

DRY PEA PRODUCTION IN CANADA

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Canadian dry yellow pea production has increased markedly in recent years. Dry pea production is concentrated in the Prairie Provinces, especially Manitoba and more recently in Saskatchewan. An average of about 20,000 hectares were devoted to dry peas during the 20-year period 1949 to 1968, and 29,000 hectares for the 10-year period 1969 to 1978. Since 1979, an average of 69,000 hectares were grown, with a record 114,000 hectare crop in 1986.

Dry pea production is concentrated in the Black soil zone of southern Manitoba and central Saskatchewan. This area runs along the northern and northeastern fringe of the Great Plains where temperature and wind are reduced, resulting in lower evapotranspiration rates than for the Great Plains in general. A slightly higher rainfall and lower evapotranspiration rate have resulted in high organic matter (Black) soils. The soils were derived from glacial action and have a high clay content with high moisture holding capacity. Annual precipitation is only about 400 mm, but peak precipitation occurs in early July during early bloom of the pea crop. These conditions result in average yields of about 2 tons per hectare, but individual yields have been double that.

Dry pea yields average about the same as spring wheat yields in this area and whenever the price of dry peas exceeds the price of wheat by 25% or more, as is currently the situation, farmers will continue to increase dry pea production in Canada.

At present the major cultivar is 'Century', a large-seeded cultivar, which is planted at 190 kg per hectare in mid- to late-May. The crop is usually ready to harvest by September 1, but inclement weather may delay harvest some years. Fortunately, Canadian cultivars tolerate considerable cold wet weather and still produce a food grade product.

Few farmers are equipped with a direct cut attachment on their combines. Thus, many farmers swath the ripe peas and run the combine behind the swather.

The major production problems are weed control and harvesting. However, experienced producers rarely have any problem with either.

Most of the Canadian dry yellow pea crop is exported. A major portion of the crop (40%) has been exported to Cuba in recent years, except for the 1985 crop. About 4,000 hectares of dry green peas were grown in 1986 and production of this type may increase in the near future.

A small portion of the Canadian dry pea crop is wet-processed by Woodstone Foods in Portage la Prairie, Manitoba, to produce a bland pea protein concentrate, pea starch, and pea hulls. The pea protein concentrate is used to a limited extent in human food preparations. The pea starch is used for carbonless carbon paper and has potential use in the potash industry to precipitate clay from the potash solution. The pea hulls are used in high fiber bread.

Pea protein concentrate may also be produced by another, dry process, but the product has a distinct sharp pea flavor which

must be "flashed-off" somehow before it can be used in very many human food applications.

There are two dry pea breeding programs in Canada, one directed by Dr. S. T. Ali-Khan, Agriculture Canada, Morden, Manitoba, and the other by Dr. A. E. Slinkard, Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan. The primary breeding objectives of the Agriculture Canada program are yield, cooking quality, and resistance to Ascochyta pinodes. At the Crop Development Centre, the initial (1972) breeding objective was to increase protein content since the higher the protein concentration of the seed, the higher the protein concentration in the pea protein concentrate. However, results of replicated tests showed that the range of protein concentration was only about 9% (19 to 28%), adapted cultivars averaged about 23%, wrinkle-seeded cultivars averaged about 25.5%, and protein concentration was influenced more by environment than by heredity. There was a negative correlation between seed yield and protein concentration and seed yield per hectare was found to be the major component of protein yield per hectare. In addition selection of high protein parent plants from high protein (usually wrinkle-seeded) lines from USDA Pea Plant Introductions usually resulted in isolation of pea seed-borne mosaic virus infected plants for crossing. This was not detected until the F<sub>2</sub> since symptoms were masked under the cool growing conditions at Saskatoon. All of the above factors combined prompted a change in the breeding objective. Accordingly, starting in 1975 the sole breeding objective at the Crop Development Centre has been yield. In 1976 the first high yield pea cultivar, 'Bellevue', was licensed from this program. It has a 15% yield advantage over the old standard cultivar Century.