

# CASE STUDY

PROJECT SIZE: LARGE (\$25,000 – \$35,000)

TIMEFRAME: 10 – 12 WEEKS

## Comparing Fibre Crop Varieties From Two Countries

**Client:** A manufacturer of fibre products from outside of Canada was interested in expanding their capabilities into Canada.

**Problem:** The client wanted to evaluate the differences between their material grown locally to the same material grown in Canada. The company had previously evaluated the differences in processing the straw, but wanted to see how the fibres differed physically, mechanically and chemically.

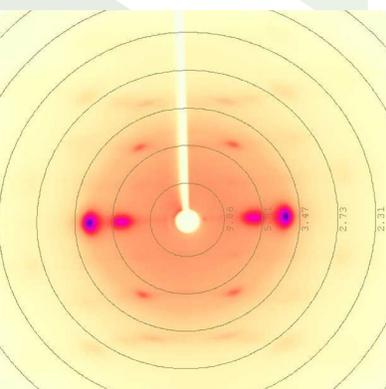
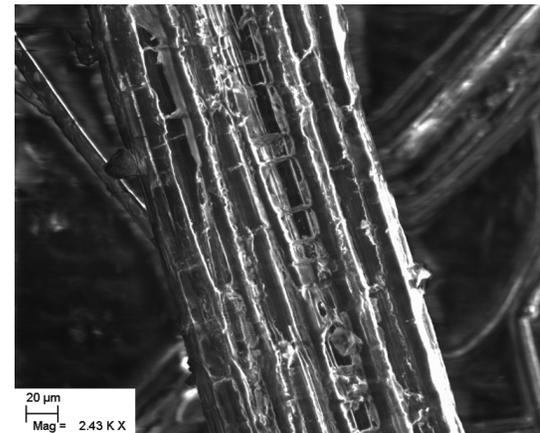
### Details:

- Two linen flax varieties that were not commonly grown in Canada, were grown and field retted at two locations in Canada and one location local to the client.

### Recommended Tests & Rationale:

In order to compare the different varieties of linen flax, FibreCITY created a customized test program to ensure a complete and accurate view of each variety was presented to the client.

- **Single Fibre Tensile Strength and Elastic Modulus** – tensile strength, a highly regarded property by industry, can provide insight into the maturity of the fibre
- **X-Ray Diffraction** – Crystallinity index is an indication of the microstructure orientation of the fibre, which can be related to the tensile strength
- **SEM Imaging** – Qualitative analysis to determine the retting level of the samples, including observation of fibre surface topology, level of cleanliness and degree of separation into technical bundles
- **FTIR Analysis** – Qualitative analysis on the retting level of the samples to detect pectin, which literature has indicated is directly related to the degree of ret
- **Chemical Composition** – Quantitative analysis of pectin and cellulose levels



### Outcome

The preliminary investigation provided encouraging evidence that the client's local variety could successfully be grown in Canada. The results indicated that the clients locally grown fibre was superior to the Canadian grown in terms of mechanical and chemical properties. The results suggested that retting plays a more important role in the quality of fibre than the growing location.