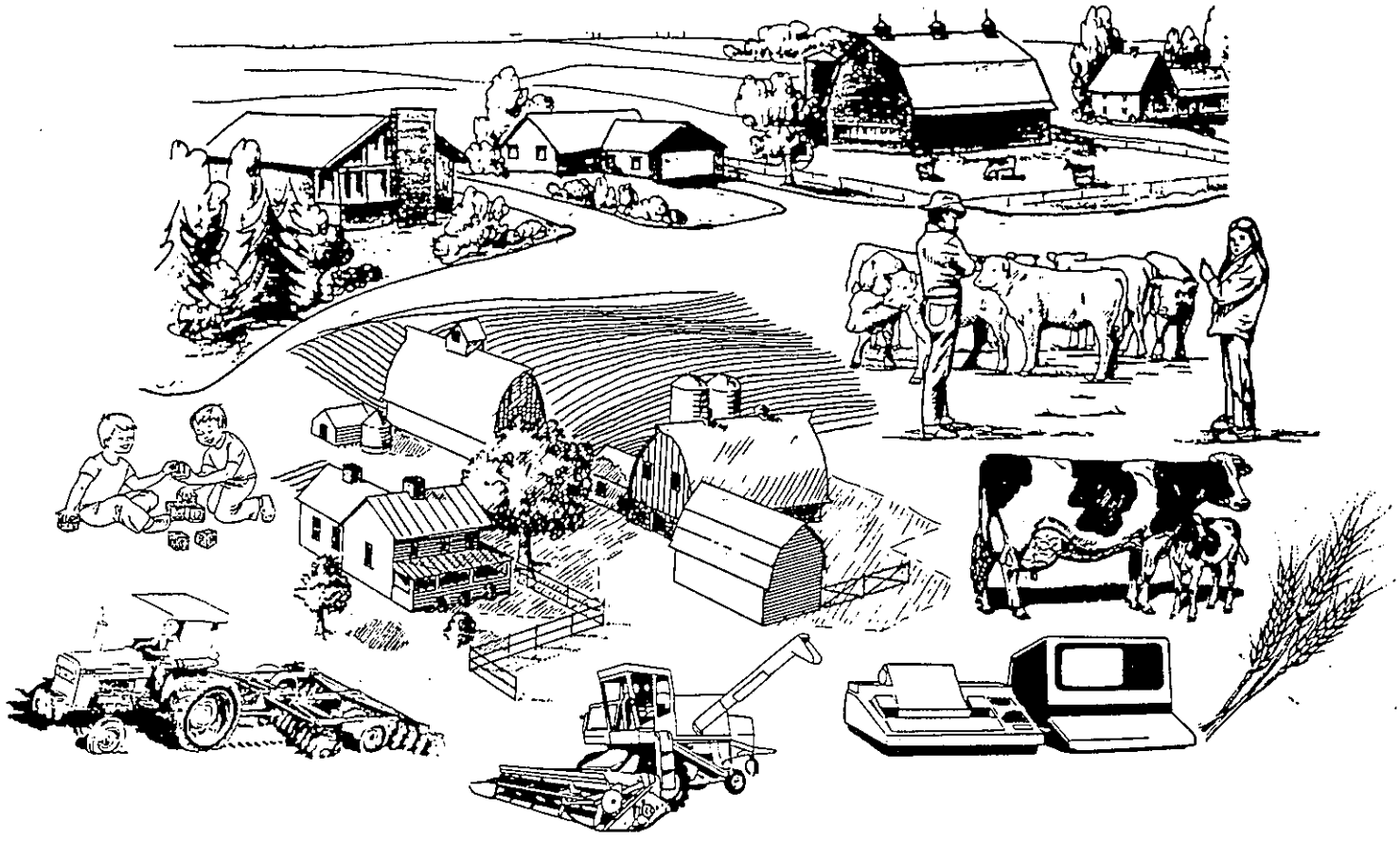
Proceedings of the
27th ANNUAL

NORTH EASTERN ONTARIO
AGRICULTURAL CONFERENCE

FEBRUARY 26-27, 1993



NEW LISKEARD COLLEGE OF
AGRICULTURAL TECHNOLOGY

OATI

Ontario

TPC-NL

1993 CONFERENCE PROCEEDINGS

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27th Annual
North Eastern Ontario Agricultural Conference and Trade Show

New Liskeard College of Agricultural Technology
February 26–27, 1993

TRADE SHOW AND POSTER SESSIONS – 2:00 pm – 10:00 pm, February 26 and
10:00 am – 4:00 pm, February 27

FARM SAFETY EVENING, Temiskaming Farm Safety Association – 7:00 pm – 9:00 pm, February 26

ANNUAL MEETING OF N.E.O.S.C.I.A. – 7:30 am Breakfast Meeting, February 27

N.E.O.S.C.I.A. CHAMPIONSHIP FORAGE, SEED AND THE POTATO SHOW – 9:00 am – 5:00 pm, February 27

FARM SAFETY FOR KIDS, Temiskaming Child Care – 2:00 pm – 4:00 pm, February 27

BANQUET – 6:30 pm, February 27

FRIDAY, FEBRUARY 26

SOILS AND CROPS

1:30 – 2:30 pm
Field Crops Research in the North
Laurier Guillemette, Agriculture Canada Experimental Farm, Kapuskasing
John Rowsell, Agronomy Section, NLCAT, New Liskeard

2:30 – 3:10 pm
Herbicide Resistant Wild Oats – Panel Discussion
Dan Tasse, Moderator, OMAF Soil & Crop Advisor, New Liskeard
Tim Borho or Brian Leggasicke, MONSANTO
Stephen Hamilton, HOECHST CANADA
Tim Trinier, CYANAMID

3:10 – 3:40 pm
Agriculture and the Environment – Taking the Lead
Jeff Wilson, Chairman, AGCare (Agricultural Groups Concerned About Resources and the Environment)

DAIRY PRODUCTION

1:30 – 2:30 pm
Dairy Research Update
Paul Gumprich, Animal Science Section, NLCAT, New Liskeard
Vern Osborne, Animal Science Section, RCAT, Ridgetown

2:30 – 3:30 pm
Haylage Nutrition for Dairy Cattle – Panel Discussion
Earl Pollock, OMAF Agricultural Representative, Brockville
Brian Bell, OMAF Beef/Dairy Specialist, Sault Ste Marie

Field Crops Research in the North

Laurier Guillemette, Agriculture Canada
Experimental Farm, Kapuskasing, Ont.

The text below is only a very short summary of the information presented at this conference. For those interested in the entire text of the presentation, copies will be available in limited quantities at the conference.

The field crop research program of the Kapuskasing Experimental Farm consists primarily of forage cultivar evaluation and forage production studies. A secondary mandate in cereal cultivar testing and production research exists along with some horticultural efforts. In today's presentation the material covered will deal with the following four topics:

1) Tall fescue, a complete description, along with production results from the north and potential as a new grass for the region.

2) Alfalfa hard seed problem, a study which looks at the problem of hard seed coat of alfalfa seeds in forage production.

3) Urea vs Ammonium nitrate fertilization on timothy, seasonal performance differences and costs of production.

4) Breeding for early maturing barley an update of the joint research efforts and results from various sites in northern locations.

Early results from tall fescue testing appear to indicate that most registered varieties were not adapted to Ontario conditions - with more recent new cultivars this specie has found a place in Ontario Agriculture. Its growth habit and yields have shown that it can do quite well when compared to other grass species presently grown in the region. Ontario producers now have up to 4 varieties available for either pasture or hay production.

After two years of comparing alfalfa seeds with varying degree of seed coat hardness, preliminary results have indicated that under near normal seeding conditions the degree of hard seed did not affect the dry matter yield of the crop in the production years.

In a 3 year study to compare 4 levels of urea vs ammonium nitrate on timothy, there were significant yield differences due to the source and level of nitrogen applied. In some instances it was cheaper to use urea and under different circumstances ammonium nitrate had the advantage.

Northern Ontario grain producers can be reassured that the research establishments in Northern Ontario are presently involved in testing early maturing barley cultivars as requested a few years ago by the Timiskaming Grain Growers Association.

publication and is based on 3 years of data from Testing Area V including Thunder Bay and Emo. The '1992 Relative Yield' for New Liskeard and Verner was calculated in a similar way based only on the 1992 data. Additions to the list for 1993 are discussed after the table.

Table 1 Barley Varieties

Variety	1992 Yield (t/ha)		Relative Yield From 296	1992 Relative Yield	
	New Lisk.	Verner		New Lisk.	Verner
2-Row					
Albany	7.46	5.12	93	95	95
Lester	8.60	5.00	94	110	93
Morrison	7.19	5.28	99	92	98
Symko	8.01	5.95	100	102	110
6-Row					
Chapais	8.67	5.48	107	111	102
Etienne	7.31	5.11	104	93	95
Leger	7.77	5.20	104	99	96
Maskot	8.12	5.71	94	104	106
OAC Kippen	7.51	5.08	101	96	94
Sabina	7.51	5.99	104	96	111
Average	7.82	5.39	4.85		

The 2-row variety 'Frin' had a relative yield of 87 at New Liskeard and 94 at Verner. The 6-row variety that topped the regionals in Area V last year, AC Burman, had relative yields of 93 and 89 at New Liskeard and Verner respectively and will not be recommended to Ontario farmers. In 1992, Chapais topped the test at New Liskeard and Sabina at Verner. Sabina has done well at Verner; but, is flagged for deletion from the recommended list in 1994. It is unlikely that certified seed will be available in any quantity in 1994 as a result of its intended deletion. Another 6-row that has been tested under the code BT-490 and may be named 'Codac', had relative yields of 106 and 109 at New Liskeard and Verner respectively. The numbered variety TB 891-6 had relative yields of 102 and 96.

Table 2 Oat Varieties

Variety	1992 Yield (t/ha)		Relative Yield From 296	1992 Relative Yield	
	New Lisk.	Verner		New Lisk.	Verner
Donegal	8.04	5.42	104	113	116
Marion	7.49	4.94	100	105	105
Newman	6.11	3.91	95	86	83
Ogle	6.53	3.79	102	92	81
Ultima	7.51	5.38	99	105	115
Average	7.14	4.69	4.71		

The variety 'Robert' had a relative yield of 107 at New Liskeard and 113 at Verner. 'AC Stewart' had a relative yield of 91 at both locations. It is essentially a rust resistant Ogle. The 'naked' or 'hulless' varieties 'AC Lotta', 'AC Hill' and 'Tibor' had relative yields of 83, 68 and 53 at New Liskeard and 76, 83 and 64 at Verner.

Results are presented in ascending order by variety name. The C.V. for the test was 7.89%, 8.96% and 6.43% for the first and second cuts and total respectively. The first cut was harvested on June 15 and the second on August 13. Like many locations in Ontario, the early-May to late-June period was very dry with no precipitation of any practical importance during that period.

Statistical analyses indicate that there was no significant (repeatable) difference between the first-cut or total yields of these varieties. There were slight significant differences in the second-cut yields. Second-cut yields must differ by at least 333 kg/ha to be significantly different (LSD 0.05).

POTENTIAL PROTEIN SUPPLEMENTS

If the 1992 growing season made the production of crops that are well adapted to the northeast difficult, it made the production of warm and long-season crops seem hopeless. The following table summarizes our experiences with lupines (long, cool-season crop) and soybeans (warm-season crop) at Verner and New Liskeard over the past few years. The data are averages over many varieties.

Table 5 Potential of Lupines and Soybeans as Home-Grown Protein Sources

	1990		1991		1992	
	Days to Harvest	Yield kg/ha (bu/ac)	Days to Harvest	Yield kg/ha (bu/ac)	Days to Harvest	Yield kg/ha (bu/ac)
Soybeans	140	2340 (35)	113	2530 (38)	161	1034 (15)
Lupines	145	3019 (45)	114	1863 (28)	161	932 (14)

Soybeans and lupines reached full maturity in 1990 and 1991. Moisture at harvest ranged from 18 to 24% in 1990 and 12 to 14% in 1991. Neither soybeans nor lupines reached maturity in 1992. They were both harvested with many pods and seeds still green. Moisture at harvest was over 30%.

CEREALS AND PEAS

We looked at a more traditional protein crops; peas. We have been attempting to fashion a system for growing peas that will make harvesting easier. To this end, we grew peas and cereals in mixtures. Peas were seeded at 200 kg/ha and the cereals at the "bushel-to-the-acre" rate. Table 6 summarizes our results from Verner (Vern) and New Liskeard (N.L.)

Barley in mixtures with peas gave lower protein percentages and lower quantities of protein per acre. This may be the result of 2 factors; wheat has a higher protein content than barley and the wheat/pea mixtures had higher percentages by weight of peas than did the barley/pea mixtures.

Table 7 Yields and Oil Free Fatty Acid (FFA) Contents of Spring Canola at NLCAT in 1992

Variety	Yield (t/ha)			FFA's (%)		
	296[a]	N.L. 1992	Ont. 1992	296[a]	N.L. 1992	Ont. 1992
OAC Springfield	2.68	4.20	2.69	0.78	0.086	0.31
Cyclone	2.80	4.52	3.20	1.17	0.053	0.25
Kristina	2.59	5.06	2.92	0.93	0.042	0.26
WW1432	2.73	4.50	2.95	0.96	0.093	0.28
Delta	2.73	4.18	2.97	0.96	0.063	0.3

[a] From Eastern Cooperative Spring Canola Test 1990-1992

The recommended rates of nitrogen fertilization for spring canola have been revised based on 11 years of NLCAT research, most of which was done on local farms using farmer-seeded canola. Table 8 shows the new recommended rates.

Table 8 Recommended Rates of Nitrogen for Spring Canola

Price Ratio[b]	Most Economical Rate of Nitrogen Application (kg N/ha) for Areas Receiving Less Than 2300 Corn Heat Units
3.33	110
2.5	130
2	140

Let's say that you receive $280 per tonne of canola and you pay $238 per tonne for 34-0-0. In every tonne of 34-0-0, there are 340 kg of N (34% of 1,000 kg). Each kg of N therefore costs $238 ÷ 340 = $0.70. We use this value to calculate the price ratio as follows:

$$\textit{Price Ratio}^{b} = \frac{\$/kg\ of\ N}{\$/kg\ of\ Canola} \qquad \textit{eg.}\quad 2.5 = \frac{\$0.70}{\$0.28}$$

The price ratio of 2.5 is then matched to the table to give a recommended nitrogen rate of 130kg of N per ha.

We are continuing our work on nitrogen and canola to relate soil nitrate-nitrogen test results to nitrogen recommendations, and to determine the impact of various rates of nitrogen fertilization on canola quality.

We have a ten-acre field in which we have been experimenting with no-till crop production. Canola was seeded into this field with a no-till drill on May 7. An adjacent 2-acre field, that was plowed last fall, was worked up and seeded the same day with the same drill. On May 24, both fields of canola were at about the same stage of development.

The no-till canola was killed by the frost on May 25 (-6.5°C) whereas the canola on the conventionally-tilled land survived. The difference in survival was likely due to the ability of the tilled land to radiate heat to keep the plants from freezing. High residue cover and albedo likely impeded the radiation of heat from the no-till surface.

account for a lack of positive yield responses. It is unclear why strong negative yield responses did not result from the very high rates of N applied. There was no lodging in 1990 nor 1991 which is very surprising.

The most striking aspect of the results of this experiment was the post-harvest nitrate-nitrogen levels in the top 60cm (see figures 1, 2 and 3).

Good correlation exists between the amount of N applied and the amount remaining in the plots in all years. About 0.7 to 0.8 times as much nitrate-nitrogen remained in the plots as was nitrogen applied in 1990. This is generally what one would expect.

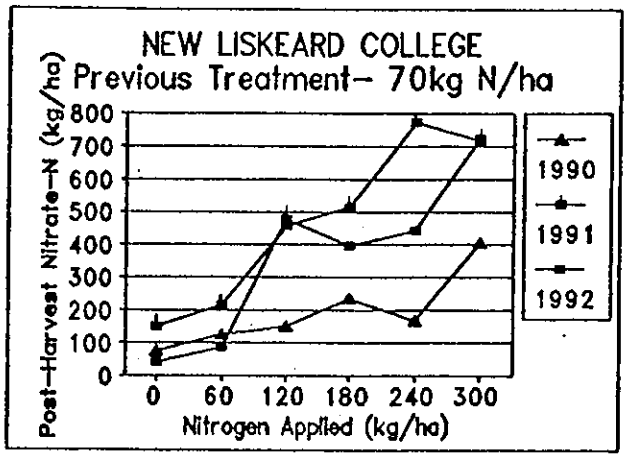

Figure 2

In all three strips in 1991 and 1992, considerably more nitrate-nitrogen was found in the plots after harvest than was applied in the spring. Between 1.8 and 2.4 times more nitrate-nitrogen was found post-harvest than was applied. These two years were quite different climatically from each other yet the results were surprisingly close between them. A blocked tile run through the plot area most likely led to the anomalous results in both yield and post-harvest nitrate-nitrogen levels in 1990. Similar relationships were found between the amount of nitrogen applied and the post-harvest soil nitrate-nitrogen levels regardless of the initial treatments in all three years.

Further research in this area is needed. Mineralization of nitrogen from soil organic matter may have been stimulated by applications of nitrogen fertilizer in 1991 and 1992. This heightens the potential threat to groundwater from application of nitrogen beyond rates to which the crop will respond.

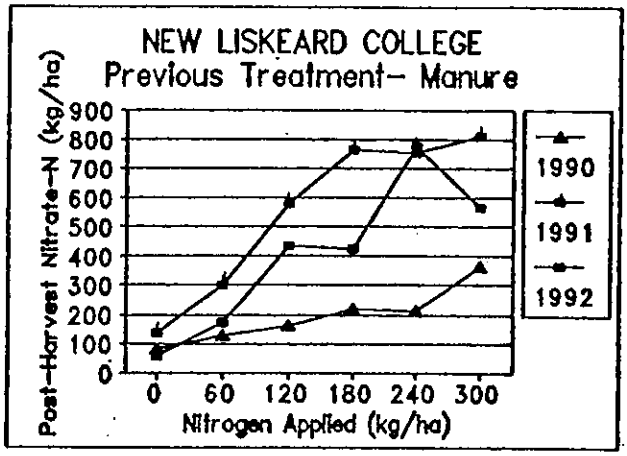

Figure 3

READ THE LABEL BEFORE USING

CONTENTS 20 LITRES (4.4 GALLONS)

EXTRA STRENGTH

HOE-GRASS®

284

EMULSIFIABLE LIQUID HERBICIDE

EASTERN CANADA AND BRITISH COLUMBIA

COMMERCIAL

DANGER

CORROSIVE

TRIPLE RINSE

GUARANTEE: DICLOFOP-METHYL 284 GRAMS PER LITRE
(2.84 pounds per gallon)

REGISTRATION NO.: 16042
PEST CONTROL
PRODUCTS ACT

HOECHST CANADA INC.
Head Office – Montreal
Agriculture Division
295 Henderson Drive
Regina, Saskatchewan S4N 5C2
(306) 721-4500 (Collect)

Hoechst

As HOE-GRASS controls only certain grassy weeds, it is important to control broadleaf weeds by using a pre-emergence herbicide such as Afolan® , or Afesin® or a post-emergence herbicide such as Basagran® on crops where the use of these products is registered.

Tank mixtures of HOE-GRASS with broadleaf herbicides (e.g. Basagran, 2,4-D, 2,4-DB etc.) must not be used and will result in reduced weed control. A time interval of four (4) days before or after application of HOE-GRASS is required before broadleaf herbicides can be applied without a reduction of grassy weed control.

BARLEY:

HOE-GRASS must be applied in the 1 to 4 leaf stage of the barley and prior to tillering. Application beyond the 4 leaf stage or after tillering (stooling) will result in crop damage. Under certain environmental conditions, yellow blotches may appear on the barley leaves. These blothes will be rapidly outgrown and will not affect maturity or yield. On all other registered crops, use HOE-GRASS independently of crop stage.

DO NOT APPLY HOE-GRASS TO KLAGES OR BETZES BARLEY VARIETIES.

FORAGE LEGUMES:

Alfalfa, Red Clover and Sweet Clover alone or undersown to any crop for which the use of HOE-GRASS is registered (e.g. wheat, barley) must be treated only in the year of establishment, and must not be grazed or harvested for livestock feed in the treatment year.

TANK MIX DIRECTIONS:

For broad-spectrum control of annual grassy and broadleaf weeds in Barley (except Klages and Betzes), Flax (when flax is 5 - 10 cm or - 4 inches in height), Spring and Winter Wheat only, apply HOE-GRASS at 2.8 litres per hectare (1 quart per acre) plus Pardner® . Apply in a minimum of 110 litres of water per hectare (10 gallons of water per acre) at a pressure of 275 kPa (40 p.s.i.) and at a speed of 6 - 8 km/h (4 - 5 mph).

WEED STAGE:

Spray when the grassy weeds are in the 1 to 4 leaf stage and before tillering, when Volunteer Corn is 15 - 25 cm (6 - 10 in.) in height and the broadleaf weeds are in the 1 to 4 leaf stage.

CAUTION:

If grassy weeds are in the correct stage for HOE-GRASS application before broadleaf weeds have emerged DO NOT DELAY HOE-GRASS APPLICATION.

WEATHER CONDITIONS:

During periods of stress [for example, very hot (28°C or 82°F) and/or dry conditions or low humidity] plants are not actively growing. Better control of grassy weeds will be achieved with HOE-GRASS alone than if the tank mix of HOE-GRASS/Pardner is used.

CAUTION:

Under some environmental conditions (for example, under hot daytime temperatures), flax may be severely injured by Pardner. Application of the tank-mix should be avoided at these times.

CAUTION:

Do not tank mix HOE-GRASS with any insecticide (other than DECIS), fungicide, fertilizer or any other chemical or additive except those listed on this label.

CAUTION:

HOE-GRASS should be applied before the use of any broadleaf herbicide other than those listed on this label. Mixtures with other broadleaf herbicides (2,4-D, Basagran etc.) must not be used and will result in reduced grassy weed control. A time interval of four (4) to seven (7) days before or after application of HOE-GRASS is required before any other pesticide, fertilizer.

Carefully read and follow all precautions and limitations of the HOE-GRASS and PARDNER labels.

- Do not graze treated fields.
- Do not mix HOE-GRASS with insecticides (except those registered on this label), fungicides, fertilizers or any other chemicals or additives.
- Do not apply insecticides, fungicides, fertilizers or other chemicals within four (4) days of HOE-GRASS application.
- PRECAUTION:

  KEEP OUT OF REACH OF CHILDREN. THIS PRODUCT IS A SENSITIZER AND CAUSES EYE DAMAGE. WEAR GLOVES AND PROTECTIVE EYE EQUIPMENT WHEN HANDLING THIS PRODUCT. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. AVOID BREATHING SPRAY MIST. Avoid spray drift on to susceptible plants and USE ONLY FOR RECOMMENDED PURPOSES AND AT RECOMMEND RATES. Keep in original container during storage. TOXIC TO FISH. Do not contaminate water supply, ponds, lakes, streams and irrigation ditches.
- During periods of stress plants are not actively growing. When daytime temperatures are very hot (28°C or 82°F) and/or conditions are very dry and/or there is low humidity, plants are under stress. Application of HOE-GRASS during these periods may result in substantially reduced control. Under these conditions yellow blotches may appear on crop leaves. These blotches will be rapidly outgrown and will not affect maturity or yield.
- UNIFORM, THOROUGH COVERAGE IS IMPORTANT TO ACHIEVE GOOD CONTROL. If weed populations are extremely high, it may be difficult to achieve good coverage as spray penetration may be inhibited. Apply the spray at a forward angle of 45°, and ensure that weeds are young and actively growing.

HIGHLIGHTS OF THE 1992 AND 1993 DAIRY RESEARCH AT NLCAT

Paul Gumprich, Lecturer, Animal Science, NLCAT

PROTEIN SUPPLEMENTATION EFFECT ON MILK PRODUCTION, BODY CONDITION SCORE AND REPRODUCTION OF HIGH PRODUCING DAIRY COWS

Forty cows were randomly divided into four feeding groups. A control group received only soybean meal, groups 1, 2 and 3 received five, six and seven pounds of whole roasted soybeans. Differences in milk yield and composition, body condition score, and reproductive parameters were measured. Total feed consumption, water consumption and economic parameters were also measured. Data is now being analyzed.

For 1993, the cows will be divided into 3 groups. Group 1 will receive soybean meal, Group 2 will receive whole roasted soybeans and Group 3 will receive canola meal. All rations will be balanced for protein. Economics and performance parameters will be measured.

USE OF A NEW HEAT DETECTION AID

The use of a pedometer will be analyzed to determine if it is a viable aid to detecting heats. Post parturient cows will be fitted with a pedometer. Measurements will be taken to determine its accuracy.

COMPARISON OF TWO DIFFERENT CALF STARTERS

Calves will be split into two feeding groups. One group will receive an 18% commercial calf starter, the other group will receive a 20% commercial calf starter. Costs and growth rates will be measured.

MINERAL SUPPLEMENTATION EFFECT ON GROWTH RATE OF HEIFERS

Heifers will be split into two groups. Group 1 (control group) will receive mineral supplementation through injections and feed. Group 2 will receive slow release vitamin mineral baloses. Growth rates and economic data will be compared.

Carbohydrate Definitions:

Sugars and starches: Non structural components of the plant cell that are highly digestible.

Pectin: A structural component of the cell wall that is highly digestible.

Cellulose: A structural component of the cell wall, a polysaccharide composed of glucose units. Very slow digestion rate unless acted upon by rumen bacteria.

Hemicellulose: A structural component of the cell wall, mixed polysaccharide (not glucose), not related to cellulose and has a slow digestion rate.

Lignin: A structural component that is not a carbohydrate, is a complex polymer that does not contain sugar units. It can be associated with cellulose as ligno-cellulose and therefore can limit the digestive action of rumen bacteria. It is not digestible, as there are no lignin digesting bacteria in the rumen.

FIBRE AND FORAGE FIBRE ANALYSIS

Chemically, fibre is the structural component of the plant cell wall. Nutritionally, it consists of the components of the plant cells which are indigestible or have very slow digestion rates.

The objective of fibre analysis is to determine how much carbohydrate present is in a digestible form and how much is not. The crude fibre analysis of yesteryear has given way to the VanSoest system of fibre analysis. Developed by the Cornell Scientist, the VanSoest detergent system separates the plant into important fractions using detergents of differing pH. See the following chart for explanation.

ADF AND NDF

ADF	NDF
ACID DETERGENT DIGEST	NEUTRAL DETERGENT DIGEST
SOLUBLES -Plant cell contents hemicellulose and pectin	SOLUBLES - Plant cell contents (sugars and starches) and pectin
RESIDUE - ADF or cellulose and lignin	RESIDUE-NDF or cellulose, lignin and hemicellulose

Wayne Kay-UCO Feed Lab, Guelph 1989

UIP AND SOLUBLE PROTEIN OF LEGUMES AND GRASSES AT VARYING MOISTURE

		% SOLUBLE PROTEIN (% of CP)		% UIP (% of CP)	
% DM		LEGUME	GRASS	LEGUME	GRASS
90		20	20	28	37
85	HAY	22.5	22	27.2	36.3
80		25	24	26.4	35
75		27.5	26	25.6	34.9
70		30	28	24.8	34.2
65		32.5	30	24	33.5
60		35	32	23.2	32.8
55	HAYLAGE	37.5	34	22.4	32.1
50		40	36	21.6	31.4
45		42.5	38	20.8	30.7
40	HAY CROP	45	40	20	10
35	SILAGE	47.5	42	19.2	29.3
30		50	44	18.4	28.6
25		52.5	46	17.6	27.9
20		55	48	16.8	27.2
15		57.5	50	16	26.5
10		60	52	15.2	25.8

Brian Tarr-OMAF Feed Advisory Program

It has been theorized that lactating diets containing a large portion of forage as vegetative legumes may cause reproductive failure from B.U.N. (blood urea nitrogen), a circulating toxin that occurs from the buildup of ammonia in the rumen. This ammonia enters the bloodstream, reacts with carbon dioxide and forms urea.

Various OMAF accredited laboratories can analyze forages for soluble protein. This may be used in ration formulation. This must be practical: the ration delivered may differ greatly than what is actually consumed! So what if the ration looks great on paper.

LARGE BALE SILAGE SYSTEM

Stephen P. Clarke, P. Eng.
Engineering Field Crop Structures
and Equipment Specialist
Resources Management Branch, OMAF

BASIC REQUIREMENTS FOR QUALITY SILAGE

1. Cut at right stage of maturity
2. Ensile the forage at the correct moisture content
3. Exclude the air from the forage as quickly as possible, and keep it cool.

HARVESTING

- **Crop** - 50-60% MC
  - Below 40% MC let dry as hay
  - Harvesting at 55% MC compared to hay at 18% MC can cut harvest and storage losses in half. See Figure 1.
  - Cut and swath crop, wilt to 55% MC. See Table 11 and 12.

Equipment

1. Use same equipment as for harvesting hay. Packing is usually eliminated.
2. Machinery for making and transporting heavier, high moisture bales is required since bales will typically be twice the weight of hay bales.
3. Bales need to be small i.e. 4'x 4', 4' x 5'
   - 4' x 5' bale Hay @ 18% MC - 750 lb
   - 4' x 5' bale silage @ 60 MC - 1500 lb
4. Increased weight of bales due mainly to extra water only and not the ability of balers to bale wet forage denser.
5. Bale sizes matched to fit bale bags or other coverings used.
6. Ground speed of baler should be less than speeds used in making field - cured hay to obtain tight, dense bales.
7. Silage bales are heavier than dry hay bales, but the number of bales handled per acre is similar.

Feeding and Utilization

1. The silage can be fed to almost any kind of cattle that would use conventional silage.

2. Strings should be removed from the bales to allow the animals access since silage bales are more dense than hay bales.

3. Not all systems that work with feeding large round hay bales will work with feeding large silage bales. The bales should be fed on an elevated platform and protected by feeding gates.

4. During the winter, a bale of silage can be exposed to the animals for several days.

5. Feed in various ways:

    1. In circular or square large bale feeders.

    2. Feed loose into managers outside or in the barn with barriers.

    3. Out in the open, fed loose

    4. Foil chopped into feeder wagons or bunks.

6. Some research indicating higher dry matter in-take of big bale silage. (i.e. long stem feed not chopped).

INDIVIDUAL BALES

Individual Bags

1. Essentially no difference exists in the performance of different types of bale bags with respect to colour and quality of plastic, based on the initial usage of each bag.

2. Top quality feed can be consistently produced from individual bagging of big bale silage.

3. Mould formation, though seldom extensive, should not be considered abnormal with individual bags of silage.

4. Make bales that do not fit the bags tightly. This will result in time saved in bagging and less stem punctures occurring.

5. Tie bales off with electrical wiring harness as twine is prone to cutting the plastic bag. (Approximate cost $0.20/harness).

Hydraulic Tube filling Unit

- 2 men, one man on tractor loading bales into drum and one man operating hydraulic system loading tube.

- 2 tractors - a small H.P. tractor with hydraulics on the unit and a big enough tractor to handle the bales.

Bale Pick Up Type

Butt bales end to end in a row. Then use lift and bagging machine. The machine is pulled by an offset hitch that positions it to the side of the tractor. Mounted on a 4-wheel chassis, its two extended lift arms reach out ahead, sliding under the bales. Each bale in the row pushes the bale ahead of it onto the machine and into the bag mounted over a hoop at the back. Bales are lifted just 6" off the ground and then gently lowered back into the bag. No hydraulics required.

STACKED BIG BALE HAYLAGE

Stacks of Big Bales

Stacks of big bales can be preserved by covering and sealing them with a double layer of 6 mil polyethylene. Do not use construction grade of plastic. As shown in figure No. 6, the outer layer provides the seal, while the inner layer protects it from stem punctures. Use plastic or rope tie downs spaced every two feet. Earth is used to seal the edges of the outer layer.

1. When a stack of large round haylage bales are covered with plastic, and sealed, the included oxygen is not sufficient to cause heating.

2. Any subsequent perforation of the plastic will result in considerable local mould formation. If air can travel freely through the stack, the mould will be widespread. Bale deformation appears to be substantial enough to limit air movement between layers.

3. Twine and tire tie-downs are effective in preventing billowing and flapping of the polyethylene cover.

4. Two layers of 6 mil polyethylene "silage Film" or equivalent will prevent stems from puncturing the cover, especially where the tie-downs are in contact. Do not use "Construction" grade polyethylene.

5. Stack size should be related to feed-out rate and expect ambient temperature.

6. Aside from an extra man needed for the 2 hours of covering and sealing the stack, the one man method of harvesting hay remained intact.

7. **Proper timing of baling**

- Bales 50-60% moisture content if below 40% let dry as hay

- Late in fall low temperatures - low population of lactic acid producing bacteria-poor quality silage will be produced.

SELECTING FORAGE VARIETIES IN '93

Jim Johnston, Agronomy Section, NLCAT

BACKGROUND ON VARIETY TESTING

Selecting the right forage variety for your farm can be confusing. You may get conflicting advice depending on which seed company, farm supply outlet, or neighbour you talk to. However, there is a system in place to independently assess forage varieties, thus allowing each farmer a chance to make their own decision when selecting forage varieties.

The Ontario Forage Crops Committee (OFCC) co-ordinates forage variety testing in the province. Membership on the OFCC includes OMAF and Agriculture Canada researchers, OMAF extension staff, the Canadian Seed Trade Association, The Canadian Seed Growers Association, and the Ontario Soil and Crop Association. Each year, the OFCC updates the list of recommended forage varieties for Ontario.

The testing procedure includes 10 different forage species. Currently, there are 128 varieties on the recommended list, of which alfalfa and timothy account for 88 varieties (Table 1). The recommended list has traditionally been published in Publication 296, but since 1992 it has also been released as a brochure. The variety brochure is released in late December each year. It is available from OMAF offices or from many seed and farm supply dealers.

To appear on the recommended list, a variety must yield equal to or greater than the check variety in official OFCC trials. New varieties that yield less than the check, or older varieties than no longer perform equal to the check do not appear on the list. Therefore, it is advisable to select your forage varieties from those appearing on the recommended list.

DATA COLLECTION

For each species, relative yields of varieties are reported separately for northern and southern Ontario. In the north, data is collected at NLCAT, Kapuskasing and Thunder Bay (Ag. Canada). This provides northern farmers with variety data that is generated under their own soil and climatic conditions. A large part of the forage research program at NLCAT is dedicated to conducting official OFCC variety tests. In 1992, over 2600 individual plots were used for variety testing at the main campus.

While most field trials focus on yield data, additional information is published in the variety brochure. Depending on the species, information such as disease resistance, flowering/heading date, regrowth potential, and drainage tolerance may be provided (Table 2). These factors may be equally or more important than yield in certain situations.

There were 10 new alfalfa varieties added to the recommended list in 1993. After accounting for 5 varieties that were dropped from the list, there are now 73 recommended alfalfa varieties. I will not discuss each new variety, but rather make a few comments on some new information that has been added to the alfalfa table this year.

ALFALFA PERSISTENCE

One of the first questions a farmer asks about an alfalfa variety is how well it persists. The variety brochure has a table to indicate the relative yield of alfalfa in the 3rd and 4th production years. Farmers who want to keep their alfalfa fields down for longer periods (more than 3 years) should consider this information when selecting varieties. It takes 1-2 extra years of research to get reliable persistence data. This means that new varieties may be on the recommended list for a couple of years before persistence data becomes available.

ALFALFA QUALITY

There has been a lot of talk in the last few years about differences in quality between alfalfa varieties. This has been heightened by the introduction of "multi-leaf" alfalfa varieties. "Multi-leaf" varieties have been selected to produce more than the normal three leaflets per leaf. This trait may result in better quality due to its effect on the leaf:stem ratio.

The OFCC has been conducting quality analysis on alfalfa varieties since 1991. Quality testing is only done if the sponsoring company requests it (and pays a fee). The 1993 brochure contains the results of the quality analysis for five varieties. Results for several more varieties should be available next year.

Quality potential is reported for both intake and digestibility. For each parameter, varieties are rated using a star system, where the number of stars indicates the quality of the variety relative to the checks (Table 4).

There has been a lot of promotional "hype" regarding the quality potential of alfalfa varieties. The brochure provides some objective means of evaluating various quality claims being made. At the same time, the quality of the alfalfa in your barn or silo will be influenced much more by your harvest management than by variety selection. The bottom line is that a superior quality variety will only be useful to you if your production system is already top-notch.

CONCLUSIONS

I have given a brief overview of some new varieties you may want to try in 1993. Additional data included in the variety brochure should help farmers make objective decisions regarding variety selection.

The graphs I have included indicate that the OFCC variety testing process has not shown any single variety to be greatly superior in yield potential. The primary benefit of the process has been to keep inferior varieties off of the recommended list.

In practical terms, seed availability and pricing must be considered when selecting varieties. However, when the initial seed cost is written off over the life of the stand, superior varieties (which are often more expensive) usually pencil out favourably.

While successful forage production should always start with careful variety selection, the importance of other management factors such as establishment methods, soil fertility and harvest management cannot be overemphasized. Your own forage system can only be successful if each component is properly managed.

Table 3. Varieties added and deleted from recommended list in 1993.

SPECIES	ADDITIONS	DELETIONS
Alfalfa	Class, Crown II, Echo, Encore, Impact, Incentive, Legend 2, Multi-plier, Resistar, 630	Citation, Hunter, Husky, Preserve, Thor
Birdsfoot Trefoil	Bull	Upstart
Red Clover	Concorde	Redland III
Bromegrass	Radisson	
Orchardgrass	Benchmark, DS-7, Okay	
Tall Fescue	Phyter	

Table 4. Quality rating system used by the OFCC.

Symbol	*	**	***
Relationship to checks	Inferior	Equal	Superior

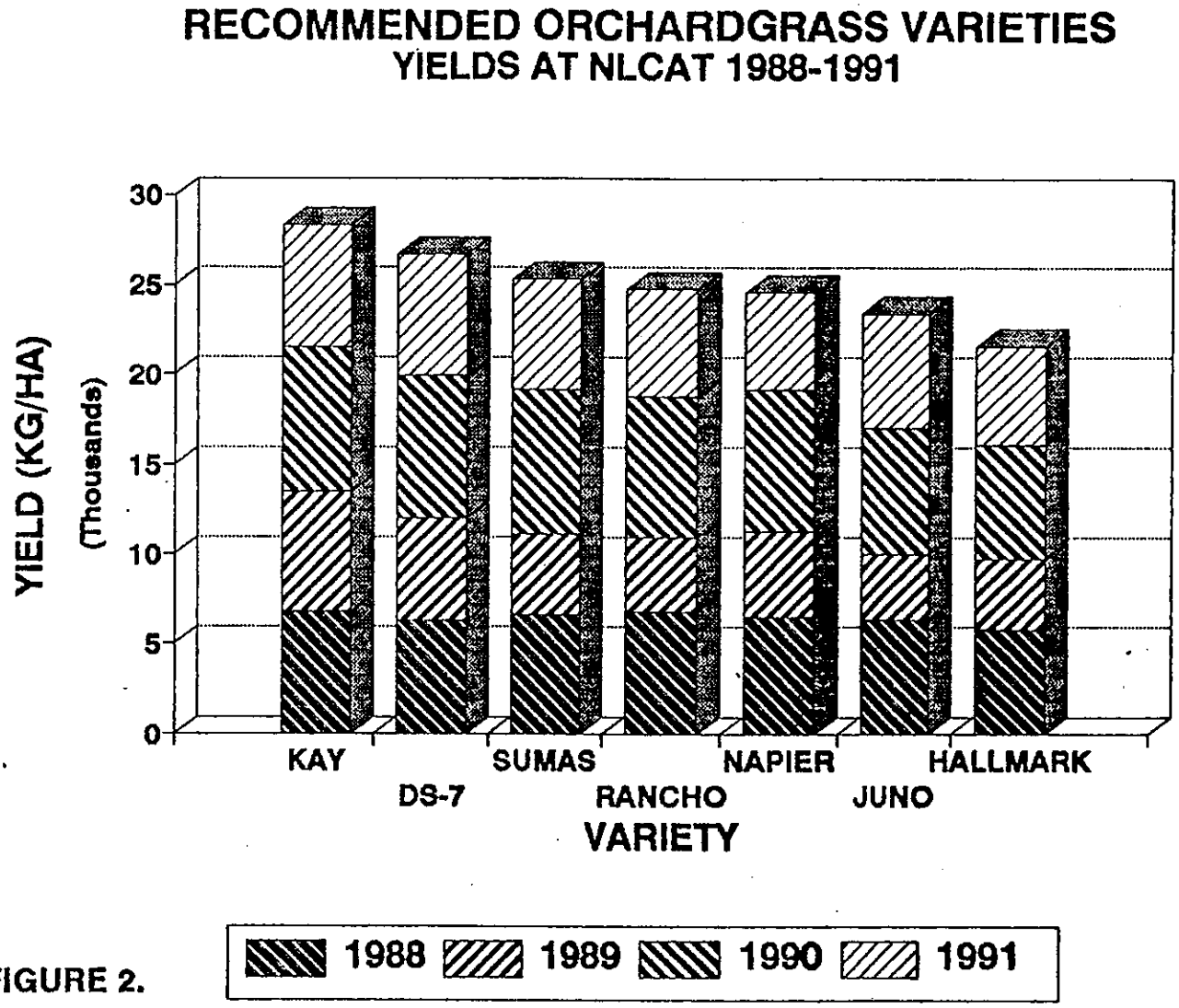
RECOMMENDED ORCHARDGRASS VARIETIES
YIELDS AT NLCAT 1988-1991
YIELD (KG/HA)
(Thousands)
30
25
20
15
10
5
0
KAY
DS-7
SUMAS
RANCHO
NAPIER
JUNO
HALLMARK
VARIETY
1988
1989
1990
1991

FIGURE 2.

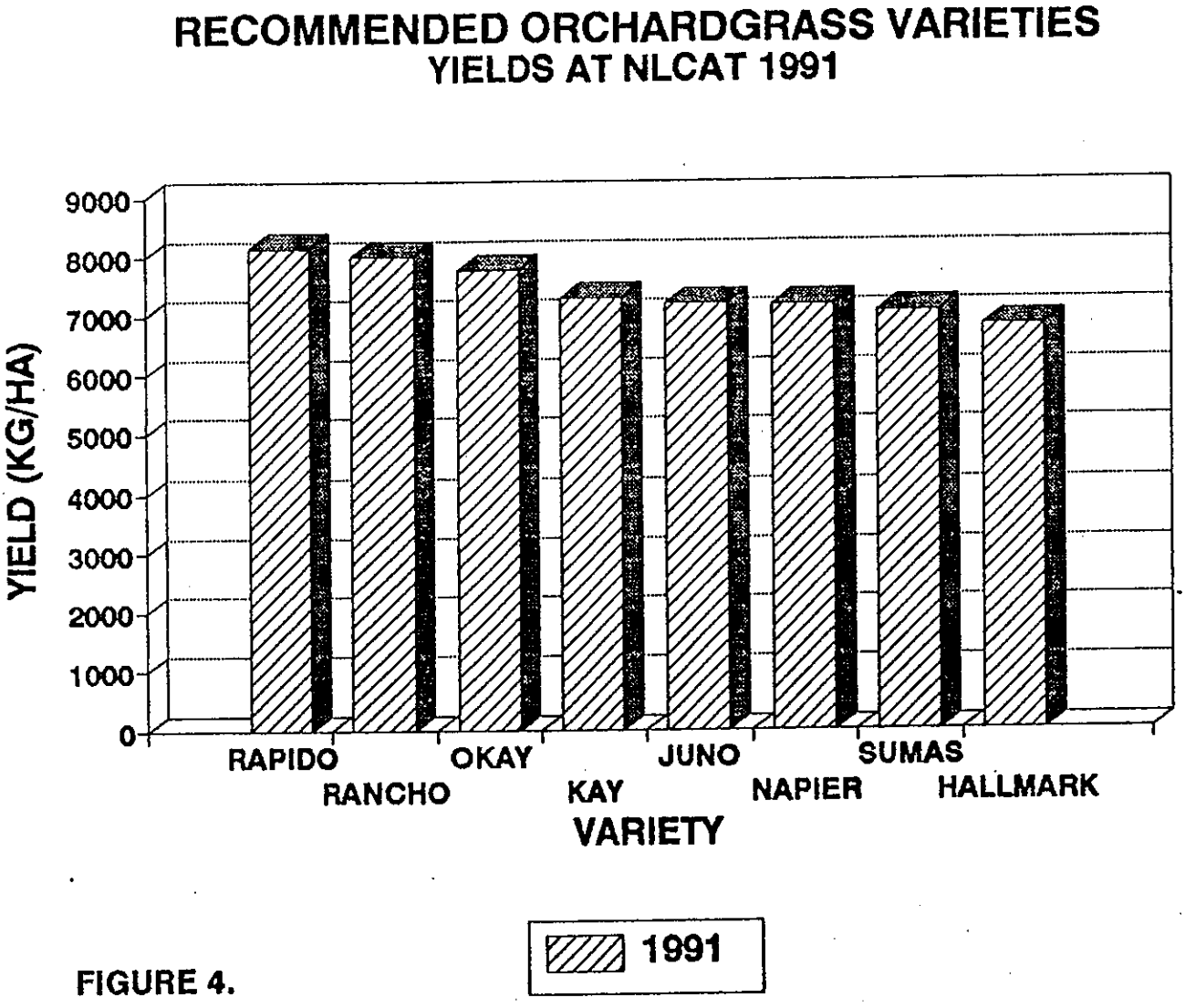
RECOMMENDED ORCHARDGRASS VARIETIES
YIELDS AT NLCAT 1991
YIELD (KG/HA)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
RAPIDO
RANCHO
OKAY
KAY
JUNO
NAPIER
SUMAS
HALLMARK
VARIETY
1991

FIGURE 4.

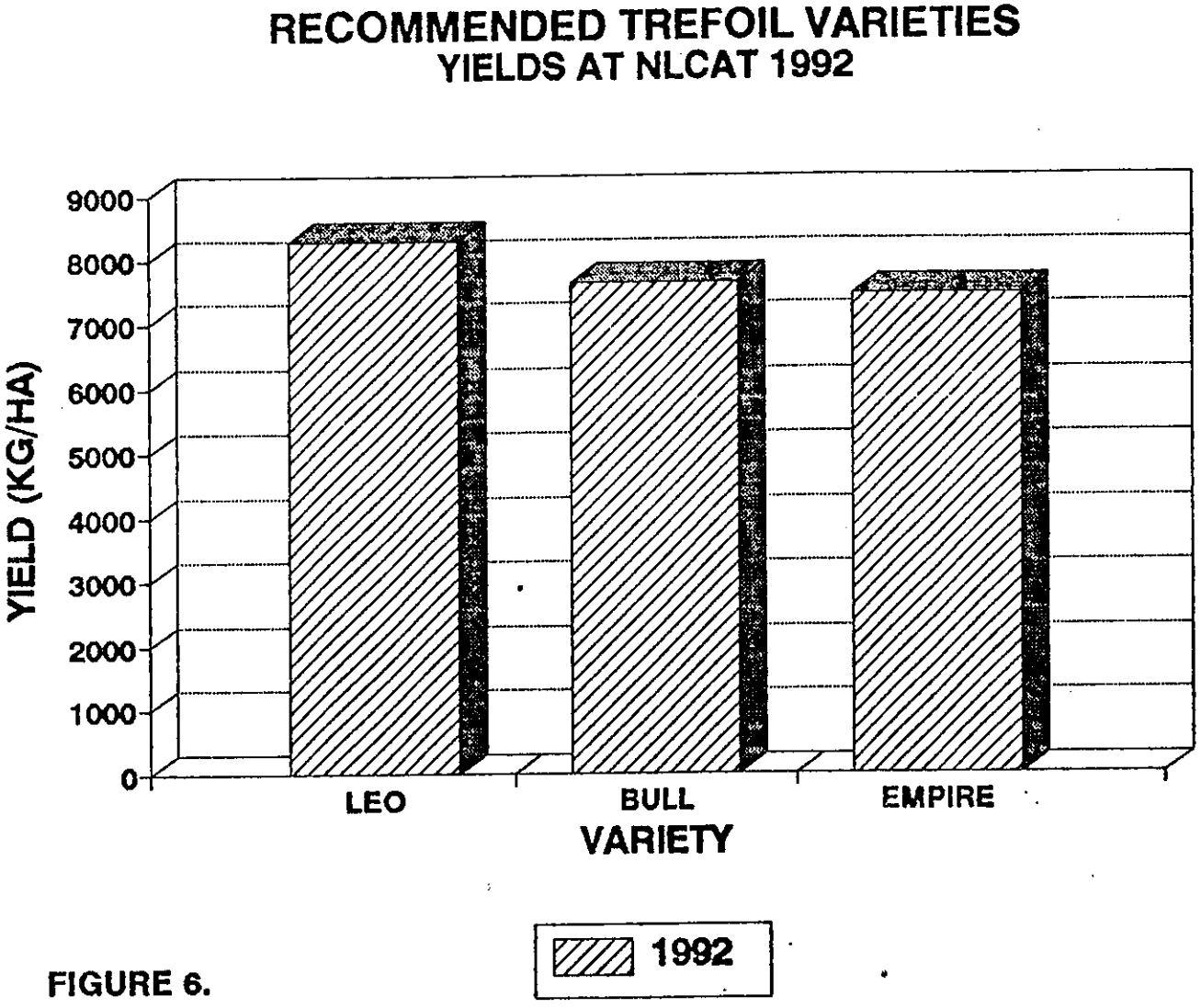
RECOMMENDED TREFOIL VARIETIES
YIELDS AT NLCAT 1992
YIELD (KG/HA)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
LEO
BULL
EMPIRE
VARIETY
1992

FIGURE 6.

development is to increase or create wealth; wealth being defined as more money coming into the community than is going out. Our experience showed us that this really did not cover all of the bases. It did not explain why communities with very little industrial base managed to thrive and be prosperous. Nor did it explain why even when a community was lucky enough to have an industrial project plunked in its midst it was still dysfunctional.

Consequently we defined community economic development as, "Any change in circumstances which represents an improvement in the standard of living and/or the quality of life within a community." This, then, allows us to deal with every thing from social and cultural improvement right through to wealth generation, therefore it is socio-economic.

Working in the field with these definitions in mind we found a number of other truths about economic development.

1. There is an hierarchy of economic development initiatives at the top of which is wealth generation (related to the Gross Provincial Product) and at the bottom are the improvements to cultural, recreational and social amenities of the community. They look like this:

   i) Production of goods or services which when marketed generate profit (return on investment) and new employment.

   ii) Production of goods or services which generate profit and maintain employment or move it around from one area to another within the community.

   iii) Production of goods or services which while not necessarily profitable represent a socio-economic return to the community and serves to reduce a community's economic dependence.
   e.g. workshops, employment preparation programs, etc.

   iv) Production which is not marketed externally but serves to reduce a community's economic dependence.
   e.g. housing projects, recycling of waste.

   v) Production which improves the cultural, recreational or social amenities of a community.

2. There is an hierarchy of readiness of a community for economic development which is the reverse of the economic development hierarchy.

   This hierarchy, the stages of growth, ranges from community awareness, the development of community spirit, through to collective and individual profit oriented initiatives.

6. External factors create the need for change.

An organism sitting comfortably in its environment has no need to change. The minute that a change occurs in that environment, it gets hot or cold, then the organism must adjust if it is to survive.

Your community is that organism existing in the environment of the region, the province, the country, the world. That environment is constantly changing; wheat prices go down, a mine closes because world metal prices take a dive, technology changes and so on. The survival of the community is determined by its ability to adjust to those changes now and in the future.

Readiness - Getting ready for change.

1. Set up a core working group.

   This can be your movers and shakers, your spark plugs, possibly a municipal councillor or two, some key people - community leaders. About a dozen people is fine for a start and it does not have to be formal.

   If a professional is available to you get him or her involved from the start (your process resource).

   - Define the problem. Talk it out
   - Define what you like about the community as it is now, what needs to be changed, what you would like the community to be some time in the future (10, 15, 20 years).

   Let the community know what is going on. Talk it up. You are going to need them to be involved later.

   Do not decide on projects at this time.

   For a project to have the full support of the community, the community must be convinced it is both desirable and necessary. It must "buy" in.

2. Start a groundswell, stoking the fires, co-opting support.

   Have members of the core group talking with and discussing the group's ideas for change with various local groups, organizations, etc. Co-opt their leaders and members into the process.

   Again, let the public know what you are doing.

3. Get the municipal council to endorse and even formalize the process.

NORTHWEST ONTARIO RECYCLE ASSOCIATION

Tom McConnell, P.Eng., Project Engineer, Town of Dryden

Ontario is a world leader in the blue box approach to recycling due to very active promotion by the Ministry of Environment, assisted by industry, especially the pop industry. This paper recounts the experience of one system serving 25 municipalities in North Western Ontario. It suggest that due to the success of this and other promotions, supply of many of the recycled commodities has outstripped demand, resulting in poor economics, at least in the short term. As well, problems unique to recycling in Northern Ontario are discussed.

It suggests that recycling be looked at as a service and as such not expected to be profitable. People are very supportive of the program and therefore municipalities ought to participate.

It points out that the whole field of solid waste management is evolving and that blue box recycling is by no means the last word. Other aspects of waste management such as composting are discussed in relation to Northern Ontario.

* * * * *

Storage Of Forages And Grain

Traditional storages have been made from steel, wood, and concrete. With the advent of plastic this is changing. The use of plastic to store forages and grain has grown and will continue to grow through out the 90's and into the 21st century. The driving forces behind this growth in plastic usage are:

1. The low up front cost compared to long term storages

2. Very flexible storage options

3. Extending the life of existing storages by use of liners

4. The commodity marketing of crops stored in plastic packages

Plastic silage/haylage and hay film is used for preservation and protection of harvested forage. Storing crop in bags, tubes, stacks, and wrap.

Plastic liners are used in old silos to seal the silo for high moisture grain. For a 20 ft. diameter and 70 foot high silo a disposal liner would cost $650 dollars. While a permanent one would be approximately $8000 dollars.

Plastic Sheets are used to cover piles of surplus high moisture corn and haylage. Surplus storage must be on high ground with a berm to divert surface water away from the pile. If at all possible locate storage on pavement or concrete. Provide for effluent collection by installing sump pits.

Plastic Bags or Tubes. This system uses augers and belt conveyors to fill bags and tubes with high moisture corn, ground ear corn etc.

OFF FARM OPTIONS

USING PLASTIC AS A FUEL : ENERGY RECOVERY

Energy recovery is another option for plastics and for solid wastes. There are currently, five energy recovery plants in Ontario. They convert approximately 400,000 tonnes of solid waste to energy annually. In the U.S. there are 136 Energy Recovery Plants with another 100 plants planned by the year 2000. In Germany the recycling targets are being revisited and energy recovery is gaining as a waste management option.

While energy recovery of solid wastes can reduce volume by 95 percent, plants require controls on air pollutants. Also the bottom and flash requires treatment and then land fill disposal.

The high energy value of used plastics offer opportunities for energy recovery. This high value compared to other wastes allows plants to this as a high energy supplement to maintain the high temperatures required for operation. See Table 1.

Energy recovery plants accept solid waste for the tipping fee that would be payed at a landfill. Some fees in New York are $30 to $40 per ton. For plastic this fee is negotiable due to its high energy value. If plastic is stocked piled and delivered during the winter no fee may be charged since this is a low energy time for feedstock of waste.

Material	Btu/pound	Material	Btu/pound
Plastics		Corrugated Boxes (Paper)	7,000
Polyethylene	19,900	Textiles	6,900
Polypropylene	19,850	Wood	6,700
Polystyrene	17,800	Average for MSW	4,500
Rubber	10,900	Yard Wastes	3,000
Newspaper	8,000	Food Wastes	2,600
Leather	7,200	Fuel Oil	20,500

(Council for Solid Waste Solutions, 1990)

3. RECLAMATION

4. END-USE MARKETS

Collection

Agricultural plastics are collected for recycling instead of being disposed of after serving their initial purpose. For recycling to be effective, one must have a high collection rate. Research has indicated that for consumer plastic that curb side collection has the highest rate of between 70 to 90 percent collection rate. See Table 2 if agricultural collection follows the urban trend a curb side collection system would maximize recovery.

TABLE 2: METHODS OF COLLECTION

TYPE	COLLECTION RATE %	POSSIBLE VOLUME COLLECTED [Million lbs]
DROP-OFF	10	0.44
BUY - BACK	15 - 20	0.66 - 0.88
CURBSIDE	70 - 90	3.08 - 3.96

Adapted from CPRR

However, in the country side travel distance is large and agricultural plastic is bulky, curb side recycling may not be the best way to go. Definitely most if not all recycling will start with Pilot Programs that will involve a drop off collection or a buy back system.

Handling And Sorting

Handling and sorting is a major challenge as there are over 3,000 different plastics. Fortunately for agriculture, there are mainly 6 types of plastics, with 4 types being used most frequently. In the horticultural industry containers are made from polystyrene (6) polypropylene (5) and high-density polyethylene (2). The fourth type of plastic is low-density polyethylene (4) which is used in agricultural plastic wrap, bags, tubes, greenhouse, mulch, and overwintering films.

Agricultural film is mainly type (4) low density polyethylene. Sorting of this material is needed due to different plastic products and the additives. For example, plastic wrap is 0.5 to 1 mile thick and has tacifiers (glue) compared to tube plastic which is 4 to 5 mil thick with no tacifiers. Levels and types of contamination also may be a sorting criteria.

2. Landscape Timbers:
   Approximately 12 million wooden timbers per year are used in the USA (if 10% of the non-structural market was penetrated 50 million pounds of mixed plastic could be used).

3. Horse Fencing

4. Farm Pens for Dairy, Hogs and Poultry.

5. Roadside Posts

6. Pallets:
   More than 300 million wooden pallets used annually in the USA. If 1% penetration of this market was made by recycled plastics 370 million pounds of plastic could be utilized.

Current and Future Recycling

In Ontario a Pesticide Container Recycling Pilot Program was started in the spring of 1992. The collection system was a drop off with personnel on site to inspect and receive containers. Only clean triple-rinsed or jet-rinsed and emptied containers up to 23 litres were accepted. After collection a number of plastic truck loads went to Recycles to manufacture plastic test runs of fence posts, curb stops and pallets. The information collected will be used in developing a provincial full scale recycling program. The pilot project was funded by a per container charge from members of the Crop Protection Institute on 1992 agricultural pesticide sales. With cooperation from the Ontario Ministries of Agriculture and Food and Environment, the Crop Protection Institute, the association of Municipal Recycling Coordinators, and Agcare [Agricultural Groups Concerned About Resources and the Environment].

Research at the University of Guelph, Centre for Toxicology indicates that fencepost made from recycled pesticide containers are safe. In fact you would have to stack 1.2 million of them in a hectare [2.5 acres] to equal the lowest recommended pesticide application rate

In Nova Scotia, the department of Agriculture and Marketing organized two collection days in 1992 for Post Agricultural Film from round bale wrap, bags and tubes. Farmers brought truck loads of plastic to a collection site. Then the plastic was spread out into a windrow and then a farm baler was driven into the plastic to bale it. After spreading the plastic the baling only took a little over and hour for 2.5 tons. No sorting is done on site. A plastic recycling broker collected the plastic in a baled form and shipped it to his home where he breaks open the bales and inspects for cleanliness then repacks into 300 pound bales ready for sale. The success of this type of operation is dependent on finding a broker to accept and pick up the plastic. Large scale collection is thought to be limited since the Agricultural film is shipped as a very low blend with other plastic.

SPECIAL THANKS TO

Mike Langman and John Bowness of the Nova Scotia Department of Agriculture and Marketing.

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1. John Bowness
Nova Scotia Department of Agriculture and Marketing
Truro, Nova Scotia

2. Mike Langman
Nova Scotia Department of Agriculture and Marketing
Truro, Nova Scotia

4. Environment and Plastics Institute of Canada
1262 Don Mills Road,
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Don Mills, Ontario
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5. Plastics Recycling Foundation
1275 K Street, N.W.
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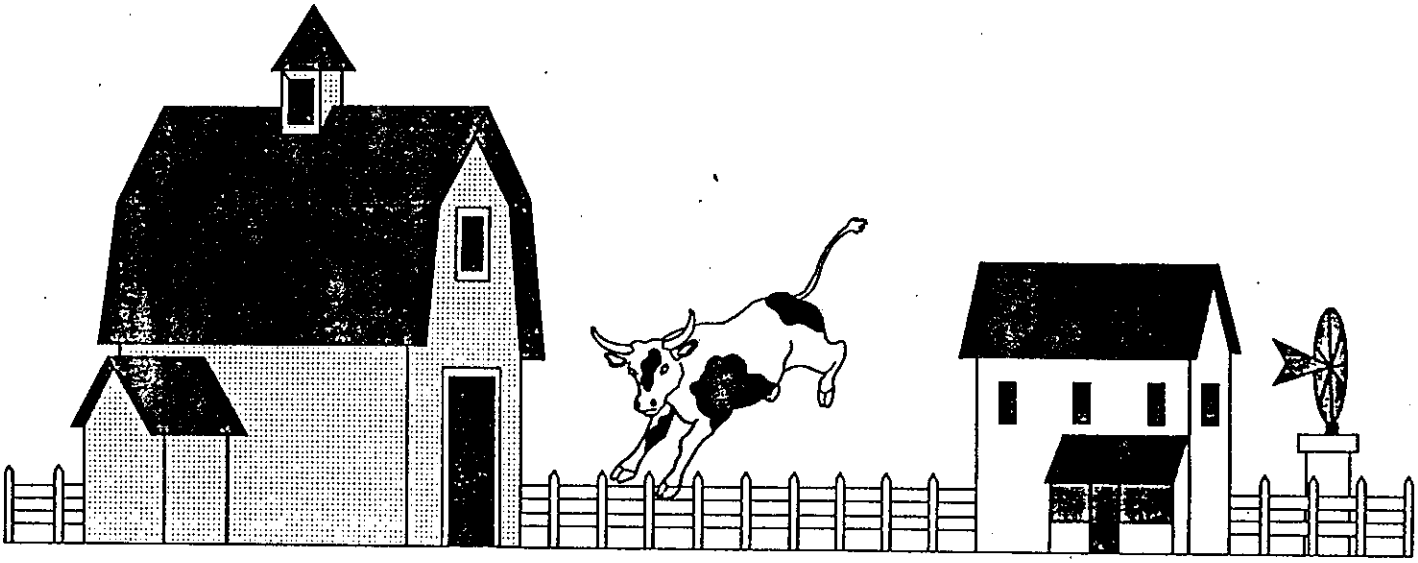
Washington, D.C.
United States
20005

6. Center for Plastics Recycling Research
Rutgers, The State University of New Jersey
Bush Campus, Bldg. 3529
Piscataway, New Jersey
United States
08855

Beef Research Highlights

Kapuskasing Experimental Farm



R. Berthiaume, G.L. Roy, D. Lavoie
and M. Mercier

Table 1

Effect of GnRH on estrus synchronization and fertility in beef cows

	Control	GnRH
# cows	52	48
Estrus (Day 0-6)	18	2
• Gestation	13	0
• Conception (%)	72.2	0
Estrus (6-10)	26	40
• Gestation	24	34
• Conception (%)	96	85
Day (0-10)		
• Estrus (%)	84.6	87.5
• Conception (%)	86.7	81.0

- Fall calving

In 1989, a fall calving (August - September) program was initiated to determine on herd productivity the effect of calving on pasture and of wintering cows and calves outside.

Over a 3 year period, calf mortality remained very high (19.3%) while calving rate dropped from 81% to 53% (Table 2). However, weaning weights were generally similar to spring born calves (Table 3) suggesting that problems were not related to nutrition but to management and environmental conditions during the early post-calving period (storms, etc.)

Bark chips pads have been used to alleviate such a problem. Bark chips were obtained from a local supplier and were spread over the wintering area at the Kapuskasing Experimental Farm. The area is six pen feedlot-like structure which enables us to collect experimental data. Since there were no wooded areas in the vicinity, artificial windbreaks were built to protect the herd from dominant winds.

After three years, it has been demonstrated that bark chips can be used as an alternative to concrete floors during spring thaw. That has been confirmed on several on-farm projects. However, cows should not be kept on the bark pad all winter as this causes an accumulation of snow and ice which impairs drainage properties needed during spring thaw.

Replacement heifers

- Effect of anabolic implant (Synovex) on heifer growth, pelvic area and reproduction

Anabolic implants have been proven to promote higher gains in growing animals. However, in some cases, implantation have had adverse effects on pregnancy rates of treated heifers.

An experiment was run to determine if the amount of oestrogen and progesterone found in Synovex would have an effect on these characters. The Kapuskasing replacement heifers were randomly allotted to 4 different treatments (Control, Synovex C, 2 Synovex C and Synovex S). This was done over 2 years. Implants had no effect on either weaning or yearling weight (Figure 1). However, implanted heifers had larger pelvic area at one year of age. Heifers implanted twice with Synovex C or with Synovex S had lower conception rate (Figure 2).

- Effect of weaning age (200 vs 300 days) on the growth of fall-born heifers

Previous trials have demonstrated that fall-born calves weaned in the spring (April-May) experience a weight loss early in the pasture season (June) while grass is abundant and highly digestible.

Fall-born replacement heifers were divided at random among two treatments to determine if delaying weaning until 300 days of age could alleviate this weight loss thus ensuring higher yearling weights.

Half of the heifers were weaned on April 2nd and put on a silage ration while the other half remained with their dams. They all went on pasture on June 2nd. Weaning at 300 days was done on June 25. All the heifers were kept as one group on pasture throughout the summer. The late weaned heifers (Figure 3) lost less weight early in the pasture season while it took almost two months (June 2 to July 25) for the heifers weaned at 200 days to return to the weight they were when put on pasture. Heifers weaned at 300 days of age outweighed the other group by 32 kg on October 15.

Figure 3. Effect of weaning age on the growth of fall-born heifers

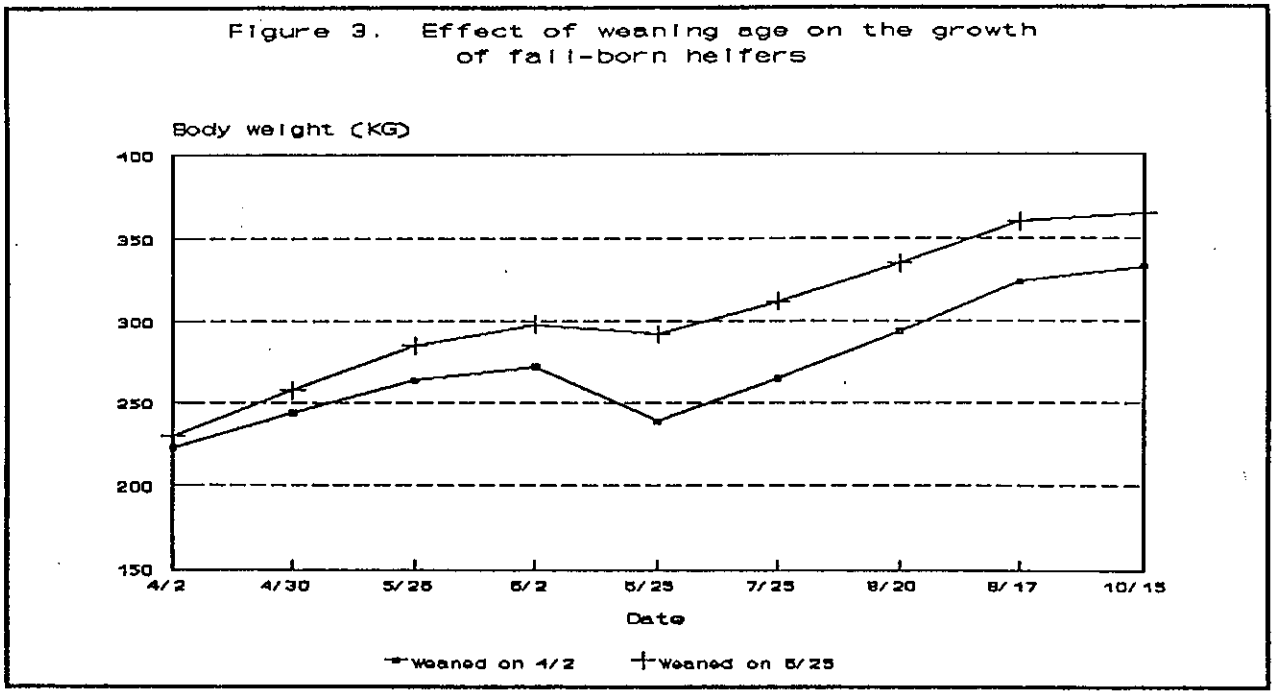


Figure 4. Effect of R.P.A.A. on growth of steers fed grass silage

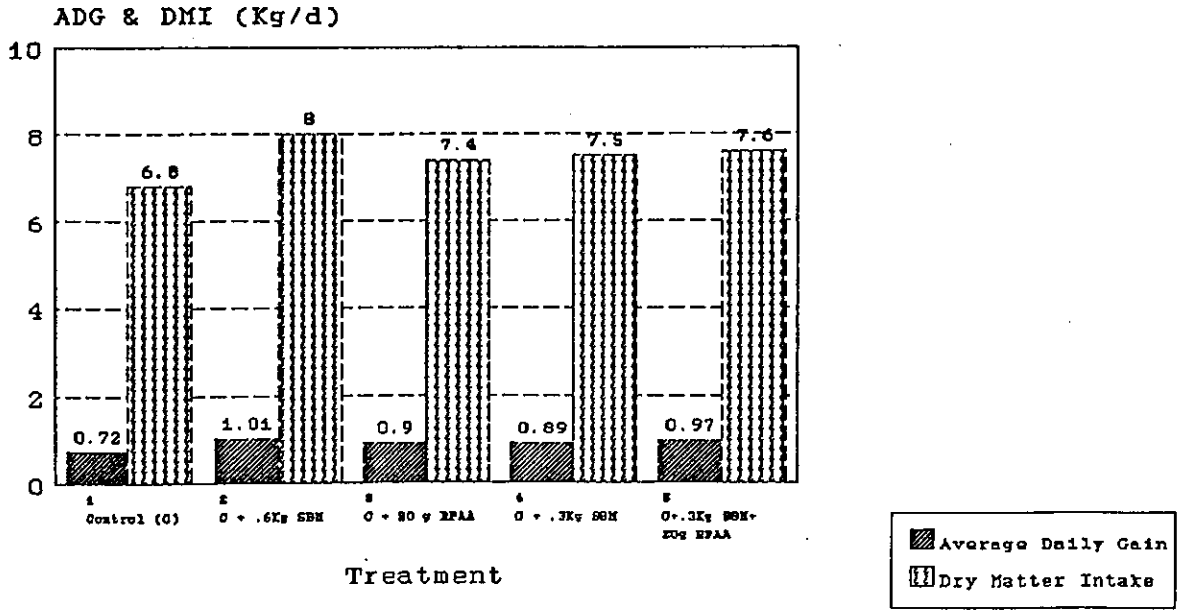
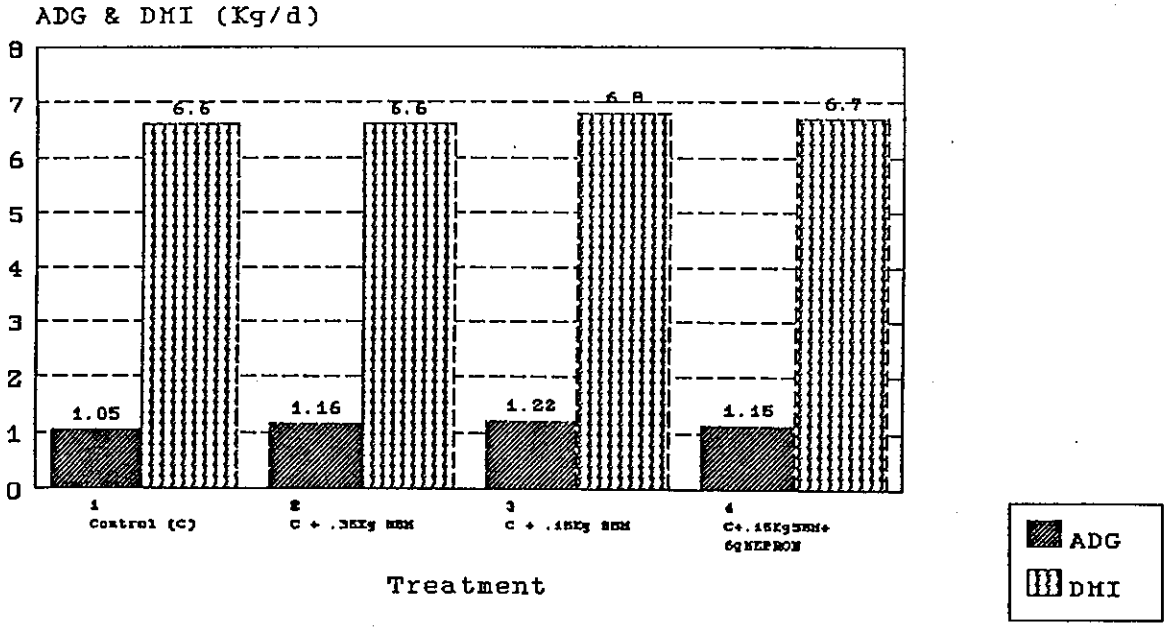


Figure 5. Effect of HEPRON on growth of heifers fed grass silage



- Comparison of round bale silage vs heap silage

Round bale silage has become one of the most popular method to harvest and store forages in Eastern Canada. However, little research has been done to compare it to conventional chopped silage in terms of performance and feed efficiency.

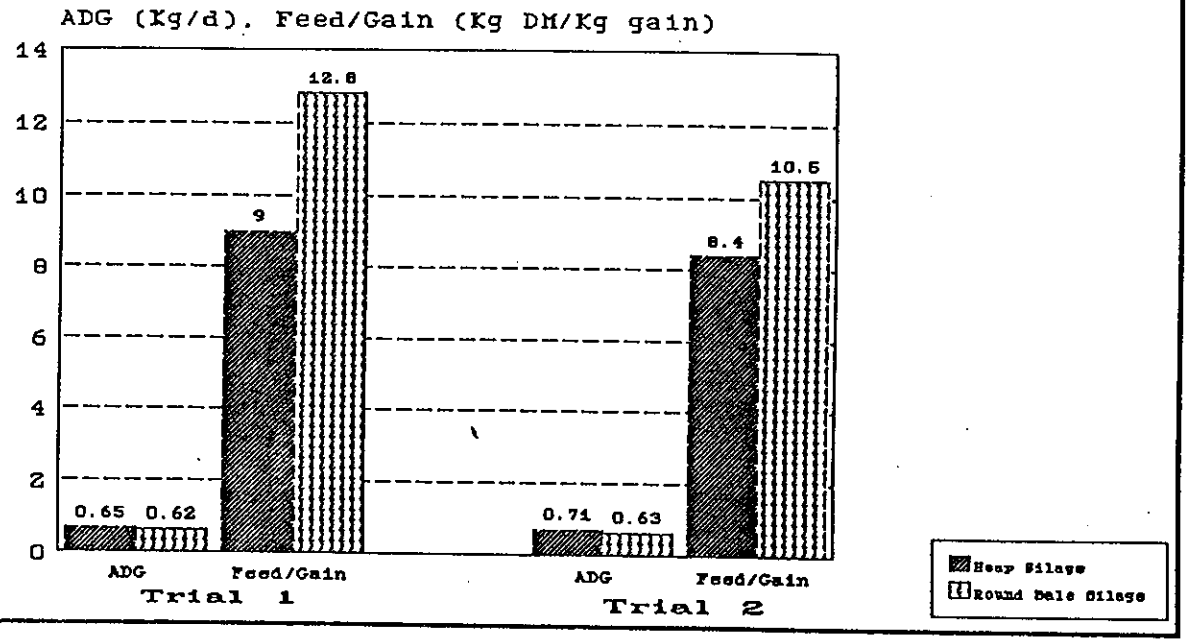
Two different trials conducted at Kapuskasing attempted:

1- to compare individually bagged round bale silage to heap silage when fed to beef steers and;

2- to compare round bale silage stored in tubes to heap silage when fed to replacement heifers

In both cases (Figure 7) daily gains were equivalent. However, it took 24 and 42% more dry matter to achieve equivalent gains with round bale silage. Therefore, farmers opting for round bale silage should allow accordingly in their forage needs.

Figure 7. Performance of round bale silage vs heap silage



HIGHLIGHTS OF THE 1992 AND 1993 BEEF RESEARCH AT NLCAT

Paul Gumprich, Animal Science Section, New Liskeard

Comparison of Pasture Grazing and Creep Feeding Systems for Beef Calves - Summary

Rotational grazing was compared to set-stocking systems utilizing 76 cow-calf pairs.

Highest calf gains were achieved with a conventional set-stocking system supplemented by a grain creep-feed when compared to calves receiving no creep-feed (control group) or calves on a forward grass-creep system.

The forward grass-creep group showed no increased gain over the conventionally grazed, control group, indicating that grass was not a limiting factor in the control group. Precipitation received through the grazing period was well above normal, providing abundant pasture growth.

The grain creep-feed was a cost effective method of increasing weaning weights.

Total weight gains of calves per acre (200.9 lbs) were highest for the rotationally-grazed group indicating the most efficient use of pasture for that system. Total calf gains per acre were similar for the grain-supplemented calves (199.1 lbs) indicating that the grain-mix compensated for the lack of pasture nutrients (or pasture quality) on the set-stocking system.

Performance of Suckling Beef Calves on Three Pasture/Creep Systems

	Treatment 1	Treatment 2 2	Treatment 3
Pasture System:	Rotational grazing	Set stocking-rate	Set stocking-rate
Creep Feed System:	Forward grazing	None	Grain-mix
# Cow-calf pairs	25	25	26
# Yearling heifers	7	7	8
# Days on Pasture	102	102	102
# Acres	40	51.0	47.7
Ave. Pasture gains (lbs):			
Heifers calves	312	306	342*
Steer calves	328	360	383*
Yearling heifers	261	265	218
Cows	108	101	123
Calf gains/acre (lbs)	200.9	167.3	199.1
Total gains/acre	314	264	305

* These calves consumed 8,500 lbs of creep feed at a cost of $637.50.

MACHINERY COSTING

Jean-Denis Methot, Head, Farm Business Management, NLCAT

One of the most important costs influencing profit in farming is the cost of owning and operating machinery. Machinery has become very expensive and buying can really influence the cash flow.

Machinery cost is usually second after the cost of land. According to the June 1991 Census, the investment is as follows:

	MACHINERY INVESTMENT	LAND AND BUILDINGS
Algoma	16,518,938	73,473,113
Cochrane	12,012,774	42,702,864
Manitoulin	14,575,758	73,947,516
Nipissing	13,758,484	52,143,084
Parry Sound	14,246,323	79,367,457
Sudbury	8,993,509	33,931,520
Timiskaming	34,123,627	105,374,495
TOTAL	114,229,413	460,940,049

	TOTAL REVENUE	REPAIRS & INSURANCE	FUEL AND OIL
Algoma	14,802,741	962,714	821,293
Cochrane	10,969,471	670,880	624,679
Manitoulin	11,177,244	843,840	686,131
Nipissing	12,230,042	701,364	537,264
Parry Sound	8,307,868	677,388	531,298
Sudbury	7,255,546	462,631	406,766
Timiskaming	30,622,966	2,265,349	1,722,401
TOTAL	95,365,878	6,584,166	5,329,832

The 1991 Census shows that in north eastern Ontario about 12.5% of total revenues went to pay for fuel, oil, lubrication, repairs and insurance. Other ownership costs such as shelter brings this percentage even higher.

It is not unusual to find that the differences in profit from one farm to the next can be due to the way the machinery is selected and managed.

WHAT IS THE BEST COMBINATION OF

LAND <---> LABOUR <---> CAPITAL FOR YOUR FARM?

PROPER MACHINERY MANAGEMENT SAVES DOLLARS

Repairs and depreciation are two factors which you have control over. Your management of the machinery determines how much you will spend in repairs and how much longer your machines will last (depreciate). Fuel consumption also relates to the maintenance program as tuning, proper ballasting and operation will cut on consumption.

Savings of 25% of your annual machinery repair costs can translate in a 50% increase in your net farm income. Example: $10,000 annual machinery repair costs and a net farm income of $5,000.00. A 25% savings is an additional $2,500 added to your net farm income; a 50% increase in NET FARM INCOME!

TYPES OF REPAIRS

1. Routine Wear

   Rigid maintenance schedule and no abuse can increase life of part by 50 to 100%.

2. Accidental breakage or damage

   Rushing and carelessness can be costly. These parts are rarely at the dealer and it may take time to have them ordered.

3. Repairs due to operator neglect

   We can minimize by:
   - -maintenance
   - -rigid daily inspections
   - -good off-season repair program

4. Routine overhauls

   overloading & poor maintenance can accelerate overhauls by 100%.

Good management means lower repair costs. For instance, according to an FMO Machinery Management text by John Deere, a tractor which had cost $50,000 and now has 5,000 hours will have cost $11,135 in repairs in a good management program, $14,850 in an average management program and $18,560 in a poor management program.

Individuals not maintaining and operating their machines properly will spend more in repairs during the life of a machine than its actual purchase price!

5. **People** - the people that are going to be used in producing the product - are they qualified? Are others going to buy it, promote it and retail it. Your consumers, who are they? Aim the product to meet a larger segment of the population. Where do these people live, etc.

6. **Profit** - Are you willing to work long and hard hours. What's your profit going to be? How may years are you going to produce the item until you make a profit?

It is this process that farm marketers use every day to learn more about their product, their competition, their consumer, and about the general trends of business that will affect their farm families in the future.

Today, we will hear from three farmers of Northern Ontario who have created marketing opportunities for their present production that has and is still giving them a greater return for their labour and investment.

First of all, Graydon Bowman of Thornloe has produced seed grain and alfalfa for many years. He'll tell us of the process of thought, research and method that he now is doing to "add value" to his production in the marketing of it.

Heather Jansa of Desbarats in Algoma District will share with us the co-operative organized marketing of Algoma's Lamb Producers with the local slaughter facility. This has paid dividends to these sheep producers.

Brian Schubert of the New Liskeard area is a beef producer, who will discuss some of his thinking of beef production and marketing - relating that you should not limit your marketing or selling outlets and why. Brian is a strong believer in farming by numbers. He's keen to make a profit, but first you have to know your projected and actual income and expenses - so you are a better buyer and seller in your business.

Marketing opportunities are there for anyone who wants them. They don't come easy, but why let the middleman make their living on your production and investment? Dealing directly with the consumer is exciting and challenging, but the rewards of money and satisfaction keep our farm marketers reaching to new levels!

NORTH EASTERN ONTARIO SOIL AND CROP IMPROVEMENT ASSOCIATION

AWARD OF MERIT

The purpose of the Award of Merit is to recognize individuals who have made an exceptional contribution to agriculture in the region of northern Ontario served by the North Eastern Ontario Soil and Crop Improvement Association.

Candidates for selection may be nominated by each district association or by the regional association. No more than one candidate may be nominated by any one association in one year.

The 1993 Award of Merit winners are:

Aubrey and Mabel Bogart, nominated by the Muskoka Soil & Crop Improvement Association.

John A. Orford, nominated by the Manitoulin Soil & Crop Improvement Association.

Charles Harvey Wilmott, nominated by the Algoma Soil & Crop Improvement Association.

The following are short resumes of this year's NEOSCIA Award of Merit winners.

Their barn, when built in 1879, was the largest in Canada! It took two years to install the foundation - all rock was hand carried from the farm. Recently, Aubrey and Jim have added steel girters, tonnes of concrete, plus other home ideas that have made a very workable barn facility to feed cattle on two levels, store their chopped dry hay for easy self-feeding of cows; good inside area that is heated by cattle body heat, for a tractor garage and workshop combination area; cattle handling and processing facility; and a concreted barnyard which they have hosted summer beef barbecues sponsored by the Red Meat Weigh Club and Cattlemen's Association to entertain the Minister of Agriculture and Food on three occasions.

Aubrey has always been a promoter of good land stewardship, valuing the precious land that we have and work with. In his manure management, he's used the spreader to apply limestone and grass seed. In 1991, under the Land Stewardship II, the Bogarts built a concrete manure yard and storage plus a residue pit to save the liquid to apply back on the land.

Thirty-five years ago, Aubrey was the founder of trefoil in Muskoka. He planted the trefoil and has been very pleased with the results when it finally began to grow; he had many sleepless nights wondering if the weed patch would ever establish as trefoil.

CONGRATULATIONS TO AUBREY & MABEL BOGART FOR RECEIVING THE 1993 AWARD OF MERIT!!

The Algoma Soil & Crop Improvement Association is proud to have nominated ***Charles Harvey Wilmott***, for a 1993 Award of Merit.

The family farm, located near the community of Gordon Lake, was transferred in 1936 to Charlie and his wife, Isabel. From then until 1960, they raised mixed livestock. In the late sixties, Charlie concentrated on the beef operation -mainly hereford cattle. As an active member of the Algoma S.C.I.A., since the early forties, he always strived for excellence with his crops. Charlie would often test on the farm new types of grass seed and grain to assess their performance with the farm's soil types and weather conditions. He was always concerned about items such as: crop rotation, soil organic matter, soil testing, fertilizer application and weed control.

Charlie, Isabel and their son Gary took pride in keeping the farmstead in good condition and were recognized in 1972 and 1974 at the Central Algoma Exhibition with the C.I.B.C. silver tray award.

Charlie had other interests: farm auctioneer (1942-1990), concrete work, mail man (1929-1936), working in the bush in the winter time for over 45 years and to assist Isabel with gardening. He served on the executive of the Co-Op and was a member of the Cattlemen's Association, Algoma Veterinary committee, Algoma Co-Op livestock sales and the Bruce Mines agricultural committee.

"AWARDED POSTHUMOUSLY"

CHARLIE WILMOTT

(1910 - 1993)

AWARD OF MERIT - 1993

AWARD OF MERIT

The Muskoka Soil and Crop Improvement Association wish to nominate Aubrey and Mabel Bogart of Windermere for the Award of Merit to be presented in February, 1993.

The Bogart family, a Dutch family, arrived in Albany, New York State in 1689. They later became one of the first United Empire Loyalists to land in Upper Canada in the Kingston, Winchester, Stirling and Tweed area in 1783. Bogarttown was formed in that area.

Aubrey's grandfather was one of the first homesteaders in Watt Township in the District Municipality of Muskoka on what is now known as the Deebank Road. Aubrey is the third generation on the present farm, born November 14, 1920. Aubrey was educated in Dee Bank School and married in 1943 to Mabel Hammel, who was born near Bracebridge, and educated in Monck Public School and Bracebridge High School. Nine years later, the first of four children were born; two boys and two girls. One son, Jim (fourth generation) and his wife, Joanne and their first child, Samantha live on the farm, which Jim is taking over with Aubrey and Mabel's help.

They own and operate Bogart cottages on Three Mile Lake and this business was started in 1936. They also have owned and operated a school bus line for 26 years, and is still being run by Jim and Joanne Bogart.

Aubrey served 14 years on Watt Township council, was president of the Muskoka Soil and Crop Improvement Association and a member for 31 years, and president for 5 years of the Muskoka Chapter Full Gospel, Business Men, and is still working on this non-denominational outreach work.

Aubrey's family operate their farm of approximately 1000 acres, 400 acres are cultivated with 150 acres cleared as ranch land. Their beef herd consists presently of 150 head of simmental hereford cross cattle. Feeding program consists of chopped hay, round dry bales, and recently of first and second cut round bale haylage, plus grain corn which is hammer-milled prior to feeding.

Their beef crop is sold as 900 pound yearlings to local sales and buyers. Their use of round bale haylage has dramatically reduced need of off-farm protein purchasing with the yearlings.

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The members of the Muskoka Soil and Crop Improvement Association proudly nominate Aubrey and Mabel to receive this Award of Merit - to a well-deserving couple.

Congratulations to AUBREY & MABEL BOGART.
FOR RECEIVING THE 1993 AWARD OF MERIT

END