Agriculture Demonstration of Practices and Technologies (ADOPT)

Project Final Report

The final project report should be made available electronically (MS Word). Additional data tables and or graphs may be submitted in spreadsheet format. Due to formatting, printing and distribution requirements, final reports will not be accepted as PDF documents. Completed reports must be returned by email to Evaluation.Coordinator@gov.sk.ca.

Project Title: Demonstration of the effects of seeding date on new and niche flax varieties

Project Number: 20241033 (NARF), 20241034 (IHARF), 20241035 (SERF) 20241036 (WCA), 20241037 (_____), 20241038 (____)

Producer Group Sponsoring the Project: None

Project Location(s): *Provide the name or number of the rural municipality, nearest town or legal land location if possible. Provide the name of any cooperating landowner(s).* Melfort, Indian Head, Yorkton, Redvers, Swift Current, Prince Albert.

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Abstract *(maximum 200 words)*

Detail key elements from the project objectives, methodology, results and conclusions to provide a short concise summary of the project. List extension activities such as field days or workshops and include the number of people who visited the project.

To demonstrate the effect of seed date on new brown and yellow flax varieties, small plot trials were conducted at 6 Agri-ARM sites near Melfort, Yorkton, Indian Head, Redvers, Swift Current, and Prince Albert. Trial at each site was arranged in a split-plot design with two seed dates, 'Early' (as early in late April/May as logistically possible for each site), and 'Delayed' (10-14 days later) and five flax varieties – CDC Kernen, CDC Esme, CDC Glas, CDC Dorado (yellow seeded), and AAC Bravo. Seed dates were the main factor and varieties were randomized within each seed date. Data were collected on plant emergence, plant height, days to maturity, yield, lodging, and test weight of harvested seed. Lodging was low across all locations. The effect of seed date and variety varied by location for most agronomic parameters, but yield was not affected by seed date at most sites. However, delaying seeding led to a significant increase in yield at Melfort, and slight (but insignificant) increase in yield at most other sites. Delayed seeding also

resulted in increased plant height and higher test weight of harvested seed at 4/6 sites, and hastened maturity at 3/6 sites. Varietal differences also varied by location, but newer varieties CDC Esme and CDC Kernen yielded higher or similar to the older variety, CDC Glas, at most locations. However, they also took longer to mature than other varieties at most sites, with days to maturity averaging 105 days for CDC Esme and 103 days for CDC Kernen across all sites. In comparison, CDC Glas matured in 101 days when averaged across all sites. CDC Dorado, the yellow seeded variety, was among the shorter varieties at most sites and its yield was similar to the rest of the varieties at 3/6 sites. These data show that newer varieties have similar yield potential to the older CDC Glas, but increased days to maturity might be a trade-off in some locations. Additionally, CDC Dorado might be a good option for producers looking to get a premium by selling golden flax without necessarily compromising on yield.

Extension activities undertaken for this trial reached at least 300 people in 2025.

Project Objectives

Provide a short statement outlining the project objectives. Identify the key concept this project was designed to demonstrate. For example, you might use a statement such as *"This project was intended to demonstrate and compare the benefits of……" or "The objective of this project was to demonstrate the impact of…."*

The overall objective of this project was to demonstrate new varieties of brown and yellow flax to local producers and generate regional data on the effect of seeding date on agronomic performance and traits for these varieties. Specifically, this project aimed to generate scientifically sound, regionally relevant data across Saskatchewan on the effect of early vs. delayed seeding of five new flax varieties on agronomic parameters of plant emergence, plant height, days to maturity, lodging, yield, and harvested seed quality.

Project Rationale

Briefly describe why this project is of interest to local producers. Why is it important to have this project? What are the potential beneficial outcomes? What is the perceived need?

Flax is one of the major oilseed crops grown in Saskatchewan. In addition to serving as a good cash crop option for farmers, flax is an important rotational crop that provides ecological benefits. It makes for a more diverse crop rotation and interrupts disease and insect cycles that affect cereals, pulses, and other oilseed crops such as canola (1, 2). Growing flax also promotes soil health by forming associations with arbuscular mycorrhizal fungi which improve soil carbon sequestration, soil structure, and increase soil organic matter (3).

Data from Saskatchewan Crop Insurance show that 233,535 acres of flax was grown in 2023 which comprised of 21 varieties (4). Out of them, CDC Glas was the most popular with 82,133 commercial acres. CDC Sorrel (grown on 26,366 acres in 2023) and CDC Bethune (grown on 21,619 acres in 2023) were also popular. These three varieties are relatively old – The CFIA website reports that CDC Glas was granted Plant Breeders' Rights (PBR) in 2014, CDC Sorrel was granted PBR in 2008, and CDC Bethune was granted PBR in 2001 (5). Since then, several new varieties of flax have been developed. These include CDC Rowland (PBR granted in 2019), CDC Kernen (PBR granted in 2023), CDC Esme (PBR provisionally granted in 2023), and CDC Dorado yellow flax (PBR granted in 2019). Other breeding programs, such as those out of Agriculture and Agri-Food Canada which are no longer operational (6) have also released new varieties, for example AAC Bravo (PBR granted in 2014), AAC Bright yellow flax (PBR granted in 2019), AAC Marvelous (PBR granted in 2019), and AAC Prairie Sunshine (PBR granted in 2018). Additionally, private companies such as Viterra have also released new flax varieties, and these include VT50 (NuLin 50) yellow flax (PBR granted in 2011), WestLin 60 (PBR granted in 2016), WesLin 71 (PBR granted in 2015) and WestLin 72 (PBR granted in 2016).

All of the aforementioned varieties are included in the 2024 SaskSeed Guide along with their agronomic information and how they compare with CDC Glas (Check variety). However, producer uptake of new varieties is low and slow, as evidenced by data from Saskatchewan Crop Insurance Corporation. It is in farmers' interest to consider growing newer varieties as they usually offer improved agronomic traits. Additionally, growing niche, yellow seed varieties have the advantage of selling at a price premium over brown flax seed varieties (7).

Flax is generally recommended to be seeded in mid-May. However, because flax can take 90-125 days to mature and harvest can be delayed due to cold and wet conditions in the Fall, farmers may consider seeding flax early as it is tolerant to light frost (8, 9). But flax is also a poor competitor with weeds and some farmers find it beneficial to seed later, into warmer soil so it can establish well from the start and there is time to apply pre-seed and pre-emergent herbicides (10). From 2013-2015, studies were conducted to assess the effect of seeding date on flax at CLC (near Prince Albert), IHARF (near Indian Head), NARF (near Melfort), and ECRF (neat Yorkton). These studies compared flax seeded in the first week of May with flax seeded in last week of May and into early June (11, 12). Both trials found that even though seeding later reduced days to maturity, there was no difference in yield between flax seeded early and flax seeded in late May/early June. Both these trials were done with older varieties of CDC Bethune, Taurus, and FP2454. Taurus and FP2454 are now outdated and are not included in the SaskSeed Guide or reported to have insured acres by Saskatchewan Crop Insurance Corporation between 2019 and 2023.

This project aimed to demonstrate newer flax varieties to local producers and highlight their potential compared to older varieties. Additionally, this project aimed to generate important regional information on the effect of seeding date (early vs. delayed) on flax agronomic traits of height, days to maturity, lodging, yield, and test weight for flax varieties grown in local environmental conditions. This information will be valuable to local producers and will aid them in better decision making on their farms when crop planning and looking to diversify their crop rotation. Recognizing the value and potential of this project, the producer board of Saskatchewan Oilseed Development Commission had also expressed interest in conducting this demonstration.

(1) https://mbcropalliance.ca/directory/production-resources/flax-in-your-crop-rotation/
(2) https://www.gov.mb.ca/agriculture/crops/seasonal-reports/pubs/growing-flax.pdf
(3) Fall AF, Nakabonge G, Ssekandi J, Founoune-Mboup H, Apori SO, Ndiaye A, Badji A and Ngom K (2022) Roles of Arbuscular Mycorrhizal Fungi on Soil Fertility: Contribution in the Improvement of Physical, Chemical, and Biological Properties of the Soil. Front. Fungal Biol. 3:723892. doi: 10.3389/ffunb.2022.723892
(4) Saskatchewan Crop Insurance, 2023. Flax Provincial Average Yields by Variety. https://www.scic.ca/uploads/resource-centre-files/ci-SMP-average-yield-flax.pdf
(5) https://active.inspection.gc.ca/english/plaveg/pbrpov/cropreport/flae.shtml
(6) Ag Canada drops flax breeding for agronomy research - Manitoba Co-operator
(7) https://www.grainews.ca/crops/higher-premiums-from-golden-flax/
(8) https://www.saskflax.com/quadrant/media/Pdfs/Flax%20on%20the%20Farm/2022/220418%20April%20Flax%20on%20the%20Farm%20Final.pdf
(9) https://www.saskflax.com/growing/seeding.php#
(10) https://mbcropalliance.ca/blog/agronomy-extension-special-crops/weed-control-strategies-in-flax/
(11) Holzapfel, C., Brandt, S., Hall, M. (2016). Seeding Rate and Seeding Date Effects on Flax Establishment and Yield (ADOPT #20140388). https://agriculturereports.saskatchewan.ca/?sADF=True&sAFIF=True&sBDF=True&sSRI=True&sADOPT=True&sSAVI=True&sTAD=True&sSFP=True&sResultPanel=block&sSearchStr=20140388

(12) Lewko, G. (2016). Seeding rate and seeding date effects on flax establishment and yield (ADOPT #20140455). https://agriculturereports.saskatchewan.ca/?sADF=True&sAFIF=True&sBDF=True&sSRI=True&sADOPT=True&sSAVI=True&sTAD=True&sSFP=True&sResultPanel=block&sSearchStr=20140455

Methodology

Fully describe how the project was set up and run. You should provide enough information so that any reader can understand what you did, and where and when you did it. From that they can determine if your report has any relevance to their own operation. For example, your description should include all relevant items such as 1) the number and size of any field plots, 2) what was seeded, 3) what treatments were applied to the plots, 4) the schedule or timing of any relevant activities such as seeding, treatment application or harvest, and 5) what was measured to evaluate the success of any treatment. If your project dealt with animals, you should be sure to include 1) the number of animals in each trial group, 2) the treatment or procedure applied to each group, and 3) what was measured to evaluate the success of each treatment.

Small plot trials were conducted at 6 Agri-ARM sites across Saskatchewan – NARF (Melfort, SK), ECRF (Yorkton, SK), IHARF (Indian Head, SK), SERF (Redvers, SK), WCA (Swift Current, SK), and CLC (Prince Albert, SK). At each site, the trial was set up as split-plot consisting of two seed dates (Early and Delayed) as the main factor and five flax varieties as the sub-factor that were randomized within each seeding date. Treatment list is provided in Table 1 below.

Table 1. Treatment list for the trial, “Demonstration of the effects of seeding date on new and niche flax varieties”.

Treatment #	Variety	Seed colour	Seeding date
1	CDC Kernen	Brown	Early
2	CDC Glas	Brown	Early
3	CDC Esme	Brown	Early
4	CDC Dorado	Yellow	Early
5	AAC Bravo	Brown	Early
6	CDC Kernen	Brown	Delayed
7	CDC Glas	Brown	Delayed
8	CDC Esme	Brown	Delayed
9	CDC Dorado	Yellow	Delayed
10	AAC Bravo	Brown	Delayed

‘Early’ seed date was targeted to be as early in May as logistically possible for each site, and 'Delayed' seed date was 10-14 days later. Seeding rate of each variety was targeted at 667 seeds/m^2 (400 plants/m2 and assuming 40% seed mortality) after adjusting for seed size (thousand kernel weight (TKW)) and germination. The trial was fertilized so that all nutrients were non-limiting at each site. Best management practices for weeds, disease, and insect pests were undertaken at each site.

Following parameters were measured:

1) Soil temperature at the time of seeding for both seed dates.

2) Emergence counts – Plants were counted in two 1 m rows per plot to calculate plant density and converted to plants/m^2.

3) Days to maturity – Days to maturity were recorded for each plot. Plot was rated mature when 75% of the bolls are brown.

4) Plant height - Plant height was measured for 3 plants per plot, one plant each in the front, middle, and back of the plot and average plant height determined.

5) Lodging before harvest – Plots were rated on a scale of 1 (upright) to 5 (flat) before harvest.

6) Yield – Plot yield was recorded and corrected for dockage and adjusted to a uniform moisture content of 10%. It was then converted to kg/ha.

7) Test weight of cleaned, harvested flax sample from each plot was determined.

Dates of operation for activities conducted throughout the field season at all sites are summarized in Table A1 of the Appendix. Data analysis was done using Statistix 10 data analysis software. Split-plot ANOVA (analysis of variance) was conducted with seed date as the main-plot factor, variety as the subplot factor, and replicate as the replication variable. After determining significant effect(s) of variety, treatment, or their interaction through ANOVA, post-hoc testing was done using Tukey's HSD with alpha = 0.05.

Results *(you must provide the following information)*

Present and discuss any project results, including any data or measurements taken to evaluate the demonstration. Include things that didn't appear to work. These results are just as important to share. List extension activities such as field days or workshops. List the activity, the date it occurred, and the number of people who attended.

<u>Environmental conditions and general overview of the growing season</u>

Although each site had its own unique challenges during the 2025 growing season, the trial was established and conducted successfully at each site. Weather summary for the 2025 growing season, including monthly and long-term mean temperatures and rainfall, can be found in Table A2 of the Appendix. Northern sites (Melfort and Prince Albert) had extremely dry spring with virtually no rain in May which reduced emergence, but rains finally came in June bringing higher-than-average precipitation. Southern sites (Indian Head, Yorkton, Swift Current, and Redvers), on the other hand, received some rain in April and May but were drier than average in June. July was also drier than average at most sites. Conditions at Indian Head got progressively drier through the growing season, and Yorkton also received lower rainfall than normal in 2025 from May-August. Prince Albert had frost occur after seeding a few times in May and June which reduced yield potential, and desiccation with diquat in September was not effective in drying flax down. As a result, flax at Prince Albert was observed to have new flowering/regrowth and had to be harvested wet. Some deer grazing also occurred in the trial at Prince Albert. At Swift Current, weed control was a significant issue due to flax's poor competitiveness with weeds such as kochia and wild oat, thereby resulting in poor emergence, especially for the early seed date. At Redvers, the trial established well but significant seed loss occurred closer to the end of the growing season due to bolls shattering before the trial was dry enough to be harvested.

Specific results from each site are discussed below.

<u>Results from NARF, Melfort</u>

Table 2 shows ANOVA results along with means of agronomic parameters for NARF, Melfort location.

Table 2. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, "Demonstration of the effects of seeding date on new and niche flax varieties" conducted at Melfort, SK. Tukey's HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	Plant height (cm)	Days to maturity	Yield (kg/ha)	Test weight (g/0.5 L)
p-value (Seed date)	0.0625	0.0367	0.024	0.0161	0.0049

p-value (Variety)	0.0320	<0.0001	0.0001	<0.0001	<0.0001
p-value (Seed date x Variety)	0.6518	0.0600	0.1254	0.5819	0.1935
Grand mean	274	57	106	2690	346.9
CV	18	5	1	9	1
Seed date	---- Means for Seed date at Melfort, SK ----				
Early	297 A	56 B	107 A	2510 B	344.4 B
Delayed	252 A	59 A	105 B	2871 A	349.4 A
Variety	---- Means for Variety at Melfort, SK ----				
CDC Kernen	267 A	60 A	105 B	2850 AB	350.2 A
CDC Glas	256 A	59 AB	105 B	2681 BC	343.5 C
CDC Esme	305 A	57 BC	109 A	2855 A	348.1 AB
CDC Dorado	257 A	55 C	105 B	2445 D	345.7 BC
AAC Bravo	288 A	55 C	104 B	2621 C	346.8 B

At Melfort, plant emergence did not vary significantly between seed dates. ANOVA showed a significant effect of variety on plant emergence but Tukey's HSD test did not find significant differences between varieties. Plant height, yield, and test weight of harvested seed were all higher for delayed seed date compared to the early seed date at Melfort, and delaying seeding hastened maturity by 2 days. CDC Kernen and CDC Glas were the tallest varieties while AAC Bravo and CDC Dorado (yellow seeded) were among the shortest. CDC Esme took the longest to mature at Melfort while other varieties were 4-5 days faster maturing. CDC Esme and CDC Kernen were among the highest yielding along with having the highest test weight, while CDC Dorado was the lowest yielding. Test weight of CDC Glas and CDC Dorado were among the lowest compared to other varieties. No lodging was observed in this trial and the interaction of seed date and variety was not significant for any agronomic parameter at Melfort. Group means for the interaction of seed date and variety can be found in Table A3 of the Appendix.

Results from ECRF, Yorkton

Table 3 shows ANOVA results along with means of agronomic parameters for ECRF (Yorkton, SK).

Table 3. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, "Demonstration of the effects of seeding date on new and niche flax varieties" conducted at Yorkton, SK. Tukey's HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	Plant height (cm)	Days to maturity	Yield (kg/ha)	Test weight (g/0.5 L)
p-value (Seed date)	0.0228	0.0003	0.0004	0.3062	0.0089
p-value (Variety)	0.0001	<0.0001	0.0002	0.0186	0.0899
p-value (Seed date x Variety)	0.1897	<0.0001	0.0010	0.0058	0.0015
Grand mean	568	52	113	1844	327.2
CV	19	3	2	41	4
Seed date	---- Means for Seed date ----				
Early	494 B	47 B	105 B	1696 A	315.7 B
Delayed	642 A	56 A	121 A	1992 A	338.6 A
Variety	---- Means for Variety ----				
CDC Kernen	464 B	56 A	113 B	1905 AB	326.0 AB
CDC Glas	648 A	54 A	113 B	1801 AB	327.3 AB
CDC Esme	565 AB	51 B	115 A	1996 A	332.4 A

CDC Dorado	491 B	48 B	113 B	1885 AB	327.3 AB
AAC Bravo	672 A	49 B	113 B	1632 B	322.9 B

Plant emergence was significantly improved with delayed seeding at Yorkton. The effect of variety was also significant – CDC Glas and AAC Bravo had better emergence than CDC Kernen and CDC Dorado, while the emergence for CDC Esme was similar to other varieties. Plant height increased by 9 cm with delayed seeding, days to maturity increased by 16 days, and test weight of harvested seeds increased by 23 g when seeding was delayed. No lodging was observed in this trial. Yield was not affected by seed date but the effect of varieties and the effect of the interaction between variety and seed date was significant for yield. CDC Esme had significantly higher yield and test weight than AAC Bravo while there was no significant difference in yield or test weight between other varieties. CDC Kernen and CDC Glas were significantly taller than CDC Esme, CDC Dorado, and AAC Bravo at Yorkton. CDC Esme took 2 days longer to mature than the rest of the varieties. The effect of the interaction between seed date and variety was significant at Yorkton for plant height, days to maturity, yield, and test weight, and their grouped means can be found in Table A4 of the Appendix.

Results from IHARF, Indian Head

Table 4 shows ANOVA results along with means of agronomic parameters for IHARF (Indian Head, SK).

Table 4. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, “Demonstration of the effects of seeding date on new and niche flax varieties” conducted at Indian Head, SK. Tukey’s HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	**Plant height (cm)**	**Days to maturity**	**Yield (kg/ha)**	**Test weight (g/0.5 L)**
p-value (Seed date)	0.0035	<0.0001	0.0037	0.0675	0.038
p-value (Variety)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
p-value (Seed date x Variety)	0.0833	0.0164	<0.0001	0.0292	0.0110
Grand mean	490	54	101	2026	331.4
CV	8	2	1	9	1
Seed date	---- Means for Seed date ----				
Early	544 A	48 B	102 A	1947 A	330.4 B
Delayed	435 B	60 A	99 B	2105 A	332.3 A
Variety	---- Means for Variety ----				
CDC Kernen	450 B	58 A	102 B	2155 A	332.8 AB
CDC Glas	526 A	56 A	100 C	2053 A	329.6 C
CDC Esme	457 B	53 B	103 A	2129 A	333.7 A
CDC Dorado	465 B	51 B	99 D	1892 B	329.4 C
AAC Bravo	549 A	52 B	99 D	1903 B	331.4 BC

At Indian Head, all parameters except yield were significantly affected by seed date. Plant emergence was lower when seeding was delayed, and delayed seeding also led to increased plant height and test weight of harvested seed at Indian Head. Maturity was hastened by 3 days with delayed seeding compared to seeding early. There were significant differences between varieties for all parameters: Plant emergence was significantly higher for CDC Glas and AAC Bravo compared to other varieties; Plant height was significantly higher for CDC Kernen and CDC Glas compared to other varieties; CDC Dorado and AAC Bravo were the earliest maturing (99 days) followed by CDC Glas (100 days), CDC Kernen (102 days), and CDC Esme was the slowest maturing. No lodging was observed in this trial. Yield of CDC Kernen, CDC Glas, and CDC Esme was significantly higher than that of CDC Dorado and AAC Bravo. CDC Esme had the highest test weight while CDC Dorado had the lowest test weight and was comparable to the test weight of CDC Glas and AAC Bravo. The interaction effect of seed date by variety was significant for plant height, days to maturity, yield, and test weight and their means can be found in Table A5 of the Appendix.

Results from SERF, Redvers

Table 5 shows ANOVA results along with means of agronomic parameters for SERF (Redvers, SK).

Table 5. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, "Demonstration of the effects of seeding date on new and niche flax varieties" conducted at Redvers, SK. Tukey's HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	Plant height (cm)	Days to maturity	Shattering (%)	Yield* (kg/ha)	TKW (g)	Lodging (1-5)
p-value (Seed date)	0.2103	0.0012	0.1237	0.0112	0.3355	0.0003	0.0892
p-value (Variety)	0.0013	<0.0001	0.0122	0.5277	0.0180	<0.0001	0.0048
p-value (Seed date x Variety)	0.9302	0.0243	0.3255	0.7865	0.2792	0.0003	0.0048
Grand mean	361	64	106	62	1484	6.4	1.3
CV	23	5	3	23	16	1	55
Seed date	---- Means for Seed date ----						
Early	382 A	57 B	107 A	50 B	1527 A	6.6 A	1.0 A
Delayed	340 A	70 A	105 A	75 A	1441 A	6.1 B	1.6 A
Variety	---- Means for Variety ----						
CDC Kernen	290 B	69 A	106 AB	59 A	1289 B	6.3 B	1.0 B
CDC Glas	413 A	65 AB	104 B	64 A	1391 AB	5.6 C	1.0 B
CDC Esme	370 AB	65 AB	107 A	63 A	1535 AB	6.8 A	1.1 B
CDC Dorado	337 AB	58 C	106 AB	64 A	1747 A	6.4 B	1.9 A
AAC Bravo	397 A	61 BC	105 AB	61 A	1458 AB	6.9 A	1.4 AB

*Yield is reported after adjusting for loss from shattering before harvest.

At Redvers, yield was significantly affected due to bolls shattering before they could be harvested. As a result, most harvested samples were not adequate to measure test weight and thousand kernel weight (TKW) was determined instead. Yield in Table 5 is reported after accounting for shattering instead of actual harvested yield. Significant shattering occurred in plots of both seed dates but shattering was 15% higher for delayed seed date compared to the early seed date. However, there was no difference in shattering between varieties and the interaction of seed date by variety was also not significant for shattering.

Seeding date did not have a significant effect on plant emergence, days to maturity, lodging, or yield in Redvers. However, delaying seeding significantly increased plant height and reduced thousand seed weight of harvested seed. Plant emergence of CDC Glas and AAC Bravo was significantly higher than CDC Kernen while other varieties were similar to each other. CDC Kernen was the tallest while CDC Dorado was the shortest at Redvers. CDC Glas matured significantly earlier than CDC Esme (difference of 3 days), while there was no significant difference in maturity days between other varieties. Adjusted yield of CDC Dorado was higher than CDC Kernen but no significant difference was observed in yields of other varieties. Harvested seed of CDC Esme and AAC Bravo had the highest TKW followed by CDC Kernen and CDC Dorado, and harvested seed of CDC Glas had the lowest TKW. Overall lodging was low in the trial but CDC Dorado lodged the most and was comparable to AAC Bravo while CDC Kernen, CDC Glas, and CDC Esme had almost no lodging. The effect of the interaction of seed date and variety was significant for plant height, TKW, and lodging at Redvers and their group means can be found in Table A6 of the Appendix.

Results from WCA, Swift Current

Table 6 shows ANOVA results along with means of agronomic parameters for WCA (Swift Current, SK).

Table 6. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, "Demonstration of the effects of seeding date on new and niche flax varieties" conducted at Swift Current, SK. Tukey's HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	**Plant height (cm)**	**Days to flowering**	**Days to maturity**	**Yield (kg/ha)**	**Test weight (g/0.5 L)**
p-value (Seed date)	0.0104	0.3339	0.0757	0.001	0.0613	0.001
p-value (Variety)	0.001	0.0011	0.0043	0.0001	0.0014	0.0001
p-value (Seed date x Variety)	0.7001	0.399	0.0009	0.0227	0.8827	0.1491
Grand mean	134	48	53	93	1190	340.4
CV	8	3	5	1	24	0.2
Seed date	---- Means for Seed date ----					
Early	124 B	48 A	54 A	95 A	1056 A	338.9 B
Delayed	143 A	47 A	52 A	90 B	1324 A	341.9 A
Variety	---- Means for Variety ----					
CDC Kernen	122 BC	52 A	54 A	93 AB	1410 A	342.7 A
CDC Glas	154 A	47 B	54 A	91 BC	1155 B	338.8 B
CDC Esme	125 BC	47 B	54 A	94 AB	1187 B	342.1 A
CDC Dorado	115 C	46 B	54 A	96 A	1135 B	339.3 B
AAC Bravo	151 AB	45 B	51 B	90 C	1063 B	339.4 B

At Swift Current, plant emergence increased with delayed seeding whereas plant height, days to flowering, and yield remained unaffected by seed date. Delaying seeding hastened maturity by 5 days and increased the test weight of harvested seed by 3 g. Plant height, yield, and days to flowering were unaffected by seed date.

All agronomic parameters were significantly affected by variety. CDC Glas had significantly higher emergence compared to CDC Kernen, CDC Esme, and CDC Dorado. AAC Bravo had similar emergence to CDC Esme and CDC Kernen but was significantly higher than CDC Dorado. Plant height of CDC Kernen was significantly increased compared to other varieties. AAC Bravo flowered significantly earlier than other varieties and matured 3-6 days faster than most varieties except CDC Glas. CDC Dorado, CDC Esme, and CDC Kernen were among the slowest maturing varieties at Swift Current. CDC Kernen yielded significantly higher than other varieties and its test weight was among the highest between varieties, along with CDC Esme. No lodging was observed for this trial at Swift Current. Interaction of seed date and variety was significant for days to flowering and days to maturity, and group means for all parameters can be found in Table A7 of the Appendix.

Results from CLC, Prince Albert

Table 7 shows ANOVA results along with means of agronomic parameters for CLC (Prince Albert, SK).

Table 7. ANOVA results and means of agronomic parameters grouped by Seed date and Variety for the trial, "Demonstration of the effects of seeding date on new and niche flax varieties" conducted at Prince Albert, SK. Tukey's HSD test at 95% confidence interval was used to compare means. Within the same grouping (Seed date or Variety), means followed by the same letter within a column do not significantly differ from each other.

	Emergence (plants/m^2)	Plant height (cm)	Days to maturity	Lodging (1-5)	Yield (kg/ha)	Test weight (g/0.5 L)
p-value (Seed date)	0.2661	0.463	0.3758	0.3534	0.0114	0.4573
p-value (Variety)	0.0915	0.0493	0.0005	0.0212	0.4803	0.0058
p-value (Seed date x Variety)	0.2055	0.5749	0.0564	0.3073	0.7855	0.3276
Grand mean	287	61	96	1.2	1033	333.7
CV	4	11	5	50	12	2
Seed date	---- Means for Seed date ----					
Early	290 A	60 A	95 A	1.3 A	1139 A	334.6 A
Delayed	284 A	62 A	97 A	1.1 A	926 B	332.9 A
Variety	---- Means for Variety ----					
CDC Kernen	268 A	64 A	98 AB	1.0 B	1096 A	338.4 A
CDC Glas	340 A	62 AB	94 B	1.0 B	921 A	331.4 B
CDC Esme	295 A	61 AB	103 A	1.1 AB	1191 A	334.5 AB
CDC Dorado	253 A	58 B	92 B	1.6 A	975 A	332.4 B
AAC Bravo	280 A	60 AB	93 B	1.0 B	979 A	332.0 B

The effect of seed date was only significant for yield at Prince Albert, and delaying seeding reduced yield by 213 kg/ha or 3.4 bu/ac. However, it should be recalled that the trial at Prince Albert had to be harvested wet due to ineffective desiccation and was also affected by deer grazing.

Plant emergence, plant height, days to maturity, lodging, and test weight of harvested seed did not differ between seed dates. Significant varietal differences were observed for all parameters except plant emergence and yield at Prince Albert. CDC Dorado was significantly shorter than CDC Kernen but both varieties were comparable to others in height. CDC Glas, AAC Bravo, and CDC Dorado matured 9, 10, and 11 days earlier than CDC Esme, respectively. Days to maturity of CDC Kernen was similar to other varieties. While lodging was low overall at Prince Albert (average rating of 1.2 on a scale of 1 (upright) to 5 (whole plot flat), CDC Dorado had significantly higher lodging (average rating of 1.6) than CDC Kernen, CDC Glas, and AAC Bravo (average rating of 1.0). Test weight of harvested seed was significantly higher for CDC Kernen compared to all varieties except CDC Esme. Interaction of seed date and variety was not significant for any agronomic parameter at Prince Albert but their group means are provided in Table A8 of the Appendix.

Conclusions and Recommendations

Describe what was learned from the demonstration. Highlight any significant conclusions and provide recommendations for the application and adoption of the project results. Be sure that you have presented the relevant data to support your conclusions. Identify any further research, development and communication needs, if applicable.

Early seed date for this project ranged from April 30th to May 13th and delayed seed date ranged from May 14th to May 27th. Agronomic parameters evaluated in this project varied in their response to seed date and variety depending on the site. For most sites, yield was not significantly affected by seed date. However, despite emergence being similar between seeding dates, delayed seeding increased yield at Melfort by 361 kg/ha or 6 bu/ac, and decreased yield in Prince Albert by 213 kg/ha or 3 bu/ac. Prince Albert's yield data were affected by deer grazing and ineffective drydown despite desiccation, but Melfort had no such issues. It is possible that later seeded crop yielded higher at Melfort as it underwent shorter drought stress compared to the early-seeded crop and was at a more optimum growth stage to take advantage of moisture in June, July, and August. This could be the case for other sites as well that had a slight (but statistically insignificant) increase in yield with delayed seeding, such as Yorkton, Indian Head, and Swift Current.

Generally, delaying seeding increased plant height – Later seeded plants were taller by 3 cm at Melfort, 9 cm at Yorkton, 2 cm at Indian Head, and 13 cm at Redvers. Delaying seeding also reduced days to maturity at half the sites – Later seeded plants matured 2 days earlier at Melfort, 3 days earlier at Indian Head, and 5 days earlier at Swift Current compared to early seeded plants. However, at Yorkton, delaying seeding increased days to maturity by 16 days and seed date had no effect on days to maturity at Prince Albert and Redvers. Plant height was not affected by seed date in Swift Current and Prince Albert.

Test weight of harvested seed was also generally higher with delayed seeding – Test weight for delayed seed date at Melfort, Yorkton, Indian Head, and Swift Current was 1-13 g higher than early seed date values. At Redvers, where harvested samples were insufficient for most plots to determine test weight, TKW of harvested seed from delayed seed date was 0.5 g lower compared to the early seed date. Test weight of harvested grain was unaffected by seed date at Prince Albert. At Redvers, boll shattering was 15% higher for delayed seed date than the early seed date.

Varietal differences in agronomic parameters also differed by site and were statistically significant at most sites. While highest yielding varieties differed depending on the site, CDC Esme and CDC Kernen were among the highest yielding at most sites, although their days to maturity were also higher (ranging from 94 days in Swift Current to 115 days in Yorkton, averaging 105 days across all sites for CDC Esme, and averaging 103 days across all sites for CDC Kernen). While CDC Esme significantly outyielded CDC Glas only at Melfort, it yielded similar to CDC Kernen and CDC Glas at Yorkton, Indian Head, Redvers, and Swift Current. The yellow seeded variety, CDC Dorado, yielded lower than other varieties only at Melfort and Indian Head – At Yorkton, its yield was statistically similar to rest of the varieties, at Redvers CDC Dorado yielded the highest but was comparable to all other varieties except CDC Kernen (which yielded the lowest in Redvers), at Swift Current CDC Dorado was similar in yield to all other varieties except CDC Kernen (which yielded highest in Swift Current). CDC Dorado was also among the shorter varieties at all sites. CDC Glas had among the least days to maturity at all sites compared to other varieties, ranging from 91 days in Swift Current to 113 days in Yorkton and averaging 101 days across all sites.

Taken together, these data show that newer varieties like CDC Kernen and CDC Esme have the potential to yield similar to, or in some cases, more than, the older variety CDC Glas, although they might take longer to mature compared to CDC Glas. Additionally, yellow seeded variety CDC Dorado might also be worth trying for producers who are looking to get a premium on golden flax – Depending on the region that they're farming in, it might even outyield other brown varieties.

Sustainable Canadian Agricultural Partnership (Sustainable CAP) Performance Indicators

a) List of performance indicators

Sustainable CAP Indicator	Total Number
Scientific publications from this project (List the publications under section b)	
• Published	0
• Accepted for publication	0
Highly Qualified Personnel (HQPs) trained during this project	
• Master's students	0
• PhD students	0
• Post docs	0
Knowledge transfer products developed based on this project (presentations, brochures, factsheets, flyers, guides, extension articles, podcasts, videos)[1]. List the knowledge transfer products under section (c)	

[1] Please only include the number of unique knowledge transfer products.

b) List of scientific journal articles published/accepted for publication from this project. Please ensure that each line includes the following: **Title, Author(s), Journal, Date Published or Accepted for Publication and Link to Article (if available).** *Add additional lines as needed.*

1.
2.
3.
4.

c) List of knowledge transfer products/activities developed from this project.

Knowledge Transfer Product or Activity	Event/Location Where Knowledge Transfer Was Conducted	Estimated Number of Producers Participated in Knowledge Transfer	Link (if available)
NARF & AAFC Joint Field Day	NARF, Melfort, SK on July 23, 2025	126	
"Walk The Plots" Radio Show with Glenda Lee Allan on CKSW 570, Magic 97.1 and Country 94.1	Swift Current, SK throughout the summer	Unknown	
IHARF Field Day	Indian Head, SK on July 15,	157	

	2025		
SERF Field Day	Redvers, SK on July 10, 2025		

Acknowledgements

Include actions taken to acknowledge support by the Ministry of Agriculture, the Canadian Agriculture Partnership (for projects approved between 2017 and 2023) and the Sustainable Canadian Agriculture Partnership (for projects approved between 2023 and 2028).

All participating sites are grateful for the support provided by the Saskatchewan Ministry of Agriculture, Government of Canada, and the Sustainable Canadian Agriculture Partnership that made this demonstration possible. As such, their contribution was verbally acknowledged whenever this trial was mentioned at summer events and during summer field tours.

Appendices

Include any additional materials supporting the previous sections, e.g. detailed data tables, maps, graphs, specifications, literature cited (Use a consistent reference style throughout).

Table A1. Dates of operation for field activities at all sites in 2025.

	Chemical/ Date of operation					
Activity	**NARF (Melfort)**	**ECRF (Yorkton)**	**IHARF (Indian Head)**	**SERF (Redvers)**	**WCA (Swift Current)**	**CLC (Prince Albert)**
Seeding - Early	May 6	May 13	May 7	May 10	Apr 30	May 10
Seeding - Delayed	May 20	May 27	May 25	May 26	May 14	May 21
Soil Temp (Early)	11.4°C	15°C	8.9°C			9.5°C
Soil Temp (Delayed)	13.9°C	21.9°C	16.4°C	22°C		8.5°C
Previous crop	Wheat		Canary seed	Oat	Durum	Wheat
Pre-Emergent Herbicide	May 5: Authority 480 @ 118 ml/ac and StartUp @ 1 L/ac.	May 8: Transorb @ 1 L/ac	May 9 (early): 0.67 l/ac Roundup Weathermax + 118 ml/ac Authority 480; May 24 (delayed): 0.67 l/ac Roundup Weathermax; May 29 (delayed): 118	0.67 L/ac Glyphosate 540	Apr 18: Roundup Transorb @1L/ac + Aim @47ml/ac + Merge @1L/100L	May 14: Roundup Transorb @ 0.67L/ha

			ml/ac Authority 480			
Post-Emergent Herbicide	Jun 9: Centurion @ 75 ml/ac; Jun 27 (late seeded only): Basagran Forte @ 910 ml/ac and Assure II @ 300 ml/ac.	June 13: Select + Amigo @ 150 ml/ac; Jun 16 (early) and Jun 19 (delayed): Curtail M @ 810 ml/ac; Jun 27: Select + Amigo @ 150 ml/ac	Jun 11 (early) & Jun 20 (delayed): 0.405 l/ac Buctril M + 0.19 l/ac Poast Ultra + 0.5% Merge	Jun 17: 150 ml/ac Centurion ADV, 0.4 L/ac Buctril M	May 1 (early) & May 15 (delayed): Authority @118ml/ac; Jun 4: Centurion @75ml/ac + Carrier @0.5L/100L	May 30: Poast Ultra; Jun 17: Assure II
Fungicide	July 11: Dyax @ 160 ml/ac.	Jul 7 (early) & Jul 14 (delayed): Acapela@ 350 ml/ac	Jul 5 (early) & Jul 18 (delayed): 0.16 l/ac Dyax + 0.125% Agral 90	None	None	None
Insecticide	None	None	None	None	None	None
Desiccated	Sep 25: Dessicash.	Aug 26 (early), Sep 27 (delayed) with Reglone Ion @ 0.83 L/ac	Sep 8: 0.67 L/ac Roundup Transorb HC	Sep 9 (early), Sep 17 (delayed): 0.5 L/ac Bolster + 0.125% Agral 90	Sep 11: Reglone Ion @0.69L/ac + LI700	Sep 10: Reglone Ion
Harvested	Oct 6	Sep 22 (early), Oct 7 (delayed)	Sep 21	Sep 23 (early), Oct 2 (delayed)	Sep 23	Sep 23
Data Collection						
Plant counts	May 26 (early), Jun 6 (delayed)	Jun 2 (early), Jun 6 (delayed)	May 28 (early), Jun 12 (delayed)	Jun 6 (early), Jun 20 (delayed)	Jun 2	Jun 10
Height	Aug 15	Aug 8 (early), Aug 13 (delayed)	Aug 1 (early), Aug 15 (delayed)		Aug 20	Aug 13
Lodging	Oct 6 just before harvest.	Sep 22	Sep 5		Aug 20	Sep 24
Shatter %	N/A	N/A	N/A	Aug 29 (early), Oct 2 (delayed)	N/A	N/A

Table A2. Mean and total monthly and long-term temperature and precipitation from May-September 2025 for all sites. Long term data comprises the years 1997-2021 for Melfort; 1981-2010 for Yorkton, Indian Head, and Redvers; 2014-2024 for Swift Current; and 2015-2024 for Prince Albert.

Location	Year	May	June	July	August	Avg. / Total
----------------------------- Mean Temperature (°C) -------------------						
Melfort	2025	13.8	15.0	17.0	18.0	16.0
	Long-term	**10.1**	**15.2**	**17.8**	**16.7**	**15.0**

Yorkton	2025	12.4	15.7	17.5	18.3	16.0
	Long-term	**10.4**	**15.5**	**17.9**	**17.1**	**15.2**
Indian Head	2025	12.7	15.3	17.0	17.8	15.7
	Long-term	**10.8**	**15.8**	**18.2**	**17.4**	**15.6**
Redvers	2025	13.2	16.2	17.5	17.9	16.2
	Long-term	**11.1**	**16.2**	**18.7**	**18.0**	**16.0**
Swift Current	2025	13.1	15.9	18.0	19.0	16.5
	Long-term	**11.9**	**16.4**	**19.1**	**18.7**	**16.5**
Prince Albert	2025	11.2	12.7	14.9	17.1	14.0
	Long-term	**11.2**	**16.0**	**18.3**	**16.7**	**15.6**
-------------------------------- Precipitation (mm) ---------------------						
Melfort	2025	4.8	93.2	25.9	113.5	237.4
	Long-term	**33.4**	**79.5**	**69.6**	**45.9**	**228.4**
Yorkton	2025	23.6	63.4	36.8	71.2	195.0
	Long-term	**51.0**	**80.0**	**78.0**	**62.0**	**271.0**
Indian Head	2025	42.6	39.4	27.1	26.9	136.0
	Long-term	**51.7**	**77.4**	**63.8**	**51.2**	**244.1**
Redvers	2025	65.0	27.0	80.0	40.0	212.0
	Long-term	**60.0**	**95.2**	**65.5**	**46.6**	**267.3**
Swift Current	2025	34.2	31.3	78.2	92.6	236.3
	Long-term	**47.5**	**56.0**	**56.3**	**38.0**	**197.8**
Prince Albert	2025	2.2	137.6	8.6	51.2	199.6
	Long-term	**36.5**	**66.8**	**61.3**	**43.6**	**208.2**

Table A3. Means for the interaction of seed date x variety for the trial conducted at Melfort, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

	Emergence ($plants/m^2$)	**Plant height (cm)**	**Days to maturity**	**Yield (kg/ha)**	**Test weight (g/0.5 L)**
Early CDC Kernen	302 A	57	106 B	2719	346.7
Early CDC Glas	278 A	58	107 AB	2477	340.6
Early CDC Esme	330 A	55	111 A	2696	345.3
Early CDC Dorado	265 A	53	105 B	2252	344.1
Early AAC Bravo	308 A	55	104 B	2406	345.1
Delayed CDC Kernen	232 A	64	105 B	2981	353.7
Delayed CDC Glas	235 A	60	103 B	2884	346.4
Delayed CDC Esme	281 A	58	108 AB	3014	350.8
Delayed CDC Dorado	248 A	57	105 B	2638	347.3
Delayed AAC Bravo	267 A	56	103 B	2837	348.6

Table A4. Means for the interaction of seed date x variety for the trial conducted at Yorkton, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

	Emergence (plants/m²)	Plant height (cm)		Days to maturity		Yield (kg/ha)	Test weight (g/0.5 L)	
Early CDC Kernen	426	50	C	104	C	1616	308.6	BC
Early CDC Glas	509	50	C	106	C	1785	319.2	ABC
Early CDC Esme	491	46	CD	108	B	2040	326.5	AB
Early CDC Dorado	437	47	C	105	C	1704	319.2	ABC
Early AAC Bravo	608	42	D	104	C	1334	305.1	C
Delayed CDC Kernen	502	63	A	121	A	2194	343.3	A
Delayed CDC Glas	786	59	AB	121	A	1818	335.5	AB
Delayed CDC Esme	640	56	B	122	A	1952	338.3	A
Delayed CDC Dorado	546	48	C	121	A	2065	335.5	AB
Delayed AAC Bravo	736	56	B	122	A	1930	340.7	A

Table A5. Means for the interaction of seed date x variety for the trial conducted at Indian Head, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

Seed date x Variety	Emergence (plants/m²)		Plant height (cm)		Days to maturity	Yield (kg/ha)	Test weight (g/0.5 L)
Early CDC Kernen	490	C	51	EF	105	2122	331.0
Early CDC Glas	582	AB	50	EFG	101	1991	329.2
Early CDC Esme	496	BC	47	FG	105	2040	332.7
Early CDC Dorado	518	BC	47	FG	101	1853	329.8
Early AAC Bravo	636	A	46	G	99	1729	329.4
Delayed CDC Kernen	410	C	65	A	98	2188	334.6
Delayed CDC Glas	469	C	62	AB	99	2116	330.0
Delayed CDC Esme	419	C	60	BC	101	2218	334.7
Delayed CDC Dorado	413	C	54	DE	97	1930	329.0
Delayed AAC Bravo	463	C	57	CD	99	2076	333.4

Table A6. Means for the interaction of seed date x variety for the trial conducted at Redvers, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

Seed date x Variety	Emergence (plants/m²)	Plant height (cm)		Days to maturity		Shattering (%)		Yield* (kg/ha)		TKW (g)		Lodging (1-5)	
Early CDC Kernen	320	63	BCD	107	A	45	B	1387	AB	6.7	B	1.0	B
Early CDC Glas	429	56	D	106	A	50	AB	1475	AB	5.8	D	1.0	B
Early CDC Esme	400	58	CD	108	A	53	AB	1696	AB	7.1	A	1.0	B
Early CDC Dorado	348	56	D	108	A	53	AB	1653	AB	6.5	BC	1.0	B
Early AAC Bravo	413	55	D	105	A	48	AB	1422	AB	7.1	A	1.0	B
Delayed CDC Kernen	259	76	A	105	A	73	AB	1191	B	6.0	D	1.0	B
Delayed CDC Glas	397	74	A	103	A	78	A	1307	AB	5.3	E	1.0	B
Delayed CDC Esme	340	73	AB	105	A	74	AB	1373	AB	6.4	C	1.3	B
Delayed CDC Dorado	326	61	CD	105	A	75	AB	1841	A	6.4	C	2.8	A

Delayed AAC Bravo	381	67 ABC	105 A	75 AB	1495 AB	6.7 B	1.8 AB

Table A7. Means for the interaction of seed date x variety for the trial conducted at Swift Current, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

Seed date x Variety	Emergence (plants/m^2)	Plant height (cm)	Days to flowering	Days to maturity	Yield (kg/ha)	Test weight (g/0.5 L)
Early CDC Kernen	121 AB	52 A	57	96 AB	1323	341.1 ABCD
Early CDC Glas	143 AB	47 ABC	57	93 BC	1006	337.7 DE
Early CDC Esme	111 B	48 ABC	56	97 AB	1026	340.8 ABCD
Early CDC Dorado	102 B	48 ABC	53	100 A	996	338.5 CDE
Early AAC Bravo	142 AB	44 C	51	90 C	927	336.5 E
Delayed CDC Kernen	124 AB	52 AB	52	90 C	1497	344.3 A
Delayed CDC Glas	165 A	47 ABC	52	89 C	1304	339.8 BCDE
Delayed CDC Esme	140 AB	47 ABC	51	90 C	1348	343.4 AB
Delayed CDC Dorado	128 AB	45 BC	55	92 BC	1273	340.0 BCDE
Delayed AAC Bravo	160 A	46 ABC	51	89 C	1199	342.2 ABC

Table A8. Means for the interaction of seed date x variety for the trial conducted at Prince Albert, SK. Means were compared using Tukey's HSD test at 95% confidence interval. Means followed by the same letter within a column do not significantly differ from each other. Where letters are absent, means for that parameter could not be grouped by letters due to the pattern of significant differences.

Seed date x Variety	Emergence (plants/m^2)	Plant height (cm)	Days to maturity	Lodging (1-5)	Yield (kg/ha)	Test weight (g/0.5 L)
Early CDC Kernen	307 A	62 A	99 ABC	1.0 A	1303 A	337.4 AB
Early CDC Glas	310 A	61 A	98 ABC	1.0 A	1058 A	333.9 AB
Early CDC Esme	310 A	59 A	102 AB	1.3 A	1245 A	334.5 AB
Early CDC Dorado	263 A	58 A	89 C	2.0 A	987 A	333.3 AB
Early AAC Bravo	261 A	60 A	89 C	1.0 A	1100 A	333.9 AB
Delayed CDC Kernen	228 A	66 A	98 ABC	1.0 A	890 A	339.5 A
Delayed CDC Glas	370 A	64 A	91 BC	1.0 A	784 A	328.8 B
Delayed CDC Esme	281 A	63 A	104 A	1.0 A	1136 A	334.6 AB
Delayed CDC Dorado	244 A	57 A	94 ABC	1.3 A	963 A	331.5 AB
Delayed AAC Bravo	300 A	59 A	97 ABC	1.0 A	859 A	330.1 B

Expenditure Statement

You must provide an expenditure statement showing how ADOPT funds were used. Expenditures must be reported using the budget categories shown in Appendix B of your contract. We recommend that you report your expenditures using the Excel spreadsheet we have developed for this purpose (ADOPT Expenditure Statement.xls). That spreadsheet is available from the research branch project manager or the evaluation coordinator.

Note that the ADOPT contract requires you to retain all receipts and financial records relating to the project for at least six years after the project is completed.