Seeds - Costs of production

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COSTS, PRICES, AND CONTRACTS IN THE U.S. AND Canadian SEED CORN INDUSTRIES

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1. INTRODUCTION

Background

Seed corn production in Southern Ontario has declined by approximately 50 percent from 40,000 plus acres to 20,000 plus acres over the past few years[1]. It is perceived that the major causes for this are two-fold. First, the U.S. producers have lower costs of production and receive less gross returns from seed corn production, thus decreasing the companies' input costs. Second, the quality standards in the U.S. are sufficient now to negate any benefit that Canadian seed corn had in international markets. It is also perceived that U.S. producers receive more government subsidies and support payments than their Canadian counterparts.

Because of these factors it has become increasingly more difficult to negotiate a satisfactory contract between the Ontario Seed Corn Growers' Marketing Board (OSCGMB) and the Ontario Seed Corn Companies' Association (OSCCA). There are real concerns regarding the future of the seed corn industry in Southern Ontario which must be addressed.

Purpose

The purpose of this study is to address the concerns regarding the costs of production, corn prices and government financial assistance programs for seed corn production in order to facilitate future contract negotiations and assess the future viability of the industry in Southern Ontario.

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[1]The Ontario Seed Corn Companies Association. "An Open Letter to the Seed Corn Growers of Ontario." Chatham, Ontario, May 16, 1988.

Objectives

The three specific objectives of this study are:

1) To estimate the costs of production and corn prices received for seed corn growers in Southern Ontario and the three U.S. states of Illinois, Indiana, and Iowa.

2) To compare and contrast terms and conditions of U.S. seed corn contracts with the contract used in Southern Ontario.

3) To estimate and compare the net results of government input subsidies and support payments in Southern Ontario and the United States as they pertain to seed corn production.

Terms of Reference and Methodology

The seed corn industries in Southwestern Ontario, Illinois, Indiana, and Iowa were analysed with respect to costs of production, contract terms, prices received, and government subsidies. Costs of production for seed corn were obtained through a survey of seed corn producers in each area. A description of the survey and discussion of the results are in section 2. Copies of the surveys are in Appendix A. Comments received on the surveys are reported in Appendix C.

Sample contracts from seed processors in the U.S. are compared and contrasted in section 3. Additional information about the contracts is in Appendix B.

Prices received by producers as indicated by both the futures prices and elevator prices are reported in section 4. Historical prices in Chatham, Ontario and central Illinois were obtained for the most recent crop year (1987-88) and compared.

A comprehensive review was made of all government subsidies and support payments which pertain to the production of seed corn in both the U.S. and Southern Ontario. The results obtained indicate the net effect on the price of

a bushel of seed corn, expressed in commercial corn equivalents. These results are discussed in section 5.

All results which involve monetary terms are reported in Canadian dollars. U.S. dollars were converted to Canadian dollar equivalents by using the following yearly average exchange rates. The exchange rates used are 1.3260 for 1987 and 1.2404 for 1988.

Interest rates for both countries were determined by adding one and a half percentage points to the yearly average prime rate in the respective country.

Summary and conclusions of the study are reported in section 6.

2. COSTS OF PRODUCTION SURVEY

Surveys were sent out to seed corn producers in Southern Ontario and the three U.S. states of Illinois, Indiana and Iowa. 235 questionnaires were mailed out in Southern Ontario and 88 responses received for a response rate of 37 percent. 466 questionnaires were mailed to producers in the U.S.; 66 responses were received, which represents a response rate of 14 percent. Table 1 gives a detailed breakdown of the response rates. Appendix A contains copies of the Ontario and U.S. surveys.

Table 1. Response Rates of Seed Corn Survey

	Sent	Received	% Response
Illinois	228	19	8
Indiana	118	19	16
Iowa	120	28	23
Total U.S.	466	66	14
Ontario	235	88	37

Acres Grown and Land Costs

Respondents were asked to report for both seed corn and commercial corn production, the following information: acres grown, acres rented, rental costs, acres lost or rejected and land taxes.

Input Costs

Input costs were estimated by having respondents report the quantities of fertilizer and chemicals used. Average prices for these inputs were obtained from various government and industry sources. Suggested retail prices were used in order to standardize the results. It is recognized that individual producers obtain discounts that may range from 10 to 20 percent off retail prices.

Tillage Operations

Respondents were asked to indicate the number and type of tillage operations they used on their farms. The frequencies of these operations were analyzed in order to obtain an average no. of operations in each region. Custom rates for the 4 areas were then used to arrive at an average cost of tillage operations.

Planting Operation

Planting costs were estimated by asking respondents to indicate the number of planting trips required and again custom rates were applied.

Harvesting Operations

Harvesting operations (picking, combining, drying, trucking) were analyzed in two ways. Respondents were asked to indicate which operations they used and whether or not they used their own equipment or the service of a custom operator and again custom rates were used to establish an average cost.

Intangible Items (particular to seed corn compared to commercial corn)

Male Plant Removal

Respondents were asked to indicate how the male corn plants were removed/harvested on their farm. They were also asked for any costs they incurred and/or revenues received from this operation.

Weed Problems

Respondents were asked to indicate (yes or no) whether they had increased weed problems in seed corn fields as compared to commercial corn. They were also asked to indicate in $/acre, what the cost of dealing this increased problem was. These results were compared to the actual differences determined in the herbicide costs for seed and commercial corn production.

Soil Compaction

Respondents indicated whether or not they experienced increased soil compaction in their seed corn fields, compared to commercial corn and if so, whether extra tillage was required because of this increase. Again, custom rates for these operations were used in order to determine an average cost for this increased compaction.

Soil Residue

Because of the smaller plant size for seed corn, respondents were asked to indicate the percent reduction in soil residue. While no hard data exists in the industry regarding the cost of this decrease in terms of future production levels, soil conservation experts were contacted in order to estimate this cost.

Equipment Modification/Extra Equipment/Extra Repairs

Respondents were asked to estimate the cost in $/acre for these extra items. They pertain particularly to corn planter modifications and extra wear and tear caused by performing operations during adverse weather conditions because of the critical nature of seed corn production i.e., male corn planting and pre-frost harvesting.

Isolation Requirements

As with any seed production, seed corn fields must be isolated from other corn crops in order to ensure pureness of variety. Respondents were asked to indicate what effect this isolation had on their farming operation and how much it cost them in $/acre for seed corn production.

Increased Travel To and From Fields

There are many extra trips made to a seed corn field for inspection, detasseling, etc. Again respondents were asked to indicate how important this was to them and what cost, if any, they associated with seed corn production, in $/acre.

Loss of Management Control

Many operations in the production of seed corn are directed by the company involved, thus depriving the producer of complete control over his/her operation. Respondents were asked to indicate how important this factor is to them and what cost ($/acre), if any, they associate with seed corn production.

High Overall Stress

Certain aspects of seed corn production may cause increased stress on the producer. Respondents were asked to indicate whether or not they experienced

increased stress producing seed corn, and, if so, what additional return ($/acre) they required.

Yield Criteria

Two important considerations in seed corn production are the determination of the norm (average yield for the variety planted) and zone factor (ave. commercial corn yield for area) or their equivalents in the U.S. Producers were asked whether they agreed with the present method of determining these factors (yes or no) and for any pertinent comments. These comments have been summarized.

Timing of Payments, Pricing Method, Marketing System

Respondents were asked if they agreed with the present timing of payments, marketing system and present pricing method (yes or no). Additional comments were invited and these have been summarized.

Premium

The final question asked of the producers was what additional premium ($/acre) they required to grow seed corn as compared to commercial corn. The results of this question have been cross-referenced to the sum of the premiums reported for the separate intangible items and the results reported.

Survey Results

Grouping Responses

Statistical tests were used to see if the differences in the responses from Illinois, Indiana, and Iowa were significantly different. It was found that there were no significant differences in the responses from the three states for any of the

variables examined. These variables included acres of seed corn planted, amounts of fertilizer applied, land rent, and premium required to grow seed corn. Based on the results of these tests, the three states were grouped together for all subsequent comparisons of the U.S. and Ontario.

The responses between the U.S. and Ontario seed corn producers were significantly different for most variables, a notable exception, the additional return required to compensate for the added stress of growing seed corn. The statistical test used to test the significance of the differences and results from the tests are in Appendix F.

Cost of Growing Seed Corn in the U.S. vs. Ontario

Given the results of the survey, it cost less to grow seed corn in Illinois, Indiana, and Iowa than it did in Ontario in 1987 and 1988. A comparison of the costs of production in Tables 2, 3, and 4 and Chart No. 1 report the cost of growing seed corn in Ontario was CDN $81 and $94 per acre more than growing the seed in the U.S. in 1987 and 1988, respectively. Comparing expenditures item by item explains why the Ontario cost is higher.

Materials expenditures were $9-11 per acre more in Ontario than in the U.S.. More anhydrous nitrogen was used in the U.S. and more nitrogen in other forms was used in Ontario. Anhydrous costs less than other forms of nitrogen. Dry K (potash) and lime were the only nutrients with greater expenditures in the U.S. than in Ontario. Expenditures in the U.S. were slightly greater for insecticides, but herbicide expenditures were much greater in Ontario. The greater expenditure in Ontario reflects higher prices for herbicides rather than higher application rates applied (see Tables 11 and 12 for chemical prices).

Table 2. Cost of Producing Seed Corn, CND$ per acres, for United States and Ontario

	1987		1988	
	U.S.	ONT.	U.S.	ONT.
MATERIALS				
Fertilizer-Ann. Ammonia	$ 16.38	$ 0.76	$ 17.91	$ 1.15
-Other Nitrogen	12.15	29.48	12.00	32.06
-Dry N	6.72	11.44	6.67	12.95
-Dry P	21.00	22.88	21.72	22.04
-Dry K	16.34	11.64	18.75	16.30
-Lime	5.89	3.20	4.00	2.80
Herbicide($)	30.17	37.45	30.81	35.65
Insecticide ($)	9.02	8.00	9.73	8.10
Micronutrients($)	0.21	2.20	0.37	2.15
TOTAL MATERIALS	117.88	127.05	121.97	133.19
PREHARVEST				
Plowing	3.75	12.35	3.51	12.24
Chisel plow	2.18	1.78	2.08	1.76
Soil-saver	1.99	0.85	1.85	0.85
Total Primary Tillage	7.92	14.97	7.44	14.85
Disc	3.83	3.78	3.79	3.89
Cultivator	6.54	12.39	7.87	12.46
Row-crop cult.	5.57	6.45	4.77	5.40
Other cult.	0.91	1.45	1.04	1.45
Total Secondary Tillage	16.86	24.07	17.48	23.20
Planting	20.16	22.90	18.85	22.00
Applying fertilizer	7.03	8.00	6.57	8.00
Spraying	9.28	12.00	8.68	12.00
Total Preharvest	61.25	81.95	59.02	80.05
HARVESTING AND MARKETING				
Picking	39.78	40.00	37.20	40.00
Trucking	11.93	10.00	11.16	10.00
Marketing	0.00	3.00	0.00	3.00
Total Harv. & Mktg.	51.71	53.00	48.36	53.00
OTHER COSTS				
Crop Insurance	6.90	5.00	6.45	5.00
Interest on materials	10.11	9.32	10.79	11.54
Miscellaneous	10.77	17.50	10.08	18.75
Total Other Costs	27.78	31.82	27.31	35.29
Subtotal All Costs	258.61	293.82	256.66	301.54
LAND RENT	133.93	180.00	127.72	177.00
TOTAL ALL COSTS	**392.54**	**473.82**	**384.38**	**478.54**

Table 3: Crop Budgets for Seed and Commercial Corn (Ontario)

MATERIALS	SEED 87	SEED 88	COMM 87	COMM 88	PRICE 87	PRICE 88	SEED 87	SEED 88	COMM 87
Seed	0	0	1	1	$25.00	$29.00	$0.00	$0.00	$25.00
Fertilizer-Ann. Ammonia	5	7	47	55	0.152	0.164	0.76	1.15	7.14
-Other Nitrogen	117	117	84	77	0.252	0.274	29.48	32.06	21.17
-Dry N	52	52	34	41	0.22	0.249	11.44	12.95	7.48
-Dry P	80	76	70	74	0.286	0.29	22.88	22.04	20.02
-Dry K	103	100	86	87	0.113	0.163	11.64	16.30	9.72
-Lime	0.16	0.14	0.04	0.047	20	20	3.20	2.80	0.80
Herbicide($)	37.45	35.65	20.9	21.35	1	1	37.45	35.65	20.90
Insecticide($)	8	8.1	3.3	3.2	1	1	8.00	8.10	3.30
Micronutrients($)	2.2	2.15	1.55	1.6	1	1	2.20	2.15	1.55
TOTAL MATERIALS							127.05	133.19	117.08
PREHARVEST(trips)									
Plowing	0.823	0.816	0.84	0.822	15	15	12.34	12.24	12.60
Chisel plow	0.127	0.126	0.06	0.067	14	14	1.78	1.76	0.84
Soil-saver	0.063	0.063	0.08	0.067	13.5	13.5	0.85	0.85	1.08
Total Primary Tillage	1.013	1.005	0.98	0.956			14.97	14.85	14.52
Disc	0.582	0.598	0.44	0.42	6.5	6.5	3.78	3.89	2.86
Cultivator	1.77	1.78	1.62	1.55	7	7	12.39	12.46	11.34
Row-crop cult.	1.29	1.08	0.98	0.96	5	5	6.45	5.40	4.90
Other cult.	0.29	0.29	0.16	0.18	5	5	1.45	1.45	0.80
Total Secondary Tillage	3.932	3.748	3.2	3.11			24.07	23.20	19.90
Planting	2.29	2.2	1	1	10	10	22.90	22.00	10.00
Applying fertilizer	1	1	1	1	8	8	8.00	8.00	8.00
Spraying	2	2	1	1	6	6	12.00	12.00	6.00
TOTAL PREHARVEST	5.29	5.2	3	3			81.95	80.05	58.42
HARVESTING & MARKETING									
Picking	1	1	0	0	40	40	40.00	40.00	0.00
Combining	0	0	1	1	30	30	0.00	0.00	30.00
Drying	0	0	1	1	31	31	0.00	0.00	31.00
Trucking	1	1	1	1	20	20	10.00	10.00	20.00
Marketing	1	1	1	1	1	1	3.00	3.00	1.00
TOTAL HARV.& MKTG.							53.00	53.00	82.00
OTHER									
Crop Insurance	1	1	1	1	5	5	5.00	5.00	5.00
Interest on Materials	1	1	1	1	11.00%	13.00%	9.32	11.54	8.59
Miscellaneous	1	1	1	1	14	15	17.50	18.75	14.00
TOTAL OTHER COSTS							31.82	35.29	27.59
SUBTOTAL ALL COSTS							293.82	301.54	285.09
LAND RENT	180	177	126	118	1	1	180.00	177.00	126.00
TOTAL ALL COSTS							473.82	478.54	411.09

NOTE: All units are in pounds and acres.
Other nitrogen refers to U.A.N.(28%), Urea(46%), and Ammonium Nitrate sources.

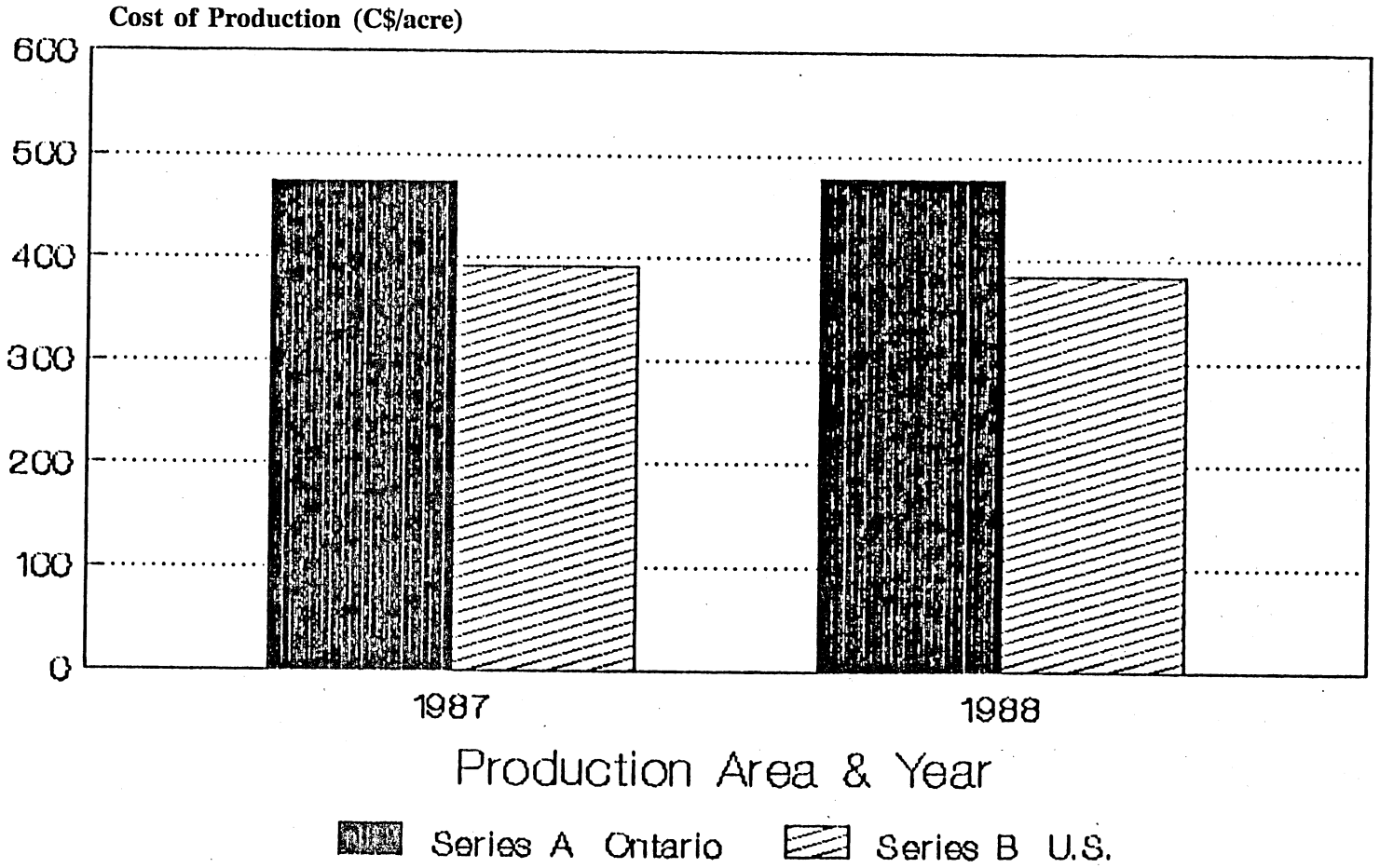
Table 4: Crop Budgets for Seed and Commercial Corn (United States)

MATERIALS	SEED 87	SEED 88	COMM 87	COMM 88	PRICE 87	PRICE 88	SEED 87	SEED 88	COMM 87
Seed	0	0	1	1	$29.17	$26.04	$0.00	$0.00	$29.17
Fertilizer-Ann. Ammonia	95	101	112	117	0.172	0.177	16.38	17.91	19.31
-Other Nitrogen	49	44	42	38	0.248	0.273	12.15	12.00	10.41
-Dry N	26	25	27	27	0.259	0.267	6.72	6.67	6.98
-Dry P	72	73	77	77	0.292	0.298	21.00	21.72	22.46
-Dry K	112	108	109	112	0.146	0.174	16.34	18.75	15.90
-Lime	0.35	0.25	0.25	0.22	16.840	15.996	5.89	4.00	4.21
Herbicide($)	22.75	24.85	17.8	20.1	1.326	1.240	30.17	30.81	23.60
Insecticide($)	6.8	7.85	5.75	5.7	1.326	1.240	9.02	9.73	7.62
Micronutrients($)	0.16	0.3	0.2	0.46	1.326	1.240	0.21	0.37	0.27
TOTAL MATERIALS							117.88	121.97	139.94
PREHARVEST(trips)									
Plowing	0.286	0.286	0.224	0.211	13.127	12.276	3.75	3.51	2.94
Chisel plow	0.196	0.2	0.224	0.246	11.138	10.416	2.18	2.08	2.50
Soil-saver	0.161	0.16	0.2	0.228	12.332	11.532	1.99	1.85	2.47
Total Primary Tillage	0.643	0.646	0.648	0.685			7.92	7.44	7.90
Disc	0.482	0.51	0.4	0.4	7.956	7.440	3.83	3.79	3.18
Cultivator	1.05	1.35	0.98	0.98	6.232	5.828	6.54	7.87	6.11
Row-crop cult.	1.2	1.1	0.78	0.825	4.641	4.340	5.57	4.77	3.62
Other cult.	0.196	0.24	0.19	0.175	4.641	4.340	0.91	1.04	0.88
Total Secondary Tillage	2.928	3.2	2.35	2.38			16.86	17.48	13.79
Planting	2	2	1	1	10.078	9.424	20.16	18.85	10.08
Applying fertilizer	1	1	1	1	7.028	6.572	7.03	6.57	7.03
Spraying	2	2	1	1	4.641	4.340	9.28	8.68	4.64
TOTAL PREHARVEST	5	5	3	3			61.25	59.02	43.44
HARVESTING & MARKETING									
Picking	1	1	0	0	39.780	37.200	39.78	37.20	0.00
Combining	0	0	1	1	29.172	27.280	0.00	0.00	29.17
Drying	0	0	1	1	26.520	24.800	0.00	0.00	26.52
Trucking	1	1	1	1	23.868	22.320	11.93	11.16	23.87
Marketing	1	1	1	1	0.000	0.000	0.00	0.00	0.00
TOTAL HARV.& MKTG.							51.71	48.36	79.56
OTHER COSTS									
Crop Insurance	1	1	1	1	6.895	6.448	6.90	6.45	6.90
Interest on Materials	1	1	1	1	9.70%	10.70%	10.11	10.79	12.00
Miscellaneous	1	1	1	1	8.619	8.06	10.77	10.08	8.62
TOTAL OTHER COSTS							27.78	27.31	27.51
SUBTOTAL ALL COSTS							258.61	256.66	290.45
LAND RENT	101	103	101	99	1.326	1.240	133.93	127.72	133.93
TOTAL ALL COSTS							392.54	384.38	424.38

NOTE: All units are in pounds and acres.
Other nitrogen refers to U.A.N.(28%), Urea(46%), and Ammonium Nitrate sources.
U.S. dollars were converted into Canadian dollars by using the appropriate exchange rates: 1.326 for 1987 and 1.2404 for 1988.

CHART #1

SEED CORN COST OF PRODUCTION
ONTARIO & THREE U.S. STATES



All dollars are Canadian dollars

Primary and secondary tillage expenditures were greater in Ontario than in the U.S.. Higher fuel costs and heavier soils which call for more tillage are the primary reasons.

Harvesting and Marketing expenditures were about the same in the two regions. Picking costs a bit more in Ontario, while trucking costs a bit more in the U.S. U.S. producers do not have a marketing board with its associated fees.

Other costs of crop insurance and interest on materials are about the same in both regions, but miscellaneous expenses are higher in Ontario. The higher miscellaneous expenses are a reflection of the higher materials and pre-harvest expenditures.

Land rent is a major source of the higher cost of production in Ontario. Land rent for commercial corn was not significantly different between the U.S. and Ontario, but land rent for seed corn was close to $50/acre higher in Ontario. Seed corn is grown on better quality land in Ontario. Tomato and other vegetable crop growers compete with seed corn growers for this better land, bidding the rental rates up. As long as a higher valued crop can be grown on seed corn land, land rental costs will reflect the rates that the higher valued crop can pay. The seed corn producing areas of the U.S. we studied do not have the same land pressures, and thus have lower land rental costs.

Average seed corn acreage was significantly larger in the U.S.; 185 acres and 267 acres in 1987 and 188, respectively, compared to 70 acres and 73 acres in Ontario for the same years. The differences in acreage between the U.S. states were not significantly different. The difference of the average acres of seed corn between the U.S. and Ontario was significant.

Analysis of the survey responses indicated that in Ontario 36 of 88 growers or 41 percent did not grow any commercial corn in 1987 or 1988, while in the U.S., 7

of 66 growers or 11 percent did not grow any commercial corn during the same period. This further supports the fact that seed corn competes with other crops as opposed to commercial corn only, in Ontario.

Actual selling prices for land of comparable quality are not significantly different in the three U.S. states and Ontario. Currently land of good quality in the Chatham area will sell for $2,500 to $3,000 per acre. While similar quality land in Illinois and Indiana would sell for $2,300 to $2,800 per acre (in Canadian funds).

Increased Weed Problems in Seed Corn

Increased weed problems in seed corn, compared to commercial corn, were reported by 95 percent of the seed corn growers in both Ontario and the U.S. This indicates that increased weed pressure caused by seed corn production is not specific to Ontario alone. An analysis of the difference in herbicide costs between seed and commercial corn in 1987 and 1988 shows the following results (see Table 5).

Table 5. Increased Cost of Weed Control, Seed vs. Commercial Corn

($/acre)

1987		1988	
Ontario	U.S.	Ontario	U.S.
$16.55	$6.55	$14.30	$5.90

Ontario and U.S. seed corn growers estimated that the increased cost of weed control in subsequent crop years (following seed corn) is $31/acre and $14/acre, respectively. While this is not a scientifically calculated result, it indicates the magnitude of the increased weed problems associated with seed corn production.

Increased Soil Compaction

Due to the fact that extra trips for male planting and detasseling must be made in a timely manner for good seed corn production and that harvest must be completed before the first frost, increased soil compaction often results in seed corn fields, particularly when wet weather coincides with field operations. In Ontario and the U.S. 61 percent and 52 percent of the seed corn growers reported increased compaction in seed corn fields. While an indepth study of weather patterns in the two regions was not conducted, it became clear from conversations with growers and company representatives that wet weather at harvest time, in particular, is a much more common scenario in Ontario than in the U.S. This may well account for the higher percentage of growers reporting increased soil compaction in Ontario.

Seed corn growers were also asked to indicate whether or not they found extra tillage to be necessary because of this increased compaction. The reported operations found necessary ranged from extra discing to V-ripping to filling ruts with a tractor mounted blade. By analysing the number of operations required and using custom rates, the average cost of dealing with increased compaction was determined to be $5/acre and $3/acre, respectively, in Ontario and the U.S.

Loss of Soil Residue From Seed Corn Production

Seed corn growers were asked to estimate the percent of residue loss associated with seed corn vs. commercial corn production. In Ontario, growers estimated this loss to be 50 percent and in the U.S., 45 percent. While it is recognized that this loss of residue has a definite negative affect on soil organic matter, it was impossible to obtain any reliable estimates as to the future economic effects of this loss. Soil conservation experts do not have sufficient test results to estimate this cost. It

is known that certain government programs in Ontario are not available to seed corn growers because of this residue loss. These programs are targeted at improving soil conservation and provide farmers with financial assistance to this end.

Equipment Costs

Two main factors contribute to increased equipment costs. First, the male and female corn are usually planted at different times and often separate planting equipment is required particularly for male interplant. Second, the timing of seed corn field operations may result in operating machines during adverse soil conditions, thus increasing equipment wear, resulting in higher repair costs. Seed corn growers in Ontario and the U.S. estimated this increased cost to be $15/acre and $11/acre, respectively.

Effects of Isolation Requirements for Seed Corn

Isolation requirements for seed corn place restraints on other cropping plans. Table 6 illustrates that Ontario growers find isolation to have a larger effect on their other farming practices than U.S. growers.

Table 6. Effect of Isolation on Other Cropping Plans

No Effect			Large Effect
1	2	3	4
(mean of U.S. responses, 2.6)		(mean of Ontario responses, 2.9)	

Seed corn growers in Ontario and the U.S. estimated the additional compensation required for isolation effect is $24/acre and $12/acre, respectively.

Two factors contribute to isolation requirements being a larger problem in Ontario as compared to the U.S. First, average acreage is larger in the U.S. and

field sizes are generally larger as well. This results in less isolation area as a percent of field size (eg. 75 acre field requires twice its area for isolation and a 150 acre field requires 1 1/4 times its area for isolation, when distance is the sole means of isolation). Chart No. 2 illustrates this point graphically. The second factor in the U.S. is that government set-aside acres may be used as isolation. This allows the grower to set-aside acreage in convenient locations so as to minimize the required isolation with other crops.

For further comments on isolation refer to Appendix B.

Importance of Increased Travel, To and From Fields

Seed corn growers reported on the importance of increased travel through their farms by inspectors, company personnel, detasselers, etc. Table 7 illustrates that Ontario growers find this to be more important than their U.S. counterparts.

Table 7. Importance of Increased Travel, To and From Fields

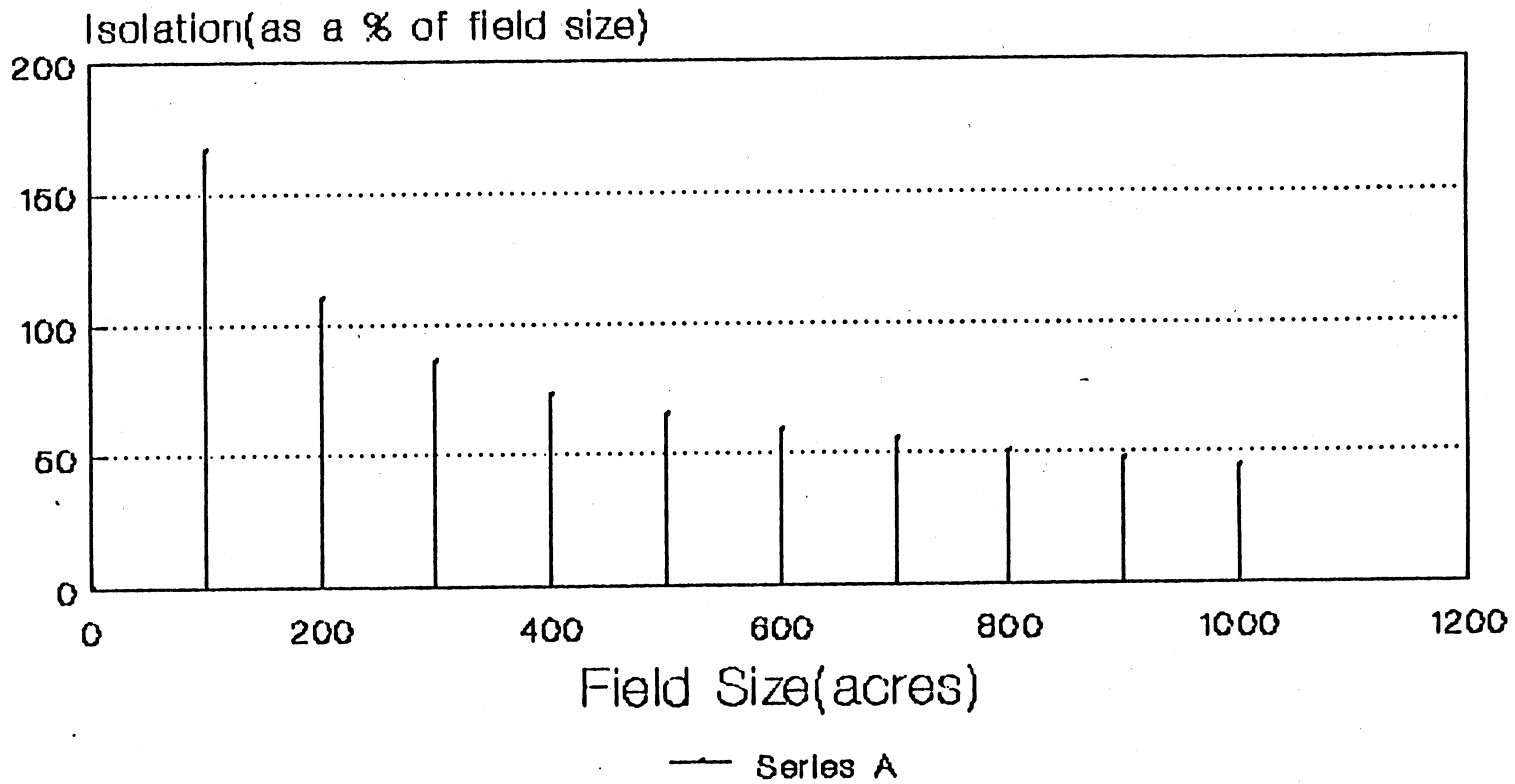
No Effect			Large Effect
1	2	3	4
(mean of U.S. responses, 2.3)		(mean of Ontario responses, 2.7)	

In terms of additional compensation required for this increased travel, Ontario and U.S. growers estimated it to be $11/acre and $5/acre, respectively. Some of the reasons cited for the requirement of an additional return were: tools are stolen, other

CHART #2

ISOLATION REQUIRED

AS A PERCENT OF FIELD SIZE



Note: All isolation is being provided by distance separation. No male rows have been used.

crops are tramped, portable washrooms must be rented and garbage must be gathered from fields when the workers leave.

Importance Associated With the Loss of Management Control

Many of the operations regarding seed corn production are directed by the companies and growers thus lose control of some management decisions. Table 8 illustrates the importance of this loss to seed corn growers.

Table 8. Importance of Loss of Management Control

No Effect			Large Effect
1	2	3	4
(mean of U.S. responses, 2.1)		(mean of Ontario responses, 3.2)	

Ontario growers estimated the value of this loss to be $32/acre, while their U.S. counterparts estimated this value to be $11/acre. While no concrete reasons were cited for the difference in these responses, conversations with growers indicated that adverse weather conditions at harvest time were in part responsible. Due to the weather conditions experienced in Ontario, harvest operations (usually arranged by the company) are often carried out when farmers would rather not be travelling in their fields.

Higher Overall Stress Associated With Seed Corn Production

Many of the conditions previously discussed can lead to higher stress for seed corn growers. When asked if they experienced higher stress, 89 percent of Ontario growers and 63 percent of U.S. growers indicated that they did. Many growers indicated that they also required additional returns (compared to commercial corn) as compensation for this increased stress. Ontario and U.S. growers estimated the value of this compensation to be $38/acre and $26/acre, respectively. This difference, while relatively large, is not statistically significant. A review of the reasons cited for increased stress, noted in Appendix C, indicates that Ontario growers are more concerned with how the crop looks, air pollution, moisture loss, seedling vigour and tile drain damage than their U.S. counterparts. Statistical tests indicated that those growers experiencing higher stress asked for a higher premium than those experiencing lower stress.

Opinions Re: Contract Terms

In addition to questions regarding the actual production practices used for seed corn, growers were asked a series of questions which centered on the method of determining the final payments received for seed corn. Table 9 presents the results of these questions in summary form.

Analysis of these results indicates that Ontario growers would like to see changes made in the calculation and/or use of the norm and the pricing method. Overall, U.S. growers appear to be satisfied with their contract terms.

Table 9. Percent of Growers Satisfied With Contract Terms

Term	Ontario	U.S.
Norm	60%	84%
Yield Factor	70%	82%
Payment Timing	80%	73%
Pricing Method	53%	72%
Mktg. System	75%	73%

Additional Premium Required for Seed Corn Production

When asked what additional premium seed corn growers required to grow seed corn vs. commercial corn, the following response was obtained. Ontario growers said they want, on average, $185/acre over and above the gross returns for commercial corn, while U.S. growers wanted $76/acre. When the additional premiums required for such items as weed problems, soil compaction, etc., were totalled it was found that in Ontario this total premium was $154/acre and in the U.S. it was $80/acre. The difference in premium requirements between Ontario and the U.S. is significant but no particular reason is evident as to why this spread is so great.

Chemical Usage On Seed and Commercial Corn - Ontario and U.S.

All surveys were analysed as to pesticide usage in the U.S. and Ontario. Fungicide use by growers was very limited (1 or 2 growers reporting). Insecticide use was more common with a large percentage of growers reporting the use of insecti-

cides. With the exception of a few isolated cases, all insecticides used in the U.S. and Ontario were common. Herbicide use showed a greater variance in both the U.S. and Ontario because of the larger number of herbicides available. U.S. growers reported the use of 21 herbicides. Analysis of these herbicides by trade name indicated that 9 of these 21 were not available to Ontario growers. Further analysis by chemical composition revealed that only 4 of these 21 were not available to Ontario growers. Two of these four contained alachlor (Lariat and Lasso) which is banned in Canada. The other two herbicides were used for control of annual grasses and certain broadleaf weeds.

Ontario growers reported the use of 18 herbicides. Of this 18, only 1 is not registered in the U.S. but such registration is expected. Table 10 lists the U.S. chemicals and the Ontario equivalent by trade name.

Analysis of Differences in Herbicide Costs (Seed Corn)

The results of the cost of production study indicate that Ontario farmers are spending more money on herbicides than their U.S. counterparts by a significant amount per acre. In 1987 and 1988 respectively, Ontario farmers spent on average 24 and 16 percent more than the U.S. farmer on herbicides. Tables 11 and 12 give a breakdown of the prices for the most commonly used herbicides in 1987 and 1988 in Ontario and the U.S. as reported by seed corn growers. Table 13 indicates the application rate of herbicides used by seed corn growers and the percentage of growers that used each herbicide. Analysis of Tables 11, 12 and 13 suggests that the increased cost to Ontario seed corn growers for herbicides is directly related to the price difference, as usage rates, on the average, are comparable in both countries.

Table 10. Reported Usage of Herbicides - United States

Chemical Name	Ontario Equivalent
2-4D	same
Atrazine	same
Banvel	same
Basagran	same
Bicep	Primextra
Bladex	same
Butril	Pardner
Conquest	Blazine
Dual	same
Eradicane	same
Extrazine	Blazine
Hidep	2-4D
Laddock	same
Lariat	unavailable
Lasso	unavailable
Princep	same
Ramrod	unavailable
Sutan	same
Sutazine	same
Tandem	unavailable

Table 11. Herbicide Cost Comparison (1987 Prices) Ontario and United States

Chemical	Ontario Price	U.S. Price (Ont. to U.S.)	% Difference
Attrex Nine-0	$ 2.85/lb.	$ 2.65/lb.	+ 7
Banvel	20.50/l	20.65/l	- 1
Basagran	23.40/l	17.85/l	+31
Bladex	9.15/l	6.45/l	+42
Dual	18.80/l	17.00/l	+11
Laddock	8.90/l	6.00/l	+48
Pardner (Ont.) Buctril (U.S.)	19.80/l	13.70/l	+45
Sutazine	7.00/l	6.00/l	+17

Note: All U.S. prices were converted to Canadian dollar equivalents using an exchange rate of 1.3260. Chemical concentrations are equivalent for all chemicals compared. U.S. prices are representative of three U.S. states only (Illinois, Indiana and Iowa)

Table 12. Herbicide Cost Comparison (1988 Prices),Ontario and United States

Chemical	Ontario Price	U.S. Price (Ont. to U.S.)	% Difference
Attrex Nine-	$ 2.85/lb	$ 2.65/lb	+ 7
Banvel	20.50/l	21.00/l	- 2
Basagran	23.40/l	17.05/l	+37
Bladex	9.15/l	6.30/l	+45
Dual	18.80/l	16.80/l	+12
Laddock	8.90/l	5.85	+52
Pardner (Ont.) and Buctril (US)	19.80/l	12.95/l	+53
Sutazine	7.05/l	5.55/l	+27

Note: All U.S. prices were converted to Canadian dollar equivalents using an exchange rate of 1.2404. Chemical concentrations are equivalent for all chemicals compared. U.S. prices are representative of three U.S. states only (Illinois, Indiana, and Iowa).

Table 13. Herbicide Use by Percent of Growers Using and Average Usage Rate, Ontario and United States

Herbicide	1987 Percent of Grower Using Ont.	1987 Percent of Grower Using U.S.	1987 Per Acre Rate Application Ont.	1987 Per Acre Rate Application U.S.	1988 Percent of Grower Using Ont.	1988 Percent of Grower Using U.S.	1988 Per Acre Rate of Application Ont.	1988 Per Acre Rate of Application U.S.
Atrazine	15	38	.75 lb	1.2 lb	24	36	.75 lb	1.4 lb
Banvel	0	5.5	-	.34 l	2	5.5	-	.34 l
Basagran	9	2.7	.8 l	.95 l	9	2.7	.7 l	.95 l
Primextra/ Bicep	11	14	2.2 l	3.1 l	11	11	2.4 l	.3 l
Bladex	24	31	1.8 l	1.28 l	29	19	2 l	1.28 l
Pardner/ Buctril	0	5.5	-	.55 l	7	11	.43 l	.6 l
Dual	73	42	1.1 l	1.2 l	71	38	1.1 l	1.1 l
Embutox	4	0	1 l	-	7	-	.9 l	-
Eradicane	2	0	-	-	0	2.7	-	3 l
Blazine/ Extrazine	0	5.5	-	3 lb	0	5.5	-	2.1 lb
2-4D/HIDEP	0	8	-	.5 l	2	7.7	.3 l	.5 l
Laddock	71	31	1.3 l	1.1 l	67	33	1.3 l	1.1 l
Lariot	0	14	-	1.1 l	0	19	-	1.1 l
Lasso	0	11	-	3 l	0	22	-	2.6 l
Princep	0	27	-	1.25 lb	0	2.7	-	1.25 lb
Ramrod	0	5.5	-	11.5 lb	0	5.5	-	11.5 lb
Sutan	0	11	-	2.3 l	2	8	3 l	2.4 l
Sutazine	2	5.5	-	3.4 l	2	5.5	-	3.4 l
Tandem	0	2.7	-	.47 l	0	2.7	-	.47 l

Note: Usage Rates are representative of three U.S. states only (Illinois, Iowa and Indiana). All units are Canadian per acre.

Table 14. Comparison of Seed Corn Contracts in Ontario and Six U.S. Contracts

TERMS	ONTARIO	CONTRACT "A"	CONTRACT "B"
PREMIUMS	in 1988, $1.05/bu. (stated)	in 1988, .12¢/bu. (inferred)	no premium on price but final yields are increased by 5% or 8% depending on the contract
EXTRA PLANTING TRIPS	no reference made to extra trips or related cost/remuneration	no reference made to extra trips or related cost/remuneration	grower responsible for making delayed plantings but compensated $7.45/acre 1 male delay $9.90/acre 2 male delays
ISOLATION REQUIRED	grower responsible to provide isolation as directed by company	refer to Seed Corn production practices book	grower responsible to provide isolation in accordance with company direction (minimum, 40 rods) Grower report all crops grown within 80 rods of seed corn field.

TERMS	CONTRACT "C"	CONTRACT "D"	CONTRACT "E"	CONTRACT "F"
PREMIUMS	no mention	no mention	no mention	calculated by adding an amount to yield, call Bonus Bushels, which equals the Contract Yield x 10% or 5%
EXTRA PLANTING TRIPS	grower responsible for making delayed plantings but compensated $4.95/acre 1 male delay $8.70/acre 2 male delay $8.70/acre 1 female delay	no reference made to extra trips or related costs/remuneration	grower responsible to make delayed plantings but compensated $11.15/acre, 1 male delay $14.90/acre, 2 male delays $11.15/acre, 1 female delay	grower responsible to make delayed plantings but compensated $4.95/acre, each male delay $9.90/acre, 1 female delay
ISOLATION REQUIRED	grower responsible to provide 40 rod of isolation from waxy corn and 80 rods from sweet, pop or white corn under company direction	grower responsible to provide isolation as required by the company (dependent on neighbouring crops)	grower responsible to provide isolation as directed by company. 40 rods is standard and 80 rods for fields of sweet, pop or off-colour corn in excess of 5 acres	grower responsible to provide a minimum of 10 rods isolation and 80 rods for sweet, pop or white corn (or equivalent male rows) Company reserves the right to change isolation

TERMS	ONTARIO CONTRACT	CONTRACT "A"	CONTRACT "B"
Pricing Method A) Cash	grower selects (1) or (2) 1) average of daily closing prices at Chatham from Nov. 15/88-Mar 15/89 2) use closing Chatham price on 1 to 5 selected dates from Nov 15/88 - Mar 15/89	cash price at local selected elevator + 12¢ OR County Loan Rate	cash price at a local elevator
B) Futures	no futures price option	select price from Dec., Mar., or May contracts + 12¢/bu	select price from Dec., Mar., or May contracts
% Sold Per Price	for average price-100%; for selected prices-any % per date	may sell 25, 50, 75 or 100% per date	may sell any % per date
Payment Methods Price	selected price plus $1.05/bu	selected price plus .12¢/bu. or County Loan Rate	selected price from market
Cash Amount & Date	1) $360/acre, advance on Nov.30/88-balance Mar 31/89 (if less than 70% crop then $245/ac.)	crop sold x price paid 15 days after sale if Loan Rate payments held until Mar 31/88	crop sold x price-paid 15 days after sale

TERMS	CONTRACT "C"	CONTRACT "D"	CONTRACT "E"	CONTRACT "F"
Pricing Method A) Cash	no cash price option	no cash price option	no cash price option	highest price at one of three named local elevators
B) Futures	select a price from Dec., Mar, or May contracts	average May contract prices in Dec. & Apr. or select specific prices from May contract	select a price from Dec. contract only	no futures price option
% Sold Per Price	must sell at least 25% per date	may sell 25 or 50% using Dec. ave. balance on April ave. for specific price may sell up to 50% by Nov. 30/88 balance on April price	may sell any % per date	may sell any % per date
Payment Methods Price	selected price from market or County Loan Rate	selected price from market	selected price from market	selected price from market
Cash Amount & Date	no option	no option	no option	up to 50% of crop x first selected price -paid 10 days after sale bal. pd.May 1/89

TERMS	ONTARIO CONTRACT	CONTRACT "A"	CONTRACT "B"
Cash Amount & Date (cont'd)	(2) amount sold on selected date x price - payment 10 days after sale		
Futures Amount and Date	no futures option	amount sold x price Dec. contract - payment Dec. 15/88 Mar. contract - payment Jan. 15/89 or 15 days after sale May contract - payment Mar 15/89 or 15 days after sale	amount sold x price Dec. contract - payment by specified date in contract Mar. & May contracts - payment by 25th of delivery month
Yield Criteria Terms NORM	five-year average yield for each hybrid. New hybrids use estimates for 1 year then average called the Norm	grower's hybrid yield - average hybrid yield must be <150% >50% called Grower's Yield Index (GYI)	average yield for each each grower's crop per hybrid called Contract Average Yield (CAY) average of all contract yields per hybrid in the area called Hybrid Average Yield (HAY)

TERMS	CONTRACT "C"	CONTRACT "D"	CONTRACT "E"	CONTRACT "F"
Cash Amount & Date (cont'd)				
Futures Amount and Date	approximately 1/2 of crop paid for between Nov. 1/88 and Apr 3/89 balance on Apr. 3/89	amount sold x lst price paid Feb. 1/89 balance paid May 25/89	50% paid Dec. 31/88 balance paid Apr. 15/89	no futures options
<u>Yield Criteria Terms</u> Norm	each hybrid is assigned a factor by which grower's yield is multiplied called Variety Production Factor (VPF)	no mention	no mention	average yield per hybrid at each plant location called Hybrid Yield (HY)

TERMS	ONTARIO CONTRACT	CONTRACT "A"	CONTRACT "B"
YIELD CRITERIA (CONT'D) ZONE FACTOR	five year average yeild of commercial corn as reported by the Ontario Corn Committee Zone 1 = 155 bu./acre Zone 2 = 136 bu./acre called the Zone Factor	average yield of commerical corn from randomly selected fields at each plant location called Location Commercial Corn Equivalent (LCCE)	average yield of commerical corn from randomly selected fields for each plant location called Plant Base Yield (PBY)
CALCULATED YIELD BU./ACRE	actual yield x zone norm factor if yield > 120% of norm then: 120%norm x zone norm factor + extra bushels	base + variable bushels where: base =.5 x LCCE variable = .5 x LCCE x GYI	[(CAY-HAY)x 1.6] + PBY for 1 or 2 contracts/hybrid ([(agreed% x CAY)-CAY]x 1.6) + PBY -final yield is then multiplied by 5 or 8% dependent on the area

TERMS	CONTRACT "C"	CONTRACT "D"	CONTRACT "E"	CONTRACT "F"
YIELD CRITERIA (CONT'D) ZONE FACTOR	no mention	no mention	no mention	average yield of commerical corn from randomly selected fields at each plant location called Commercial Corn Base (CCB)
CALCULATED YIELD BU./ACRE	(100 base bushels + bushels of seed) x UPF (non-corn ground) (90 = base bushels + bushels of seed) x VPF (corn ground)	(hybrid yield x local factor) + base bushels base bushels varies with plant location	(yield up to 50 bu. x 400%) + extra bushels or (yield up to 45 bus. x 250%) + extra bushels + 50 bushels	fixed + variable + bonus bushels where: fixed=.6 x CCB variable=.4 x CCB x contract yield / hybrid yield bonus=(fixed + variable) x 5% for less than 3 contracts per hybrid (105% x CCB) + bonus where: bonus= contract yield x 10%

TERMS	ONTARIO	CONTRACT "A"	CONTRACT "B"
ROGUING AND DETASSELING	company performs all necessary operations	company performs all necessary operations	company performs all necessary operations except grower responsible to remove volunteer corn for 40 rods
PRESTICIDE APPLICATION	grower responsible for application and all associated costs no reference to specific items, such as corn borer control	refers to Seed Corn Production Practices Book	grower responsible for application and costs of all pesticides except company pays full cost of controlling corn borer or leaf diseases
HARVESTING & DELIVERY	grower responsible for all operations & costs	grower responsible for all operations & costs	grower responsible for all operations and costs
CROP INSURANCE	as provided by the Crop Insurance Commission of Ontario grower and company share the premium	company pay for a 65% coverage policy or the grower can provide own insurance. Payments are deducted from gross receipts for seed corn.	no crop insurance program but company guarantees grower $310/acre

TERMS	CONTRACT "C"	CONTRACT "D"	CONTRACT "E"	CONTRACT "F"
ROGUING AND DETASSELING	company performs all necessary operations	company performs all necessary operations except grower responsible to remove volunteer corn for 25 rods	company performs all necessary operations except grower responsible to remove volunteer corn for 70 rods	company performs all necessary operations
PRESTICIDE APPLICATION	grower responsible for application and costs of all pesticides except company pays 50% of cost for controlling rootworm beatle corn borer and cutworm; grower must apply cutworm insecticide on land previously growing soybeans	grower responsible for application and costs of all pesticides applied preplant incorporated company will pay 75% of post-emergence insecticide and 100% of fungicides	grower responsible for application and costs of pesticides except: 50/50 split with company for costs to control corn borer, flea beetle, aphids & blight	grower responsible for application and costs of pesticides except company will provide pesticides required for control of corn borer, cutworm, leaf aphid & blight
HARVESTING & DELIVERY	grower responsible for all operations & costs	grower responsible for all operations and costs	grower responsible for all operations & costs	grower responsible for all operations. Company pays $5.60/ton for transportation and charges $33.50/acre if it harvests
CROP INSURANCE	if crop insurance is in place then company gets the benefits	company has the right but not the obligation to provide insurance or grower may provide insurance. Payments are deducted from gross receipts for seed corn	no mention	no mention

3. CONTRACT TERMS AND CONDITIONS (all results based on 1988 contracts)

Representative contracts were obtained from six different seed companies in the U.S. Four of these are large well known companies with plants in Southern Ontario and two are smaller independent companies who serve their local area market. These contracts were compared to each other with particular emphasis on the comparison to the Ontario contract.

Table 14 presents the results of the contract comparisons in summary form. The most important aspects of the contract comparisons are presented here. For further information refer to Appendix A.

Pricing Method

In Ontario the producer must select, at the time of contract signing, either the average closing cash price at Chatham between November 15, 1988 and March 1, 1989 as the price for all seed corn production or from 1 to 5 specific dates when he/she may sell any percentage of seed corn production at the closing cash Chatham price on each date. There is no option to price seed corn production using the futures market. Five of the six contracts examined from the U.S. indicate that the producer has the option of selling various percentages of corn using either futures prices or cash prices. Only one contract offered a cash price option only.

One of the major differences in the U.S. and Ontario is the time frame during which a producer can price seed corn. In Ontario the producer must select the pricing option (i.e. averaging or selection date) at the time of signing the contract. The five or less selection dates are also chosen at this time.

In the U.S. producers are given a variety of pricing options with the use of futures prices by most companies. In one extreme case the grower can price

his/her crop from April 1, 1988 to March 31, 1989, by using cash Table 14 or Dec., Mar. or May futures prices. The shortest time period allowed for pricing on one contract is from June 25, 1988, to November 30, 1988. This difference allows the U.S. producer much more flexibility in pricing seed corn and also the opportunity to lock in prices which may be unusually high for specific reasons (eg. 1988's drought). When a producer elects to sell corn using a futures' contract price, the price received is determined by obtaining forward contract prices being offered by local elevators. Therefore, the local basis is taken into consideration. For example, in July a producer could sell seed corn using December futures for November delivery. The price would be that quoted by local elevators for delivery on the selected date (forward contract price or futures price minus the basis).

Payment Method

In Ontario, if the producers use the average price method, they are paid $360/acre on November 30, 1988 and the balance is paid March 31, 1989. When using the selection date method, producers are paid the selected price times the amount sold 10 days after the date of sale. In the U.S. there is no standard payment method. Those contracts offering a cash price option provide for payment within 15 days of the date of sale, with the exception of one, which provides payment for 50 percent of the crop sold, at time of sale and the balance is paid May 1, 1989. Contracts which offer futures pricing options generally allow for payments to be made 10 to 15 days after the date of sale, with restrictions as to the earliest date of payment tied to either the delivery month for a particular contract or some pre-specified date preceding the delivery

month. Some contracts name specific dates on which payment will be made (eg. 50 percent paid December 31, 1988, balance April 15, 1989).

Yield Criteria

There are two main factors used in the determination of yield. They are the variety "norm" and the "zone factor". These two terms are used in Ontario. Some U.S. contracts use these terms but name them differently, while other contracts make no reference to these terms. In Ontario the "norm" is determined by using the past five year average yield for a particular hybrid; for new hybrids, an estimated norm is provided by the company and can be adjusted in the second year, henceforth the five year average is used. This estimating approach is problematic. Higher or lower than expected norms could be used in years 1 and 2 resulting in inflated or deflated yield calculations. The "zone factor" is determined by using the 5 year historical average yield for commercial corn as reported by the Ontario Corn Committee on a county basis. In the U.S., while the term "norm" is not used specifically, other similar terms are. When the norm equivalent is used, it is the average yield for a particular hybrid in the given year for a specific plant location (no 5 year average).

The zone factors in the U.S. are again known by many names. In three of the six contracts examined the company allows the grower to select a field of commercial corn where a yield check can be performed. A specified number of fields are selected from the total number submitted and the yield checks are then performed at harvest time. After dropping the high and low fields the average is calculated. This figure becomes the zone factor or equivalent. The yield determination is plant specific. Other contracts use base bushels or variety production factors in order to express seed corn yields in commercial

corn equivalents. These contract terms are based on commercial corn yields but no yield checks are performed on a yearly, plant specific basis. Some companies contacted, who currently do not use yearly checks are considering implementation of this practice, despite its complexity and cost. Conversations with growers indicate a better understanding of the yield check system as opposed to the systems which use base bushels or variety production factors. Growers also perceive fairer treatment when yearly yield checks are performed for the purpose of determining seed corn yields.

Calculated Yield

The Ontario contract and all U.S. contracts use different formulas to calculate the commercial corn equivalent yield of seed corn production. Table 14 provides a comprehensive review of these formulas. Most contracts include an incentive to achieve better-than-average yields. In Ontario the maximum increase is limited to 20 percent; higher yields are added on a straight bushel basis. Contract "A" in the U.S. calls for a range of the grower's yield index (150 to 50 percent). Other U.S. contracts may provide a guaranteed yield in bushels (eg. 50) while others allow for the addition of extra bushels, called bonus bushels (range 5 to 10 percent of calculated yield). Four of the six contracts examined do not put a ceiling on the amount of seed corn that is used as a base for multiplication by the zone factor or its equivalent, in order to arrive at the final calculated yield of seed corn in commercial corn equivalents.

Premium

In Ontario a premium is negotiated each year to compensate growers for the extra management requirements of seed corn. In 1988 this premium was $1.05/bu. While no direct reference is made to a specific premium in any of the U.S. contracts one is inferred in three of the contracts. Contract "A" calls for the addition of $ 0.12/bu. to the selected price and contracts "B" and "F" increase yield determinations by adding a percentage (5 to 10) to the final calculated yield before payment is determined.

Further contract considerations may be found in Appendix B.

4. CORN PRICES

All of the contracts which we analysed required some combination of cash or futures prices for commercial corn to establish the return for seed corn. Accordingly, we have compared the cash price at Chatham to the cash price at a point in central Illinois for the 1986 and 1987 crop years, from November through March.

All the data are contained in Table 15. The source of the Illinois data is the USDA's Grain Situation and Outlook. The data represent a monthly average price and they were converted to Canadian funds by using the average monthly exchange rate as reported by the Bank of Canada. The Canadian price is the track price at Chatham, as reported on Thursday of each week and averaged for the month. Then we deducted $0.20 for a handling margin to represent the board price at the elevator.

The data in Table 15 indicate that in crop year 1986, the price at Chatham was somewhat higher on average than central Illinois. However, in 1987 the opposite occurred. The difference in implicit basis between the two years is simply that the Canadian market was somewhat short of corn in 1986, tended to import it and was possibly affected by the countervailing duty. In 1987, Canada had a long supply of corn and the domestic market was not protected by the countervailing duty. In crop year 1988, as it unfolds, we will likely see a return to a basis more like that of 1986. On average, there is little difference between the average cash price during the past two years at these two locations.

Most of the U.S. contracts also allowed producers to price before harvest. Accordingly, we have reported in Table 16 the average price for December futures in each month from May through November of the past three crop years. They have been converted to Canadian funds. It would appear that commercial corn prices in Central Illinois probably would be about $0.15 to $0.20 under the December futures price. These data in Table 16 indicate that in all of the past three years U.S.

Table 15. Corn Returns, March to November, C$/bu. 1986/7 to 1987/88

Month	1986/87 Central Illinois	1986/87 Ontario	1987/88 Central Illinois	1987/88 Ontario
Nov.	2.15	2.17	2.29	2.09
Dec.	2.10	2.21	2.32	2.19
Jan.	1.96	2.12	2.38	2.15
Feb.	1.84	2.08	2.40	2.13
Mar.	1.93	2.19	2.39	2.19
Average	2.00	2.15	2.36	2.15

Table 16. Average Monthly December Closing Corn Futures Price, May to November, 1985-1988

Year & Month		Average Futures Price Dec. Corn (Close, US$/bu)	Average Futures Price Dec. Corn (Close, CS$/bu)	Exchange Rate Monthly Average of Average Noon
1986	May	2.004	2.756	0.7271
	Jun	1.909	2.652	0.7197
	Jul	1.757	2.426	0.7243
	Aug	1.691	2.348	0.7203
	Sep	1.665	2.310	0.7209
	Oct	1.694	2.352	0.7203
	Nov	1.704	2.362	0.7214
1987	May	1.958	2.626	0.7456
	Jun	1.975	2.644	0.7470
	Jul	1.768	2.344	0.7543
	Aug	1.675	2.220	0.7544
	Sep	1.752	2.304	0.7603
	Oct	1.831	2.398	0.7637
	Nov	1.834	2.414	0.7598
1988	May	2.311	2.858	0.8085
	Jun	3.074	3.742	0.8214
	Jul	3.230	3.900	0.8283
	Aug	2.983	3.652	0.8168
	Sep	2.932	3.596	0.8153
	Oct	2.886	3.478	0.8297
	Nov	2.695	3.247	0.8300 Est.

Notes: Simple average of Corn Futures Prices - Chicago Board of Trade - Daily Closing Prices
Exchange Rates, Monthly Average of Noon Rate, Bank of Canada Review

producers could have priced their product on a forward contract at a level which exceeded the eventual price in November through March. This is, of course, especially true for 1988/89 when U.S. producers could have priced against a December futures level in excess of C$3.20 during June and July.

The additional flexibility for the U.S. seed corn grower to take advantage of price increases before harvest is clear. In most years, there is a seasonal tendency for prices to rise before harvest as weather and other natural phenomena are perceived to threaten yields. This is especially true when there are relatively small inventories of corn or the U.S. farm program has taken substantial amounts of acreage out of production. When these things occur, the impact of a real or expected lower yield is much greater than when there are large amounts of acreage and/or large amounts of corn and inventory. In most years, the rumours and fears of a crop failure are considerably worse than its reality. The rumours and fears occur during the summer before harvest. Harvest is reality (unfortunately, the U.S.D.A. report for January is also reality!). By harvest when reality has set back in, prices are often much lower than had been expected three or four months earlier. 1988 was a prime example. Ontario seed corn producers are in the position of having to price their product when reality exists. U.S. producers have the option of pricing when the rumours and fears exist. This gives them an advantage.

5. GOVERNMENT PROGRAMS

As indicated earlier, we have investigated the level of government support given to corn producers in both countries. In the case of the United States, the figures reported represent all direct government transfers that reach corn producers. The major transfers are those provisions of the 1985 farm bill which include the loan rate, the set-aside program, administration of the Commodity Credit Corporation, and payments to producers to store Commodity Credit Corporation corn on their farms. These are the programs that were found to be countervailable by the Canadian Import Tribunal (CIT) in 1986. The CIT made a preliminary determination that these had totalled approximately $1.05/bu. Those data were reported in the oral presentation. Subsequent investigation indicated that the final determination was lower. Moreover, the totals reported for the U.S. at the meeting in London contained many expenditures (eg. research, extension, education) that cannot be regarded as direct, trade distorting or unfair subsidies to corn producers under domestic or international law. Therefore, to show a more relevant picture, direct subsidies are reported in Table 17 for the two countries.

In Canada, the data refer to all federal government transfers to corn growers. They do not include transfers from the provincial government.

The data are included in Table 17. They show, as expected, that U.S. corn producers receive a higher level of government support than their Canadian counterparts. In fact in most years the difference in level of support is very substantial.

Table 17. Subsidization of Corn - Canada and the United States, 1985/86-1987/88

	1985/86	1986/87	1987/88
United States[1]			
Level of Production (bu)	9000 ml	8401 ml	7100 ml[2]
Total Policy Transfers ($US)[3]	4691 ml	10093 ml	8266 ml[2]
T.P.T./bu ($US)	0.52/bu	1.20/bu.	1.16/bu[2]
Direct Payments ($US)[4]	2730 ml	7999 ml	6550 ml[2]
D.P./bu ($US)	0.30/bu	0.95/bu	0.92/bu[2]
Ontario[5]			
Level of Production (bu)	228 ml	188 ml	215 ml[2]
Federal Payments ($CDN)	40 ml[2]	130 ml[2]	45 ml[2]
F.P./bu ($CDN)	0.23/bu	0.75/bu	0.30/bu[2]

NOTES:

1 From "Estimates of Producer and Consumer Subsidy Equivalents: Government Intervention in Agriculture, 1982-86", Agriculture and Trade Analysis Division, Economic Research Service, USDA, April 1988.

2 Estimates.

3 Includes direct payments (deficiency, diversion, storage, and loan forfeit benefits), input subsidies (commodity loans, farmers home administration, crop insurance, and fuel excise tax), marketing transfers (processing and marketing, transport and inspection), long-term research and development, and state programs.

4 Includes only direct (federal) payments, some other transfers may be considered countervailable.

5 From the Ontario Corn Producers Association (OCPA) representing federal (ASA & SCGP) expenditures in Ontario only (unpublished).

6. CONCLUSIONS

Our task in carrying out this study was to compare four factors in the seed corn markets in Ontario and the three Corn Belt states of Illinois, Indiana and Iowa. The factors included: direct and indirect costs of producing seed corn; grower/processor contracts; market returns and government payments. We will discuss each below.

Cost of Production

We surveyed growers in the two countries to conduct the comparative cost analysis, as well as gaining growers attitudes on a number of other factors. The direct costs, by which we mean those things not included as intangibles in the study, are higher in Ontario than in the Corn Belt. There appeared to be four reasons for differences in costs in the two countries. First, while there is little difference in the total amount of actual nitrogen used to produce seed corn in the two countries, U.S. growers use much more anhydrous ammonia than do Ontario growers. Anhydrous ammonia is a less expensive source of nitrogen than those sources normally used by Ontario growers. Therefore, it is the mix of nitrogen sources that causes one problem. Second, Ontario growers spend more on field operations than do their U.S. counterparts. Both of the first two factors may be attributed to the perceived notion in Ontario that topsoil is relatively thin and needs to be protected and to the notion that planting with anhydrous ammonia can have a negative impact on corn yields.

The third cause of the difference in production costs is substantially higher chemical, and especially herbicide, costs in Ontario. Examination of the data leads to the inference that the difference is not that Ontario growers use more chemicals. Rather, there is a significant difference in prices of those

chemicals in the two countries. It is interesting to note that of all the prices that were considered in the study, only chemical prices are significantly different in Ontario than in the United States. This is associated with a set of trade restrictions that were established some years ago to encourage the chemical industry in this country. The impact seems to have been to apparently protect the profits of some international chemical companies and to certainly increase the cost of production for Ontario growers. Unless there is some major social benefit (which escapes us at the moment) that is also gained by these higher prices, it would certainly be our recommendation that the seed corn industry represents itself to the federal government to determine whether an end can be brought to this price distortion. As free trade unfolds, Canadian growers will suffer relatively greatly from pieces of the market that are not allowed to be part of free trade.

The final reason for the differences in cost are the differences in rental rates for seed corn land. It is obvious that much of the seed corn in Southwestern Ontario is grown on land that has superior characteristics. These characteristics also make the land quite suitable for growing other high value products, like tomatoes. The difference in rental rates reported by growers for seed corn land relative to rates for commercial corn land are rather astounding. They tend to confirm the assertion that seed corn is grown on the best land. They also tend to confirm our hypotheses that the tomato industry or some other set of high value crops is determining the opportunity cost for this land. While this competition for land occurs in Ontario, it does not occur in the Corn Belt rental rates for seed corn land. Data for the Corn Belt reveal that rental rates for seed corn land are not different from rental rates for commercial corn land. Thus the alternatives available to growers are very significant

in determining the cost of producing seed corn. This is the major difference for direct costs for the two countries. Moreover, while it is apparent that most seed corn is not grown on rented land, land rental values and especially their differentials are quite indicative of the value and the reservation price that growers would assign to their owned land. In other words, for non-rented land, one would expect that seed corn growers do the same kind of calculations as for rented land to determine which use of their land has the highest payoff.

Indirect costs are those things associated with the so-called intangibles about which we asked seed corn growers. It was quite instructive that Ontario growers reported consistently that each component of intangible cost was more of a problem than did U.S. growers. It was also instructive that Ontario growers consistently estimated the intangible costs to be higher than their American counterparts. The relationship between costs and concerns is consistent throughout the responses received by the producers.

It is difficult to pin down a reason for Ontario growers to report more problems in higher intangible costs. However, we would suggest that the most fundamental reason is that Ontario's seed corn enterprises, as well as its commercial corn enterprises, tend to be significantly smaller in size than in the U.S. Moreover, Ontario growers have more alternatives than in the U.S., therefore they have to worry more about the effects of their programs for seed corn on other commodities than do their American friends. In a sense, if one regards the items of indirect costs as "hassles", and one assumes that the hassle to the grower costs the grower a certain fixed amount, then it stands to reason that when those costs are expressed on a per acre basis, they are higher in Ontario. There are simply fewer acres over which to spread the costs of the hassle in Ontario than in the U.S. Frankly, we would also expect that some

of the reason for the higher indirect cost is another spilover from the higher valued products like tomatoes. When one has a lucrative alternative to producing seed corn, rightly or wrongly, it may be perceived that one needs higher compensation for the hassles of producing seed corn than would be the case when there is not a lucrative alternative. Therefore, in a sense we may have captured the opportunity cost notion in more than one of the variables.

At any rate, it is very clear from the study that Ontario's costs, both direct and indirect, are higher than in the U.S. Corn Belt. It will therefore be difficult for the Ontario industry to grow unless the premium for producing seed corn in Ontario can adequately compensate Ontario growers.

U.S. and Canadian Contracts

Comparing the Ontario seed growers' contract with contracts in the United States, one is left with a number of inferences. First, the most fundamental perception is that there are probably as many different contracts as there are seed corn companies in the United States. There is considerable flexibility and variation among the contracts in almost all of their aspects. Three factors in the U.S. contracts relative to Ontario's stand out.

The first difference is that we can find no evidence of a specific premium over commercial corn for producing seed corn in the United States. There are many ways that companies compensate growers for the extra cost of producing seed corn. Most of these are through adjustment factors for the quantity produced rather than directly through price.

The second factor is that most U.S. contracts establish the norm based on each year's local annual yield. This contrasts with Ontario's approach of using an historical five year period. Given that Canadian growers were much

less satisfied with the use of the norm in Ontario than were American growers, one would think it worthwhile to investigate further the possibility of changing the way norms are established in Ontario. This might require more than just getting additional detail. It might require that Ontario growers and companies will have to define relatively small geographic units in establishing the norm. Establishing geographic boundaries could be more difficult than re-establishing the concept on which the norm is based. Given the fairly high level of disgruntlement with Ontario's norm and with the entire situation that has occurred in negotiations the past few years, it would appear worth while to examine the possibility of using an annualized norm instead of a five year average.

The third major area in which there is discrepancy between the contracts in the two countries is in the flexibility that U.S. producers have about when they can establish their prices. U.S. growers have, generally, from May through October during which they can establish prices, as well as the cash market after harvest. Our analysis of U.S. cash and futures prices suggests rather strongly that this gives U.S. producers the opportunity to establish the prices of their seed corn, not only earlier than their Ontario competitors but also at, in most cases, substantially higher prices. Most agricultural commodities tend to have a seasonal pattern in their prices. Corn is no exception in that there is a strong upwards seasonal tendency during the summer months. This upward tendency assists both holders of old crop commodity as well as producers of new crop commodity.

In some years, like the most recent one, when the U.S. farm program limited acreage and a drought limited yield, U.S. growers have the opportunity

to benefit very substantially from the seasonal tendency. We would strongly suggest that the marketing board further consider this alternative.

Government Payments

The last area of comparison in the study is government subsidies. Our calculations show that U.S. payments to corn growers were substantially higher than Canadian government payments to corn growers was over the past three years. It is our view that this difference has had a beneficial impact on corn production in the U.S. midwest relative to soybean production. This is in large part because the soybean program does not have a target price and a direct subsidy, while the corn program does. At the very worst, for example, in a recent year a producer who grows soybeans would have received a price of approximately $4.77/bu., which is equal to the loan rate. In the same year a producer of corn who was willing to participate in the government programs, was guaranteed a minimum of $3.03/bu. for his corn. If one compares the worst outcome for the soybean grower at $4.77/bu. to the worst outcome to the corn grower at $3.03/bu. and compare the difference in the yields and cash costs, one will come to the conclusion rather rapidly that that situation very substantially favours corn.

However, we cannot argue that the existence or the level of the subsidy in the U.S. has a beneficial impact on seed corn production. We have analysed a series of slightly different cost and return scenarios for commercial and seed corn. There simply does not appear to be any price and cost situation in which equal payments per acre from government subsidies give either seed or commercial corn a benefit over the other. In other words, if both seed and commercial corn receive equal payments per acre, which they do in the U.S.,

we can find no situation with respect to costs and market prices that give seed corn an advantage.

However, one must acknowledge the high probability that U.S. set-aside program has contributed quite substantially to improving the competitiveness of the U.S. seed corn industry. This is because it is entirely possible for U.S. growers to use the set-aside in some manner to provide isolation requirements to seed corn. Set-aside acres are those acres that, almost by definition, will not return a profit. However, by setting aside some acres, producers are guaranteed a relatively high return from the government for the acres not set aside. So giving up income on set-aside acres can be more than compensated because of the government guarantee of price to the acres that are not set-aside. Since those acres are not a cost resource, since they can't be used for anything else, they do provide, in many cases, very cheap isolation requirements for seed corn. We cannot dispute, therefore, that the U.S. farm program assists seed corn growers. However, we feel fairly strongly that the advantage is provided, not by the level of price support, but rather by the set-aside program. The corollary of this is that one would expect in upcoming years that the cost of isolation in the United States will increase as fewer acres are set aside for the feed grain program, if that indeed occurs. As this occurs we would expect that some of the other intangible elements in the production cost equation for U.S. seed corn might increase. In other words, one would expect that as isolation becomes more expensive, U.S. growers will determine that the cost of the "hassle" of growing seed corn might become higher in conjunction with the loss of set-aside.

The final summary of the foregoing is that our study suggests U.S. seed corn producers have several advantages over their Canadian competitors. Their

costs of production, both direct and indirect, are lower. Second, their contracts generally allow greater flexibility in the timing of pricing and, therefore, the opportunity to gain a relatively higher price. Third, U.S. growers have enjoyed in the past three years a level of support from government that is higher than the level in Ontario. However, the major advantage to seed growers from farm programs is that set-aside acres in the U.S. Farm Bill can provide a low cost method of providing isolation requirements to seed corn.

APPENDIX A

Ontario and U.S. Surveys

SEED CORN SURVEY (Ontario)

LAND AREA	SEED CORN 1987	SEED CORN 1988	COMMERCIAL CORN 1987	COMMERCIAL CORN 1988
Acres Planted	_____	_____	_____	_____
Acres Rented	_____	_____	_____	_____
Rental Price ($/acre)	_____	_____	_____	_____
Acres Lost or Rejected	_____	_____	_____	_____
Land Taxes (net of rebates) $/acre	_____	_____	_____	_____

PURCHASED INPUTS

Fertilizer Application Rates

When entering quantity, specify units as lbs., kg., or gal.

Applied Before Planting (spring & last fall)	ANALYSIS	SEED CORN 1987 QUANTITY	SEED CORN 1988 QUANTITY	COMMERCIAL CORN 1987 QUANTITY	COMMERCIAL CORN 1988 QUANTITY
Anhydrous Ammonia	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
U.A.N. (28%)	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Urea or Prills*	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Liquid Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer #1	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer #2	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Lime	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

* Prills refer to 34% Ammonium Nitrate

Fertilizer Application Rates (cont'd)		SEED CORN		COMMERCIAL CORN	
		1987	1988	1987	1988
	ANALYSIS	QUANTITY		QUANTITY	
Applied at Planting					
Liquid Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Applied After Planting					
Anhydrous Ammonia	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
U.A.N. (28%)	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Urea or Prills	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
OTHER NUTRIENT SOURCES					
	COMPOSITION				
Micronutrients	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Manure (Type)	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

PESTICIDE APPLICATIONS

TRADE NAME	NO. OF APPLICATIONS	1987	1988	1987	1988
		TOTAL PRODUCT PER ACRE			
Herbicides		(Specify Units Used)			
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#3_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#4_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

PESTICIDE APPLICATIONS (Cont'd)

TRADE NAME	NO. OF APPLICATIONS	SEED CORN 1987	SEED CORN 1988	COMMERCIAL CORN 1987	COMMERCIAL CORN 1988
		TOTAL PRODUCT PER ACRE (Specify Units Used)			
Insecticides					
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#3_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Fungicides					
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

TILLAGE OPERATIONS

Indicate the tillage operations performed by entering the number of trips for each operation used on your farm.

EQUIPMENT USED	SEED CORN 1987	SEED CORN 1988	COMMERCIAL CORN 1987	COMMERCIAL CORN 1988
Moldboard Plow	_____	_____	_____	_____
Chisel Plow	_____	_____	_____	_____
Soil-Saver	_____	_____	_____	_____
Disc	_____	_____	_____	_____
Cultivator	_____	_____	_____	_____
Row-Crop Cultivation	_____	_____	_____	_____
Other (specify)_____	_____	_____	_____	_____

PLANTING OPERATIONS	NO. OF PLANTING TRIPS			
Corn Planter	_____	_____	_____	_____

HARVEST OPERATIONS

Using the codes listed, indicate how the following operations were carried out on your farm.

Own Equipment	1
Custom Service	2

	SEED CORN		COMMERCIAL CORN	
	1987	1988	1987	1988
Picking	_____	_____	_____	_____
Combining	_____	_____	_____	_____
Drying	_____	_____	_____	_____
Trucking	_____	_____	_____	_____
Other (specify)_____	_____	_____	_____	_____

POST-HARVEST OPERATIONS

Stalk-Chopping (Yes or No)	_____	_____	_____	_____
Other (specify) _____ (do not include normal tillage operations)	_____	_____	_____	_____

ITEMS PARTICULAR TO SEED CORN PRODUCTION

MALE PLANT REMOVAL

Describe the male plant removal/harvest operation used on your farm.

_____

_____

Are you reimbursed for any part of this operation? Yes _____ No _____

If yes, how much? ($/acre) 1987 _____ 1988 _____

Is any part of the operation done at your expense? Yes _____ No _____

If yes, at what cost? ($/acre) 1987 _____ 1988 _____

WEED PROBLEMS

Have you experienced increased weed problems in your seed corn as compared to commercial corn?

Yes _____ No _____

If yes, what is your cost of controlling this increased weed problem in seed corn or subsequent crops? ($/acre) _____

SOIL COMPACTION

Do you experience more soil compaction in your seed corn fields that causes extra tillage?

Yes _____ No _____

If yes, what is the extra tillage? _____

SOIL RESIDUE

What is your estimate of the reduced residue available from seed corn compared to commercial corn? _____ % less

EQUIPMENT MODIFICATION/EXTRA EQUIPMENT/EXTRA REPAIRS

Due to the different planting patterns required for seed corn, planter modifications and/or additional planting equipment and repairs may be required. What is your cost for this modification/equipment/repairs? $/acre _____

ISOLATION REQUIREMENTS

On the scale provided, indicate how much effect the isolation requirements of seed corn have on the remainder of your farming operation.

1 2 3 4

No Effect _____ Large Effect

What additional cost for seed corn do you attach to this?

$/acre _____

INCREASED TRAVEL TO AND FROM THE FIELD (Not Field Travel)

It is recognized that additional trips are made to a field of seed corn, as compared to other crops, for inspection, detasseling, etc. On the scale provided indicate the importance of this to you on your farm.

1 2 3 4

Not Important _____ Very Important

What additional cost for seed corn do you attach to this? $/acre _____

YIELD CRITERIA

Is the determination of the norm fair? Yes _____ No _____

If no, how is it unfair?

_____

_____

Is the determination of the yield factor fair? Yes _____ No _____

If no, how is it unfair?

_____

_____

LOSS OF MANAGEMENT CONTROL

Such items as the selection of fields for seed corn production, size of acreage, acreage confirmation and timing of harvest may be out of the control of the farm manager. How important is this loss of control to you?

1 2 3 4

Not Important Very Important

What additional return do you require for this loss of control? $/acre _____

HIGHER OVERALL STRESS

Do you experience increased stress when growing seed corn as opposed to commercial corn?

Yes _____ No _____

If yes, what is the increased stress?

_____

What additional return do you require for this increased stress?

$/Acre _____

CONTRACT TERMS

Please indicate your opinion on each of the following contract terms and add any additional comments that are appropriate.

Do you agree with the present timing of payments? Yes _____ No _____

Comments/Suggestions_____

_____

CONTRACT TERMS (cont'd)

Do you agree with the present pricing method? Yes _____ No _____

Comments/Suggestions _____

_____

Do you think the present marketing system is adequate? Yes _____ No _____

Comments/Suggestions _____

_____

_____

What additional premium do you require for seed corn production compared to commercial corn? $/acre _____

OTHER COMMENTS (SEED CORN)

Please add any additional comments that you feel are pertinent to this survey.

_____

_____

_____

Thank you for completing this survey.
Please return it in the enclosed self-addressed envelope.

SEED CORN SURVEY (United States)

LAND AREA	SEED CORN 1987	SEED CORN 1988	COMMERCIAL CORN 1987	COMMERCIAL CORN 1988
Acres Planted	_____	_____	_____	_____
Acres Rented	_____	_____	_____	_____
Rental Price ($/acre)	_____	_____	_____	_____
Acres Lost or Rejected	_____	_____	_____	_____
Land Taxes ($/acre)	_____	_____	_____	_____

PURCHASED INPUTS

Fertilizer Application Rates

When entering quantity, specify units as lbs., kg., or gal.

Applied Before Planting (spring & last fall)	ANALYSIS	SEED CORN 1987 QUANTITY	SEED CORN 1988 QUANTITY	COMMERCIAL CORN 1987 QUANTITY	COMMERCIAL CORN 1988 QUANTITY
Anhydrous Ammonia	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
U.A.N. (28%)	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Urea or Prills*	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Liquid Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer #1	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer #2	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Lime	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

* Prills refer to 34% Ammonium Nitrate

Fertilizer Application Rates (cont'd)		SEED CORN		COMMERCIAL CORN	
		1987	1988	1987	1988
	ANALYSIS	QUANTITY		QUANTITY	
Applied at Planting					
Liquid Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Dry Fertilizer	_____ N-P-K	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Applied After Planting					
Anhydrous Ammonia	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
U.A.N. (28%)	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Urea or Prills	_____ N	_____ per acre	_____ per acre	_____ per acre	_____ per acre
OTHER NUTRIENT SOURCES					
	COMPOSITION				
Micronutrients	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Manure (Type)	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

PESTICIDE APPLICATIONS

TRADE NAME	NO. OF APPLICATIONS	1987	1988	1987	1988
		TOTAL PRODUCT PER ACRE			
Herbicides		(Specify Units Used)			
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#3_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#4_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

PESTICIDE APPLICATIONS (Cont'd)		SEED CORN		COMMERCIAL CORN	
		1987	1988	1987	1988
TRADE NAME	NO. OF APPLICATIONS	TOTAL PRODUCT PER ACRE (Specify Units Used)			
Insecticides					
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#3_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
Fungicides					
#1_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre
#2_____	_____	_____ per acre	_____ per acre	_____ per acre	_____ per acre

TILLAGE OPERATIONS

Indicate the tillage operations performed by entering the number of trips for each operation used on your farm.

EQUIPMENT USED	SEED CORN 1987	SEED CORN 1988	COMMERCIAL CORN 1987	COMMERCIAL CORN 1988
Moldboard Plow	_____	_____	_____	_____
Chisel Plow	_____	_____	_____	_____
Soil-Saver	_____	_____	_____	_____
Disc	_____	_____	_____	_____
Cultivator	_____	_____	_____	_____
Row-Crop Cultivation	_____	_____	_____	_____
Other (specify)_____	_____	_____	_____	_____

PLANTING OPERATIONS	NO. OF PLANTING TRIPS			
Corn Planter	_____	_____	_____	_____

HARVEST OPERATIONS

Using the codes listed, indicate how the following operations were carried out on your farm.

Own Equipment	1
Custom Service	2

	SEED CORN		COMMERCIAL CORN	
	1987	1988	1987	1988
Picking	_____	_____	_____	_____
Combining	_____	_____	_____	_____
Drying	_____	_____	_____	_____
Trucking	_____	_____	_____	_____
Other (specify)_____	_____	_____	_____	_____

POST-HARVEST OPERATIONS

Stalk-Chopping (Yes or No)	_____	_____	_____	_____
Other (specify) _____ (do not include normal tillage operations)	_____	_____	_____	_____

ITEMS PARTICULAR TO SEED CORN PRODUCTION

MALE PLANT REMOVAL

Describe the male plant removal/harvest operation used on your farm.

_____

_____

Are you reimbursed for any part of this operation? Yes _____ No _____

If yes, how much? ($/acre) 1987 _____ 1988 _____

Is any part of the operation done at your expense? Yes _____ No _____

If yes, at what cost? ($/acre) 1987 _____ 1988 _____

WEED PROBLEMS

Have you experienced increased weed problems in your seed corn as compared to commercial corn?

Yes _____ No _____

If yes, what is your cost of controlling this increased weed problem in seed corn or subsequent crops? ($/acre) _____.

SOIL COMPACTION

Do you experience more soil compaction in your seed corn fields that causes extra tillage?

Yes _____ No _____

If yes, what is the extra tillage? _____

SOIL RESIDUE

What is your estimate of the reduced residue available from seed corn compared to commercial corn? _____ % less

EQUIPMENT MODIFICATION/EXTRA EQUIPMENT/EXTRA REPAIRS

Due to the different planting patterns required for seed corn, planter modifications and/or additional planting equipment and repairs may be required. What is your cost for this modification/equipment/repairs? $/acre _____

ISOLATION REQUIREMENTS

On the scale provided, indicate how much effect the isolation requirements of seed corn have on the remainder of your farming operation.

1 2 3 4

No Effect _____ Large Effect

What additional cost for seed corn do you attach to this?

$/acre _____

INCREASED TRAVEL TO AND FROM THE FIELD (Not Field Travel)

It is recognized that additional trips are made to a field of seed corn, as compared to other crops, for inspection, detasseling, etc. On the scale provided indicate the importance of this to you on your farm.

1 2 3 4

Not Important _____ Very Important

What additional cost for seed corn do you attach to this? $/acre _____

YIELD CRITERIA

Is the determination of the hybrid yield fair? Yes _____ No _____

If no, how is it unfair?

_____

_____

Is the determination of the commercial corn base/plant base yield/commercial corn equivalent fair? Yes _____ No _____

If no, how is it unfair?

_____

_____

LOSS OF MANAGEMENT CONTROL

Such items as the selection of fields for seed corn production, size of acreage, acreage confirmation and timing of harvest may be out of the control of the farm manager. How important is this loss of control to you?

	1	2	3	4	
Not Important					Very Important

What additional return do you require for this loss of control? $/acre _____

HIGHER OVERALL STRESS

Do you experience increased stress when growing seed corn as opposed to commercial corn?

Yes _____ No _____

If yes, what is the increased stress?

_____

What additional return do you require for this increased stress?

$/Acre _____

CONTRACT TERMS

Please indicate your opinion on each of the following contract terms and add any additional comments that are appropriate.

Do you agree with the present timing of payments? Yes _____ No _____

Comments/Suggestions_____

_____

CONTRACT TERMS (cont'd)

Do you agree with the present pricing method? Yes _____ No _____

Comments/Suggestions _____

_____

Do you think the present marketing system is adequate? Yes _____ No _____

Comments/Suggestions _____

_____

_____

What additional premium do you require for seed corn production compared to commercial corn? $/acre _____

OTHER COMMENTS (SEED CORN)

Please add any additional comments that you feel are pertinent to this survey.

_____

_____

_____

Thank you for completing this survey.
Please return it in the enclosed self-addressed envelope.

APPENDIX B

Other Contract Considerations

Extra Planting Trips

In most planting situations it is necessary to stagger the planting of male and female seed in order to allow for proper pollination. This is generally accomplished by delaying the planting of the male corn and, in some cases, by delaying the planting of the female corn. A less common practice is to flame either the male or female corn seedling plants in order to delay their maturity. There are no references in the Ontario contract to any compensation received by the grower for these practices, however, individual companies make arrangements with their growers. These arrangements vary from the company doing all delayed planting to the grower being responsible for these operations. One company provides the planter for the grower to operate and others pay the grower $2 to 6$ per acre for delayed plantings. In one case the company charges the grower $3/acre when they do the planting. In four of the six U.S. contracts, definite payment terms are established (see Table 14). Two of the six contracts make no reference to these items.

Isolation Requirements

When pedigreed seed is to be produced, it is necessary to isolate this crop from all other crops of the same species. While the companies retain the right to set these requirements, they are largely based on federal regulations. Isolation may be provided by distance or by planting male corn rows. These distance or male corn rows regulations are similar in Canada and the U.S. For all bordering crops except sweet, pop or white corn the distance requirement is 660 feet or 40 rods.

Roguing and Detasseling

In all cases (Ontario and the U.S.) the company is responsible for the removal of all genetic off-types and detasseling. While not stated in all contracts growers are responsible for removal of volunteer corn and any other weeds or plants that will harm seed production.

Pesticide Application

Growers are responsible for all pre-plant, pre-emergence and early post-emergence weed and insect problems. This is common in both the U.S. and Ontario and is clearly stated in all contracts. In the Ontario contract there is no reference made to responsibility for such items as corn borer, flea beetle, leaf aphids or fungi. Again, individual agreements are made between the grower and company involved. These agreements generally favour a 50/50 split of all costs for control of the mentioned problems but vary from the grower being responsible for all operations and costs to the grower buying the chemicals and the company applying them. In the U.S. all but one of the six contracts makes specific reference to arrangements for these additional problems. Table 14 provides a summary of these. Again, they range from total company responsibility, to a 50/50 split, to the company providing the pesticides and the grower applying them.

Harvesting and Delivery

With the exception of isolated circumstances, the grower is responsible to cover the cost of harvest and delivery for his/her seed corn crop. It is common practice in Ontario for growers to use the services of a custom picker but less common in the U.S. Ontario and U.S. growers use custom services approximately 80 and 50 percent, respectively. Some companies own their own equipment and charge the farmer for their services as though they were custom operators. A similar situation exists for trucking and delivery.

Payment Acreage

In both Ontario and the U.S. the payment acreage is the total of the female and male acres. In Ontario, the producer has deducted from his/her payment the value of male corn harvested or the estimated value of male corn destroyed before

harvest. These latter considerations are not considered in the contract but individual companies deal with their growers independently. In the U.S., again there is no direct reference to male corn acres but the general opinion is that the company abandons all male corn to the grower and the total of male and female acres is used to determine final payment acreage.

Male Corn Harvest/Removal

In many cases in Ontario the male corn is cut out shortly after pollination because of the shorter growing season which leads to problems with maturity. In the U.S. this is also a relatively common practice, however, some growers do combine the male corn and use it for commercial purposes. In four of the six contracts in the states, the grower is given the male corn. The other two contracts call for the grower to harvest and deliver the male corn to the company for an agreed upon price or the grower may be given the male corn to harvest.

The results of the survey indicate that over 95 percent of the male corn is destroyed in Ontario. Only 3 of 88 growers indicated that they harvested the male corn for commercial use. In the three U.S. states, only 65 percent of the growers reported that the male corn was cut out before maturity. The remainder of the growers (35 percent) harvested the male corn for commercial use.

Two main reasons are cited for the difference. First, the maturity problem and second the increased use of male interplant in Ontario. Many companies and growers in the U.S. reported the use of a 4 and 1 planting patter, which improves the opportunity to harvest the male corn.

Additional Considerations In U.S. Contracts

As previously stated, the emphasis on contract comparisons was placed on the major items. This section contains a listing of the less important items found in all U.S. contracts. No frequency calculation of observations has been made.

Grower Responsibilities

- provide good seedbed
- assume risk of all chemical residues
- soil test every 2 or 3 years
- test soil PH and adjust
- protect corn from intruders
- grower may not use corn for seed purposes
- in some cases grower responsible for any liability claims from workers in seed corn fields
- no liens against seed corn, only assign rights to payments received

Company Responsibilities

- provide the seed corn
- do all rogueing and detasseling
- assume liability of any injuries sustained in seed corn fields
- to sample seed corn when delivered
- provide the grower access to the plant when seed corn being delivered
- provide seed for replant - i.e. seed corn, commercial corn, sorghuum or beans
- pay $11.15/acre for non-corn ground where seed corn is grown
- reimburse delivery costs after first 30 miles

Sampling Procedures

Contract

A - sample each load of corn delivered
B - no mention re: sampling procedure
C - no mention re: sampling procedure
D - sample 50 percent of corn received (minimum 3 samples per day)

E - sample every fourth wagon load

F - sample every 1,000 lb. lot (15/64 screen)

Company Rights

- cancel improperly isolated acreage
- cancel contract if seed not planted by May 20, May 21, May 25 (contract specific)
- execute weed control at grower's expense
- cancel contract by June 10 if crop unsuitable
- free access to seed corn fields at all times
- order destruction of rejected fields (pay grower $62/acre)
- allow grower to plant own crop on rejected acreage (if isolation maintained)
- reject acreage damaged by hail, ponding, etc.
- acreage rejected before June 15 - company pay seeding costs and provide hybrid seed corn
- acreage rejected after June 15 - company pay grower commercial corn yield X price for rejected acres
- take control of seed crop if grower defaults
- company decision on grading is final
- may abandon seed corn to grower for use as commercial corn
- fly seed field to assist pollination (50/50 split on costs)
- acreage rejected before May 31, no liability to company
- acreage rejected after May 31 and before October 15 - company harvest and pay as usual or abandon crop to grower for commercial corn use
- open date for seeding date limit
- no replanting without company permission
- cancel contract if isolation not met or abandon acreage to grower affected by improper isolation
- various methods of compensation for rejected acreage
- minimum 100 bu. yield equivalent of commercial corn
    - yield X (Dec. future less .30/bu.)
    - (comm corn base X .6) + contract yield
- destroy male corn or pay grower to do so

Other Considerations

- no liability either party due to acts of God
- no warranty by company re: -yield or compensation
  -detasseling damage
- no partnership or business arrangement implied by the contract
- no warranty re: seed germination by company
- grower must carry workmen's compensation, public liability or property damage insurance

APPENDIX C

Summary of Survey Comments

SUMMARY OF SURVEY COMMENTS - ONTARIO BY HEADING

Growers made the following comments on the surveys which were received. These comments are presented here in unedited form. No attempt has been made to establish a frequency for these comments and therefore, more than one grower may have made the comment. Thus all comments do not have equal weight.

YIELD CRITERIA

NORM

- don't know what corn will be planted or its past record
- first year production should be the norm
- there should be no norm to meet
- the companies should insure production instead of Crop Insurance
- valid only when at least 3 years used to establish the average
- gets harder and harder to achieve the norm as growers do a better job of production ie. 5 year average keeps going up
- not enough information on some varieties
- determine the norm from the average yields per hybrid per year
- weight the norm to the current year
- more than company personal should be involved in setting the norm for a new variety in its first year
- 120% ceiling no good- after this you just give the corn away
- ceiling is 10-15% too low
- under norm crop is penalized but a super crop is purchased at bargain prices
- lower the first year norm by 10-15%
- lift the ceiling on the norm completely
- norm is too high on some varieties and some varieties are poor germinators
- growers should have access to yield records to stop abuse by companies
- tricky issue because seed corn yields vary by at least 200%
- set the norm according to the grower's past record
- research trials and the first year yield often differ greatly
- by the time the 5 year average norm has been established, the variety is often discarded

ZONE FACTOR

- it is unfair to those who have fields which always produce better than average yields
- the average yield is obtained from observations on average farms but seed corn is usually grown on the best quality land
- each grower should have his/her own plot of commercial corn in order to obtain a rolling average for yield factor
- make the calculation using the company advertising brochures and yield data specific to the seed growing area

CONTRACT TERMS

TIMING

- have the final payment two months earlier
- payment by November 1
- use the 12 month average price and three payment times(Dec. 15; Apr. 1; Oct. 1)
- pay some up-front money in the spring to help with planting expenses
- make the November payment in October
- receive the delayed payment on January 2
- receive 75% at harvest and the balance on March 1
- first payment should be 15 days after delivery
- receive 1/3 at contract signing; 1/3 at pollination; 1/3 on November 30

PRESENT PRICING METHOD

- premium should be $1.30; $1.35; $1.50
- be able to sell anytime after harvest
- set the price anytime during the year
- should be able to elect and average the price for at least 9 months
- sell on the futures market as with commercial corn
- like the choice of pricing method
- is all right if norm can be met 90% of the time
- should take into account competitive crops other than commercial corn, such as vegetables
- set the price before the contract is signed
- present method uses the price of corn from the period of lowest prices (Nov.-Mar.)
- price between March and August or May and October
- use a value per acre
- if yield is only 80% of norm then can do better growing commercial corn
- provide the opportunity to forward contract at least 50% of the crop
- producer and company should settle the contract independently
- price the corn from contract signing to March 31
- expand the period to extend from April 15 to March 1
- should know how much an acre you will receive before planting
- receive more per bushel for bushels up to the norm and then less per bushel after that

MARKETING SYSTEM

- will depend on how well the board and companies collectively bargain
- free trade means industries must be competitive
- board and growers will have to know all costs and how they compare to the competition
- growers with high costs and/or low yields may not survive
- if the board tries to protect inefficient growers then the whole industry will suffer and be uncompetitive

- seed companies are trying to undermine the board eg. one company had a dinner for their growers and introduced the Company Resource Team
- board too prone to "bull" from processors-should take into account the finished product price; processor profits; money spent on promotion, equipment, offices, etc.
- why should the grower's price go down when the price of seed corn to the commercial corn grower goes up?
- marketing board should study the companies' profits more and less those of the growers

HIGHER OVERALL STRESS

Growers were asked to indicate if they experienced higher stress growing seed corn as compared to commercial corn and if so to indicate what this increased stress was. The following is a summary of the reported causes of this increased stress.

- the corn looks bad, has more weeds and you don't really know how well the crop has done until it is processed
- the timing of interplant
- harvesting when wet, isolation required, poor canopy, extra weeds and interplanting problems
- a bit more stress but not as much as growing tomatoes
- worry about air pollution and insects
- poor detasseling by some work crews
- worries at pollination time
- weather problems
- poor seedling vigour for wet, cool springs
- attitude of the company management
- don't get acreage allotment soon enough - if no seed corn to plant it is often too late to buy seed for other crops
- concern about damage to tile drains
- having to plant when the company says plant, regardless of other crops such as tomatoes or beans
- less canopy means more moisture loss from the field
- just want to look the other way at detasseling time

OTHER COMMENTS

The following is a summary of the comments made by growers in the additional comments section of the survey.

- companies raise prices 10-15% every year, increase their wages paid, send the sales staff to Hawaii and build multi-million dollar facilities - it's about time they realized where their bread and butter comes from - this year I will get $600/acre but the company will sell 50+ units of corn at $5,000+/acre(markup is $4,400/acre)
- are growing a premium crop and should therefore be paid a premium price
- company uses the grower to experiment on varieties because crop insurance will pay the losses
- the most attractive item is good crop insurance coverage

- crop insurance should be based on each field, not the average of all
- isolation, loss of soil residue, fewer chemicals for weed control and weed control are major concerns
- companies should work harder to get chemicals available in the U.S. licensed here
- mechanical detasseling reduces yield more than hand methods
- detasseling operators tramp down female corn
- seed corn requires extra management, spray and fertility and dry land thus increasing the cost of production
- if production costs are much lower in the U.S., what are companies doing in Ontario? -grow the seed in the U.S.!
- if a fair price is not paid then the companies should move out
- many farmers believe that the companies should move to the U.S., they have had enough
- seed corn land will yield 20-30 bu./acre more than the average used for commercial corn
- isolation is more of a problem because of the increase in the amount of sweet and commercial corn grown
- companies should cut their overhead, not the farmers
- no incentive for seed corn over the past two years
- companies are making record profits by raising the price of seed corn to commercial growers
- seed corn yield is very unstable from year to year exposing the grower to a lot of risk
- Ontario yields are more stable than U.S. yields and therefore the Ontario farmer should be paid more
- survey does not include items such as wicking weeds, hoeing, etc.
- the company is more concerned about their cost than the farmer-they will pick in the mud just to fill their dryer
- an agreement is needed re: harvest in adverse conditions
- poor equipment and poor operators result in poor male planting and tramped female corn
- company production people have poor attitudes
- why does the premium decrease when the price of commercial corn seed increases?
- one seldom grows the same variety 2 or 3 years in a row
- seed fields where the male is planted first have a higher risk
- revenue is lost because male corn is seldom harvested but the expected yield is deducted from the payment received
- wheat and soybeans have lower input costs and less stress
- seed corn can't be compared to commercial corn because it is a specialty crop
- seed corn is a good specialty crop for the area, lets pay for the extra work and stress and keep the crop viable
- seed corn growers are special growers with special land who can do a job with the land to ensure that it will produce in the future
- other costs are involved such as: toilet rental, 50/50 split of insecticides(particularly flying them on) and garbage removal after detasselers leave
- don't negotiate the contract every year as the constant chipping away at the contract by the companies has upset the growers and is leading to bad feelings between the two

- custom operators must clean weed seeds from machines before moving to another farm(essential)
- below norm yields are common leading to a lower seed price but the price to commercial corn growers is the highest in history
- in 1987 actual inputs for seed corn = $104/acre and commercial corn inputs were $73/acre
- grower should have the opportunity to select hybrids that do the best on his/her farm
- fed up with the companies putting the screws to the farmers -sales rep gets more selling a bag of seed corn than the farmer gets for the seed that is in it
- should be given the option of making extra planting trips
- price of commercial corn down on the market and thus seed corn price down but the commercial corn grower never realized a price saving
- seed corn companies should steer away from scare tactics when talking about future acreage
- because of the higher population, the same fertility is required as for commercial corn
- 50 acres of seed corn requires control of a 150 acre farm
- the unhappy people are probably those who don't qualify as seed growers
- company norms are set differently, some company growers achieve only 80% of norm while others achieve 120% of norm consistently
- an analysis of marketing board data re: norms, yield, etc. should be done to compare companies with each other

SUMMARY OF SURVEY COMMENTS - UNITED STATES BY HEADING

Growers made the following comments on the surveys which were received. These comments are presented here in unedited form. No attempt has been made to establish a frequency for these comments and therefore, more than one grower may have made the comment. Thus all comments do not have equal weight.

YIELD CRITERIA

NORM/HYBRID YIELD

- pollination timing has a major effect on yield
- used to be paid my yield - now use area average against commercial corn
- should be the plant average, not the area average
- hybrid yield is always too high -grower can't make base and if he does then the company raises it
- don't like yield tied into neighbours average
- multiplier not high enough
- not fair because contract acreage used instead of field acreage

YIELD FACTOR/COMMERCIAL CORN BASE

- locations used for commercial corn yields are too far apart
- should be the average of three samples in the area
- growers with better management and better yields get shorted

CONTRACT TERMS

TIMING

- sell at the same time as commercial corn
- receive payment when the crop is sold
- contracts should be signed earlier to aid crop planning
- would like payments available after December 15
- receive money earlier
- can't price corn until Dec. 1 of the crop year
- sell and collect anytime after harvest
- desire payments with better cash flow
- pay when the grower sells, not when the company sells
- ability to price the crop during the growing season would be nice
- marketing year is too short

PRESENT PRICING METHOD

- chance to sell all of the crop at one time is desirable
- should be able to sell anytime through the year
- need a longer selling time(now Dec. 1-June 30)
- should be able to sell on the futures market
- would like ability to sell later in the summer months
- the company needs to honour the local elevator bids, despite their ability to exercise hedging options in the following trading session
- currently no choice is given on the premium

- base price should be taken from the CBOT instead of the local price
- there is no floor price, it should be $0.30 over the local price
- prices are set without any input from the grower

MARKETING SYSTEM

- one grower commented that there should be a producer's association

HIGHER OVERALL STRESS

Growers were asked to indicate if they experienced higher stress growing seed corn as compared to commercial corn and if so to indicate what this increased stress was. The following is a summary of the reported causes of this increased stress.

- no control over detasseling or harvest time
- worry re: male or female delays
- pollination problems(dry times and heat stress are real problems)
- contracts are signed too late and last minute changes are made
- worry of replanting with commercial corn on June 10
- watching things get screwed up that should be avoided
- working fields under adverse conditions
- harvesting the seed corn too soon
- can't combine beans if seed is going out
- weed control and germination problems
- limited chemical list
- poor seedling vigour

OTHER COMMENTS

The following is a summary of the comments made by growers in the additional comments section of the survey.

- one should diversify, rather than growing all seed corn
- green suckers are a real problem during picking operations
- it is possible to make $110-125/acre more growing seed corn than commercial corn with a little more effort
- planting and weed control operations are inefficient
- seed corn gives very little competition to weeds
- seed production is challenging but the returns are not good enough
- benefits of seed corn production are a $11.15 bonus per acre for growing it on bean ground, no seed costs or drying charges
- yields are indexed by how well you grow seed corn
- the company grosses $7,440-9,925/acre but the grower only $435-495/acre, while the grower has $2.00 invested for every $1.00 that the company has invested -it is hard to work with a greedy capitalist company
- versatility is an advantage, since no storage or drying capacity are required
- seed corn grossed $600/acre in 1988 and commercial corn $508/acre

- seed corn company doesn't pay for extra labour, soil compaction, chemicals, etc. -therefore need a growers association
- costs are greater than we think because of increased weed problems and extra soil compaction
- Ontario is not suited to seed corn production because of the shorter growing season(frost risk)
- organic matter is decreasing because of lower residue from seed corn
- seed corn production requires 15-20% higher returns to pay for extra time, pesticides, equipment, and detasseling
- the company does all the work except to prepare the ground and plant, therefore, there is no extra stress
- if set-aside acreage is decreased then the company will have to pay more for the isolation required
- muddy conditions at split planting times are a problem
- planting date has a large effect on yield
- hybrids are extremely variable in production
- weed seeds should be cleaned from pickers before they are moved to the next farm
- poor mechanical detasseling operations have resulted in yield reductions of 50%
- the increased weed problems are very serious
- company should share the picking and herbicide costs
- shrink should be calculated to 15% moisture
- fertilizer requirements should be reduced
- the company should pay for trucking costs
- picking is a real problem
- weather has a large effect at pollination time
- yield calculation method used by the company is inadequate
- company personal are arrogant and difficulties are poorly compensated
- very happy with company relations and methods used

APPENDIX D

Comparison of Commercial Corn Production Costs

COST OF PRODUCING COMMERCIAL CORN, U.S. vs. ONTARIO, 1983-87

It is difficult to compare the cost of producing commercial corn between Ontario and upper-mid-west U.S. due to environmental differences that result in different yields. Higher producing farms in both regions will use more inputs, resulting in higher production costs on a per acre basis, but higher yields result in lower costs of production on a per bushel basis. Differences in how the costs are figured also make direct comparisons difficult. For example, land costs can be a reflection of rental costs, ownership costs, or a returns to land, depending on the state collecting the data. Keeping these difficulties in mind, some comparisons can be made.

The cost of producing commercial corn in Ontario based on OMAF figures and ranges of production costs for Illinois, Indiana, and Iowa based on USDA extension publications for those states are listed in Table D.1 for the years 1983-87. The cost of production in Ontario is generally within the range of costs for the U.S. region. Land costs are higher in the U.S., but total costs per acre and cost per bushel in the U.S. range around the Ontario figures. Yields are generally higher in the U.S., but yields in Kent County, Ontario, range from 114 to 135 bushels for 1983-87, which is comparable to Indiana and Iowa yields. One should keep in mind that these costs are estimated averages, so there will be producers with both higher and lower costs in all the regions.

Table D.1. Cost of Producing Commercial Corn, U.S. and Ontario, 1982-87

	Ontario	U.S.
1987		
Land Costs	$71.00	$ 94 - 129
Total Costs	340.00	368 - 436
Cost/bu.	3.47	3.02 - 3.47
Yield	98 bu.	107 - 145 bu.
1986		
Land Costs	$77.00	125 - 140
Total Costs	357	432 - 486
Cost/bu.	3.68	3.71 - 3.93
Yield (bu./ac.)	97	110 - 149
1985		
Land Costs	$75.00	136 - 157
Total Costs	368.00	451 - 486
Cost/bu.	3.75	3.55 - 4.08
Yield (bu./ac.)	97	110 - 153
1984		
Land Costs	77.00	134 - 153
Total Costs	378.43	370 - 502
Cost/bu.	3.86	3.50 - 4.12
Yield (bu./ac.)	97	115 - 145
1983		
Land Costs	77.00	132 - 150
Total Costs	367.00	365 - 495
Cost/bu.	3.82	3.65 - 4.20
Yield (bu./ac.)	96	110 - 145

APPENDIX E

Crop Insurance Comparison

CROP INSURANCE

Crop insurance is available to seed corn growers in the United States and Ontario. The following summaries highlight the most important aspects of this program in the two regions.

Ontario

In Ontario all seed corn growers have crop insurance. The crop insurance program calls for the federal government to pay half the premium and the company and grower share the second half of the premium, 50/50. Premiums for seed corn crop insurance are based on three main items: the number of years a variety has been grown, the variety norm, and the experience of the processor. Premiums vary in a wide range, $\pm$ $1.00/acre, but averaged approximately $4.70/acre in 1988. In order to standardize cost comparison in Ontario and the U.S. the cost of crop insurance for commercial corn was used as it is not significantly different from that for seed corn. The maximum coverage available is 80 percent of the norm for any variety. For example, if the variety norm is 40 bu./acre, the producer will be guaranteed .8 x 40 = 32 bu./acre yield, with final payment based on the yield times the appropriate price.

Problems with crop insurance in Ontario are centered on two main items: the setting of the variety norm and the fact that a grower's seed corn fields are all averaged to determine the final yield. This latter point means that a grower can lose an entire field of production but receive no insurance if other field coverage brings the total yield up to or beyond the 80 percent average level. Presently, much discussion is evolving around these issues but no solutions have been forthcoming.

United States

Crop insurance is not universal in the U.S. Some companies offer a guaranteed return per acre and others offer crop insurance. Growers also have the option of purchasing their own insurance programs. There are three levels of coverage that the producers can choose to purchase: 50, 65 or 75 percent of the expected yield. The expected yield is based on the county average where the corn is grown. The 50 percent and 65 percent coverages are partially subsidized by the U.S. government. The 75 percent coverage is paid in full by the producer. There are also three price levels that can be elected. In 1988 the price levels were $1.55, $1.85 and $2.50 per bushel.

Crop insurance premiums in the U.S. depend on the percent coverage and price levels elected by the producer, and the expected yield in their county. As an example, a producer in a county with a 100 bushel per acre average who elected 65 percent coverage at $2.50 per bushel would have paid $4.35 per acre in 1988. Due to the wide range of premiums for seed corn the average for commercial corn was used for budget purposes, consistent with the Ontario method.

Problems with crop insurance for seed corn in the U.S. are centered on what the correct expected yield and price for a specialty crop like seed corn are. Seed corn yields are usually less than the county commercial corn average, but prices received are higher. No insights have been gained from the U.S. on how to address this problem.

APPENDIX F

Statistical Tests

Statistical Tests of Differences Between Illinois, Indiana, Iowa and Ontario

Method

A t-test for independent samples with different variances and a different number of observations was used to test if the variables from the survey, e.g., acres of seed corn grown, amount of anhydrous nitrogen used, etc., were significantly different between Illinois, Indiana, Iowa, and Ontario. The test statistic was:

$$t' = (X_1 - X_2)/[Var_1/n_1 + Var_2/n_2]^{1}/2,$$

where X is the mean of the variable, Var is the variance, n is the number of observations, and the subscript 1,2 refers to the variable. The test statistic was compared to a parameter adjusted for the number of observations:

$$t = t_1(Var_1/n_1) + t_2(Var_2/n_2).$$

If $t' < t$, then the means are not significantly different, and any difference that does occur is due to errors in measurement or other random events. If $t' > t$, the differences are significant. All tests were done with a 95% level of confidence; i.e., we are 95% confident that the statistical tests are giving us the correct answers.

RESULTS

Differences between Illinois, Indiana, and Iowa were tested to see if the three states should be analyzed separately, or if they could be grouped together for further analysis. Results of the t-tests showed that the responses from the three states were not significantly different. Therefore, the three states were grouped together for comparisons with Ontario. Results of the t-tests for selected variables are reported in Table F.1.

Responses from Ontario were compared to the three states grouped together (U.S.). The differences between Ontario and the U.S. were significant for most variables. Selected t-test results on the differences between Ontario and the US are reported in Table F.2.

TABLE F.1.T-tests Results on the Differences Between Selected Variables in Illinois, Indiana, and Iowa.

Locations	Variables	t'	t
Illinois & Indiana	Seed Acres '87	0.66	2.09
Illinois & Indiana	Seed Acres '88	0.71	2.09
Illinois & Indiana	Premium	0.76	2.13
Illinois & Iowa	Seed Acres '87	0.66	2.05
Illinois & Iowa	Seed Acres '88	0.71	2.13
Illinois & Iowa	Premium	0.65	2.13
Indiana & Iowa	Anhy N on Seed	0.64	2.11
Indiana & Illinois	Anhy N on Seed	1.23	2.13

TABLE F.2.T-Tests Results on the Differences Between Selected Variables, Ontario and the U.S.

Variable	t'	Probability (that t' > t)
Seed acres '87	4.55	0.000
Seed acres '88	5.25	0.000
Comm acres '87	3.34	0.001
Comm acres '88	3.71	0.002
Anhy N, seed '87	8.30	0.000
Anhy N, seed '88	9.05	0.000
Anhy N, comm '87	6.39	0.000
Anhy N, comm '88	6.53	0.000
Other N, seed '87	5.89	0.000
Other N, seed '88	7.12	0.000
Seed P, '87	1.48	0.140
Seed K, '87	0.29	0.772
Seed P, '88	0.99	0.322
Seed K, '88	0.39	0.699
Mold plow '87	7.62	0.000
Mold plow '88	7.67	0.000
Chisel plow '87	0.89	0.375
Chisel plow '88	1.14	0.254
Soil saver '87	1.86	0.066
Soil saver '88	1.60	0.112
Disc '87	1.04	0.302
Disc '88	0.94	0.350
Cultivate '87	4.69	0.000
Cultivate '88	1.42	0.159
Other tillage '87	0.96	0.338
Other tillage '88	0.70	0.486
Trucking '87	1.00	0.320
Trucking '88	1.48	0.141
Soil residue	1.73	0.085
Isolation effect	1.80	0.074
Increased travel	2.64	0.009
Man. control	6.75	0.000
Land rent '87	2.49	0.017
Land rent '88	3.07	0.004
Equipment cost	0.85	0.400

TABLE F.2.T-Tests Results on the Differences Between Selected Variables, Ontario and the U.S.

Variable	t'	Probability (that t' > t)
Isolation cost	3.28	0.001
Increased travel cost	3.06	0.003
Loss Man. control	5.01	0.000
Higher stress cost	1.74	0.087
Premium required	9.64	0.000