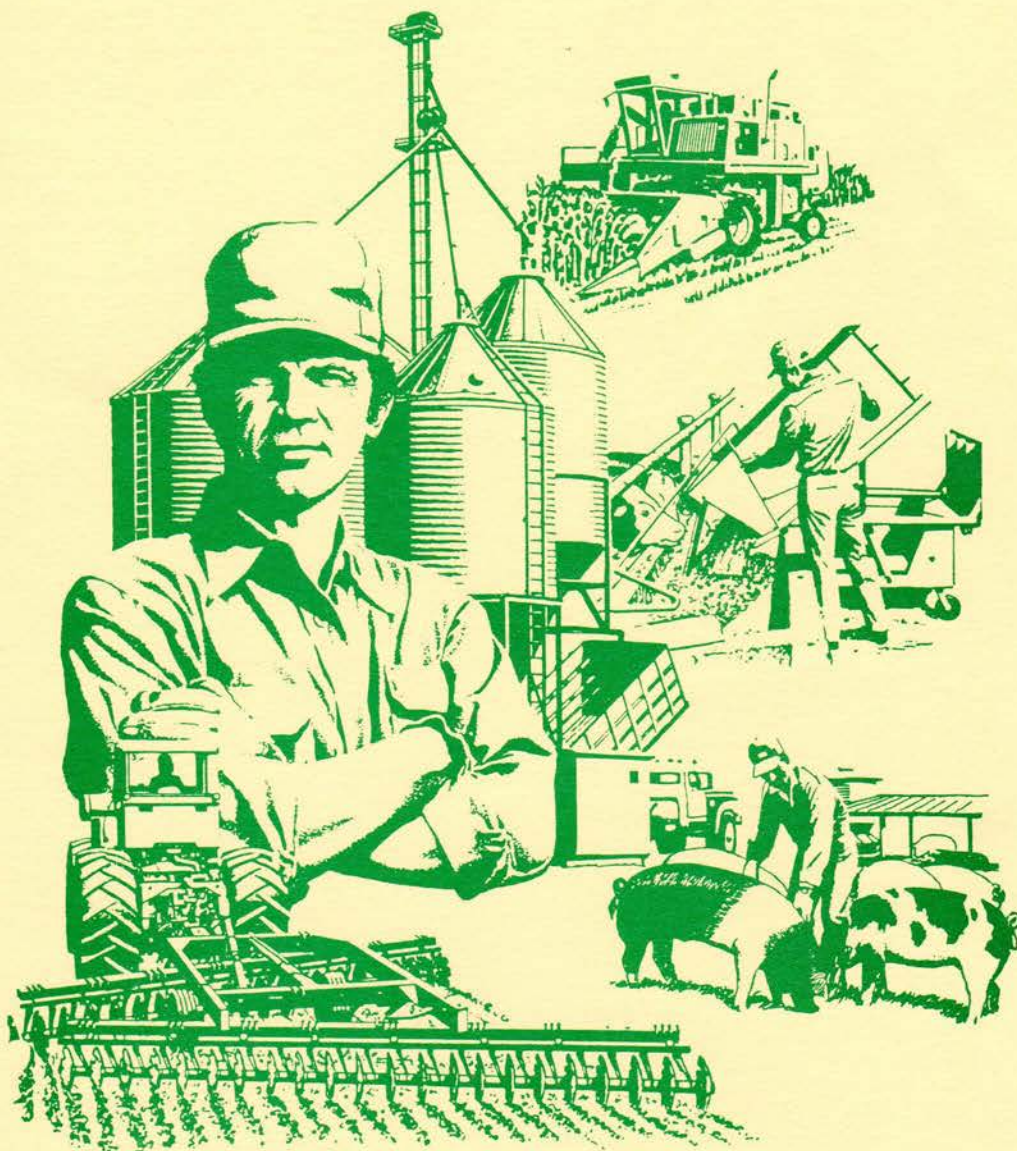


**23<sup>RD</sup> ANNUAL**

**NORTH EASTERN ONTARIO**

**AGRICULTURAL CONFERENCE**

**FEB 27th & 28th, 1989**



**NEW LISKEARD COLLEGE OF  
AGRICULTURAL TECHNOLOGY**

# 1989 CONFERENCE PROCEEDINGS

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## WELCOME TO THE CONFERENCE

David Beattie, Director  
New Liskeard College of Agricultural Technology

The New Liskeard College of Agricultural Technology and the North Eastern Ontario Soil and Crop Improvement Association are pleased to host the 23rd Annual North Eastern Ontario Agricultural Conference and Trade Show.

The planning committee for the conference was expanded this year to include representatives from all farmer organizations and commodity groups as well as the North Eastern Ontario Soil and Crop Improvement Association and Ontario Ministry of Agriculture and Food personnel.

The committee has put together a conference program that consists of high quality speakers representing timely, informative topics of benefit to a wide range of farmers and agricultural industry personnel.

The conference program has been compressed into a two day time frame by the inclusion of an evening session on Monday. The banquet on Tuesday evening will be the final session. We hope that those travelling from a distance will find this new format more convenient.

The Trade Show will feature commercial displays of agricultural products as in previous years with several exhibitors offering hands-on sessions on Monday afternoon.

The NEOSCIA Championship Forage Show will open on Tuesday, exhibiting high quality forages and seed samples as in previous years.

Welcome to the New Liskeard College of Agricultural Technology and the 23rd North Eastern Agricultural Conference. I am sure your participation will be both profitable and enjoyable.

23rd ANNUAL  
NORTH EASTERN ONTARIO AGRICULTURAL CONFERENCE  
AND TRADE SHOW

MONDAY, FEBRUARY 27

1:00 PM                      CONFERENCE REGISTRATION OPENS - Front Entrance,  
Education Building

1:00 PM - 8:45 PM        TRADE SHOW OPEN

N.E.O.S.C.I.A. CHAMPIONSHIP FORAGE AND SEED SHOW  
- PLACE YOUR EXHIBITS BY 5 PM, Room 550

CONCURRENT SESSIONS

ENGINEERING

Lecture Theatre

CHAIRMAN: Steve Mailloux,  
Sudbury District

2:00 - 2:30 PM

Barn Ventilation

Ben Hawkins, Head, Engineering  
Section, NLCAT

2:30 - 3:00 PM

Water Quality and Agriculture  
Dr. R. Frank, Director,  
Agricultural Laboratory Services  
Branch, OMAF

3:00 - 3:30 PM

The Wabi River Study and its  
Effects on Local Agriculture  
Wayne Marshall, Ministry of  
the Environment

HORTICULTURAL CROPS

Room C & D

CHAIRMAN: Dave Hackett,  
Cochrane North

2:00 - 2:30 PM

Strawberry Production in Northern  
Ontario  
Bob Wolfe, Wolfe Farm,  
New Liskeard

2:30 - 3:00 PM

Estimated Returns on  
Vegetable Crops  
Alan Fisher, Financial  
Analyst

3:00 - 3:30 PM

Panel - Farmers' Market  
Progress in 1988  
Gord Edwards, President  
Riverside Farmers' Market  
(New Liskeard)  
Jean-Denis Methot,  
Agricultural Representative,  
Cochrane Districts  
Gord Mitchell, Agricultural  
Representative, Muskoka-  
Parry Sound

3:30 - 4:00 PM

REFRESHMENTS & TRADE SHOW

4:00 - 6:00 PM    HANDS ON SESSIONS AND DEMONSTRATIONS - Bacterial inoculation  
of hay; semi-permanent electric fencing; quota break-even  
spreadsheet; welding equipment.



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JOINT SESSION - FARM BUSINESS MANAGEMENT

Lecture Theatre

CHAIRMAN: Terry Phillips

President, N.E.O.S.C.I.A.

- 7:30 - 7:45 PM Canada's Outstanding Young Farmers Program  
Janet Parsons and Owen Legge, Canadian Outstanding Young Farmers
- 7:45 - 8:15 PM What Should you Expect from a Farm Business Accountant  
Dave Hope, Head, Farm Business Management Section, NLCAT
- 8:15 - 9:15 PM Estate Planning - The Management of Wealth  
Bill Broadworth, Farm Business Advisor, Central Region, OMAF
- 

TUESDAY, FEBRUARY 28

- 8:00 AM ANNUAL MEETING OF THE NORTH EASTERN ONTARIO SOIL AND CROP  
IMPROVEMENT ASSOCIATION - Lecture Theatre
- 8:30 AM REFRESHMENTS
- 8:30 - 5:00 PM TRADE SHOW OPEN
- 8:30 - 5:00 PM N.E.O.S.C.I.A. CHAMPIONSHIP FORAGE AND SEED SHOW  
Room 550
- 

JOINT SESSION - AGRICULTURAL TRADE UPDATE

Lecture Theatre

CHAIRMAN: David Beattie

Director, NLCAT

- 10:00 - 10:45 AM What's in Store for Ontario Agriculture  
Dr. Larry Martin, Chairman, Department of Agricultural Economics  
and Business, University of Guelph
- 10:45 - 12:00 NOON Panel - The Impact of Trade Regulations on the Beef and  
Dairy Industries  
Dr. Larry Martin, Chairman, Department of Agricultural  
Economics and Business, University of Guelph  
John Core, Vice-Chairman, Ontario Milk Marketing Board  
Morley Shepherdson, President, Canadian Cattlemen's Association
- 

- 12:00 - 1:30 PM LUNCH - COLLEGE RESIDENCE CAFETERIA
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### CONCURRENT SESSIONS

**CROP PRODUCTION**

Classroom C &amp; D

CHAIRMAN: Reg Lentir  
Manitoulin District

1:30 - 1:50 PM

Gross Margin Comparison of  
Northern Crops

David Beattie, Director, NLCAT

1:50 - 2:10 PM

Do you Need Limestone?

John Rowsell, Agronomy Section,  
Section, NLCAT

2:10 - 2:45 PM

What's the Key to a Good Canola  
Crop?Bob Forrest, Agronomy Section,  
CCAT**ANIMAL PRODUCTION**

Lecture Theatre

CHAIRMAN: Les Hillstrom,  
Algoma District

1:30 - 2:15 PM

The Effects of Vitamins  
on Conception and Parturition  
Dr. John Hilton, Technical  
Manager, Hoffmann-La Roche Ltd.

2:15 - 2:45 PM

Alternate Protein Sources  
Paul Gumprich, Livestock NLCAT

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 2:45 - 3:30 PM

REFRESHMENTS and TRADE SHOW

3:30 - 4:00 PM

District Soil and Crop Improvement  
Association Project Reports -  
Leafcutter Bees, Owen Legge  
Sweet White Lupins, Graham Gambles  
No Till, Graham Gambles

3:30 - 4:15 PM

Antibiotic Tolerances and  
Residues  
Dr. Arnost Villim, Drug  
Evaluator, Human Division  
Bureau, of Veterinary Drugs,  
Agriculture Canada

4:00 - 4:45 PM

Field Crop Update for 1989  
Alex Skepasts, Head, Agronomy Section,  
NLCAT  
Laurier Guillemette and  
Carole Lafreniere, Agriculture  
Canada, Kapuskasing

4:15 - 4:45 PM

Highlights of the Innovations  
Conference  
Jean Denis Methot,  
Agricultural Representative,  
Cochrane Districts  
Bob Chorney, Marketing  
Specialist, Northern Ontario,  
OMAF

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### BANQUET (Riverside Place, New Liskeard)

6:30 PM.

**THE GREENHOUSE EFFECT**GUEST SPEAKER: David Phillips, Superintendent, Climate  
Development Section, Canadian Climate  
Centre, Environment Canada

AWARDS PRESENTATIONS - Reg Lentir, Chairman, Forage and Seed Show



BARN VENTILATION

by Ben Hawkins

Ventilation problems in barns are usually identified by farmers when temperature, moisture, or odour control becomes a problem. Therefore a properly functioning ventilation system should control these three properties in order to provide a healthy and comfortable environment for the animals as well as the farmer.

Animals produce both moisture and heat. In a confined area the moisture and heat have to be removed in order to prevent a build up of either. If moisture were allowed to build up the air would soon become saturated with water and begin condensing on components of the building. If heat were allowed to build up the temperature in the building would increase to a point at which the animals could not live.

In order to prevent the build up of moisture or heat outside air has to be introduced into the barn. The incoming air can remove the heat if the temperature of the outside air is less than the inside air. Moisture removal is slightly more complicated.

During warmer weather the ventilation rate required to regulate the temperature of the barn is higher than that required to remove the moisture produced by the animals. When the outside temperature drops the ventilation rate needed to cool the barn is reduced. As the temperature continues to drop the ventilation rate has to be reduced and eventually the rate necessary to control the temperature will be lower than that necessary to control the moisture levels. When the outside temperature reaches this point the ventilation rate necessary to control the moisture has to be maintained and unless additional heat is added to the barn the temperature inside the barn will begin to drop.

The critical temperature where the ventilation rates for heat removal and moisture removal are the same can be reduced. This temperature is dependant on three variables which the individual farmer can control. These are:

- 1) Inside temperature of the barn
- 2) Construction and insulation of the barn
- 3) Density or number of animals in the barn

Of these three variables the one that has the most influence on the critical temperature is the construction and insulation of the barn.

Proper inlet construction and placement is critical. Air entering from locations other than the ventilation inlets can destroy the proper functioning of a ventilation system. The insulation if not adequate can result in massive heat losses from the building and render the ventilation system useless.

Understanding the principles of how ventilation systems are designed and the variables which effect the systems performance is an important step in trouble shooting existing ventilation systems and determining requirements for new construction.



## WATER QUALITY IN AGRICULTURE

Dr. Richard Frank  
Agricultural Laboratory Services Branch  
OMAF, Guelph

### INTRODUCTION

Both the air we breath,, and the water we use are returned to the environment for others to use and reuse. Hence both are on loan, the "Water is in Trust". Every farmer would like to return that water back to the environment in as good or better condition than it was received. Sadly none of us do this and urbanites are less mindful of this than farmers.

Rain falling on the land recycles to the atmosphere either directly by evaporation or following lateral movement across soil surfaces or vertical movement into the soil on return to surface waters. Studies have revealed that in the Great Lakes Basin 66% of the precipitation returns to the atmosphere as evaporation from the soil or evapo-transpiration from crops and vegetation. Much of this water is drawn from the soil water by crop roots and evaporates from leaf surfaces. One quarter of the rainfall flows over the soil surface into ditches and streams to become surface water. The remaining 9% recharges the ground water and recycles to the atmosphere very slowly via surface water. In the winter and spring months the water table rises close to the soil surface, then drains away into ditches and streams to decline below the tile drains during the summer months. Both surface and tile drainage waters flow via streams and rivers to the Great Lakes. Waters moving over the land surface may take hours to days for the trip to the lakes. On the other hand ground waters may take weeks to years to accomplish the same distance.

### Farm Activities

Superimposed on this hydrologic system are farm activities that change the nature of the soil surface and the plant canopy over the land. These in turn affects the pathways and amounts of water running off the surface or percolating into the soil. A farmer who increases ground water recharge decreases the amount of surface runoff waters. This is accomplished by (i) growing cover crops, (ii) applying livestock manures, (iii) leaving trash cover and a rough soil surface, and (iv) practising strip or contour farming on sloping land.

A farmer who decreases ground water recharge, increases the amount of surface runoff waters. This occurs with (i) the exploitation of soil fertility, (ii) the creation of bare, and smooth surfaces over which water can flow, (iii) the reduction of soil organic matter (iv) the increase in soil compaction, and (iv) the cultivation of soils up and down the slope.

In well managed soils, surface runoff can be virtually eliminated. On the other hand with poor management, percolation can be virtually eliminated. A well structured stable soil indicates good management while a mobile structureless soil indicates poor management.



## AGRICULTURAL FERTILIZERS

Fertilizers are added to soils in many ways. Some application practices result in high losses to the environment; other practices are conservative for the crops. Fertilizers in excess of crop requirements either leach down the soil profile to reach ground water as for example with excess nitrogen or are carried off the field into ditches as for example with nitrogen and phosphorus. Neither nitrogen nor phosphorus are destroyed, they must go somewhere. Nitrogen can be present in soil as  $\text{NH}_3$  or  $\text{NO}_3$  but eventually returns to the atmosphere as  $\text{N}_2$  gas. Before this happens nitrates may contaminate ground water, surface waters or both. Phosphorus tends to be fixed in the soil. However it can be moved to stream and lake water in its soluble forms or in insoluble forms attached to soil particles being eroded from soil.

## PESTICIDES

The types of pesticide most widely used on the general farm are insecticides for corn root worms, fungicides for seed treatment and herbicides for weed control in row crops. The method of application of pesticides can vary.

Hence:

1. Butylate, EPTC and metolachlor are incorporated into the upper layers of the soil. Atrazine, cyanazine, metribuzin are applied on the soil surface. Fonofos, and terbufos are applied below the planted seed.
2. Captan, diazinon, lindane are applied to the seed.
3. Atrazine, 2,4-D, glyphosate, MCPA are applied to the standing crop or the growing weed.

Pesticides can break down within days of application or persist from one season to the next. The persistence has a large and important bearing on contamination of both surface and ground water. Those that persist are difficult to keep out of water. On the other hand the short lived pesticides rarely appear in water. Examples appear in Table 1.

Table 1. Persistence of common pesticides.

Short Lived	Intermediate	Long Lived
captan	cyanazine	atrazine
carbaryl	lindane	endosulfan
chloramben	linuron	metolachlor
2,4-D	metobromuron	simazine
EPTC	metribuzin	terbicil
glyphosate	terbufos	
MCPA	trifluralin	

## SURFACE WATER CONTAMINATION

Pesticides showing up in water can come from spills and human error. Such accidents can result in very high concentrations in water that can be a health hazard. Presence in surface waters can be the result of heavy rainfall immediately following field applications where surface runoff waters carry the pesticide to ditches and streams. In addition infiltrating rain percolating down the soil profile, can carry pesticides to the tile drain and thus to streams. Losses in runoff and leaching heavy rainfall close to the time of application can give high residues in both runoff waters and tile drainage waters. These residues usually decline as the rainfall occurs at increasing intervals after applications. In a field under study in 1987 metolachlor appeared at 18 ug/L (ppb) in tile drainage waters when rain fell two days after application but failed to appear in tile drainage waters after rain in the dry summer of 1988. In 1987 the soil was saturated when the rain occurred while in 1988 the soil was dry. Runoff waters can carry many different pesticides from soils, pastures or grain fields. However the amounts removed annually appear to be more correlated to the persistence of the pesticide. Hence runoff of the short lived MCPA from grain fields is around 0.002% of that applied while the runoff from corn fields treated with atrazine can exceed 1.0% of that applied. The losses via tile drainage water can be a trace for MCPA and up to 0.5% for atrazine. The following table illustrates a field where both 2,4-D and atrazine were removed.

In summary the short-lived pesticides rarely show up in water from field applications, and if they do it is for only a short period. Heavy rains following applications can give single isolated events of pesticide loss to water.

Table 2. Surface runoff and leaching from fields treated with 2,4-D and atrazine.

Item	Applied	Date of Sampling				
		25 April	9 May	23 May	6 June	20 June
Open ditch	2,4-D 15 May	-	-	4.0	0.4	0.3
Tile sandy soil		-	-	-	0.9	0.2
Tile clay soil		-	-	0.2	0.2	0.6
Open ditch	atrazine 25 May	0.1	3.0	0.1	14.0	1.0
Tile sandy soil		-	-	0.2	1.4	2.4
Tile loam soil		-	-	0.2	1.6	0.5



Human Errors. Any pesticide used on the farm can appear in water when human errors occur. These errors include back siphoning, overfilling sprayers, washing equipment, leaving unrinsed containers near water supplies and dumping unwanted pesticide.

Short vs Long Lived Pesticides. The major surface water contaminations are associated with the long lived pesticides, see Table 3.

Table 3. Route of loss of short and long lived pesticides

Route of loss	Short Lived	Long Lived - Atrazine	
	MCPA Losses of applied	Percent of losses	Losses of applied
Storm runoff	Usually none	50-60%	clay 1.8%
Tile drainage	to	16-25%	loam 0.6%
Spills	0.002% of applied	18-25%	sand 0.3%

The long lived pesticides appear in surface water year round as illustrated in Table 4.

Table 4. Periods of loss of short and long lived pesticides.

Period in Year	Short Lived - MCPA		Long Lived - Atrazine	
	Loss (%)	Applied (%)	Loss (%)	Applied (%)
Jan - Apr (high rainfall snow melt)	0	-	54	0.90
May - Aug. (Use season)	100	0.002	32	0.65
Sept. - Dec. (post-use)	0	-	14	0.25

The losses at the river mouths of the three major rivers in Southern Ontario appear in Table 5 and again illustrate the differences between short and long lived pesticides.

Table 5. Losses at River Mouth - 1981-85

Persistence		Grand River	Saugeen River	Thames River
Long Lived				
Atrazine	- amount - kg	2910	790	5560
	% samples	91	62	99
Short Lived				
MCPA	- amount - kg	<5	0	56
	% samples	1	0	2

### GROUND AND WELL WATERS

In the last few years it has become evident that many wells have become contaminated with both fertilizers and pesticides. In a recent survey of 76 wells it was found that five contained levels of nitrate above the Maximum Acceptable Concentration of 10 mg/L. All five were dug wells and one had been drilled out without giving adequate protection to the well-head or side-casing. The data obtained point to the fact that poorly constructed, poorly protected shallow wells can be readily contaminated, especially with nitrates from fertilizer or manure and atrazine applied close to the well. The five represented 23% of the shallow dug wells analysed during the survey.

Upon reviewing the data on 506 wells analysed between 1969-84 suspected of being contaminated 49% were in fact contained with pesticides residues. The contaminations were traced to spills or carelessness around 129 of these wells (22%). Spray drift was found to have entered 51 wells (8.6%). Runoff or leaching waters carrying pesticides had entered 113 wells (19%). Herbicides were present in 292 of the wells (49%), fungicides in 33 (5.5) and insecticides in 7 (1.2%). The two most commonly found herbicides were atrazine in 107 (18%) and 2,4-D in 97 (16%). There appeared to be two main reasons for well contamination. These were: 1. Poor construction and inadequate well head protection allowing runoff waters and drift to readily enter the well. 2. Human errors where spills occurred into or around the well head. This later problem led to drilled wells becoming also contaminated.

The OMAF assistance program now in place is intended to help build pesticide storages and pipe water away from farm supplies in an attempt to eliminate the potential to contaminate well and pond waters. The most recent survey of well waters indicate farmers may be resolving this problem (Table 6).



Table 6. Well surveys 1984-87.

Survey Year	Wells	Level of Contamination (ug/L, ppb)			Total
		<1.0	1.1 - 100	101+	
1984	91	6	5	1	12 (13%)
1986	103	5	5	0	10 (10%)
1987	76	1	2	1	4 (5%)

## CONCLUSION

Pesticides are a valuable tool in the production of food and should not be allowed to degrade the quality of water, the environment or social values. Some pesticides, ie. the short lived ones, are rarely found in water and can easily be kept out of water. Others and especially the long lived pesticides are often found in water and it takes considerable effort to prevent contamination. The cost of prevention is a fraction of the cost of clean up. If farmers know the facts, maybe strategies and farm practices can be used to avoid or minimize losses of farm chemicals to water. I hope this presentation has helped to clarify this much needed goal with those using pesticides.

## Strawberry Production in Northern Ontario

Bob Wolfe, Wolfe Farm, New Liskeard, Ont.

Feb. 27, 1989

I. Strawberry Production in the New Liskeard area as opposed to rest of Northern Ontario.

A. Climatic differences.

1. Farm to farm area to area.

II. Historical Outline of my Strawberry Operation.

A. Started with 200 plants in 1977.

B. 1979 We planted two acres, but lost one acre to quackgrass.

C. 1980 We planted four acres and picked 1 acre

1. No irrigation, dry, hauled water, individual plant loss.

D. 1981 Planted four acres and picked four acres.

E. 1982 Planted four acres and picked 8 acres but four acres had winter kill and root rot.

F. 1983 Planted four acres picked four acres and lost four acres to root rot.

G. 1984 Personnel illness put us behind in our weeding program. Planted four acres.

H. 1985 Planted four acres. Weed problems, frost, and fruit rot.

I. 1986 Planted nine acres to a new variety of strawberry. But because of weed problems from previous year only six acres was picked.

J. 1987 Did not plant berries. picked thirteen acres. Nine acres did not runner nor produce. Second year bed carried year. Genetic fault in new variety.

K. 1988 Planted seven acres, picked four acres from third year year bed. Very low yield.

III. Before going into strawberries one must consider the following factors.

A. Soil type.

B. Location to market.

C. Availability of water.

D. Susceptibility to frost, spring and fall.

E. Are you and your family prepared to enter into an intense thirty day period of people contact.

F. Land must be prepared one year in advance, and one must be prepared to not have income for at least one year.

G. Ordering, storing and planting plants.

H. Weed control.

I. Irrigation.

J. Harvesting berries as pick-your-own.

1. Must be organized in advance to handle the following.

a. Parking.

b. Customer flow into and out of the farm.

c. Supervision during picking.

d. The picking experience, fun, fun, fun.

1. You, staff and pickers.

K. Renovation of your strawberry plants.

1. Northern conditions as opposed to Southern Ontario growing conditions.

IV. Summary.

A. Problems to be solved.

1. Winter kill.

2. Frost damage.

3. Increasing yield.

a. Extend growing season.



- b. Greenhouse effect.
  - c. Black plastic mulch.
  - d. Irrigate in fall for frost protection.
  - e. Plant large strong plants.
  - f. Plant as early in spring as is possible.
  - g. Optimize growing environment.
    - i. Weed control.
    - ii. Irrigation.
    - iii. Fertilizer, green and animal manure.
  - h. Increase market.
  - i. Lower expenses.
- B. Future for strawberry production in the New Liskeard area.
- 1. Solve current problems associated with northern growing conditions and suppliment income with other farm enterprises or off the farm income.

## ESTIMATED COSTS AND RETURNS FOR VEGETABLE CROPS

by: G.A. Fisher, P.Ag, Blenheim, Ontario

In the production of any crop and in particular for vegetable crops, a farmer cannot set any production, marketing, or credit needs without an estimate of his production costs and returns. By using a budget or plan of the proposed vegetable crops to be grown on his farm, a farmer is better prepared to determine which offers the greatest potential for success.

The demand for fresh vegetables has grown in recent years. This demand has been created by a growing urban population and changes in eating habits of diet-conscious consumers. Many restaurants, ranging from expensive to fast-food outlets, are now offering salad bars.

The production of fresh vegetables in Ontario is governed by the law of supply and demand. The majority of the fresh vegetables are assembled, packed and distributed by a network of produce dealers located in areas of vegetable production and in all major urban centres throughout Ontario. Many growers market their own produce in many ways, such as to an urban produce distributor, to area retailers, to area restaurants, through a variety of roadside markets and pick-your-own operations. Whatever way you choose to market your vegetables, make sure that you plan well in advance. Remember that a well grown crop is of little value unless it is successfully marketed.

While I am not familiar with all the vegetable crops that will grow well in this area, I am told that there is potential expansion for; cabbage, cauliflower, broccoli, sweet corn, carrots and potatoes. While there is some potential for others, I will provide an estimate of costs and returns for those mentioned.

Total production costs consist of variable or operating and fixed or overhead costs. The variable or operating costs include: materials such as seed or transplants, fertilizer, pesticides, hired labour; the repairs and fuel to keep tractors, trucks, and machines operating; custom work services; shipping cartons and interest on operating capital.

Fixed costs include the owner or operator's labour; an allowance for management, depreciation and interest on investment for tractors, trucks and machines; an allowance for land use such as a land rental or interest on land investment; an allowance for a vegetable packing and storage building if required; and other overhead items such as electricity, phone, accounting, advertising, and general farm maintenance costs.

While some vegetable producers desire to cover all production costs, others who already own the land and machines are more interested in the gross returns earned above the variable costs. This return is called the GROSS MARGIN which is the amount above the variable costs that a crop contributes to the operator for his wages, management, and to the investment in machinery and land. In the accompanying table, both the total production costs and the gross margin figures are shown.

Good vegetable production which brings profitable returns does not just happen, but is the result of a lot of planning by the grower.



**ESTIMATED COSTS & RETURNS, FRESH VEGETABLES**  
**- NORTHERN ONTARIO, 1988**

	Cabbage	Cauliflower	Broccoli
Yield estimate .	10 ton	8 ton	3 ton
Price estimate .	\$240/ton	\$405/ton	\$950/ton
- dollars per acre -			
GROSS RETURNS . .	2,400	3,240	2,850
<b>VARIABLE COSTS</b>			
Hired labour (hr)	272 (50 hrs)	648 (120 hrs)	391 (72 hrs)
Plants . . . . .	268	178	220
Fertilizer . . . .	120	122	122
Pesticides . . . .	73	89	109
Crates . . . . .	806	700	420
Other materials	--	30	20
Custom work . . .	--	--	630
Tractor & machine repairs&fuel . . .	51	87	97
Interest on operating capital . . . . .	52	59	74
TOTAL VARIABLE . .	1,642	1,913	2,083
GROSS MARGIN . . .	758	1,327	767
<b>FIXED COSTS</b>			
Operator labour	65 (8 hrs)	97 (13 hrs)	97 (13 hrs)
Management allowance	120	162	142
Tractor & machine costs . . . . .	93	138	157
Land charges . . .	50	50	50
Other overhead . .	25	25	25
TOTAL FIXED . . .	353	472	471
TOTAL ALL COSTS	1,995	2,385	2,554
RETURNS OVER ALL COSTS . . . .	405	855	296

**Note:** Cabbage includes all costs except storage; Cauliflower is packed at the farm and delivered to shipper. Broccoli is harvested and custom packed and iced before delivery to dealer.

## ESTIMATED COSTS &amp; RETURNS, FRESH VEGETABLES

- NORTHERN ONTARIO, 1988

	Carrots	Potatoes	Sweet Corn
Yield estimate .	20 ton	165 cwt.	600 doz.
Price estimate .	\$100/ton	\$7.10/cwt	\$1.65/doz.
- dollars per acre -			
GROSS RETURNS .	2,000	1,172	990
VARIABLE COSTS			
Hired Labour . .	75 (14 hrs)	54 (10 hrs)	165 (30hrs)
Seed . . . . .	159	161	53
Fertilizer . . .	56	95	55
Pesticides . . .	188	199	68
Other materials	--	4	--
Crates . . . . .	13	--	106
Tractor & machine repairs/fuel .	144	149	60
Marketing fees .	--	15	--
Interest on operating capital . . . . .	51	57	17
TOTAL VARIABLE .	686	734	524
GROSS MARGIN . .	1,314	438	466
FIXED COSTS			
Operator Labour	125 (17 hrs)	50 (7 hrs)	40 (10 hrs)
Management allowance	100	59	50
Tractor & machine costs . . . . .	437	224	96
Land charges . .	50	50	50
Other overhead .	25	15	25
TOTAL FIXED . .	737	398	261
TOTAL ALL COSTS	1,423	1,132	785
RETURNS OVER ALL COSTS . . .	577	40	205

**Note:** Carrots delivered to dealer in bulk bins; no storage, grading or packing costs; Potatoes do not include any storage and marketing costs; Sweet corn is hand harvested, packed and delivered to dealer.



## RIVERSIDE FARMER'S MARKET UPDATE

By: Gord Edwards, President, Riverside Farmer's Market (New Liskeard)

It is almost impossible to provide a complete Farmer's Market progress report in the brief time allocated to me, so let me highlight a few details.

Let me stress at the outset that Riverside Farmer's Market would not have been the success story that it was without outstanding involvement and support from all the participants. The Ministry of Agriculture and Food through Bob Chorney provided excellent organizational assistance and were also generous enough to provide money for advertising and materials through Agri-North. The town of New Liskeard's provision of their new multi-use building along with the full cooperation of the recreation department and town council showed their interest in the success of the market. The Temiskaming Health Unit offered their full cooperation including participation at the steering committee level. Our outstanding group of vendors maintained their enthusiasm throughout the summer, bringing the kind of quality products we were hoping for. Finally, a group of committed consumers made the effort all worthwhile from a monetary standpoint.

We operated the market from July 9th to October 15th with one week shutdown for the fall fair on August 20th. This gave a total of 14 market days. The market was open from 7 to 11 AM on Saturday mornings. On average, 15 vendors were involved on a given day with a total of thirty-eight over the summer. A wide variety of fresh produce, meats, baked goods, flowers and crafts were sold. The market clearly became a community meeting place with customers pausing to chat over a cup of coffee.

You should be made aware of some of the difficulties we faced and how they were resolved. One of the main conflicts arose over the Multi-use aspect of the building which was often booked for a wedding reception Saturday evening. This made it necessary for us to clear the building in a hurry so the town crew could clean up before decorations and tables were placed for the reception. However with the help of all the vendors we managed to clear the building by 11:15 each Saturday. A second area of concern was the importation of fruits and vegetables from southern Ontario. The Committee wanted to ensure that a wide selection of fresh produce was offered without hurting local production. After some careful negotiation with the importers, it was agreed that when local production was available the imported fruit or vegetable would be withdrawn. A third area of concern was our forced shutdown during the week of the fall fair. In analyzing our sales figures, we were shocked to discover a \$1000 drop for the week after the fair. For purposes of continuity, we are determined, in future, to maintain a presence for that week, even if we have to rent a tent. Finally, although not a major problem in 1988, we are concerned that a careful balance be maintained between produce and crafts to ensure that the farmer's market flavour is not lost.

Our most important endeavour was our collection and processing of statistics on the market. Vendors were asked to anonymously submit their sales figures for the previous week before the start of each market. These were collected by our manager and totalled to provide a weekly sales volume. I am pleased to tell you that for the 14 week period, the Riverside Farmer's Market generated sales of just over \$45000. We also used door prize tickets to generate traffic flow figures and to determine on a telephone exchange basis, our customers' location. Neil Tarlton, who spent a weekend entering the data into his computer, deserves a vote of thanks for the graphic illustration. With this simple statistical collection and analysis we have established a base year against which to measure future performance. We also have concrete data to use in determining the long term economic viability of Riverside Farmer's Market.

Plans are now being formulated for the 1989 market season. With a few minor changes we are looking forward to repeating and improving upon our 1988 experience.



Jean Denis Methot, P. Ag.  
Agricultural Representative  
Cochrane Districts

### FARMERS MARKETS IN COCHRANE DISTRICTS

FOUR MARKETS HAVE BEEN CREATED IN COCHRANE DISTRICTS SINCE 1987.

"Le Marché Cantin" was started in Hearst in 1987  
"Le Marché/The Market" was started in Kapuskasing in 1987  
"Cochrane Farmers Market" was started in Cochrane in 1987  
"Timmins Farmers Market" was started in Timmins in 1987

Each market is unique but all four markets report very similar findings:

- 1- Lack of vegetable producers in each area.
- 2- Limited number of crops possible and there is a need to learn more about "season extenders".
- 3- Funding was critical to get the markets started.
- 4- Municipalities are most willing to help.
- 5- Town businesses want the markets at their proximity.
- 6- The media has given the markets a great deal of attention.
- 7- A few individuals in each market are wondering about a transportation and marketing system that would bring in fresh fruit from Southern Ontario to each market along Highway 11 as well as Timmins.
- 8- Last year's producers were for the most part "sold out" early every market day.
- 9- Some people will arrive half an hour before opening. They want the "best" of the crop.

### DESCRIPTION OF EACH MARKET

HEARST: A private market since there wasn't enough producers who wanted to form an association.  
It offers fresh fruits and vegetable not available locally and this is bringing in more sales than that of local produce.  
The variety also attracts more people.  
Other producers are selling to "Marché Cantin" who takes a reasonable cut for selling it.  
It is a covered building and it has an old refrigerated trailer behind it.  
The owners Jules and Micheline Cantin also have refrigerated storage at home.  
The market opens mid July to close Mid September.  
It opens 3 days per week.



KAPUSKASING: This market has been a couple miles away from town for the last two years. Last year, estimated sales were \$12,000. So far, no vegetables and fruits produced outside the local area were allowed at the Market. This may change.

The market opens Saturday mornings. They tried a couple Thursday nights but this wasn't attracting many vendors and consumers. A corn roast was a success last year. The market tried one Saturday in the circle and sales were much better. Businesses are asking the market to move downtown and negotiations have already started. There is also work being done to cover the market for rainy days.

The market had between 6 and 20 vendors at each market day. Crafts were a good attraction. The market opened from mid July to mid September. They had a bedding plant sale at the local Sportsman Show last May. This was done so as to inform the consumer about the market.

COCHRANE: The official opening was on 6th avenue. The Town agreed to close 6th avenue for the morning and animals were brought in as well as displays. There was an excellent crowd but little produce.

The market then moved to the Cochrane Agricultural Society Fairgrounds for the next two months. They are using a barn with cement floor, which is locked for the rest of the week. They don't have to move tables this way. The only inconvenience is Fair Day. We had the market just outside the Fairgrounds that morning.

This group is looking into opening once in May, June and July in 1989. It would then open every week for August and September.

TIMMINS: This market is set inside the Mountjoy Arena, rent is free. It serves the largest local population north of Highway 17.

To me, if any, this market should become a real success. We need many more producers in Timmins because of the larger population and of the many ethnic groups living there.

The first market was June 4th, with a really successful flower and plant sale as well as crafts and baking, a petting zoo, horse rides and a circus tent set up at the arena.

The number of vendors varied from 7 to 15 on any given day.



## CONCLUSION

None of the markets would have been a success without the hard work of the directors. I hope that more people will become vendors and active members as I see a danger for the hard workers to burn out after a few years of being in the lead.

I encourage all family members to get involved. Not only does the market create a bit of extra income but it also links the farming community to the towns and cities. It becomes excellent public relations and a good tool to inform city folks.

## FARMERS' MARKETS OF MUSKOKA-PARRY SOUND

by: Gordon Mitchell, Agricultural Representative, Muskoka & Parry Sound Districts

In Muskoka and Parry Sound Districts, we have Farmers' Markets located in Muskoka District at Bracebridge, Saturday a.m. in the Park, and in Huntsville on Wednesday a.m. and Friday p.m. in a downtown parking lot, and in Parry Sound District the markets are located in South River on Saturday a.m. in a warehouse in town, and another in Powassan on Saturday a.m. at the fairgrounds on Hwy #11.

The beginning organization of these markets differed. In Muskoka, the Soil and Crop Improvement Association began the 2 locations as a project. The South River market began as a result of the area's economic developmental study and the Powassan market resulted from a citizens group in the area who were interested in creating a local marketing centre.

All markets have steering committees of volunteers interested in creating a local marketing centre for locally grown, made, or produced produce, crafts, and baked goods, except South River, where Ontario produce from Toronto Food Terminal was trucked up on Friday for the Saturday market.

In each case, there were very few vendors to support the organizing committees in the beginning to assure them that they would sell at the market on day one -- in other words, a lot of fence-sitters! Lots of vendors appeared however, when it looked as though the market was a success.

The local Agricultural Office supported all markets in their developmental stages, helping them through their question and decision times. Each market held educational help sessions with Bob Cobbledick, Provincial Marketing Specialist, on how to design and set up a table display at the market, and held a discussion.

Consumers are hard to educate. First of all, that we have a farmers' market, its location, when the market opens, what products are available. Advertising is a key element to the success. Once consumers find the market, they attend regularly.

All market vendors are urged to market only their best quality produce.

Press coverage was very important. Show and tell the newspaper reporters what is happening. Invite them to write stories with pictures before the market opens, as it opens, and after it opens. The pictures and stories inform the local public and help promote the market to all consumers.

### SUMMARY:

A farmers' market is an exciting local event. It takes a lot of hard work for the organizing committee and vendors. The rewards are many, for example, being able to market your own production direct to the consumer, earning money and having fun doing it, and acquiring an education equal to none!





# CANADA'S OUTSTANDING YOUNG FARMERS PROGRAM in ONTARIO



Presented by  
**CALGARY EXHIBITION & STAMPEDE**  
&  
**CANADIAN JUNIOR CHAMBER/JAYCEES**



## Introduction

The Ministry of Agriculture and Food (Ontario), and the United Co-Operatives of Ontario are pleased to announce that they are once again the official sponsors in Ontario of the Canada's Outstanding Young Farmers Program.

This program is design

- 1) To increase the urban awareness of our young farmers, and agriculture in general;
- 2) To promote better understanding between our urban and rural communities; and,
- 3) To recognize individual farmers in various areas of agriculture who excel in their particular fields.

The men or women who will be selected as Outstanding Young Farmers in their communities, districts and provinces will be symbolic of the thousands of young Canadians engaged in one of Canada's oldest industries, and the sponsors are pleased to be associated with these people. Three Outstanding Young Farmers will be selected from eight (8) regional winners by a judging panel composed of respected and knowledgeable individuals in the agricultural community. Entrants will be judged on their progress in their agriculture careers, their willingness to innovate and try new procedures, their production history, the extent of soil and water conservation practices employed and their overall contribution to their communities.

Each regional winner will be a guest of honour at the 10th Annual National Outstanding Young Farmers' Banquet, where the winners will be announced and presented with the "W. R. Motherwell" Award.

## The National Award

The three winners of the 1989 competition will be presented with the "W. R. Motherwell" Award, named after Dr. William Richard Motherwell, Minister of Agriculture for Saskatchewan (1905-1918) and for Canada (1921-1930). Dr. Motherwell was born in 1860 and was raised near Perth, Ontario, in the heart of Lanark County. Dr. Motherwell attended Guelph Agricultural College, with a scholarship for outstanding scholastic achievement.

Dr. Motherwell was among the first to recognize the value of the dry-farming procedure — summer fallow. In fact, he is often credited with its discovery.

With the formation of the first provincial government in Saskatchewan in 1905, Dr. Motherwell became the first Minister of Agriculture. From this office, he was instrumental in the passing of the Dairy Industry Act, developing innovative livestock distribution policies and the equal faculty basis for agriculture when the University of Saskatchewan was founded.

In 1921 Dr. Motherwell became a Member of Parliament and the Minister of Agriculture for Canada. From this office, he was instrumental in the standardization and grading of all farm agricultural produce and in the development of rust resistant varieties of wheat. Under Dr. Motherwell's leadership, Canada was the first country in the British Commonwealth to set up "Restricted T. B. Areas".

Dr. Motherwell died in 1943 at the age of 83. He was respected as a farm leader, legislator, administrator and statesman but was first, last and always a farmer.\*

\*Biographical notes from "The Motherwell Story" by D. W. Kirk, published by the Government of Canada, Department of Agriculture, Regina 1956.

## The Provincial Award

An Ontario Award was started with the 1988 program. This award is jointly shared by the Regional Honourees of the Great Lakes Region and the Central Region.

This award is called the Padre Young Award. It will be in memory of Rev. William Atwood Young, BSA, BD, DD (1904-1980).

A minister of the Presbyterian Church and graduate of the Ontario Agricultural College, "Padre" Young had a profound influence on thousands of Ontario's rural young people. He was counsellor, guide, and inspiration to students, to Junior Farmers and to Women's Institutes. After service in World War II, he was made first chaplain of the Ontario Agricultural College, conducting non-denominational services in War Memorial Hall for 20 years. A firm believer in the lasting values of rural life, he was a renowned after-dinner speaker, singer and author of regular columns in the farm press. He founded the Ontario School for Rural Clergy, and was Secretary of the Canadian Swine Breeders Association.

Padre Young was also a recognized judge of poultry, flowers and livestock. He was a fine photographer and painter of rural scenes. In his home community of Elora he served on the municipal council, in service and fraternal organizations and the Horticultural Society. He founded the Fergus Highland Games. In 1967 he was awarded an OAC Centennial Medal.

A deeply religious but very realistic attitude towards life, coupled with a sense of good humour pervaded Rev. W. A. Young's 45 years of service to Ontario farm people.\*

\* Information obtained from the Ontario Agricultural



## The Competition and Competition Areas

The Outstanding Young Farmers Program is divided into three levels of competition — local, regional and national. Individuals nominated will compete on a local area level, using the official entry form available from local Junior Chamber/Jaycee units, the sponsors' branches or dealers, or by writing to one of the addresses below.

Application forms are to be completed and submitted by the individual or the nominating group according to directions sent with the form. These entries are judged on a local level, if necessary, and these winners then proceed to the appropriate regional competition, where a regional winner will be announced. Entries in the regional competition will receive details about the Award Banquet from the appropriate Regional Chairman listed below.

A completed Financial Statement may be required at the regional level, but it is required at the national level, on a form provided directly by the National Committee. At the national level only, a presentation of thirty (30) slides is also required.

There will be eight (8) regional winners based on the following regions of the Canadian Junior Chamber/Jaycees: -

Pacific	British Columbia and Yukon
Alberta/Northwest	Alberta and Northwest Territories
Prairie	Saskatchewan
Mid-Canada	Manitoba and Northwestern Ontario
Great Lakes Central	Southwestern Ontario Northern, Central and Eastern Ontario
Quebec Atlantic	Quebec Maritime Provinces

Each regional winner will receive a trip to the National Competition to be held October 24th to 28th, 1989 in Calgary, Alberta, hosted by the Calgary Exhibition and Stampede.

## Eligibility

The following criteria must be met in order for candidates to be eligible:

- 1) Be aged 18 through 40, not becoming 40 prior to January 1st, 1989 and,
- 2) Be actual farm operators; deriving a minimum of two-thirds of their income from their farm.

## Judging Procedures

The judges for the competitions are selected by the governing body. The judges are people who are knowledgeable and experienced in all aspects of the agriculture industry.

The candidates are judged in these four (4) major categories:-

- 1) Progress in Agriculture Career - 50 points
- 2) Extent of Soil, Water and Energy Conservation Practices - 25 points
- 3) Crop and Livestock Production History - 25 points
- 4) Contribution to Community, Province and Nation - 25 points

Complete details on each of these categories, and the procedures themselves are contained in the official Nomination Form.

## Past Provincial Honourees

	Central Region
1980	Neil Allin
1981	Ross Kennedy
1982	Terry Gough
1983	Lyle Vanciel
1984	Ardiele Grieve
1985	*Owen Legge
1986	Jim Glenn
1987	Arnie Hakvoort
1988	*Janet Parsons

### Great Lakes Region

1980	N/A
1981	*Mike Maynard
1982	*John McDougall
1983	*Bill Fletcher
1984	Michael O'Shea
1985	Bruce Goodchild-wood
1986	*Murray Ferguson
1987	*Gordon Forth
1988	Ralph Dietrich

\*W R Moherwell Honouree

## Program Sponsors

National Level	Provincial Level
Bank of Montreal	Ministry of Agriculture & Food
John Deere Limited	United Co-Operatives of Ontario
Hoechst Canada Inc.	

## Conclusion

This annual award is designed to honour The Outstanding Young Farmers in Canada but it can only be successful if all farmers are able to look at this program and feel proud to be a farmer.

The sponsors listed above are pleased and proud to be associated with this fine program, and the Canadian Junior Chamber/Jaycees and their members in Ontario are appreciative of the sponsors' overall assistance and support.

For further information please contact:

Blaine Evans  
Chairman, Central Region  
73 Blake Street  
Barrie, Ontario  
L4M 1K1

or

in Southern Ontario, west of Highway 25

Phil Fletcher  
16 Shirley Street,  
Hamilton, Ontario  
L8T 4C5

## THE JAYCEE CREED

### We Believe:

That faith in God gives meaning and purpose to human life;

That the brotherhood of man transcends the sovereignty of nations;

That economic justice can best be won by free men through free enterprise;

That government should be of laws rather than of men;

That earth's great treasure lies in human personality;

And that service to humanity is the best work of life.





FARM BUSINESS MANAGEMENT

"ESTATE PLANNING FOR FARM FAMILIES"

- Bill Broadworth,  
Farm Business Advisor,  
O.M.A.F., Uxbridge.

Many people have the wrong idea about 'Estate Planning'. They feel estate planning implies the hiring of cigar smoking middle-aged men to draft some plan to keep the Government from getting all the money when they are gone. There may be some element of truth in this idea. However, Estate Planning is much more.

Estate Planning is really a life long process involving the creation, protection and disposition of wealth. In the case of farming, the wealth is farm assets usually but there may well be wealth in the form of off-farm investments. In essence, estate planning is the setting and realization of goals. Finally, estate planning is a very personal matter.

Estate Creation - can happen in several ways. In farming, estate creation usually results from re-investment of net farm income. The size of net farm incomes is related directly to a farm family's farm management ability, abilities to set and reach goals and length of farming career.

A few farmers may create an instant estate by winning a lottery, buying life insurance and then dying, receiving gifts from parents and inheriting wealth from parents.

Generally, for most farmers, estate creation is dependent upon knowledge of farming skills, ability to apply farming skills, inner human qualities of desire, determination and hard work.

Estate Protection Farm families are unique because they own the place of business and the assets used in the business. A school teacher does not own the school, the industrial worker does not own the factory or the raw products. Thus, the farm family is typically confronted with the problem of using vast amounts of credit in the creation of a farm estate. This real possibility of being "deeply in debt" for much of one's farming career is one reason farmers have special needs for estate protection. Essential protection devices are insurance protection and an up-to-date will. Most farm families would like to have their affairs arranged so that if the husband died, his wife would be at least free of debt. This would enable the wife the option of continuing or selling the farm operation. Also, most farm families would want, if a child is old enough and interested, a situation which would make it possible for a child to take over on father's death without too much debt. This is another good reason for insurance.

Mortgage insurance and bank loan insurance are excellent forms of estate protection. Also, do not neglect disability income insurance.



How much insurance? To answer this, a farm couple should discuss "just how they would want things to be" if one or the other wasn't alive tomorrow". Then go out and get insurance protection. Indeed, insurance protection is an integral part of estate planning.

Wills are so basic for estate protection and distribution. Wills must be up-to-date and preferably drafted by a lawyer.

Estate Distribution Like doctors, lawyers, teachers, businessmen, athletes and civil servants, farmers have careers. Their career is the farming profession. Because farming is a career, a farmer will terminate farming. All farmers hope they will retire from farming. In retiring, a farmer will likely sell his farm outside the family or transfer within the family. When a farmer sells outside the family, the objective will be to get as much money as possible from the sale and minimize as many taxes as possible.

Farm transfers within families require detailed planning because such transfers often occur over a period of years. Thus there is a period of inter-generational farming. The objective will be to integrate the goals of parents and children into a transfer plan so that the needs of both generations will be met. The priorities will be security for the parents, establishment of the farming child(ren) into farming and equitable treatment of non-farming children. Good human relationships are vitally important for successful, rewarding farm transfers within the family.

Sometimes farmers, like other people, experience difficulties leaving their careers. Farmers should try to view retirement as a retirement from farming not a retirement from life. Farmers should plan for retirement. Lets realize that healthy Canadians live longer now. The average Canadian male who reaches 65 can expect to live another 14 years while a female can expect to live another 18 years. If farmers are average Canadians in terms of life span, they can experience a good number of years of retirement from farming.

In planning for a happy retirement, the prime considerations are money, health and worthwhile activities. Insufficient finances for a desired retirement lifestyle often means living to a ripe old age will be a mixed blessing. Doing nothing is the most tiresome, boring job in the world because one cannot quit or rest. Thus, farmers are no different than anyone else. They should develop activities which will be time-consuming and satisfying. The best thing to save for older age is yourself - maintain good health through exercise, proper nutrition and intellectual interests.



Effective farm estate planning involves competent advice in areas of estate creation, preservation and disposition. Such advisors can be farm management advisors, accountants, insurance people and lawyers. Farmers should choose advisors, who are knowledgeable and who are interested in the farmer's overall goals.

Life's journey is short. Make it exciting, challenging and rewarding. Farm estate planning is an important life-long process for farmers. It involves estate creation, protection and distribution. The estate size varies with each farm operation but in all instances is largely dependent upon the manager's ability to set and achieve goals - farm management ability.

## IMPACT OF TRADE REGULATIONS ON THE DAIRY INDUSTRY

by: John Core, Vice Chairman, The Ontario Milk Marketing Board

### Canada-U.S. Trade Agreement

The Canadian government assured us during these discussions that the Canadian Dairy Industry was not part of this deal and that they would take whatever steps necessary to maintain the industry if a deal was signed. Subsequently yogurt and ice cream were added to the import control list since they would have been affected by a tariff reduction. The U.S. has recently challenged this decision and have asked for a GATT panel to be struck to deal with this question. Our industry will be monitoring this action carefully during the coming year and will be urging our government to take a continuing strong position on their right to use the import control list to preserve our supply managed commodities.

We continue to have concerns in several other areas and are pursuing these with the federal government. They include the importation of ingredients with less than 50 per cent milk solids, importation of retail milk products by the consumer at border crossings and the potential impact of importation of processed food products containing dairy ingredients.

### GATT Negotiations

Canada is able to exercise border control on imported dairy products through the authority of Article XI of the current GATT agreement. Without Article XI, a domestic supply managed commodity could not be protected from large quantities of imported product. It is critical that Article XI be maintained and strengthened to overcome the confusion surrounding the definition of "like product" referred to in the Article. The U.S. has a stated intention to eliminate barriers to agricultural trade. It is therefore important that our government maintain its stated position with regard to supply management and limit all but historical imports recognized under the agreement.

The theoretical application of the PSE (Producer Subsidy Equivalent) or TDE (Trade Distortion Equivalent), as a measure of "Subsidy", does not reflect well on the dairy industry and we reject their application. Supply management, in our opinion, does not contribute to an agricultural trade imbalance but helps to prevent it in the dairy industry, by not producing huge domestic surpluses.

It is important for our industry to maintain the discipline that allowed us to come within 1-2 per cent of our Canadian requirements last year. We want to continue to use the world market as the balancing wheel of our industry but want to assure the world dairy producers that it will be a very small part of our production and will only act as a sleeve to assure that we meet our domestic requirements as short-term consumption needs and production capabilities change.



## GROSS MARGIN COMPARISON OF NORTHERN CROPS

David Beattie, Director

New Liskeard College of Agricultural Technology

One of the most difficult decisions facing farm managers on an annual basis is deciding which crops to grow and how much of each crop to grow to maximize returns, and hopefully profit.

Good managers rely on accurate production and marketing information in making these kind of decisions. The only accurate information on production costs and crop yields, for any individual farm, comes from that farm.

Those keeping good production and financial records can easily calculate what it costs to produce a bushel of barley, oats or wheat. Once you know what it costs to produce and what you can likely sell it for - then you know which crop or crops have the best potential to make money on your farm.

You may wish to compare the income generating potential of some crops you haven't grown with crops grown in the past. There is a way to do this which is fairly accurate, called gross margin comparisons.

**Gross Margin = Gross Sales less Operating Costs**

Gross Margin is the amount of money left to cover fixed costs such as land rent, machinery depreciation, utilities, etc. and includes your return to labour, management and risk.

In calculating the gross margin of each crop for comparison between crops, we are assuming that operating costs (seed, fertilizer, herbicides, fuel, repairs, crop insurance, interest on money invested in inputs and marketing fees) are basically similar for all farmers in the area.

The real differences in costs between farmers are due normally to fixed (indirect) costs. Machinery ownership costs, land costs and overhead costs vary tremendously between farms.

Crops which show highest gross margin returns are most likely to meet fixed costs and give you a return to your labour, management and risk.

The following table is only an example of how gross margins are arrived at for comparison purposes. Individuals should substitute their specific costs, expected prices and average crop yields to give an accurate comparison for their farm.

Estimated Gross Margins for Some Northern Crops

	Barley	Oats	Red Spring Wheat	Spring Canola	Alfalfa Hay
<u>Operating Costs</u>					
<u>Per acre</u>					
Seed	15.00	15.00	30.00	13.00	30.00
Fertilizer	25.00	15.00	25.00	30.00	34.00
Herbicides	2.00	2.00	2.00	6.00	-----
Fuel and Repairs	40.00	40.00	40.00	40.00	40.00
Crop Insurance	4.00	4.00	7.50	6.50	6.00
Interest on Materials	3.50	3.16	4.35	4.00	8.00
Marketing Costs	10.00	10.00	10.00	10.00	----
Total Operating Costs	99.50	89.16	118.85	109.50	118.00
<u>Returns Per Acre</u>					
Expected Yield	1.3 t (60 bu)	1.0 t (65 bu)	0.95 t (35 bu)	0.68 t (15 cwt)	4 t (200 bales)
Expected Price Per Unit	\$110./t	\$120./t	\$205./t	\$256./t	\$75./t
Gross Returns	143.00	120.00	194.75	174.08	300.00
Gross Margin (Gross Returns Less Operating Costs)	43.50	30.54	75.90	64.58	182.00



## Do You Need Limestone?

John Rowsell

New Liskeard College of Agricultural Technology  
February 28, 1989

The average limestone recommendation made by the provincial soil testing service for acid northern Ontario soils is 7 tonnes/ha. Delivered costs range from \$17-\$44 per tonne, spreading costs not included; therefore, the cost to the farmer averages \$119-\$308 per hectare (\$48-\$123 per acre). Once a soil in northern Ontario is amended with limestone at recommended rates, we would not expect that soil to require limestone again. The cost of liming can therefore be considered in two ways: as a very expensive input in the year of application and as an input with almost negligible cost over the expected life of its effectiveness.

Regardless of which perspective you choose, the following should be taken into account when considering application of limestone:

Crop to be grown: Recent studies have shown no response by winter wheat, corn and soybeans to limestone on soils with a pH of 5.0. Preliminary results collected in our trials have shown a positive response by barley to limestone on 2 soils with pH of 5.6. Recommended target pH's are set according to crop to be grown and soil texture. Consider the most 'acid sensitive' crop in your rotation. Also, dolomitic limestone is the recommended source of magnesium for all crops except potatoes and blueberries on soils that are deficient in magnesium.

Long-term soil test pH levels: It is not uncommon to see soil test reports indicating changes in soil pH of over 1 pH unit from year to year. That is a ten fold change in acidity. Soils should be sampled to the depth of primary tillage. Recommendations assume a tillage depth of 15cm (6"). Rates of limestone should be adjusted according to the depth of tillage that you commonly use.

Limestone must be incorporated to be effective: Do not apply lime to established forages unless the land is going to be cultivated that year. Limestone takes time to work. pH levels may continue to increase up to 3 years after application.

Some soils seem to increase in pH with time: There are many plausible theories as to why this may occur. Again, analysis of soil test results over the long term is important.



## WHAT'S THE KEY TO A GOOD CANOLA CROP?

R.E. FORREST, Centralia College.

That's a very pointed question. It seems to imply that there is a single element that is the secret of all success in the canola business, doesn't it? Well, what is that elusive secret? Is it variety selection, or seeding rate? Is it time of planting or perhaps weed control or harvesting method? All of these things are important, but is any one of them the KEY? No, of course not! This short list of topics is by no means exhaustive in terms of what it takes to make a success of growing canola. It takes a lot more than that! Can there, then, be a KEY? I believe that there is. That KEY is not to be found, however, in any single crop production practice. No, the KEY TO PRODUCING A GOOD CANOLA CROP is in COMMITMENT!

"What?! Commitment?!" I can hear the skepticism in your minds! Yes the KEY is COMMITMENT; the commitment to do things well; the commitment to succeed. "A bit far fetched", you think. No, not at all. The growing of a good crop of canola is complicated business. There are a great number of factors to consider, and new things to learn. In Ontario, we are not steeped in tradition when it comes to canola. With cereals, for example, we have a wealth of knowledge and experience to draw upon. So much of what we know about cereal production has become second nature by virtue of our long standing experience with those crops. Not so with canola! The KEY TO SUCCESS lies in BEING COMMITTED TO SUCCESS.

Before you write me off for having been out in the sun too long, let me explain what I mean. I mentioned the ideas of variety selection, and so on, earlier. These topics, and others like them are of key importance but the KEY lies in being willing to learn as much you can about this new crop. More than that, it involves COMMITMENT to put all of that knowledge together into a working plan, which you will execute with precision and dedication. The key to doing ANYTHING well, is first deciding that you ARE going to do it well. Growing canola is no exception to that. If you don't think you will succeed, you probably won't. If you are afraid that you may run into problems, you probably will. If you DECIDE to be successful, your chances of becoming so are MUCH greater!

By now you have probably decided what you think of this philosophy. Some of you are beginning to think that "Forrest may just have some thing there". There may be a few of you, though, that might as well go and have a coffee. I hesitate to say what you are probably thinking!

For those of you that are still with me, where do we go from here? Well, I mentioned information gathering. In the time that I have today, there is no possible way that I can tell you all there is to know about canola, so if you are going to be successful, you are going to have to do some digging on your own. You have excellent resources at this college, and the Plant Industry and Ag. Rep. Branches. Use them. You are only a phone call away from virtually all of the information that you need.

Canola is a "cool season crop". In essence, what that means is that it performs at its best in the cooler farming areas of the province. Areas with 2700 CHU or less are more favourable for canola production. Canola flowers are very sensitive to high temperatures. If the weather is hot when the plants are blooming, many flowers will abort. Flowers that do form normally, may or may not be effectively pollinated, and pod development may not progress normally if temperatures are high. Even in areas with less than 2700 heat units, temperature stress at flowering can be a problem. The best way to minimize the chances of reduced seed set due to high temperatures at flowering, is to plant as early as possible. Early planting, means early flowering, under lower temperature conditions, which in turn results in greater seed yield.



Variety selection is quite important. There are currently 10 recommended varieties to choose from. All of these are B. napus types, which have higher yield potential for most of Ontario, than the earlier maturing B. campestris varieties. The performance data for these varieties can be found in OMAF Publication 296. You will notice that the earlier maturing varieties yield somewhat less than the "full season" ones. Your choice should not be made solely on the basis of yield, however. Be sure that the variety that you choose will mature in your area. Seed which has not completely filled before the plant's growth is arrested, will be poor in quality, and may cause reduction in grade.

We have a couple of triazine tolerant varieties of spring canola that may be of interest to farmers with specific, difficult to deal with weeds. For the most part, however, these triazine tolerant types ought to be ignored, primarily because of their considerably lower yield potential.

Canola is quite responsive to nitrogen and relatively high rates of this nutrient are required to support top yields. Anywhere from 100 to 150 kg/ha (90-135 lb/A) will be required, depending on the yield potential of your farm, and the history of the field in question. Nitrogen can be applied in excess, however. The law of diminishing returns applies. In addition, excessive nitrogen can cause the canola plant to react more drastically to stress, as well as lead to degradation of ground water supplies. Canola is not too responsive to P and K. A soil test is the best way to arrive at suitable rates.

Seed should be treated with a suitable combination of fungicide and insecticide. This will provide protection from seed and early seedling diseases, such as black leg, seed decay, seedling blight and damping off, as well as flea beetles. Additional control of flea beetles can be achieved by mixing the seed with an appropriate granular insecticide prior to planting.

As I mentioned, early planting is a "must". The seed bed should be fine and firm. Because the seed is small, it shouldn't be planted too deep. About 2-3 cm is ideal. Deeper planting will reduce emergence. If a granular insecticide is used, the planter should be calibrated with the mixture of seed and insecticide.

White mold and black leg are the two diseases most likely to be found in canola. Both are somewhat difficult to manage. Both are soil borne, and black leg can be seed borne as well. Long rotations including non susceptible crops are the only practical approach to control.

Swathing should take place when about 25% of the seeds in pods from the middle portion of the plant have changed colour. The seed will ripen in the swath, and shattering will be reduced. Cut the crop high (just below the bottom pods) to make a small loose windrow, held above the ground by the long stubble. This will promote faster and more uniform drying.

Cutting the crop high will result in less trash to separate from the seed during combining. This will allow faster harvesting with less seed lost from the rear of the machine. Seed moisture should be no more than 8% for long term storage, although, 10% is the standard for marketing. Under good drying conditions harvesting could begin at 12%, since seed moisture will drop fairly quickly.

Well, we've covered a lot of ground! Now, the challenge is to make use of this information, along with the answers to all of those questions that must still be in your minds. The KEY lies in having the desire to make all of this work for you. If you make canola your number one priority, and deal with it in the manner that it will therefore command, the odds for success are high!



## FIELD CROP UPDATE FOR 1989

By: Laurier Guillemette

Presented at the 23rd North Eastern Ontario Agricultural  
Conference and Trade Show February 28, 1989

The field crop research program at Kapuskasing is divided into two major thrusts:

- A) Cultivar evaluation of forages, cereals, and horticultural crops for the great clay belt of northeastern Ontario, northwestern Quebec and parts of eastern Canada.
- B) Management studies in forages, cereals and horticultural crops in order to improve persistence, quality and efficiency of these crops under northern latitudes. Studies in the forage program in order to evaluate parameters which are important for efficient ruminant conversion of forages.

Data from cultivar trials and management studies are used in the formulation of provincial recommendations in Ontario and Quebec. The agronomy section has several thousand plots at Kapuskasing and recently has established a permanent testing site at Evain, Quebec where 2 crop biologists are now carrying out trials under the Canada-Quebec agreement.

### Forages

The forages update and program for this conference will be presented later by Carole Lafreniere.

### Cereals

Barley: A total of 91 entries of barley were evaluated under several cultivar trials for Ontario and Quebec. Among the six row barley, Leger continues to produce high yields and is difficult to beat in yields. A total of five new lines were supported for registration last month. Two row barley cultivars have not been producing as well as the six row cultivars. If 2 row cultivars are sown, the cultivars Albany and Rodeo should be chosen over Birka. Next spring we will be examining 20 or more lines of very early maturing barley.

Over the years, several cereal management studies were carried out, however, today I will deal with only two recent experiments. During the years 1985, 1986 and 1987, a trial was set up to examine 4 different row spacing with 4 seeding rates on Leger barley. There were no significant yield differences as a result of the four seeding rates and there were no significant row spacing x seeding rate interaction in any of the 3 years studied. In 1985, there was a 26.5% yield advantage in using the narrow 10cm row spacing, in 1986, the advantage was 9.4% and 8.3% in 1987.



In another barley study, different barley cultivars were sown in blends. This trial was also carried over a period of 3 years. Leger sown in monoculture outyielded all other blends, and most blends containing Leger were among the highest grain yielding mixtures over the entire 3 years. Birka sown alone was again the lowest yielder, however, when mixed with Leger, over the 3 year period, it placed 3rd in performance.

### Horticulture

The horticulture program at the Kapuskasing Experimental Farm exists because of the participation of local horticultural society and the research station in L'Assomption, Quebec.

The vegetable programs has been looking at basically two projects:

1. the evaluation of warm season vegetables under plastic mulches and
2. the comparison of different size of transplants on several cole crops.

The final results from these projects is in the process of being compiled and some highlights will be presented at the conference.

In the near future, the vegetable program will look at windbreaks and its effect on growth and also the use of other methods of enhancing the micro climates for warm season vegetables.

The other part of the horticultural program is to evaluate trees and ornamental shrubs in order to obtain information on hardness, behaviour, growth and other agronomic characteristics on exotic and native species and cultivars which could possess ornamental value under severe climatic conditions.

## NEW ORIENTATION IN FORAGES AT KAPUSKASING EXPERIMENTAL FARM

By: Carole Lafrenière, agr.  
Forage specialist  
Agriculture Canada, Kapuskasing

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What distinguishes northern and southern latitudes from an agricultural point of view?

Soils: We have good soils and with appropriate management they can produce good yields.

Plants: Some plants are more adapted to southern and others to northern conditions. However, most cultivars utilized in the north are the results of breeding efforts realized in and for more southern latitudes. The result is that we have some difficulties in adapting them to our conditions.

Climate: Climate puts a lot of pressure on agriculture and for a long time we believed that the climate was a handicap to the agricultural potential of the north.

Research in forages at Kapuskasing during the past 20 years has developed a ruminant production system for northern climatic conditions. Quality of forages has been improved by optimizing management and storage techniques. In the last few years, a major shift in forage utilization is evident. Dairy, beef and sheep producers place increased emphasis of forages used in the diets. High quality forages is the key to minimizing feeding costs and maintaining profitability. The problem now is that the best producers following these practices have now reached a ceiling in production efficiency as their forage inputs are concerned. New approaches must be explored if further gains are to be realized.

The first thing to do is to change our approach towards northern agriculture and the scientists must keep in mind the following:

- We can't change the climate, therefore we must work to increase its positive effects and minimize its negative effects.
- Producing forages for ruminants and its production must be linked to economic considerations and not only to the plants.
- From a nutritional point of view, we do not yet know which is the best forage for ruminants.

Keeping these points in mind and because of Kapuskasing's strategic position in terms of climate, we want to develop production systems adapted to our conditions in collaboration with other scientists with a leadership in the interaction climate-plant-animal. To achieve this, the beef and forage programs will be linked together and research on forages will be developed according to climatic and ruminant needs.



Forage research is now focused on the impact of the environment on forage quality, impact of management on quality in relation to climate and influence of quality parameters on ruminant productivity.

For the next few years, new initiatives in forage research will concentrate on:

- effect of latitude on quality of timothy
- relation between species and nitrogen fertilization under two different climates
- relation between cutting management and nitrogen fertilization on timothy under two different climates
- introduction of about 200 different cultivars of grasses from Europe
- projects on water soluble carbohydrates (WSC)

With the addition of a scientist in animal production, there will be a gradual emphasis on pasture and silage research. Performance and variety testing trials from Ontario and Quebec will also continue at Kapuskasing. Any pasture or grassland species that could be of interest for northern agricultural conditions will receive particular attention.

## FIELD CROP UPDATE FOR 1989

A.V. SKEPASTS  
Head, Agronomy Section N.L.C.A.T

The Agronomy section continues to be very active in the evaluation and search for species and cultivars adapted to northern Ontario climatic and soil conditions. Management and soil fertility practices of several crop species are also being evaluated.

Cereal management tests

Investigations into the effects of date of seeding and rates of nitrogen were carried out with currently recommended barley and oat cultivars.

Early May seeding and nitrogen rates up to 60 kg/ha gave the highest yield responses in oats and barley.

Narrow row seeding

Barley cultivars Nord, Birka, Bruce and Leger were seeded in 9 cm and 18 cm rows at 1100, 550, 275 and 140 seeds per m<sup>2</sup>. Half of the experiment was treated with cerone. In 1986, 1987 and 1988, 3% yield increase was realized from narrow row seeding. The best seeding rates were 275 - 550 seeds per m<sup>2</sup>. When low seeding rates were used the number of tillers and the number of seeds per head increased.

Hard red spring wheat production tests

Canadian cultivars, Katepwa and Columbia, and the European cultivar Max were compared at 2 seeding rates and 5 levels of nitrogen fertilizer.

The European cultivar Max was the highest yielder but had a lower protein content than the Canadian cultivars.

The highest yields were realized at seeding rate of 500 seeds/m<sup>2</sup>.

Cultivar evaluation

Numerous oat, barley and wheat cultivars, originating either in western or eastern Canada, were compared for yield and other agronomic characteristics.

The eastern barley cultivars yielded an average 5993 kg/ha, while the western cultivars yielded 5760 kg/ha. Virden from Brandon, Manitoba was the highest yielding barley cultivar (6939 kg/ha) in all tests.

In oats, Marion and Baldwin showed the highest yields. The average yield for the eastern cultivars was 4692 kg/ha. Ogle, Oxford and Tibor and the best lodging resistance. The western Oats averaged 4911 kg/ha. The highest yielding western cultivar was Foothill at 5815 kg/ha. Most of the western cultivars showed fair to poor lodging resistance.



Ten of the recommended hard red spring wheat cultivars including Roblin and Katepwa, averaged 4576 kg/ha and required 97 days to ripen.

Durum wheat looked very promising with an average yield of 4609 kg/ha. In the feed wheat test average yields of 5013 kg/ha were realized.

### Oil Crops

In the western regional canola test the average yield for the Argentine types was 2389 kg/ha, a 31% increase over the Polish types. In the Ontario cooperative test 49 cultivars and plant breeder lines were examined. Seed yields ranged from 1358 to 2577 kg/ha.

Despite the dry growing season good linseed yields were obtained. The test average was 1548 kg/ha.

### Protein crops

In northern Ontario the production of soybean might be considered as a very risky enterprise (due to late spring frosts). However, there are certain areas where this crop would fit well into local climatic conditions. Soybean breeders have developed early cultivars that require only 92-98 days to harvest and they can ripen in our growing conditions quite well. In the College tests the average soybean yield was 3773 kg/ha and the crop ripened in 109 days.

Field peas show the greatest potential for protein production in northern Ontario. In the New Lisheard tests the average protein was 25%. Some cultivars had a protein content up to 27% and the yields averaged 2526 kg/ha. Peas are very hardy and can be planted extremely early in the spring. Special equipment is not required for the production of field peas.

Sweet lupins and faba beans suffered from the hot and dry growing season and yielded only 1277 and 1679 kg/ha, respectively. One should note that practically no herbicides are available for weed control in sweet lupins.

### Forage Crops

The popular forage legume alfalfa performed well in the variety of tests. The better cultivars yielded 9.7 tonnes per ha under the two cut system, while the low yielders provided only 6.8 tonnes of dry matter per ha.

The better red clover cultivars in the first harvest year yielded 7.5 tonnes of dry matter per hectare. In the second harvested year the yield dropped by 40% for the same cultivars.

Birdsfoot trefoil cultivar yields ranged from 4300 to 5100 kg of dry matter per hectare.

Cultivars of brome grass, orchard grass and tall fescue were evaluated for their dry matter production. The brome grass cultivars were the most productive, averaging over 9 tonnes of dry matter per hectare in a two cut system.

#### Pasture experiment

Simulated grazing tests consisting of brome grass, tall fescue, reed canary grass and Kentucky blue grass were carried out. Brome grasses produced 13% more dry matter than the test average. Kentucky blue grass was the lowest producer.

Several perennial rye grass cultivars and other grass species were compared either singly or in mixtures with alfalfa under pasture management. The highest production was realized from brome grass-alfalfa mixtures. In an earlier experiment, several ryegrass cultivars were winter killed after the second production year.



## THE EFFECTS OF VITAMINS ON CONCEPTION AND PARTURITION

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The reproductive performance of a dairy cow or breeding sow is affected by various abiotic and biotic factors such as feeding rate, environmental conditions, farm management and of course diet composition and nutrient content. In relation to the diet or feed of any animal, there are a number of essential micronutrients that are critical to reproductive performance. Not the least of these essential micronutrients are the vitamins. All vitamins are critical and important to the animal in terms of reproductive performance, however, two vitamins and a provitamin have been directly implicated in the reproductive success of dairy cows and breeding sows. These vitamins are vitamins A and E and the provitamin Beta-Carotene. The purpose of this report is to outline the most recent research of these nutrients to these animals in terms of function and apparant mechanism of action, and the recommended inclusion levels of these nutrients in the diet of the dairy cow and breeding sow.

### Vitamin A

The role of vitamin A in maintaining the functional integrity of epithelial tissue is well established (Deluca and Suttie, 1970 "The Fat Soluble Vitamins" Academic Press). In relation to reproduction, the functional role of vitamin A in stabilizing the epithelial lining for the reproductive (uterine) tract is thought to be a major role of vitamin A. Vitamin A also functions in oogenesis, placental development as well as fetal and embryonic growth (Gaguly et al., 1980 Vitamins and Hormones 38:1-54; Zile and Cullum 1983 Proc. Soc. Exp. Biol. Med. 172:138-152). However, the mode of action and/or mechanism by which vitamin A is involved in this part of reproduction is still somewhat speculative. Nevertheless, it is apparent that without a sufficient dietary supply of vitamin A, reproductive performance (ie. successful conception and parturition) is impaired.

The recommended inclusion rates of vitamin A for successful breeding of the dairy cow and breeding cow and breeding sow is listed in the following table:

Animal	Vitamin A Inclusion Level
Cows	40,000 (I.U./day)
Sows	10,000 (I.U./kg feed)

### Vitamin E

A deficiency of vitamin E is known to cause muscle degeneration or dystrophy, gastritis and/or ulcers and in severe cases sudden death. More recently, there has been an increased interest in the effect of vitamin E deficiency on the incidence of mastitis and retained placentas .../2



in dairy cattle and lactation failure in the sow (Tubbs Miss. Vet. J. 1987: 7-10). The mode of action of vitamin E is believed to be related to the antioxidant function of the vitamin which may affect the immune response (disease resistance) of the animal.

Until recently, it was thought that the endogenous dietary supply of vitamin E, particularly to dairy cows, was sufficient to prevent any vitamin E deficiency. However, recent Canadian and U.S. forage analyses indicates that this assumption is invalid. The recommended inclusion levels of vitamin E for these animals is listed in the following table:

Animal	Vitamin E Inclusion Level	
Cows	500	I.U./head/day
Lactating Cows	1,440	I.U./head/day
Sows	35	I.U./kg feed

#### Beta-Carotene

During the late 1970's and early 1980's, it was determined that beta-carotene may have an independent function in reproduction other than that of as a precursor of vitamin A (Stowe 1984 Comp. Ed. Pract. Vet. 6:167-175). This conclusion has been quite controversial and several recent studies have indicated that beta-carotene had no significant effect on conception rate, uterine involution, milk yield or the fertility of the dairy cow (Akordor et al., 1986 J. Dairy Science 69:2173-2178; Folman et al., 1987 J. Dairy Science 70:357-366; Wang et al., 1988 J. Dairy Science 71:181-186). However, it should be noted that in all of these studies the nutrient content, particularly the vitamin E level, may have been deficient. As previously indicated, forages have only recently been noted to have low levels of vitamin E (in concert with low levels of beta-carotene). The NRC (1988) has only recently recommended a specific vitamin E requirement for dairy cattle. Since all of the recent studies have based their test diets on the NRC requirements prior to the 1988 publication, then the test diets could have been marginal to deficient in vitamin E. Considering the effect of a marginal vitamin E deficiency on the fertility of the cow, this could have masked any beneficial effect of beta-carotene on the overall reproductive performance of the cow. In addition, it should be noted that recent research by Talavera and Chew (1988 J. Reprod. Fert. 82:611-615) has indicated that beta-carotene plays a very important role in regulating luteal cell function and/or effecting progesterone secretion in "in vitro" studies. This role of beta-carotene may not only be important to the dairy cow but also the breeding sow.

The recommended inclusion levels of beta-carotene are listed in the following table:

Animal	Beta-Carotene Inclusion Level
Cows	500 mg/head/day
Sows	30-60 mg/head/day



### Conclusion

Vitamins play a very important role in the reproductive success of any animal. Vitamins A and E appear to have very specific and significant effects in the overall fertility of the dairy cow and breeding sow. In addition, beta-carotene may also have a very specific and independent role in reproduction. The complete breeding diet or feed should contain adequate amounts of these nutrients in order to optimize reproductive performance and success.

## ALTERNATE PROTEIN SOURCES

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Proteins are complex organic substances occurring in nature, synthesized by plants and put together from amino acids in animals. Protein is a Greek word meaning "of first rank importance". It is difficult to pinpoint specific functions of proteins or amino acids since almost every function of the body utilizes proteins or amino acids. It is involved as a principle constituent of all hormones and enzymes in the body; it constitutes the principle component of muscle, skin, blood and bodily secretions.

Because the structure of proteins are so varied and complex, and although some amino acid synthesis occurs in the gastro intestinal tract of some animals (cecum of horse and rabbit and rumen in ruminants), the entire amino acid needs of growing, lactating and working animals must be met through the ration. For non-ruminant livestock, protein quality (the quality of proteins is measured by the amount and distribution of the essential amino acids) is important. This means that quite often not only does the crude protein requirements have to be met, but, also the animal's essential amino acid requirements (especially in non-ruminant diets).

When looking at alternate protein sources the amino acid composition of that feed should also be ascertained. Most of our common cereal grains are deficient in the amino acids lysine and tryptophan. In soybean meal the most limiting amino acid is methionine. Together these two feeds make a balanced (amino acid) diet for farm livestock. This amino acid balance (protein quality) does not seem to be as important for mature beef cattle and sheep as good quality forage will provide adequate protein. These animals can convert non-protein nitrogen, such as urea, ammonium phosphate and biuret, into true protein in the rumen where it is then digested. This may provide the necessary supplemental nitrogen (as much as 1/3 of the total N requirement) in high-energy diets containing a nitrogen:sulfur ratio of 10:1.

Except for a deficiency of energy because of low feed intake, a protein deficiency is the most common factor limiting growth, milk production and reproductive performance. The amount of protein required (and more specifically amino acids) in the diet varies somewhat according to species and stage of life cycle. For most farm livestock in production, there must be some protein supplement added to the basic ration. Protein supplements are usually the most expensive types of feed. With the high cost of soybean oil meal, livestock producers are looking for cheaper alternatives. Most protein supplements are byproducts from other industries such as the oilseed crushing industry (giving soybean meal and canola meal). But there are protein supplements derived from animal tissues from rendering plants, milk by products or from marine sources. Protein supplements of animal origin are usually the most expensive types.



Some alternative protein sources which may be obtained locally are whole canola, canola meal, whole soybeans, field beans and peas. Price and availability of canola and canola meal make it unattractive at this time in northern Ontario.

Whole soybeans are available locally but contain undesirable factors such as trypsin inhibitors. Roasting of these seeds destroys the undesirable factors. The amount of whole roasted soybeans fed to pigs must be limited as too much oil in swine rations leads to poor carcass quality and off-tasting pork.

Faba beans and peas of a number of species are becoming more popular in northern Ontario as a crop grown (in combination with another cereal grain) for livestock feeding. These seeds generally contain about 22 - 26% protein. These proteins tend to be deficient in sulfur-containing amino acids as well as tryptophan, and some contain undesirable factors. This makes use for monogastric species very limited.

When deciding to use a different protein source, not only the price and the amount of crude protein should be considered but, also, the quality of the protein, any undesirable factors present, processing necessary, palatability, availability of the product and any special limitations for different species. A lot of these protein sources are also good sources of energy and crude fibre; this adds further factors to take into consideration when determining whether to use a new protein source for animals.

#### COMPOSITION OF COMMON PROTEIN SOURCES

FEED TYPE	CRUDE PROTEIN %		TDN %	CRUDE FIBRE%
	Range	Average		
<u>GRAINS</u>				
Corn	9 - 12	10.8	90	2
Oats	10 - 15	12	74	12
Barley	9 - 14	11.5	82	6
Soybeans	32 - 40	38	85	6
Canola	17 - 29	24	83	6
Field Peas	12 - 37	24	87	7
Faba Beans	24 - 32	29	72	8
<u>MEALS</u>				
Soybean meal	44 - 54		81	3 - 7
Canola meal	32 - 48		71	13
Meat meal	50 - 55	52	73	2.4
Fish meal	28 - 71	56	74	1
<u>HAYS</u>				
Legume Hays	10 - 24		52 - 70	18 - 33
Grass Hays	3 - 22		45 - 65	24 - 35

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ANTIBIOTIC TOLERANCES AND RESIDUES

by

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Drugs are administered to food producing animals for the treatment, mitigation or prevention of a disease, disorder, abnormal physical state, or the symptoms thereof. Drugs are also used for the improvement of feed efficiency and rate of weight gain.

A heavy responsibility is placed on the livestock producer and veterinary practitioner to ensure that the animals and their products, entering human food chain, are free of residues in excess of legally permitted limits. The major concern to public health is the chronic exposure to low levels of drug residues. When the residues in excess of legal limits are consumed over a long period of time, injurious effects may be produced.

As a federal regulatory agency, we in the Bureau of Veterinary Drugs (BVD) are responsible for the evaluation of data on safety and efficacy before the new animal drug can be sold for use in animals in Canada. Because of the advancement in analytical techniques and the ability of our residue chemists to measure progressively lower levels of residues, the setting of tolerances for drugs used in food producing animals is of utmost importance. The regulatory agencies cannot justify the enormous economic costs involved in introducing increasingly more sensitive monitoring programs. Not all drug residues have the same toxicity and the limited financial resources have to be spent on a priority basis.

In setting new tolerances, the primary concern of the BVD is the avoidance of health risks to the Canadian public consuming products originating from treated animals. The tolerance levels which are being set are below the levels known to pose a measurable health risk, and incorporate a considerable margin of safety. The BVD is using a system of human safety assessment of new animal drugs which is similar to that currently used in the U.S. This system includes a six step procedure and can be summarized as follows:

1. Metabolism studies in the target species.
2. Comparative metabolism studies in the laboratory test species.
3. Toxicity/carcinogenicity testing to determine a safe level or acceptable level of risk for residues.
4. Determination of the target tissue, marker residue and tolerance (Maximum Residue Limit).
5. Development of an analytical assay for the marker residue at the required level of measurement.
6. Establishment of a withdrawal period required for the safe use of the drug.



The clearance of Excenel Sterile Powder for Injection for treatment of bovine respiratory disease is an example of a recently established tolerance for this third generation cephalosporin antibiotic.

Whenever a drug is administered to food producing animals, treated animals must be withheld from the market according to warning statements on the label of the drug. From a public health point of view, as well as for regulatory compliance, every effort must be made to avoid illegal residues in human food. The most common reasons for the presence of illegal drug residues in food are as follows:

- failure to observe the labelled withdrawal period for the particular drug;
- use of drugs to "mask" clinical signs to prevent condemnation of animals at antemortem inspection prior to slaughter;
- use of unapproved or banned drugs;
- exceeding labelled maximum recommended dose and frequency;
- use in unapproved species;
- use of unapproved route of administration;
- feed mill error or mix-up in delivery;
- cross-contamination due to inadequate cleaning of feed mill bins, carry-over from previous mixing;
- improper label directions of a drug product.

What can the livestock producer do in order to avoid illegal residues?

Label directions should be carefully followed

- drugs should be used only for the approved species and routes of administration;
- maximum recommended dose and frequency of use should not be exceeded;
- labelled withdrawal times should be strictly observed.

When your veterinarian recommends the use of the product for the species, dosages, or claims not indicated on the labelling (off label use), his/her directions must be followed with particular attention being given to the withdrawal period. The records and identity of treated animals should be carefully maintained.



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### INNOVATIONS

We always wonder about new ways to make money in order to increase our cash flow.

I attended a 2 day Innovations Conference at Kemptville College last December. Bob Chorney, joining me as a speaker today and Becky Hughes from New Liskeard College also attended the conference.

There are a number of reasons for looking into alternate sources of income. Examples are:

- 1- to increase revenues
- 2- for the spouse to contribute into the operation
- 3- for children to make money during the summer
- 4- as a semi-retirement business
- 5- to keep busy during slow seasons
- 6- to make use of other resources available on your farm (eg: trees)
- 7- as a hobby

Most of the innovation ideas I saw are:

- 1- a high risk & very specialized
- 2- labour intensive
- 3- have a limited market
- 4- are productive areas which most people including agri-business know little about
- 5- require good marketing, publicity and public relations

Nobody wants to risk too much money in a new venture. Most speakers we heard started small. A good recipe is:

- 1- START SMALL
- 2- expand gradually as your production and markets are found
- 3- know your limits
- 4- sell "quality"
- 5- give your client service with a smile
- 6- spend a few dollars on promotion
- 7- keep liabilities under control

You can start a very profitable sideline that could even turn out as a retirement hobby or even a full-time occupation for you or a member of your family.

Please note that some of the following ideas may be possible in Districts such as Nipissing but not north of it. An instance is maple syrup production.

I know of innovations in Northern Ontario and I am sure that if we looked into our own District, we could find 100 ideas just as good as those of "Innovations 100".

This may be a good theme for next year's Agricultural Conference in New Liskeard.

I tried to group the presentations so as to help you in your search for areas of interest.

### LIVESTOCK

- 1 - Embryo Recipients
- 2 - Freezer Beef Marketing
- 3 - Sheep on Your Farm
- 4 - Raising Red Veal
- 5 - Breeding Horses
- 6 - Fancy Poultry in Ontario
- 7 - Opportunities for Duck & Goose Production
- 8 - Boarding Horses
- 9 - Wood Production & Marketing
- 10 - Goat Cheese on a Small Scale
- 11 - Thoroughbred Race Horses in Ontario
- 12 - Heavy Horses
- 13 - Rabbit Production and Marketing
- 14 - Raising Angora Goats
- 15 - Specialty Meat Marketing
- 16 - Selling Game Birds to Restaurant
- 18 - Raising Deer for Venison
- 19 - Small Scale Mink Farming
- 20 - Raising Endangered Species
- 21 - Trapping your Farm

### FISH

Aquaculture in Ontario  
Raising Trout  
Fee Fishing

### ENTERPRISES FROM THE HOUSE

Leather Crafts  
Clothing Business from the Home  
Sweet Things  
Catering from your Home  
Bed and Breakfast  
Stencil Art in the Home  
Farm Vacations  
Knitting in the Home  
Hand Painted Accessories



**(ENTERPRISES FROM THE HOUSE continue)**

Mail Order Farming  
Serving in the Home  
Selling Homemade Fruit and Vegetable Preserves

**CROPS**

Organic Crop Production  
Selling your Cereals  
Lupins in Eastern Ontario  
Pedigreed Seed Production  
Specialty Grains in Eastern Ontario  
Oats for Food and Feed  
Sunflowers in Eastern Ontario  
Alfalfa Seed Production  
Field Peas in Eastern Ontario  
Preparing and Bagging Birdseed

**HORTICULTURE**

Asparagus Production  
Hydroponic Lettuce  
Cole Crop Production  
Cultivated Lowbush Berries  
Fresh Market Tomatoes  
Season Extenders for Horticultured Crops  
Servicing Bedding Plant Customers  
Fresh Cut Flower Production  
Garlic in Ontario  
Current and Gooseberry Production  
New Potatoes  
Raspberry Production  
Production of Oriental Vegetables  
Strawberry Marketing  
Herd Production and Marketing  
Pick Your Own Marketing

**NURSERIES**

Getting Started in Nursery Business  
Nursery Stock Production in Containers  
Trends in Bedding Plant Production

**FORESTRY**

Production and Sale of Timber  
Fuelwood Production and Marketing  
Maple Orchards for Syrup Production  
Cedar Production

**(FORESTRY continue)**

Maple Sap as a Cash Crop  
Maple Sugar and Maple Butter Production  
Production and Marketing of Maple Syrup  
Growing and Marketing of Christmas Trees  
Small Sawmilling

**MARKETING**

Inventory Your Farm Options  
Determining Markets Within 30 Minutes  
Operating a Roadside Market  
Direct Exporting  
Farm Markets in Eastern Ontario  
Value Added Produce  
Promoting Your Product  
Marketing Co-ops  
Roadside Marketing Opportunities  
Hotel and Restaurant Trade  
Overview of Alternatives  
Effective Advertising and Promotion

**AGRE-BUSINESS**

Farm Consulting  
Moonlighting with Computers

**MISCELLANEOUS**

Storage Rental on the Farm  
How to Sell your Machinery Ideas  
Bees and Honey  
Marketing Livestock and Poultry Waste  
Patenting of Inventions  
Financing a New Business



## INNOVATIONS 100 CONFERENCE

## KEMPTVILLE COLLEGE OF AGRICULTURAL TECHNOLOGY

Saturday and Sunday, December 3-4, 1988

## REPORT

by: Robert T. Chorney, Marketing Specialist - Northern Ontario Region

Approximately 750 persons attended. The majority were from Eastern Ontario; about 50 from South-Central Ontario; 15-20 from Southwestern Ontario; 6-8 from Northern Ontario and a few people from Quebec.

The conference was extremely well-organized and highly informative.

Chairmen of the sessions were Gordon Hill, Past-President OFA, Varna and Dr. Stan Young, Extension Co-ordinator, University of Guelph. Both men kept the speakers/proceedings precisely on time.

Following each group of six speakers there was a 20 minute break where the six adjourned to a small conference room where they were available for one-to-one consultations. In most cases, it turned out 10 to 1, however, there was ample opportunity for questions and answers in a small group setting.

Of particular interest to the writer were the presentations on:

- Aquaculture (2)
- Raising beefalo
- Hydroponic lettuce
- Sod production
- Operating a roadside market
- Pick-your-own marketing
- Raising deer for venison
- Marketing co-operatives

The keynote speakers were:

Ken Knox  
Chairman, Farms Products  
Marketing Board  
Toronto

and

Brian Cooper, M.B.A.  
Chairman  
School of Hospitality,  
Hotel & Culinary  
George Brown College  
Toronto

Mr. Knox spoke about "the changing marketplace"...the need for quality and consistency; innovation, marketing strategy and inspiration. He also described the four stages of going into business...wonder; blunder; thunder and plunder. He ended by covering the old adage of "plan your work and work your plan".

Mr. Cooper spoke about the need to be unique; to stress quality; to produce and sell high ticket items and diversification. He also shared information about the trends toward an aging population; reduced immigration; increased percentage of female workers; a shrinking high school population and a lower percentage of students opting for continuing education.