

Agency Establishment Plan

The following individuals (Plan Proponents) submit this Plan for consideration:

- Tom Mann, Drinkwater, SK. (fenugreek grower)
- Cal Kelly, Regina, SK. (fenugreek grower)
- Emerald Seed Products Ltd. Avonlea, SK (fenugreek processor – on behalf of fenugreek growers)
- Saskatchewan Pulse Crop Development Board

The intent is to establish a:

- Development Commission
- Development Board
- Marketing Board
- X Add a crop to an existing Development Board

The agricultural product(s) or commodity upon which the proposed Plan is focused is (are):

- Fenugreek

A. Agency Mandate

Describe what purpose the agency would work to fulfill or, alternatively, what net benefit Saskatchewan's agri-food industry would gain with the establishment of the proposed agency.

There is consensus among fenugreek growers that further research into production practices, plant breeding, and agronomy, is needed for the industry to move to the next level. Growers believe becoming part of Sask. Pulse Growers and collecting levy through SPG, will greatly bridge the research gap and sustain growth of the crop.

Fenugreek is a relatively new crop to Saskatchewan. It is a profitable rotational crop, with nitrogen fixation capabilities, good drought tolerance, and high yield potential. Fenugreek development in this province has largely been producer driven, and privately funded over the past 20 years.

B. Industry and Market

With respect to the agricultural product(s) on which the agency's mandate is focused:

1. *Describe the specific market and how it has evolved.*
2. *Using statistics, analysis and additional research (where appropriate), provide an overview of the history of the industry and the future market expectations.*
3. *Describe the envisioned role of the agency in developing the industry.*
4. *On a preliminary basis, outline the research and development areas that could form the basis of the agency's work.*

A reference period of three to five years prior to and following the establishment of the agency is required.

Historical Production & Trade

Fenugreek (*Trigonella foenum-graecum* L.) is a self-pollinated, small-seeded annual legume (family Leguminosae) that has been traditionally grown as a spice and a forage crop. Historically it has been grown in the Mediterranean region, and Asia. The major seed producing countries are India, Ethiopia, Egypt and Turkey. In India, the seeds are used in curries, dyes, and young seedlings eaten as a green.

Production data is very limited, as is world trade and international price data. India is the largest producer with an annual seeded area of 95,000 ha, producing 41,000 metric tonnes of seed mainly for domestic consumption in curry powder blends. India is also the leading exporter, at approximately 15,000 MT. Fenugreek trade as a spice is relatively small compared to other spices. There has been limited acreage in Europe and Australia amounting to less than 500 ha. There is no data to indicate any commercial production in the USA. American spice importers prefer Indian fenugreek.

Fenugreek seed was first grown commercially in western Canada in the early 1990's. The first Canadian developed cultivar, AC Amber, was released from AAFC Morden, and was grown briefly in the 1990's in southern Manitoba, and at Eston, SK. Early production of AC Amber was fraught with disease, frost, and poor seed quality. Alberta had limited acreage as a forage crop, with moderate success. Fenugreek production in Manitoba has not been successful, due to higher rainfall and humidity for disease management.

In the early 1990's the Crop Development Centre in Saskatoon, led by Dr. Al Slinkard, screened hundreds of fenugreek varieties from around the world. He used the best-suited fenugreek selections to begin a small breeding program co-funded by Emerald Seed Products and ADF. This resulted in the first successful Saskatchewan fenugreek release, CDC Canafen in 1995.¹ It was first grown commercially in the early 2000's and proved to be better adapted to the brown and dark-brown soil zones of Saskatchewan than previous varieties. CDC Canafen has earlier maturity, and improved end-use qualities for processing into food, nutritional and health products. CDC Canafen remains the main commercially grown variety in Saskatchewan. It has good yield potential, fair fungal disease resistance, fair standability, and is intermediate to late in maturity in Southern Saskatchewan.

New Market Opportunities

Emerald Seed Products (ESP) began a research and development program in the 1990's to process fenugreek seed into new value-added components, rather than traditional spice uses. Emerald became the first and only company in the world to commercially fractionate fenugreek into component products when it built a dedicated fenugreek processing plant in Avonlea, SK in 2004.

¹ Fenugreek in Saskatchewan, Pub. 2003. Sask Ag & Food.

ESP was careful to match production to existing market demand and processing capacity, and avoiding wild cycles of boom/ shortage, and bust/ over-supply. ESP overcame many processing issues and developed a proprietary process to isolate fenugreek component products. This processing capability gives Saskatchewan growers a distinct advantage in the global market. ESP has expanded 4 times in the past decade, adding new processing capacity.

Emerald Seed Products - **Current Markets** for processed fenugreek products:

- Food Hydrocolloid or Gum: Stabilizer, thickener, fat-replacer
- Industrial Polymer – used in “fracking” as a reagent
 - Mining applications – flocculation, dispersing agent
- “Maple” Flavoring Extracts and Concentrates
- Pharmaceutical/ Nutraceutical, diabetic applications
- Specialized Feed Supplement, Animal Health/Nutrition
 - Natural feed stimulant, palatant across all species
 - Natural growth & lactation stimulant in dairy, swine

A major market for fenugreek gum is as an industrial polymer. Industrial applications include petroleum drilling for “fracking”, and in mining industries as an adjunct polymer to purify various ores. Development of these markets has taken many years of research and development with end-users to validate the benefits of fenugreek gum in these industries. This work is on going, as new end-use applications are being tested at present. A significant increase in the size of these markets is expected in the next few years as demand grows for industrial applications and feed supplements. Currently ESP is working with over 20 companies, both large multinationals and mid-sized international companies. Several large and important Canadian companies are current customers of ESP’s industrial grade fenugreek products. Asian is the largest market for fenugreek feed supplements.

It is expected that more processing capacity will come on line when new companies enter the fenugreek processing business in the medium and long-term.

Saskatchewan Acreage

This slow expansion of fenugreek acreage over the past decade is reflected in provincial data supplied by the Saskatchewan Crop Insurance Corporation. It is likely that fenugreek acreage may be under-reported, with some uninsured acreage. It is estimated that 2018 fenugreek acreage was between 3-6,000 acres. This acreage is expected to increase significantly as end-use demand and production capacity increases in the next few years.

Table 1. SCIC Insured Fenugreek Acres
Fenugreek Seeded Acres by Year

Year	Grand Total
2005	445
2006	362
2007	1,106
2008	662
2009	577
2010	165
2011	132
2012	976
2013	2,507
2014	3,760
2015	1,886
2016	4,367
2017	2,746
Grand Total	19,691

Areas of Adaptation & Potential

Initial fenugreek production was confined to the Brown Soil Zone, and the drier areas of the Dark Brown Soil Zone, due to its relatively long maturity of 110(+) days. However, fenugreek has been successfully grown at many locations in the Dark Brown Soil Zone (occasionally in the southern Black). Recently there is less concern about frost and weather damage because CDC Canafen can be processed successfully even if it has been weathered. While fenugreek has good drought tolerance, it also responds well to moisture, with top-end yields coming in at 30 – 50 bushels per acre in different regions of the province. Dr. Al Slinkard has stated that the only limitation to fenugreek production in Saskatchewan will be processing capacity. While capacity and demand has been growing substantially in recent years, there is agreement that the province is on the verge of major growth in market demand for fenugreek in the next few years. In the long-term, it is feasible that there will be a need for many fenugreek processing plants to service more than a hundred thousand acres of fenugreek in the coming decades, as industrial applications create new demand.

Fenugreek Grower's Experience
Tom & Janice Mann, Drinkwater SK

“ We have grown fenugreek on Regina Heavy Clay Soil at Drinkwater, SK for 12 years. The accumulated acreage in those 12 years is 5,826 acres. The weather during that period has varied greatly from too wet in 2014, to an extended drought in 2017 to severe hail (2008), to an early heavy frost (2004). The yields have varied from 40 bushels/acre in 2012, down to near zero in 2008 & 2014 due to flooding.

Fenugreek has many positive qualities that make it a good choice in any rotation. It should be seeded by mid-May which allows it to mature by mid-September. Fenugreek can be pre-harvest desiccated with glyphosate.

Harvest is flexible and it can be delayed until all other crops that are sensitive to quality deterioration are harvested. A wet dry cycle on mature fenugreek can sometimes be an advantage for processing.

Fenugreek is harvested similar to lentils with a flex header - therefore it should be land rolled in the spring in order to level the field for a quality harvest. We have been using a seeding rate of 32 to 40 pounds an acre.

Moisture content in stored fenugreek is regarded as safe at 12% to 13%. The straw that is left after fenugreek greatly enhances the soil tilth (like other pulses), but it needs to be chopped and spread as completely as possible by the combine.

The economics of growing fenugreek are good and relatively stable, with a 30 bushel crop currently grossing \$500 per acre.

I believe that an increase in fenugreek acreage in Saskatchewan must be coupled with increased research and processing capability. It appears that we are on the verge of sustained growth in this industry and we need to take the necessary steps now, to improve the on-farm agronomy of growing fenugreek.”

Tom Mann

Future Fenugreek Research & Agronomy Needs Under SPG

This list of research priorities has been put forward by Saskatchewan fenugreek growers. This research would improve fenugreek productivity, and fenugreek production economics on the farm. These are ranked in order of importance:

- 1) Improvements in plant breeding & variety selection:
 - a. Improvements needed in disease resistance (cercospora), better yield, better standability (lodging), and early maturity
 - b. There has only been one successful, commercial variety released in Saskatchewan in the last 25 years.
- 2) Fungicide research for control of cercospora fungus
 - a. It is THE main disease issue in wet, humid years.
 - b. Only partially controlled by foliar fungicides
- 3) Herbicide research:
 - a. Examine tolerance 2-4D (phenoxy chemistry) and other Group 4 chemicals potential for in-crop use for fenugreek.
 - b. Examine Odyssey (minor use registration), Edge, Valtera (fall applied) plus Glyphosate with 2,4-D Ester as a pre-seed burn-off.
- 4) Improve straw management & utilization.
 - a. Fenugreek can produce a large yield of very sinewy straw. This produces challenges for seeding the following spring's crop into fenugreek stubble.
 - b. Examine ways to utilize fenugreek straw. It can be a good high-protein feed, but more work is needed on validate its potential feed value, and cost-benefit to livestock producers.
- 5) Improvements in rhizobium inoculant
 - a. Selection to boost N availability, improve yield
 - b. No specific fenugreek strains available in Canada
 - c. Examine how inoculation can impact yield and plant density, especially on fields that have grown fenugreek previously.
- 6) Fertility trials
 - a. Optimum fertilizer rates needed
 - b. Fenugreek may use more nitrogen than other pulse crops.

Levy Collection Estimates

The following is an estimate of recent fenugreek acreages (from SCIC) and from processor (ESP), and from discussions with growers. These acreages, multiplied by average yield and unit values, give an estimate of the producer levy that could be collected through SPG. Future acreage projections are based on current growth in demand for processed fenugreek products in both Asia and the U.S.

It is assumed that the levies would be similar to the levy on other pulses, deducted from gross sales (currently~0.66%, possibly up to 1%).

Years	Harvested Acres	Yield (per acre)	Production	Producers (#)	Proposed Levy (\$)	Levies Collected (\$)
2013 - 2016	~ 4 -5000/yr.	1400 lbs.	5.6M – 7.0M lbs.	~ 10-15	SPG pulse rate	Theoretically ~ \$8 - 15,000/ yr
2017 - 2018	~ 4 – 6,000	1650 lbs.	6.6M- 9.9M lbs	~ 25	“	~ \$20-30,000.
2019 proj	5-7,000	1600 lbs.	8.0M- 11.2M lbs	~ 30		~ \$27,000 proj.
2022 - 2025	10-25,000	1700 lbs.	17M- 42.5M lbs	~ 50		~ \$40-60,000 proj.
2030	100,000+	1800 lbs.	180M lbs	~500+		~ \$300,000 proj.

C. Financial Viability

Levy Payment and Collection

1. *On which commodity will the levy be applied? A clear definition must be provided.*
 - Fenugreek (*Trigonella foenum-graecum* L.)
2. *Who will be required to pay the levy?*
 - All producers who produce fenugreek in Saskatchewan would pay the mandatory, non-refundable levy?
3. *Who will be required to collect the levy?*
 - All buyers of Saskatchewan-produced fenugreek would be required to deduct and remit the levy to SPG, as per SPG’s current levy collection and marketer registration board orders.
4. *When will the levy be applied?*
 - The levy will be applied at the first point of sale of the crop by the producer.
5. *How will the levy be collected?*
 - At the first point of sale, the levy will be deducted from the producer’s payment by the buyer. The buyer will then remit the levy to SPG on a monthly basis as per SPG’s levy board order in place at the time.
6. *Will a third party be contracted to perform the levy collection procedures?*
 - SPG currently collects pulse and soybean levy in-house. Fenugreek would be collected in the same way.
7. *Describe the audit system that will be incorporated to ensure the levy structure is followed.*
 - SPG regularly reviews standard publications for new buyers with interest in crops within its mandate and requires annual registration for all buyers of pulse crops. This process would be the same for Fenugreek buyers.
 - SPG reviews every submission of levy to ensure calculations are correct based on the approved levy rate and will follow up on discrepancies as discovered.
 - SPG’s auditors annually review the levy collections for completeness through their audit testing.

Levy Refunds (development commissions only)

8. How often will levy refund applications be submitted to the agency?
9. What requirements will levy refund applications be required to meet for a refund to be granted?
10. How will the levy refund process be conducted? (Include timelines.)

Levy Collection Estimations

11. Complete the following table to provide a quantitative summary of the levies that could have been collected within the last five years with respect to the agricultural product(s) of the proposed Plan. In the “Notes” section, indicate from where the production data was obtained and any other comments related to this analysis.

Years	Harvested Acres	Yield (lbs/acre)	Production (tonnes)	Producers (#)	Proposed Levy (\$)	Levies Collected (\$)
2013 - 2016	~ 4 - 5000/yr.	1400 lbs	2500-3200 tonne	~ 10-15	SPG pulse rate	Theoretically ~ \$8 - 15,000/ yr
2017 - 2018	~ 4000 – 6,000	1650 lbs.	“	~ 25	SPG pulse rate	~ \$20-30,000.

12. Complete the following table to provide a quantitative summary of the levies that are forecasted to be collected in the next five years with respect to the agricultural product(s) of the proposed Plan. In the “Notes” section, indicate from where the production data was obtained and any other comments related to this analysis.

Years	Harvested Acres	Yield (insert units/acre)	Production (insert units)	Producers (#)	Proposed Levy (\$)	Levies Collected (\$)
2019 proj	5-7,000	1600 lbs.		~ 30	SPG pulse rate	~ \$27,000 proj.
2022 - 2025	10-25,000	1700 lbs.		~ 50	SPG pulse rate	~ \$40-60,000 proj.
2030	100,000+	1800 lbs.		~500+	SPG pulse rate	~ \$300,000 proj.

Budgeting

13. *A five-year budget demonstrating how producer funds will be divided between agency administration and mandate expenses must be provided. Complete the table with a list of expected revenues and expenses.*
 - As this is not creating a new organization, just adding an additional crop to the mandate of an existing organization, levies collected for fenugreek will be invested into fenugreek-specific work to start and not specifically towards administration. As with other crops falling under SPG, SPG determines where to allocate revenue based on strategy and opportunity for growth. The actual amount invested into fenugreek may be higher or lower than the levy collected for fenugreek in any given year.

D. Producer Registration

1. *How will producers be registered with the agency?*
 - Producers will be registered with SPG in the same way producers that produce pulses and soybean are registered now. Producers would be registered when they sell fenugreek, have the levy deducted and remitted to SPG by the buyer.
2. *How will these registrations be maintained?*
 - The registrations will be maintained in the same way they are today for pulses and soybeans. Producers will remain registered producers if they have sold fenugreek and paid levy in the last two years.

E. Governance

It is proposed that fenugreek be added as a crop under SPG's mandate. Therefore, governance will be subject to SPG's overall governance as laid out in regulations and Board policy

1. *How many directors will sit on the Board?*
 - There are currently seven registered producers elected to serve on the SPG board
2. *How long will a director's term last?*
 - Terms for directors are typically three years in length.
3. *How many consecutive terms may a director serve before he or she must step down from the Board?*
 - Directors may currently serve three consecutive terms on the board before having to step down.
5. *Describe the process for electing the Board of Directors, including timelines.*
 - SPG currently calls for nominations annually for two or three directors, depending on the number of directors completing a term. If more nominations are received than there are seats up for election, an election is held. If not, nominees are acclaimed. Elections typically take place in November with Director terms starting at the end of the SPG AGM, usually held in January.

6. Describe the processes that will be applied during the agency's Annual General Meeting. Such processes include the notification of meeting, a list of the reports to be presented, the voting procedures, and the intended motion practices.

- The text below is taken directly from SPG's current regulations with paragraph references noted:
 - 18 (3): *The board shall notify all registered producers:*
 - *for an annual general meeting of registered producers, of the date, time, location and agenda not less than 30 days before the date on which the annual general meeting commences;*
 - 18 (5): *The board shall present to the annual general meeting of registered producers:*
 - *a summary of the financial plan it has approved for the current fiscal year; and*
 - *an outline of programs and activities it has planned for the current fiscal year.*
 - 8 (3): *The board shall prepare an annual report containing:*
 - *a copy of the audited financial statement of the board for its previous fiscal year;*
 - *a description of:*
 - *the state of the pulse industry; and*
 - *the activities of the board for its previous fiscal year; and*
 - *a list of the names and addresses of the directors of the board.*
 - 8 (4): *The board shall make the annual report available:*
 - *to the council;*
 - *at the annual general meeting of registered producers; and*
 - *on request to:*
 - *any registered producer; or*
 - *any registered marketer.*
 - 18 (7) (a,b): *A resolution may be proposed for consideration at the annual general meeting or at a special general meeting by either:*
 - *delivering to the board, not later than 60 days before the date of the meeting, a written request signed by 10 registered producers requesting that the resolution be placed on the agenda for the next annual general meeting or special general meeting, as the case may be;*
 - *a two-thirds vote of the registered producers present at the annual general meeting or special general meeting, agreeing to add that resolution to the agenda.*
- Participants must be registered producers to make motions and vote. Votes must receive a simple majority to pass.
- Participants who are not registered producers may speak at the meeting at the discretion of the Chair.

F. Producer and Stakeholder Support

Describe how producer support has been assessed. Include a description of what information that assessment has produced and any alterations to the development of the proposed Plan that have resulted.

This request to become part of SPG has been initiated by fenugreek growers; specifically, growers who produce fenugreek under contract to Emerald Seed Products Ltd (ESP) (estimated to be more than 90% of total fenugreek production in SK). These growers have been unanimous in their support for this initiative at fenugreek production meetings. If a producer vote would be required to join SPG, both ESP and SCIC could provide a list of active fenugreek growers.

There are no special considerations or requests from fenugreek growers to the proposed development plan under the SPG umbrella. As described above, the current mandate and governance model of SPG would be compatible with the research and development needs and goals of fenugreek growers in Saskatchewan.

G. Final Comments

Provide any additional information or comments that would provide more insight into the intent, purpose and future implications for Saskatchewan's agri-food industry with respect to this Plan.

There is a strong need to conduct further research and development to advance fenugreek production and address agronomic factors in order to sustain growth of the crop. Becoming part of Sask. Pulse Growers will greatly bridge the research gap. The development of fenugreek in Saskatchewan in many ways parallels the development of peas and lentils in the 70's and 1980's.

Fenugreek production in Saskatchewan is complementary to other pulses and crop rotations in general. Fenugreek is processed into high-value component products that do not rely on bulk rail transport to market. There is also a large job-creation, multiplier effect on the local economy with fenugreek processing.

There is a very real danger that Saskatchewan could lose the race to develop fenugreek unless more work is done to build on the initial success of this new crop. Other countries can grow and process fenugreek. Saskatchewan has an early advantage that needs to be capitalized on.

Fenugreek has vast potential for growth in Saskatchewan, as processing capacity expands. There are large high value-added end-use markets, particularly in the food and industrial sector waiting to be tapped. Saskatchewan developed technologies give the province a distinct "first in the market advantage". Saskatchewan also has a strategic, natural advantage in world market as a low-cost producer, with a good reputation for quality control. We have a very large, stable U.S. market at our doorstep.

Large Asian markets such as China, Japan, and Korea are buying Saskatchewan fenugreek products, and this could create an enormous long-term opportunity for growth.

The development of fenugreek has been driven by the belief that fenugreek can become an important, profitable crop for Saskatchewan. It is hoped by being included in SPG that we can build on the existing momentum to increase fenugreek production in this province.