A FEASIBILITY STUDY

TO

REVITALIZE

THE

NEW LISKEARD COLLEGE OF AGRICULTURE TECHNOLOGY

IN ASSOCIATION WITH

THE

NORTHERN COLLEGE OF APPLIED ARTS AND TECHNOLOGY

VOLUME TWO:

APPENDICES

PREPARED BY



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CONTENTS

Volume Two - Appendices

- A People and Organizations Interviewed
- B Agricultural Productivity of the Soils of Ontario and Quebec
- C Information On Specialty Schools
 - Centre for International Business Studies
 - The Canadian Institute for Petroleum Industry Development
 - The International Oil and Gas Company Management Program
 - The International Livestock Management Schools
- D Canadian Community Colleges Offering Courses in Tourism
- E Report on the Tourism Industry, The Hon J Judd Buchanan and Speech by the Prime Minister
- F Saskatchewan Indian Federated College
- G Statement from Correctional Services Canada

APPENDIX A PEOPLE AND ORGANIZATIONS INTERVIEWED

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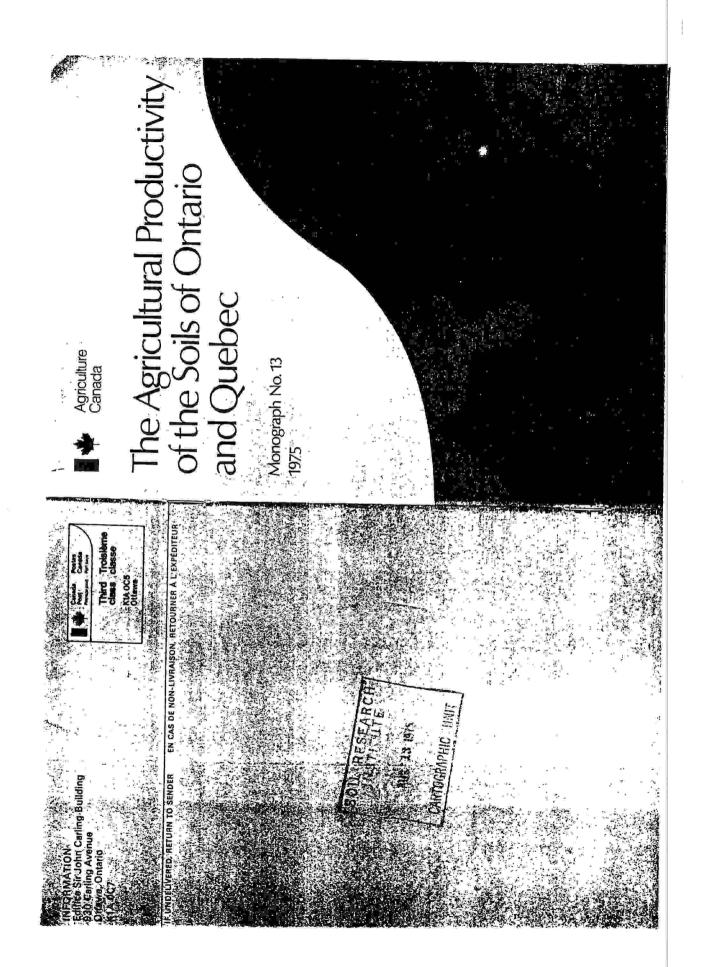
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APPENDIX B

AGRICULTURAL PRODUCTIVITY of the SOILS of ONTARIO and QUEBEC



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THE AGRICULTURAL PRODUCTIVITY OF THE SOILS OF ONTARIO AND QUEBEC

Information gathered by soil surveys is now sufficient to warrant the making of a rough assessment of the maximum agricultural productive potential of the soils of Ontario and Quebec. The purposes of this publication are to outline the extent of the agricultural land base, to describe briefly the main physical factors inhibiting its full use, to discuss the approaches to gauging regional productivity, to express the gross potential productivity in terms of the percentage increase in agricultura production that the land could support, and to assess the future impact of urbanization of agricultural land.

THE EXTENT OF AGRICULTURAL SOILS

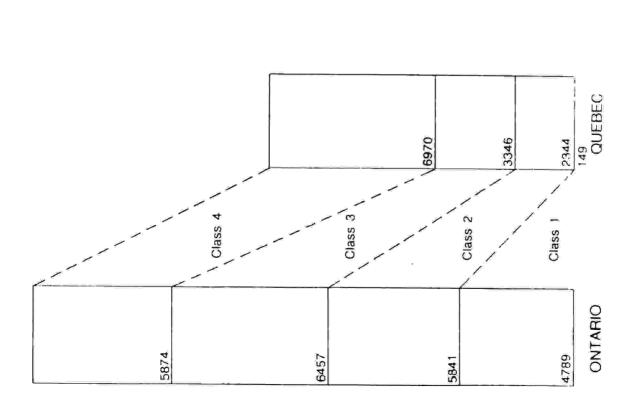
A general picture of the agricultural potential of the soils of Ontario and Quebec can be obtained from the soil capability maps made for the Canada Land Inventory (C.L.I.) from soil surveys. Generalized versions of these maps at a scale of 1:2.5 million(M) for Ontario and Quebec are enclosed in the back pocket of this publication. Soils suitable for arable use, classes 1 to 4 in the soil capability classification for agriculture, cover 22.6 M ac in Ontario and 12.8 M ac in Quebec (Fig. 1). Prime agricultural soils, classes 1 and 2, cover 10.3 M ac in Ontario and 2.5 M ac in Quebec. The remaining agricultural soils are subject to various limitations that sig nificantly raise input costs and depress productivity and economic rent.

The 1971 census recorded 10.9 M ac of improved land in Ontario and 6.4 M ac in Quebec (Table 1). This suggests that about half the soils suited to field crops in the two provinces remain in forest. However, improved land includes only that on census farms and other improved areas should be added. Moreover, the forested areas include very few Class 1 and Class 2 soils and a very large proportion of the Class 4 soils. The latter are useful for pastureland and some special crops, but are of marginal value for the production of field crops and will remain so for the foreseeable future.

Class 5 and Class 6 soils have a limited grazing capacity for livestock. Only small areas of these soils are both cleared and close to more productive soils on viable farms. Some special crops, such as blueberries, thrive on lower-class soils, but they are relatively insignificant in the total picture.

The frontiers of the agricultural land base in Ontario and Quebec were reached long ago; the only notable exceptions are the forested Class 3 soils in the Clay Belt of northern Ontario and adjoining parts of Quebec. Consequently, the reserves of land productivity lie mostly in the more efficient use of present farmland.

The distribution of higher-class soils is shown on the C.L.I. 1:1 million scale maps, which were generalized from the 1:250,000 soil capability



CENSUS AREAS OF IMPROVED AND CROPPED LAND. ONTARIO AND QUEBEC (THOUSAND ACRES) TABLE 1

| 1951 1951 | The second secon | | THE THE |
|--------------------|--|-------|---------|
| | 1 1971 | 1951 | 1971 |
| | - | 8.829 | 6.450 |
| Cropped land 8,645 | 7.856 | 5.790 | 4.337 |

ing from Windsor to below Quebec City quite large areas have serious shortcomings. The limiting factors and acreages for all soils are listed in tables 2 (Ontario) and 3 (Quebec) to give some idea of their relative maps. Even within the main lowland corridor of productive soils extendmportance In Ontario 28% of mineral soils have excess moisture, 18% have low fertility, 15% are deficient in soil moisture, and 12% have poor soil structure.* Low fertility affects an area in Quebec similar in size to that in Ontario. but these soils represent a much higher proportion (39%) of the land base. Excess moisture limits 23% of the agricultural soils, an intricate pattern of wet and droughty soils 15%, excessive stoniness 14%, and steep topography 14%.

Climatic factors limit the productivity of higher-quality soils only in the Clay Belt, but within the St. Lawrence-Great Lakes Lowland climatic

ACREAGES OF AGRICULTURAL SOILS, WITH SPECIFIED LIMITATIONS, ONTARIO TABLE 2

| | | | ٠ در: در: |
|-----|-------------------------------------|----------------------------|-----------------|
| | | Area affected ² | agricultural |
| | Limiting factors | (thousand acres) | soils |
| - | Excessive soil moisture | 7,549 | ZX |
| 5 | Low natural fertility | 4.741 | <u>×</u> |
| e0. | Deficient soil moisture | 3,914 | 15 |
| 4 | Undesirable soil structure or low | | |
| | permeability or both | 3.161 | 12 |
| ı, | Adverse climate toold temperatures! | 2.834 | Ξ |
| 9 | Steep topography | 1,764 | 1 |
| 7 | Excessive stoningss | 494 | 34 |
| œ | Bedrock near to the surface | 268 | - |
| ō. | Combination of 2, 3, and 4 | 134 | ıσ |
| d | Cumulative minor fimitations | 12 | 0.1 |
| = | No limitations | 5,652 | 7) |
| Sta | Potal area of agricultural soils | 26,640 | |
| | 20 | | |
| 2 | | | |

Souleamelrases: 1.2 Land 1

*The gereages in the table counset to summed the areas shown or the C.E.L. maps to be significantly affected by two power under each factor.

Figure 1. Areas of sculs in agricultural capubility classes, Clerk Onlaine and

★The general section is sented on 1250 mut scale maps. More normate furnees for scatterin Outrane based on Lorgers after imposanche found in Roffman, DW × 1970.

Quebre (000 acres)

variations are quite significant (Williams 1973). Urban encroachment on farmland is most extensive in the areas with the best grawing conditions from the standpoint of accumulated heat (Millette 1968). Else where, even on the best soils, the choice of crops is more restricted.

TABLE 3 ACREAGES OF AGRICULTURAL SOILS" WITH SPECIFIED LIMITATIONS, QUEBEC

| | | Area affected ² | ogriceultural |
|----------|-----------------------------------|----------------------------|---------------|
| Į | Lamitung factors | (thousand acres) | z. 2. |
| | Low natural fertility | 966'+ | 68 |
| și · | Excessive soil moisture | 2,997 | 7 |
| ¥ | Intricate pattern of wet (#2) and | | |
| 2 | moisture deficient (#7) soils | 1,865 | |
| ÷ | Excessive stonings | 2,000 | 7 |
| ı; | Steep topography | 1,776 | |
| ٤. | Undesirable soil structure or low | | • |
| | permeability or both | 1,235 | 2 |
| ı~' | Deficient soil moistare | 737 | æ |
| £ | Cumulative minor limitations | 501 | ÷ |
| တ် | Subject to flooding | 129 | 19 |
| ≘: | Combination of 1.6, and 7 | 117 | o. C |
| = | Bedrock near to the surface | 46 | c |
| ⊋i | No limitations | 149 | - |
| Fota | Total area of agricultural soils | 12.809 | ! |
| <u>s</u> | larea of agricultural soils | 12.809 | |

Swis in classes 1.2.1 and J

The acreages in the table cannot be summed, the fixers shown on the C.L.L maps to be significantly affected by two limiting factors, totalling 3.8 M as are entered twice, one under each factor

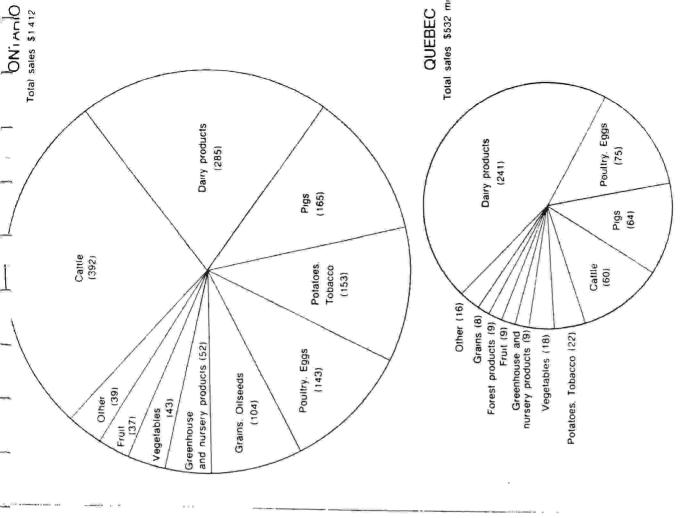
THE PRODUCTS OF AGRICULTURE

In assessing the productive potential of the soils it was assumed that the prevalent kinds of agriculture will be pursued in the future in roughly the same proportions. This is unlikely to be the case over the long term because of the volatile nature of certain input costs, the possibilities of milk and meat substitutes, and the continued encroachment of urbanization on specialized production areas. However, no other course is open for the intended purpose.

Judged by the value of the products sold from census farms in 1971. Ontario agriculture is dominated by eattle (28%), dairy products (2075), and pigs (1275). Animal products account for 70% of sales, Potatoes and tabacco together constitute 11%) Fig. 2).

In Quebre, dany products alone account for 45% of sales, poultry and eggs 14%, pgs 12%, and cartle 14%

The contributions of other products are itemized in Fig. 2



Eigure 2. The value of agricultural products sold from census farms in Ontario and Quebec, 1971. (figures in brackets denote value of sales in § millions).

MEASURING PRODUCTIVITY

An area of 35.4 M ac is the absolute agricultural land base of Ontario and Quebee 1Fig. 11. Its productivity and ultimate food-producing equativity have upper limits set by the economic feasibility of overcoming a variety of adverse soil characteristies, which are mostly physical.

The productivity of Class-1 soils under certain assumed levels of man agement can be roughly predicted for most crops. Many of the problems on soils of classes 2 to 4, other than infertility, are not easily overcome. Knowledge of the effectiveness in relation to costs of the measurestired at the problems is incomplete, especially in the fields of moisture and crossion control. Technical developments may increase the productive potential of some soils with physical problems, but large increases in fertilizer prices could result in reduced productivity of other soils.

Soil productivity is determined by soil and landscape properties, clum.to management inputs, and socioeconomic variables. The soil capability classification is a crude aggregation of the soil and climate. Even on a province-wide application, the approach needs to be refined before the physical bases of productivity can be accurately assessed. Capability classes and subclasses must be subdivided into performance management units, where the level of soil survey detail permits it. This can only be done for limited areas of Ontario and Quebec on the basis of available

The effects of variable management inputs can be approached by assuming certain arbitrary levels that are defined in detail in terms of methods, material inputs, use of imported feeds, and intensity of capital and labor. Although the assumption of a uniform high level of management has been used to evaluate productive potentials, cropy yields at this level are roughly, twice the present province-wide yields. The average yields on commercial farms he between the two.

In addition to the obvious recurring management inputs, such as fertilizers, herbicides, purchasing ability, and timing skills, there are other factors such as, the choice of crops: whether the animals converting them are relatively efficient poultry) or inefficient cattles; the degree of dependence on feed imported from outside the region; and the resonner fulness and technical knowledge of the farmers. There is much overlap between management inputs and external sociocomonic variables. The latter frequently act as constraints on the achievement of whatever production levels are inducated by soil and climatic conditions and good farminamagement. They amge braintaingable things such as the excessive fragmentation of holdings to infamilibles like a general lack of commitment by the public, including farmers, to the idea of pharming Unfortunately, assertions of anticidial freedoms commonly and ascordance experienciples of optimal landings.

Lind productivity to the cited by the system of tenger, the extension of the production of the cited of the system of the property of the cited of the system of the cited of the system of the cited of the system of the cited o

ernment progridms on substance, price and hieode supports, surply management, and crop insurance are listed as socioeconomic factors rather than management inputs because they seem to represent social as much as agricultural policy. Assistance programs may raise or stabilize farm income, but do not necessarily raise the productivity of farmland and may lower it. Clark 1973 noted that the benefit of such programs occurs in the form of a rise in the price of land rather than in the income of the farmer as such.

An FAO study on agricultural adjustment in 1972 illustrated how gross productivity might be limited voluntarily by international agreement. It called upon developed countries to withdraw land, capital, and labor from agriculture between now and 1980 as an act of supply management to avert impending surpluses and allow underdeveloped countries to export agricultural commodities. If acted upon, this would amount to a deliberate curtailment of the prevailing 2 to 2.5% annual increase in productivity. Even while the study was in progress, declining world food stocks have created an impetus in the other direction.

The availability of markets has a powerful influence on productivity: it matters little that an area is well suited to a particular crop if markets are adequately supplied from elsewhere and impenetrable.

Apparently, the only method of estimating the productivity of the soils of a region is a systems approach that takes into account the full range of soil, climatic, management, and social variables. This allows for adjustment through time of the significant components described above, but it requires information that is not available now.

A simpler approach is to correlate vields from a representative range of sample sites with measurable soil. landscape, and climatic properties, under assumed uniform levels of management and socioeconomic conditions. This site-factor method was used by Hoffman (1971) and Anderson (1971) to derive useful performance indices for establishing the productivity relationships between the soil capability classes. By using the grain yields of oats, barley, and corn, Hoffman obtained indices of 0.8, 0.64, and 0.49 for soils of classes 2.3, and 4 respectively (Class I equals 1.0). All of the 740 sites used were managed at a uniformly high level.

One possible shortcoming in the technique is the method of hand sampling of yields, which has been known to give inflated values compared with what a farmer actually realizes. Moreover, yield relationships in one sampling year do not allow for the effect of bad years or total crop failures, which depress long-term average yields to a greater extent on lower-class soils than on higher-class soils. The performance indices for soils of classes 3 and 4 are likely to be optimistic.

The performance induces can be used to illustrate the fotal productivity of an area in terms of a single crop. Hoffman (1972) estimated that southern Ontario soils could produce 893.6 M by of barley. He expressed the same idea in calorie-supplying power. At the rate of 2700 calories per person per day, the land base could support 17.3 M people or three times. The present population. Thus the maximum carrying equacity of farmland—

in Ontario would be about one person per acre. The performance indices were believed to be of wide geographical application; a rerun of the regression analyses by geographical subdivisions of the province produced he same result.

classes 1 to 4. He found that the area of land required to provide a 3 to 2 chance of above-average income was 117 ac of Class 2, or 160 ac of Class 3. Tested on a further 300 farms, the analyses yielded ern Ontario based on the correlation of income with areas of soils of respectively (Class I equals 100). Only the relationship between Class 2 and Class 3 soils were actually determined whereas the others were Noble (1965) made an economic classification of 65 dairy farms in eastestimated. The soils were evaluated by farm units and regarded as domin effect performance indices for soils of classes 2 to 4 of 87, 75, and 33 mant if they covered 51% or more of the crop area. Despite these obvious imitations, the approach confirms the reality of the class differences.

Odell and Oschwald (1970) developed multicrop soil productivity indices relating crop responses to management for most Illinois soils. The typical vields of corn, soybeans, wheat, oats, and alfalfa, and the currying Two levels of management were defined and crop yields under the basic level on a few of the best soils were used as the reference base for indices capacity of pastures were tabulated for each soil. This approach is a synthesis of the predictive yields as they appear in most soil survey reports. erm yield data from experimental agronomy fields, but it is not clear of all soils under both levels. The basis for some of the estimates was longnow many measurements, if any, were available beyond those actually vited from 7 locations in the State for 11 soil series. The productivity the presence of fragipan. The apparent precision of the neat tabulation ndices derived from the yield data were also adjusted quite arbitrarily o allow for past or potential erosion (it is not clear which), slopes, and may be illusory, but the information is of great value.

e Les V_eg

ity, but it could be if adequate soil-survey coverage were available. A similar approach in Ontario and Quebec is hampered by incomplete survey coverage at the scale required and insufficient data on yields The Illinois approach was not used to gauge regional productive capacunder defined inputs.

production. The soil capability classification for agriculture is not a basic In this publication the acreages rated by soil capability classes were used as the basis for estimating potential for increased agricultural Therefore, weaknesses show up where the soil coverage is sketchy, as shown by the changes made in areas resurveyed in detail. However, it ran supply a useful estimate of potential regional soil productivity when mput. The greater inputs required and the lower productivity on lowerclass soils compared to higher-class ones can be accommodated by adjustme their acreage downwards by Hoffman's performance indices, In this he area of land available is related to the area actually required to susain present production levels under a defined level of management way, the land hase is reduced to "Class I equivalents" expressed in inventory in itself but an interpretive regrouping of the soils inventory adjusted acres." This potential productivity can be compared with pres-

to sustain present production under defined yields. The difference between the acreages needed and available, with some adjustments, gives ent productivity, because it is known how many adjusted acres are needed an estimate of untapped productive potential.

THE PRODUCTIVE POTENTIAL OF THE AGRICULTURAL LAND BASE

levels under a uniformly high level of management, with the total acreage of suitable soils available. Table 4 (Ontario) and Table 5 (Quebec) show production figures, acreages, and province-wide yields of the main crops averaged for the years 1970 to 1972. The potential yields in column 5 are The productive potential for land-base enterprises can be estimated from a comparison of the land actually required to support current production those that can be expected under good management on Class 1 soils, and they lead to the calculation in column 6 of the potential area required to sustain present production levels.

CROP PRODUCTION, YIELDS, ACREAGES REQUIRED, AND POTENTIAL FOR INCREASE, ONTARIO TABLE 4

| , | | | Actual | Potential | Potential |
|---------------|-------------|-------|----------|-----------------------|-------------------------|
| Crop | Production! | Area1 | yield/ac | yield/ac ² | required ³ |
| 198 | (k bu) | (kac) | (hus) | (hii) | The second |
| Wheet | CHU | 000 | 1 | DC | K ac |
| " ucar | 19,558 | 366 | 42.5 | 80 | 194 |
| Oats | 34,777 | 624 | r. | Ob | 200 |
| Barley | 18 077 | 000 | | O.C. | 200 |
| Den | 10,011 | 900 | 9.10 | 80 | 236 |
| , | 1,513 | 53 | 28.5 | 9 | 56 |
| Mixed grains | 53,792 | 899 | × 65 | o | 100 |
| Corn (grain) | 98 456 | 1 106 | 000 | 2 6 | 160 |
| Ruckurhost | 200 | 021.1 | 0.70 | 135 | 729 |
| Die 111 | 248 | 2 | 24.8 | 20 | |
| r leid beans | 2,631 | 108 | 24.4 | 45 | 20 |
| Sovbeans | 11,477 | 369 | 31 | 20 | 000 |
| | (k fone) | | 1,000 | | 007 |
| Datatas | STOP THE | | (Suo) | (Suo) | |
| i otatoes | 418 | 44 | 9.5 | 12 | 35 |
| пау | 7.037 | 2.809 | 0.5 | ş | 2 0 |
| Carn (fodden) | 0 0 0 | | 0.0 | ာ | 2,335 |
| Tohaza | 0,200 | 179 | 13.3 | 17 | 486 |
| Toogco | ŧ | 87 | Ė | 1 | 7.0 |
| Vegetables | (I) | 196 | 1 | | 0 |
| Tree fruite | | 2 | r | í | 126 |
| Small famile | I | 00 | į | ţ | 63 |
| Cilian II uns | ı | 27 | 1 | į | 27 |
| Total | | 7,761 | | | 5.620 |
| | | | | | The same of the same of |

Average of 1970, 1971, 1972 from Quarterly Bulletin of Agricultural Statistics, Statistics Canada, except for acreages of tobacce, vegetables, and fruits, taken from 1971 census.

Potential yield under good management on Class I soils.

erite oraș

²⁷ Potential area required² is the area required to support the present levels of production under high levels of management it is expressed in terms of Class I soils or the equivalent acreages of all soils. The equivalent acreages are arrived at by multiplying the acreages of soils of classes 2.3 and 4 by the factors 0.8, 0.64, and 0.5 respectively. This is supposed to bring the soils into their approxymate productivity relationship and facilitates comparison with acreages available. The factors are those of Hoffman 11971.

300,000 ac in Ontario and 120,000 ac in Quebec. Consideration was not given to the valuable areas of organic soils in the two provinces because there is insufficient information for a useful estimate of their productive potential.

** 2 300 (c)

of the annual 2 to 2.5% overall increase in agricultural productivity of recent years have not been considered. There appears to be little evidence The estimated productive potentials are predicated upon good progress in mentation. The contribution of increased crop yields and the implications removing the more serious socioeconomic restraints such as farm fragthat this trend has reached its peak.

Provinces, it has been found that potential productivity is 150% above the present level without recourse to clearing forests, and 800% if you allow for the clearance from forest of soils of classes 2 to 4. Quebec, 116 and 25% respectively, is not startling. Even in the Atlantic The potential for expansion in the productivity of the soils of Ontario and

The small potential for expansion in Quebec results from the fact that virtually all suitable soils are being used along with large acreages of marginal soils (Class 4). A greater increase in productivity than that probably come from a continued rise in inputs, continued substitution of machinery for labor, and higher-quality products. Ontario has some untapped potential, but it is chiefly in lower-class land requiring high-cost and is being retired. Any increase in productivity in both provinces will indicated would be possible on the good soils at the same time as marginal

THE LOSS OF PRODUCTIVE POTENTIAL TO URBANIZATION

The virtually irreversible conversion of the agricultural land base to urban and similar nonagricultural uses represents substantial attrition of the productive potential. This destructive process can be justified in some places where no alternatives are available, or where its effects may be mitigated by rational planning. But in general, it proceeds unchecked in its crosion of food-producing capacity. How much of the inherent agricultural productivity of Ontario and Quebec is threatened?

Minggar San II

amount to 367,000 ac between 1971 and 1981, 823,200 by 1991, and 1,282,400 by the year 2001. These acreages amount to 2.2, 4.9, and 7,77 respectively of the soils of classes 1 to 3 in the province (Table There is considerable evidence (Bogue 1956, Crerar 1962, and Hind-Smith 1962) that this conversion takes at least 200 ac for every increase of 1,000 in urban population. If this rate is applied to the projected increase in urban population in Ontario the permanent loss of farmland would 31. Similarly, in Quebec the losses would be 291,800, 561,000, and 749,000 ic representing 5.0, 9.6, and 12.8%, of soils in classes 1 to 3.

The urban population figures used are preferred projections of the Systems Research Group (1970). Urban population is defined as the population of cities, towns, and villages with a population of over 1000, whether is made that all urban expansion, including land idled, is occurring at the expense of farmland. The amounts of threatened land in the various incorporated or not, and urbanized fringes of cities classed as metropolitan areas, other major urban areas, and certain smaller cities that with their urban fringe had a population of 10,000 or over. The assumption capability classes are not known with certainty, but maps show a very high proportion of classes 1, 2, and 3.

There is some evidence that the land absorption rate is decreasing in some areas as infilling of older urbanized areas occurs (Gad 1973).

PROJECTED POPULATION AND LAND ABSORPTION TRENDS, ONTARIO AND QUEBEC, 1971 TO 2001 TABLE 6

À į.

| | | Urba | Jrban population | 1 | |
|------|----------------------|---------------|-----------------------------------|--------------------------------|---|
| Date | Total population' | % of total | Increment from 1971 (thousand) | absorption (k ac) ² | % of total land in classes 1 to 3 |
| | Ontario | | | | |
| 1971 | 7,703 | 8 | | | |
| 1981 | 9,333 | 89 | 1 835 | 798 | 66 |
| 1991 | 11,384 | 93 | 4 116 | 268 | 70 |
| 2001 | 13,420 | 96 | 6,412 | 1,282 | 7.7 |
| _ | Quebec | | | | |
| 1971 | 6,028 | 80 | | | |
| 1981 | 7.261 | 80 | 1.459 | 606 | C III |
| 1991 | 8,306 | 94 | 2,805 | 122 | 0.0 |
| 2001 | 9,112 | 96 | 3,745 | 749 | ا ان در |
| | | | | 2 | 0.77 |

Taken from: Canada Population Projections to the year 2000, Systems Research Group, Toronto, 1970. The 1971 population figures are those of the census.

The population projection for Ontario to 1991, 11.4 M, is in good agreement with one of 9 projections made independently by the Economic Analysis Branch of the Ontario Department of Treasury and Economics ARDA 1972). This projection was based on the highest of three population fertility assumptions, which is a rate unchanged from the present, and the central rate of three annual rates of migration into the province, e., 50,000 (the others were 30,000 and 70,000). This projection is also close to an annual rate of population increase of 2%, which appeared to be accepted as reasonable in ARDA Report No. 7 (1972, p. 290). Hoffman (1970, p. 15) estimated that urbanization will take 1 M ac of arable land in southern Ontario by the year 2000. This is close to the projections made above.

method based on urban development uses, population projections, and idle urban lands. It cited a study of 52 urban municipalities as demon-ARDA Report No. 7 arrived at lower figures for southern Ontario by a strating an exponential relationship between population numbers and

^{&#}x27;A land absorption coefficient of 200 ac per 1000 increase in urban population was assumed.

developed urban area (1972, p. 78). Other analyses of the 42 most populous counties and 27 cities and towns (pp. 81-89) suggested that by 1991, 172,000 ac within present municipal boundaries and 137,500 ac acquired by annexation would be taken from agriculture. The report claimed that 119,500 ac of undeveloped land within urban areas were available in 1966, if it were assumed that the ratio of undeveloped to developed urban areas could be reduced from the prevailing 0.8 or 1.0

The study considered the land losses to the 27 cities and towns in soil capability terms (p. 89). It concluded that their encroachment on Class 1 and Class 2 soils in the period of 1971 to 1991 will amount to 196,100 ac for the central population projection and 386,800 for the high projection. The latter was considered to represent a moderate overestimation, but excluded land absorption by rural nonfarm residences.

The findings of the ARDA-sponsored study rely heavily on the validity of the regression equation relating acreages to population, on the purticular population projections used, and on a succession of thematic assumptions such as the neglect of urban fringe development outside municipal boundaries.

Other authors have reported or favored either lower land absorption rates than the 200 ac per 1,000 urban population increase (Williams 1973 and Crerar 1970) or higher rates (Pearson 1973). The most practical way of resolving the issue would be systematic measurements on time series of airphotos for selected areas.

Not all losses of agricultural land have been accounted for. Because of the rapid rise in housing costs in urban areas in recent years and a general back-to-the-land movement, low density rural housing has mush-roomed. This may have consumed as much as 600,000 ac or 3% of the total farmland in southern Ontario in the decade 1960 to 1970 (ARDA 1972. p. 102). This figure suggests that up to 60% of the total land converted is being used for low-density rural residential purposes. Many dwellings are on lots that exceed the 25-ac minimum severance required by most municipal land division committees. The rate of 600,000 ac per decade seems very high to use as the basis for even general projections without some corroboration, but unfortunately the problem is not well documented. Furthermore, much of the land in question has not been built on or removed permanently from agriculture. It can be considered as being held for some future use in commercial agriculture.

Probably, potential agricultural land is going into more irreversible forms of low-density rural residential use (structures, roadways) at a rate of all least 25,000 ac per year in Ontario and the same in Quebec. If this were true, the rates of loss of Ontario agricultural land given above (Table 6) would be raised to 4.0% by 1981, 8.4% by 1991, and 12.8% by 2001. The Quebec rates would be raised to 9.6, 18.3 and 26.7% respectively.

Projections of the impact of low-density rural residential development on farmland are fraught with difficulty. There is some conflict between the

present mushrooming of rural nonfarm residences and the Systems Research Group projections, which indicate a continual increase in the proportion of the Ontario population residing in urban areas from 84% in 1971 to 89% in 1981, 93% in 1991, and 96% in 2001. The Quebec projections are within 1% of the Ontario figures. Future trends in the loss of farmland to rural nonfarm uses will be greatly affected by political decisions and planning ordinances.

CONCLUSION

Although the farmland can be made to produce 116% more in Ontario and 25% more in Quebec without considering Class 4 soils, it is a severely limited resource. Similar calculations for the Maritime Provinces are 800%

Many authors have deplored the process whereby urbanization is taking over irreplaceable high-quality farmland. I suggest that although the rate of attrition is less spectacular than some writers have claimed, it remains a serious problem.

Unless countermeasures are taken, 12% of the food-producing capacity of Ontario may be lost between 1971 and 2001 at an annual average rate of 0.4%. By the same process 26% of the food-producing capacity of Quebec may be lost at 0.9% annually. These are the inevitable conclusions to be drawn from relating productivity of the realistic land base (soils of classes 1 to 3) to projected rates of land absorption.

Liquidation of an asset at this rate warrants immediate action on a scale not previously attempted.

ACKNOWLEDGEMENTS

Mr. Paul Lajoie, Soil Research Institute, supplied measured acreages of soils by capability classes and compiled the 1:2,500,000 soil capability maps.

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| Approximate Conversion factor x 25 | Σ | S.III.) | (mm) (m) (km) | (m.) (m.) | (6m²) (m²) (100) (100) (100) (100) (100) | (kg) | ن د | (kPa) | (kW) | (m/s) (km/h) | (h (\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) (\ell(\hat{ha}) | |
|--|-----------------|-------------------------------|--|--|---|---|----------------------------------|----------------------------------|---------------------|--|---|--|
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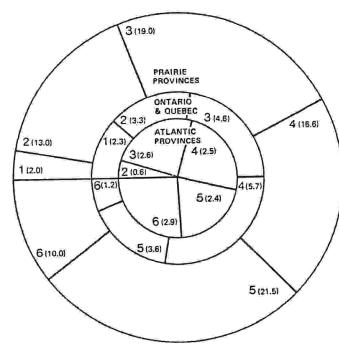


Figure 1. Areas of capability classes (millions of hectares) in different agricultural regions. Note: All area segments originate from the center.

Additional land for crop production: Canada

J. A. SHIELDS and J. L. NOWLAND

Soil surveys have gathered sufficient information to permit a rough assessment of the productive potential of land capable for agricultural purposes. This paper seeks to provide a general overview of Canadian farmland and its use; to determine the extent of major land reserves capable of, but not presently used for agriculture; and to describe briefly some of the physical and socioeconomic factors inhibiting their agricultural use. A final objective is to estimate the potential productivity of the unfarmed agricultural land reserves relative to current production.

Agricultural Capability of Soils

The agricultural capability of soils in southern Canada has been classified in the Canada Land Inventory (CLI), a system that relied heavily upon soil survey information to develop interpretive classifications of land for various uses. The procedures involved and the bases of classes and subclasses in the CLI system are well documented in other publications (8, 1). Mineral soils are grouped into seven classes according to their potentialities and limitations for agricultural use. Soils in the first three classes are

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considered capable of sustained production of common cultivated crops, and those in the fourth are of marginal capability. The fifth class is capable of use for improved pasture and hay, the sixth for native pasture, and the seventh is for soils and land types considered incapable of any of these uses.

As Shields and Ferguson (8) pointed out, climatic limitations tend to be overshadowed by other limitations because, for the most part, they are identified only when no other adverse factors are present. Moreover, in Central and Atlantic Canada especially, low soil fertility tends to be underestimated on those soils with other limitations.

To date the CLI has been completed for all provinces except British Columbia. The area within the completed portion of the CLI boundary includes about 200 million hectares or approximately 22 percent of the land area in Canada. The area with agricultural capability, classes 1 through 6, comprises 116 million hectares or 12 percent of the total land area; while the portion suitable for field crops (classes 1-4) is 74.7 million hectares; and the prime agricultural lands in classes 1 and 2 are 21.4 million hectares or 2 percent of the total land area (Figure 1, Table 1). The 78 percent of the country not covered by the CLI includes only minor areas with potential for agriculture.

Almost three-quarters of the land in classes 1 through 6 occurs in the Prairie Provinces; they possess 34 million hectares of classes 1 through 3 land well suited to common

| l soil | capabll | TEV CI | asses, D | A DICA | יורכס רד | 2000 | | | | | | | | | - | | | |
|---|---|---|---|------------|---------------|-------------------------|---|--|--|--|--|--|--|----------------|--|--|--|---|
| 1 1 | 6 | 54 | CLI G | apabili | lty Class | ses for | Agricu | lture | <u> </u> | 6 | ŀ | 5 | Organic | 6 | Water, Parks and Urban | 7 | F 840 | 84 |
| | u u | 9 | 9 | q | 4 | q | 4 | q | 0 | y | | , le | 30105 | 4 | Spa N | | | 4 |
| lk. | 611 | 2.5 | | 10.5 | 2,544 | 10.4 | 2,352 | 9.6 | 2,903 | 11.9 | 9,350 | 38.2 | 3,695 | 15.1 | 745 | 1.8 | 24,466 | 100 |
| ı | ı | į | 5,5 | 7 | 62 | 9, | 388 | 3.6 | 2,891 | 26.8 | 3,742 | 34.7 | 3,460 | 2.1 | 226 | 2.1 | 10,775 | 100 |
| 1 | 261 | 45.9 | 157 | 27.6 | 23 | 0.4 | 86 | 17.3 | ĵ | ı | 28 | 4,8 | 2.8 | ń | a. | i | 268 | 100 |
| i | 178 | | | 18.0 | 855 | 7.7 | 76 | 1.6 | 6.1 | ı. | 3,895 | 66.4 | 137 | 2,3 | 48 | 80 | 5,862 | 100 |
| ı | 173 | 2.4 | 1,343 | 18.5 | 2,011 | 27.7 | 1,772 | 24.5 | 5.6 | ı.İ. | 1,686 | 23.2 | 96 | 1.3 | 168 | 2.3 | 7,261 | 100 |
| 3.7 | | 5.3 | | 7.3 | 5,732 | 1.6 | 3,546 | 5,6 | 1,201 | 1.9 | 34,887 | 55,3 | 3,422 | 5.4 | 4,057 | 4.9 | 68,110 | 100 |
| .2 | 954 | 2.9 | 1,363 | 4.2 | 2,830 | 8.8 | 1,636 | 5.0 | 9.8 | म् | 21,851 | 8*99 | 1,268 | 3.9 | 2,633 | 8.2 | 32,605 | 100 |
| 7.4 | 2,360 | | 3,279 | 10.8 | 2,902 | 5,6 | 1,910 | 6,3 | 1,192 | 3.9 | 13,036 | 42.5 | 2,154 | 7.7 | 1,423 | 4.7 | 30,504 | 100 |
| 1.9 | | | 19,090 | 17.1 | 16,766 | 15.0 | 21,482 | 19.3 | 10,025 | 0.6 | 6,308 | 5.7 | 13,199 | 11.8 | 9,630 | 8.6 | 111,612 | 100 |
| 8 | 2,556 | 10.7 | 2,561 | 10.7 | 2,573 | 10.8 | 2,250 | 7.6 | 2,162 | 9.1 | 1,254 | 5,3 | 5,113 | 21.4 | 5,192 | 21.8 | 23,844 | 100 |
| 2,8 | 9,446 | 16.8 | 10,082 | 26.2 | 4,252 | 11,1 | 7,799 | 20.3 | 4,065 | 10.6 | 284 | 1. | 2,914 | 7.6 | 1,581 | 4.1 | 38,494 | 100 |
| 2,309 2,309 2,249 2,069 1,072 | 1 % 1 1 % 2,309 3.7 60 2 2,249 7,4 2,069 1.9 184 .8 1,072 2.8 | 2 2 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 2 % - 611 2.5 - 611 2.5 - 261 45.9 - 178 3.0 - 173 2.4 3.7 3,313 5.3 .2 954 2.9 7.4 2,360 7.7 1.9 13,044 11.7 .8 2,556 10.7 2.8 6,446 16.8 | CI.I G. 2 | CLI Capabilli | CLI Capability Class 2 | CLI Capability Classes for 3 2 4 2 7 7 3 2 3 2 4 4 7 7 7 3 1 1 62 4 6 7 7 1 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 | CLI Capability Classes for Agricin 2 2 2 3 2 4 2 5 5 5 7 5 7 7 2 5 5 7 5 7 4 2 5 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | CLI Capability Classes for Agricult 2 2 2 3 4 2 5 5 5 7 4 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | griculture 5. 2 6 5. 2 6 3.352 9.6 2,90 388 3.6 2,89 98 17.3 - 94 1.6 ,772 24.5 ,546 5.6 1,20 ,910 6.3 1,19 ,482 19.3 10,02 ,250 9.4 2,16 ,799 20.3 4,06 | griculture 5. 2 6 5. 2 6 4.352 9.6 2,903 1 388 3.6 2,891 2 98 17.3 - 94 1.6 6.1 4.772 24.5 5.6 4.910 6.3 1,192 4.482 19.3 10,025 4.250 9.4 2,162 4.799 20.3 4,065 1 | grieniture 5. Z. 6. Z. 5. 3. 4. 6. Z. 5. 3. 6. Z. 6. 3. 3. 6. Z. 891 Z6.8 98 17.3 94 1.6 6.1 .1 772 24.5 5.6 .1 546 5.6 1,201 1.9 786 5.0 8.9 .1 791 6.3 1,192 3.9 782 19.3 10,025 9.0 799 20.3 4,065 10.6 | grieniture 5. Z. 6. Z. 7 5. 3. 2. 6. Z. 7 5. 3. 4. 6. 2. 7 5. 4. 5. 891 26.8 3,742 98 17.3 28 94 1.6 6.1 .1 3,895 5.4 5. 5.6 .1 1,686 5.46 5.6 1,201 1.9 34,887 6.36 5.0 8.9 .1 21,851 6.30 6.308 6.30 6.308 6.30 7.99 20.3 4,065 10.6 284 | grieniture 5. | grienlture 5. Z. 6. Z. 7. Z. Soils. Z. 5. Soils. Z. 5. Soils. Z. 6. S. 7. Z. Soils. Z. 6. Soils. Z. 7. Soils. Z. 8. Soils. Z. 9. Soils | grieniture 5. Z. 6. Z. 7. Z. Soils Z. A 352 9.6 2,903 11.9 9,350 38.2 3,695 15.1 388 3.6 2,891 26.8 3,742 34.7 3,466 2.1 98 17.3 28 4.8 2.8 .5 94 1.6 6.1 .1 3,895 66.4 137 2.3 ,772 24.5 5.6 .1 1,686 23.2 96 1.3 ,546 5.6 1,201 1.9 34,887 55.3 3,422 5.4 ,636 5.0 8.9 .1 21,851 66.8 1,268 3.9 ,910 6.3 1,192 3.9 13,036 42.5 2,154 7.7 ,482 19.3 10,025 9.0 6,308 5.7 13,199 11.8 ,799 20.3 4,065 10.6 284 .7 2,914 7.6 | griculture 5. Z. 6. Z. 7. Z. Soils. 2. Areas Z. Areas Z. Soils. 2. Areas Z. Soils. 2. Areas Z. Soils. 3. Ar | Water, Parks and Strict. griculture Organic Urban and Urban and Urban and Urban and S. Z. |

Areas measured on 1:250,000 scale maps of soil capability for agriculture, Canada land inventory.

8.5 26,294 13.2 25,042 12.6 27,379 13.7 14,130

100

199,188

14,129

10,2 10.5

25.4

7.1 50,545

49,274 100

5.8 7.1

2,858

5,173 20,316

7.6

4,770

7.7

23.2

11,433

20.2

9,940

6,447 13.1

8.3

4,041

1.7

813

Alta, a

4,378 2.2 16,969

Canadab

4,065 3,794

For Alberta class I area includes 105,100 HA, and class 3 area 158,500 HA,

Canada total does not include British Columbia for which data are unavailable.

field crops, 17 million hectares of marginal class 4 land and 32 million hectares suited to improved or native pasture in classes 5 and 6. Ontario and Quebec have 20.7 million hectares of classes 1 through 6 land, of which 10 million hectares are in classes 1 through 3, 5.7 million hectares are marginal, and 4.7 million hectares are best suited to pasture.

Atlantic Canada has nearly 11 million hectares of classes 1 through 6 land, nearly half of which are in classes 5 and 6. There is no class 1 land, very little class 2 land, and slightly more than 2.5 million hectares in each of classes 3 and 4.

Preliminary estimates of capability classes in British Columbia (data not shown) indicate about 0.6 million hectares in classes 1 and 2, 1.4 million hectares in class 3, and 2.6 million hectares in classes 4, 5, and 6.

Overview of Agricultural Land Resources

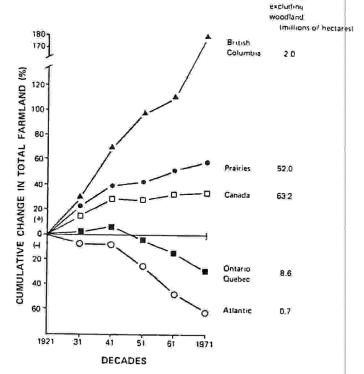
Although Canada has a total land area of 906 million hectares, most of the country is climatically unsuitable for agriculture. Agriculture's land base is confined primarily to two natural regions—the Prairies and the St. Lawrence—Great Lakes Lowlands. To this can be added small but significant areas in the Maritime Provinces and the valleys of British Columbia. The Cordillera, the Canadian Shield, and much of the rocky glacier—scoured landscape of the Appalachian region are disqualified by unfavorable physiography or soils. On top of this, the climatic constraint of a short growing season is superimposed along the northern fringe.

Farmland Area

In 1971, the area on farms in Canada, excluding the 5.5 million hectares of woodland, was 63.2 million hectares, of which 43.8 million hectares were improved land. The 63 million hectares of farmland, excluding woodland, represents a 35 percent increase since 1921 (Figure 2). During the 50-year period prior to 1971, there have been great variations in regional trends. In the Atlantic Provinces and Ontario-Quebec, the farmland area declined by 61 percent and 28 percent respectively. In contrast, there has been a marked increase in the Prairie Provinces—to 60 percent above the 1921 area—and a dramatic expansion of 180 percent in British Columbia.

The larger part of the expansion in the Prairies was northward in the period 1921 to 1941 in response to droughts in the largely settled southern Prairies. This trend continued on a reduced scale in subsequent decades, regardless of the fact that the shift northward encountered climates less favorable for agriculture.

In Ontario and Quebec, loss of farmland has also occurred in areas of marginally productive soils. But more important, there have been large losses of higher class lands in the vicinities of the cities along the corridor from Windsor to Quebec City. From 1951 to 1971,



1971, Total

Farmland,

Figure 2. Change of total farmland (excluding woodland) in major agricultural regions of Canada.

losses of both lands in this corridor exceeded 2.8 million hectares, half of which was improved land (5). The loss of 1.1 million hectares between 1966 and 1971 indicated an acceleration of this trend. It has been projected that the continued loss of farmland to urbanrelated uses in Quebec and Ontario may exceed .3 million hectares and .5 million hectares, respectively, between 1971 and 2001 (7). The liquidation of this resource has been greatest in the areas endowed with the best climates and soils. Williams (10) concluded that from an agriclimatic standpoint, nearly half of farmland losses to urban encroachment in Canada was coming from the best 5 percent of our farmland.

British Columbia has suffered as badly as any province from the permanent alienation of farmland. It is estimated that the annual average loss between 1962 and 1972 was 4,000 hectares and approaching 6,000 hectares per year at the time of the Land Commission Act in 1972. The dramatic expansion of farmland noted earlier has come about with the exploitation of northern areas, where less favorable climates and soils extort higher inputs for less productivity than the lost lands of the south.

Decline of the farmland areas in the Atlantic Provinces is attributed, in part, to difficulties in the use of modern farm machinery in the many hilly, stony, and moist areas and to the fragmented nature of the areas suitable for agriculture. Many farms have remained too small or too remote from markets to function as viable units, and the traditional combined activity of farming, fishing, and woodcutting is no longer as practical as it once was. The production of hay, a mainstay of the old farms and well suited to many of the soils, has become less rewarding. Consequently, much of the lost farmland simply has reverted to bush, some good soils along with the poor.

Present Use of Farmland

The areas of broad categories of land use on farms by provinces is given in table 2. Of the 43.8 million hectares of improved land in the country, 70 percent is in the Prairie Provinces and 16 percent in Ontario and Quebec. Improved land ranges from 30 percent of total farmland in British Columbia to 65 percent in the Prairie Provinces and Ontario and Quebec. Cropland ranges from 62 percent of improved land in British Columbia to 72 percent in the Prairie Provinces. Summer fallow occupies an area equivalent to 39 percent of the cropped area (i.e. excluding summer fallow) in Alberta and 29 percent in Manitoba, but reaches 61 percent in Saskatchewan.

Table 3 gives a more detailed breakdown of arable land by individual crops and provinces. Many of the area values are three-year averages in order to avoid using unrepresentative single-year data. In other cases, only single-year data (1971 Census) were available. Significant trends are evident from the percentages changes over the previous decade.

Almost one-quarter of Canada's cropland is in forage crops, chiefly hay. During the last decade, the area in hay has shrunk markedly in the Maritimes, Ontario, and Quebec, and expanded greatly in the Prairies and British Columbia. This trend was accompanied by an increase in the cultivation of corn for fodder in eastern Canada and, toward the end of the decade, a drop in Prairie wheat area.

The area occupied by oilseeds advanced dramatically, spearheaded by rapeseed in the Prairies and soybeans in Ontario, to attain almost 9 percent of cropland area in 1971. Flax made no contribution to the expansion, its area declining in all regions.

Wheat is grown on over one-third of the cropland and somewhat less than one-third is in the other grains. Average annual area in wheat, 1971 to 1973, was down in Alberta and Saskatchewan by one-sixth compared to a decade earlier. Barley increased in all provinces, its area more than doubling in the 10 years.

Grain corn areas, mostly in Ontario and Quebec, expanded 180 percent in the decade to occupy 2 percent of the total cropland in the country. Other trends included an expansion of field beans in both Ontario and minor production areas; a steady decline in tree fruit area; substantial expansion in vegetable area in all provinces except Manitoba and Alberta; and little change in total potato area, with expansion in New Brunswick, Ontario, Manitoba, and Alberta offset by declines in Nova Scotia, Quebec, and Saskatchewan. There was also little change in tobacco area, as large increases in smaller producing areas in the Maritimes offset declines in Ontario and Quebec.

Other changes in smaller producing areas that seemed of significance on the local scene were the expansion in corn, wheat, barley, and peas in the Maritimes and the expansion of corn, oilseeds, wheat, barley, and vegetables in British Columbia.

Physical Potential for Expanding Crop Production

An assessment of the ultimate physical

Table 2. Present use of farmland (1,000 ha).

| | | | | Improved | Summer |
|--------------------|----------------|-----------------|----------|---------------|--------|
| Province | Farmland | Improved Land | Cropland | Pasture | Fallow |
| Atlantic Provinces | 1,419 | 561 | 374 | 138 | 9.9 |
| NFLD. | 25 | 7.7 | 3.5 | 3.2 | 0.2 |
| P.E.I. | 314 | 200 | 142 | 46 | 3.7 |
| N.S. | 538 | 156- | 98 | 43 | 2.5 |
| N.B. | 542 | 197- | 130 | 46 | 3.5 |
| Central Canada | 10,839 | 7,012 | 4,939 | 1,639 | 129 |
| Que. | 4,374 | 2,612 | 1,757 | 693 | 33 |
| Ont. | 6,465 | 4,400 | 3,182 | 946 | 96 |
| Prairie Provinces | 54,096 | 35,515 | 22,094 | 2,201 | 10,622 |
| Man. | 7,698 | 5,186 | 3,695 | 296 | 1,075 |
| Sask. | 26,348 | 18,803 | 11,072 | 793 | 6,708 |
| Alta. | 20,050 (1,980) | 11,526 (11,384) | 7,327 | 1,112 (1,098) | 2,839 |
| B.C. | 2,358 | 711 | 443 | 161 | 70 |
| Canada | 68,712 | 43,799 | 27,850 | 4,139 | 10,830 |
| | | | | | |

Source: 1971 Census data.

Table 3. Areas of land under crops by provinces (1,000 NA), 1971-1977; and perrent change from 1960-1962ª.

| 12 | +38 +40 +13 +330 +6 | 977+ | 3,521 - - -89 | +27 -7 +34 +32 | +151 -15 -24 -19 +102 +102 +46 -0 | 1 |
|--------|---|------------------------------|--|--|--|--------|
| B.C. | 225 225 17 5.8 9.5 | 8.1 | . 6.5 | 51 5 46 | 0.4 0.4 0.4 0.4 | 97 |
| 82 | -37 +41 +79 +37 | | +153 +68 -48 | -23 +28 -26 | +77 -21 -21 -21 +144 +144 +144 +144 +144 +144 +144 +1 | 3 |
| Alta. | 1,690 1,392 235 1.6 | | 5.41 | | 2,152 781 96 3,8 17. 4 17. 17. 3,0 3,0 | 7,809 |
| 24 | +146 +394 -37 +111 +35 | 76+ | +300 +2,880 +1,238 -11 | 77 6 6 7 8 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | +143 +15 +3,279 -84 +107 +337 +337 +69 +69 -75 | |
| Sask. | 883 722 110 .8 | 286 | 651 29 .3 | 6,262 13 765 5,484 | 1,940 764 147 4.7 2.3 2.3 2.3 1.1 1.1 1.2 | 10,989 |
| * | 古 1 1 1 1 1 1 1 1 1 1 1 1 1 | +58 | +1,288 +495 +66 -21 | -29 +66 -8 | +182 -17 -17 +195 +195 +123 -22 +41 +41 | |
| Man. | 524 470 29 7.5 | 200 | 204 64 232 .5 | 1,157 3.6 57 1,096 | 844 518 139 100 11.2 | 3,672 |
| 84 | 417- 117- 128- 128- 128- 128- 128- 128- 128- 128 | +57 | -664 +73 -95 | 28 28 28 28 | +361 -63 -63 -63 +188 +188 +149 -100 -100 -132 -32 -32 -63 -63 -63 -63 -63 -63 -63 -63 -63 -63 | |
| Ont. | $\frac{1,412}{1.115}$ $\frac{268}{14}$ | 150 | 149. | 152 146 .6 5.4 | 150 203 203 20 31.8 17 17 117 | 2,805 |
| 84 | -14 -20 +61 +159 +52 | 7 | +1,770 | +269 +223 +238 +293 | 1101 147 147 142 142 142 142 142 143 143 143 143 143 143 143 143 143 143 | |
| Que. | 1,248 1,083 77 57 31 | 2,7 | 4.5.8.5 | 16 4.4 11.7 | 277 277 277 26 27.7 29.7 29.7 4.0 2.9 | 1,705 |
| 2 | 451 184 1505 151 | h | F 1 1 1 | 485 450 451 451 451 451 451 451 451 451 451 451 | +199 -54 -61 -61 -83 -83 -83 -42 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 | |
| N. | 70 66 1.5.3 | f | h i j i | 2.1 | 22 2.0 1.1 1.1 1.1 1.1 | 122 |
| 2.5 | -33 -36 +361 +19 | ı | 111 | +215 +437 +308 +192 | +568 +179 +179 +179 +274 +297 +297 +247 +74 +1,731 | |
| s. | 67 61 1.6 3.4 | 1 | тт 🖫 | 2.1.3 | # 1 | 16 |
| 84 | -30 -30 -11 -112 -1137 | f | 7 1 6 F | +70 +80 +184 +184 | +794 -494 -23 +292 +292 -10 +205 +205 +205 +3,154 | |
| P.E.I. | 22 8. 1 1.1. | t | 1116 | 3.2 2.1 9.2 | 0181 11. 12. 12. 12. 12. | 109 |
| * | -32 -33 -56 | ţ | 1 4 5 5 | X E E 30 | 4.60 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | |
| NFLD | 2.5 2.4. | ı. | 1111 | 1111 | 44************ | 3.1 |
| 82 | +20 +19 +128 +128 +25 | +69 | +289 +592 +74 -23 | 15 19 18 18 | 25252525252525252525252525252525252525 | |
| Canada | 6,209 5,188 487 347 187 | 2,058 | 848 95 150 628 | 9,479 235 922 8,322 | 2,187 2,651 301 301 31 31 31 31 31 31 31 31 31 31 31 31 31 | 26,954 |
| Crops | Forage crops tame hay oats cut for hay corn for fodder other fodder crops | Oilseeds rape and mustard | secd sinflowers soybeans flaxseed | Wheat vinter durum saring | Barley Oats for grain Rye Buckwheat Corn for grain Peas Beans Sugat beets Tree [ruits Vegetubles Potatoes Tobacco Small fruit | Total |

a Values underlined are three year averages, 1960-1962 and 1971-1973, from quarterly bulletin of agricultural statistics. (Several issues) Statistics Canada, Other values are from Census of Agriculture 1961 and 1971.

potential for expanded crop production has been made, based on the total supply of land in various capability categories (6, 7, 8). It was expressed as the percentage increase in production over present levels that the soils are capable of supporting. To do this, it was necessary to reduce the various qualities of land to a common denominator using indices of relative productivity. Hence, 1.56 hectares of class 3 soils in Ontario are equivalent to 1 hectare of class 1 soils under a high level of management. The total areas of soils in various classes were reduced to adjusted areas of class 1 equivalents. This facilitated comparison with the demand for land in areal terms.

The land available, expressed in class 1 equivalent area, was then compared with that actually required to sustain present crop production levels. Unfortunately, the proportions of the areas under each crop in each soil capability class are not known. Therefore, the potential for expansion was expressed in relation to the class I equivalent area actually needed to sustain current levels of production under a chosen uniform level of management on all farms. In this case, a high level of management and appropriate crop yields were chosen to give an estimate of maximum capacity of the land. It is recognized that it may be economically feasible to exploit only a fraction of this capacity in the immediate future.

There are limits to the usefulness of the CLI classification for evaluating the soil resource in this way. The system rests solely upon ratings for regionally adapted field crops. These ratings may have less meaning for special crops and forage crops or for the relative nationwide suitability of a crop. Furthermore, the system was never intended to reflect competitive crop productivity relationships or the costs of overcoming these limitations; both of these aspects are of pressing concern today. The costs of development and production inputs within any class, especially classes 3 and 4, vary widely as a function of the specific kinds of limiting factors. However, the productivity indices proposed by Hoffman (3) for Ontario have since been corroborated for higher class soils and correlated with gross margins realized by the farmer (personal communication with E. E. Mackintosh). They were also found to be a fair approximation for the Prairies (8).

The Prairie Region. A general picture of the physical potential for expansion of agricultural production can be obtained from a comparison of the amounts of land currently used for agriculture with the amount of land in capability classes 1 through 4 (Table 4). This indicates a total of about 15 million hectares of potentially arable but unimproved land in the Prairie region. This is not too far from the estimate by Johnson (4) of 12 million hectares of arable land that could be added to the present farm area. By far the biggest proportion (9.6 million hectares) is in the province of Alberta.

Soil productivity data from a number of sources for common crops in the Prairie Provinces led Shields and Ferguson (8) to assign indices for classes 2, 3 and 4 soils of 0.85, 0.70, and 0.5, respectively (class 1 equals 1). The corresponding areas in hectares were multiplied by these factors to arrive at a single land supply figure in terms of class 1 equivalent area.

In calculating the area of class 1 equivalent soils required to sustain present production levels under universal high-class management, Shields and Ferguson (8) assumed that such management in Saskatchewan could achieve yields of 2,900 kilograms per hectare of wheat, 3,200 of oats, 3,800 of barley, and 1,500 of flax and rape. Figures for other provinces and other crops were given by Shields and Ferguson (8).

These estimates led to the conclusion that, under the stated high-class management assumption and using all soils in classes 1 through 4, the physical potential for expanded crop production is 135 percent above present production levels in Alberta, 65 percent in Saskatchewan, and 100 percent in Manitobal These calculations were made under the assumption that the prevailing ratios of cropped area to summer fallow--2.4 for Alberta, 1.4 for Saskatchewan, and 2.9 for Manitoba--will remain unchanged. In fact, reductions of summer fallow areas, especially in the Black and Dark Gray soil zones, have been advocated by several authorities. Furthermore, the estimates do not take into account the gradual increase in crop yields resulting from technology, which is at the rate of 2 to 2.5 percent annually.

Table 4. Arable Canada Land Inventory classes and improved land areas in the Prairie region.

| | | C.L.I. | Class | | Sum of Classes | Sum of Classes | Total Improved | Potentially Arable |
|--------------|-----|--------|-------|-----|-------------------|-------------------|-------------------|-----------------------|
| Province | 1_ | 2 | 3 | 4 | 1-4 | 1-3 | Land | Unimproved |
| | | | | - | — million | hectares - | | |
| Manitoba | 0.2 | 2.6 | 2.6 | 2.6 | 8.0 | 5.4 | 5.1 | 2.9 |
| Saskatchewan | 1.0 | 6.4 | 10.0 | 4.2 | 21.6 | 17.4 | 18.6 | 3,0 |
| Alberta | 0.8 | 4.0 | 6.4 | 9.8 | 21.0 | 11.2 | 11.4 | 9.6 |

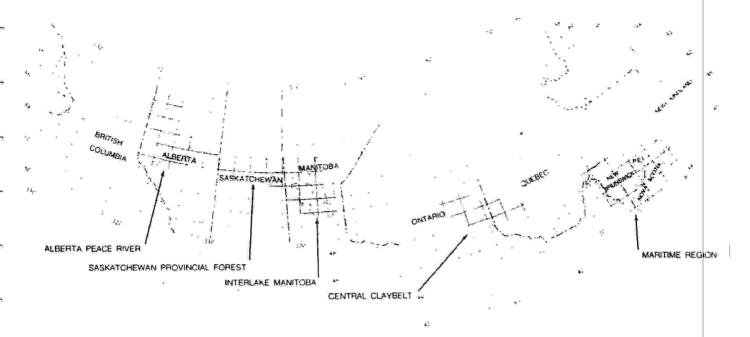


Figure 3. Major areas of potential agricultural land in Canada.

Central Region. The method used for assessing ultimate physical potential for agriculture in the Prairie region had been used previously for the soils of Ontario and Quebec (7). The indices relating crop productivity between capability classes were determined by Hoffman (3) as 0.8, 0.64, and 0.5 for soils in classes 2, 3 and 4, respectively (class 1 equals 1). The potential for increased crop production was assessed under the same assumptions of universal high-level management as described for the Prairie study. While summer fallow ratios are not a significant consideration, downward adjustments of the available land base were made to allow for the high-class land that may be required for pastures under the prevailing types of farming operation and also to accommodate effects of fragmentation of some high-class soil areas.

After these adjustments, the crop land base of Ontario is reduced to 5.1 million hectares and that of Quebec to 1.3 million hectares of class 1 equivalent soils. These figures are adjusted using the productivity indices and are equivalent to class 1 land; the actual areas are larger.

The crop yields under high-class management on class 1 soils were assumed to be 5,360 kilograms per hectare of wheat, 4,320 of barley, 3,420 of oats, 3,780 of rye, 8,505 of grain corn, 30 tons per hectare of potatoes, 7.5 tons of hay and 42 tons of corn for fodder. Under these assumptions, the maximum crop production potential using all class 1 through 4 soils comes to 188 percent of present production for Ontario and 150 percent for Quebec.

It was further assumed in arriving at these figures that there would be no change in the area

under tree fruits, small fruits, vegetables, and tobacco; these crops cover 121,400 hectares in Ontario and 48,500 hectares in Quebec. Consideration was not given to valuable areas of organic soils in the two provinces because there is insufficient information for a useful estimate of their productive potential. Other factors not considered were the annual 2 to 2.5 percent technological increase in agricultural productivity of recent years and the loss of productive land to urbanization.

Maritime Region. In arriving at an estimate of potential for increase in productive capacity, in similar fashion to that used for the other regions, it was assumed that average yields on class 2, 3 and 4 soils, under a high level of farm management, can attain 2,520 to 3,240 kilograms per hectare of grain, 30 tons per hectare of potatoes, and 7.5 tons per hectare of hay. On this basis, present crop production levels in the Atlantic Provinces could be sustained, theoretically, with 235,600 hectares (6).

Allowing for the area required for pasture—land, Nowland (6) estimated that the physical capacity exists to increase regional crop production 150 percent without resorting to significant clearance of forest land. The figure for Nova Scotia was 243 percent; for Prince Edward Island, 85 percent; for New Brunswick, 162 percent; and for Newfoundland, 300 percent. The clearing of forests and expansion of agriculture to the maximum of the potential land base (the class 2 through 4 soils in viable blocks) would allow crop production in the region to expand up to nine times its present level. Again it must be remembered that these figures refer only to the physical capacity of

the soils and take no account of the economic inputs required to exploit the potential on this scale.

It was assumed throughout that the proportions of different types of enterprise and the areas currently devoted to fruit, vegetables, and tobacco (17,700 hectares) will remain roughly constant and that good progress will be made in overcoming serious socioeconomic constraints. The contribution of upward-trending crop yields was not considered.

Major Reserves of Agricultural Land, Their Potential Productivity and Physical Limitations

A general picture of the extent of unfarmed land with potential for agricultural production may be obtained by comparing soil capability maps with agricultural land use maps, which, in turn, can be related to census data of improved and unimproved farmland areas. When agricultural land use maps are superimposed on soil capability maps, it is apparent that there are five major land areas capable of field crop production but currently not used for this purpose (Figure 3).

These areas of potential agricultural land include the Peace River District of Alberta, the Interlake area of Manitoba, the Clay Belt of northern Ontario and Quebec, and portions of Nova Scotia and New Brunswick in the Maritime Region. Another area of lesser extent occurs within the Northern Provincial Forest Reserve of Saskatchewan. Table 5 gives the areal estimates of the capability classes of these unfarmed lands and their estimated production potential. These estimates refer only to the physical capacity of the soils to produce under the high levels of management stated previously and take no account of the economic inputs required to attain these production levels.

In attempting to define the major unfarmed areas with agricultural potential, it is important to consider the nature of the limiting factors for agriculture that render the supply somewhat elastic. The chief factors responsible for placement of soils in capability classes include those due to climate, soil, and landscape. In addition to these constraints, it should be borne in mind during the following discussion that most of these reserves are cur-

Table 5. Major unfarmed areas in Canada, by capability classes, and their estimated production potential (1500) (100)

| Area | Class 3 | Class 4 | Total Class Equivalent Area Available ^a | Class 1 Equivalent Area Required for Present Provincial Production | Estimated Production Potential ^b |
|-------------------------------|---------|---------|--|---|---|
| Peace River, Alberta | 400 | 4,800 | 2,680 (1900) ^c | 4,000 | 47 |
| Interlake, Manitoba | 400 | 1,500 | 1,030 (765) ^c | 2,000 | 38 |
| Clay Belt, Ontario-Quebec | 1,200 | 2,360 | 1,950 | 2,250 ^d | 85 |
| Maritime, after land blocking | 2,000 | | NA | NA | 800 ^e |
| Saskatchewan forest reserve | 600 | 800 | 820 (480) ^c | 5,500 | 9 |

Derived by multiplying class 3 and 4 soils by productivity indices of 0.64 and 0.5, respectively, for Clay Belt area and by 0.70 and 0.5, respectively, for areas in Alberta, Manitoba, and Saskatchewan.

Estimated production potential, expressed as percent of present total production for the province or region.

Available for cropping after adjustment for summer fallow, assuming prevailing ratios of cropped area to fallow: 2.4 for Alberta, 2.9 for Manitoba, and 1.4 for Saskatchewan.

For Ontario, as most class 3 and 4 soils were in that province.

Estimated on the basis of all class 2 through 4 soils, forested and cleared, in designated "viable agricultural blocks" in Maritime region (6).

rently wooded so that land clearing must also be considered.

Peace River, Alberta

By far the largest unfarmed area with capability for agriculture lies within the Peace River District of Northern Alberta (Figure 4). The area generally lies north of 54° latitude but bends southward along the western portion of the province. Comparison of data for Census Divisions 12, 13, 14, and 15 with coincident capability and land use information indicated that most of the class 2 and 3 soils in the district are presently farmed; only about 0.4 million hectares of class 3 soils remain unimproved. In contrast, only a small proportion of the class 4 soils are farmed, and nearly 5 million hectares occur beyond the farmland area. Most of the potentially arable areas are in forest. When expressed in terms of class 1 equivalents and after adjustment for summer fallow area, it is estimated that these class 3 and 4 soils have a combined potential productivity equal to about 45 percent of the present field crop production in Alberta (Table 5). Unfarmed areas capable of being either improved or unimproved pasture (classes 5 and 6) are very extensive, occupying nearly 9 million hectares. A further 4.5 million hectares are occupied by organic soils.

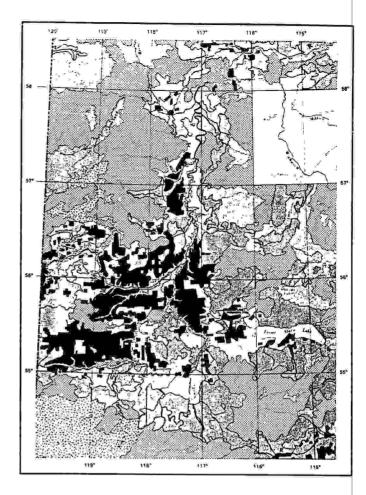
The unfarmed area capable for field crops (both classes 3 and 4) has a severe climatic limitation with a frost-free period ranging from 75 to 90 days at lower elevations to less than 60 days in the uplands. Moisture is generally not a limiting factor from the standpoint of plant growth; but abundant autumn rains frequently delay harvest, giving rise to costly losses of cereal and forage crops.

Soil limitations include those common to Gray Luvisolic soils that occupy most of the well to imperfectly drained areas not presently farmed. Upon cultivation, these soils are prone to structural limitations as a result of the strongly leached, powdery nature of the plow layer, coupled with its 1 w organic matter content. When thoroughly dr:, these soils are often baked very hard and require a great deal of power and tillage to prepare a stisfactory seed bed. Heavy showers or rains af er seeding cause the surface soil to flow and iddle; upon drying, it bakes into a strong crust tions, crops are often un ble to emerge.

Gray Luvisolic soils are lso inherently low in fertility, including sulf deficiencies, extremely low nitrogen avai bility, and very low levels of phosphorus. St stantial areas are acid, causing significant problems with alfalfa and barley production. (arly, their management requirements are his er than on other soils of similar capability in the Prairie region; and the input costs are cons erably more expensive.

Other limitations is sude excess soil moisture in the many low-lyi: aras scattered through-

Under these condi-In addition to the s ructural limitations,



LEGEND LAND USED FOR FARMING

CATEGORIES OF SOIL NOT USED FOR FARMING

CATEGORY A - Dominantly Mineral Soils of Classes 2 and 3 * CATEGORY B - Dominantly Mineral Soils of Class 4 * CATEGORY C - Dominantly Mineral Soils of Classes 5 and 6 * CATEGORY D - Dominantly Class 7 *

CATEGORY O - Organic Soils

* As defined by the Canada Land Inventory

Figure 4. Potential agricultural lands in the Peace River District, Alberta.

out this landscape and adverse topography. Slopes and relief patterns are serious impediments to the use of very large areas because of the diffulties of operating farm machinery and because of the erosion hazard.

Saskatchewan, Forest Reserve

A minor but significant amount of land with potential for agricultural production

occurs in the Northern Provincial Forest Reserve of Saskatchewan (Figure 5). Data supplied by the Saskatchewan Soil Survey (personal communication, K. W. Head) indicate that about 0.6 and 0.8 million hectares of class 3 and 4 soils, respectively, occur within the portion of the Reserve surveyed by the CLI. Presently, there are only small isolated parcels of land used for arable agriculture. However, it is estimated that the combined area of class 3 and 4 soils have a physical potential for expanded crop production equivalent to about 10 percent of the present provin-

cial total (Table 5).

Limitations due to climate and soil factors characteristic of Gray Luvisolic soils are similar to those described previously for the Peace River District. In addition, there are extensive areas of coarse sandy outwash deposits of low moisture-holding capacity and low inherent fertility. Landform patterns are very complex over much of the area. Consequently, class 3 and 4 soil areas occur in numerous relatively small, isolated parcels separated by depressional poorly drained mineral soils and organic

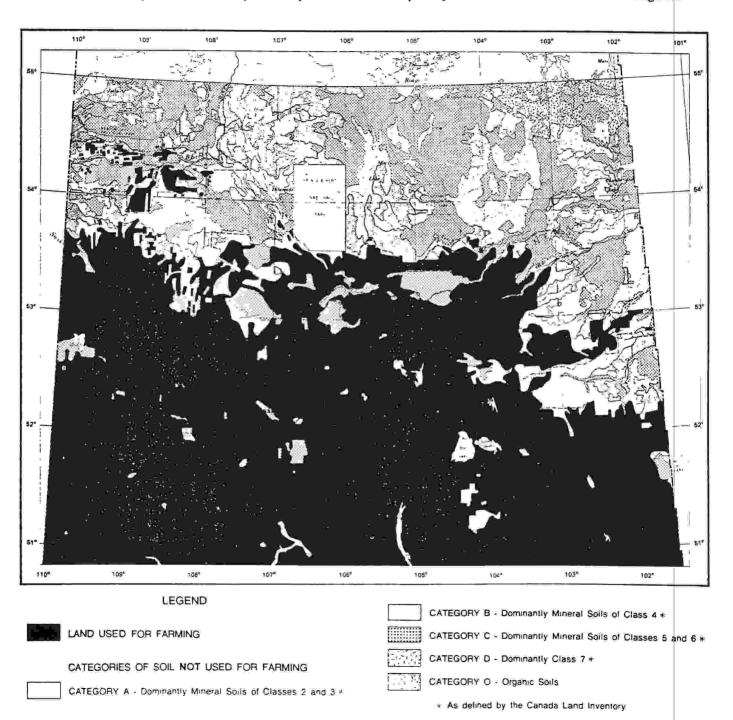


Figure 5. Potential agricultural lands in the Northern Provincial Forest (Reserve), Saskatchevan.

soils of varying thickness. Other landscape limitations include steep slopes and adverse wetness. Areas where these soil or landscape limitations are serious enough to lower the capability to classes 5 or 6 occupy a total of about 2.2 million hectares. Organic soils occupy about 2.5 million hectares.

Interlake, Manitoba

In Manitoba, most of the unfarmed land with varying capability for agriculture occurs in the wooded areas between Lake Winnipeg and Lake Manitoba and in the area west of Lake Manitoba to the Riding Mountain Escarpment (Figure 6). For the purpose of this discussion, this general area is referred to as the Interlake area. Most of the unfarmed area capable of field crops is class 4 and to a lesser extent class 3, which occurs in some small isolated areas. After adjustment to class I equivalents and assuming the prevailing ratio of cropped to fallow area, it is estimated that these areas have a potential equivalent to 35 to 40 percent of the present field crop production in Manitoba (Table 5). In addition, there are about 3.4 million hectares with potential for pasture (classes 5 and 6) and nearly 5 million hectares of organic soils.

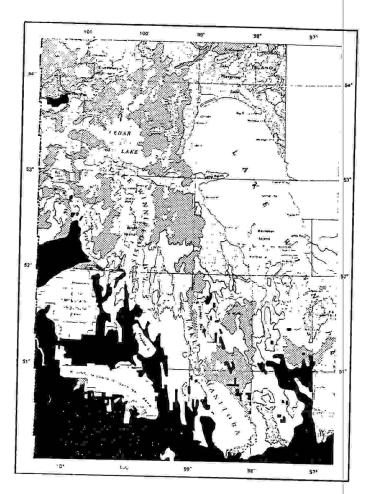
Major limitations of soils in this area are the result of shallowness, high lime content, stoniness, and complex landforms. Interlake landforms are characterized by a highly repetitive ridge and swale pattern. The stony ridges are separated by elongated areas of poorly drained mineral and organic soils in the swales. This complex landscape is further complicated by ridges oriented perpendicular to the natural slope of the land that impede natural drainage and increase developmental costs.

Modification of the ground moraine by wave action of former glacial Lake Agassiz produced an erosion surface over much of the landscape. The associated continuous layer of cobbles and stones at or near the surface constitutes a severe limitation. The high lime content of these morainic deposits is considered by some to cause a fertility limitation due to inherently low available phosphorous. However, recent discussions with local soil fertility specialists suggest that this limitation was over-emphasized during the capability rating.

On the more positive side, this is the only reserve of agricultural land that has no significant regional agriclimatic limitations. Therefore, it possesses good potential for agricultural expansion if the limitations due to poor drainage and stoniness can be ameliorated economically.

Clay Belt, Ontario-Quebec

In Ontario and Quebec, the major area with agricultural potential, but presently unfarmed, lies in the northern Clay Belt along the provincial boundaries to the south of James Bay. The agricultural potential is variable throughout



LEGEND

LAND USED FOR FARMING

CATEGORIES OF SOIL NOT USED FOR FARMING

CATEGORY A - Dominantly Mineral Soils of Classes 2 and 3 *

CATEGORY B - Dominantly Mineral Soils of Class 4 *

CATEGORY C - Dominantly Mineral Soils of Classes 5 and 6 *

CATEGORY D - Dominantly Class 7 *

CATEGORY O - Organic Soils

* As defined by the Canada Land Inventory

Figure 6. Potential agricultural lands in the Interlake area, Manitoba.

the area with the larger area of higher capability soils occurring in the Ontario portion (Figure 7).

Land use maps of the Clay Belt indicate that farmland area is small relative to that with capability for agriculture. The 1971 Census indicated only 0.5 million hectares as improved farmland and a similar amount that is farmed but unimproved. After adjustments for improved land, the unfarmed capability areas

were 1.2 and 2.4 million hectares for classes 3 and 4, respectively (Table 5)—2 million hectares in class 1 equivalents. This is more than 80 percent of the total class 1 equivalent areas required to maintain present production levels in Ontario. Unfortunately, these estimates take no account of the developmental and recurring inputs required to achieve this potential. Neither do they take into consideration that a much narrower range of field crops is adapted to the area.

The Clay Belt area is limited by a cool moist climate that varies greatly depending on latitude and elevation. Average frost-free periods over most of the area range from 80 to 92 days, limiting the production of certain field crops, especially grain corn, soybeans, and winter wheat. There is more than enough precipitation for plant growth; greatest monthly rainfall occurs in July, August, and September. As a consequence of this autumn precipitation maximum, harvesting of for-

age crops and cereal grains is frequently difficult. In the absence of other limitations, the soils of the area, at best, can only rate as class 2 because of climate.

Undulating silt and clay deposits are predominant in the area, although outwash and deltaic sand plains are also common. Shallow sandy morainic deposits interspersed with rock outcrops occur along the southern and eastern periphery; while organic soils cover the clay deposits, particularly along the northern fringe area. The main limitation of the clay soils is excessive wetness, often coupled with massive soil structure. Most of these soils are rated as classes 4 and 5; class 3 clays are not very common. In contrast, the main limitations associated with soils developed on sandy morainic and outwash materials are dryness, low inherent fertility, and cemented structures. Steep slopes and excessive stoniness are also

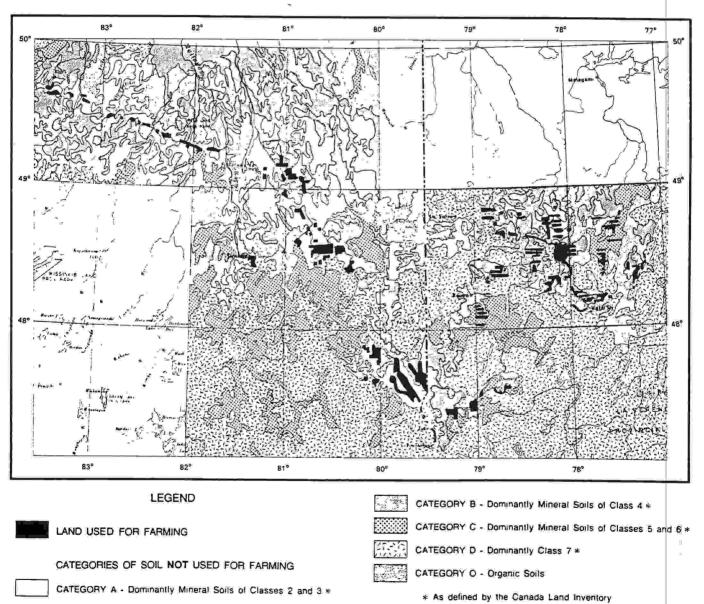


Figure 7. Potential agricultural land in the Ontario-Quebec Clay Belt area.

common. Areas with serious soil or landscape limitations preventing the successful production of annual field crops occupy about 1.2 million hectares (classes 5 and 6); organic soils occupy about 2 million hectares.

Maritime Region

Widely disparate estimates of the potential agricultural land in the Maritime Region are possible depending on the data sources selected. While the CLI data indicate 5.7 million hectares capable of general agricultural use (classes 2-4), the improved farmland area reported in the 1971 Census was only one-tenth of this size. In assessing the potential agricultural land base of this region, Nowland (6) suggested that this difference of 4 to 5 million hectares of classes 2 through 4 may be regarded as the ultimate maximal reserve of agricultural land. Most of it is poorly located, distributed in small pockets, or dissected by poor soils and difficult topography (Figure 8). A large part of the area presently remains in forest and would absorb high inputs of capital even after clearing.

The immediate and medium term agricultural land base has been appraised according to a system of blocking land into viable units defined as multi-crop and limited-use blocks (2). After consideration of geographical and socioeconomic factors, it was concluded that a more realistic estimate of a land base with immediate potential for viable commercial agriculture within the agricultural blocks would be about 2.6 million hectares (6). About 0.7 million hectares are in classes 2, 3 and 4 and presently cleared. The remaining 1.9 million hectares consist of good soils under forest.

Further adjustments of the above data for improved farmland area (about 0.5 million hectares) reduces the unfarmed class 2 through 4 soils in the viable agricultural blocks to about 2 million hectares. Assuming that present crop production levels can be maintained from about one-quarter million hectares (6), it is estimated that crop production in the region could be expanded by a factor of 8 to 9 times its present level (Table 5). Again it must be remembered that these figures take into account only the physical capacity of the soils to produce under a high level of management but take no account of the economic inputs required to exploit the potential on this scale. As indicated for other regions, the contribution of upward trending crop yields is not considered.

Climatic factors impose a ceiling on the productivity of all Maritime soils. The marine influence ensures a lower summer temperature and less accumulated heat than is desirable for cereal crops and some fruit. The frost-free period, in general, is a limitation for only a few crops; but spring is a month too late and too cool for optimum growing conditions. Summer rainfall is more or less in balance with evapotranspiration in most areas, but serious summer deficiencies do occur in most years on loose

sandy soils in capability class 3 and 4 and in some years on other soils.

The dominant soil limitation is low inherent fertility, a product of the cool humid climate. Generally speaking, infertility to the degree that results in recognition in the capability classification system is costly to correct; and the cost has risen rapidly of late. Virtually all of the soils in the Maritime region are highly infertile and acid.

The second most serious limitation is poor soil structure, which affects nearly one-third of the unfarmed soils with arable potential. is commonly expressed as dense, compact subsoil layers that restrict penetration of plant roots and infiltration of rainfall. The effects include persistence of excess water, especially in the spring, and the sensitivity of soils to prolonged or heavy rainfall. These hinder the movement of machinery at critical times, such as seeding or harvesting; they also induce shallow rooting of crops and consequent deficiencies in plant nutrition, lack of resistance to drought in mid-summer, and severe winter damage to legumes. Many of the soils with poor subsoil structure are inherently suited more to forage than cereal crops because forage yields may be as high as on soils lacking this problem; and difficulties of moving machinery are less critical.

Other major limitations include excessive stoniness and wetness, other than that produced by dense subsoil. Steep slopes and unfavorable relief patterns are serious impediments to the use of large areas for some crops because of the difficulty of operating machinery and the hazard of accelerated erosion. Small but significant areas are also limited by shallowness over bedrock and flooding. Areas where these landscape limitations are serious enough to downgrade the capability to classes 5 and 6 occupy about 2 million hectares. Organic soils occupy over .5 million hectares.

Physical Potential for Livestock Grazing

The foregoing discussion on the supply of land for agriculture and its physical potential and constraints was primarily concerned with the capability to grow field crops. What additional capacity exists for pasture and range?

In general, the data base required to answer this question as it applies specifically to the unfarmed land is totally inadequate.

Most of this land is currently wooded; and forage production levels, present or potential, are not well documented. Even less is known about developmental costs to bring these lands into production and recurrent inputs necessary to maintain economic returns. However, the location and extent of the unfarmed areas capable of improved and unimproved pasture (classes 5 and 6) has been determined. This information, when coupled with that collected on similar farmland areas, can be used to provide general insight into the physical potential

attainable from the unfarmed areas.

There is considerable potential for pasture renovation in the Atlantic Provinces. The 95,000 hectares of cleared class 4 soils located within viable agricultural blocks as defined by Hilchey (2) represent the most immediate potential for improvement that does not impinge on potential arable land. By definition, these areas are in proximity to potentially viable farms and are certainly underutilized. It has been demonstrated that forage yields on such areas can be increased two and a half times and the quality greatly enhanced at moderate cost. Extension into the 2 million hectares of forested or remote class 4 land is unlikely in the near future in view of the costs of clearing woodland, in addition to high subsequent inputs.

As was noted earlier, many class 3 soils in the Atlantic Provinces are better suited to forage than most other crops; but it appears almost impossible to gauge what this means for livestock farming potential. A recent economic analysis suggested that the most competitive types of farming enterprise in the Maritime Provinces in the immediate future would include those selling milk and dairy herd replacement stock, but not manufacturing milk or pure beef enterprises.

The picture for the Prairies Provinces is much clearer, and a real potential for forage production can be defined with little competition from field crops. Johnson (4) estimated that there are 30 to 36 million hectares suited mainly to grazing and fodder production. He

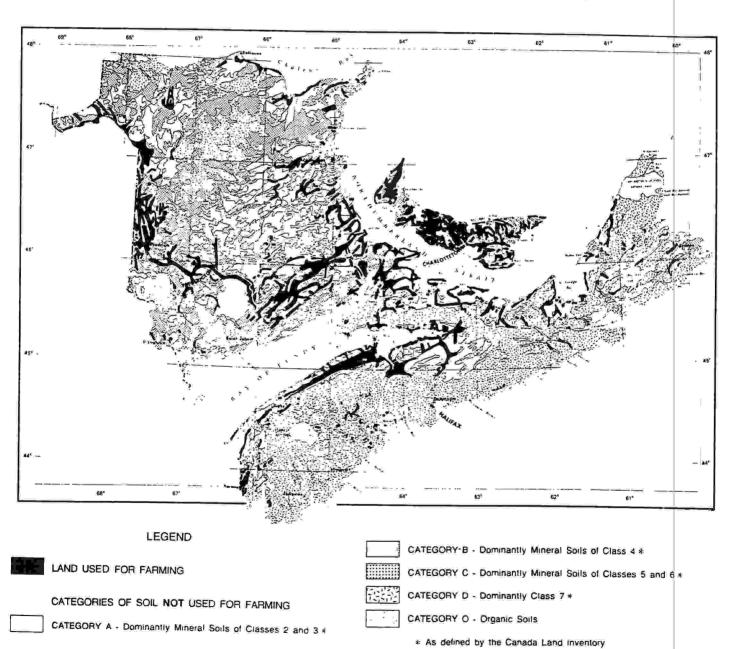


Figure 8. Potential agricultural lands in the Maritime Region.

estimated that there are 12 to 14 million hectares of unimproved land in capability class 5, of which half could be improved at moderate cost to provide the feed potential for an estimated 4 to 5 million cows. He noted that class 6 land on farms amounts to 4 to 6 million hectares, and it contains inliers of class 5 land worth improving. Johnson concluded that the land resources are sufficient to support a fourfold increase in cattle population in the Prairie Provinces without significant encroachment on cereal crop production levels. This is the physical capacity of the land resource; the economic feasibility at prevailing cattle prices is much more tenuous.

The major areas available for expansion in the livestock farming area are located in the Peace River area, the Northern Provincial Forest of Saskatchewan, and the Saskatchewan River Delta areas of Saskatchewan, the area between latitude 54° and 55° east and southeast of Wabowden, and north of Clearwater Lake in Manitoba (Johnson, personal communication). The productivity of the soils in these areas can be quite high following adequate inputs; Johnson cited yields of alfalfa and alfalfa-brome mixtures at Wabowden of 5 tons per hectare. The acid soils of the Peace River district require heavy liming, especially for susceptible crops such as barley and alfalfa.

Organic soils, of which there are especially large areas in Manitoba, hold much potential for livestock. Inputs are heavy for drainage as well as fertilization, and management is generally complex.

An area of 400,000 hectares of unimproved pasture in Ontario, mostly soils in CLI classes 5 and 6, has been identified as having significant potential for expanded livestock production based on renovation by chemical herbicides. Inputs currently costing about \$100 per hectare are capable of producing a fourfold increase in stock carrying capacity.

The 1971 Censos indicated areas of improved pasture on farms of 946,000 hectares in Ontario and 693,000 hectares in Quebec, but the proportions on soils in different capability classes are unknown. The 4.8 million hectares of Ontario soils and 4.4 million hectares of Quebec soils in classes 4 and 5 represent a large reserve for hay and pasture. Soils in class 6 (1.2 million hectares) are supposedly suitable only for wild pasture. A very large proportion of the soils in all three classes remains forested.

Central British Columbia is another area with great potential for an expanded livestock industry. There are 1 to 1.2 million hectares of soils in classes 4 and 5 that could be cultivated for forage. At present, a little over half this area is in native range; the rest is forested.

Summary

Good arable land (soils in CLI classes 1, 2 and 3) covers 34 million hectares in the three

Prairie provinces, 10 million hectares in Ontario and Quebec, and 3 million hectares in the Atlantic Provinces. In addition, Canada, as a whole, has 25 million hectares of class 4 land of marginal suitability for arable use. Improved farmland amounts to 44 million hectares.

There exists some capacity for both intensification of agricultural production on the currently improved area and enlargement of the area itself. But reserves are less than commonly assumed. Theoretically, the extension of high levels of management to all cultivable soils could raise agricultural production above present levels by 90 percent in the Prairie provinces, over 150 percent in Ontario and Quebec, and by 800 percent in the Atlantic Provinces. With the addition of steady annual gains in productivity from technical improvements, these values would represent ultimate production ceilings for the land base. They are based on an assumption that the relative proportions of farming types and crops remain roughly constant.

To give an idea of the relative importance of these areas, the value of field crops produced was \$865 million in Alberta, \$1.1 billion in Saskatchewan, \$423 million in Manitoba, \$592 million in Ontario, \$207 million in Quebec and \$111 million in the Maritime Provinces (1973 figures).

The obstacles to realizing even a fraction of the physical potential include the high costs of ameliorating many of the limiting soil and landscape characteristics encountered in class 3 and 4 areas, the production risks in marginally suitable climates, the preemptive cost of clearing forest on much of the unused land reserve, and the inadequacy of the input cost data required to evaluate land in terms of suitability for ranges of specific best uses. Furthermore, there is a whole suite of socioeconomic constraints associated with marketing opportunities, market instability, land use patterns, tenure, and conflicting uses.

Five main areas in Canada have been singled out as having untapped potential for arable use. Among the most important is the Peace River District of northern Alberta, which has about 400,000 hectares of unimproved class 3 soils and 5 million hectares of unimproved class 4 soils. These areas are mostly under forest and are subject to a short frostfree period, moist autumns, poor soil structure, and low fertility. The value of potential crop production from the Peace River District, corresponding to the provincial totals given above, is calculated at \$407 million, or 24 percent of the total potential of the five regions identified.

The Saskatchewan Northern Forest Reserve contains 0.6 million hectares of class 3 soils and 0.8 million hectares of class 4 soils, mostly forested, but with significant agricultural possibilities. Chief problems are climatic factors, poor soil structure, low fertility, and rather complex landform patterns.

59

APPENDIX C INFORMATION ON SPECIALTY SCHOOLS

Centre for International Business Studies (CETAI)

In 1975, when HEC had already set up numerous international activities and begun developing integrated instruction in international management and economics, it created the Centre for International Business Studies, known by its French acronym, CETAL The Centre was founded with support from the federal and Quebec governments and has a three-fold mission; teaching, research and international projects and activities.

Today, international management is an integral part of all HEC's traditional programs. In fact, HEC offers the broadest range of such courses in Canada, Its numerous research publications on the international sector cover such diversified subjects as high-technology industries, R&D management, and the challenge of reorganizing public-sector agencies. Through CETAI, HEC is involved in international development projects and activities in many countries of Europe, Africa. Latin America and Asia.

International Network

North America:

- Alberta Economic Development and Trade
- Amoco Canada Petroleum Company Ltd.
- · Canadian Hunter
- · Canadian Occidental
- Canadian Petroleum Association
- CANMET
- Canterro
- · Cascades
- Commission nationale de l'energie
- . C.S. Resources Ltd.
- Energy, Mines and Resources, Canada
- Energy Resources Conservation Board (ERCB)
- * Esso Resources Canada Ltd.
- · Fairbank Oil Property
- · Gaz Metropolitain Inc.
- · Guif Canada Resources
- . Home Oil Company Ltd.
- · Honeywell Canada inc.
- . Husky Oil Ltd.
- · Imperial Oil Ltd.
- Institut de l'energie des pays ayant en commun l'usage du français (IEPF)
- · Independent Petroleum Association of Canada (IPAC)
- · Interprovincial Pipeline Ltd.
- Intragaz Inc.





- Petroleum Ltd.
- Petro-Canada Inc. · Pétroles Calex
- Petroleum Resources Communication Foundation
- Petroleum Services Association of Canada
- · Pétromont Inc.
- Phillips Petroleum Resources
- Polysar
- · Precision Drilling Ltd.
- · Rife Resources Ltd.
- . Sceptre Resources Ltd.
- · Shell Canada Ltd.
- SNC inc.
- . SOOUIP
- Sperry Sun
- Syncrude Canada Ltd.
- · TransCanada PipeLines Ltd.
- TransCanada PipcLines-!PEL-KOPP
- . Ultramar Canada Inc. Union Gas
- · World Bank

INTERNATIONAL OIL AND GAS COMPANY MANAGEMENT PROGRAM (PROGEP)

The International Oil and Gas Company Management Program (PROGEP) was created in 1987 as an initiative of the Petro-Canada International Assistance Corporation (PCIAC). At that time, the Centre d'Études en Administration Internationale (CETAI) of the École des Hautes Études Commerciales de Montréal (HEC) was given a mandate to develop the program and to manage it academically as well as administratively. The distinguishing feature of the program is the involvement of professionals from the oil and gas sector. The advisory council, which consists of managers of organizations related to the energy sector, as well as several training institutes and research centres, contribute on an ongoing basis. A senior adviser is also responsible for liaising with industry.

Available to managers of oil and gas companies and to oil and gas authorities, PROGEP is for candidates with university-level technical training who wish to complete their management training. Since its creation, the program has granted over 130 ciplomas. These managers, from some sixty companies in 24 countries, now occupy key positions in their organizations.

PROGEP is an academic program leading to a graduate diploma (Diplôme d'études supérieures spécialisées, or DESS). It may be taken full-time (ten months) or part-time (maximum of three years). Modules are complemented by industrial tours of Québec and a study trip to Alberta, Canada's principal centre of oil and gas production. Candidates registered for DESS may receive financial assistance from CIDA.

PROGEP is structured in the form of intensive four-week modules. The various DESS modules are now available as training sessions for company managers wishing to upgrade themselves. The program also offers tailored in-house seminars.

Candidates for the program must normally:

have a diploma from a university or a leading school;

have held a management position in an oil- and gas-related organization for five to ten years;

be nominated by their company executives;

pass the selection interview (for DESS candidates only).

For additional information, please contact:

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5255 Decelles Avenue

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CANADA H3T 1V6

Telephone: (514) 340-6197

Fax:

(514) 340-6177

Telex:

(21) 05-561325

January 1994

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| CHILE | APR | 89 | 1 | GENETICS MARKETING | 2.0 | 11 | SEMEX | SPANISH |
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| HUNGARY | MAY | 89 | 2 | DAIRY MANAGEMENT | 4.0 | 44 | SEMEX | ENGLISH |
| SPAIN | MAY | 89 | 5 | EVAL. & GENETICS | 2.0 | 55 | SEMEX | SPANISH |
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| VENEZUELA | JUNE | 89 | 1 | EVAL. & GENETICS | 2.0 | 11 | SEMEX | SPANISH |
| URUGUAY | JUNE | 89 | 1 | EVAL. & GENETICS | 2,0 | 11 | SEMEX | SPANISH |
| ALGERIA | JUNE | 89 | 3 | DAIRY MANAGEMENT | 6.0 | 99 | AG CAN | FRENCH |
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| COLOMBIA | JUNE | 89 | 1 | EVAL. & GENETICS | 2.0 | 11 | SEMEX | SPANISH |
| MEXICO | JUNE | 89 | 1 | EVAL. & GENETICS | 2.0 | 11 | SEMEX | SPANISH |
| VENEZUELA | JUNE | 89 | 1 | EVAL. & GENETICS | 2.0 | 11 | SEMEX | SPANISH |
| COSTA RICA | JUNE | 89 | 1 | EMBRYO TRANSFER | 6.0 | 33 | KCAT | SPANISH |
| MEXICO | JUNE | 89 | 1 | EVAL. & GENETICS | 2.0 | 11 | SEMEX | SPANISH |
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| ARGENTINA | JUNE | 89 | * | EVAL & GENETICS | 2.0 | 11 | SEMEX | |
| NEW ZEALAND | JUNE | 89 | 4 | EMBRYO TRANSFER | 6.0 | 33 | SELF PD | SPANISH |
| UNITED KINGDOM | JULY | 89 | 3 | COMPUTER MGMT PROGRAM | 2.0 | 33 | SEMEX | ENGLISH |
| ALGERIA | SEPT | 89 | 2 | MILK RECORDING | 8.0 | 88 | AG CAN | ENGLISH |
| VENEZUELA | SEPT | 89 | 1 | SALES MANAGEMENT | 2.0 | 11 | CANAGRO | FRENCH |
| ALGERIA | SEPT | 89 | 3 | COMPUTER SKILLS | 8.0 | 132 | AG CAN | ENGLISH FRENCH |
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| ALGERIA | SEPT | 89 | 1 | ARTIFICIAL INSEMINATION | 8.0 | 44 | AG CAN | FRENCH |
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| UNITED KINGDOM | OCT | 89 | 5 | HIGH TECHNOLOGY | 2.0 | 55 | | SPANISH |
| SPAIN | OCT | 89 | 3 | DAIRY MANAGEMENT | 10.0 | 165 | SEMEX CANTABRIA | ENGLISH |
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| BRAZIL | FEB | 90 | _ | GENETICS MARKETING | 2.5 | 96 | SEMEX/CIDA | ENGLISH |
| COLOMBIA | FEB | 90 | | REPRO HERD HEALTH | 5.0 | 55 | SEMEX/CIDA | PORTUGUESE |
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| MEXICO | FEB | 90 | | REPRO HERD HEALTH | 5.0 | 28 | SEMEX/CIDA | SPANISH |
| VENEZUELA | FEB | 90 | | REPRO HERD HEALTH | 5.0 | 28 | SEMEX/CIDA | SPANISH |
| MEXICO | MAR | 90 | | GENETICS MARKETING | 2.5 | 41 | SEMEXICIDA | SPANISH |
| CHILE | MAR | 90 | | GENETICS MARKETING | 2.5 | 14 | SEMEX/CIDA | SPANISH |
| COLOMBIA | MAR | 90 | | GENETICS MARKETING | 2.5 | 14 | SEMEX/CIDA | |
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| BRAZIL | APR | 90 | | GENETICS MARKETING | 2.5 | 83 | SEMEX/CIDA | SPANISH |
| MEXICO | APR | 90 | | REPRO HERD HEALTH | 5.0 | 55 | SEMEXICIDA | PORTUGUESE |
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| MEXICO | JUNE | 90 | 1 | REPRO HERD HEALTH | 13.0 | 72 | SEMEX/CIDA | ENGLISH |
| BRAZIL | JUNE | 90 | 2 | REPRO HERD HEALTH | 5.0 | 28 | SEMEXICIDA | SPANISH |
| THAILAND | JUNE | 90 | 1 | DAIRY CATTLE MANAGEMENT | 5.0 | 55 | SEMEXICIDA | SPANISH |
| THAILAND | JUNE | 90 | 2 | NUTRITION & FEEDS | 13.0 | 72 | SEMEX/CIDA | ENGLISH |
| THAILAND | JUNE | 90 | 2 | GENETICS | 6.0 | 66 | SEMEX/CIDA | ENGLISH |
| COLOMBIA | JULY | 90 | 1 | EMBRYO TRANSFER | 6.0 6.0 | 66 | SEMEXICIDA | ENGLISH |
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| CHILE | JULY | 90 | 4 | EMBRYO TRANSFER | 6.0 | 33 | SEMEXICIDA | SPANISH |
| BRAZIL | JULY | 90 | 9 | EMBRYO TRANSFER | 6.0 | 33 | SEMEX/CIDA | SPANISH |
| POLAND | JULY | 90 | 17 | FARM APPRENTICESHIP | 6.0 | 33 | SEMEXICIDA | PORTUGUESE |
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| UNITED KINGDOM | SEPT | 90 | 5 | SALES MANAGEMENT | 20 | 3 | SEMEX | ENGLISH |
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| UNITED KINGDOM | SEPT | 90 | 16 | AMBASSADOR TOUR | 1.0 | 88 | SEMEX | ENGLISH |
| THAILAND | OCT | 90 | 4 | MILK QUALITY | 4.0 | 88 | SEMEX | ENGLISH |
| BRAZIL | NOV | 90 | 1 | EMBRYO FREEZING | 1.0 | 22 | SEMEX/CIDA PRIVATE | ENGLISH PORTUGUESE |
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| CHILE | SEPT | 91 | 1 | NUTRITION & FEEDING | | 7 - 27 | The second secon | LANGUAGE |
| MEXICO | SEPT | 91 | 2 | NUTRITION & FEEDING | 3.0 | 17 | SEMEXICIDA | SPANISH |
| ARGENTINA | SEPT | 91 | 1 | NUTRITION & FEEDING | 3.0 | 33 | SEMEX/CIDA | SPANISH |
| COLOMBIA | SEPT | 91 | 4 | GENETICS MARKETING | 3.0 | 17 | SEMEX/CIDA | SPANISH |
| MEXICO | SEPT | 91 | ż | GENETICS MARKETING | 3.0 | 17 | SEMEX/CIDA | SPANISH |
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| CHILE | SEPT | 91 | 1 | GENETICS MARKETING | 3.0 3.0 | 17 | SEMEX/CIDA | SPANISH |
| UKRAINE | OCT | 91 | 2 | SEMEN PROD. & PROCESSING | 5.0 | 17 | SEMEXICIDA | SPANISH |
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| ROMANIA | MAR | 92 | 2 | DAIRY CATTLE MANAGEMENT | 8.0 | 44 | EAIT | ENGLISH |
| UKRAINE | MAR | 92 | 6 | REPRO HERD HEALTH | 10.0 | 110 | EAIT | ENGLISH |
| UKRAINE | MAR | 92 | 5 | REPRO HERD HEALTH | 6.0 | 198 | EAIT | UKRAINIAN |
| LATVIA | MAR | 92 | 13 | DAIRY CATTLE MANAGEMENT | 6.0 | 165 | EAIT | UKRAINIAN |
| BRAZIL | MAR | 92 | 5 | NUTRITION & FEEDING MGMT | 13.0 | 930 | EAIT | LATVIAN |
| ROMANIA | MAR | 92 | | REPRO HERD HEALTH | 3.0 | 83 | SEMEX/CIDA | PORTUGUESE |
| ESTONIA | MAR | 92 | 10 | | 6.0 | 33 | EAIT | ENGLISH |
| UKRAINE | MAR | 92 | 17 | DAIRY FARM APPRENTICESHIP | 16.0 | 880 | EAIT | ESTONIAN |
| ESTONIA | MAR | 92 | | DAIRY CATTLE MANAGEMENT DAIRY CATTLE MANAGEMENT | 8.0 | 528 | EAIT | UKRAINIAN |
| MEXICO | MAR | | | | 10.0 | 825 | EAIT | ESTONIAN |
| PARAGUAY | MAR | 92 | 2 | EMBRYO TRANSFER | 6.0 | 66 | SEMEXICIDA | SPANISH |
| COLOMBIA | MAR | 92 | 1. | EMBRYO TRANSFER | 6.0 | 33 | SEMEX/CIDA | SPANISH |
| LATVIA | MAR | 92 | 1 | EMBRYO TRANSFER | 6.0 | 33 | SEMEX/CIDA | SPANISH |
| LITHUANIA | APR | 92 | | REPRO HERD HEALTH | 6.0 | 165 | | LATVIAN |
| TAIWAN | APR | 92 92 | | DAIRY FARM APPRENTICESHIP | 16.0 | 880 | | LITHUANIAN |
| UKRAINE | APR | | | CDN DAIRY INDUSTRY STUDY | 9 | 47 | PRIVATE | ENGLISH |
| UKRAINE | APR | 92 | | GENETICS MARKETING | 4 | 96 | SEMEX/AG.CAN | UKRAINIAN |
| UNITED KINGDOM | APR | 92 | | ALSIRE MANAGEMENT | 4 | | SEMEWAG.CAN | |
| l . | | 92 | _ | AMBASSADOR TOUR | 2 | 66 | SEMEX | ENGLISH |
| | APR | 92 | | GENETICS MARKETING | 1.0 | 11 | SEMEX | ENGLISH |
| | MAY | 92 | | DAIRY CATTLE MANAGEMENT | 10.0 | 550 | EAIT | LITHUANIAN |
| LATVIA | MAY | 92 | | DAIRY CATTLE MANAGEMENT | 10.0 | 550 | EAIT | LATVIAN |
| LATVIA | MAY | 92 | | DAIRY CATTLE MANAGEMENT | 10.0 | 550 | EAIT | LATVIAN |
| LATVIA | MAY | 92 | | DAIRY FARM APPRENTICESHIP | 16.0 | 880 | EATT | LATVIAN |
| CHINA | MAY | 92 | 3 | TRANSLATORS STUDY TOUR | 3.0 | 45 | WUSC | ENGLISH |

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| Physical Company of the Company of t | AND DESCRIPTION OF THE PERSON NAMED IN | | | | (WEEKS) | DAYS | AGENT | LANGUAGE |
| BRAZIL | MAY | 92 | 5 | REPRO HERD HEALTH | 6.0 | 165 | | PORTUGUESE |
| BRAZIL | MAY | 92 | 4 | EMBRYO TRANSFER | 6.0 | 132 | SEMEX/CIDA | PORTUGUESE |
| ROMANIA | JUN | 92 | 5 | SWINE MANAGEMENT | 4.0 | 110 | EAIT | ROMAINIAN |
| ESTONIA | JUN | 92 | 5 | REPRO HERD HEALTH | 6.0 | 165 | EAIT | ESTONIAN |
| UNITED STATES | JUN | 92 | 6 | GENETICS MARKETING | 1.0 | 33 | SEMEX | ENGLISH |
| UKRAINE | JUL | 92 | 4 | FINANCIAL MANAGEMENT | 1.0 | 33 | SEMEX | UKRAINIAN |
| UNITED STATES | JUL | 92 | 3 | GENETICS MARKETING | 1.0 | 17 | SEMEX | ENGLISH |
| LITHUANIA | JUL | 92 | 5 | REPRO HERD HEALTH | 6.0 | 165 | EAIT | LITHUANIAN |
| LESOTHO | JUL | 92 | 4 | DAIRY CATTLE MANAGEMENT | 9.0 | 198 | NB DEPT. AG. | ENGLISH |
| UKRAINE | AUG | 92 | 10 | DAIRY CATTLE MANAGEMENT | 8.0 | 440 | EAIT | UKRAINIAN |
| UKRAINE | AUG | 92 | 1 | JOURNALIST STUDY TOUR | 1,0 | 6 | | UKRAINIAN |
| IRAN | AUG | 92 | 3 | GOAT AI MANAGEMENT | 1.0 | 17 | the second control of | ENGLISH |
| UNITED STATES | AUG | 92 | 2 | GENETICS MARKETING | 1.0 | 44 | SEMEX | ENGLISH |
| LATVIA | SEPT | 92 | 5 | REPRO HERD HEALTH | 6.0 | 165 | EAIT | LATVIAN |
| UNITED KINGDOM | SEPT | 92 | 13 | GENETICS MARKETING | 2.0 | 143 | SEMEX | ENGLISH |
| UNITED KINGDOM | OCT | 92 | 12 | GENETICS MARKETING | 2.0 | 132 | SEMEX | ENGLISH |
| ZIMBABWE | OCT | 92 | 6 | CON GENETICS STUDY TOUR | 2.0 | 66 | CIDA | ENGLISH |
| POLAND | NOV | 92 | 3 | DAIRY CATTLE MANAGEMENT | 6.0 | 99 | AG CDA | POLISH |
| PERU | NOV | 92 | 5 | ARTIFICIAL INSEMINATION | 2.0 | 55 | SEMEX | ENGLISH |
| UNITED STATES | NOV | 92 | 8 | GENETICS MARKETING | 1.0 | 44 | SEMEX | ENGLISH |
| ESTONIA | NOV | 92 | 5 | REPRO HERD HEALTH | 6.0 | 165 | EAIT | ESTONIAN |
| ZIMBABWE | NOV | 92 | 1 | CDN GENETICS STUDY TOUR | 2.0 | 11 | CIDA | ENGLISH |
| BELGIUM | NOV | 92 | 14 | GENETICS MARKETING | 2 | 116 | OMAF | ENGLISH |
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| TUZBA INTE | Tita s | · | | I————————————————————————————————————— | | | | |
| UKRAINE | JAN | 93 | 6 | REPRODUCTION HERD HEALT | 6.0 | 198 | EAIT | UKRAINIAN |
| UKRAINE | JAN | 93 | 11 | DAIRY CATTLE MGMT/EXTENSI | 8.0 | 484 | EAIT | UKRAINIAN |
| GERMANY | JAN | 93 | 1 | SALES TRAINING PROGRAM | 1.0 | 6 | SEMEX CANAD | ENGLISH |
| UKRAINE | FEB | 93 | 5 | REPRODUCTION HERD HEALT | 6.0 | 165 | EAIT | UKRAINIAN |
| BRAZIL | MAR | 93 | 2 | SEMEN EVALUATION | 1.0 | ,11 | CIDA | PORTUGUESE |
| UNITED STATES | MAR | 93 | 5 | GENETICS MARKETING | 1,0 | 28 | SEMEX | ENGLISH |
| LITHUANIA | MAR | 93 | 5 | REPRODUCTION HERD HEALT | 6.0 | 165 | EAIT | LITHUANIAN |
| LITHUANIA | MAR | 93 | 10 | DAIRY CATTLE MANAGEMENT | 10.0 | 550 | EAIT | LITHUANIAN |
| UNITED KINGDOM | APR | 93 | 9 | AMBASSADOR TOUR | 2 | 74 | SEMEX | ENGLISH |
| UNITED KINGDOM | APR | 93 | 6 | AMBASSADOR TOUR | 2 | 50 | SEMEX | ENGLISH |
| UNITED STATES | APR | 93 | 8 | GENETICS MARKETING | 1.0 | 44 | SEMEX | ENGLISH |
| AUSTRALIA | APR | 93 | 10 | GENETICS MARKETING | 3 | 138 | SEMEXIAG CAN | |
| LATVIA | MAY | 93 | 5 | REPRODUCTION HERD HEALT | 6.0 | 165 | EAIT | LATVIAN |
| GERMANY | MAY | 93 | 2 | COW CONF. EVALUATION | 2.0 | 22 | SEMEX | ENGLISH |
| CHINA | JUNE | 93 | _ | STUDY TOUR | 2.0 | 143 | CIDA | CHINESE |
| BURUNDI | JUNE | 93 | 4 | DAIRY CATTLE MANAGEMENT | 10.0 | 220 | IDRE | |
| NETHERLANDS | AUG | 93 | 4 | GENETICS MARKETING | 1.0 | 22 | AIMS | FRENCH |
| CANADA | SEPT | 93 | | EFFECTIVE MARKETING MNGM | ı | | | ENGLISH |
| ZIMBABWE | | | | | 1.0 | 105 | OAAB | ENGLISH |
| | OCT | 93 | | FEED LAB MANAGEMENT | 4.0 | 22 | CIDA | ENGLISH |
| ZIMBABWE | OCT | 93 | | MILK LAB MANAGEMENT | 4.0 | 22 | CIDA | ENGLISH |
| ZIMBABWE | OCT | 93 | | MILK RECORD COMPUTER SYS | 4.0 | 22 | CIDA | ENGLISH |
| ZIMBABWE | NOV | 93 | 1 | LIVESTOCK GENETICS MARKET | | 11 | CIDA | ENGLISH |
| ZIMBABWE | NOV | 93 | 1 | CANADIAN DAIRY GENETICS | 2.0 | 11 | CIDA | ENGLISH |
| ZIMBABWE | NOV | 93 | 1 | FEED LAB DAIRY EXTENSION | 4.0 | 22 | CIDA | ENGLISH |

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| ZIMBABWE | NOV | 93 | | 100 000 000 000 000 000 | (WEEKS) | DAYS | AGENT | LANGUAGE. |
| UNITED KINGDOM | NOV | 93 | 1 | MILK LAB ANALYSIS | 6.0 | 33 | CIDA | ENGLISH |
| UNITED KINGDOM | NOV | 93 | 5 | AMBASSADOR TOUR | 1.0 | 28 | SEMEX | ENGLISH |
| POLAND | NOV | | 2 | AMBASSADOR TOUR | 1.5 | 17 | SEMEX | ENGLISH |
| HUNGARY | NOV | 93 93 | .3 | GENETICS MARKETING | 2.0 | 33 | SEMEX | ENGLISH |
| UKRAINE | NOV | | 3 | GENETICS MARKETING | 2.0 | 33 | AIMS | ENGLISH |
| OIN VIIILE | NOV | 93 | 9 | AI MANAGERS STUDY TOUR | 1.0 | 50 | AIMS | ENGLISH |
| | SUB-TO | TAIL | | | | OM I TO SEAL IN LIVE | | |
| best and to specific in several sold environment in a popular and age of the page. | | 1.61.00 | 134 | | CHIERON MINORAN | 2890 | | |
| LITHUANIA | JAN | 94 | 6 | REPRODUCTION HERD HEALT | | | | |
| CANADA | FEB | 94 | 14 | EFFECTIVE MARKETING | 6.0 | 198 | EAIT | LITHUANIAN |
| ARGENTINA | FEB | 94 | | | 0.5 | 39 | OAB | ENGLISH |
| CANADA | MAR | 94 | 1 1 | SEMEN PROD. & PROCESSING | 0.5 | 3 | SEMEX | ENGLISH |
| CHINA | MAR | 94 | 12 | EFFECTIVE MARKETING | . 0.5 | 33 | OAB | ENGLISH |
| CANADA | APR | 94 | 3 | ON-SITE MANAGERS | 0.5 | 8 | CIDA | ENGLISH |
| USA | APR | 94 | 11 | EFFECTIVE MARKETING | 0.5 | 30 | OAB | ENGLISH |
| AUSTRALIA | APR | | 9 | GENETICS MARKETING | 1.0 | 50 | AIMS | ENGLISH |
| UNITED KINGDOM | | 94 | 8 | GENETICS MARKETING | 1.0 | 44 | AIMS | ENGLISH |
| CHINA | APR | 94 | 8 | AMBASSADOR TOUR | 1.0 | 44 | SEMEX | ENGLISH |
| 20 10 1 | MAY | 94 | 3 | MILK ANALYSIS LAB. MGMT. | 8 | 132 | SEMEX/CIDA | ENGLISH |
| CHINA | MAY | 94 | 1 | EMBRYO TRANSFER TECH. | 8 | 44 | SEMEX/CIDA | ENGLISH |
| CHINA | MAY | 94 | 3 | SEMEN PROD. & PROCESSING | 6 | 99 | SEMEXICIDA | ENGLISH |
| CHINA | MAY | 94 | 3 | REPRODUCTION HERD HEALT | 8 | 132 | SEMEXICIDA | ENGLISH |
| CHINA | MAY | 94 | 1 | PRACTICAL DAIRY TRAINING | 4 | 22 | SEMEX/CIDA | ENGLISH |
| CHINA | MAY | 94 | 4 | DAIRY CATTLE GENETICS | 16 | 352 | SEMEX/CIDA | |
| CHINA | MAY | 94 | 7 | DAIRY CATTLE CARE & MGMT. | 14 | 539 | SEMEXICIDA | ENGLISH |
| BRAZIL | MAY | 94 | 1 | EMBRYO TRANSFER | 6 | 33 | SELF | ENGLISH |
| CANADA | MAY | 94 | 9 | EFFECTIVE MARKETING | 0.5 | 25 | | ENGLISH |
| CANADA | MAY | 94 | 9 | EFFECTIVE MARKETING | 0.5 | | OAB | ENGLISH |
| CANADA | MAY | 94 | 11 | EFFECTIVE MARKETING | 0.5 | 25 | OAB | ENGLISH |
| CANADA | JUNE | 94 | 10 | EFFECTIVE MARKETING | 0.5 | 30 | OAB | ENGLISH |
| ZIMBABWE | JUNE | 94 | 5 | DAIRY CATTLE EXTENSION | | 28 | OAB | ENGLISH |
| PARAGUAY | JUNE | 94 | 1 | DAIRY CATTLE EXTENSION | 6 | 165 | SEMEXICIDA | ENGLISH |
| FRANCE | JUNE | 94 | - | MARKETING MANAGEMENT | 6 | 33 | ROTARY | ENGLISH |
| ZIMBABWE | JULY | 94 | 1 | LIVESTOCK STUDY TOUR | 2 | 55 | AIMS | ENGLISH |
| ZIMBABWE | JULY | 84 | 2 | LINEAR TYPE | 2 | 11 | CIDA | ENGLISH |
| IRAN | JULY | 94 | 2 | GENETICS MARKETING | 2 | 22 | CIDA | ENGLISH |
| AUSTRALIA | AUGUS | 94 | | GENETICS MANAGEMENT | 2 | 22 | AIMS | ENGLISH |
| | AUGUS | 94 | | | 2 | 22 | SEMEX AUSTR | ENGLISH |
| EGYPT | SEPT | 94 | | GENETICS MANAGEMENT | .2 | 11 | AIMS | ENGLISH |
| 22 V | OCT | | | MILK RECORDING | 4 | 22 | IDRC | ENGLISH |
| 21 21 2 KEWEE | OCT | 94 | | GENETICS MARKETING | 2 | 11 | AIMS | ENGLISH |
| | OCT | 94 | | GENETICS MARKETING | 2 | 55 | AIMS | ENGLISH |
| | | 94 | 11 | GENETICS MARKETING | 3 | 6 | SIGMA VI | ENGLISH |
| 4 | OCT | 94 | | GENETICS MARKETING | 2 | 55 | AIMS | ENGLISH |
| | OCT | 94 | | AI REGIONAL MANAGERS | 0.5 | 47 | OAB | ENGLISH |
| CANADA | OCT | 94 | 16 | EFFECTIVE MARKETING | 0.5 | 44 | | ENGLISH |
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APPENDIX D

CANADIAN COMMUNITY COLLEGES OFFERING COURSES in TOURISM

COMMUNITY COLLEGES IN ONTARIO OFFERING:

1. HOTEL & RESTAURANT MANAGEMENT

Algonquin, Nepean Cambrian, Sudbury

2. CULINARY MANAGEMENT

Humber, Toronto George Brown, Toronto

3. FOOD AND BEVERAGE

George Brown, Toronto Sault, Sault Ste Marie Sir Sandford Fleming, Peterborough Fanshawe, London Conestoga, Kitchener Durham, Oshawa

FOOD SERVICES & BARTENDING or FOOD SERVICES SUPERVISOR

Northern, South Porcupine Canadore, North Bay Centennial, Scarborough Sir Sandford Fleming, Peterborough Kemptville, Kemptville

5. HOSPITALITY & TOURISM MANAGEMENT

Ryerson, Toronto Canadore, North Bay

6. HOTEL & RESTAURANT ADMINISTRATION

Niagara, Welland, ON Humber, Etobicoke Loyalist, Belleville Sault, Sault Ste Marie Georgian, Barrie Humber, Etobicoke Sheridan, Brampton Cambrian, Sudbury Fanshawe, London St Lawrence, Brockville Canadore, North Bay Centennial, Scarborough

For a complete list of all Canadian Community College hotel, resort, food, and restaurant courses see the following pages.

| | 3 | Run Dat |
|---|---|------------|
| Canadian Colleges Which Offer Hotel & | Restaurant Mgmt. Rela | ated Prog |
| Program Title College Mailing Address | Contact | Languag |
| Hotel & Restaurant Management | | English |
| Algonquin College Algonquin College 1385 Woodroffe Avenue | Mr. R Reid | |
| Nepean ON CAN K2G 1V8 | Chairman, Hospitalit | y & Tour |
| Tech. Gest. Hoteliere-Restauration / Hot | cel-Restaurant Manag. | Bilingu |
| College LaSalle College LaSalle | | |
| 2000, rue Sainte-Catherine ouest Montreal QU CAN H3H 2T2 | Directeur, Ecole de | Tourisme |
| Sommelier | (| English |
| Algonquin College Algonquin College 1385 Woodroffe Avenue Nepean ON CAN K2G 1V8 | Mrs. K Campbell Director, Business, (613) 727-9400 Loc: | C.E. |
| Accommodation, Food & Beverage Services NBCC - Saint Andrews Campus NBCC - Saint Andrews Campus P.O. Box 427 | | English |
| Saint Andrews NB CAN EOG 2X0 | Loc: | |
| Gestion alimentaire et hotelliere | | French |
| Cambrian College Cambrian College 1400 Barrydowne Road | M. R. Cornu | |
| Sudbury ON CAN P3A 3V8 | Chairman, Hospitality (705) 566-8101 Loc: | y/Tourism |
| Business Technology : Hospitality Admini | stration | English |

Cabot College App. Arts, Tech. Cont. Ed.

Run Date Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progr Program Title Language College Mailing Address Contact University College of Cape Breton Univ. College of Cape Breton P.O. Box 5300 Glace Bay Highway Sydney NS CAN B1P 6L2 Loc: Culinary Management English Humber College of Applied Arts & Technologies Humber College Applied Arts & Technology North Campus 205 Humber College Boulevard Etobicoke ON CAN M9W 5L7 Loc: Culinary Management English George Brown College of Applied Arts & Technology George Brown College Applied Arts & Tech 500 MacPherson Avenue P. O. Box 1015, Station "B" Toronto ON CAN M5T 2T9 Loc: Culinary Management English Georgian College of Applied Arts & Technology Georgian College Applied Arts & Tech. One Georgian Drive Mr. B Furzecott ON CAN L4M 3X9 Dean, Hospitality & Tourism (705) 728-1951 Loc: Barrie Food and Beverage Supervisor English Selkirk College Selkirk College P.O. Box 1200 Mrs. C McLeod Castlegar BC CAN V1N 3J1 Dept/Head-Tourism Careers Proceed (604) 352-6601 Loc: 205 Food & Beverage Management (VVI Campus) English Vancouver Community College Vancouver Community College 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Loc: Food Administration English Cabot College App. Arts, Technology, Con. Education

Run Date Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progra

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|--|--|------------|
| Program Title College Mailing Address | Contact | Language |
| T TITUOC THITTED DITAE | | |
| P.O. Box 1693 St. John's NF CAN A1C 5P7 | Loc: | |
| Food & Beverage Management | | English |
| George Brown College of Applied Arts & T George Brown College Applied Arts & Tech 500 MacPherson Avenue P. O. Box 1015, Station "B" Toronto ON CAN M5T 2T9 | Loc: | |
| Food & Beverage Management | | English |
| Mohawk College Mohawk College Fennel Avenue and West 5th P.O. Box 2034 Hamilton ON CAN L8N 3T2 | | pment |
| Food & Beverage Management (Sault Camp | us) | English |
| | Mr. G Monteith Dean, Business & Ho (705) 949-2050 Loc: | |
| Food & Beverage Management | | English |
| Sir Sandford Fleming College Sir Sandford Fleming College McDonnel Campus 526 McDonnel Street Peterborough ON CAN K9J 7B1 | Loc: | |
| Food & Beverage Service | | English |
| Fanshawe College of Applied Arts & Techn Fanshawe College Applied Arts & Techn. 1460 Oxford Street East P.O. Box 4005 London ON CAN N5W 5H1 | M Hanwell (519) 452-4100 Loc: | |
| Food & Beverage Service | | English |
| Southern Alberta Institute of Technology Southern Alberta Institute of Technology 1301 - 16th Avenue North West | Mr. R Hendrickson Hospitality Careers | |

Run Date Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progr

Program Title Language College Mailing Address Contact -----Calgary AB CAN T2M 0L4 (403) 284-8110 Loc; -----Food & Beverage Management (Waterloo Campus) English Conestoga College of Applied Arts & Technology Conestoga College Applied Arts & Techn. 299 Doon Valley Drive Kitchener ON CAN N2G 4M4 Loc: Food & Beverage Management English Durham College of Applied Arts & Technology Durham College 2000 Simcoe Street North Mr. B Degeet P.O. Box 385 Director, Arts & Administrati (905) 721-2000 Loc: ON CAN LIH 7L7 Oshawa

Food Service & Bartending

English

George Brown College of Applied Arts & Technology George Brown College Applied Arts & Tech 500 MacPherson Avenue P. O. Box 1015, Station "B" Toronto ON CAN M5T 2T9

Food Services & Bartending

English

Northern College Northern College Highway 101 P.O. Box 2002

South Porcupine ON CAN PON 1H0

Loc:

Food Services Supervision (College Drive Campus)

English

Canadore College of Applied Arts & Tech.

Canadore College 100 College Drive P.O. Box 5001

Mr. S Tomkins

Dir. Hospitality & Tourism North Bay ON CAN P1B 8K9 (705) 474-7600 Loc:

Food Service Supervisor

English

Centennial College of Applied Arts & Technologies Centennial College Applied Art & Tech.

P.O. Box 631 Station "A"

Mr. D Rapley Chairperson

Scarborough ON CAN M1K 5E9 (416) 694-3241 Loc:

| Canadian Colleges Which Offer Hotel | & Restaurant Mgmt. Rela | Run Date ted Progr |
|--|---|-----------------------|
| Program Title College Mailing Address | Contact | Language |
| Food Service Supervisor | | English |
| Sir Sandford Fleming College Sir Sandford Fleming College McDonnel Campus 526 McDonnel Street Peterborough ON CAN K9J 7B1 | Loc: | |
| Food Service Management | | English |
| Kemptville Agricultural College Kemptville College of Agricultural Technology Prescott Street, Kemptville ON CAN KOG 1J0 | Ms. L Reasbeck Head, Food Science & (613) 258-8333 Loc: | Tech. |
| Food Services Supervisor Technician | | English |
| Lagara College Langara College 100 West 49th Avenue | | |
| Vancouver BC CAN V5Y 2Z6 | Loc: | |
| Food Service Technology (NSIT) | | English |
| Nova Scotia Community College Nova Scotia Community College Department of Education 1701 Hollis St,Box 2086 Halifax NS CAN B3J 3B7 | Loc: | |
| Food Services Administration | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | English |
| North West Regional College North West Regional College 1381 - 101st Street | | |
| Nth. Battleford SK CAN S9A 0Z9 | Loc: | |
| Food Services Administration (Kelsey I | | English |
| Sask. Institute of Appl. Sc. & Tech. SIAST Avord Centre | | |
| 1401-606 Spadina Cres. East Saskatoon SK CAN S7K 2H6 | Ms. C Frith Program Head (306) 787-8048 Loc: | |
| Front Desk Clerk | | English |
| | | |

Run Date Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progr Program Title Language College Mailing Address Contact Yukon College Yukon College P.O. Box 2799 Whitehorse YT CAN Y1A 5K4 Loc: Gestion alimentaire et hoteliere French La Cite collegiale La Cite collegiale 2465, boul. Saint-Laurent ON CAN K1G 5H8 Loc: Gestion Culinaire (College Drive Campus) Bilingua Canadore College of Applied Arts & Tech. Canadore College 100 College Drive Mr. S Tomkins P.O. Box 5001 Dir. Hospitality & Tourism North Bay ON CAN P1B 8K9 (705) 474-7600 Loc: Gestion Hoteliere (College Drive Campus) Bilingua Canadore College of Applied Arts & Tech. Canadore College 100 College Drive Mr. S Tomkins P.O. Box 5001 Dir. Hospitality & Tourism North Bay ON CAN P1B 8K9 (705) 474-7600 Loc: Hotel/Motel Accounting and Financial Management (VVI Campus) English Vancouver Community College Vancouver Community College 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Hotel/Motel Eng. & Fac. Management (VVI Campus) English Vancouver Community College Vancouver Community College 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Loc: Hotel/Motel Food & Beverage Management (VVI Campus) English Vancouver Community College Vancouver Community College

Run Date Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progr. Program Title Language College Mailing Address Contact 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Loc: Hotel/Motel Marketing & Sales Management (VVI Campus) English Vancouver Community College Vancouver Community College 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Loc: ______ Hotel/Motel Room Division Management (VVI Campus) English Vancouver Community College Vancouver Community College 1155 East Broadway Box No. 24700 Station "C" Vancouver BC CAN V5T 4N4 Loc: Hotel and Restaurant Management English Westviking College Westviking College Applied Arts, Technology & Continuing Education P.O. Box 5400 Stephenville NF CAN A2N 2Z6 Loc: Hospitality Administration & Services (Pending) English St. Clair College of Applied Arts & Technologies St. Clair College Applied Arts & Tech. 2000 Talbot Road West Windsor ON CAN N9A 654 Hospitality Management English North Island Community College North Island Community College 2300 Ryan Road Courtenay BC CAN V9N 8N6 Loc: Hospitality Management English Holland College Holland College 140 Weymouth Street Mr. B Bree Chairperson, Tourism & Hospit

Canadian Colleges Which Offer Hotel & Restaurant Mgmt. Related Progra Program Title Language College Mailing Address Contact ______ Charlottetown PE CAN C1A 4Z1 (902) 566-9500 Loc: Hospitality & Tourism Management English Ryerson Polytechnical Institute Ryerson Polytechnical Institute 380 Victoria Street Toronto ON CAN M5B 2K3 Loc: Hotel, Restaurant, Resort Administration English Canadore College of Applied Arts & Tech. Canadore College 100 College Drive Mr. S Tomkins P.O. Box 5001 North Bay ON CAN P1B 8K9 Dir. Hospitality & Tourism (705) 474-7600 Loc: Hotel Front Desk Attendant English East Kootenay Community College East Kootenay College 2700 College Way P.O. Box 8500 Cranbrook BC CAN V1C 5L7 Loc: Hotel Front Office & Reception English George Brown College of Applied Arts & Technology George Brown College Applied Arts & Tech 500 MacPherson Avenue P. O. Box 1015, Station "B" Toronto ON CAN M5T 2T9 Loc: Hotel Management and Tourism English Canadian College for Chinese Studies Canadian College for Chinese Studies 855 - 859 Cormorant Street Victoria BC CAN V8W 1R2 Loc: Hotel Management English George Brown College of Applied Arts & Technology George Brown College Applied Arts & Tech 500 MacPherson Avenue P. O. Box 1015, Station "B" Toronto ON CAN M5T 2T9 Loc:

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Belleville ON CAN K8N 5B9 Hotel & Restaurant Management (Sault Campus) English Sault College Sault College 443 Northern Avenue Mr. G Monteith Dean, Business & Hospitality (705) 949-2050 Loc: Sault Ste Marie ON CAN P6A 5L3 Hotel Administration French

Sheridan College Sheridan College

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100 College Drive

P.O. Box 5001

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Mr. R Sereda
1301 - 16th Avenue North West
Calgary
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Mr. S Tomkins

Dir. Hospitality & Tourism

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| | Sask. Institute of Appl. Sc. & Tech. SIAST Avord Centre | Mr. P. Cox | П |
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| Malaspina College Malaspina College 900 Fifth Street | Mr. G Johnson | |
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| Centennial College of Applied Arts & Technologies Centennial College Applied Art & Tech. P.O. Box 631 Mr. D Rapley Chairperson Station "A" Chairperson (416) 694-3241 Loc | : |
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| Lethbridge Community College Lethbridge Community College 3000 College Drive South Lethbridge AB CAN T1K 1L6 | Mr. J W Hylton Dean, Business Tra (403) 342-3202 Loc | ades & Tec |
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$\label{eq:appendix} \mbox{\sc APPENDIX E}$ $\mbox{\sc REPORT on the TOURISM INDUSTRY}$

REPORT FROM THE HONOURABLE J. JUDD BUCHANAN

SPECIAL ADVISOR ON TOURISM
TO THE PRIME MINISTER

October 1994





Cabinet du Premier ministre

Ottawa, Canada K1A 0A2

Release

Date:

Octol r 25, 1994

For release:

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Attached is a co-Minister's Special Minister today. of the report prepared by the Hon. Judd Buchanan, the Prime Advisor on Tourism. The report was presented to the Prime

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PMO Press Office

(613) 957-5555

Report on the Tourism Industry

OU NAMED ME SPECIAL ADVISOR ON
TOURISM IN MAY OF 1994, WITH A DIRECTIV
TO DETERMINE WHAT STEPS THE FEDERAL
GOVERNMENT COULD TAKE TO ENHANCE CANADA'S
DURISM INDUSTRY. THE GOAL IS TO ELIMINATE THE
TOURISM DEFICIT AND SIGNIFICANTLY INCREASE
HE NUMBER OF JOBS IN THE TOURISM INDUSTRY.
SUBSEQUENT TO THAT APPOINTMENT, I HAVE VISITED
"ITH GOVERNMENT MINISTERS AND OFFICIALS
AS WELL AS REPRESENTATIVES OF THE TOURISM
JOUSTRY. HAVING MET APPROXIMATELY 300 KEY
INDUSTRY AND GOVERNMENT REPRESENTATIVES, I
"SSURE YOU, PRIME MINISTER, THAT THIS EVIDENCE
—F YOUR PERSONAL INTEREST IN THE TOURISM
INDUSTRY WAS GREATLY APPRECIATED BY THEM.

Their plea to us is for cooperation and leadership. They want us to work alongside them in developing ourism in Canada and in the international market-place. Above all, I was taken by the willingness of the industry to work together, with governments, o seize the tremendous opportunities that exist.

As we are all aware, Canada is well positioned to succeed in the highly competitive global tourism narket. In the language of the industry, Canada has a differentiated tourism product for which there is a demonstrated and growing international demand. Our wide open spaces, unspoiled natural beauty, winter and summer activities, friendly people, and a wealth of cultural heritage and Aboriginal tourism experiences are available in a safe, clean environment, at a reasonable cost. With these advantages, it is totally unacceptable that in 1993 Canada had a net tourism deficit of \$7.9 billion, 25.7 percent of our current account deficit.

Tourism in the Canadian Economy

Tourism is a global industry and one of the most rapidly growing sectors in the world economy.

Tourism is big business in Canada. It provides more than 500 000 jobs for Canadians in some 60 000 businesses across the country. It contributes \$25.9 billion to our gross domestic product.

Tourism also has a unique ability to create jobs nationwide. It is a people-intensive industry with a demonstrated ability to create jobs at a faster rate, more economically, than the economy as a whole. Tourism has a particular advantage in that it provides jobs both for young people entering the work force for the first time and for those re-entering the work force after a period of unemployment. Those jobs are both at the entry level and, contrary to the perception of some, in higher-skilled, higher-paid categories. Tourism businesses include passenger transportation, accommodation, travel agencies, tour operators, recreation and amusement, car rentals, food and beverage services. The Tourism Industry Association of Canada reports that the industry employs more young people, women, visible minorities, Aboriginal people and people with disabilities than are employed in the Canadian labour force as a whole. Women hold 35 percent of the management jobs and 54 percent of the supervisory jobs.

Tourism is also important to the financial well-being of federal, provincial and municipal governments. Each \$1 billion of tourism revenue generates \$230 million in income for the federal government, \$160 million for the provincial governments and \$60 million for municipal governments.

Not only does the tourism industry contribute to the general economic well-being of Canada, it also offers great opportunity for improving regional economies. A case in point is the Atlantic Canada Opportunities Agency's success in coordinating efforts to promote and develop tourism in the Atlantic provinces. The monies invested in marketing there have already produced a remarkable return.

Economic Importance of Tourism

The industry's major concern is that successive federal governments have not appreciated or understood the significant economic contribution tourism makes to Canada. It is already a \$26 billion industry, more than the combined 1992 revenues from agriculture (59.9 billion), mining (\$7.5 billion), forestry (\$2.6 billion) and fisheries (\$1 billion). In spite of its contribution, over the past decade there has been a continual downgrading of tourism in both its departmental status and its funding. This, the industry believes, not only prevents us from seizing the opportunities Canada has before it, it puts even the current economic contribution at risk. Two points illustrate the problem as the industry sees it:

- In spite of its importance to the economy, there is not an advocate at the Cabinet table whose exclusive concern is the tourism industry. It is but one of many responsibilities the Minister of Industry carries in his already heavy portfolio. Neither does the industry have a Deputy Minister or an Assistant Deputy Minister; its most senior official is a Director General. Federal leadership would help this diverse, fragmented industry come together with a common cause.
- 2. The federal marketing budget peaked at \$42 million, around the time of Expo 86, and has been continually cut back since. It now stands at about \$16 nillion. For purposes of comparison, Charle Lapointe, Executive Director of the Mon real Tourism and Convention Bureau told me that his marketing and prorection budget for Montreal Island lone is \$16 million. Next year, he expect the municipalities on the north and so th shore will join the program, pushi. 3 his budget to some \$22 million annual.

Lew Rogers, the Direct of Tourism Halifax, believes that tourism repusents Atlantic Canada's greatest hope for job cree ion. He then wondered why Canada devotes on! \$16 million to promote Canada throughout the orld and expects that amount to create sufficie a consumer demand to dramatically increase jot in the industry.

This line of thought came up repeatedly in my meetings across the country. The industry was pleased with the government's announcement of a \$193.4 million fund for tourism industry training. They fully understand that the education and training of a professional tourism work force is vital. They point out, however, that training deals with the supply side, not the demand side. It is imperative that we also create new demand for Canada's outstanding tourism products if we expect our newly trained workers to find jobs in which to demonstrate their skills.

The Domestic Market

To reduce Canada's unacceptable travel deficit, we must not only increase the number of foreign tourists to Canada, but we must also stem the flow of Canadians who feel compelled to take their vacations outside our country.

It has been 10 years since the government of the day decided there was no net economic benefit in promoting Canada as a tourism destination to Canadians. This decision has contributed to a 60 percent increase since 1984 in the number of Canadians who vacation, and spend their money, in other countries.

To offset the effect of one Canadian travelling and spending outside the country, we have to bring in two people from other countries - one to negate the outbound Canadian and thus stay even, and one more to bring in the revenue we would have had if our outbound Canadian had decided to spend vacation dollars at home.

We are losing our home market by default. No one is telling Canadians about the attractions in their own country, about the significant improvements over the past decade which the industry has made to its products, about how the experience being offered has never been a better value. In particular, we have underutilized cultural, heritage and natural tourism products, many of which are federal assets managed by Canadian Heritage. No one is telling Canadians about Canada.

Under the current arrangement, responsibility for promoting domestic travel has lain with the provinces and territories. Some of this is very effective, but on a regional scale. Throughout my consultations, the industry continued to call on the federal government to reinstate a national domestic marketing program to encourage Canadians to travel more within Canada.

The International Market

Our inadequate marketing and promotion is not limited to Canada. In no small way, recent funding cuts have contributed to the decrease in Canada's global market share over the past decade, at a time when most of our competitors have been increasing their budgets. The U.S. Ambassador to Canada, Jim Blanchard, put his finger on the problem when he said, "Canada is the best-kept secret in the tourism world." In our most important market, the United States, we are simply not telling Americans about the products and experiences Canada offers.

Generally, Americans' knowledge of Canada is limited, so there is a strong need for marketing and promotion if we are to capture our fair share of that valuable market. At a time when the U.S. dollar is worth \$1.35 Canadian, we should be having a tremendous influx of U.S. visitors. In the words of one of the many people I met, "Canada is having a sale but we aren't telling our customers about it!"

Despite Canada's weakened voice in international markets, Canadian products continue to be viewed favourably; Canada's international image is of a large, developed, secure, clean country populated by friendly people. With this positive image and within the existing tourism infrastructure, increased promotion can yield immediate results.

I found particular irony in reviewing the Australian situation. Some years ago. Australia, with a small budget and few visitors, came to Canada to ask our tourism officials for advice. At that time, Canada was considered a world leader in the international marketing and promotion of Canada through the Canadian Government Office of Tourism. The Australians learned well and applied our advice with a vengeance; their tourism budget now exceeds \$100 million — a figure 12 times what it was when they first came to seek our advice. Australia has invested substantially in tourism development and marketing and the results are there to see; their number of visitors has quadnipled.

During that period, Canada ignored its own advice and went in the opposite direction. The Canadian Government Office of Tourism was abolished and its resources dispersed throughout other federal departments. Moreover, the marketing and promotion budget was reduced by 60 percent.

Canada's tourism industry faces a formidable challenge in effectively marketing Canada's diverse tourism products and experiences against stiff international competition. Though much effort has been made toward a more cooperative approach to international marketing, these are often seen as ad hoc processes successful in themselves but with little relationship to each other. We must find a way to coordinate resources and messages against clearly defined and agreed upon target markets.

Clearly a need exists for an entity to thread together the diverse but interdependent elements of an industry as complex as that of tourism in Canada.

The efforts of the many players in the tourism sector must be at least known, preferably coordinated and best of all integrated. We need to enhance the image of Canada and its products, increase the foreign and domestic market's awareness of their choice of destination, promote the development of new and existing facilities in various parts of the country and pursue the adoption of tourism supportive policies and programs.

What has been lacking through which all elemonable and private sector meaningful input to the execution of marketing has indicated that it is pusignificantly to the final activities in return for it in the design and execu

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Conclusion

My primary task was to actions to be taken by the to increase tourism reveled industry employment a international travel defined increased with industry respondents stressed the integration of public an efforts and spoke in supfunding for marketing.

Both private and pul also took the opportuni which they felt were in efforts to capitalize on to The diversity and extendifficult to deal with in many of them in Appen imaginative and helpfuplay which could be deconcerning appropriate

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y is distinguished ts different sectors, by its many operators and markets. The global us increase in compehe industry's call for ingness to unite to I their call for a new h these objectives. In the view of many people, the problem has been the lack of a meaningful forum through which all stakeholders can provide input into the development of marketing plans and then work together toward their implementation. A 1993 review of government and business marketing strategies showed that the total marketing program was fragmented and inefficient. There was little consistency in geographic areas being targeted, market segments being addressed and products being offered.

Recommendation

As a first step to redressing the problems and setting Canada on a course to benefit from tourism as it should, I recommend the creation of a Canadian Tourism Commission. This new body would be directed by a Board composed of federal, provincial/territorial and private sector representatives. This proposal has widespread support from both the industry and governments.

I believe that the Commission would enable Canada to develop a coherent, unified voice for Canada's tourism industry. The single greatest advantage of such a body would result from having the industry represented as full participants. The programs would be jointly developed and implemented by the representatives of the federal government, the provincial governments and the industry sitting as the Board, and would be funded by the federal government, provincial governments and the industry. Because of this participation, the Commission would be the means to orchestrate the collaboration all participants in the industry have been seeking.

In the words of one industry member, "It is vital that the decisions be made by those whose livelihoods depend upon the success of the tourism industry rather than by those whose livelihoods depend upon the existence of the tourism industry."

Purpose

The prime responsibility of the Commission would be marketing Canada as a tourist destination to international and domestic tourists. The market research and resulting promotional programs would be the major focus of the Commission's efforts.

The secondary responsibility would be to provide support for the existing tourism associations, such as the Tourism Industry Association of Canada and other groups, in resolving issues of importance: transportation; the role of the national parks and historic sites; the evolving role of Canada Customs and Immigration officers; the application of the goods and services tax (GST); the training of personnel and the development of standards; grading of facilities; the financing and expansion of tourism facilities; and Aboriginal tourism.

Board Composition

To achieve equitable representation, the proposed Board would consist of representatives from:

- provincial/territorial governments and the tourism industry from six regions
- federal government
- industry, such as the airlines, accommodation, surface transportation and Aboriginal tourism
- · attractions, culture and sports.

The Prime Minister would name a Chairman.

Regional agencies, which are responsible for the economic diversification of their respective areas, consider tourism an important factor. Their public and private sector partners are represented on the national Board, ensuring that the regional view is well represented. Any programs they develop for their regions would be coordinated with that of the national program.

Funding

I recommend a base funding of \$50 million for marketing from the federal government. In addition, the federal funds would be augmented by provincial/territorial government and industry contributions. The combined total would allow for effective marketing of Canada at home and abroad.

For the future, I propose that the base federal budget for the Canadian Tourism Commission be increased by an amount equal to 1 percent of increased tourism revenues above the current \$26 billion figure. For example, if tourism revenues grew by \$1 billion, an additional \$10 million would go into the marketing and promotion budget. I would like to emphasize that the federal government realizes \$230 million of each \$1 billion increase in tourism revenue, an outstanding return for a \$10 million investment. The history of Canada's tourism industry makes it abundantly clear that you can't reap the harvest without planting the seeds.

APPENDIX A Important Issues Raised by the Tourism Industry

1. Transportation

Air access is an important issue throughout Canada. This concern was registered particularly strongly in Halifax, Ottawa, Edmonton and Vancouver. Both industry and government representatives feel that it is essential to have increased air access to their regions, particularly out of the United States, if they are to achieve their tourism potential.

Additional concerns were expressed that Canadian negotiators in the bilateral discussions had too narrow a view of their mandate. It was felt that their concern was limited to the airlines only and did not extend to the broader needs of the tourism industry or the Canadian consumers.

For example, because of limited air access in Vancouver from major U.S. cities, the majority of cruise ship passengers will be bused from Seattle, given a brief tour of the city of Vancouver and will be taken directly to their ship, without benefitting the Canadian tourism industry in any way. There are more than 100 such cruise ships leaving the port of Vancouver this year.

As well, work needs to be done with the airlines to see if some way can be found to help Canadians to become tourists within their own country in a less costly way, without damaging further the airlines traditional income sources.

This applies to the rail and bus system as well, although some programs are already in place in these systems. There is a need for improvement in intermodal transportation for tourists; more and easier opportunities for travel between different modes of transport are required. Finally, there is a recognized need to upgrade the condition of our highways and roadside facilities.

2. The Role of the National Parks and Historic Sites

Strong concerns were expressed in some areas of Western Canada about the reluctance on the part of Parks Canada to encourage tourism in our national parks. Our national parks represent one of our greatest tourist attractions and it is essential that they play a prominent role in our tourism industry. Individuals and associations raising these concerns recognized and were sensitive to the importance of conservation and preservation of park values and the difficulties in combining these with increased tourism. As we both know from experience, the conflict between Parks Canada's two mandates — preservation and enjoyment — is not easily resolved.

There were general concerns that the quality of tourism facilities in some of the national parks is significantly deteriorating because of the ambivalence of Parks Canada toward tourism. It is essential that these facilities provide a quality experience for our visitors. The senior administration in Parks Canada is aware of these problems and is determined to do its utmost to aid the tourism industry while being conscious of the preservation segment of its mandate.

3. The Evolving Role of Canada Customs and Immigration Officers

While the industry recognizes that the primary role of entry point officials is enforcement, they continue to call for improvements to the manner in which these officials greet Canada's customers. The industry representatives felt strongly that since they represent the tourist's first contact with Canada, they ought also to present a more welcoming impression. Customs officials are working with programs in this area and have made significant strides, but the feeling is that there is still some distance to go.

4. The Application of the Goods and Services Tax (GST)

One of the major rationales for the replacement of the manufacturers' sales tax by the GST was the need to level the playing field for our export industries. The GST is not supposed to be levied on goods and services exported from Canada. For some peculiar reason, an exception has been made for the tourism industry. When package tours are purchased outside of Canada, a significant cost is included for GST. This is a discriminatory act against the tourism industry; all tourism packages purchased outside Canada should be completely exempt from GST.

5. The Training of Personnel and the Development of Standards

Training is essential for a consistent, quality tourism product, and is recognized as a problem area for Canada. The Canadian Tourism Human Resource Council called for support for the private sector in skills upgrading. The council also called for coordination of the marketing efforts of government and the tourism industry, and an increase in federal investment in marketing the Canadian tourism product.

The new National Tourism Job Creation and Training Initiative announced in July by Human Resources Development Canada will actively address a number of these concerns, as will my recommendations for the Commission and for increased investment in marketing. Funding will be provided for job creation, related training and skills upgrading in the tourism sector. There will also be national and occupational standards and training courses from both public and private sources to help clients learn new tourism-related skills.

6. Grading of Facilities

The assessment and grading of tourism facilities to assist visitors in making choices needs a national focus. While some programs are already under way in Canada on a regional basis, for example the Canada Select program in Atlantic Canada, assessment and grading must be extended and refined on a national level.

7. The Financing and Expansion of Tourism Facilities

The difficulty of arranging financing for tourism facilities was often raised. Many believe that financial institutions and programs have a perceptual bias against tourism, resulting in insufficient access to financing for capital developments and marketing costs. Canada's chartered banks are of marginal use when it comes to financing smaller tourism businesses which provide the majority of employment in this industry. The Federal Business Development Bank has a much greater percentage of its loans in the tourism field than do the chartered banks and should be encouraged to maintain, and even increase, its support of the tourism industry.

8. Aboriginal Tourism

Demand is increasing for contact with Canada's Aboriginal populations to learn about their heritage and values which are deeply rooted in a respect for nature. Considerable work needs to be undertaken in support of this product.

Significant progress has been made by the Aboriginal business community over the past few years in the development of market-ready products. Continued work, with partners, is needed on initiatives such as itinerary and package development, development of an information network linking all participants, and targeted promotional campaigns.

9. Other Issues

A number of other important issues were raised which are too numerous to receive full discussion here. These items, which should be raised with the Canadian Tourism Commission, include:

- the role of governments in the provision of infrastructure
- provision and extension of bicycle paths
- improvement of recreational vehicle facilities
- education of Canadian tourism operators on calculating the exchange rate and eliciting their cooperation to ensure a fair rate of exchange is used
- · promotion of eco-tourism
- governmental awareness of special events and sports events
- · awards for excellence in tourism
- promotion of tourism in the schools
- use of Canadian icons to promote tourism
- encouragement of a TV travel channel.

APPENDIX K

AUSTRALIA

AUSTRALIAN TOURIST COMMISSION (Est. 1967)



MINISTRY OF TOURISM

H.O. + 9 OVERSEAS OFFICES

FUNCTIONS

- to increase number of visitors
- to maximize benefits
- to protect against negative effects of tourism

BOARD

9 appointed by Federal Minister + 1 (to manage) selected by Board Of these:

- . 1 from Gov't P.S.
- 1 with environmental or sociological expertise

Rest with relevant expertise (moving toward regional representation)

FUNDING

\$77.8M - government

+ - \$25.0M - industry

MARKETING

Primary focus

Special interest Australia Program

Theme years

Aussie Specialists (within the industry)

Coordination re: Trade Fairs

Partnership Australia (within the

industry)

Natural Holiday Guide (eco-tours)

follow-up research

GREAT BRITAIN

BRITISH TOURIST AUTHORITY (BTA) ENGLISH TOURIST BOARD (ETB) (Est. 1969)



MINISTRY OF NATIONAL HERITAGE

(Scotland, Wales, N. Ireland)



(Secretaries of State)

OVERSEAS OFFICES

FUNCTIONS

BTA: to increase tourism

to advise government

ETB: promotes domestic tourism

improve product

domestic advertising

BOARD

Chair + 6 and Chairs of Scotland, Wales (and N. Ireland (by invitation))

Most from regional tourist boards and different sectors of tourism industry

FUNDING

£32M BTA:

+ £18M private sector

ETB: £14M

+ £4.5M industry

MARKETING

BTA: primary focus

Coordinates representation

at Trade Fairs

Info through overseas offices

Product development Accommodation grading

Standards of Tourist Info Centres

Stats to industry

HONG KONG

HONG KONG TOURIST ASSOCIATION (Est. 1957)

(semi-governmental)

H.O. + 17 OVERSEAS OFFICES

FUNCTIONS

- to increase number of visitors
- to coordinate travel industry
- to advise government

BOARD

12 appointed by government Of these:

- 1 is Sec'y of Dept. of Economy
- others from different sectors of tourist industry-
- -1 800 membership from industry and sectors

FUNDING

Funded by government

· no amount given

MARKETING

Promotional campaigns

Special-interest activities and tours

Promotion as convention and exhibition centre

Improvement of standards of tourism industry

SPEECH

BY

PRIME MINISTER JEAN CHRÉTIEN

TO THE

TOURISM INDUSTRY ASSOCIATION

OF CANADA

Vancouver October 25, 1994

Check Against Delivery

A year ago today, our government received its mandate from the Canadian people. Tonight I will take the opportunity to look back and reflect on the last year, and more important look forward to the year ahead.

We ran an election campaign on several themes. We promised to work hard to restore a sense of hope to Canada. We promised to restore integrity to public life, and to demonstrate that government can once again be a force for good in society. We promised to focus our attention on creating the climate necessary for jobs and economic growth.

Professor Michael Bliss, in his new book on the Prime Ministers of Canada described our Red Book as a contract we offered to the people of Canada.

We have worked very hard over the last year to fulfil the terms of that contract. A great many of the promises in the Red Book have been implemented. We have done what we said we would do. Let me give a few illustrations of a long list of promises we have carried out.

- We put in place a joint federal/provincial/municipal infrastructure program. This program has already created over 70,000 new jobs.
- ♦ We signed with the Provinces the first ever agreement to reduce internal barriers between provinces.
- We created a Youth Service Corps.
- We created a Youth Internship program.
- We set up the National Forum on Health.
- We established a prenatal nutrition program.
- We increased funding for aboriginal education.
- We restored funding for literacy programs.
- We appointed an Ethics Counsellor.
- We introduced legislation with respect to the relations between lobbyists and the government.
- We have given Members of Parliament a greater opportunity to contribute to the development of public policy and legislation.
- We cancelled the helicopter program.
- We reduced defence expenditures.
- We cut grants to business.
- We reduced the size of ministerial staff and the Prime Minister's Office.

These are just a few examples of what we have done to keep our promises.

We said that we would concentrate on the economy. And we have. Since we took office, the economy has created more than 330,000 new jobs. The economy is growing at a rate of approximately 4%. Consumer confidence is up, and so is business confidence.

What I am most proud of is that we have restored a sense of integrity to government. No one has questioned our honesty and our integrity. We have created a sense of pride in the concept of public service.

It has been a busy, productive year. I am proud of our accomplishments, and I am encouraged by the new spirit of Canadians. It has been a strong beginning. But after all, only a beginning. A few weeks ago in Quebec City I set out an agenda for the second year of our government - an agenda also focussed on two words: jobs and growth.

First I said that the Minister of Human Resources, the Honourable Lloyd Axworthy, would table a discussion paper on improving our social security system. That paper was tabled three weeks ago.

Mr. Axworthy has begun a national debate. We all know that the status quo is not good enough. Our social programs need fundamental reform to help Canadians obtain the skills they require to find and keep jobs. We must reform those programs which create disincentives to work. And we must make our social programs affordable.

We have placed some options on the table. Now we need dialogue on the best means to achieve our objectives. That will take place over the next few months. I urge all Canadians to participate in that dialogue. Then the government will make final decisions, and we will legislate to make the necessary reforms.

Last week the Minister of Finance, Paul Martin, tabled two major documents. One set out a comprehensive framework for economic policy, with the clear objective of creating jobs and economic growth. It explains why deficit reduction is essential to achieve our growth and jobs objectives.

The second document begins a process of consultation on the best means of achieving significant deficit reductions in the next budget. By the end of 1996-97, we will meet our Red Book target to cut the deficit in half as a percentage of Gross Domestic Product in our first three years in government.

Reducing the deficit to three percent of GDP is no easy task. It means some re-design of the federal government. We believe that government is, and must be, a force for good in society. We will modernize the government of Canada to make certain that it can perform the functions needed for the 21st century in a cost-effective way. I want to assure Canadians that we are going to act in a manner that is fair and equitable.

I want to turn now to two further elements of our agenda for achieving increased jobs and growth. The first is through trade. In our Red Book, we said that we have to place an emphasis on the growing markets of the Pacific and Latin America. Tonight I want to share with you what we are doing to meet these goals.

British Columbia is Canada's gateway to the Pacific. Within weeks of taking office a year ago, I travelled to Vancouver to meet with the business men and women who make up the Asia Pacific Foundation.

Premier Harcourt has been a very strong supporter of the Team Canada approach to trade in the Pacific Rim. We have adopted that approach. Next week, accompanied by provincial Premiers, I am leaving for China with 300 Canadian business leaders as part of the largest Canadian trade mission in history. I will travel to China, Hong Kong, to the APEC meeting in Indonesia, and then to Vietnam. As a result of the work that the Canadian business community has put into the development of this trade mission, we will sign major contracts that will create thousands of jobs everywhere in Canada.

In January, we will pursue our objective of opening markets and creating jobs for Canadians, with a trade mission that I will lead to Latin America.

The Industry Minister, John Manley, is working on a package of initiatives to help build a climate where business can create jobs. Tonight, I am announcing one major element of his program.

In the Red Book, we said that governing in the 1990's requires creating partnerships between the federal government, the Provinces and the private sector. The Team Canada approach for trade in the Pacific Rim is a first step. A second area where the Team Canada approach is essential is in the tourism industry. Last May, I asked my friend Judd Buchanan to be my special advisor on tourism.

Judd agreed to do so, and we negotiated a contract of a dollar a year. He got the job done in 6 months, so he saved the government 50 cents. Now Paul Martin is his friend for life.

A few minutes ago, I talked about my sense of pride in restoring integrity to government, and in restoring the belief that government can be a force for good in society. Judd Buchanan has shown that a sense of accomplishment in public service is a far greater reward than a large fee. I want to thank Judd, as well as my other dollar-a-year-man, Mitchell Sharp, for symbolizing what public service should mean to all of us.

Today, we have released the Buchanan Report on Tourism. It is short and to the point. Canada has a balance of payments deficit in tourism amounting to almost 8 billion dollars. That costs Canadians income and jobs. It is over one quarter of our current account deficit. The purpose of the Buchanan report is to help turn around the balance of payments deficit in tourism and to create new jobs for Canadians.

APPENDIX F SASKATCHEWAN INDIAN FEDERATED COLLEGE

SASKATCHEWAN INDIAN FEDERATED COLLEGE

at the University of Regina A University College All Your Own

The Saskatchewan Indian Federated College (SIFC) at the University of Regina provides educational opportunities to Canadian and International Indian and non-Indian students. The SIFC is the only Indian-controlled, university-level college in the Americas. We offer our students undergraduate and graduate degree opportunities within an environment of Indian cultural affirmation. The SIFC hires its own faculty and staff, offers unique programs and has a personalized Student Services department directed at your needs and interests.

As an SIFC student you are offered the best of both worlds. We are federated with the University of Regina (U of R), and all programs and activities offered on campus are open to you. Students are members of the overall University community, yet have the richness of services afforded to smaller colleges. The SIFC is a member of the Association of Universities and Colleges of Canada.

Academic offerings:

The SIFC combines Indian-oriented and conventional areas of study leading to certificates and degrees. The SIFC has eleven departments offering Indian oriented courses in:

- * Science/Mathematics
- * English
- * Indian Health Studies
- Indian Studies
- * Indian Fine Arts
- * Indian Languages/Linguistics/Literatures
- * Indian Education
- Indian Social Work
- Indian Communication Arts
- Business/Public Administration
- * Extension/Northern Programs

A number of pre-professional programs such as Pre-Law, Pre-Agriculture and Pre-Medicine are also available.

You may register at the SIFC after you receive your Letter of Acceptance from the U of R. For the student who does not have a complete Grade 12, the University Entrance Program is one option to begin your university education.

Student Services:

SIFC also provides you with your own Student Services department to help you realize educational success and to assist you with the personal and social adjustments to an academic environment. To accomplish this, counsellors and advisors are on hand to assist you in personal or academic concerns. Elders are also available to provide counselling and advice based on traditional values received from our ancestors.

The Registrar's office provides information and advice on rules, regulations and degree requirements. Through Student Services senior students provide tutoring in all subject areas. In co-operation with the English Department regular writing clinics are held. Students can apply for various SIFC and U of R scholarships and bursaries. For the sports-oriented, SIFC athletics offers students a number of recreational and competitive sports opportunities. Students interested in integrating academic learning with work experience can consider the co-operative work/study programs.

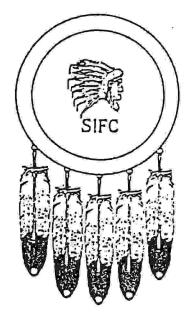
Library Services:

The SIFC Library on the U of R campus houses over 50,000 items including books, periodicals and audio-visual materials. SIFC collections focus on the Indian peoples of North, Central and South America.

Social and Cultural Events:

Through the year students participate in our Annual Awards Night, College Convocation, symposiums, traditional feasts and pipe ceremonies. The College also hosts the Annual Powwow, the Cup Hockey Tournament and the Invitational Volleyball Tournament. During the winter semester, the staff and students host our Annual Cultural Week.

Students can become involved with the the college through the efforts of SIFC Students' Association (SA). SIFC-SA is the



representative and active voice for the student body and organizes a variety of social, cultural and political activities for interested students throughout the school year.

An average of 100 students graduate from SIFC each academic year. Enrollmer projections for 1995 are for more than 1200. The occupational successes of ou students, in combination with the quickly increasing student numbers, illustrate the need for a university that present programs from an Indian perspective in cultural environment.

Join us! Our friendly faculty, staff an students will welcome you.

Take the first step and write, call or fax for an SIFC informational package today:

SIFC - Information Services 118 College West University of Regina Regina, SK. S4S 0A2

Phone: (306)584-8333 Fax: (306)584-0955

APPENDIX G STATEMENT from CORRECTIONAL SERVICES CANADA

Ottawa, Canada K1A 0P9

94-11-01

Your life Votre rétérence

Our file Noting religionates
510-1

Dr. Anstey
ADIC
Suite #703
Delta Tower
Ottawa Ontario

Dear Dr. Anstey:

Re: Potential Use of New Liskeard Agricultural College as a Correctional Facility

The following information is provided in response to our telephone conversation of earlier today and your previous discussions with Barbara Cooke, the person responsible for the Correctional Service of Canada's Long Range Accommodation Plan.

Ms. Cooke confirmed that the CSC does not presently foresee the need for additional capacity, in Ontario, for either female or male minimum security inmates, beyond that which is currently being implemented. Should you, nonetheless, wish to determine the facility's capacity to be used for this purpose, I would suggest that you provide us with a description and floor plan(s) of the College. This approach would be preferable to sending you our security standards for your own assessment.

Should you require additional information, you can contact me at 996-1391.

Yours truly,

George Centen

Manager Facility Research

and Standards

C.C. Barbara Cooke DOPRA

Canada'

The importance of the tourism industry in Canada cannot be over-estimated. Let me quote the Buchanan report:

"Tourism is big business in Canada. It provides more than 500,000 jobs for Canadians in some 60,000 businesses across the country. It contributes \$25.9 billion to our Gross Domestic product. Tourism also has a unique ability to create jobs nationwide. It is a people-intensive industry with a demonstrated ability to create jobs at a faster rate, more economically, than the economy as a whole. Tourism has a particular advantage in that it provides jobs both for young people entering the workforce for the first time, and for those re-entering the workforce after a period of unemployment. Those jobs are both at the entry level and, contrary to the perception of some, in higher-skilled, higher-paid categories. ..."

After travelling to every province and every territory, and consulting with over 350 people in the tourism industry, Mr. Buchanan makes very clear that the federal government cannot and must not act alone. He recommends a new partnership between the federal government, provincial governments and the tourism industry to develop a cohesive and coherent and unified voice to promote Canada to Canadians and to the world. In essence, he recommends a Team Canada approach.

As a result of his extensive consultations with the industry and with the provinces, Mr. Buchanan recommends the creation of a Canadian Tourism Commission which would be a true partnership of the industry and both levels of government.

Decision-making would be placed in the hands of a Board of Directors made up of representatives of the tourism industry, provincial and territorial governments and the federal government. It would help us to cooperate and get the most out of limited resources. It would prevent unilateral action and harmful competition.

The provinces and territories are essential to presenting the full image of Canada to the market-place. The industry itself must have the lead role in designing and delivering marketing programs.

Tonight, I am pleased to announce that the federal government, for its part, accepts Mr. Buchanan's recommendations. Since a partnership must not be imposed, I have asked Mr. Buchanan, and John Manley, to work with the provinces and the industry so that everyone signs on. Our objective is to establish a Canadian Tourism Commission by the New Year.

The Canadian Tourism Commission would give us the chance to marshall all our resources in a cooperative rather than competitive manner. We must promote all of Canada - British Columbia and the Atlantic, Québec and the Prairies, the North and Ontario.

When we promote eco-tourism, Canada's great outdoors, in Asia, we will be presenting an image of all of Canada. When we speak in Europe of the cultural experiences offered by the aboriginal community, we will be speaking of experiences from all over Canada.

When we cooperate, we can be very successful. if we compete against each other, everyone loses.

The Buchanan Report quotes one industry member as saying "It is vital that the decisions be made by those whose livelihood depends upon the success of the tourism industry, rather than by those whose livelihood depends upon the existence of the tourism industry." I agree.

The second major recommendation of the Buchanan Report is to increase federal funding of domestic and international tourism marketing.

I agree with Mr. Buchanan that for the tourism industry to be able to create new jobs, the federal government should increase its spending on tourism promotion at home and abroad. We will do that. The federal government now spends 15 million dollars on tourism promotion. We will increase our budget to 50 million dollars. We will find the additional 35 million recommended by Mr. Buchanan by cutting elsewhere in the government.

If the industry and government are to work in partnership, it is essential that there be a partnership in financing as well. Tonight, I have announced federal funding of 50 million dollars a year which would go to a Canadian Tourism Commission.

I hope the industry and the provinces will see that it is in their interest as well to help finance the Canadian Tourism Commission. A real partnership will maximize the effectiveness of industry spending, federal spending and provincial spending.

Our goal in this new partnership should be to create a 100 million dollar marketing fund that will re-establish Canada as a force in the global tourism industry. Together, governments and industry will design, finance and deliver the world's most effective program selling the world's best tourism product.

When we fully achieve the partnership between government and the industry that the Buchanan report has recommended, we will create many thousands of new jobs for Canadians all over the country. We will generate considerable new revenues for companies and for all levels of government. And we will substantially improve our balance of payments.

Any talk about tourism would be incomplete without talking about culture. Canada is as rich in cultural events as it is in its great natural beauty. People travel to see something stimulating - like the mountains, coasts, forests or great plains in our National Parks, like our historic sites, or like the wide variety of theatre, dance and musical events in our urban centres.

Major conventions don't choose cities just for the meeting rooms. They go where participants can visit museums, attend a concert or see a play.

Cultural tourism in Canada is big business - very big business. We have some of the largest and finest literary, film and theatrical festivals in the world, and we Canadians share them with people from other countries - especially the U.S.A.. In 1991, three million Americans visited Toronto specifically for cultural events, and spent 600 million dollars on hotels, restaurants and shopping.

That is one reason you are honouring Garth Drabinsky today as your industry's Man of the Year. I too want to pay tribute to him for his contribution to cultural life in Canada.

Our culture is an indispensable part of our national life and a valuable part of the image of ourselves we project abroad. We as a government believe that a strong cultural sector should be supported by all who want to see Canada's tourism market grow.

Finally, I want to thank the many members of the Tourism Industry Association of Canada who provided support to Judd and who have made today's announcement possible. I want to congratulate your outgoing chairman, Gary Llewellyn, for a job well done. And I want to wish all the best to your incoming chairman, John Gow. He has worked closely with Judd Buchanan in the preparation of the report. I want to thank him for his time and effort, and wish him well as he assumes his new responsibilities.