

SOY20/20

Industrial Soybeans

Soy oil and industrial bio-products

Vegetable oils can replace petroleum in many industrial applications to create bio-products. The creation of alternative markets for soy oil will facilitate an increase in domestic crushing. At present, the development of industrial markets is promising, but significant constraints remain.

Bio-Products

- Bio -diesel
- Polyurethane foam
- Solvents
- Lubricants
- Adhesives
- Inks
- Waxes
- Resins

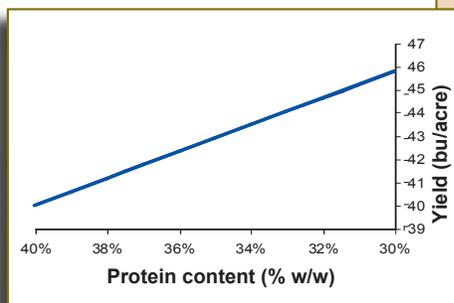
The Economics of bio-based industries

Economics constrain the commercial development of bio-based opportunities. Bio-products carry two types of risk: technical risk associated with manufacturing and performance, and market risk. Bio-based products that are lower in cost and do not sacrifice value have a greater chance of being adopted because they only carry the technical risk, not the market risk.

Today, the economic feasibility of using soybean to make industrial products is weakened by the opportunity value of soybean oil for human consumption. This value equation becomes self-limiting as we become locked into single market opportunities. We have however, the ability to manipulate the composition of the bean in ways that will change the economic equation, creating an opportunity for industrial use while maintaining or increasing farm value.

Progress is possible through ingenuity and vision

Based on current understanding of soybean energy partitioning it will soon be possible to create a soybean that is lower in protein, higher in oil, and higher in yield. Varieties such as these could be sold for a lower price per bushel, while maintaining profit per acre. Maintaining



the protein value for these beans would reduce the cost of the oil making industrial applications more attractive. (see www.soy2020.ca for more information).

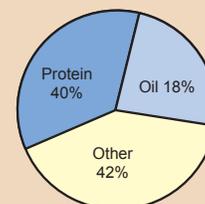
The future of industrial uses for soybean

This exciting model requires the combined efforts of researchers, government and industry. *The Soy 20/20 Project* is working with the research community to develop a specialized industrial soybean that will increase the likelihood of a bio-based sector. As new industrial bean markets emerge, farmers can begin to move up the value chain by producing use-specific beans, and positioning themselves to produce and trade protein and oil instead of grain.

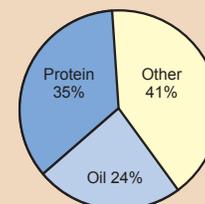
We have an opportunity to capitalize on our identity preservation system to be first movers in the development of an industrial crop. The realization of this opportunity will lead to the development of new soy based industrial value chains, with incremental benefits for the entire rural economy.

Industrial soybean composition

Traditional 40 bu/ac



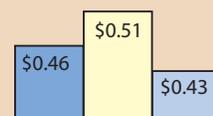
Industrial 43 bu/ac



Value Chain model retains profits for all players:

Industrial manufacturer has an alternative feedstock to petroleum
 Crusher maintains margin despite less co-product (meal) per unit of oil due to the lower price paid per tonne and increased oil
 Farmer retains value/acre based on higher yield per acre and a lower price received per bushel

EXAMPLE - A designer soybean would reduce the price/litre of soy-based biodiesel.



■ Diesel price
 □ Soy based biodiesel price
 ■ Biodiesel soybean price