

Rapeseed Cultivation in Finland

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Katri Pahkala, Agricultural Research Centre, Dep. of Plant Science. The cultivation of rapeseed was started in Finland more than 40 years ago, soon after the Second World War. The production started with high erucic winter turnip rape, but after 1976 only low erucic varieties (content less than 1 %) of spring rape (*B. napus*) and spring turnip rape (*B. campestris*) were cultivated.

Due to determined efforts to increase the cultivation of rapeseed, the area under cultivation has increased manifold during the past ten years. In the early sixties the cultivation area of rapeseed wasn't more than about 6 000 hectares, covering today over 70 000 hectares. Of the total area nearly 95 % is spring turnip rape.

Climatic factors and yields

The cultivation area of rapeseed in Finland is concentrated in the southern part of the country. Growing degree-days required by rapeseed limit the production in northern areas.

B. campestris heat requirements are 1 100 growing degree-days (figure 1). Growing *B. campestris* in areas that have fewer growing degree-days than that will be more risky. Cultivation of *B. napus* will succeed only on the southern coast of Finland because it requires more growing degree-days than *B. campestris*.

Average yields across the production area of rapeseed do not vary much. To the north, however, lower heat accumulation poses a higher potential risk causing greater yearly variations in yields. Yearly yields of *B. napus* vary more than those of *B. campestris*. The average yield of *B. campestris* is about 1 600 kilograms per hectare and that of *B. napus* somewhat higher, about 1 800 kilograms per hectare (figure 2). However, yields of 2 000 and 3 000 kg respectively are common on top farms.

The most important production factors limiting yield potential of rapeseed in Finland are the short growing season, moisture stress during germination and early vegetative stages as well as abundant rain in autumn causing lodging. Sometimes fall frosts can damage immature seeds of *B. napus*.

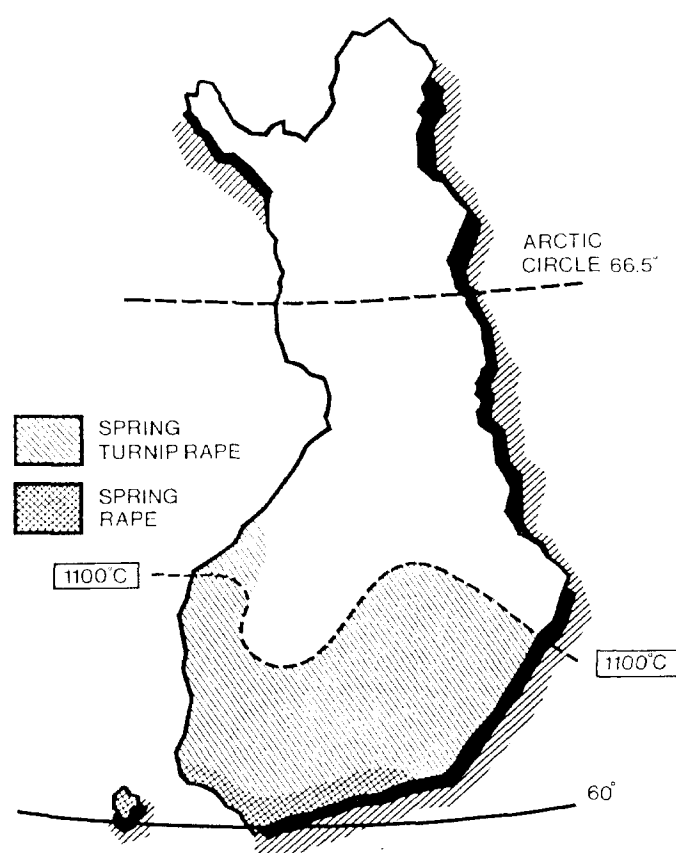
Pests and diseases

Flea beetles (*Phyllotreta* spp.) are pests of seedlings of rapeseed chewing holes in cotyledons and early leaves. Usually damage is light and seed dressing will give enough protection for the seedlings.

Blossom beetle (*Meligethes aeneus*) is the worst insect pest damaging plants from early bud stage to flowering and it has to be controlled almost yearly.

The most important diseases of rapeseed are *Rhizoctonia solani*, *Sclerotinia sclerotiorum*, *Plasmiodiophora brassicae* and *Botrytis cinerea*. These dis-

Fig. 1. — The cultivation area of rapeseed in Finland.



eases occur quite commonly in the fields but greater epidemics, so far, have been rare. Observations from the past few years indicate, however, that the frequency of diseases will grow with the increasing cultivation area of rapeseed. Latest research results have indicated that in the future diseases might reduce cultivation and yields of rapeseed. Crop rotation and fungicide application are the best means of controlling diseases.

Varieties

To perform well in Finland the rapeseed varieties have to be early maturing and especially adapted to our climatic conditions.

Today the most popular *B. campestris* variety is the low erucic acid Swedish variety, Emma. Cultivation of new, low erucic acid, low glucosinolate varieties will increase in the future as new varieties come to the market. At the moment, four of these low erucic, low glucosinolate varieties are in cultiva-

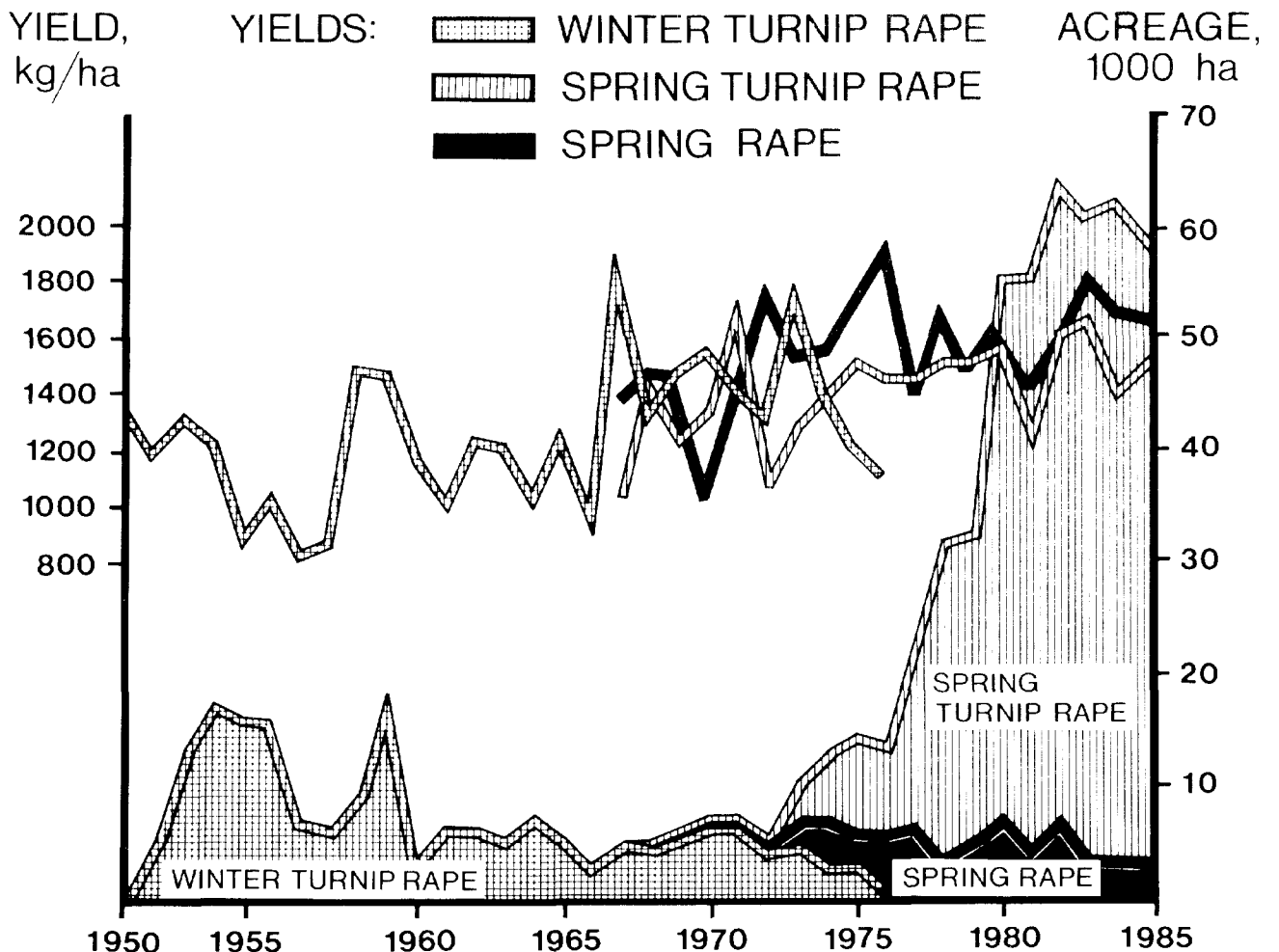
tion in Finland, they are Finnish Valtti and Nopsa, Canadian Tobin and Swedish Ante. All the *B. napus*-varieties are low erucic, low glucosinolate varieties, of which Swedish Topas and Karat are the most popular ones (table 1).

There are two institutes, Agricultural Research Centre of Finland, Department of Plant Breeding and Hankkija Plant Breeding Institute (co-operative society owned by farmers), which are responsible for the rapeseed breeding work in Finland.

Use of products

Domestic protein meal and vegetable oil are the rapeseed products for which it's cultivated. Rapeseed meal is an excellent source of protein with a favourable balance of amino acids and has therefore become an important protein source of livestock feeds. Edible oil products form the biggest part of oil consumption. Oil is also used for technical purposes and livestock feeds. Part of the oil is

Figure 2. – The cultivation area and average yield of rapeseed in 1950-85 in Finland.



also exported. Year 1985 the amount exported was 1500 tons of rapeseed oil. The quality of rapeseed oil has improved greatly since the low erucic acid varieties have come to cultivation (erucic acid content less than 1%). The quality improvement has in turn increased the possibilities of using rapeseed oil for edible purposes.

The present rapeseed cultivation area of 70 000 hectares provides enough oil for domestic purposes. However, as much as 120 000 hectares would be needed to satisfy the need for rapeseed meal proteins in livestock feeds.

Contract growing

According to the Oilseed Act rapeseed is cultivated purely on contract in Finland. Yearly the Government fixes a quota for rapeseed production according to which oilmills and their representatives make contracts with the producers. The seed for

cultivation is provided by the contractor. This system makes it possible to control the varieties and the quality of the seeds in cultivation.

The domestic price for the producers is higher than the world market price. The quality of the seed effects on the price. The basic price changes according to chlorophyll and moisture content of the seed and weed seed number.

Future trends

The farming policy aims at increasing the cultivation area of rapeseed up to 100 000 hectares by the year 1990. New better varieties make it possible to increase seed yields, too. The main aim of the farming policy is to decrease overproduction of cereals and also to compensate imported protein with domestic rapeseed meal. Rapeseed is also a very suitable plant for the crop rotation of cereal growers increasing cereal yields of the next year several percents.

Table 1 – Oil crop varieties in Finland. Official trials of Agricultural Res. Centre 1978-1985

Spring turnip rape, South Finland.

	Seed yield kg/ha	Growing days	Chlorophyll content ppm	Oil content % of dry m.	Protein content % of dry m.
Emma 0	100 (2070)	104	12	43.4	22.8
Tyko 0	101	106	13	44.3	22.3
Ante 00	89	102	16	42.2	23.4
Tobin 00	86	102	14	44.5	22.9
Nopsa 00	47	103	9	43.8	22.8
Valtti 00	100	106	16	45.7	22.0

Spring rape, South Finland

Topas 00	100 (2301)	124	38	46.8	23.4
Karat 00	93	125	39	46.5	23.8