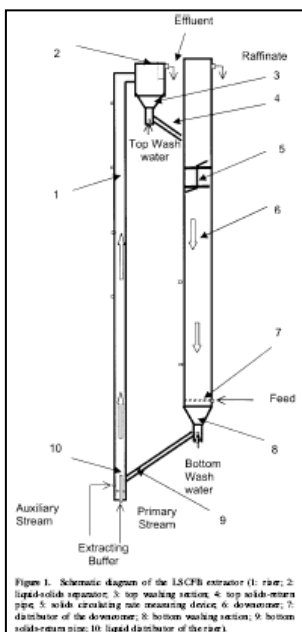


# Novel Protein Separation Technology

## BACKGROUND

Soy 20/20 recognized a significant gap in the Canadian soy protein value chain – a total lack of soy protein processing. Soy proteins are one of the most widely used and important soy-based food ingredients, yet Canada produced none. This lost opportunity was costing the Canadian soy industry over \$11 million annually. Further, it was felt that without a soy protein processing presence, Canada would be unable to capture the value of new soybean varieties with special protein profiles. Typically, the scale and technologies employed by the major protein producers in the US were not conducive to small-scale isolation of specific, fragile proteins. The industry needed to bridge the protein gap.

Soy 20/20 learned of a patented separation technology – liquid-solid circulating fluidized bed



reactors – developed by the University of Western Ontario (UWO) Department of Chemical and Biochemical Engineering. The continuous flow process could simultaneously adsorb and then release proteins using two inter-connected fluidized beds. The technology could be adapted for soy protein and protein sub-unit separation if researchers identified the right reactants and parameters. A new gentle process to separate protein from inputs made in Canada without the use of hexane, heat, or drastic pH changes would open the door to novel domestic ingredient production. With a goal of commercialization, this idea fit with the long-term vision to establish a flexible processing facility to harvest the novel products and capture immense value of specialty trait soybeans.

## STRATEGY

Soy 20/20 wanted to build a collaborative team to link food scientists from the University of Guelph with engineers from UWO in order to prove that the concept was feasible and to characterize the food functionality of the resultant proteins. To bring the idea to fruition there was a need to establish a team and secure funding to support the research.

## RESULTS

In 2004, Soy 20/20 brought together researchers from the UWO and the University of Guelph to investigate this innovative Canadian technology for the recovery and isolation of soy protein and soy inputs. A research plan identified the goals and needs of the project. Soy 20/20 took the lead by sourcing \$250,000 for the project by writing funding applications and coordinating the application process. The Ontario Soybean Growers, the Manitoba Pulse Growers Association, Soy 20/20, and UWO provided private funding and ultimately secured a grant of \$106,000 from the Agricultural Adaptation Council's CanAdvance Program in 2005. With the funding secured and the team in place, Soy 20/20 helped the researchers secure samples of different forms of soy inputs. Soy 20/20 maintains involvement by attending update meetings, offering insight, and monitoring progress of the project. If the technology is successfully adapted to soy protein, Soy 20/20 will lead the charge for commercialization

## IMPACT

The research is on track, on budget, and has been successful to date. The team has identified the reaction parameters for multiple proteins and is now investigating the ability to target specific proteins on the large-scale apparatus. Research projects require long-term vision and patience, but this project will play a key role in the development of a soy protein industry in Canada and in a general greater ability for the value chain to reap value from commodity and special use soybeans.

## STATUS

Research ends in 2009 with commercialization efforts to follow.