2021, Issue 4

Grow With Us

Lakeland Agricultural Research Association

July/August 2021

Salvaging A Crop? Here Are Some Things To Consider When Valuing A Crop For Feed

Beef Cattle Research Council

With moderate to severe drought in many areas of Canada and the northern United States, many beef producers are looking for alternative feed sources to get their cattle through the coming months. With drought causing lower crop yields, many beef producers are hoping to work with neighbouring farmers to graze, bale, or silage crops. The question is how to value that feed in a way that provides value to both the farmer and the cattle producer.

When considering salvaging crops for feed, beef producers need to consider accessibility, availability, yield, transport costs, potential anti-nutritional factors or other animal health impacts, and feed quality.

On the other hand, farmers are thinking about residue management, long term land impacts, contracted crop acres, costs to harvest, etc. When establishing prices, it is important to be clear in your communications about what each party hopes to gain as well as each party's responsibilities. While grazing cattle on crop land or residues isn't new, the salvaging of crops may put some unique options on the table for 2021.

The value of crops for livestock feeds calculator was developed to help beef producers work with their neighbors to determine a value for salvaged crops.

For example, a barley field with 14 bu/acre of grain at current prices of $7.95/bushel results in a grain value of $111.30/acre. When you subtract the costs of combining the field ($32.33/acre according to the Saskatchewan Custom and Rental Rates Guide from August 2020) the harvest value is $78.97/acre. This provides a starting price to be considered. If a crop is being sold to a livestock producer as greenfeed, there is also the value of the straw.

The second part of the calculator provides estimates of nutrients per acre of straw and prices per pound, using the lower yield of 14 bushels/acre. That equates to roughly $1 of straw per bushel of barley harvested (another$15.11/acre).

This is added to the harvest value above ($76.87/acre), for a total of $91.98/acre. This is a reasonable starting point for a pricing conversation, but there may be other costs or considerations.

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2021 Calendar of Events

Hemp Tour	September 15, 2021	Smoky Lake
Nutrition Workshop	September 21, 2021	Smoky Lake
Nutrition Workshop	September 23, 2021	Lac La Biche

Call the LARA Office for help with:

Age Verification, Feed Testing, Environmental Farm Plans, Canadian Agriculture Partnership Applications and more.

780.826.7260

Feed Testing

We offer two free feed tests to all producers in the MD of Bonnyville, Lac La Biche County, Smoky Lake County and the County of St. Paul.

Call the office to borrow a bale probe or to drop off a sample: 780.826.7260

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Salvaging A Crop? Here Are Some Things To Consider when valuing a crop for feed

Continued from front cover

Step 1. Select Crop		
Select Crop	Cereal Straw	
Estimated straw yield	0.5	tonne/ac
Step 2. Value of Standing Crop		
Estimated grain yield	14	bu/ac
Current grain price	$7.95	$/bu
Grain Value	$111.30	$/ac
Less Combine costs	$32.33	$/ac
Grain value in the bin	$78.97	
Nutrient value of Straw	$ 15.11	$/ac
Value of Standing crop	**$94.08**	**$/ac**

While leaving a certain amount of crop residue in the field to capture snow over the winter is often important to boost spring moisture levels, some farmers may be faced with a situation where crop yield is too low to bother combining, but without removal of some of this residue (e.g., by baling or grazing) they may be forced to cultivate the existing crop under in order to be able to plant next spring's crop. And that scenario won't help the crop producers that may need to buy out their pre-delivery contracts. By working with a neighbouring beef producer to salvage some value, they may be able to buy out those contracts in situations where there is no chance of fulfilling them.

Producers also need to include swathing, baling/silaging, labour costs, and transportation costs. Once again using the Saskatchewan Custom and Rental Rates Guide (August 2020), and a yield of half a bale per acre, that greenfeed total costs would be $121.04/bale.

Nutrient Value of Manure

Step 3. Nutrient value of Straw and Manure				
Nutrients	Straw (lb/ac)	Manure (lbs)	Price ($/lb)	Nutrients in Manure
Nitrogen (N)	6.88	486	0.55	6 g/kg
Phosphorus (P)	2.02	639	0.66	7.89 g/kg
Potassium (K)	18.52	3,115	0.50	38.45 g/kg
Sulphur (S)	1.325		0.55	
Value ($/ac)	$ 15.11			
Total Acres	160			
Total Value for the field	**$ 2,416.95**	**$ 2,246.85**		

If the crop is being grazed, the value of manure left on the field should also be considered. Cattle manure is a good source of nutrients, such as nitrogen (N), phosphorus (P), potassium (K), sulfur (S), and magnesium (Mg), as well as other trace elements." Approximate nutrient levels in cattle manure include 7.89 g P / kg manure, 38.5g/kg K, and 2–8.1 g/kg for N. An average of 6 g/kg or 12 pounds of N in a ton (2,000 pounds) of beef cattle manure was used in this example.

With reduced straw production in many fields expected in 2021, the nutrient value of the manure left after grazing may be similar to the nutrient value of the straw removed this year. But there are additional benefits of having manure on the soil – the biological activity in the manure can help boost nutrient cycling within the soil. Other considerations for crop grazing are:

- availability, practicality and cost of water and fencing infrastructure
- meeting any herbicide, insecticide, or other input withdrawal dates for grazing
- potential sulfate and nitrate levels in the crop (or any other potential anti-nutritional factors)
- if the cattle are unfamiliar with the crop, training them to eat it
- grazing cattle may leave fields rough and farmers may be required to harrow in spring or once cows have been removed

Resources:

http://www.beefresearch.ca/blog/salvaging-a-crop-here-are-some-things-to-consider-when-valuing-a-crop-for-feed/

BCRC
BEEF CATTLE RESEARCH COUNCIL

Soil Health Benchmark in Alberta

In previous years, there has been an increasing interest in the connection between soil health and overall food quality. Sustainable productivity of a soil is a function of physical, chemical, and biological soil aspect. Historically, chemical soil health has been the focus of crop production. However , soil health can only be fully assessed through all three parameters.

Improvement in soil health can results in higher production potential and could strengthen the soil's ability to cope with environmental conditions such as drought, compaction, and higher amounts of moisture.

The goal of this project is to assess 220 soil samples across the province each year for soil physical, chemical, and biological health. Samples will be taken from participating producer's fields with a wide variety of management practices including pastures, hay, annual crops etc. Results from the samples will be provided to the participating producers and anonymously they would be compiled into an online database that will be accessible for all producers across the province.

We are currently still looking for producers within our participating Counties and Municipalities who are interested in participating in this project.

If you are interested in having your land sampled as a part of the Soil Health Benchmarking project or if you are looking for more information, please call us at the LARA office (780) 826-7260.

The Garden in the Fall

Lara Staff

Fall is the time when the gardeners reap the fruits of their labor— delicious peas, carrots, corn, potatoes, and, of course, enough zucchini to feed a small village. This is also the time to start next years bounty. There are so many great varieties of garlic bulbs and local stores will soon be stocking these as well. The " hardneck" varieties tend to do better in our climate than their "softneck" cousins. Garlic should be planted in mid October. A thin layer (2-3 inches) of leaves is an excellent idea — to improve survival rate.

Next spring, rake off the leaves and wait for that delicious fresh garlic. The hardneck varieties will develop a scape (a long flowering stem). Scapes should be removed in early summer as their growth will rob energy from the plant— resulting in smaller garlic heads. The scapes are edible and will give a pleasant mild garlic flavor in stir - frys or other dishes.

When at least 50% of the plant has turned yellow (usually late July), pull out garlic heads and hang them in a cool, well-ventilated area to dry. After 2 weeks, cut off the stalks and store the heads in a cool, dark area. After 2 weeks, cut off the stalks and store the heads in a cool, dark area. Most garlic heads will store for a year! Enjoy!

Did you hear about the garlic diet? Simply eat 6 cloves of garlic each day. You won't lose any weight but people will stand further away—and you will look smaller from a distance!

Ag Forward:
managing on-farm plastics

Can the Ag Sector Achieve Zero Plastic Waste on the Farm?

July, 2020

Modern farming utilizes technologies and innovative products that can help farmers operate efficiently with a goal of higher productivity yields in both crops and livestock.

Some of these tools are well known in today's farming operations and include items made of plastic, such as grain bags and baler twine, as well as plastic containers – jugs, drums and totes – that are used to deliver products such as pesticides and fertilizers. While these are convenient and sometimes essential tools around farms, they can be difficult to manage when they are empty. However, innovative ideas from industry and farmers can lead to better outcomes for managing these materials.

Waste analysis studies in the province estimate that Alberta farmers generate just over 14,000 tonnes of various types of ag plastic annually, which is about the same as Saskatchewan, and includes containers, grain bags, plastic baler twine, bale wrap, silage bags and bunker covers.

Many farmers have shared their preference for options that avoid 'use and discard' practices, but admit they are challenged to find alternatives. More and more, they look to the manufacturers of these products and packaging to offer solutions to the mounting volume of plastics used to deliver crop input products or to store and preserve harvested crop and livestock fodder.

Attitudes about managing these used materials are shifting not only on the farm, but within ag industry circles, as well. Many manufacturers of ag products using plastics fund recycling programs available to farmers through Cleanfarms programs to advance the circular economy for plastics. The circular economy considers all aspects of the product design to minimize unnecessary products, and design materials that can be reused or recycled, keeping them in the economy and out of the environment. The Government of Alberta has already committed to advancing a circular economy for all plastics in the province.

Ultimately, the goal is to achieve zero plastic waste in the agricultural sector meaning that for farmers, these materials can be used efficiently, never becoming waste, which contributes to positive on-farm stewardship.

cleanfarms

ALBERTA AG-PLASTIC RECYCLE IT!

Alberta

The pilot project is led by the multi-stakeholder Agricultural Plastics Recycling Group, funds were granted by the Government of Alberta and are administered by Alberta Beef Producers

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Ag Forward: managing on-farm plastics 2

Filling a grain bag at the end of harvest season in Alberta

"The impact for Alberta farmers is two-fold. We can operate our farms with less clutter, keeping both the outbuilding areas and the land free of plastic materials and we can contribute to a more sustainable, environmentally responsible farm operation for ourselves and our families. Recycling programs are a significant step in protecting the future in the ag sector," said Dean Hubbard, an Alberta wheat farmer and APRG member.

Find out more:

- Alberta Ag-Plastic. *Recycle-It!*
- View published and upcoming editions

Upcoming edition: A look at how ag plastics recycling works in Alberta – the challenges and opportunities

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Cleanfarms is an agricultural industry stewardship organization that contributes to a healthier environment and a sustainable future for Canadian agriculture by developing and operating programs across Canada specifically for farmers that collect used ag plastics for recycling, as well as other ag-related used and unwanted materials for recycling or safe disposal. cleanfarms.ca

The Agricultural Plastics Recycling Group (APRG) was formed in 2017 and comprises more than 20 organizations representing agricultural producers, retailers, manufacturers, municipalities, non-profits and others. The group is committed to finding solutions to manage agricultural plastics. aprg.ca

Interaction Between Canola Seed Size and Seeding Depth Project

Alyssa Krawchuk, LARA

Canola (*Brassica napus*) is one of the most widely grown oilseed crops in Alberta. The costs of establishing canola are high, with the cost of seed being second only to fertilizer costs. Consequently, the ability of farmers to improve production through an understanding of interactions between seed size and planting depth would be highly beneficial.

Previous research has shown that a seeding depth of 50 mm resulted in a 24% to 41% reduction in plant emergence when compared to a seeding depth of 25 mm (Lamb and Johnson 2003). A similar study by Hanson et al. (2008) demonstrated a significant reduction in seedling emergence and plant density when seeding depth was increased from 19 mm to 38 mm. Vigil et al. (1996) demonstrated a reduction in seedling emergence as a result of the interaction between seeding depth and temperature, indicating that increased seeding depths could place seed into cooler soils that could delay or reduce emergence rates. Studies in Saskatchewan have found a positive impact on the seedling establishment with reduced seeding depths (Mahli and Gill 2004; Nuttal 1982). Harker et al. (2012) demonstrated that seedling emergence improved from 37% to 62% when seeding depth decreased from 4 to 1 cm. In contrast, Hwang et al. (2014) did not find that seeding depth impacted seedling establishment. However, the general conclusion from previous research is that increasing seeding depth results in reduced seedling emergence and stand establishment.

The development of new canola cultivars over the past two decades has produced changes in canola seed size that have altered seeding rates. Previous research indicates that canola seed size can impact emergence, as demonstrated by Hwang et al. (2014) that a mid-sized seed performed better than a small or large seed under greenhouse conditions. Elliot et al. (2008) showed an increase in canola emergence with an increase in seed size. An Australian study (Brill et al. 2016) demonstrated that larger seeds increased early biomass and overall yield in two canola varieties. A recent study in Alberta (Harker et al. 2017) confirmed this by demonstrating a 28% greater shoot biomass at the 6-leaf stage with large seeds when compared to small seeds. These results are further supported by Harker et al. (2015) that showed greater early biomass production with larger seeds.

Very little research is available on the interaction between seed size and seeding depth. A recent study from Australia concluded that reductions in seedling emergence in canola by increasing seeding depth could be offset by planting seeds larger than 2 mm in diameter (Brill et al. 2016).

This study aims to further assess the interaction between seed size and planting depth in Alberta conditions.

Continued on page 10...

Cutting Annual Crops for Livestock Feed

Barry Yaremcio, Yaremcio ag Consulting

Timing is critical when making greenfeed or silage from drought stressed annual crops. It is better to cut earlier than later. There are a number of reasons not to wait.

1) There is generally no yield increase. As the plant deteriorates, the bottom leaves dry and drop from the plant. This reduces both the amount of protein and energy that is in final silage or greenfeed. Any increase in the amount of weight in the grain head is offset by the leaf losses. For canola salvage crops, the blossoms and leaves are the major contributors to plant quality .

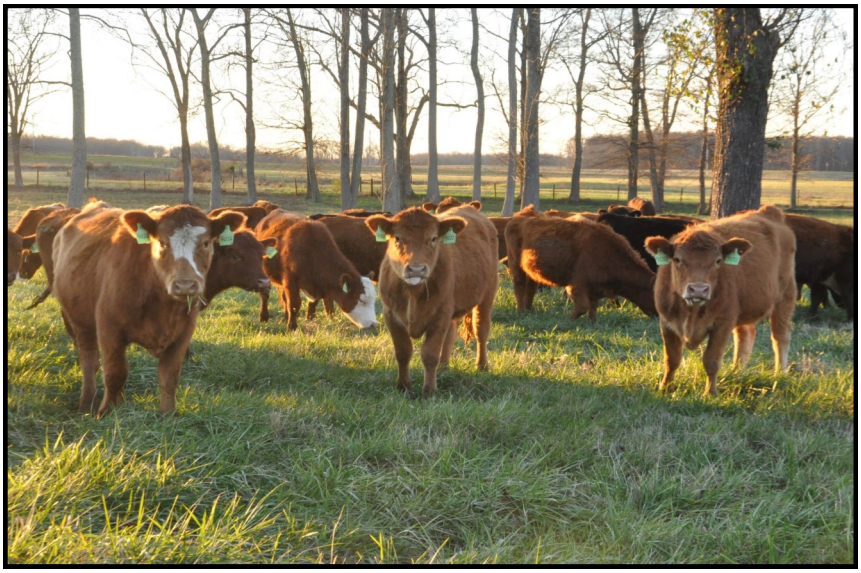
1) Fibre levels increase rapidly as the plant matures. In dry, hot conditions, the plants will mature two to four weeks earlier than in a normal year. Acid detergent fibre (ADF) increases by approximately 2 % per week. This reduces available energy (digestible energy (DE), total digestible nutrients (TDN), or metabolic energy (ME)) by approximately 1 to 1.5 points per week. Neutral detergent fibre (NDF) increases by 2 to 3 % per week. When the neutral detergent fibre content in the final ration exceeds 60%, feed digestion rates decrease and the animal is not able to eat as much as normal.

1) High fibre rates increase the amount of stem rejected (not consumed) by the animals. This increases feed waste. Chopping or tub grinding the long stems can increase intake, but it is an additional expense that can be avoided if the crop was harvested earlier.

1) Moisture content in plants decrease as they mature. If making a chopped silage that requires 60 to 65% moisture, the standing crop may only have 55% moisture or less. The material will need to be cut to a shorter length to improve packing but there is no guarantee that the shorter chopping length will solve the problem.

1) More mature cereal crops end up being a chopped straw and grain combination instead of a true silage. This creates more difficulties in feeding due to animal behavior. It is possible that the cows will sort through the feed, pick the grain and leave the straw behind. Acidosis, grain overload, and bloat can occur if the cows overconsume the grain.

If possible, cut and harvest the salvage crop early. If placing the silage in a bag or pit, have a 20 L pail and lid next to the unload area. Take a hand full of material out of every third or fourth load and place it in the pail. Re-seal the lid. When the pile, pit or bag is completed. Mix the material and fill a bread bag one third full. Press out the air, seal the bag and freeze it prior to submitting for analysis. If the material is packed properly, and covered with plastic, the quality of the material going into storage should be as good as the silage coming out. This provides a feed test result well before the silage is fed.



Canola Seed Size and Depth Trial

Continued from page 8

The trial began in 2020 and will conclude in 2022 after three years of data collection. Three locations are being managed across the province:

1. Lakeland Agricultural Research Association in Lac La Biche.
2. Battle River Research Group in Forestburg
3. SARDA Ag Research in Fahler

Data from all three locations will be summarized individually and then compared to assess results under different regional and environmental conditions.

The trial is funded through the Canadian Agricultural Partnership.

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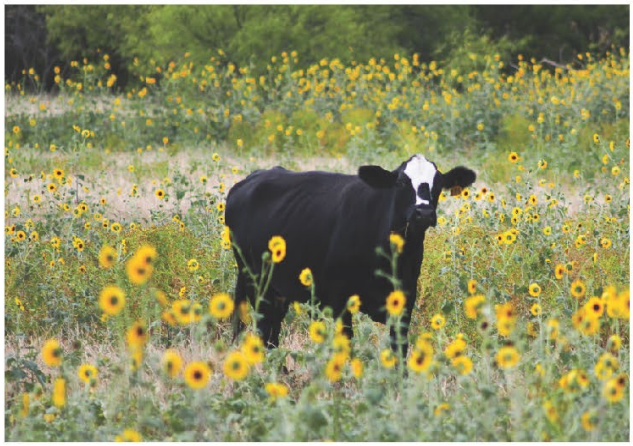
LARA Watershed Resiliency and Restoration Program

Funding Opportunity

Watersheds are unique, come in many shapes and sizes and can cross many different land uses. The simple definition of a watershed is the area of land that catches precipitation, and drains into a wetland, stream, river or groundwater. The riparian zone is the interface between the upland and a water course. This area is heavily influenced by water, how and where it flows and is reflected in the plants, soil characteristics and wildlife that are found there. Riparian areas have a large role in water quality, quantity and biodiversity. They provide eight key functions to: trap and store sediment; build and maintain banks and shorelines; store water; recharge aquifers; filter and buffer water; reduce and dissipate energy; create primary production; and maintain biodiversity by providing habitat for plants, wildlife and fish. These Ecological Services benefit people, other living organisms, and the overall functioning of interconnected natural systems within watersheds. Conservation and restoration of wetlands and riparian areas in Alberta are needed for sustainably functioning watersheds.

LARA has available funding ending November of 2022 for: offsite watering systems, riparian fencing, watercourse crossings, and wetland enhancements such as pond levelers, exclusion fencing and riparian plantings. So apply for your projects as soon as possible.

Forms and information for the program are available online at: http://www.laraonline.ca/farming-resources/environmental/funding-opportunities/



LAKELAND AGRICULTURAL RESEARCH ASSOCIATION

SOIL HEALTH ACADEMY

With Gabe Brown and Dr. Allen Williams

JUNE 22-24, 2022

MALLAIG AB

Through hands-on training from the world's leading experts, Soil Health Academy participants learn how to increase profitability, build resiliency into the land, decrease input costs and improve nutrient density of food and agricultural products. No matter where you farm or what you grow, the Soil Health Academy will teach you how to improve soil health through practical regenerative agricultural principles.

Mission Statement:

The Lakeland Agricultural Research Association (LARA) conducts innovative unbiased applied research and extension supporting sustainable agriculture.

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