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Report prepared by:
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## Project Identification

**1. Project Title:** "Expanding Rotational Options Using New and Novel Pulse Crop"
**2. Project Number:** (SPG AP2208a)
**3. Producer Group Sponsoring the Project:** Saskatchewan Pulse Growers, Saskatchewan Ministry of Agriculture (ADOPT)
**4. Project Location(s):**

- Wheatland Conservation Area (WCA), Swift Current, SK (RM. 137).
- Conservation Learning Centre (CLC), Prince Albert, SK (RM 490).
- Northeast Agriculture Research Foundation (NARF), Melfort, SK (RM 428).
- East Central Research Foundation, Yorkton (ECRF), SK (RM 244).
- South East Research Farm (SERF), Redvers (RM 61).
- Indian Head Research Agricultural Research Foundation (IHARF), Indian Head, SK (RM 156).
- Western Applied Research Corporation (WARC), Scott, SK (RM 380).
- Saskatchewan Irrigation Diversification Centre (ICDC), Outlook, SK (RM 284)

**5. Project start and end dates (month & year):** April 2022-February 2023
**6. Project contact person & contact details:**

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## Objectives and Rationale

### 7. Project objectives:

- The objective of this demonstration was to provide producers with economic and agronomic information on non-traditional pulse crops that may be adapted to various soil climatic zones in Saskatchewan. Introducing new and novel pulse crops into specific regions is necessary to maintain, diversify, and extend cropping rotations, leading to a more robust and resilient cropping systems.

### 8. Project Rationale:

- Extending cropping rotations has long been promoted in the province by many commodity groups, industry, and government organizations to help producers develop a more robust cropping system with respect to integrated pest management and long-term sustainability. Identified as a priority issue by the Saskatchewan Pulse Growers, incorporating new pulse crop options will maintain or diversify pulses in a crop rotation, particularly in regions that are experiencing production issues with over utilization of current pulse crop options.
- These demonstrations have been done in the past at numerous Agri-ARM sites and have indicated that there is great interest from producers on new and novel pulse crops. These demonstrations have proved to be popular stops on the field days and tours, generating

questions and follow-up inquiries regarding agronomic and economic concerns and performance.

- This project was identified as a priority concern by the Saskatchewan Pulse Growers, a provincial commodity group receiving feedback from their producer members concerned with agronomic and economic issues related to pulse crops in their cropping rotations. Including a pulse crop in rotation with cereals and oilseed crops is shown to increase soil available nitrogen, improve soil health, and optimize soil moisture, resulting in increased yields of subsequent crops using less nitrogen and optimizing economic returns. Furthermore, including a pulse in the rotation also increases the time between canola crops which is important to the industry a whole and a challenge that many growers face.
- Crop diversity in each phase of the rotation is a key tool used by producers to mitigate problems related to weeds, disease, and other pests. These are all problems that producers in many areas are currently faced with. Growing traditional crops in too tight of a rotation has created serious challenges for some crops, making them no longer economically viable in extreme cases. In order to ensure diversity, producers must have multiple cropping options available to them in each phase of the rotation. However, before introducing a new crop into an existing rotation, producers must do extensive research into the crops agronomic and environmental requirements in order to grow the crop, followed up by researching market opportunities and commodity pricing to insure a positive economic return. Even though many producers are willing to take these steps, they lack specific information on growing and marketing new crops in their particular region. This becomes a major deterrent to some which limits the adaption of new and novel pulse crops and restricts diversity.
- By demonstrating and introducing new and novel pulse crops to producers at field days and winter extension events, they are able see how these crops are, or are not, suited for the specific regions where they are demonstrated. This allows producers to determine whether or not adding these crops into their rotation are economically feasible.

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## Methodology and Results

### 9. Methodology:

- Field trials were established at each Agri-ARM site to provide provincial wide coverage consisting of multiple soil zones and growing conditions. Since some crops were likely to be better suited to certain regions, project managers and SPG selected the crops and varieties they considered best suited for their particular environments (minimum of 10 pulse crop varieties)
- Crops demonstrated included fenugreek, faba bean, mung bean, lupin, cow pea, a number of dry beans, field pea, maple pea, chickpeas, soybean, and lentils.
- All operations and relevant agronomic information are listed in Table 6. Each crop was replicated twice to ensure a good visual representation. For some locations, one replicate was weed free using a combination of registered pre-seed and in-crop herbicide along with supplemented hand weeding. It was up to individual site managers whether to hand-weed the second replicate, as current herbicide options for many of these crops are limited and producers are unable to hand weed entire fields. Where applicable, the second replicate represented having no in-crop weed control in order to demonstrate how each crop would look in a field

situation. If certain weed populations were a concern to individual site managers, both replicates were hand weeded.

- Plot size varied by location and was kept relatively small since hand weeding will have to be implemented. Specific plot size will depend on the seeding implement utilized at each site.
- Inoculants were limited for many of these pulse crops, so nitrogen requirements were satisfied by applying N fertilizer as either side banded or top dressed. Plots were fertilized according to soil test recommendations for NPKS for each crop and site.
- All plots were harvested at crop maturity.
- Data collection included:
    - Establishment (1m row X 3 locations per plot)
    - Visual competition to weeds (1-5 scale, 1=excellent weed control)
    - Yield (kg/ha)
    - Basic Economics
- Data was not statistically analyzed as the project was set up for demonstration purposes.
- Selected agronomic information is provided in Table 5 of the Appendices.

## 10. Results

*Growing season conditions*

- Mean monthly temperatures and precipitation amounts for May-August of each site are presented relative to the long-term (1981-2010) averages in (Table 4). Rainfall and average growing season temperatures greatly varied across the sites. Average mean temperatures ranged from 99-109% of normal, the coolest site being Redvers and the warmest being Swift Current. Half the sites received below average precipitation ranging from 78-83%, the least being Swift Current. Melfort was close to average precipitation (106%). The remaining three sites were above average (Indian Head, 117% and Yorkton, 119%). While Redvers had close to average rainfall in June and August, May was twice the normal average, and July almost four times the normal average for precipitation. Overall Redvers received 206% of normal precipitation from May through August. Despite growing condition difficulties, yields were still reasonably high at each site.

*Emergence*

- This data is not replicated and cannot be used to make any conclusions or recommendations (Table 1). All crops emerged at the sites they were planted, but percent emergence varied.
- Emergence was low at Swift Current due to below average rainfall and resulted in many crops below 50% emergence. Chickpea, lupin and mung bean (69%) had the highest emergence rates and were closely followed by dry bean (67%) and were closely followed by soybean, dry bean and peas.
- Indian Head, a wetter region in the province had essentially 100% emergence for most crops, including lentils, peas, soybean and faba bean. Fenugreek also emerged quite well.
- Under irrigation at Outlook, lupin, mung bean and faba bean established exceptionally well. However, mortality was higher for chickpea, cowpea and fenugreek at close to 50%.
- At Melfort, emergence ranged from 60-90%, with the exception of fenugreek (21%).

- At Yorkton, from highest percentage to least, chickpea, lupin, dry bean, lentils, peas and soybean, all emerged at roughly 100% of the seeding rate. Emergence for faba bean (92%) and mung bean (68%) were more moderate, while fenugreek was quite low (41%).
- At Scott, Lupin plant populations substantially exceed the target seeding rates; however, most crops ranged from 61-86% emergence, with the exception of chickpea (23%) and fenugreek (15%).
- Prince Albert had above 50% emergence for all crops. Most notably lupin, faba bean, maple pea, and soybean were approximately 100% emergence with chickpea and mung bean close to 50%.
- Beans emerged very well at Redvers, including faba bean (133%), adzuki bean (120%), chickpea (118%), dry bean (112%) and soybean (100%). Fenugreek and lentils were less than 50% emergence.

**Table 1. Mean emergence (plants/m²) and percentage of seeded rate for each crop at each location (2022).**

| Location | WCA | | IHARF | | ICDC | | NARF | | ECRF | | WARC | | CLC | | SERF | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crop type | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % | plants/m$^2$ | % |
| Red lentil | 70 | 54% | 178 | 137% | 107 | 83% | 93 | 72% | 161 | 124% | 106 | 81% | 116 | 89% | 60 | 46% |
| Green lentil | 68 | 53% | 176 | 135% | - | | | | | | | | | | 57 | 44% |
| Black lentil | - | | 214 | 165% | - | | | | | | | | | | | |
| Yellow pea | 46 | 58% | 91 | 113% | 70 | 87% | 59 | 73% | 96 | 120% | 54 | 68% | 52 | 65% | - | |
| Green pea | 52 | 65% | 72 | 90% | - | | 61 | 77% | - | | 53 | 66% | - | | 55 | 69% |
| Maple Pea | - | | | | | | | | | | | | 81 | 101% | - | |
| Austrian Winter pea | - | | | | | | | | | | | | | | 60 | 75% |
| Soybean | 37 | 66% | 62 | 109% | 43 | 75% | 49 | 85% | 62 | 108% | - | | 57 | 101% | 57 | 100% |
| Chickpea | 30 | 69% | 35 | 80% | 22 | 49% | 28 | 65% | 68 | 154% | 10 | 23% | 22 | 50% | 52 | 118% |
| Lupin | 31 | 69% | - | | 68 | 152% | 27 | 60% | 60 | 132% | 55 | 121% | 55 | 123% | - | |
| Faba bean | 26 | 60% | 52 | 119% | 57 | 129% | 43 | 97% | 41 | 92% | 38 | 86% | 75 | 171% | 58 | 133% |
| Dry bean | 30 | 67% | 25 | 55% | 45 | 99% | 43 | 95% | 59 | 130% | 28 | 61% | 32 | 71% | 50 | 112% |
| Adzuki bean | - | | | | | | | | | | | | | | 54 | 120% |
| Mung bean | 21 | 69% | - | | 88 | 294% | 18 | 60% | 20 | 68% | 14 | 48% | 16 | 53% | - | |
| Fenugreek | 44 | 32% | 124 | 92% | 72 | 53% | 28 | 21% | 56 | 41% | 20 | 15% | 89 | 66% | 58 | 43% |
| Cow pea | 31 | 53% | - | | 33 | 57% | - | | | | 40 | 69% | 42 | 72% | - | |

## *Weed Competition*

- Since registered broadleaf herbicides were not available for all crops, one replicate was hand weeded (if needed) in order to better evaluate establishment and yield, as well as make for a good visual representation in order to capture photos and tour plots with producers. Generally, a good weed rating (1), or low dockage (%) was correlated with higher yields. Faba beans, peas and lentils were among the crops that had the best weed control.

## *Seed Yield*

- This data is not replicated and cannot be used to make any conclusions or recommendations (table 2).
- When looking at less commonly grown pulses we do know faba bean, soybean, dry beans and fenugreek to be well adapted in certain areas and more information on growing these pulses can be found at https://saskpulse.com/growing-pulses/.

**Table 2. Yield collected from demonstration plots in 2022.**

| Yield (lbs/ac) | Outlook | Redvers | Prince Albert | Indian Head | Swift Current | Scott | Melfort | Yorkton | Avg. | Prov. Avg. |
|---|---|---|---|---|---|---|---|---|---|---|
| Red Lentil | 1,447 | 954 | 1,925 | 3,017 | 1,259 | 1,343 | 1,737 | 1,057 | 1,592 | 1,165 |
| Green Lentil | - | 335 | - | 1,974 | 1,155 | - | | | 1,155 | |
| Black Lentil | - | | | 2,283 | - | | | | 2,283 | |
| Yellow Peas | 5,797 | - | 1,803 | 4,727 | 1,277 | 1,957 | 3,784 | 138 | 2,499 | 2,040 |
| Green Peas | - | 507 | - | 4,660 | 1,205 | 2,046 | 2,400 | - | 2,205 | |
| Maple Peas | - | | 1,939 | - | | | | | 1,939 | |
| Austrian Winter Pea | | 716 | | | | | | | | |
| Chickpea | 4,480 | 225 | 0 | 392 | 1,298 | 802 | 2,987 | 26 | 1,276 | 1,072 |
| Soybean | 3,088 | 520 | 177 | 1,649 | 359 | | 673 | 58 | 932 | 1,920 |
| Black Bean | 2,706 | 2,579 | 707 | 1,680 | 883 | 796 | 1,658 | 580 | 1,449 | |
| Adzuki Bean | - | 90 | - | | | | | | 90 | |
| Faba Bean | 3,797 | 1,573 | 3,689 | 3,652 | 1,099 | 1,688 | 1,806 | 2,145 | 2,431 | |
| Fenugreek | 2,067 | 792 | 1,905 | 3,542 | 1,079 | 533 | 347 | 1,058 | 1,415 | |
| Mung Bean | 39 | - | 14 | - | 0 | 9 | 34 | 508 | 101 | |
| Lupin | 1,785 | - | 1,196 | - | 975 | 1,643 | 802 | 540 | 1,157 | |
| Cowpea | 0 | - | 0 | - | 0 | 0 | - | | 0 | |

## *Economics*

- Basic economic information was collected in December of 2022 (Table 3).

**Table 3. Cost of seed, April 2022. Selling price, December 2022 (https://statpub.com).**

| Crop type | Cost of seed ($/lb) | Selling price ($/lb) |
|---|---|---|
| Fenugreek | 0.55 | * |
| Faba bean | 0.33 | 0.23** |
| Mung bean | 3.12 | *** |
| Lupin | - | - |
| Cowpea | - | - |
| Dry Bean | 1.25 | 0.6 |
| Green peas | 0.40 | 0.23 |
| Yellow pea | 0.43 | 0.21 |
| Maple Pea | 0.32 | 0.3 |
| Red lentil | 0.50 | 0.33 |
| Green lentil | 0.62 | 0.52 |
| Black lentil | 0.62 | 0.52 |
| Chickpea | 0.74 | 0.58 |
| Soybean | 2.00 | 0.28 |
| Adzuki bean | - | - |

*Fenugreek seed can be marketed to Emerald Seeds
**Feed grade quality faba beans ($0.18/lb)
***Organic mung bean can be marketed to Mumm's Sprouting Seeds

## *Extension Activities (+Attendees)*

- Featured on a weekly radio segment titled "Walk the Plots" that is broadcasted across the Southwest on CKSW. https://podcastville.ca/shows/67/episodes/15345
- Jessica Enns and Sherrilyn Phelps spoke on this trial at the Scott Field Day on July 13th, (95+)
- At Indian Head, the project was discussed by Sarah Anderson and Chris Holzapfel during the Indian Head Crop Management Field Day on July 19, 2022 and the plots were visited by multiple farmers and industry representatives throughout the season (150+)
- Presented by NARF at their Annual Field Day on July 20th, 2022 (40+)

- Wheatland Conservation Area showcased this to multiple industry clients throughout the summer (30+)
- Presented at CLC Field Day (60+)
- SERF Annual Field Day on July 28, 2022 (50+), Lana Shaw
- Presented by Amber Wall (WCA) at the 2023 Winter Pulse Meetings located in Regina (200+), Assiniboia (150+) and Elrose (150+)
- Gursahib Singh presented this project at the ICDC field day (90+)
- AAFC Director General visit (15+), Gursahib Singh
- EMC field tour (15+), Gursahib Singh
- Irrigation conference (300+), Gursahib Singh
- Presented by Meagan Reed (SPG) at a grower meeting in Meadow Lake (100+), February 16, 2023
- Presented by Robin Lokken (CLC) at the 2023 Winter Pulse Meetings located in Melfort (150+)

## 11. Conclusions and Recommendations

- This project resulted in a very successful demonstration in the field, allowing producers, commodity groups, as well as industry partners from around the world to view and discuss alternative pulse crop options.
- While the project provided important insights into the adaption of the various pulse crops throughout the province, no concrete recommendations, or conclusions can be made due to the lack of replication in the field trials and across years.
- Early emerging mung beans had harvestable pods, but the majority of the plot was late emerging with no seed set.
- It was noted at Prince Albert that the cowpeas were still flowering when frost hit and resulted in nothing to combine.
- At Prince Albert that soybean and dry bean pods were too low to the ground and there were also issues with setting combine
- Many sites had early season deer pressure resulting in nothing to harvest including Chickpeas at Prince Albert, mung beans at Swift Current and cowpeas at all sites it was seeded.
- A number of sites had issues with setting combine correctly at harvest for crops that had not been harvested before and do not already have a recommended setting.
- It was noted that mung bean did not emerge well at Yorkton.
- At Redvers rabbits ate soybean leaves and the Adzuki leaves, as well as some new growth, which resulted in more determinate growth.
- It was noted at Redvers, that Austrian winter (forage) peas were very lodged at the end of the season.
- At Yorkton, peas shelled out onto the ground at harvest.
- At Indian Head, the chickpeas produced a large amount of biomass and generally appeared healthy; however, pod fill was very poor due to the wet conditions. Field pea, lentils, and fenugreek performed remarkably well at this location while yields for faba bean and dry bean were more modest. Soybean yields were lower than expected at Indian Head, likely attributable to poor seeding conditions (wet, compaction), and cooler weather early in the season.

# Supporting Information

## 12. Acknowledgements


- The project was co-funded by the Saskatchewan Pulse Crop Development Board and the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canadian Agricultural Partnership bi-lateral agreement between the federal government and the Saskatchewan Ministry of Agriculture.
- Faba bean, Chickpea, Soybean, and Pea/Lentil granular Inoculant at Wheatland Conservation Area was provided in-kind by Nexus BioAg.


## 13. Appendices

**Table 4. Mean monthly temperatures and precipitation along with long-term (1981-2010) averages for the growing seasons at each location (2022).**

| Location | Year | May | June | July | August | Avg. / Total | % of normal |
|---|---|---|---|---|---|---|---|
| | | | | *Mean Temperature (°C)* | | | |
| Yorkton | 2022 | 10.6 | 15.7 | 18.6 | 18.9 | 16 | 105% |
| | ***Long-term*** | ***10.4*** | ***15.5*** | ***17.9*** | ***17.1*** | ***15.2*** | |
| Melfort | 2022 | 9.9 | 15.2 | 18.2 | 18.7 | 15.5 | 100% |
| | ***Long-term*** | ***10.7*** | ***15.9*** | ***17.5*** | ***16.8*** | ***15.5*** | |
| Prince Albert | 2022 | 10.5 | 15.5 | 18.3 | 18.5 | 15.7 | 101% |
| | ***Long-term*** | ***11.3*** | ***16.2*** | ***18.7*** | ***17.1*** | ***15.5*** | |
| Swift Current | 2022 | 10.9 | 15.9 | 19.8 | 20.9 | 16.9 | 109% |
| | ***Long-term*** | ***10.9*** | ***15.3*** | ***18.2*** | ***17.6*** | ***15.5*** | |
| Redvers | 2022 | 10.2 | 16.3 | 19.2 | 18.9 | 16.2 | 99% |
| | ***Long-term*** | ***12.0*** | ***16.0*** | ***19.0*** | ***18.0*** | ***16.3*** | |
| Indian Head | 2022 | 10.9 | 16.1 | 18.1 | 18.3 | 15.8 | 102% |
| | ***Long-term*** | ***10.8*** | ***15.8*** | ***18.2*** | ***17.4*** | ***15.6*** | |
| Scott | 2022 | 10.0 | 15.0 | 18.3 | 18.9 | 15.6 | 105% |
| | ***Long-term*** | ***10.8*** | ***14.8*** | ***17.3*** | ***16.3*** | ***14.8*** | |
| Outlook | 2022 | 11.8 | 16.3 | 19.7 | 20.5 | 17.1 | 107% |
| | ***Long-term*** | ***11.2*** | ***16.1*** | ***18.7*** | ***17.8*** | ***15.9*** | |
| | | | | *Precipitation (mm)* | | | |
| Yorkton | 2022 | 137.9 | 57.9 | 38.4 | 90.8 | 325 | 119% |
| | ***Long-term*** | ***51.0*** | ***80.0*** | ***78.0*** | ***62.0*** | ***272*** | |
| Melfort | 2022 | 90.8 | 78.1 | 34.9 | 36.5 | 240 | 106% |
| | ***Long-term*** | ***42.9*** | ***54.3*** | ***76.7*** | ***52.4*** | ***226*** | |
| Prince Albert | 2022 | 17.9 | 75.7 | 63.7 | 37.8 | 195 | 83% |
| | **Long-term** | **39.4** | **79.7** | **77.0** | **44.6** | **236** | |
| Swift Current | 2022 | 51.2 | 37.7 | 90.4 | 7.5 | 187 | 79% |
| | ***Long-term*** | ***51.2*** | ***77.1*** | ***60.1*** | ***47.4*** | ***236*** | |
| Redvers | 2022 | 135.0 | 92.4 | 303.3 | 73.1 | 604 | 206% |
| | ***Long-term*** | ***60.0*** | ***91.0*** | ***78.0*** | ***64.0*** | ***293*** | |
| Indian Head | 2022 | 97.7 | 27.5 | 114.5 | 45.9 | 286 | 117% |
| | ***Long-term*** | ***51.0*** | ***77.4*** | ***63.8*** | ***51.2*** | ***243*** | |
| Scott | 2022 | 11.0 | 57.1 | 86.5 | 32.1 | 187 | 82% |
| | **Long-term** | **38.9** | **69.7** | **69.4** | **48.7** | **227** | |
| Outlook (6.5" irrigation) | 2022 | 35.7 | 75.2 | 53.2 | 7.0 | 171 | 83% |
| | ***Long-term*** | ***42.0*** | ***63.9*** | ***56.1*** | ***45.3*** | ***207*** | |

**Table 5. Select Agronomic information collected.**

| Crop | Resistance to aphanomyces | Target (plants /m²) | (lbs/ac) | End Use |
|---|---|---|---|---|
| Fenugreek | non-host crop | 135 | 30 | Can sell back to Emerald Seeds, where we got the seed from - ingredient in spice blends and flavoring agent in foods, beverages and tobacco, extracts used in soaps and cosmetics |
| Faba bean | partial | 44 | 120 | Human consumption (including fractionation) and livestock feed. Fractions include protein, starch and fibre for multiple markets |
| Mung bean | unknown | 30 | 20 | Human consumption - dry beans, or bean sprouts. Can also be used as a green manure crop and as forage for livestock |
| Lupin | resistant | 45 | 45 | 4% human consumption - flour, mostly used for livestock feed, 10% higher protein than peas |
| Cowpea | unknown | 58 | 50 | Human consumption - nutritious greens, snap beans, shell beans and dry beans (can be ground into flour for gluten free substitute). Useful as ground cover, weed suppression, green manure, and forage for livestock |
| Dry Bean | varies | 45 | 85 | Mostly human consumption |
| Green peas | susceptible | 80 | 174 | Human consumption and livestock feed |
| Yellow pea | | 80 | 168 | |
| Maple Pea | | 80 | 168 | Human consumption, pigeon feed |
| Red lentil | susceptible | 130 | 60 | Human consumption, but can be used for livestock feed |
| Green lentil | | 130 | 60 | |
| Black lentil | | 130 | 60 | |
| Chickpea | moderately resistant | 44 | 150 | Human consumption, but can be used for livestock feed |
| Soybean | non-host crop | 57 | 60 | 77% of global soybeans used for livestock feed. Used for biofuels, vegetable oils, 7% human consumption |
| Adzuki bean | varies | 45 | 85 | Human consumption, but can be used for livestock feed, or soil improvement crop |

**Table 6. Site Operations, 2022.**

| Location | Swift Current | Indian Head | Redvers | Scott | Yorkton | Melfort | Prince Albert | Outlook |
|---|---|---|---|---|---|---|---|---|
| **Residual N (0-6")** | 30 lbs/ac | 11 lbs/ac | 8 lbs/ac | 20 lbs/ac | 28 lbs/ac | 21 lbs/ac | 34 lbs/ac | 31 lbs/ac |
| **Soil pH** | 6.4 | 8.0 | | 6.0 | 6.7 | 6.4 | 7.3 | |
| **Pre-seed Herbicide** | Glyphosate 540 1l/ac + AIM 35 ml/ac | 0.67 l/ac Roundup Weathermax | 0.67 l/ac Roundup Weathermax | Glyphosate 540 1l/ac + AIM 35 ml/ac | - | Roundup Transorb (540) 1l/ac | glyphosate 1l/ac | glyphosate 1l/ac |
| **Stubble** | Durum | Wheat | Durum | Wheat | Wheat | Canola | Canola | Cereal |
| **Seed Date** | 26-May | 11-May | 03-Jun | 26-May | 26-May | 01-Jun | 27-May | 27-May |
| **Row Spacing** | 8.25" | 12" | 12" | 10" | 12" | 12" | 10" | 10" |
| **Seed Depth** | 1.25" | 1" | 1" | 1-2" | 1" | 1" | 1-2" | 1" |
| **Fertility** | SB 100-50-0-50 lbs/ac | SB 107-31-16-16 lbs/ac | SB 78-35-5-5 lbs/ac | BR 100 lbs/ac N, SB 58 lbs/ac P | No fertilizer applied | SB 107-31-15-15(Br. S.) lbs/ac | SB 75-15-0-0 lbs/ac | SB 120-27-0-0 lbs/ac |
| **Inoculant** | Variable depending on species | - | Variable depending on species | - | - | Variable depending on species | - | - |
| **Plant Density** | 08-Jun | 22-Jun | 28-Jun | 08-Jun | 17-Jun | 27-Jun | 11-Jul | 24-Jun |
| **In crop herbicide (rep 1)** | Centurion @75ml/ac + Amigo @0.5L/100L | 0.190 l/ac Poast Ultra plus 0.5% Merge | - | hand weed | Centurion @75ml/ac + Amigo @0.5L/100L | hand weeded | Poast Ultra (0.47 L/ac) and Merge (0.4L/ac) | - |
| **Herbicide (rep 2)** | Centurion @75ml/ac + Amigo @0.5L/100L | hand weeded | - | - | Centurion @75ml/ac + Amigo @0.5L/100L | - | hand weeded | - |
| **Insecticide** | Decis @ 0.06L/ac | - | - | - | - | - | - | Matador @33ml/ac |
| **Fungicide App** | - | 160 ml/ac Dyax + 0.125% Agral 90) | - | - | - | - | - | - |
| **Fungicide App** | - | 170 g/ac Lance WDG applied on July 15 | - | - | - | - | - | - |
| **Weed competition** | 22-Jun | 22-Jun | 04-Aug | 29-Jun | 11-Aug | 11-Jul | 07-Jul | 21-Jul |
| **Desiccation** | - | 0.67 l/ac Roundup Weathermax | - | Reglone Ion @ 0.83L/ac | - | - | Reglone Ion 2.04 L/ha | - |
| **Note:** | Deer problems | 14-Aug (Hail) | Rabbit problems | - | 23-Jun (Hail) | - | 05-Oct (Heavy frost) | Deer problems |
| **Harvest Dates** | Aug 23-Sep 7 | Aug 26-Sep 30 | Sep 11-Oct 21 | Sep 7-Oct 3 | 29-Sep | Sep 16-Oct 14 | Sep 9-Oct 12 | 07-Sep |

February 17, 2023

## Abstract

### 14. Abstract/Summary


- Field trials were conducted at Swift Current, Indian Head, Scott, Redvers, Melfort, Prince Albert, Outlook and Yorkton in 2022 to demonstrate non-traditional pulse crop options that may be adapted to the various regions in the Agri-ARM network. Locations were representative of Saskatchewan's Brown, Dark Brown, and thin Black, and moist Black soil zones. Data collection included residual soil nutrients, emergence, weed competition, seed yield and basic economics. This data is not replicated and cannot be used to make any conclusions or recommendations, but all crops planted did emerge and made for a successful demonstration to commodity groups representatives, crops extension specialists, producers and industry partners from around the world. Generally, good weed control was correlated with higher yields. Faba beans, peas and lentils were among the crops that had the best weed control. This project was of large interest during field tours and client visits and was deemed successful as it generated many questions and inquiries on field tours and events and created an avenue to discuss new pulses in a rotation. This project was featured on a weekly radio segment titled "Walk the Plots" that is broadcasted across the Southwest on CKSW and field days hosted by most of the participating organizations. The project was also presented by Amber Wall (WCA) at the 2023 Winter Pulse Meetings located in Regina, Assiniboia and Elrose and Meagan Reed (SPG) in Melfort. As well as by Meagan Reed at a grower meeting in Meadow Lake on February 15, 2023.