Researchers conducted trials throughout the Prairie provinces from 1989 through 1991 to determine the relationship of canola yield and quality to temperature and precipitation received during the growing season. The Western Canada Co-operative canola/rapeseed cultivar trials across the Prairies provided the database for determining yield, quality and other agronomic characteristics of Brassica napus canola cultivars in relation to weather variables of temperature and precipitation. Overall, the research showed that yields of B. napus canola cultivars can be related to temperature and precipitation, and therefore potential yields can be estimated for different areas of the Prairies dependent on these weather variables. This information was valuable to farmers selecting cultivars for planting in their area.

Previous fertilizer research trials had shown that temperature and precipitation had a dramatic effect on the yield of canola (Brassica napus), and that the canola grain crop is most sensitive to July and August maximum daily temperature and precipitation. Because cultivars may respond differently to environmental factors, researchers wanted to determine yield, quality and other agronomic characteristics of canola cultivars in relation to weather variables of temperature and precipitation.

Researchers with Agriculture and Agri-Food Canada in Saskatoon conducted trials through 1989, 1990 and 1991 throughout the Prairie provinces to determine the relationship of canola yield and quality to temperature and precipitation received during the growing season. They also wanted to determine how degree-days or heat unit measurements related to the growth and maturity of canola.

Researchers used the 1989 through 1991 Western Canada Co-operative canola/rapeseed cultivar trials across the Prairies to provide the database for determining yield, quality and other agronomic characteristics of canola cultivars in relation to weather variables of temperature and precipitation. Temperature and precipitation records for the 68 trials were taken from atmospheric environment stations located near or at the experimental sites. Four cultivars were selected, Westar, Profit, Legend and Delta. The data was analyzed to determine if there were interactions between cultivars, sites and years affecting canola yield and quality. Degree-days (accumulated average daily temperature over 5.6 C for the growing season) were calculated from the temperature data to determine if this computation could be related to yield and maturity.
Overall the research results from the three years showed the yields of cultivars among sites in western Canada were positively related to precipitation in June, July and August and were negatively related to average maximum temperatures for July and August. The ranking of canola cultivar yields changed among sites in western Canada. However, for three cultivars, the differences in yield among sites were not great and the temperature and precipitation model could not be used to estimate significant differences in cultivar yield.

Overall, heat units or degree-days were not related to the yield or maturity of canola. However, high temperatures in the late stages of growth resulted in reduced grain yields. Other models rather than heat units may be useful in computing the relationship of temperature to maturity.

The research results did not show any effect of temperature on oil and protein content of canola. However, the oil content was proportionately higher with low protein content of the meal, and conversely, with high protein, oil content was low, which resulted in a negative correlation between oil and protein content. Seeding date affected maturity with the optimum seeding dates of May 14 to 16 producing the earliest maturity date.

The research showed that because yields of *B. napus* canola cultivars can be related to temperature and precipitation, potential yields can be estimated for different areas of the Prairies dependent on these weather variables. This information was valuable to farmers selecting cultivars for planting in their area. Similar information with *B. campestris* would aid farmers in selecting early maturing canola cultivars for planting. The estimate of maturity in relation to the seeding date of cultivars in May was useful in determining an early maturity date. Early maturity helps to avoid seasonal frost damage.

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