

Soy
FOCUS

The logo features the word "Soy" in a sans-serif font above the word "FOCUS". The letter "O" in "FOCUS" is replaced by a circular sunburst or fan-like graphic composed of many thin, radiating lines. The entire logo is rendered in a light yellow color against a dark blue background.

Soy 20/20 Annual Report 2006

ACKNOWLEDGEMENT OF FUNDING

THE SOY 20/20 PROJECT IS FUNDED BY THE FOLLOWING PARTNERS:



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| Agriculture and Agri-Food Canada (AAFC) | www.agr.gc.ca |
| Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) | www.omafra.gov.on.ca |
| University of Guelph | www.uoguelph.ca |
| Ontario Soybean Growers (OSG) | www.soybean.on.ca |

The Soy 20/20 2006 BOARD OF DIRECTORS:

| | |
|----------------------|---|
| Chair: | Peter Hannam, Woodrill Farms |
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| Directors: | Don Taylor, OMAFRA Alan Wildeman, University of Guelph Gary Fread, member at large, Guelph Food Technology Centre |
| Ex-Officio Director: | Ezio DiEmanuelle, AAFC |

Soy 20/20 STAFF:

| | |
|-----------------------------|--------------|
| Executive Project Director: | Jeff Schmalz |
| Project Director: | David Lee |
| Secretary Treasurer: | Ralph Shaw |

MESSAGE FROM THE CHAIR

It is hard to believe that four years have gone by since we first envisioned what eventually became Soy 20/20. The idea of closing the space between governments, farmers, industry and academia was extremely innovative at the time. The leaders behind Soy 20/20 and the people with whom we work have been able to maintain that innovative frame of mind ever since. By combining this with energy and true industry interaction, we have created a culture that values results and action.

This year has marked several milestones. We hired a new Executive Project Director, Jeff Schmalz, and more recently hired a new Project Director, David Lee, as well as a new Secretary Treasurer, Ralph Shaw.

We want to welcome them to Soy 20/20 and express our great appreciation for the leadership and energy that our previous staff committed to Soy 20/20.

The key to our continued positive results lies in our ability to focus. We focus only on opportunities for soybeans. We focus on our core activities - aligning research, capturing opportunities and developing an innovation climate. We focus on those ideas which make the most sense for the entire Canadian soybean value chain, including farmers.

The world is rapidly adopting more bioproducts, particularly from soybeans. While there was hardly any research activity in bioproducts prior to 2000, we learned at the World Congress on Industrial Bioproducts in Toronto that in 2005 alone there were over 20,000 bioproduct patents issued world wide.

In Canada, we must catch up. Bioproducts from soybeans present many opportunities. We must ensure to the greatest extent possible that soybeans are grown, processed and manufactured in Canada. Bioproducts and more sophisticated food uses provide ample development opportunities for Soy 20/20 and amazing growth potential for Canada.





The interest and excitement around opportunities for soy in food and bioproducts has never been greater. The relationships we have developed and nurtured with our ever growing network of companies and researchers have enabled us to produce results.

As you will read in the attached Annual Report, Soy 20/20 has had another productive and progressive year and we look forward to the future. As we strive for even greater success in 2007, we must work together with all stakeholders to focus on truly seizing new opportunities for the Canadian soybean value chain.

Peter Hannam



Chair, Soy 20/20 Project

Focus ➔ *Wealth Generation*

MESSAGE FROM THE EXECUTIVE PROJECT DIRECTOR

I am thrilled to have become a part of this Project in 2006. The reputation of Soy 20/20, the work done to date and the achievements were not lost on me as I accepted this prestigious post in November. I am fully committed to continuing this tradition and further enhancing the emphasis on action and results that has made Soy 20/20 what it is.

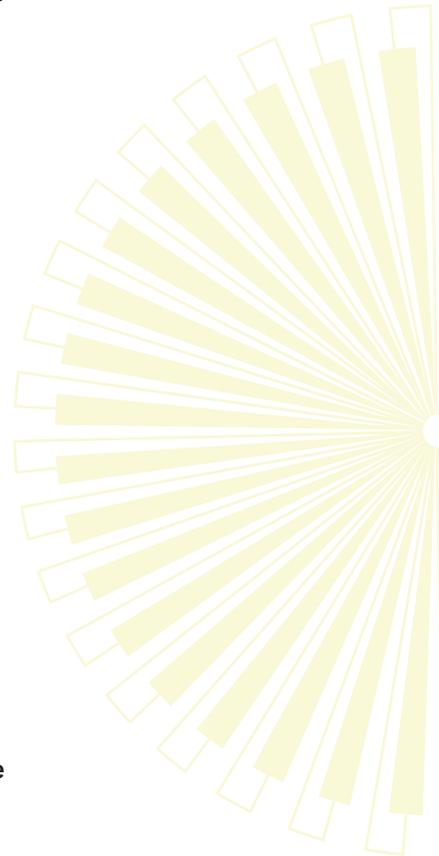
The continued input and support of our member organizations in providing the ingredients and resources to get the job done is truly appreciated. The passion and involvement of individual Directors on the Board in providing the recipe and tools to be used has been instrumental to the success of the project. And the work of past and present Soy 20/20 staff members has brought all of it together very effectively. Thank you to all. Now we need to turn up the heat and cook!

My background includes many years in the consumer packaged goods industry, strategically creating wealth by developing and marketing profitable brands to consumers. As a business person, I understand the importance of building strong value chains for mutual benefit and long term success. I recognize opportunity when I see it...and there is a ton of opportunity for Canadian soybeans!

With the emergence of the functional food and bio-products industries, I am very excited about Soy 20/20's role in keeping Canada's soy industry on track, laying new track and feeding the engine of change so that we can move even more rapidly towards commercializing opportunities. My experiences and insights have taught me one very important thing - a targeted, focused approach is critical to producing results.

Focus is what this project has been able to do well and we will continue to focus strategically on future wealth creation opportunities.

Our strong, but limited, resources will be dedicated toward maintaining momentum and turning potential opportunities into profit for the sector. Amongst the myriad of business development





possibilities that constantly come across our plate, we will focus our time, talent and effort against those which we feel will provide the greatest long term benefit to the entire soybean industry in Canada - including farmers!

We can do this. As shown in this report, the past year has been an exciting one. We have learned and accomplished a great deal. We have continued to work and think about how best to work, in all four areas of activity. As we move ahead, our vision will remain unchanged - 'leading in value-added innovation'. For Soy 20/20, this translates into one thing....the creation of wealth in the entire Canadian soy value chain.

I look forward to working with all stakeholders.

Jeff Schmalz



Executive Project Director, Soy 20/20 Project

INTRODUCTION

Mandate: “To stimulate and seize new global bio-science opportunities for Canadian soybeans”

Vision: “Canada's Soybean Industry - Leading in value-added Innovation”

Soy 20/20 was established to identify opportunities through market analysis, increase the alignment and effectiveness of public sector research and work with companies to develop or increase demand for Canadian soybeans.

This year we worked hard to maintain our momentum in these core activities and infuse it with new energy in an effort to achieve transformational change throughout the soybean value chain. We are making progress. In this report we highlight some achievements from the year gone by in four sections: creating an innovation climate, realizing opportunities, increasing research effectiveness and operational excellence.



We need to be focused

CREATING AN INNOVATION CLIMATE

The soybean industry will be even more successful when we achieve transformational change through innovation. We need to be different. We need to be focused. Soy 20/20 emphatically supports this concept and works very hard to create, promote and encourage a climate of innovation for all stakeholders.

In this area, our aim is to provide leadership to the soybean community in identifying and assessing the potential and feasibility of alternative markets for Canadian soybeans. This all begins by analyzing markets.

There are vast numbers of soy derived opportunities in the world and there are more and more each day! Around the globe, work is being done in the areas of research, policy, investment and marketing to flush out the best ideas and bring them to the market. This is good news for the soybean sector. But, in this world, we are small. We are also unique. We must be sure to identify and seize those ideas which are best for Canada. This is no easy task.

There is no one single market that will change the entirety of Canadian soybean value chains. Instead of spending a lifetime looking for a needle in a haystack, there are a number of smaller opportunities that collectively will move some of what we do into new directions in the years to come. We work to identify these markets.

In the past, Soy 20/20 has been a clear leader in the development of independent and thorough analyses of opportunities, including economic and technical feasibility. This year, we performed several independent market/technical analyses of potential opportunities within soy based value chains. With a focus on commercialization, many analyses are conducted for specific, defined business opportunities and do not unrealistically make assumptions based on world market potential. With this in mind, Soy 20/20 conducted technical and business analyses for the following soy opportunities

Results from these dynamic and fluid analyses are shared with the appropriate parties. Those opportunities where the impact to the Canadian soybean industry is significant, in terms of volume or value, are being pursued aggressively.

Soy derived polyols

Polyols are platform chemicals most commonly used in the production of polyurethanes. Polyurethanes, in turn, are a ubiquitous family of polymers used in a number of different ways and found in everything from foam cushions to computer printers. A handful of companies and a great deal of research has shown that vegetable oil based polyols (where multiple alcohols are attached in each fatty acid chain) can be partially substituted for traditional, petroleum based polyols. This generic chemical family has many opportunities for incorporating soy oil.

We believe that this area holds promise for the Canadian soybean sector, given the existence of an innovative polymer industry in Canada, the strength of the receptor manufacturing sector and the ability to offer end-use specific varieties of soybeans in the long term.

A brief analysis of only one, albeit important, polyol end use shows how significant this opportunity truly is.

We project that a company could capture 50% of the growing North American 590 million kilogram market for flexible polyurethane foam used in the transportation industry. Assuming that about 1/3 of the polyol component of the polymer mixture could be soy derived, the amount needed could exceed 78 million kilograms requiring 473,500 acres of soybean annually.





Quality cheese analogues

Cheese like products which serve alternative consumer desires are an area that shows promise. Companies seeking to utilize Canadian derived oil and protein ingredients to produce unique quality cheese analogues may find significant market success. Soy cheeses can be made by either blending soy oil with soy and dairy proteins, or by using full fat soy flour as a base.

We project that a quality soy “cheese” product could be used in the food service industry to partially replace dairy mozzarella based on cost and/or consumer demand. If a soy product could capture 2% (blended or used as a stand-alone product) of the 125 million kg food service market, it could utilize a significant amount of soy. A product comprised of 66% soy oil would require over 8,000 acres of soybean. A 50% soy flour derived product could utilize 1,147 acres annually of identity preserved soybeans.

Building materials using soy derived resins

A number of products used in home and office construction utilize polymers made with chemically derived resins. From pultruded products to insulation to plywood, there are various ways to introduce soy. Soy based inputs are attractive from economic, environmental and functional standpoints.

In past years, we have highlighted the opportunity to use soybean peroxidase in plywood production. Furthermore, the US has completed research to show that soy flour can also be used successfully in the production of plywood adhesives.

Related to soy derived polyols, we have analyzed the market for soy based polyurethane resins that could be used in fiberglass products. The opportunity is significant and a single, well developed business could realistically use the equivalent of upwards of 61,000 acres of soybean annually.

Cold pressed oil

As consumers continually seek out healthier food products, much attention has been paid to quality food oils. Specifically, there is indeed an opportunity to take soybean oil from the 4 L jug on the bottom shelf to the higher priced health aisle.

A company in this niche market could successfully market over 216,000 L of soy oil that could easily utilize 300 acres of soybeans annually.

Next generation meat analogues

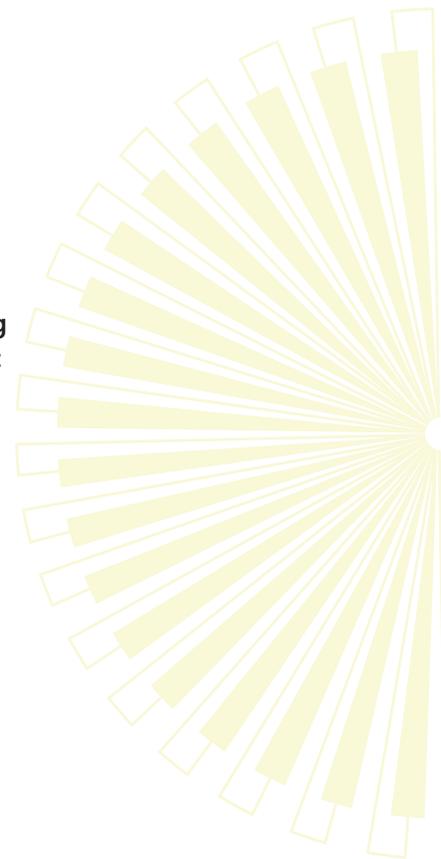
Along with a search for healthier oils, consumers in certain demographics are also re-evaluating the variety and types of protein products that serve as the foundation of their meals.

The art and science of creating soy based meal solutions in place of traditional meats has come a long way in recent years. We project that a company with a solid initial production capability and excellent market savvy could utilize the equivalent of over 1,500 acres annually.

High protein beverages

The market for high protein beverages continues to be crowded. But there remain opportunities for quality products that can appeal to consumers and use branding to clearly differentiate amongst the myriad of products on the shelves.

In working with firms, we have estimated that a well marketed product could use the equivalent of over 5,000 acres of soybeans annually.





High antioxidant, black soybeans

The use of ingredients to fortify and improve the profile of foods is becoming a massive opportunity in the food sector. The attention paid recently to products that offer high anti-oxidant levels to consumers has been great. We believe that novel soybeans could capitalize and capture a portion of this hype.

The black hulls of specialty, black soybeans could be economically produced and utilized as a functional ingredient in a host of traditional soy and mainstream foods.

If this ingredient were incorporated into a niche market bread at 1% of the dry blend, it could require 260 acres of soybeans annually.

Seed coat derived anti-microbial peptides

The use of the soybean seedcoat as a bio-refinery is of extreme interest. A lot of work has already been done to develop the technologies to locate proteins and enzymes in the hour glass cells of the hull. One potential market opportunity that has been considered to utilize this platform technology is in producing anti-microbial peptides to supplement and/or replace traditional antibiotics in the livestock industry.

Some work has been done to show that antimicrobial peptide can be effectively used in the livestock health sector to partially reduce reliance on antibiotics used to treat disease, prevent infection and support growth.

If soybean seedcoat derived antimicrobial peptide could capture 1% of the North American antibiotic market, we project that the equivalent of 17,500 acres of high value soybeans would be needed annually.

Highly functional soy flour

The opportunity to make and market full-fat soy flour has been and continues to be an area of focus. The ability to produce ingredients that can work well in a variety of applications to increase protein without negatively impacting the sensory qualities has come a long way in recent years. Now, there is an opportunity to incorporate such products into a wide range of foods based on market cache, functionality and health. Whether replacing imported ingredients, finding new uses, or building new markets, Canada can add a great deal of value to soybeans by producing flour.

A business proposition to capture this concept and make it a reality is very feasible. Such a proposition could produce at least 2,500 tonnes annually requiring over 23,000 acres of beans.

Mainstream, commercial candle wax blends

Soy based wax and wax blends continue to be of interest. The use of wax beyond the cottage candle industry represents one of the more significant opportunities.

One example of this is in the mainstream candle industry. Dominated by major international players, the home fragrance industry is big business. Getting buy-in from a major player would utilize a significant amount of soybean oil.

We have projected that if a major player in the home candle and fragrance market shifted 10% of paraffin utilization to soy wax (either as a blend or in particular products) it would use the equivalent of 5,100 acres of soybean annually.



Each opportunity is unique

REALIZING OPPORTUNITIES

In creating an innovation climate, we search for and find the best ideas. Some times we are the champions and other times the ideas come to us. But the search is just the start of the process. We have a plethora of business development ideas, many of which could be rendered meaningless without the interest and financial support of industry. At Soy 20/20 we have built an atmosphere that strives for action and results.

Our job in realizing business opportunities and thereby capturing value for Canada is:

- to act as a facilitator, in bringing companies together
- to direct their focus towards incremental profit areas
- to assist them by helping with a variety of business activities
- to assist them in sourcing required capital
- to collaborate with other like-minded organizations

Throughout the past year, Soy 20/20 has been engaged with over 15 small and medium sized food companies, start-ups and multi-nationals. These companies have vastly different needs. There is no one formula for success or road map to follow; each opportunity is unique.

In many cases, our ability to get truly involved with the above companies and help direct their focus is crucial to achieving success. In other cases, our ability to simply provide timely and accurate information is highly regarded as a service to the people and firms that actually create wealth. Our network of contacts is constantly being strengthened with cross collaborations, communication, unique alliances and new relationships. The value of this intra-industry networking is tremendous.

The value of networking

As we move forward, there are a handful of key areas on which we will focus. We will accelerate those opportunities which offer the greatest long term potential to create wealth in the entire soybean value chain, including farmers, by having potential for germplasm or process specificity that is not commodity based.

These include:

- polyols for use in the production of flexible and rigid polyurethane based products and resins, in particular for use in the manufacture of polyurethane foam components for the North American transportation industry
- encouragement of more responsive crushing that will enable us to capture the value of specialty soybean varieties and deliver that value to the market (food and bio-product) at a scale and speed which is necessary
- natural, gently isolated proteins with unique functional properties and market cache that can replace foreign produced protein ingredients in existing products and be utilized, based on functionality, in a host of new products and applications
- full fat micro milled flour ingredients for use in a wide range of food and beverage applications with particular emphasis on dairy analogues and baked goods
- cold pressed specialty oils for specific food and chemical end uses
- seed coat derived molecules (proteins and enzymes) to be adopted and developed by industrial processing, bio-product and animal health industry participants and firms



Play to Canadian advantages

INCREASING ALIGNMENT BETWEEN PUBLIC SECTOR RESEARCH AND MARKET OPPORTUNITIES

Whereas much work surrounding the capture of opportunities is centered on the near term, our efforts in research coordination are much more long range. Thankfully, we have a solid foundation on which to build as we align research with market opportunities.

The number and quality of people involved in traditional soy related research is outstanding. The growth in soybean production, efficiency, utilization and value-addition over the past 15 years is testament to that. This well networked branch of the research continuum is most often capable of running on its own legs.

However, there is still much that can be done in the area outside of normal soybean production and utilization work. Committing additional resources to the development of novel traits and products that play to Canadian advantages is essential to the long term sustainability and improved profitability of all players along the value chain in this country. We help to support this development by engaging researchers not well versed in soybeans (engineers, chemists, and food scientists) and supporting innovative projects (both company and research program driven).

There is still much more room for truly outside-of-the-box thinking that envisions beyond what is known to what can be; from what is being done to what can be done. By the time we read it or hear about it, it is usually too late. Much like creating an innovation climate, determining the best new research directions are no small task. The extensive and intensive amount of work being done on soy around the world is astounding.

There is a vast amount of work being undertaken by the private sector which is not often in need of significant support and input from Soy 20/20. The fact that major players are fully engaged in end use trait development is good news for Ontario, which is well positioned in terms of experience,

Envision *what can be*

scale and infrastructure to capture the mid-sized, end-use specific opportunities as they emerge. It also presents a massive opportunity for Ontario to focus public sector research on those niche opportunities that have significant value potential but which are not of large scale interest to major multi-national developers of germplasm. In either case, there exists a real challenge: deciding where to dedicate limited and competitive public funds so as to create the greatest return on investment for Canada.

As has been the case over the past four years, we have the opportunity to compete in a wide variety of sectors for public support and we have the advantage of a plethora of compelling industrial opportunities for soybean fractions. Our challenge is the need to focus on those opportunities that make the most sense for Canada. This type of truly strategic thinking requires complete value chain buy-in, deep understanding of the technical needs and constraints and full engagement of commercialization partners. On top of this is a realization that the focus of Soy 20/20 on this area of the Project has shifted over this past year.

So, how do we do operate? How do we determine where the gaps are and how to lead our excited and passionate network of public sector researchers, both traditional and non-traditional?

We lean on our researchers, experts and world class in their own fields, to help us help them. We speak only of what we know and don't pretend to know everything. We combine this strategy with our thorough understanding of business and the markets. Then, we act - we move to turn these ideas into reality. Action is the key!

As such, we support new, incremental work in the areas that are not a part of the traditional soybean development. We are confident that the results of this work will prove fruitful. Furthermore, because of new projects supported by Soy 20/20, new minds are being cultivated and greater soy related expertise is now being developed in Canada. Building this critical mass among tomorrow's scientific leaders will play an important, and often under-estimated, role in developing the long-term ability to attract investment, commercialize research, support commercial enhancement and make new discoveries that will positively impact the soybean industry.





This year we have continued to support and be involved with exciting projects that connect industry to industry and industry to non-traditional academic partners such as:

- the application of the peroxidase enzyme from soybean hulls to the polymerization of phenols and cresols in industrial waste water
- the use of a liquid-solid circulating fluidized bed reactor to isolate natural, highly functional proteins
- the development of anti-microbial peptides in the soybean seed coat to serve as a platform for future animal health product innovation
- the breeding of a soybean high in oil that will be well suited toward long-term bio-product efficiency improvements
- the testing of patented structured oils to support utilization as an ingredient in the food industry

Eight new research projects were submitted or supported this year, over half of which were led by the private sector. A few projects are still under consideration have a value in excess of \$375,000.

OPERATIONAL EXCELLENCE

Diligence and untiring work in the previous three areas is essential. It is, importantly, complimented with a commitment to running the Soy 20/20 Project in an extremely professional manner. Operational excellence is not our target; it is our responsibility.

A key component of our effective operations lies in the ability to leverage the collective might and support of our four founding members, while remaining non-government and at arm's length to each. This allows us to be accountable while being able to do what is necessary in confidence with real world clients, providing freedom to operate efficiently for the good of the entire soybean value chain.

With such focus, support and freedom to act at hand, we are clear as to where our mandate starts and where it finishes. But, there is also recognition of the need for alignment and synergy with other initiatives and organizations operating at the interface between research and industry. In an effort to achieve optimal efficiency and impact, we communicate and collaborate effectively with like-minded entities to ensure that duplication is limited and results maximized.

As testament to the Project's responsible, collaborative, independent and accountable approach, reports, financial statements and meetings with the Board of Directors for Soy 20/20 have occurred regularly as scheduled. In addition we are eager to accommodate the needs of our members and stakeholders, when required. Continued responsible care and management of costs and operations is demonstrated by meeting budget and program targets, as verified by third party audits.

The successful man is the average man, focused.

- Unknown



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