2015

Volume 6, Issue 2

Lakeland Agricultural Research Association

The Verdant Element

Inside this issue:

Harnessing the Sun

In Alberta we have an abundance of sun, more than anywhere else in Canada and most of the globe. For a comparison, Germany has roughly 18,000 times more solar energy collected, but Alberta has double the solar power potential. Our summer months with their long days are ideal for harvesting solar power, but even overcast days (diffuse light) have plenty of power provision for our needs.

Micro generation regulations have made it easy for people to sell excess power onto the grid during the day. However, there is a rising trend in going off grid entirely.

The cost of bringing power to new sites is astronomical and for a comparable cost a solar power system can be created to provide enough power for all your needs. And best of all no power bills, which are constantly increasing in cost.

The most important factor in solar power is knowing how much energy you require and sizing your system accordingly. Having large enough panels and enough battery storage is key to the success of going off grid. People often worry about not having enough power for all the electronics that we have come to depend on such as computers, televisions, phones; but if you size your system to your needs you can generate enough electricity to power all your shop tools, appliances and other requirements you may have.

Alternative Power References

- Solar Energy Website http://www.solaralberta.ca
- Solar Electricity Basics http://www.homepower.com/articles/solar-electricity/basics/what-solar-electricity
- NRC solar map of Canada http://pv.nrcan.gc.ca/index.php
- Utility-tie PV equipment sizing program http://www.pvselect.com/index.php
- PV and wind design tool http://www.retscreen.net/ang/home.php
- AUC Micro-generation http://www.auc.ab.ca/involving-albertans/micro-generation/Pages/default.aspx
- Information of Alberta's electric retailer program options http://www.electricityshop.ca/compare/compare_ES.asp
- How to receive credit as a Spark Green Energy generator http://sparkyourpower.ca/spark-certified-green-generators/
- A landowners guide to wind energy in Alberta http://www.pembina.org/reports/alberta-landowners-guide-web.pdf
- Small Wind Certification Council http://smallwindcertification.org/
- CanWEA's small wind energy purchasing guide http://www.eformativeoptions.com/canwea_purchaseguide

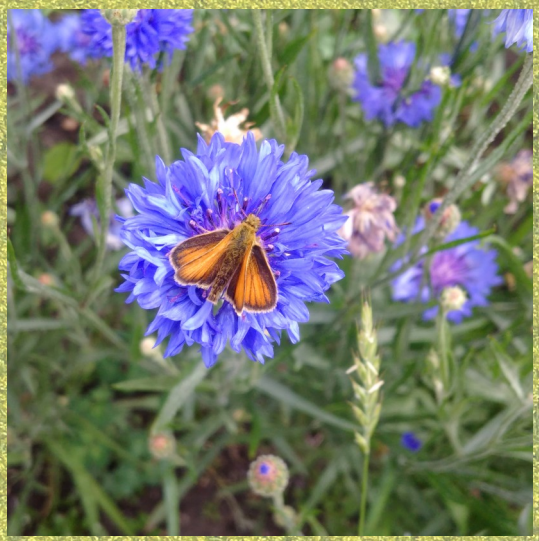
Check out the Producer Soil Highlights featuring Luc Tellier from the Lakeland!
www.albertasoilhealth.ca

To report prohibited noxious weeds call the Alberta Pest Surveillance System at :

310-APSS (2777)

EUROPEAN SKIPPER

The European Skipper is an introduced species to Canada. They feed mostly on Timothy, but will feed on other grass species as well. There is one generation per year and are seen from early June to end of July. Their eggs overwinter and are laid in groups of 30 along the grass sheath or seed head.



Clubroot

Severe clubroot galls or 'clubs' on canola root. [Photo courtesy of T.K. Turkington, AAFC Lacombe]

Clubroot is a serious soil-bourne disease in cruciferous crops, most notably canola. The disease causes galls or clubs to form on the root structure of the plant and causes death of the plant prematurely. Yield losses are estimated to be half of the percentage of infected stems. If you had 100% infestation you should expect 50% yield loss. Once clubroot infests a field it is impossible to eradicate. Spores can reside in the soil for 20 years!

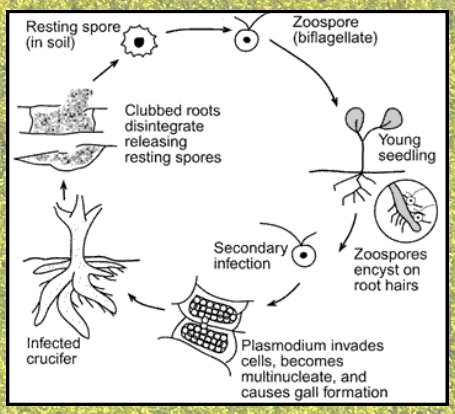
Clubroot is spread by soil, and can occur through soil transport by wind or water erosion, on farm machinery, in manure from animals fed infected feed, and soil attached to seeds (earth tags). It is often first detected in fields at the entrance. Anyone accessing the field can potentially infect a field including: construction, utilities, petroleum industries, recreation vehicles, hunters, and custom operators/ sprayers; as well as through livestock, manure, hay, straw, seed, rental equipment and even footwear.

The spread of clubroot has been rapid across the province since it was first detected close to Edmonton in 2003. Prevention is paramount to protect yourself against clubroot. The best defense is to practice good sanitation, at a minimum, by removing soil clumps and crop debris. Washing equipment with hot water or steam, and disinfecting equipment with a weak 1-2% bleach solution and letting it sit for 10-15 minutes will remove any remaining spores on your equipment. Restrict access to your fields and be cognisant of equipment purchases (especially used) as it may be coming from an area with clubroot. Practice soil conservation to reduce the amount of erosion on your fields. Avoid the use of straw or hay from areas that may contain clubroot. Manage weeds and volunteers, especially those in the mustard family, dock and hoary cress or Brassica family as they are all hosts to clubroot. Use long rotations, it will not prevent clubroot but rather slow progression of the disease as the spore half life is 4 years.

Scout your fields! The optimal time to scout your fields is 2 weeks prior to swathing when the galls are most evident. To scout your fields:

- **First assess the field as a whole. Look for patches of the crop that exhibit wilting or stressed symptoms, premature ripening, stunting and yellowing of plants.**
- **If you find plants with any symptoms, dig up a few plants to check for galls on the roots (it takes 6 weeks from initial infection for the galls to form) to properly diagnose clubroot infection.**
- **Take steps to ensure no soil is transported from one field to another while scouting.**

If you have fields infested with clubroot it will require long term management. Using long rotations (four year) will help prevent the accumulation of resting clubroot spores, but it will not eliminate or prevent the clubroot from spreading. Use clubroot resistant varieties, however even these varieties are not immune to clubroot (1-4% of seed is susceptible), expect some infected plants which can be attributed to volunteers and weeds. Minimizing traffic into the fields and committing to performing good sanitation practices will prevent the disease from spreading to new areas. Avoid working in wet fields as mud will easily stick to equipment and be transferred to other fields. If you have an infested field, work in this field last so you are less likely to spread the disease to other fields. Manage the disease with best management practices, being proactive and scouting your fields.



Life cycle of *Plasmodiophora brassicai*, the pathogen that causes clubroot (source: Ohio State University).

To learn about the Alberta Clubroot Management Plan contact your local Agricultural Fieldman or Lakeland Agricultural Research Association or visit: http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex11519

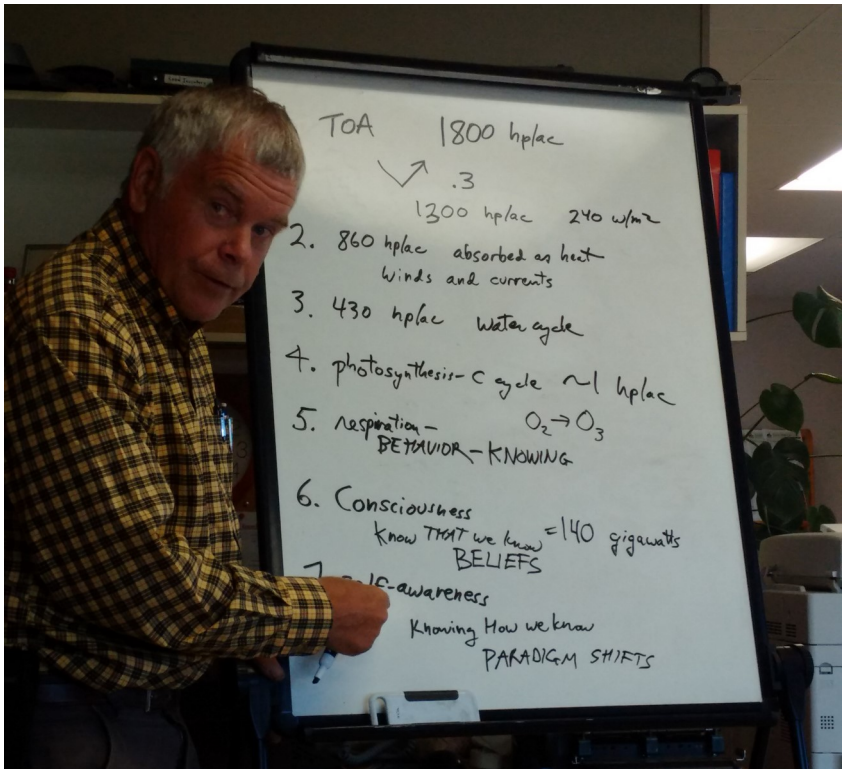
Post Watch

The Elephant Amongst Us

Human nature is very linear and we tend to focus on small issues, managing for everything in very segregated categories, and not managing the system as a whole. We learn through feedback, however the delay between action and response often causes us to over/under correct. We often focus on problems, managing for what we don't want and the solutions and links become camouflaged in the elephant (picture to right). Don Campbell said it best as when we want to create small change, we then change how we do things; when we want big change we need to alter how we see things.

We have all heard of the water cycle and pray for rain when it is dry and hot like this year; but the carbon cycle largely drives the water cycle and yet we hardly think about it at all. In fact, society has very little understanding of the carbon cycle.

Globally the power of photosynthesis is over 8 times greater than that of fossil fuels.



Above: Peter Donovan illustrates the Energy system

Energy is an open system, and we have the ability to change how much energy the earth is absorbing or reflecting from the sun. Most of the sun's energy is captured as heat driving the winds and currents, followed by the water cycle and photosynthesis. This energy eventually trickles down and is used by humans to function, leading to our behaviors and beliefs. Our beliefs shape what we know and what we do, and has changed the reflectivity of the planet, through development, changing land management practices and agriculture.

More plants equals more solar energy capture equals healthier soils. Soil is composed of sand, silt and clay and is bonded together by "slime" or the sugars exuded from the root systems feeding the bacteria, microbes and fungi. Plant roots are needed to build soils. Compare a piece of soil with an abundance of plants (rootstock) to an aggregated soil such as a driveway. The aggregated soil would be like pouring water over sifted flour (all the pore spaces will be filled), the water will run off with no infiltration. The soil with an abundance of roots will be like a loaf of bread, highly absorptive.

Society tends to measure, map and report on the issues of the elephant, but we do not connect the issues and manage them as a whole. We need to be creative in our perspective and look for solutions and look at land management on a systems level. The Peter Donovan workshop on June 27 was a fantastic introduction to soils and the carbon cycle. Join us on August 4th with Dr. Christine Jones to talk about Building Soil—Creating Land.

Our beliefs can hold us back. We need to challenge our beliefs and learn from them to create positive change.

Growing Forward

Growing Forward 2 provides programs and services to achieve a profitable, sustainable, competitive and innovative agriculture, agri-food and agri-products industry that is market-responsive, and that anticipates and adapts to changing circumstances and is a major contributor to the well-being of Canadians. The On-Farm Stewardship Program made changes to the funding list, as of November 28th 2014, applications for the following projects/expenses can no longer be submitted:

Portable Shelters and Windbreaks
Improved Manure Storage
Fuel Storage
Chemical handling systems
auto boom height
low-drift nozzles (with the exception of pulse-width modulation systems)

Most of these projects that the ARD dropped from the funding list have been funded for over 10 years. The ARD is continuously evaluating the program and based on discussion with producers and industry, it was concluded that these projects could be removed from our incentive list because they are considered common practice and do not require additional promotion through the Growing Forward program. This change is only for the On-Farm Stewardship Program.

Growing Forward Stewardship Programs

Program Area	Eligible Costs	Cost Share
Riparian Area Fencing and Management	Permanent fencing (controlled access or exclusion): • Permanent barbed/electric fencing systems • Construction materials and supplies. NOTE: all materials must be new materials and not materials on hand • Labour and equipment will be paid at a 1:1 ratio to materials expenses. (NOTE: refer to section 7.4 in the Terms and Conditions); Purchase and planting of native trees and shrubs and/or native or non-invasive introduced species of grass and legumes; Seed and seeding operation for revegetation; Cultural weed control systems and mulch	70% to a funding maximum of $50,000
Year Round / Summer Watering Systems	Deeply buried, shallow buried, or surface pipeline installation used to distribute water within a pasture and protect a water body/water source; Portable watering systems; Year-round watering systems; Troughs, stock tanks, plastic tanks (or similar water storage); Frost free nose pumps; Pumping systems; Power sources such as solar panels, windmills etc. And other electrical supplies; Plumbing materials	50% to a funding maximum of $30,000
Wetland Restoration	Earthwork related to construction or plugging of old drains; Engineering consultant fees for design and construction; Re-vegetation costs (seed plantings etc.); Applicant's equipment use at custom rates; In-kind labour at set program rates ($25/hour)	70% at funding maximum of $50,000
Livestock Facility and Permanent Wintering Site Relocation	Construction costs to rebuild an equivalent facility or adequately sized facility in a more suitable location; Plumbing, electrical, fence lines, feeding areas, shelter/wind protection; Earthwork; Engineering design and fees (if applicable); Tear down and removal costs of the old livestock facility; Re-vegetation costs of the old site; Applicant's equipment use and in-kind labour	50% at funding maximum of $50,000
Used Oil and Lubricant Storage	Double wall steel storage tank design expressly for the temporary storage of used oil and lubricants that have a ULC or CSA approved stamp or plate indicating it is for that purpose (ULC-652)	50% at a funding maximum of $2,000
On-Farm Water Management	Wells (including test drilling, new pump and well casing, electroseismology test, disinfection of new well); Dugouts (including aeration, fencing and floating intakes); Dams (including intake and fencing); Spring Development; Water tanks/storage/cisterns for low producing wells or as part of a permanent water supply; Buried pipelines Special projects include: Specified water conservation measures (purchase and installation of water use meters, well depth meters for agricultural use of water, well decommissioning by a certified contractor, well pit conversions by a certified contractor; Tie-ins	Various funding levels, refer to the terms of reference

Environmental Farm Plans

The environment is becoming a more prominent issue. It is a large factor in marketing agriculture and food products in today's global markets. Consumers are demanding more transparency and are demanding high quality and safe products. Reputation of food safety is critical to retain and gain access to domestic and international markets.

Environmental Farm Plans (EFP) provide a tool for producers to self analyze their operation and identify environmental risks, current standards, areas for improvement and also highlight what they are doing well.

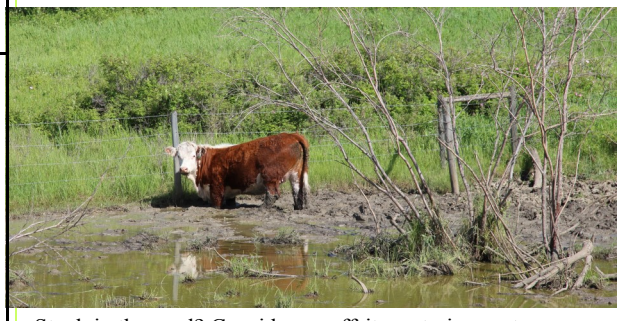
Having a completed EFP allows producers to access different funding opportunities, such as the Growing Forward Stewardship Program. It is also useful in product branding that demonstrates specific environmental standards.

The EFP Process

An EFP can be completed through workshops or one-on-one session(s). The EFP first identifies the soil and farm site characteristics. Following this, the producer completes only the relevant chapters that apply to their operation; such as wintering sites, fertilizer, pesticides, crop management etc. Upon completion the EFP is submitted to a Technical Assistant for review. Once reviewed the EFP will be returned along with a letter of completion.

The EFP is a living document and should be reviewed and updated periodically.

If you wish to complete an EFP or have any questions regarding EFP please contact the LARA office at 780-826-7260



Stuck in the mud? Consider an offsite watering system.

Principles Of Soil Management

1) Soil Cover. Don't leave bare soil. Have plants for as long as possible for the season to prevent erosion and improve infiltration. Increases energy capture.

2) Diversity. Either through crop rotation (diversity over time) or through cover crops, forage mixes, mixed species cropping.

3) Living Roots. More plants will introduce more living roots into the soil, try to maintain living roots for as long as possible.

4) Minimum Tillage. Tillage is very destructive to the fungal component of soils.

5) Integrate Livestock. Try to add livestock to the system whenever possible. This can not only help with residue issues, but also adds nutrients back into the ecosystem.

These principles are all influenced by time and timing.

Profit and sustainability all come from Energy Flow, capturing more energy through the Carbon cycle (photosynthesis).

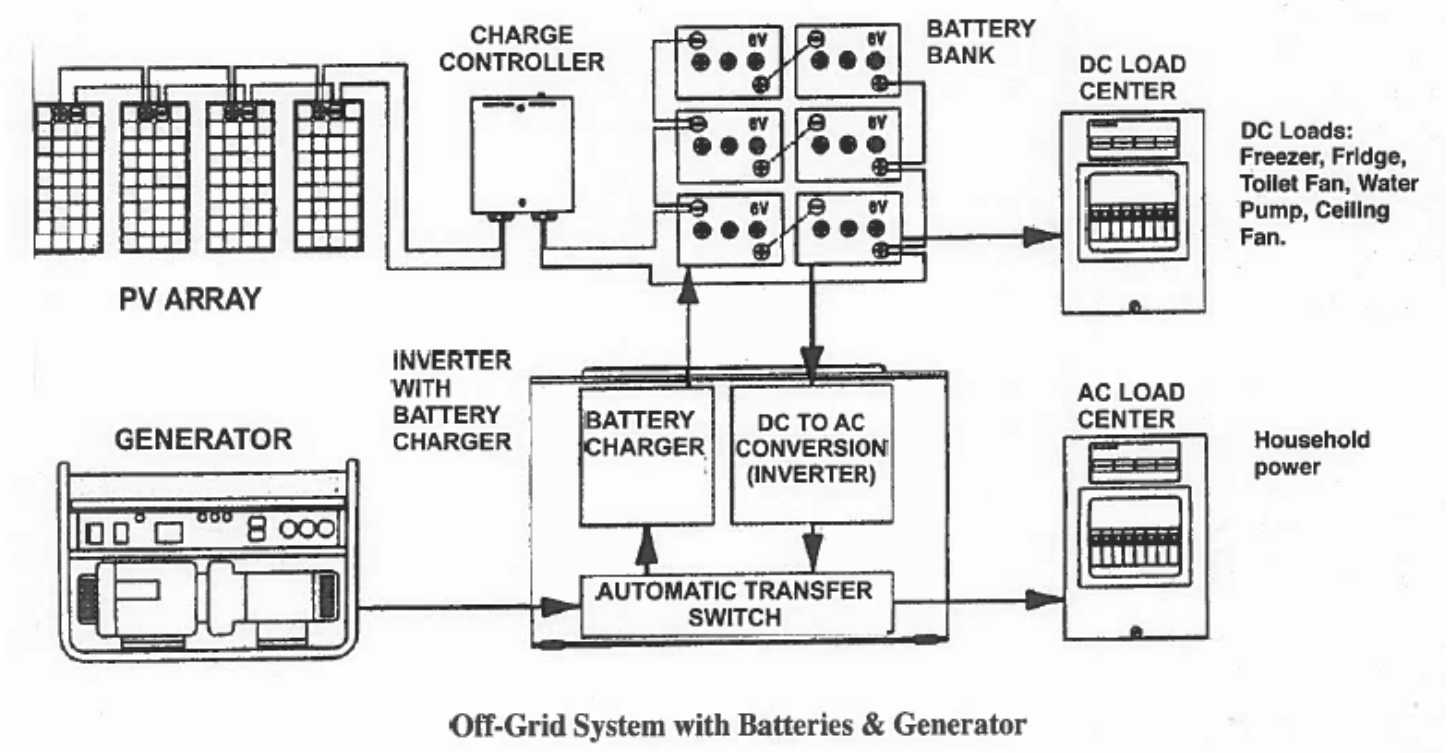
Forest Tent Caterpillars

Forest Tent Caterpillars were numerous and very noticeable this year. Outbreaks are typically 10 to 12 years apart and last 3 years at a time. The destruction is heavily visible in the boreal forest, where the insects cause extensive defoliation of trembling aspen, oak, ash, maple and birch. The trees are weakened by repeated defoliation and are much more susceptible to stressors such as drought and other pests, resulting in reduction of growth, branch loss and tree mortality.

Btk can be sprayed on the trees to kill the forest tent caterpillars. To prevent tree mortality ensure that the tree receives adequate moisture, especially into freeze-up.

Photo above: Forest Tent Caterpillars

Photo Left: Total forest defoliation along Kehiwin Lake



Solar Diagram courtesy of Ben Thomas

Water Treatment System Workshop

August 12, 2015

6:30 PM—8:30 PM
At the Centennial Centre
4313 50th Avenue
Bonnyville

Concerned about your drinking water? Is your rural water treatment system effective and addressing your water quality issues? Not all systems are designed to deal with your specific water quality issues. Having the right system will ensure better drinking water for you and your family. This free workshop is designed to give you an overview of treatment options available including distillation, reverse osmosis, chemical, biological and physical treatments.

Riparian Health Assessment

The riparian zone is the interface between the upland and a water course. A healthy riparian area: traps and stores sediment; builds and maintains banks and shorelines; stores water; recharges aquifers; filters and buffers water; creates primary production and much more!

A riparian health assessment is a tool designed to evaluate the site and can provide a foundation to build an action plan and identify priorities.

If you would like a FREE Riparian Health Assessment conducted on your property or more information please call Kellie at 780-826-7260 or email sustainag.lara@mcsnet.ca

Lakeland Agricultural Research Association

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E-mail: sustainag.lara@mcsnet.ca

Sustainable farming encompasses a wide range of practices and principles; combining environmental stewardship with profitability and ensuring that the family farm will be there for generations to come.

LAKELAND AGRICULTURAL RESEARCH ASSOCIATION

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Like us on Facebook!

~ Farm Succession ~
Planning for the Next Generation

November 19th and 20th

Elaine Froese

Elaine Froese has more than 30 years experience of working with farm families. She's a thought leader in agriculture helping farm family businesses activate well thought out plans for change. Financial planners, accountants and lenders have used her expertise to kick-start action for their clients.

Elaine and her husband farm with their son in southwestern Manitoba. Elaine travels across Canada and the U.S. to speak to conferences about conflict resolution tools for better communication and succession planning people issues.

Registration is $40.00/day and includes a free copy of Elaine's book *Do the Tough Things Right.* Register early and stop by the LARA office for your copy this summer!

LARA BAS Bonnyville Agricultural Society

(780) 826-7260 livestock.lara@mcsnet.ca @LakelandARA

Upcoming Events

Summer Field Days! Check our website for time and locations.

Dugout Workshop

Dugouts are a great source of water, but may encounter problems over their lifespan. It has been hot and dry this year and problems with dugouts will seem more severe and prevalent. If you have issues such as black smelly water, algae, vegetation and poor water capture/retention or are looking to build a new dugout then this workshop is for you!

Proper dugout management is essential to having a long lasting supply of water.

Lakeland Agricultural Research Association
5311-50 AVE
Fort Kent
August 12th, 2015
FREE lunch at 12:30
Workshop starts 1:30 PM
To Register call Kellie at 780-826-7260
or email sustainag.lara@mcsnet.ca

Come for:

- Information on common dugout issues.
- Tips on Extending Dugout Life and Improving Water Quality.

CHECK OUT OUR NEW WEBSITE!
WWW.LARAONLINE.CA