POLAND'S SHARE IN THE DEVELOPMENT OF WORLD RAPESEED PRODUCTION

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It is my pleasure to extend to each of you a very cordial welcome on behalf of the Scientific Committee of the Congress. It is hoped that you will find this conference interesting, informative and worth commemorating.

Before the presentation of papers is proceeded I should like to address you with a brief account on the development of world rapeseed production and Poland's share in this progress.

The name rapeseed is used for seeds from two related but different species, viz. Brassica campestris cultivated for oil since immemorial times and Brassica napus grown in Northern and Central Europe since the end of the Middle Ages.

A significant increase of rapeseed cultivation in Europe takes place in the second decade of this century. The latter was closely linked with the development of oil refining methods which promoted the use of rapeseed oil in food industry. The demand for edible oils and fats in Central Europe during the World War I accelerated the growth of rapeseed production.

However, a new epoch in rapeseed production and its strong position in the world oilseed scene dates from the sixties of this century with the great achievements in rapeseed breeding for improved oil and meal quality obtained in Canada and in Europe, respectively.

In the past two decades the production of oil-bearing raw materials underwent basic changes which can be listed as follows:

- a substantial increase in the production of rapeseed and palm oils /Tab.1/. In 1986 rapeseed world crop reached nearly 20 mln M tons. As a result the production of rapeseed and sunflower is next to soybean /Tab.2/;
- selection for highly improved oil and meal quality in rapeseed cultivars;
- a considerable increase of rapeseed production in Canada, Asia and Europe /Fig.1/.

The fast advancing progress was effected by intensive development of rapeseed research whose results were presented and discussed at International Rapeseed Congresses. Let me remind the fruitful meetings in Gdansk, Paris, St.Adèle, Giessen and Malmö. And again in Paris and now in Poland /Tab.3/. I should also mention the activity of the Group Consultatif de Recherches sur le Colza, formed in 1970, and its tremendous contribution to the co-operation of rapeseed producing countries.

During the last ten years rapeseed production in Europe and in Canada showed an increasing tendency to stable and high yield /Tab.4/. Higher than two-fold production show Czechoslovakia, Denmark, France, Great Britain, the Federal Republic of Germany and Poland. Moreover, it should be mentioned that in recent years rapeseed has become increasingly popular with European crushers. At present, rapeseed, rapeseed oil and rapeseed meal hold an important position in the international trade /Tab.5/.

When speaking of success in rapeseed breeding I have in mind primarily the European type of winter rapeseed /B.napus/ and the spring rapeseed grown in Canada and commonly known as Canola. Breeding for the two varieties has indeed led to notable results, namely:

- increased crop yield, oil content in seeds and better resistance to diseases;
- drastic reduction of erucic acid in oil from approx. 50% to less than 2%, and reduction of glucosinolates

content in winter rapeseed meal to about 10% of the previous level.

Now, scientists and breeders make efforts to improve further the seed yield and that of oil and protein content as well as to improve the resistance of plants to diseases and to adverse climatic conditions /e.g.frost/.

Research programmes aim to develop varieties with less linolenic acid and with reduced content of fiber. These goals do not cover the list of tasks for improving the quality of rapeseed. None the less it is important to establish effective methods for rapeseed growing.

Now, let me present you some problems of Poland, as a rapeseed producing country, which many of you are presently visiting for the first time. The climatic conditions are relatively favourable for winter rapeseed production. The average period of growth spreads from the end of March to September, at insolation within 1400-1700 hours a year. The annual rainfall is about 500 mm. Sometimes heavy rains in July make harvesting difficult. The climate can be described as temperate. It is mainly influenced by the Oceanic climate with mild winters and moderately cool summers and partly, in East Poland, by the Continental climate with moderately hot summers and cold winters. The ecological conditions cover a broad spectrum. Besides the fields with high quality fertile soil, three fourth of the total area is composed of middle- and poor soils. In the western and northern regions of Poland rapeseed crops are safe due to the mild climate but in the south-eastern part with long and severe winters, the yield depends on the climate /Fig.2/. As a result, the annual crop of rapeseed varies within the range of ± 20% /Fig.3/.

In the last century rapeseed was grown in Poland on an area exceeding 20 thousand ha /Fig.3/. The first Polish Manual on rapeseed cultivation was printed 150 years ago /Oczapowski M., 1837/ while the first records on experimental work appeared in print in Warsaw in 1860/61 /Miłosz,

1861/. Also, it should be mentioned that at the end of the last century the Polish variety Olbrzymi had been known in France as Russian Rapeseed /Kowalski, 1900/, /Tab.6/.

After World War I further development of rapeseed breeding was noted in Poland. Annual production in 1930-39 approximated 50 thousand M tons but the average yield was below 1 M ton per ha /Fig. 4/.

The large scale cropping started about 40 years ago. Polish winter rapeseed varieties Górczański /Brilant/ and Skrzeszowicki /Ferro/ are well known on international markets. As a result, Poland joined the front rank of European rapeseed producers.

The production of rapeseed in the last three years exceeded 1 mln M tons per year and rapeseed is the principal raw material of Poland's oil industry. Rapeseed is partly exported, e.g. 536 thousand M tons in 1986.

The rapeseed grown today for seeds belongs to the Brassica napus species. Brassica campestris is grown for green fodder on a very small area. It calls for mentioning that a well known cultivar Bronowski is of Polish origin.

From the 70's in Poland, like in most European countries, a zero-erucic winter variety Janpol was licenced and breeding for zeroerucic cultivars proceeded rapidly. To date some high erucic rapeseed cultivars are grown in the North of Poland to meet needs of the chemical industry and Jantar , zeroerucic and low glucosinolate winter rapeseed, is being introduced into the market. It is grown on over 40 thousand hectares.

To sum up, the following conclusions can be drawn:

- as a result of achievements of breeders and processors rapeseed constitutes a good source of high quality edible oil and its products and protein fodder,
- progress in development of rapeseed breeding and processing research announce new achievements in rapeseed quality,

- the development of rapeseed breeding in Canada and in Asia and in European countries permit to forecast that the world rapeseed production will rise and keep the second position after soybean,
- at last but not least, the promise made in St.Adèle by Bernd Weinbergs seems to come through. Let me quote it: "Plant breeders are promising further progress in improving the chemical composition /of rapeseed/ to meet more closely the demands of the edible oil refiners and feed manufacturers".

Literature

L.A.Appelqvist, R.Ohlson - Rapeseed, Elsevier 1972.

Z.Kłoczowski - Zarys hodowli rzepaku i rzepiku w Polsce, Radzików, Warszawa, 1983.

Miłosz - Roczniki Gospodarstwa Krajowego, 1861, 20.

M.Oczapowski - Uprawa roślin fabrycznych, Warszawa, 1837.

T.Kowalski - Encyklopedia Rolnicza, t.IX, Warszawa,1900.

- FAO Production yearbook 1985,vol.39, Rome 1986.
- FAO Trade yearbook 1985,vol.39, Rome 1986.
- USDA - FAS: Foreign Agric. Circular, Oilseeds and Products, FOP 10-86.

GUS - Rocznik Statystyczny 1986, Warszawa 1986.

Table 1. World production of major oilseed-oils 10^6MT

Year	Soybean	Rapeseed	Sunflowers	Cottons
1960	3,9	1,1	1,2	2,4
1970	5,9	1,6	3,8	2,7
1975	10,0	2,9	3,7	2,7
1980	13,8	4,0	5,4	3,4
1985	13,6	6,9	6,5	3,5

Source: H.Wiedermann 1983, USDA 1986

Table 2. World production of oilseeds 10^6MT

av.Years	Soybean	Rapeseed	Sunflowers
1933-38	12,4	4,0	2,5
1948-52	16,0	2,8	3,8
1970-73	52,9	7,2	10,0
1983-85	90,2	16,5	17,0
1985	100,8	18,9	19,1

Table 3. International rapeseed congresses

I	1967	Gdańsk/Poland	H.Niewiadomski
II	1970	Paris/France	Y.Guilhaumaud
III	1970	St.Adèle/Canada	B.Weinberg
IV	1974	Giessen/GFR	E.v.Boguslawski
V	1978	Malmö/Sweden	G.Andersson
VI	1983	Paris/France	J.Morice
VII	1987	Poznań/Poland	J.Krzymański

Table 4. The production of rapeseed in some European countries and in Canada - 10^3MT

	1934/38	1948/52	1958/62	1971/75	1976/80	1981/85	1985
France	73	254	135	638	642	1181	1139
Poland	48	100	125	557	637	693	1073
Great Britain	-	-	-	34	181	641	820
FRGermany	/33/	83	75	240	307	593	805
Denmark	-	9			119	400	573
Sweden	-	146	123	320	299	365	380
German DR	/40/	110	167	269	293	308	381
Czechoslovakia	7	25	62	110	151	225	285
Canada	-	9	179	1515	2440	2682	3460

Source: FAO Production Yearbook 1985

Table 5. Rapeseed and rapeseed meal trade - Av.1983-85 - 10^3MT

	Rapeseed		Rapeseed meal	
	Import	Export	Import	Export
Africa	24,1	-	-	8,6
N.America	-	1437,7	-	162,7
Asia	1334,8	-	-	171,9
Europe	123,8	-	331,7	-

Source: FAO Trade Yearbook 1985

Table 6. Polish varieties of winter rapeseed

1850-1914	Karlikowaty, Olbrzymi późny, Powiślański
1919-1939	Bydgoski, Łęcki, Nadwiślański, Poświecki, Putza
1945-1969	Górczański, Koszaliński, Oleski, Skrzeszowicki, Sobótkowski, Warszawski
1969	Var. with improv. quality:

	Erucic Acid av. %	Glucosinol. av. UM/ffm
1969 - Wipol	10	45
1972 - Janpol	0	100
1979 - Beryl	0	120
1978 - Start	0	10
1980 - BKH-180	0	15
1981 - Jantar	0	10

Fig. 1

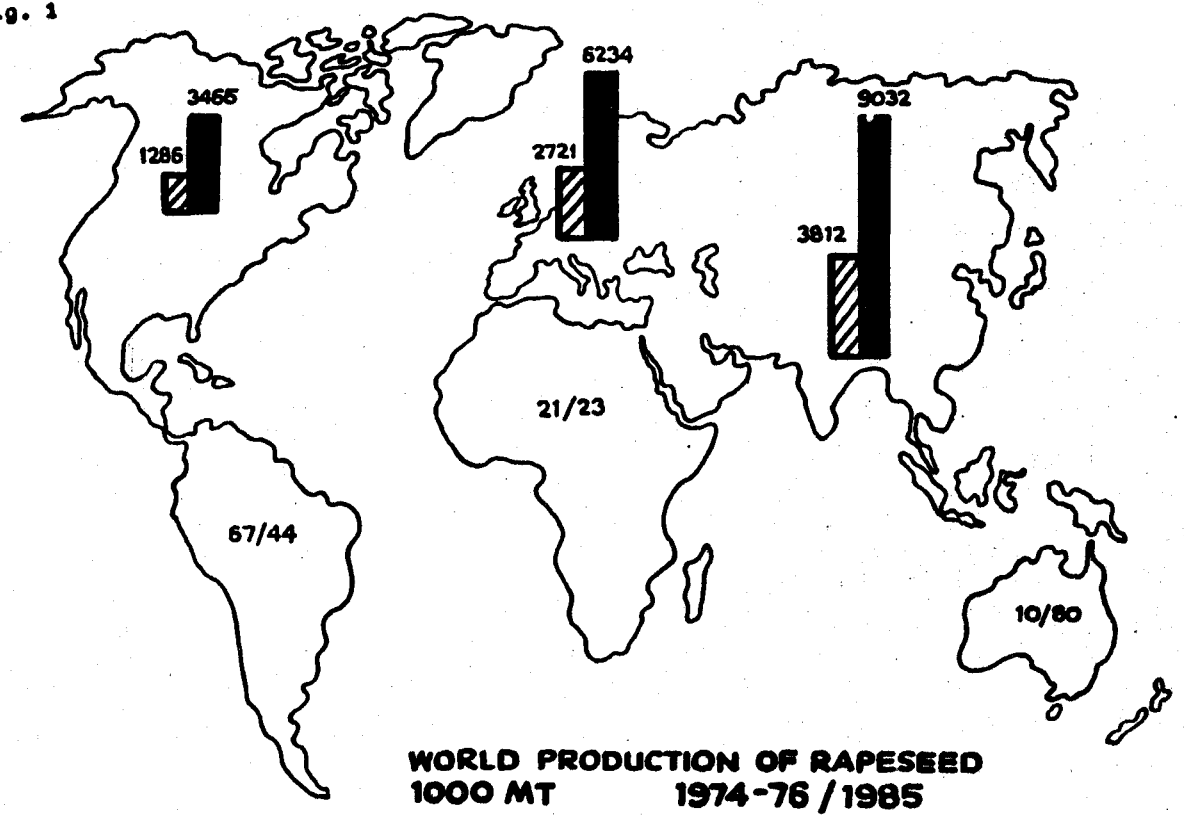
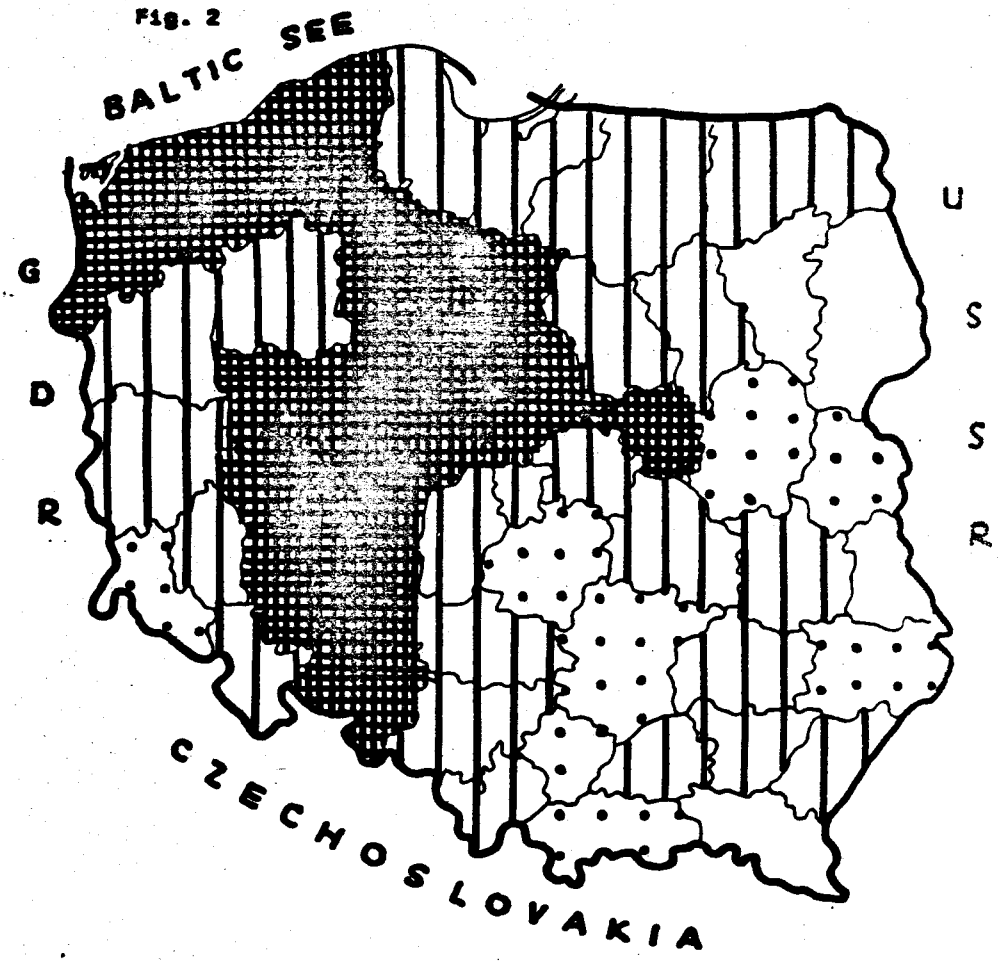

6234
3465
9032
1286
2721
3812
21/23
67/44
10/80
WORLD PRODUCTION OF RAPESEED
1000 MT 1974-76 / 1985

Fig. 2



YIELD MT/ha

<1.6 1.6-2.0 2.0-2.4 >2.4

AVERAGE RAPESEED CROP 1984-1986

Fig. 3

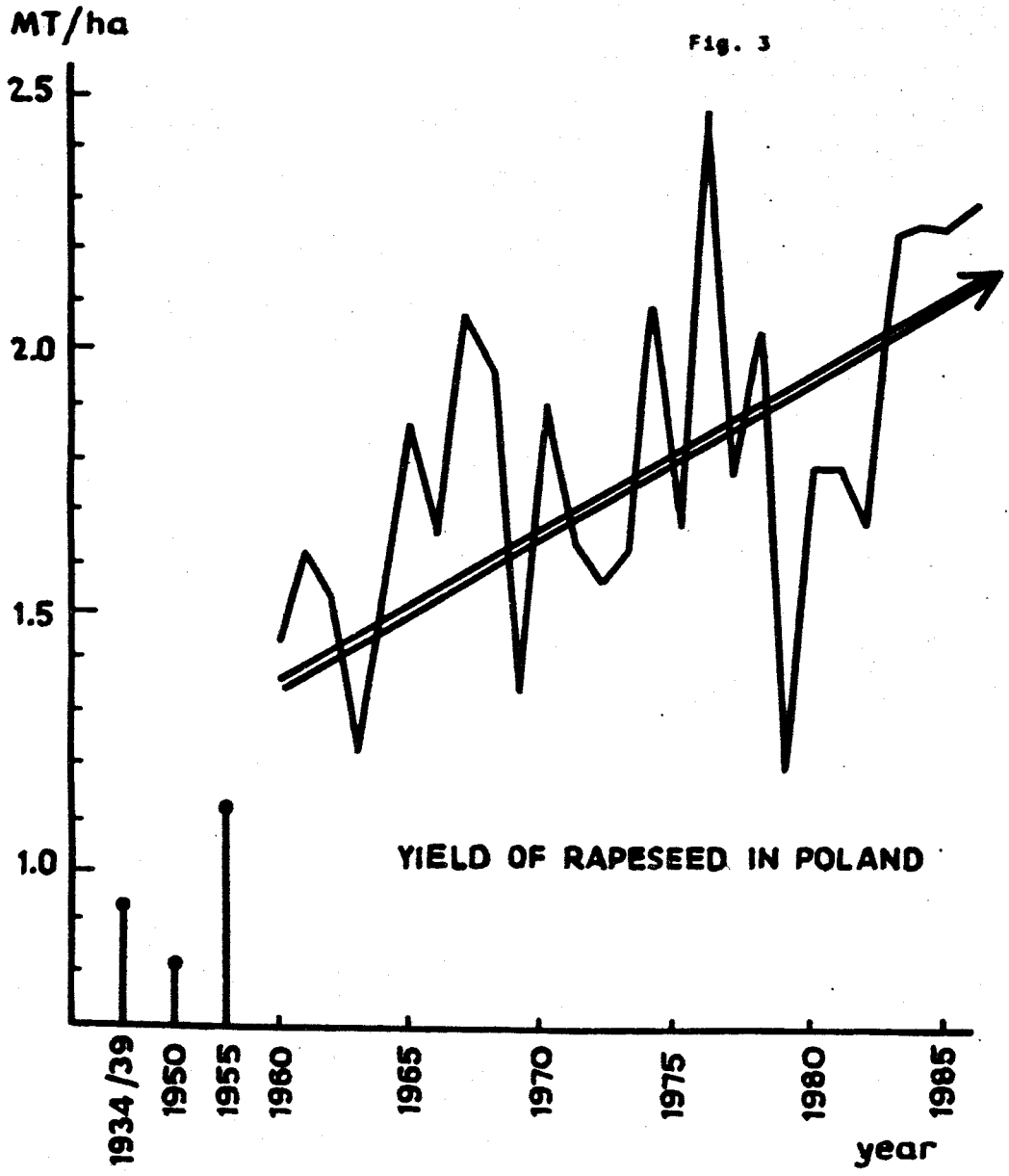

MT/ha
2.5
2.0
1.5
1.0
YIELD OF RAPESEED IN POLAND
1934/39
1950
1955
1960
1965
1970
1975
1980
1985
year

Fig. 4 **RAPESEED STORY IN POLAND**