



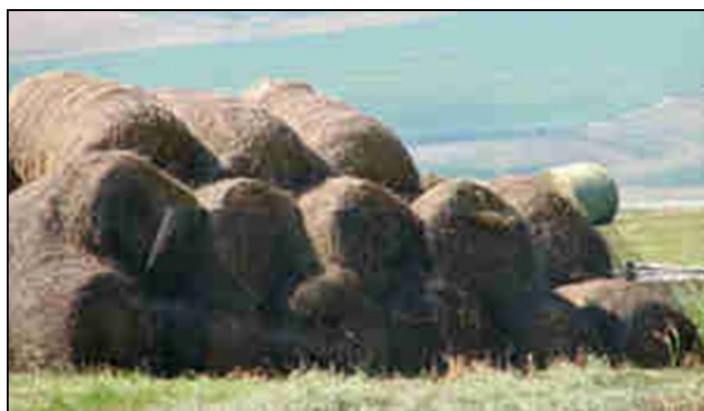
Grow With Us

Lakeland Agricultural Research Association

November/December 2021

Limitations When Feeding Low Quality Forage to Cows Yaremcio Ag Consulting Ltd.

A balanced feeding program is designed to meet the nutritional requirement of the animal. Size of animal, stage of production, environmental conditions, health status and body condition; all impact the requirements. The first two nutrients of concern when bal-



ancing rations are protein and energy. The following table has recommendations for energy (TDN) and protein for mature cows on a dry basis. *

Animal	% TDN	% Protein
Cows Mid Pregnancy	55	7
Cows Late Pregnancy	60	9
Cows Lactating	65	11

Alberta Agriculture Fact Sheet Agdex 420/52-4

the inclusion rates the two feeds is calculated. After the protein and energy requirements are met, attention must be paid to macro and trace minerals along with vitamins A, D, and E.

As forages mature, fibre content increases. There are two types of fibre that are used when balancing a ration. Acid Detergent Fibre (ADF) is used to determine the energy content in forages, and Neutral Detergent Fibre (NDF) is an indirect measure of how much feed an animal is able to consume daily. NDF content in higher quality forages is approximately 45 to 50%, and is between 65 to 75% for cereal straws and can be higher for other types of straw.

NDF is the most difficult component for the rumen microflora to digest. When total NDF content in a ration exceeds 60% or NDF intake exceeds 1.2% of animal body weight on a dry matter basis; feed intake is reduced. Animals will appear to be very full when the ration is at or exceeds NDF limits. Daily feed intake can be reduced by 3 to 5 pounds or more. This reduces the amount of nutrients consumed on a daily basis. Inclusion rates of each feed must meet energy and protein requirements, but also not exceed the upper limits for NDF intake.

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With tight feed supplies, adding straw, slough hay, or forage seed aftermath to pregnant cow rations extends the higher quality forage supply and reduces cost. The cow's nutrient requirements need to be met to prevent various problems.

Straw is included as a filler when feeding a high quality forage to pregnant cows. Using feed test results to develop a balanced ration,

Limitations When Feeding Low Quality Forage to Cows
Continued from previous page..

Resources:

[Limitations When Feeding Low Quality Forage to Cows](http://beefconsultant.com)
(beefconsultant.com)



2021 Calendar of Events

**Webinar: Feeding Through
the Drought**
Featuring Barry Yaremcio
with Yaremcio Ag Consulting

December 15, 2021
From 7:00pm—8:00pm

Zoom

**Call the LARA Office for
help with:**

Age Verification, Feed Testing, En-
vironmental Farm Plans,
Canadian Agriculture Partnership
Applications and more.
780.826.7260

Feed Testing

We offer two free feed tests to all pro-
ducers 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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Feeding Through the Drought Webinar
L.A.R.A



Webinar: Feeding Through the Drought

Featuring Barry Yaremcio with Yaremcio Ag Consulting Ltd.

Barry was raised on a mixed farm in northeastern Alberta. He has a Bachelors degree in Agriculture specializing in Animal Sciences as well Barry has completed a Masters degree in Animal Science specializing in nutrition. For many years, he has provided advice to farmers and ranchers on cattle nutrition, forage production, animal management and production concerns. In March of 2020, he started Yaremcio Ag Consulting Ltd. as an independent ruminant nutritionist and production management consultant.

Topics Include:

- Impacts of processing on grain quality
- Grazing crop regrowth
- Using various forms of supplemental protein
- Concerns with using canola
- Nitrate concerns & managing higher levels
- Bale processor impacts on feed quality and waste
- Using liquid molasses on straw bales

December 15, 2021

7:00 pm to 8:00 pm

To Register:

<https://bit.ly/3DliMZz>

***For more
information call
(780) 826-7260***



Bale Feeding Options: Pros and Cons of Common Strategies

Beef Cattle Research Council

Bale feeding is common across Canada for all classes of cattle especially during winter months. There are many different management strategies to deliver bales as feed. To help you determine the best option for you and your cattle, see below for pros and cons of three



common bale feeding strategies:

- Rolling out bales/using a bale processor and feeding on pasture
- Bale grazing
- Round feeder

When thinking about each strategy for your operation, consider the following: What are the [nutritional requirements](#) of your cattle? What is the [nutritional quality](#) of your forage? What equipment do you currently have? What equipment do you need? How much time do you have to dedicate to feed management?



Rolling out bales/bale processor fed on pasture

Pros

- o Cattle are required to travel more for feed, encouraging exercise which may result in less calving difficulties
- o Opportunity to move feeding location which allows manure to be deposited more evenly, reducing manure management costs, and targeting areas that would benefit from nutrient deposition
- o Flexibility with feeding sites
- o Reduced competition due to increased access to feed
- o Low input cost. Equipment required is likely equipment already on farm
- o Doesn't require a lot of new knowledge or skills to implement
- o Opportunity to monitor cow health before/during/after feeding as you are amongst the herd almost daily

Cons

- o Extra work to roll out bales rather than having them free-standing or in a feeder
- o Cattle will eat some high-quality feed and use the rest as bedding. While this provides organic matter to the soil, in years when feed availability is low and cost is high, it is a significant loss. (This loss can be remedied by portable bunks)
- o Required to start equipment every feeding
- o Winter conditions can cause forage loss/weathering
- o Overprocessing (i.e. bale processor) can cause loss of nutrients if forage fines blow away
- o Managing netwrap/twine is time consuming and can be difficult on equipment and cattle
- o Site options are strictly limited to locations with



Bale Feeding Options: Pros and Cons of Common Strategies

Continued...

Bale grazing



Pros

- o Reduces or eliminates the need to remove/spread manure
- o Can target sites to increase organic matter in areas that would most benefit in increased forage production
- o Depending on size of grazing area, cattle may be required to travel more for feed, encouraging exercise which may result in less calving difficulties
- o Feed testing is used to improve feed management
- o More cattle can access feed at a time compared to rolling bales or using bale feeders
- o Only requires a tractor once to set up fields, daily/weekly chores consist of moving fences
- o Provides an opportunity to build a new skillset for feeding and managing cattle by [extending the grazing season using bales](#)

Cons

- o Cattle won't fully clean up feed. While this provides organic matter to the soil, in years when feed availability is low and cost is high, you want to minimize this loss
- o Managing netwrap or twine needs to be a priority
- o There may be losses due to wildlife grazing
- o Sites strictly limited to areas with adequate shelter & water

- o May not be suitable for young or poor-conditioned cattle
- o Requires pre-planning to set up sites prior to winter feeding period
- o Temporary-fencing management is required

Round feeder

Pros

- o Cattle consume majority of the feed, leave less behind ("wasting" less)
- o Lower cost than bale processing or rolling bales out due to reduced waste
- o Less feed to maintain fat cover if hay has adequate nutrient density, as cattle are usually maximizing intake of what is fed
- o Suited to any cattle class
- o Easy access to cattle for monitoring or treating illnesses



Cons

- o Cattle have limited access to feed based on available bunk space which can increase competition among animals
- o Cost of bale feeders
- o Required to start a feed truck/tractor for every feeding
- o Increased time and financial cost to remove and spread manure if not moving feeding sites
- o Cattle exercise less to consume feed, which can contribute to calving difficulties
- o Snow removal may be necessary to support regular feeding activities

Website:

https://www.beefresearch.ca/blog/bale-feeding-options-pros-and-cons-of-common-strategies/?utm_source=BCRC+Blog+Subscribers&utm_campaign=f3ee3ae00f-EMAIL_CAMPAIGN_2021_10_29_06_33&utm_medium=email&utm_term=0_8c6acbd1df-f3ee3ae00f-369026508

Blackleg Sometimes Defied Drought This Year

The Western Producer

Disease may have thrived in some fields because dryness prevented infected stubble from deteriorating as quickly as usual

Drought is normally an impediment to crop disease.

Disease spores and fungi prefer wet conditions, so the lack of rain this spring and early summer should have controlled most diseases in Western Canada.

That was true in many fields, but in some cases the drought didn't hinder blackleg in canola.

"Some fields were loaded with it (and) others had no blackleg," said Justine Cornelsen, an agronomist with the Canola Council of Canada in Manitoba.

Cornelsen, who is based in Virden, Man., was referring to canola fields she surveyed in Manitoba.



This spring and summer were exceptionally hot and dry, but blackleg still flourished on a number of canola fields in Western Canada. | Photo courtesy The Canola Council of Canada

Mike Harding, an Alberta Agriculture plant pathologist, saw a similar pattern in Alberta.

"The levels of blackleg were very low or absent in most fields, but then we had fields from various locations that had significant levels," he said in an email. "In those fields, blackleg severity was higher than I remember seeing last year, or in previous years."

Blackleg, also known as stem canker, is a common disease of canola. It restricts nutrient and moisture uptake in the plant and hinders yield.

Yield loss depends on the severity of the infection and the percentage of plants with blackleg.

Using the canola council's yield loss calculator for blackleg, an infection severity of 3 (on a scale of 1 to 5) and a 40 percent blackleg incidence can cause a yield loss of six bushels per acre. At prices of \$15 per

bu., that's around \$90 per acre.

Cornelsen didn't have estimates on the severity and prevalence of blackleg in Western Canada this summer. Those figures will be released Oct. 28-29, when the Western Committee on Crop Pests holds its annual meeting. The committee will summarize the insect and disease situation for this year, including a report on blackleg.

However, it seems like blackleg thrived on a number of canola fields in 2021, possibly because the fungus only requires a small amount of rainfall to explode.

"It needs moisture, but it doesn't need a lot," Cornelsen said. "I think the documented work is like two millimetres of rain. A really, really tiny amount. As long as that (canola) residue gets some (moisture) in the spring, it is ready to produce spores."

The drought in Western Canada, which stretches back to 2017 in parts of the Prairies, may have actually been beneficial for blackleg. The fungus overwinters on canola stubble and can persist for years until the infected stubble decomposes.

Thanks to the dry springs and summers in recent years, canola stubble is sticking around longer than usual.

"In a dry cycle, you don't have as much soil activity working to break that old residue down," Cornelsen said. "You can easily find old canola residue in fields."

"In a dry cycle, you don't have as much soil activity working to break that old residue down," Cornelsen said. "You can easily find old canola residue in fields."

Blackleg Sometimes Defied Drought This Year

Continued....

Having canola residue isn't a huge problem, unless it's infected with blackleg.

On fields where Cornelsen found higher levels of the disease, the grower likely had a problem with blackleg a couple of years ago.

"Typically, it's on these tight canola rotations."

Lengthening the time between canola to three years is probably the best way to reduce the risk of blackleg in future crops.

On its website, the canola council recommends several measures:

- Using resistant varieties. Grow canola hybrids that have a moderately resistant or resistant rating to blackleg. Resistance reduces blackleg infection to specific races of blackleg, but does not mean the variety is immune to the disease



Rotate varieties. Growing the same hybrid repeatedly on the same field will select for races of blackleg that can overcome genetic resistance in that hybrid. Growers should also think about yield robbers.

In a growing season like 2021, with 35 C days and weeks between rain, it's easy to assume that heat and drought were the only reasons for a 15 bu. canola crop. But other agronomic issues, like blackleg, may have cut into yield.

"We've been trying to encourage people to look beyond that (heat and drought). What else was limiting (yield)?" Cornelsen said. "Some growers were still able to achieve really great yields. It wasn't solely based on that they had (more) rain."

Resources:

[Blackleg sometimes defied drought this year | The Western Producer](#)

Last seasons drought could cause unpredictable soil N

Western Producer

Western Canadian crop rotations are being thrown off by residual fertilizer left from crops that never were

A good portion of the plant nutrients applied last spring still sits in prairie soils.

Some agronomists have even found granular pellets of fertilizer still intact when taking soil tests this fall.

In most areas, there was enough moisture to dissolve fertilizer applied in the spring. However, drought conditions prevented crops from using these inputs across wide swaths of the Prairies last summer.

With fertilizer prices shooting for the moon, many producers will be eager to include high levels of residual nutrients when penciling in their fertility program. This is especially the case with nitrogen that's approximately double the price now compared to a year ago. To help growers understand the mechanism by which applied nutrients can be retained or lost, Manitoba soil

fertility specialist John Heard participated in an online discussion.

He said there is much more nitrogen left over in Manitoba fields compared to an average year.

He said there is much more nitrogen left over in Manitoba fields compared to an average year.

Agvise Laboratories provided a snapshot of the samples it tested this fall on its website.

Soil samples taken on wheat stubble in Manitoba show a significant number of fields have more than 100 pounds per acre of residual soil nitrate at soil depths of zero to 24 inches, including 44 percent of the fields tested in the south Interlake region.

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LARA Garden '22—Potatoes

Lara Staff

In spite of the recent snowfalls, now is an excellent time to begin garden '22 – at least the planning (dreaming) stage. Most gardens will have at least one row of potatoes – nothing beats the taste of the fresh baby potato smothered in a cream & dill sauce! The majority of us will plant a very familiar variety – Red Pontiac, Russet Burbank, Kennebec, Yukon Gold and perhaps a fingerling type. A government website indicated that there are more than 190 varieties registered in Canada with a few new ones being introduced each year. In the past two years, we planted Green Mountain, German Butterball, Cecile and Prince of Orange potatoes. All of these performed very well.

Cecile is an excellent tasting fingerling variety. Very shallow eyes make it easier to peel than some others. Tubers are resistant to common scab.

Prince of Orange yielded extremely well – tubers have a dark red skin and a dark yellow flesh. German Butterball produced a good yield of large yellow tubers with a mild buttery flavor. An excellent choice!

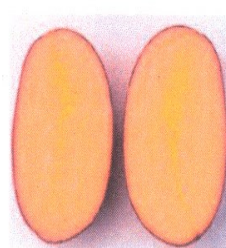
Green Mountain (a late-season variety) also yielded very well. They have an excellent “storage life” but are susceptible to scab.



Prince of Orange



Green Mountain



Cecile



German Butterball

The seed potatoes for the above 4 varieties were all purchased locally.

In 2022 we will again try other less common varieties. If you have tried other varieties, please *feel free to call and share your thoughts with us.*

Today's riddle – *What's the difference between mashed potatoes and pea soup?*

Ans: *Everyone can mash potatoes but nobody can pee soup!*

Processing Grain for Cattle

Yaremcio Ag Consulting Ltd.

Grinding or rolling grain improves digestive efficiency compared to grain that is fed whole to beef animals. But there is a potential downside to this if the grain is not processed properly.



Photo Credit: Yvonne Yaremcio

Introducing grain to a ration is a gradual process. Rumen microbe populations need to adjust from a high fibre ration to one that contains more starch. Some rumen populations will decrease in numbers while others will increase. If a 1300 pound cow is receiving 3 to 4 pounds of grain at the start of the change over, additional grain fed should not exceed 1 pound every second day.

Watch the manure. If the consistency is normal the increases can continue as mentioned above. If the manure becomes runny and watery, this is an indication that the rumen is not functioning properly; and sub clinical acidosis is occurring. More severe symptoms can be bloat, grain overload. If the consistency of the manure is not normal, reduce the amount of grain fed and do not increase grain in the ration until the manure appears normal. The guideline for increasing grain content in the ration also applies to weaned calves and feeder animals.

Animals under 700 pounds tend to eat slower and chew feed more thoroughly than larger animals that gulp their food and rely on rumination to break the

grain. When creep feeding calves on pasture, grains and peas do not need to be processed.

The increase in digestive efficiency varies with the type of grain processed. Improvements are 5 to 7% for oats, 12 to 15% for barley, 25% for wheat, rye, and triticale. Barley and oats can be broken into 2 or 3 pieces; while wheat, rye and triticale should be broken into 2 pieces. The processed bushel weight should be approximately 70% of the whole grain bushel weight. This is known as a rolling index. For rolled grain, if there is a line across the kernel and it breaks apart when it is rolled between the finger and thumb, this is adequate.

The processed grain should not contain more than 5% fines by weight when sieved over a 1 mm screen. Higher amounts of fines increase digestion rates which can lead to digestive upsets.

For additional information on processing and feeding grain to beef cows, contact Barry at 403-741-6032 or bjyaremcio@gmail.com.

Resources:

[Processing Grain for Cattle \(beefconsultant.com\)](http://beefconsultant.com)



Last seasons Drought could cause unpredictable soil N

Continued from page 7...

The average nitrate level of all fields tested in the southeast region of Manitoba was 95 lb. per acre of residual nitrogen.

“Typical rates or what we would expect to see year in year out is somewhere between 30 to 40 lb. residual (nitrogen on wheat stubble),” Heard said.

“In Western Manitoba, there were some areas out there that did receive some good and timely rains, that got some good yields and some good removals and so I’m not surprised to see some of their soil test levels coming in closer to normal.”

He said there is a wide diversity of how much residual nitrogen is left in fields, which speaks to the importance of soil testing.

Most of the nitrogen applied last spring was converted to nitrate, but many areas did not receive enough moisture for leaching to occur.

“Soils were not saturated enough for denitrification. So that was really not a pathway of loss this year,” Heard said.

“We suspected that it was so dry this year that during the dry period of year it actually depressed microbial activity, and enough so that we’re wondering if we triggered this Birch effect.”

The Birch effect occurs when microbial activity is restricted in parched soils, and when it is re-wetted, there is a burst of decomposition, mineralization and release of inorganic nitrogen and CO₂.

“We might have a lot of those bacteria microbes desiccate or are killed, but some survive and upon initial wetting they feast upon those dead bodies of their former colleagues and there’s a flush or release of nitrate nitrogen that can be detected both by the soil test and plants if they happen to be growing,” Heard said.

This short-term burst of nitrate tends to return closer to normal levels once that nitrate is re-immobilized by microbes.

The Birch effect has the potential to create the impression during fall soil testing that there’s ample nitrogen in the soil for the following year’s crop, but spring nitrogen levels may be different from those detected in the fall.

“I’m thinking that this is probably minor compared to the big rates of nitrate that are left just because of poor crop growth and removal,” Heard said.

“But I have spoken to a few agronomists that took samples in the dry period that had one nitrate level, and then after rewetting they were seeing some of this 30 lb. (per acre) increase in nitrate that may be an artifact of this Birch effect.”

Another fertility phenomenon that can show up in dry times in fields with lots of nitrogen is called haying-off, where the crop grows aggressively and consumes scarce moisture during the vegetative growth stage, leaving little for grain-fill.

Heard said this process is something that can be observed in Australian fields during droughts.

“They often see down there that they get lower yields from these highly fertilized fields, than where it’s modestly fertilized that leaves some water remaining for grain filling,” Heard said.

He said one of the dark horses this year is what hap-

pened with mineralization, which has the potential to temporarily tie up a considerable amount of nitrogen.

“With less straw being produced with a lot of short crop cereals, certainly there’s less of that straw remaining to immobilize or sap up leftover nitrate,”

Heard said.

He said a rule of thumb is that each ton of straw will immobilize about 30 lb. of nitrogen.

Even though nitrogen is not per-

manently lost, it will likely be hidden from the soil test and from early season crop growth.

If straw was baled and taken off there will be even less material to take part in any immobilization of nitrogen.

Jeff Schoenau, professor of soil fertility in the department of soil science at the University of Saskatchewan, participated in the Sask. Pulse 2021 Pulse Agronomy Workshop. He said the levels of residual nitrogen apparent on field in fall could be different compared to what is plant available in the spring.

“You do want to be cognizant that you didn’t lose a lot of available nitrogen. Because if there are really wet conditions in the spring, things may change a little bit, and so for that reason I think it’s always good to do a bit of checking,” Schoenau said.

He said once nitrogen levels get up around 30 lb. per acre, including residual and applied nitrogen, there will begin to be a reduction in the amount of nitrogen derived from fixation from pulse crops.



Drought conditions, like the ones that injured yields in this wheat crop near Flaxcombe, Sask., left large amounts of unused nutrients in prairie fields this year. | Michael Robin photo

Last seasons Drought could cause unpredictable soil N

Continued...

So, on fields with high levels of residual nitrogen it's likely a better economic decision to plant crops that can't fix their own nitrogen including a cereal or oilseed.

Schoenau said there can be negative outcomes when growing pulses on fields with high levels of residual nitrogen.

"I've seen pulses growing on soils with high available N, on a fallow is a good example, you get this really heavy vegetative growth that tends to fall over and lodge, in some cases with increased disease incidents," Schoenau said.

Charles Geddes, research scientist at Ag Canada, presented at the same Pulse Agronomy workshop, and he said growers should keep in mind how high residual nutrient levels can affect weed populations. Some of the work Geddes performed for his PhD examined volunteer canola in soybeans and he found nitrogen levels in the soil was one of the driving factors for interference from volunteer canola.

As nitrogen levels increased, yield losses imposed by volunteer canola also increased.

"Most weeds are nitrophilous, where they do prefer higher nitrogen environments, especially in our arable cropping systems," Geddes said.

"So, if you're planting the legume or pulse crop on a field with lower residual nitrogen you can just give that crop a bit of a competitive advantage because it's, in part, fixing its own nitrogen, whereas the weeds will be nitrogen starved."

Another factor to consider when it comes to residual nutrients was the regrowth that was a common sight in many growing regions last fall.

Heard said in a wet environment regrowth could act as a cover crop and provide some benefits including reducing nitrogen losses to leaching or denitrification. But in dry environments this regrowth can use up valuable water and reduce the amount of residual nutrients that could have been used by the crop the following year.

Established nitrogen uptake patterns can be used to calculate how much nitrogen is taken up by crop regrowth.

For wheat and canola, a good portion of the nitrogen

uptake occurs relatively early in the crop's life cycle compared to other crops.

"Between tillering and stem elongation, three to five weeks after seeding or germinating or regrowing... For cereals, it could be anywhere between 25 and 80 lb. of nitrogen per acre," Heard said.

"With canola getting up to the early rosette stage, 15 to 70 lb. So, that could be quite a bit of nitrogen, using a back of the envelope calculation."

To gauge how much nutrients pilfered in the volunteer canola regrowth researchers entered a canola field that wasn't worth harvesting near Brunkild, Man., but had significant regrowth later in the fall.

Heard said there was on average 1.9 tons per acre of biomass and up to 21.6 tons per acre in some of the heavy areas.

"The nutrient concentration in this foliage was quite high and probably a bunch of that was a nitrate carry over and so it was readily taken up," Heard said. "There's 160 lb. of nitrogen, 30 of phosphate, quite a bit of potassium. If I just look at the nitrogen and phosphate cost, that is a lot of dollars' worth of nitrogen and phosphorus."

At current market price for nitrogen and phosphorus, he said that the canola regrowth he examined used around \$135 per acre of these nutrients.

"We really don't know how to account for cover crops or volunteer nutrients (cycling). We know that full amount isn't available next year. It still needs to break down and decompose," Heard said.

Researchers also went into a harvested oat field with high levels of regrowth this fall.

"In this case that's about a tonne per acre (of biomass), and we looked at the uptake. There's about 80 lb. of nitrogen and 85 lb. of potash.... They're not even quite at the boot stage yet and again, some high dollar value of nutrients in that crop."

Resources:

[Last season's drought could cause unpredictable soil N | The Western Producer](#)



Pulse crops like lentils don't need a lot of additional nitrogen in the soil to do produce yields. If there is too much it can inhibit seed production, creating too much top growth causing lodging and creating opportunities for disease to flourish. | Mike Raine photo

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Lakeland Agricultural Research Association

Mission Statement:

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

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*Merry Christmas &
Happy New Year*

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