

Overview of Certified Seed and Farmer Saved Seed



External Release

Updated Version

Economics and Competitiveness Branch

March 2018

Ryan Furtas
Research Economics
Economics Section
Economics and Competitiveness Branch
780-422-7095
ryan.furtas@gov.ab.ca

*The views and opinions expressed in this report article are those of the **Economics and Competitiveness Division** and do not necessarily reflect the official policy or position of the **Ministry of Agriculture and Forestry** or the **Government of Alberta**. Analysis performed within this report is based on limited and open source information. Assumptions made within the analysis are not reflective of the position of the **Ministry of Agriculture** or the **Government of Alberta**.*

Table of Contents

.....	1
<i>Executive Summary</i>	4
<i>Introduction</i>	4
<i>Certified Seed</i>	4
Figure 1.0 Stages of Commercial Seed Production.....	4
Figure 1.1 Frequency of Certified Wheat Use per Revenue Group.....	7
<i>Saved Seed</i>	7
Figure 1.2 Western Canadian Crops Seeded With Certified Seed.....	8
Table 1.0 Pros and Cons of Certified Seed and Saved Seed	8
<i>Economic and Cost Analysis</i>	9
Table 1.1 Saved Seed Cost Analysis.....	10
Table 1.2 Saved Seed Cost Analysis, Percentage of Total Cost	11
Table 1.3 Cost of Certified Seed, Estimated cost of Saved Seed and Price of Wheat	121
<i>Report Limitations</i>	13
<i>Production Increase</i>	132
Table 1.4 Analysis of Production Increase.....	13
Figure 1.3 Cost to Seeding 1,500 Acres with Certified Seed Versus Saved Seed, 2004-2013	14
<i>Limitations</i>	15
<i>Conclusion</i>	15
<i>Appendix 1</i>	17

Executive Summary

This study provides information and some economic analysis for Alberta's wheat producers regarding the considerations for the type of seed they chose to plant. The information focuses on a cost comparison between saving seed for planting versus purchasing certified seed.

Canadian farmers are allowed to save and clean their own production for the purposes of planting it on their own land. The perception among producers is that the saved seed option is lower cost, since seed is readily available with only out-of-pocket costs for cleaning a portion of inventory. Comparatively, certified seed carries an upfront cost for producers, although it does provide a quality and performance guarantee with access to new genetics.

A direct cost comparison between saved seed and certified seed for the thirteen-year period 2003-04 to 2015-16 is included in this report. The saved seed estimate uses an average commercial price and simple costing for each action involved in cleaning the grain. The average cost of certified seed is based on Alberta Agriculture and Forestry's farm input prices for each twelve-month period.

The results reveal that only one year out of the thirteen was saved- seed a more expensive option than the certified seed option. This highlights the critical importance of producers using their own data to obtain the best information to compare costs between saved seed and certified seed, in addition to evaluating the potential of new varieties and placing a dollar figure on the convenience certified seed as well the opportunity cost of dedicating labour and resources to saved-seed.

Using certified seed can represent an opportunity for increased yield and the introduction of new genetics focused on disease, drought tolerance, or other yield increasing traits. The report provides the per bushel revenue potential associated with a modest yield increase accredited to planting a new variety of seed. There is also a cost analysis of a 1,500 acre wheat farm using saved seed or certified seed over the thirteen-year period.

Producers have their own rationale for using saved or certified seed, much of which is based around a comfort level surrounding agronomics, local knowledge and farm finances.

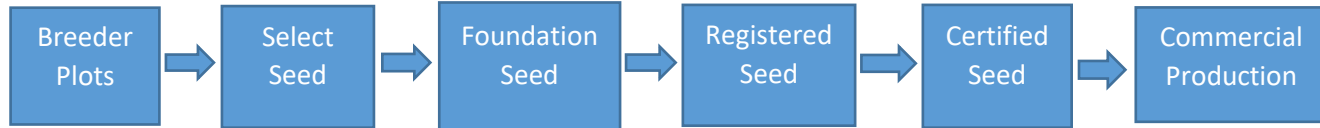
Introduction

Every growing season Alberta farmers have many of decisions to make. One of the decisions faced by farm managers is what to seed? The vast majority of field crop rotations in Alberta include spring wheat. In 2015, the Alberta acreage of wheat (including durum) was 6.8 million acres¹. Farm managers planting wheat need to budget for the purchase of certified seed for a portion of their acres or 100 per cent of their acres. Alternatively, they can allocate time, labour and resources to clean their own production for planting, which is termed saved seed. The factors that influence this decision are not always straightforward. The objective of this report is to provide background information, calculate the costs, present analysis and consider advantages and disadvantages associated with each decision.

¹ Source: <http://www.statcan.gc.ca/daily-quotidien/150630/dq150630b-eng.htm>

Certified Seed

Figure 1.0 Stages of Commercial Seed Production



Certified seed is true to type. This means all the benefits developed by the plant breeder are retained as the seed is multiplied. Pedigreed seed has five categories beginning with breeder plots. These small plots are controlled by the breeder to produce the original parent seeds for the remainder of commercial seed production process. Breeder plot production then gives way to select seed, this phase is performed only by accredited growers lasting for five generations. Select seed may not be sold or transferred and only used to produce Select or Foundation seed. The remaining stages are foundation, registered and certified seed and they last for one generation and are commercially available³. The highest level of purity available for commercial production is foundation seed, purity decreases with each generation grown through registered seed to certified seed⁴. The higher the pedigreed class of seed, the fewer contaminants allowed. The commercial seed production process occurs over a specific number of generations, eventually becoming certified seed. The variety development process from initial breeding to the marketing of seed by a farmer can take upwards of 12 years⁵.

Breeder seed is the result of researcher and plant breeder efforts over the course of several years in developing new seed varieties with improved genetics. Plant breeders develop new seed on behalf of private seed companies, public institutions such as universities (including the University of Alberta), Agriculture and Agri-food Canada (AAFC), and provincial governments⁶. Production of breeder seed is very limited and must be handled carefully in parent seed multiplication. Multiplication is performed by accredited plot growers that reproduce a small amount of seed in accordance with rigorous production standards that ensure varietal purity and freedom from impurities⁷.

Production from select plots is termed foundation class seed and is the basis for other growers to produce registered and certified class seed crops⁸. There is considerable investment of time and money involved to bring along new varieties slowly and carefully. Plant breeders and seed distributors are paid royalties through the retail price of the certified seed. The higher cost of certified seed is due to the additional costs from each of the production stages. Seed growers incur risks in retaining or holding over inventory if sales of a certain variety are less than expected. Seed

² Source: <http://seedgrowers.ca/seed-growers/what-is-canadian-certified-seed/how-certified-seed-is-produced/>

³ Source: <http://seedgrowers.ca/wp-content/uploads/Section-2.pdf>

⁴ Source: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex93](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex93)

⁵ Source: <http://www.agr.gc.ca/eng/about-us/public-opinion-and-consultations/crop-variety-registration-modernization/crop-variety-registration-in-canada-fact-sheet/?id=1374782565701>

⁶ Source: <http://seedgrowers.ca/farmers/intellectual-property-rights-play-key-role/>

⁷ Source: <http://seedgrowers.ca/seed-growers/what-is-canadian-certified-seed/how-certified-seed-is-produced/>

⁸ Source: <http://seedgrowers.ca/wp-content/uploads/Section-2.pdf>

growers are also exposed to risk by producing a new and unproven variety that may unexpectedly perform poorly due to agronomic or geographical fit. In addition, seed growers incur crop inspection fees, have increased labour and operation costs.

The basis of certified seed is verified genetic identity and purity, valuable to farmers who want additional assurance of seed quality and performance. Certified crops are inspected and produced in compliance with the Canadian Seed Growers Association (CSGA) standards. Then the seed grower receives an official crop certificate, which is the recognizable blue certified tag of the Canadian Food Inspection Agency (CFIA). The certified tag tells the farmer that a registered seed grower has produced the seed and guarantees its purity, varietal identity and germination, as well as, freedom from impurities such as weeds and other crop kinds⁹.

Certified seed of recently approved varieties is the first time a farmer is able to test any proclaimed agronomic benefits on their farm. New varieties often claim the potential for yield increases, improved drought tolerance, disease resistance, insect tolerance (e.g., wheat midge), and reduced days to maturity and improved harvest-ability (e.g., reduced straw, resistance to lodging). Certified seed purchases help finance the development of new and improved varieties.

To some farmers the advantage of purchasing certified seed is either not apparent or they do not consider the risk of planting saved seed to be high enough to offset the upfront cost of certified seed. A survey of 800 western Canadian producers growing spring wheat, barley, oats, canola, flax and peas in 2004 asked about their practices and attitudes towards certified and saved seed¹⁰. The top reasons to use certified seed according to farmers were: obtain a new variety, common seed was unavailable, they wanted to plant a higher quality seed¹¹. Patterns of certified seed are geographic and income dependent. Attitudes towards certified seed were dependent on producer demographics. Farmers with higher income had a more favourable attitude towards planting certified seed¹².

Figure 1.1 illustrates the survey results on who is using certified seed and the number of times it was used over the previous five years. High revenue producers report a higher frequency of using certified seed over the past five years when compared to lower revenue farms. Historically, farmers have become very comfortable with using saved seed; the rationale being that it is perceived to be a lower cost option and there is a belief that the quality of saved seed can be as good as certified seed.

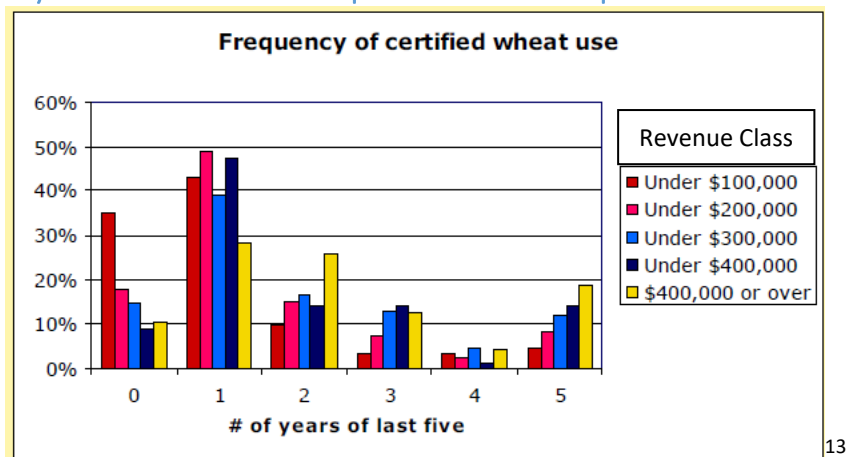
⁹ Source: <http://seedgrowers.ca/food-processors/what-is-canadian-certified-seed/>

¹⁰ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

¹¹ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

¹² Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

Figure 1.1 Frequency of Certified Seed Use per Revenue Group



13

Saved Seed

Farm saved seed is commercial grain that is cleaned by farmers for replanting. Saved seed does not require third party inspections to confirm varietal purity, identity or quality. Saved seed can easily and inexpensively have germination and vigor tests performed to guarantee standard levels. Canadian farmers are allowed to save and clean their own production for the purposes of planting on their own land, but they cannot legally sell or trade saved seed to another producer.

Production techniques for saved seed that require consideration include; field selection, which should be isolated, successful germination and uniform emergence. Favourable environmental conditions for the best for saved seed crops include:

- unbroken periods of heat units,
- temperatures and rainfall for establishment and vegetative growth,
- appropriate growing conditions during the flowering stage and
- Calm dry weather during maturation and harvest.

Today there is better weed control and heightened awareness around high quality production that can make saved seed kernel quality comparable to what is purchased from registered seed growers.

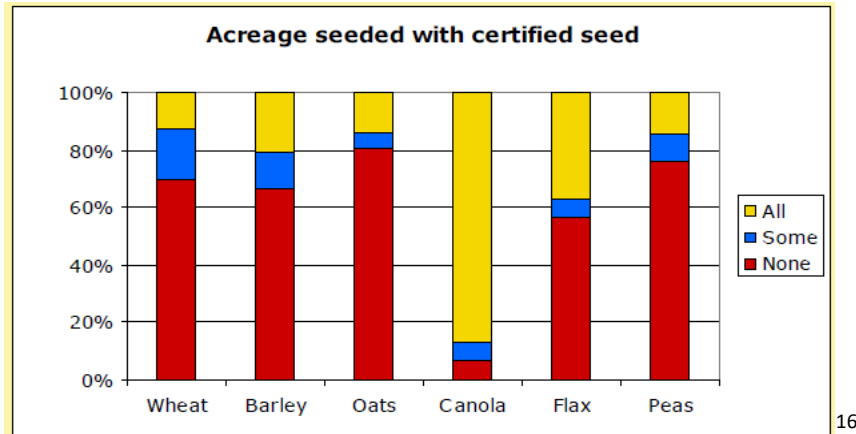
However, other factors need to be considered in the decision with respect to save seed including:

- the on-farm grain handling system;
- the time and labour required to properly clean combines, carts, augers, trucks, and bins;
- the extra effort needed for prioritized seeding, and
- pre-harvest glyphosate applications should NOT be used on crops when seed will be saved.

¹³ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

A 2004 western Canadian survey asked farmers for the area seeded with certified seed. Of the respondents, only 10 per cent of acres were seeded with certified seed and approximately 70 per cent of wheat area was planted with saved seed ¹⁴(figure 1.2). The main reasons to use saved seed are reduced cost, the belief that quality is just as good as certified seed and “I know what I am getting/always use saved seed”¹⁵ type of comments.

Figure 1.2 Western Canadian Crops Seeded With Certified Seed



Seed cleaning technology development is also responsible for advancing the quality of seed lots. Optical (colour) sorters used by the majority of Alberta seed cleaning plants are superior to prior technology. With the cost of this technology decreasing, it is now feasible for wheat growers to use optical sorters for commercial grain. The now standard technology can sort for colour defects on either side of the kernel, as well as sort based on kernel shape, length and thickness.

Colour sorters are used in wheat cleaning to remove ergot, black tip, fusarium, discolored grains and other inner contaminants. In addition to sorting by colour, wheat that is thin and lighter weight can be removed. It is commonly recognized that a plumper kernel generally performs better due to having more resources to germinate and grow under less than ideal conditions. The benefits of the colour sorter has producers almost always opting to put grain through the sorter to ensure high quality¹⁷.

Table 1.0 summarizes what farmers consider the positives and negatives of choosing either certified seed or saved seed. The main considerations for purchasing certified seed, according to farmers, are to obtain a new variety and guaranteed quality in terms of purity and genetics. The top reasons farmers use saved seed are to reduce costs and their high degree of familiarity with the variety and quality of production. Disadvantages to certified seed are cost and the seed not always meet expectations in terms of quality or value. Shortcomings of saved seed are that it is further away from

¹⁴ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

¹⁵ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

¹⁶ Source: <http://www.cropweek.com/presentations/2005/ssga.pdf>

¹⁷ Source: Expert opinion

being genetically pure, lacks quality standards and sometimes requires non-commercial production methods for best results.

Table 1.0 Pros and Cons to Certified Seed and Saved Seed

Certified Seed		Saved Seed	
Pros	Cons	Pros	Cons
New variety	Cost	Initial Cost	Less genetically pure – years away from certified
Quality assurance	Less than desirable value / quality	Farmers know what they are getting	Quality testing required - germ, vigour, disease
Genetic purity	New seed is not important practice	Higher quality production is attainable	Priority seeding and unable to apply preharvest glyphosate
Advanced Seed Technology	Particular variety is not readily available	Always done it that way	Lack proper grain handling systems, segregating costs
Yield increase potential	Risk that a new variety performs poorly	Advances in seed cleaning technology – colour sorters	Less than desirable quality
Identity preserved or traceability		1 - 3 years off certified, still genetically pure	

Economic and Cost Analysis

The costs associated with a farmer saving and cleaning CWRS wheat for 1,500 acres are detailed in Table 1.1. Based on the results of the seed rate calculator, you need 147,590 pounds or 2,500 bushels to plant 1,500 acres given average kernel weight, desired plant density and other planting characteristics¹⁸. To actually get 2,500 bushels, a producer will be required to save approximately 2,900 bushels accounting for a 10 per cent rate for cleanout. Cleanout is the term used to describe the residual grain from cleaning the gross amount of 2,900 bushels. In this case, cleanout amounts to 290 bushels. It is common practice to have extra bushels available in case the grain is mishandled, or the seeder malfunctions or a reseeding scenario arises.

Table 1.1 provides a cost breakdown of what a farmer forfeits by saving 2,900 bushels for seed compared to selling 100 per cent of the inventory and purchasing 100 per cent certified seed for planting next year’s crop. The saved seed versus certified seed cost analysis covers ten crop years beginning in 2004 and ending in 2013.

The single biggest cost associated with saving seed is the foregone opportunity to receive commercial value for the wheat. Wheat prices from 2004 to 2016 ranged from a low of \$4.10/bushel in 2005 to a

¹⁸ Source Appendix 1, seed rate calculator

high of \$8.76/bushel in 2007. That represents a \$4.66/bushel increase in the price of wheat, which in turn increased the saved seed estimate by \$4.92/bushel. The extra \$0.26/bushel cost is a direct result of having 10 per cent of the grain being removed and valued at 50 per cent of the commercial wheat price. Cleanout grain is generally sold at feed values.

Storage cost is calculated in Table 1.1 as \$0.16/bushel, which is the sum of the cost of storage estimated at \$0.027/bushel for six months. That is the approximate time the wheat would be in the bin before being replanted, instead of being sold.

Cleaning costs are relatively consistent and represent the cost of running grain through optical (colour) sorter, which is considered to be standard practice according to seed plant operators. Elevation and trucking costs of \$0.10/bu accounts for the time and operation of trucks and augers when cleaning is performed. Labour costs are categorized separately and could differ from the \$0.20/bushel estimate, depending on the assumed wage rate. Labour costs are important to include as time spent managing and executing grain delivery adds cost. The cleanout value is also subject to change and is influenced by the price of wheat.

Table 1.1 Saved Seed Cost Analysis

Year	Oct Cash – 2010-11 pool price	Storage (six months)	Cleaning ¹⁹	Elevation and trucking	Interest	Labour	Cleanout	Saved Seed cost estimate
2003/04	\$4.44/bu	\$0.16/bu	\$0.50/bu	\$0.10/bu	\$0.18/bu	\$0.12/bu	\$0.22/bu	\$5.72/bu
2004/05	\$4.28/bu	\$0.16/bu	\$0.52/bu	\$0.10/bu	\$0.19/bu	\$0.13/bu	\$0.21/bu	\$5.58/bu
2005/06	\$4.00/bu	\$0.16/bu	\$0.53/bu	\$0.11/bu	\$0.23/bu	\$0.13/bu	\$0.20/bu	\$5.37/bu
2006/07	\$4.49/bu	\$0.16/bu	\$0.55/bu	\$0.11/bu	\$0.27/bu	\$0.15/bu	\$0.22/bu	\$5.95/bu
2007/08	\$8.82/bu	\$0.16/bu	\$0.56/bu	\$0.11/bu	\$0.42/bu	\$0.15/bu	\$0.44/bu	\$10.66/bu
2008/09	\$7.17/bu	\$0.16/bu	\$0.58/bu	\$0.12/bu	\$0.17/bu	\$0.16/bu	\$0.36/bu	\$8.71/bu
2009/10	\$5.14/bu	\$0.16/bu	\$0.59/bu	\$0.12/bu	\$0.13/bu	\$0.17/bu	\$0.26/bu	\$6.57/bu
2010/11	\$8.08/bu	\$0.16/bu	\$0.61/bu	\$0.12/bu	\$0.24/bu	\$0.18/bu	\$0.40/bu	\$9.79/bu
2011/12	\$7.57/bu	\$0.16/bu	\$0.62/bu	\$0.13/bu	\$0.23/bu	\$0.18/bu	\$0.38/bu	\$9.27/bu
2012/13	\$7.71/bu	\$0.16/bu	\$0.64/bu	\$0.13/bu	\$0.23/bu	\$0.19/bu	\$0.39/bu	\$9.45/bu
2013/14	\$5.47/bu	\$0.16/bu	\$0.65/bu	\$0.14/bu	\$0.16/bu	\$0.20/bu	\$0.27/bu	\$7.06/bu
2014/15	\$5.79/bu	\$0.16/bu	\$0.67/bu	\$0.14/bu	\$0.16/bu	\$0.21/bu	\$0.29/bu	\$7.41/bu
2015/16	\$6.33/bu	\$0.16/bu	\$0.68/bu	\$0.14/bu	\$0.17/bu	\$0.21/bu	\$0.32/bu	\$8.01/bu
AVG	\$6.10/bu	\$0.16/bu	\$0.59/bu	\$0.12/bu	\$0.21/bu	\$0.17/bu	\$0.30/bu	\$7.66/bu

Table 1.1 Assumptions

- Canadian Wheat Board pool price 2004 to 2012, 2013-16 cash price net to Edmonton/Calgary

¹⁹ Source: Expert opinion

- Storage calculate to be \$0.027/bushels for six months
- For labour the Alberta farm input survey for general farm labour, full time without board five days²⁰
- Cleanout cost is based on 10 per cent of cleaned bushels removed and valued at 50 per cent of wheat price
- Elevation and trucking is the estimated cost of trucking, augering and management

The cost of saved seed is analyzed as a percentage of the total cost and is listed in Table 1.2. The table shows that the largest saved seed cost comes from the price of wheat, which ranges from 75 to 83 per cent of the total cost. Cleaning is the next largest cost at seven to nine per cent. Cleanout cost is consistently at four per cent and storage, labour, trucking and elevation are less than three per cent.

As the price of wheat decreases, the relative costs of all other categories increases. In 2005 for an example, the price of wheat was \$4.10/bushel, the lowest of the ten-year period, the relative costs of all categorizes increased with the exception of cleanout and commercial price.

Table 1.2 Saved Seed Cost Analysis, Percentage of Total Cost

Year	Commercial Price	Storage	Cleaning	Labour	Interest	Trucking and Elevation	Clean Out	Total
2003/04	78%	3%	9%	2%	3%	2%	4%	100%
2004/05	77%	3%	9%	2%	3%	2%	4%	100%
2005/06	75%	3%	10%	3%	4%	2%	4%	100%
2006/07	75%	3%	9%	2%	5%	2%	4%	100%
2007/08	83%	2%	5%	1%	4%	1%	4%	100%
2008/09	82%	2%	7%	2%	2%	1%	4%	100%
2009/10	78%	2%	9%	3%	2%	2%	4%	100%
2010/11	83%	2%	6%	2%	2%	1%	4%	100%
2011/12	82%	2%	7%	2%	2%	1%	4%	100%
2012/13	82%	2%	7%	2%	2%	1%	4%	100%
2013/14	78%	2%	9%	3%	2%	2%	4%	100%
2014/15	78%	2%	9%	3%	2%	2%	4%	100%
2015/16	79%	2%	8%	3%	2%	2%	4%	100%
5 YR AVG	80%	2%	8%	2%	3%	2%	4%	100%

²⁰ Source: <http://www.agric.gov.ab.ca/app21/farminputprices>

Table 1.3 provides a direct comparison to the estimated costs of saving seed (Table 1.1) versus the cost of purchasing certified seed over a thirteen year period (2003-2016). The results show certified seed exceeded the cost of saved seed twelve out of the thirteen years.

Table 1.3 Cost of Certified Seed, Estimated Cost of Saved Seed, Commercial Prices, and Difference between Certified Seed and Saved-Seed

Year	Cost of Certified Seed per Bushel	Cost of Saved Seed per Bushel	Commercial Prices per Bushel	Difference, cost of certified seed minus saved-seed
2003/04	\$9.48	\$5.72/bu	\$4.44/bu	\$3.76/bu
2004/05	\$8.65	\$5.58/bu	\$4.28/bu	\$3.07/bu
2005/06	\$8.50	\$5.37/bu	\$4.00/bu	\$3.13/bu
2006/07	\$8.87	\$5.95/bu	\$4.49/bu	\$2.92/bu
2007/08	\$10.55	\$10.66/bu	\$8.82/bu	\$(0.11)/bu
2008/09	\$12.17	\$8.71/bu	\$7.17/bu	\$3.46/bu
2009/10	\$11.03	\$6.57/bu	\$5.14/bu	\$4.46/bu
2010/11	\$10.95	\$9.79/bu	\$8.08/bu	\$1.16/bu
2011/12	\$12.04	\$9.27/bu	\$7.57/bu	\$2.78/bu
2012/13	\$14.34	\$9.45/bu	\$7.71/bu	\$4.90/bu
2013/14	\$14.05	\$7.06/bu	\$5.47/bu	\$6.99/bu
2014/15	\$13.63	\$7.41/bu	\$5.79/bu	\$6.22/bu
2015/16	\$13.77	\$8.01/bu	\$6.33/bu	\$5.76/bu
Average	\$11.39	\$7.66/bu	\$6.10/bu	\$3.73/bu

Table 1.3

- Cost of Certified seed - <http://www.agric.gov.ab.ca/app21/farminputprices>
- Cost of Save Seed is from Table 1.2

Table 1.3 shows that farmers saving seed is a cost effective almost all the time. However, there are increasing their risks of reduced yield due to decreased seed genetic purity and tolerance to drought and disease to name a few. From the table, farmers can generally price in about a \$3.75/bushel price premium for access to new genetics, increased tolerances and convenience of purchasing certified seed.

An observation of the data is when commercial prices are stable the seed costs are often less than the \$3.75/bushel threshold. Commercial market volatility creates price swings that can result the seed market to but well below or well above the average price spread. As with any assessment, farmers should use their own data and information for their farm and area.

Report Limitations

This report assumes access to certified seed is perfect. In reality supply shortages exist and can lead to price increases. This could lead to planting a variety that is not preferred by the producer. This report also assumed there are no major seed production issues within a local area and one way trucking for just in time pick up for planting. It is also assumed saved seed would have to pass germination and vigour testing and is deemed suitable for planting.

There is also an opportunity cost if potentially more productive work is left undone during the time it takes to clean seed. Labour costs are accounted for, but if the time would be better spent reducing costs or generating revenue from another activity, that should be included for consideration in an individual analysis.

Production Increase

Analyzing a scenario with a yield increase of 1.5 bushels per acre as the result of purchasing certified seed is summarized in Table 1.4. New seed genetics are focused on yield increases, drought and pest tolerance and reduced days to maturity, thus, an incremental 1.5 bushels / acre is attributed to certified seed. Yields within this ten year period averaged 54 bushels / acre based on central Alberta yield averages. A 1.5 bushel / acre increase over the ten years provides an average additional revenue of \$9.46 / acre or \$0.18 / bushel. The potential per bushel increase should be considered when deciding to use certified or saved seed. If the saved seed quality and variety is inferior to the certified seed, the non-realized revenue from the yield increase from certified seed should be added to the cost of saved seed.

Table 1.4 Analysis of Production Increase

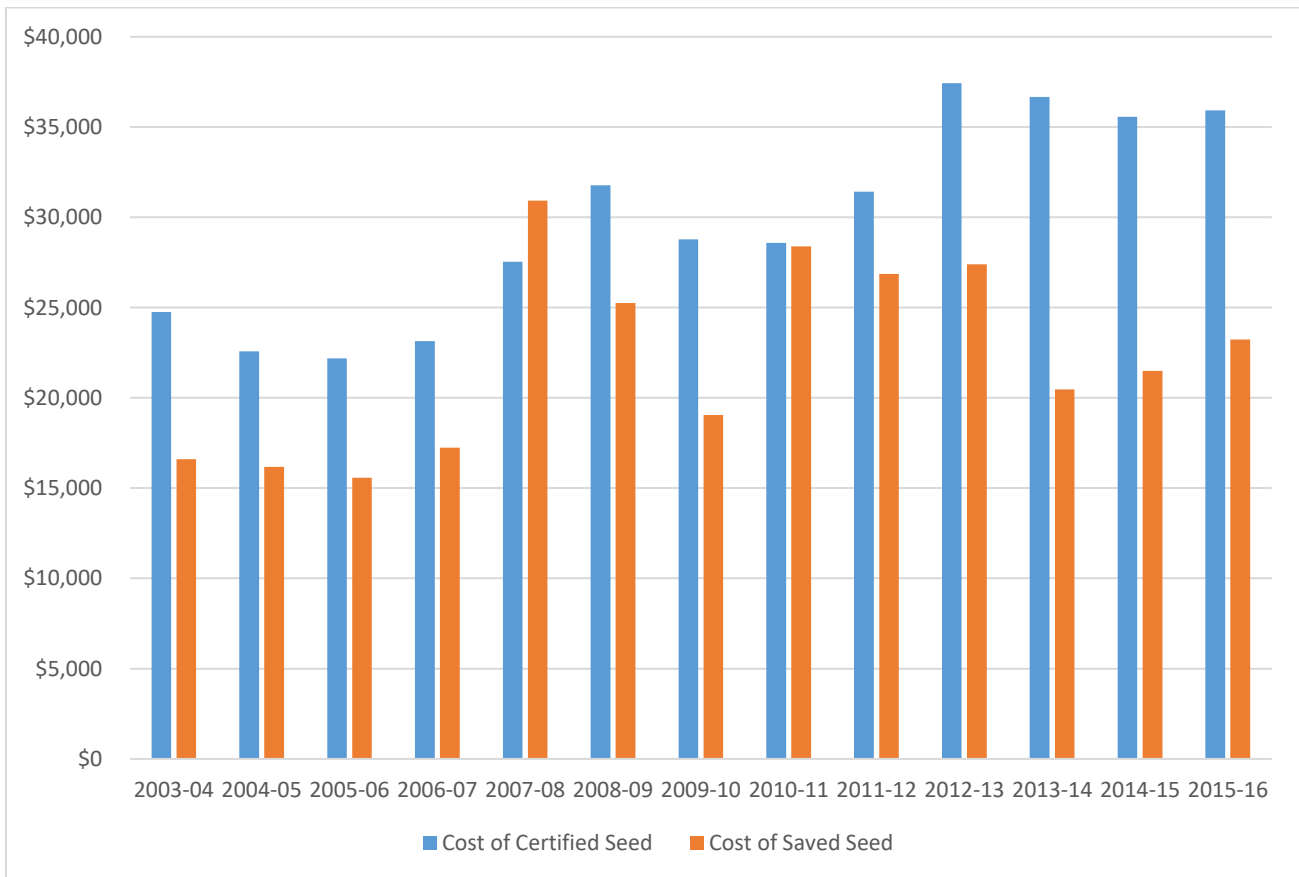
Year	Commercial Price	Average Yield	Average Yield + Add 1.5 bushel	Average Yield Revenue per acre	Revenue per acre + Add 1.5 bus /acre	Revenue per acre change: 1.5/bus less Average	Revenue per bushel with 1.5 yield increase
2003-04	\$4.44/bu	50	51.5	\$213.77	\$220.19	\$6.41	\$0.12
2004-05	\$4.28/bu	52	53.5	\$208.23	\$214.24	\$6.01	\$0.11
2005-06	\$4.00/bu	56	57.5	\$251.30	\$258.03	\$6.73	\$0.12
2006-07	\$4.49/bu	45	46.5	\$396.87	\$410.10	\$13.23	\$0.28
2007-08	\$8.82/bu	44	45.5	\$315.36	\$326.11	\$10.75	\$0.24
2008-09	\$7.17/bu	54	55.5	\$277.46	\$285.17	\$7.71	\$0.14
2009-10	\$5.14/bu	42	43.5	\$339.43	\$351.56	\$12.12	\$0.28
2010-11	\$8.08/bu	54	55.5	\$408.61	\$419.96	\$11.35	\$0.20
2011-12	\$7.57/bu	52	53.5	\$372.65	\$383.40	\$10.75	\$0.20
2012-13	\$7.71/bu	49	50.5	\$378.00	\$389.57	\$11.57	\$0.23

2013-14	\$5.47/bu	65	66.5	\$355.58	\$363.78	\$8.21	\$0.12
2014-15	\$5.79/bu	59	60.5	\$341.62	\$350.30	\$8.69	\$0.14
2015-16	\$6.33/bu	48	49.5	\$303.88	\$313.37	\$9.50	\$0.19
AVG	\$6.10/bu	54	53.0	\$320.21	\$329.68	\$9.46	\$0.18

A 1,500 acre wheat farm is again used to illustrate the costs of saving and cleaning 2,900 bushels of inventory versus purchasing 2,610 bushels of certified wheat seed each year from 2004-2013 (Table 1.4). The cost for saved seed and certified seed for each year is from Table 1.1.

Figure 1.3 is a per year comparison of the costs of saving 2,900 bushels of seed versus purchasing 2,600 bushels of certified seed from 2004 to 2013. The figure graphically shows how saved seed compares with certified seed. Easy to see how 2013 to 2015 the gap between saved and certified widens to the largest point over the thirteen data set. Conversely, 2007-08, 2010-11 and 2011-12 show a closer than the usual price spread, in fact 2007-08 it cost more to plant saved seed and in 2010-11 was equal cost.

Figure 1.3 Cost to Seeding 1,500 Acres with Certified Seed versus Saved Seed, 2003/04 to 2015/16



Limitations

The analysis is a historical review because average wheat prices are not established at the time when a farmer is making a decision on whether to save seed or purchase certified seed. The price of certified seed can react to and be a function of commercial wheat prices western Canadian farmers are receiving.

July 2012 seen the closure of the Canadian Wheat Board, which provided an average pooled price for wheat to producers. Since 2012, the majority of western Canadian producers sell wheat at cash values throughout an approximate 18-month marketing period. That means every producer has a different average price depending on the quality produced, timing of sales and market conditions.

The certified seed market is similar. Not every farmer buys seed at the same time of year or at the same price. Like any average price, some producers will pay more and some less depending on timing and the volume required. Earlier decisions likely achieve more competitive pricing, since supply shortages generally affect last minute purchases. Anticipating the seed market can also lead to savings. Purchasing before a price increases or after prices trend downward can lead to savings but on the other hand cost in storage and potential interest payments.

The saved seed analysis will always require more bushels to be included due to the 10 per cent cleanout. In the example, the saved seed quantity is 2,900 bushels versus 2,610 bushels for certified seed. That is a 290-bushel advantage head start for certified seed. The report values cleanout grain at 50 per cent of the commercial price, which depending on the cleanout quality could be sold for more if it is weed and disease free, or less should the cleanout sample, because of poorer quality.

An alternative approach is to purchase enough certified seed to plant and produce as saved seed for the next year. The upfront costs of certified seed are minimal and saved seed will only be one year away from certified. In addition, it provides an opportunity to trial new varieties and genetics before implementing on an entire operation. In the instance of the 1,500 acre wheat farm, approximately 60 acres of CWRS yielding 50 bushels / acre would produce 3,000 bushels, enough to save and clean for the next crop year. Operating a miniature 60 acre seed farm to supply next year's seed wheat reduces overall wheat production and revenue by approximately four per cent. It is important that the commercial producer mirror the seed production practices of a seed grower. This could require prioritized seeding, time and resources to ensure a clean seeder and combine and inability to apply preharvest glyphosate. Investment in seed storage may also be needed if grain segregation is required.

Conclusion

This report is focused on analyzing the cost to commercial farmers of holding back a portion of production as saved seed and accounting for all the costs associated with preparing the seed for next year's planting. The per year cost of saved seed is then compared to purchasing certified seed. The study suggests certified seed thirteen average price premium is approximately \$3.75 / bushel based on the save-seed costs in the report. The commercial price of wheat is the strongest signal to farmers

in their decision. However, all analysis should be completed with a producer's own data and take into account the previous year's commercial price and seed availability to make an informed decision.

The report described the protocol seed farmers use to produce seed, and describe farmers producing certified seed as well as farmer attitudes towards purchasing certified seed. From a 2004 survey of farmers cited "reduced costs" and "I know what I am getting" as explanations for why they prefer saved seed. The same survey cited obtaining a new variety and better quality seed as top reasons to purchase certified seed.

An economic assessment suggests that in the thirteen-year period under review, purchasing certified seed was only economically beneficial two out of the thirteen years. Purchasing certified seed over saved seed would have also given producers access to new varieties, better quality and genetics as well as relative convenience. Farmers are urged to apply their own farm data to obtain the best information on new varieties and in developing a thorough comparison between saved seed and certified seed.

Appendix 1

Wheat, Hard Red Spring Seeding Rate Calculator Results

Crop : Wheat, Hard Red Spring **Variety :** [Harvest](#) **1000 Kernel Weight :** 37 gram s

Seed **98.4 lb/ac** of Wheat, Hard Red Spring to obtain 25 live plants per square foot. Your seeder must be [calibrated](#) so that each opener drops **68.3 grams** of seed per **100 feet** of travel or **18.5 seeds** per foot of row, based on a **8 inch** row spacing.

(This seeding rate is based on your assigned values of 25 plants/ft², 95% germination, 5% seedling mortality, and 8 inches rowspacing.)

To seed **1,500 acres** you require **147,590 lbs / 66,945 kg** of seed.

Desired plant density (plants/ft ²)	<input type="text" value="25"/>	Enter plant density in the 15 to 50 range.
Germination rate (%)	<input type="text" value="95"/>	Enter germination rate in the 65 to 100 range.
Emergence mortality (%)	<input type="text" value="5"/>	Enter emergence mortality rate in the 0 to 50 range.
Row Spacing (inches)	<input type="text" value="8"/>	Enter row spacing in the 3 to 14 inches range.
1000 kernel weight	<input type="text" value="37"/>	Normally ranges between 25 and 55 gram s.
Acres to be planted, if known	<input type="text" value="1,500"/>	
Price (lb), if known	<input type="text" value="0.00"/>	