

Financial Impact of Climate Change

Case Study 3: Clark Acres Farm^A

Hazard:	EM-DAT classification: Climatological/Drought
Contributing Climate Factors:	Precipitation, temperature. Use “Monthly Drought Index” (results are reported as Standardized Evapotranspiration Index or SPEI) IMPORTANT NOTE: Lower SPEI scores indicate higher severity of drought.
Exposure:	The farm is comprised of 22,000 acres of non-contiguous land neighbouring the south-central Saskatchewan community of Watrous. Of the farmland, 12,800 acres are leased to the Clarks, and the remaining land is owned.
Vulnerability:	Crop yields begin to decline at mild levels of drought, and losses increase with each increment of severity. Crop loss is highly likely during severe and extreme drought.
Loss potential:	Loss of revenues due to decreased yields of lost crops; failure to meet debt obligations if revenues are insufficient



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Clark Acres Farm is a 22,000 km farm located in south central Saskatchewan, near the community of Watrous. The farm began in the 1930's on two sections (1,280 acres) of land, worked by William Clark and his brothers Clarence and Roy.

Over the generations, the farm's success has enabled it to grow into a major industrial farm with a seasonal workforce of 10 farm labourers and many millions of dollars in capital equipment. Like many farm, Clark Acres is quite highly leveraged and carries substantial short- and long-term debt.

^A Some details have been estimated or fictionalized for educational purposes

The farm produces mostly canola, wheat and barley with occasional crops of lentils and flax.

Droughts of some magnitude occur on average once every five years in Saskatchewan. Severe and multi-year droughts have occurred around every 35 years on average over the past 100 years. Saskatchewan has the highest variability of precipitation in Canada (along with the Arctic).

Modern, large-scale, industrial farming is a very capital intensive business. Farmers typically carry high debt loads to finance expensive farm equipment like harvesters and seeders. Furthermore, costs of farm inputs (seed, fertilizer, pesticide) are exceedingly high. These are often purchased on credit at the beginning of the farming season, with the hope that the coming season’s crops will provide sufficient revenue to cover all debt obligations.



Case problem: Given Clark Acres Farm’s exposure and vulnerability, how will climate-induced changes in hazard levels affect its bottom line.

Analytical approach: What changes are anticipated to climate factors contributing to drought, and how might those changes alter: (1) the frequency and intensity of hazard; and (2) probable losses for the farm?