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## CANADA

The following paper has been submitted by the Canadian delegation in connexion with the discussion on item (ii) of document TN.64/Ce/W/1.

### Projections of Canadian Cereals Production, Consumption and Foreign Trade as at 1970

This paper supplements the Canadian submission "Canadian Grain Production and Marketing" (TN.64/Ce/W/11 - 21 September 1965) under item 2 of agenda for Joint Studies.

This is the first time Canadian authorities have attempted a projection for cereals in such precise terms for use either within or outside Canadian Government channels. In fact officials are sceptical of the practical value of such projection in any forum, because of weather fluctuation as it applies specifically in the rather unique case of Canada. The analysis presents concepts fundamental to the future direction of the Canadian grain industry, but the absolute unknowns and variabilities are such that they can render invalid quantitative projects for the short range of five years hence.

The twenty-year period from 1945 to 1965 only is being used in the projection. The period of the 1930's is omitted as it was a time of extreme crisis for Canadian cereals producers, combining loss of export markets with acute drought and an impoverishment of resources needed to maintain land under cultivation.

All projections in this report concerning production, consumption and foreign trade relate to the year 1970 rather than the average of the five years from 1965 to 1970.

#### Canada land use

The following table gives land use over the last twenty years as well as the projection for 1970.

Canada Land Use

	1946- 1950	1951- 1955	1956- 1960	1961- 1966	Projected 1970
	(Millions of hectares)				
Total land use for grain (including summerfallow)	27.3	29.1	29.1	30.1	31.20
Summerfallow	8.4	9.4	10.4	11.0	10.60
Wheat	10.3	10.2	9.4	11.1	11.65
Oats	4.5	4.4	3.8	3.7	3.10
Barley	2.6	3.5	3.4	2.5	3.10
Other grains, including oilseed	1.5	1.6	2.1	1.8	2.75
All grain, excluding summerfallow	18.9	19.7	18.7	19.1	20.60

The 1970 projection is based on the assumption that land area devoted to grain (including summerfallow) will increase at a somewhat slower rate because of the physical limits to new land area for agriculture. The 1970 projection is 0.7 million hectares greater than the cereals acreage in 1965. (See Table 1)

As to the maximum land use over the long term, the estimate of the physical limitations to increased land area suitable to cereal production is 2.4 million hectares over the 1965 levels. The figure of 2.4 is made up primarily of two components, namely (1) the bringing into cultivation of land presently part of a farm holding mainly through the clearance of bush, and (2) the extension of the frontier to the north to land settlement. Most bushland in farm holdings has been opened to cultivation in the post-war period so that now cultivated land on farms is close to its maximum. The final physical limitation to frontier expansion is (1) rock formation without soil; and (2) perma-frost tundra which disallows agricultural production.

Of the total area, as outlined above, about one third is devoted to summerfallow. The following table indicates the changes over the past twenty years and the 1970 projection: (See Table 1.)

1946-1950 annual average	-	8.4 million hectares
1951-1955 annual average	-	9.4 million hectares
1956-1960 annual average	-	10.4 million hectares
1961-1965 annual average	-	11.0 million hectares
1970 Projection	-	10.6 million hectares

The 1970 projection is a reduction of 0.2 million hectares from the 1964 area under summerfallow of 10.8 million hectares. (See Table 1.)

The major reason for summerfallow is to obtain the moisture of two years in order to grow one crop. A secondary reason for summerfallow is to control weeds but the need for summerfallow for such purposes is now less, although not completely eliminated, because herbicides are now more capable of dealing with weeds. It is estimated that 2.4 million hectares of summerfallow presently exist in areas having a sufficiency of moisture to produce crops annually.

The clear upward trend in summerfallow over the last twenty years may now have halted and it is possible that a gradual decrease may now be setting in, but insufficient time has elapsed to be certain that a slow downward trend is actually under way.

#### Cereal crop relationships

Wheat has supremacy in economic production terms on over half of the Canadian grain acreage but this is in the drier area located in the southern Prairie Provinces which has extremely variable rainfall. In that area total production is less per hectare and more variable than elsewhere.

Feed grain and wheat appear to compete interchangeably in about one third of the cereals area comprising particularly the northern black soil zone of the Prairie Provinces. However, price-demand relationship appears to have tended somewhat away from coarse grain in favour of wheat, at least in recent years.

#### Wheat

The land area sown to wheat in the last twenty years and the projection for 1970 is as follows: (See Table 1.)

1946-1950 annual average	-	10.30 million hectares
1951-1955 annual average	-	10.20 million hectares
1956-1960 annual average	-	9.30 million hectares
1961-1965 annual average	-	11.10 million hectares
1970 Projection	-	11.65 million hectares

The projection for 1970 foresees a marginal increase in acreage only, assuming no change in wheat feed grain price relationships from the present situation. No clear-cut trend is evident from the historical data, and annual fluctuation in area under wheat is great, ranging from a low of 8.7 million hectares in 1957 to 12.0 million hectares in 1964, with a decrease in 1965. The small amount of new land coming into cultivation annually is almost entirely in the more stable rainfall area of the north and experiences strong competition for economic use from grass, legumes, forage seed, coarse grains and oilseed crops, a situation in which wheat at best can only attract minor quantities. Recognizing the sag in feed grain acreage for a number of years, the near future could see some direct shift of acreage to feed grain and away from wheat.

### Yields

The central point to be taken into account in any projection relating to wheat in Canada is yield as determined by weather fluctuations.

The past four years have produced the highest average in history, namely 15.9 hundreds of kilos per hectares. Historically there have been a few scattered periods of two to three years when yields achieved levels between 14-16 hundred kilos per hectare. At no time in the Canadian history of cereal production over the past sixty years has there been a run of high production lasting more than 3-5 years.

Extreme annual variability exists, as for instance, a yield of 7.5 hundreds of kilos per hectare in 1961-62 and 18.1 in 1965-66.

Within this extreme variation there appears to be a technological tendency for yields to increase but at a slow rate. We are, therefore, making the assumption that there will be no repetition of high yields over the next five years and that the 1970 yield level is likely to be 13.5 hundreds of kilos per hectare.

### Production

Production during the past twenty years and the projection for 1970 is as follows:

1946-1950 annual average	-	10.7 million metric tons
1951-1955 annual average	-	14.9 million metric tons
1956-1960 annual average	-	12.7 million metric tons
1961-1965 annual average	-	16.0 million metric tons
1970 Projection	-	15.7 million metric tons

The 1970 projection is based on the yield and area assumptions given above. Production has been 10 million tons or less in seven out of the last twenty years and has been 15 million tons or more in eight of the last twenty years, with the upper and lower limits of production having been 20.7 million tons in 1965-66 and 7.7 million tons in 1961-62.

Disposition of wheat supplies (See Table 9)

Canadian projections of production are based on the assumption that market outlets exist. Canada has had a substantial carry-over which, in the last fifteen years, has only once been below 10 million tons at the end of the crop year each 31 July. (See Table 9.) The last few years Canada has sold each of the large crops still retaining stocks reasonable to the international situation.

Domestic utilization has remained quite constant in the past twenty years at approximately 4 million tons and is expected to continue.

Exports to Canada's traditional markets, excluding Eastern Europe, China and the USSR, have been relatively constant at about 7 million tons.

Exports to Eastern Europe and China (excluding the USSR) have risen to a level of about 3 million tons.

Feed grain

Assuming the continuation of the present relationship between feed grain and wheat prices, it is likely that feed grain acreage will remain near the levels of recent years.

Area under oats and barley for the last twenty years and the projection for 1970 is as follows: (See Table 1.)

1946-1950 annual average	-	7.1 million hectares
1951-1955 annual average	-	7.8 million hectares
1956-1960 annual average	-	7.2 million hectares
1961-1965 annual average	-	6.0 million hectares
1970 projection	-	6.2 million hectares

Performance and projection for oats is as follows:

<u>Crop year</u>	<u>Area</u> (millions of hectares)	<u>Yield</u> (hundreds of kilos per hectare)	<u>Production</u> (millions of metric tons)
1946-1950 average	4.5	11.5	5.2
1951-1955 average	4.4	14.8	6.4
1956-1960 average	3.8	15.1	5.8
1961-1965 average	3.6	16.8	6.2
1970 projection	3.1	17.0	5.3

Performance and projection for barley is as follows:

<u>Crop year</u>	<u>Area</u> (millions of hectares)	<u>Yield</u> (hundreds of kilos per hectare)	<u>Production</u> (millions of metric tons)
1946-1950 average	2.6	12.0	3.1
1951-1955 average	3.5	15.3	5.3
1956-1960 average	3.4	14.6	4.9
1961-1965 average	2.5	17.0	3.9
1970 projection	3.1	17.5	5.4

There is a technological yield trend in existence for each of oats and barley. The considerations entering into projections are the same as those for wheat, except that fluctuations are less pronounced since more of these grains are grown in the relatively more stable moisture areas, and the technological yield trend may be a little sharper since more fertilizer can be applied in this higher rainfall area.

Real difficulty exists in attempting to project the feed grain inter-relationship of domestic production, foreign trade and consumption. All indications point to reasonable buoyancy in trend towards increased feed utilization in Canada. Canadian feed grain, while maintaining its position in the Canadian market, has declined in its export importance. Imports of feed grain are likely to increase in the future.