Standard Deviation	Number of Observations
Mirage and Round Up Original	gallon	20.94	3.92	15	21.68	0.69	12
Touchdown and Touchdown IQ	gallon	31.28	5.06	5	23.22	0.57	14
Amine 4 and 24D Amine 500	gallon	12.16	0.46	28	15.56	0.17	5
LV6 and 24D Ester LV 600	gallon	19.36	0.76	29	19.53	2.04	5
Bronate Advanced and Buctril M	gallon	59.43	3.28	26	42.07	1.36	14
Clarity and Banvel 2	gallon	93.47	3.63	29	96.85	1.89	14
Starane plus Salvo and Attain	gallon	49.57	2.36	20	34.48	1.36	13
Achieve SC and Achieve Liquid	gallon	220.85	11.1	29	208.37	3.48	12
Discover and Horizon 240 EC	gallon	496.37	23.7	31	448.31	5.54	14
Everest and Everest	ounce	23.45	1.25	29	17.50	0.61	14
Puma 1EC and Puma 120 Super	gallon	181.33	7.57	30	128.97	6.21	14
Ally XP and Ally Toss and Go	ounce	23.27	1.14	23	37.37	1.01	13
Express XP and Express Toss and Go	ounce	18.63	1.14	29	14.82	0.23	7
Warrior and Matador 120 EC	gallon	282.76	8.41	21	361.54	13.15	14

[A] These per unit prices are based on prices reported for small containers (2.5 gallon containers in Montana and 10 liter containers in Alberta).

APPENDIX B:
Survey

Pesticide Pricing Survey
United States Dealers

1) **Please complete the following table by listing the cash prices and company/manufacturer for each of the listed pesticides based on the appropriate quantity classification and quoted in terms of the cash price to be picked up at the dealership with no consulting services. Also, please comment on any pricing information in regard to quantity or program discounts:**

Brand Name/Product Name: Mirage (or Generic Equivalent)

		Pricing Information by Container Size			Additional Pricing Information	***Company/ Manufacturer***
Active Ingredients	**Formulation**	**Jug (2.5 gallon)**	**(30 Gallon Container)**	**Shuttle (100-120 Gallon)**	**Please list any quantity or program discounts**	
Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt, 41%	480g/US gallon in isopropylamine salt; 356 g/L or 3 lbs/US gallon of acid, glyphosate					

Brand Name/Product Name: Touchdown

		Pricing Information by Container Size			Additional Pricing Information	***Company/ Manufacturer***
Active Ingredients	**Formulation**	**Jug (2.5 gallon)**	**(30 Gallon Container)**	**Shuttle (100-120 Gallon)**	**Please list any quantity or program discounts**	
Glyphosate, N-(phosphonomethyl) glycine, 28.3%	3 lbs/US gallon, glyphosate acid in diammonium salt form					Syngenta

Brand Name/Product Name: Amine 4

Active Ingredients	Formulation	Pricing Information by Container Size			Additional Pricing Information	*Company/ Manufacturer*
		Jug (2.5 gallon)	(30 Gallon Container)	Shuttle (100-120 Gallon)	Please list any quantity or program discounts	
2,4-Dichlorophenoxyacetic acid, in the form of its dimethylamine salt, 47.3%	3.8 lbs/US gallon, 2,4-Dich. Acid equivalent, 39.3%					

Brand Name/Product Name: LV-6

Active Ingredients	Formulation	Pricing Information by Container Size			Additional Pricing Information	*Company/ Manufacturer*
		Jug (2.5 gallon)	(30 Gallon Container)	Shuttle (100-120 Gallon)	Please list any quantity or program discounts	
2,4-Dichlorophenoxyacetic acid, in the form of its isooctyl(2-ethylhexyl) ester, 88.80%	5.6 lbs/US gallon, or equivalent to 58.9% 2,4-D acid					

Brand Name/Product Name: Bronate Advanced

		Pricing Information by Container Size			Additional Pricing Information	*Company/ Manufacturer*
Active Ingredients	**Formulation**	**Jug (2.5 gallon)**	**(30 Gallon Container)**	**Shuttle (100-120 Gallon)**	**Please list any quantity or program discounts**	
Octanoic acid ester of bromoxynil (3,5-dibromo-4-hydroxybenzonitrile), 18.7% Heptonoic acid ester of bromoxynil (3,5-dibromo-4 hydroxybenzonitrile), 18.1% 2-ethylhexyl exter of MCPA, 40.00%	2.5 lbs bromoxynil per gallon 2.5 lbs MCPA acid per gallon					

Brand Name/Product Name: Clarity

		Pricing Information by Container Size			Additional Pricing Information	*Company/ Manufacturer*
Active Ingredients	**Formulation**	**Jug (2.5 gallon)**	**(30 Gallon Container)**	**Shuttle (100-120 Gallon)**	**Please list any quantity or program discounts**	
Diglycolamine salt of 3,6-dichloro-o-anisic acid, 56.8%	4 lbs/US gallon, acid or 480 g/L or equivalent to 38.5% of 3,6-dichloro-o-anisic acid					

Brand Name/Product Name: Starane+Salvo

Active Ingredients	Formulation	Pricing Information by Container Size: Jug (2.5 gallon)	Pricing Information by Container Size: (30 Gallon Container)	Pricing Information by Container Size: Shuttle (100-120 Gallon)	Additional Pricing Information: Please list any quantity or program discounts	*Company/ Manufacturer*
Fluroxypyr 1-methylheptyl ester:((4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxyl) acetic acid, 1-methylheptyl ester, 12.1% 2,4-dichlorophenoxyacetic acid, 2-ethylhexyl ester, 50.8%	.75 lbs/US gallon of furoxypyr acid or equivalent of 8.4% 3.0 lbs/US gallon of 2,4-dichloro. Acid or equivalent of 33.6%					

Brand Name/Product Name: Achieve SC

Active Ingredients	Formulation	Pricing Information by Container Size: Jug (2.16 gallon)	Pricing Information by Container Size: Other Quantity (please list) & Price	Additional Pricing Information: Please list any quantity or program discounts	*Company/* Manufacturer
Tralkoxydim 2-Cyclohexen-1-one, 2-[1-(ethoxyimino)propyl]-3-hydroxy-5-(2,4,6-trimethylphenyl)-(9CI), 35.0%	3.33 lbs/US gallon of Tralkoxydim or equivalent of 400g/L				Syngenta

Brand Name/Product Name: Discover

		Pricing Information by Container Size		Additional Pricing Information	
Active Ingredients	**Formulation**	**Jug (1.25 gallon)**	**Other Quantity (please list) & Price**	**Please list any quantity or program discounts**	***Company/*** **Manufacturer**
Clodinafop-propargyl (CAS No. 105512-06-9), 22.3%	2 lbs/US gallon of clodinafop-propargyl				Syngenta

Brand Name/Product Name: Everest

		Pricing Information by Container Size		Additional Pricing Information	
Active Ingredients	**Formulation**	**12 ounce Pouch**	**Other Quantity (please list) & Price**	**Please list any quantity or program discounts**	***Company/*** **Manufacturer**
Flucarbazone-sodium, 4,5-Dihydro-3-methoxy-4-methyl-5-oxo-N-[[2-(trifluoromethoxy) phenyl]sulfonyl]-1H-1,2,4-triazole-1-carboxamide, sodium salt, 70%	66% Flucarbazone acid equivalent				

Brand Name/Product Name: Puma 1EC

Active Ingredients	Formulation	Pricing Information by Container Size: Jug (2.5 gallon)	Pricing Information by Container Size: Other Quantity (please list) & Price	Additional Pricing Information: Please list any quantity or program discounts	Company/ Manufacturer
Fenoxaprop-p-ethyl: (+)-ethyl 2-[4-[(6-chloro-2-benzoxazolyl)oxy] propanoate, 11.53%	1 lb/US gallon of pure fenoxaprop-p-ethyl (d isomer)				

Brand Name/Product Name: Ally XP

Active Ingredients	*Formulation*	Pricing Information by Container Size: 2 oz. Container	Pricing Information by Container Size: 8oz. Container	Pricing Information by Container Size: Other Quantity (please list) & Price	Additional Pricing Information: Please list any quantity or program discounts	Company/ Manufacturer
Metsulfuron Methyl, Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2yl) amino] carbonyl]amino]sulfonyl] benzoate, 60%	60% dry flowable					DuPont

Brand Name/Product Name: Express XP

Active Ingredients	Formulation	Pricing Information by Container Size: 10 oz. container	Pricing Information by Container Size: Other Quantity (please list) & Price	Additional Pricing Information: Please list any quantity or program discounts	*Company/* Manufacturer
Tribenuron Methyl, Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2yl) methylamino] carbonyl] amino] sulfonyl] benzoate, 75%	75% dry flowable				DuPont

Brand Name/Product Name: Warrior (with Zeon)

Active Ingredients	Formulation	Pricing Information by Container Size: 10 oz. container	Pricing Information by Container Size: Other Quantity (please list) & Price	Additional Pricing Information: Please list any quantity or program discounts	*Company/* Manufacturer
Lambda-cyhalothrin, 11.4%	1 lb/US gallon of Lambda-cyhalothrin in capsule suspension				

Pesticide Pricing Survey
Canadian Dealers

1) **Please complete the following table by listing the cash prices and company/manufacturer for each of the listed pesticides based on the appropriate quantity classification and quoted in terms of the cash price to be picked up at the dealership with no consulting services. Also, please comment on any pricing information in regard to quantity or program discounts:**

Brand Name/Product Name: Roundup Original

		Pricing Information by Container Size				*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**10 L Container**	**115 L Container**	**450 L Container**	**750 L Container**	**Please list any quantity or program discounts**	
Glyphosate, in the form of its isopropylamine salt	356 g/L of acid						Monsanto Canada

Brand Name/Product Name: Touchdown iQ

		Pricing Information by Container Size		*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**10 L Container**	**Other Container Size (please list)& price**	**Please list any quantity or program discounts**	
Glyphosate, in the form if its diammonium salt	360 g/L acid equivalent				Syngenta

Brand Name/Product Name: 2,4-D Amine 500

		Pricing Information by Container Size			*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**10 L Container**	**20 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	
2,4-D isomer specific, in the form of dimethyl amine	470 g/L 2,4 D dimethyl amine					

Brand Name/Product Name: 2,4-D Ester LV600

		Pricing Information by Container Size			*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**10 L Container**	**115 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	
2,4-D isomer specific, in the form of iso-octyl ester	564 g/L 2,4-D iso-octyl Ester					

Brand Name/Product Name: Buctril M

		Pricing Information by Container Size				*Additional Pricing Information*	
Active Ingredients	**Formulation**	**8 L Container**	**10 L Container**	**11.36 L Container**	**113 L Container**	**Please list any quantity or program discounts**	**Company/ Manufacturer**
Bromoxynil, in the form of mixed octanoate and heptanoate esters MCPA, in the form of 2-ethylhexyl ester	280 g/L Bromoxynil 280 g/L MCPA						

Brand Name/Product Name: Banvel II

		Pricing Information by Container Size			*Additional Pricing Information*	
Active Ingredients	**Formulation**	**10 L Container**	**55 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	**Company/ Manufacturer**
Dicamba, in the form of diglycolamine salt	480 g/L Dicamba					

Brand Name/Product Name: Attain

Active Ingredients	Formulation	*Pricing Information by Container Size* 9.6 L Attain A + 2 Containers 8 L Attain B	*Additional Pricing Information* Please list any quantity or program discounts	Company/ Manufacturer
Attain A=fluroxypyr, in the form of 1-methylheptyl ester Attain B=2,4-D, in the form of low volatile ester	180 g/L fluroxypyr 564 g/L 2,4-D			

Brand Name/Product Name: Achieve Liquid

Active Ingredients	Formulation	*Pricing Information by Container Size* 3.68 L Container	Other Size (please list) & Price	*Additional Pricing Information* Please list any quantity or program discounts	Company/ Manufacturer
Tralkoxydim	400 g/L Tralkoxydim				Syngenta

Brand Name/Product Name: Horizon 240EC

		Pricing Information by Container Size		*Additional Pricing Information*	
Active Ingredients	**Formulation**	**3.68 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	**Company/ Manufacturer**
Clodinafop-propargyl	240 g/L clodinafop-propargyl				

Brand Name/Product Name: Everest

		Pricing Information by Container Size	*Additional Pricing Information*	**Company/ Manufacturer**
Active Ingredients	**Formulation**	**696 gram Container (Four 174 g packets)**	**Please list any quantity or program discounts**	
Flurcarbazone, in the form of Flurcarbazone-sodium	66% flurcarbazone in 70% water dispersible granular herbicide			

Brand Name/Product Name: Puma 120 Super

		Pricing Information by Container Size			*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**6.2 L Container**	**99.3 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	
Fenoxaprop-p-ethyl	120 g/L fenoxaprop-p-ethyl					

Brand Name/Product Name: Ally Toss-N-Go

		Pricing Information by Container Size	*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**122 gram Container (Four 30.5 g packets)**	**Please list any quantity or program discounts**	
Metsulfuron Methyl	60% Metsulfuron methyl			

Brand Name/Product Name: Express Toss-N-Go

		Pricing Information by Container Size	*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**1.28 Kg Container (Eight 160 g bags)**	**Please list any quantity or program discounts**	
Tribenuron Methyl	75% Tribenuron Methyl			

Brand Name/Product Name: Matador 120EC

		Pricing Information by Container Size		*Additional Pricing Information*	Company/ Manufacturer
Active Ingredients	**Formulation**	**3.78 L Container**	**Other Size (please list) & Price**	**Please list any quantity or program discounts**	
Cyhalothrin-lambda	120 g/L Cyhalothrin-lambda