

The Verdant Element

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THE UNWANTEDS

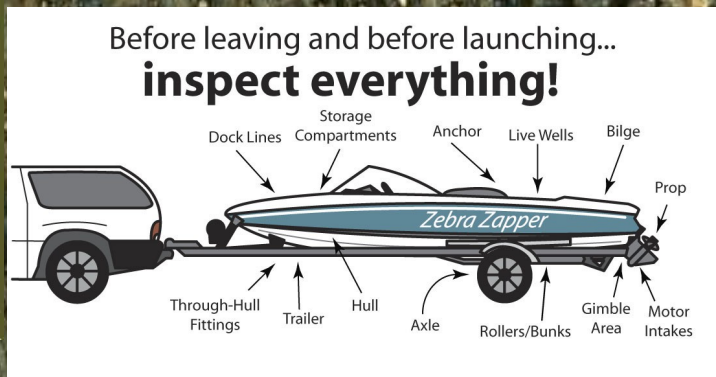
While driving through the province lately, the trees are noticeable missing their leaves. The Forest Tent Caterpillars (FTC) are back and are doing a fair bit of damage. At the present time, they have cocooned and their most damaging stage has passed until next year. Younger, healthy trees will recuperate having a new flush of leaves emerge in July. Older trees, especially in drought conditions will not fair as well and may face mortality. Trees can generally take a few years of defoliation without adverse effects. The timing and severity of the FTCs is variable all across the province. If the Forest Tent Caterpillars are affecting your shelterbelts and higher valued trees, this year is too late to take action, but early scouting and proper timing of sprays can help. BTK, a bacterial spray can be used. However, because it kills all Lepidoptera (moths and butterflies) there will be collateral species exterminated. If you are wanting to avoid using pesticides, you can spray the FTCs off the trees with water.

Another species of concern are the zebra and quagga mussels. Much has been publicized about them this year. Winnipeg has been front and center with their \$500,000 pilot project taking place in the harbors of Lake Winnipeg. Silt curtains were used to seal off the harbors, and the water was injected with liquid potash to control the infestation of quagga and zebra mussels. There are now 5 boat decontamination units and increased monitoring of the provinces waterways. These mussels can cause irreversible damage to aquatic ecosystems, increase blue-green algae blooms, and cause untold economic damage to infrastructure by clogging intake pipes, water treatment systems. They also affect recreation as they can damage boats and degrade shorelines with sharp shell fragments.

Scout your environment as prevention and early action are integral to controlling the “un-wanted”.

**CLEAN
DRAIN
DRY YOUR BOAT**

**STOP
INVASIVE
SPECIES**



Water For A Lifetime

Proper Well Maintenance and Cleaning Extends the Lifetime of a Water Well

Almost every motor vehicle owner knows that regular maintenance of their vehicle is vital to protect their investment and keep their vehicle running properly. Common sense says that if they don't invest in regular oil changes and tune-ups, they will have to pay much more later on in engine repairs. The same logic holds true when it comes to water well maintenance.

"Neglecting to maintain a well can be costly in the long run for a landowner," says Chris Gerritsen, current president of the Alberta Water Well Drilling Association and an advocate for the Working Well program. "You can't assume that a well is working properly just because water is coming out of the tap. With proper maintenance, the life of a well can be substantially increased. Total neglect on the other hand, can cost the landowner the well."

With more than 39 years working as a licensed well driller in Alberta, Gerritsen has seen a lot of changes in the industry. "There are better ways to do things today and modern wells are safer than ever before," he says. "But maintenance remains important – regardless of the age of the well. Even though most people today are aware of the importance of maintaining their well, some still aren't doing it."

Under the Water Act, private well owners have a responsibility to protect their water wells and keep ground water resources healthy and clean for future generations. "Well owners need to understand that it is their responsibility to manage their well water properly," says Jennifer Macpherson with Alberta Environment and Sustainable Resource Development and the Working Well Program. "If a well isn't regularly maintained, it can get plugged up with minerals or become contaminated with bacteria. If you regularly measure and record water level readings, over time you'll be able to see if the well's productivity starts to decline and can have a licensed driller assess and repair the problem before it is too late. If it goes too far, it may become too costly or even impossible to rehabilitate."

Most maintenance procedures can be performed by well owners at little or no cost, but some procedures require the assistance of a professional driller. Whether it is taking water samples, measuring water levels, landscaping to manage runoff issues or shock chlorinating a well, the old saying holds true – "an ounce of prevention is worth a pound of cure."

The other truth is that the consequences of neglect will always catch up with you. Like the vehicle owner who doesn't take the time to check oil in the engine of his car, a private well owner who doesn't perform regular maintenance on his well may find that one day it simply doesn't work anymore.

Learning the Basics of Well Maintenance

There is a lot to know about protecting and maintaining a water well. Well owners can learn how to perform basic maintenance procedures and speak to professionals about specific concerns with their own wells at one of several free workshops offered throughout the province by the Working Well program. For more information on workshop dates or to access free online resources, visit the Working Well website at: www.workingwell.alberta.ca



Pesticide	Droplet Size
Fungicide—looking for good coverage on plant surface	Medium
Insecticide—foliar contact	Medium
Insecticide—foliar systemic	Coarse
Insecticide—soil applied system	Coarse, Very Coarse, Extremely Coarse
Herbicide—foliar	Medium
Herbicide—systemic	Coarse

Category	Symbol	Color Code	Approximate VMD Range
Very Fine	VF	Red	< 150
Fine	F	Orange	150 – 250
Medium	M	Yellow	250 – 350
Coarse	C	Blue	350 – 450
Very Coarse	VC	Green	450 – 550
Extremely Coarse	XC	White	> 550

Spraying In Today's Times

Spraying has come along way in the last few decades. About 90% of all pesticides used are by agricultural producers. Therefore, it is easy for the public to blame farmers for pesticides in the environment such as surface waters, or when wildlife is affected. Currently there are few restrictions and governance regarding spraying. Presently farmers are not required to be certified, however responsible spraying is in everyone's best interest. By educating yourself, you are protecting not only yourself, but also your neighbors and the environment as well. The Blue Book in Alberta is a wonderful resource and guideline, however you should still be reading your pesticide labels as they have the complete legal information you need to know, especially in regards to restricted entry intervals, pre-harvest intervals and grazing restrictions.

When talking about pesticides, it includes anything that is used to kill unwanted pests. This includes herbicides, insecticides, fungicides and rodenticides. Most people forget that treatments such as Ivomec® are pesticides.



Spraying is a constant balance between adequate coverage and drift. Fine particle size provides good coverage, but also results in a lot of drift. Coarse particles have poorer coverage but do not drift as much. The coverage, canopy penetration and drift all affect spraying efficacy. To improve coverage you can select a nozzle for

a finer spray, decreasing the droplet size (decrease droplet size by half to get eight times more droplets), or increase the volume; but you must double check the label to see if it is appropriate for your specific chemical. Canopy penetration can be improved by: larger droplet size, increased volume, higher pressure (increase droplet momentum) and/or slower sprayer speed (more time over target). The key factors that affect droplet size are the choice of nozzle and the pressure you select.

Nozzle selection can greatly impact spray quality. The three functions of a nozzle are: metering (gallon/minute, litre/hectare); atomization (bulk liquid to droplet); and dispersal over an area (distribution of droplets). Boom height also impacts spray quality as a lower boom height reduces drift with a reduction in exposure to air currents without affecting droplet size.

It is best to spray in winds that are between 3-5 miles per hour or 5-15 kilometers per hour.

Protecting Yourself and the Environment

We all know the importance of Personal Protective Equipment such as goggles and gloves, but are you using it? The carbon filters for you cabs can only adsorb so much before it is just like spraying with the window open. Are you maintaining these filters? When our skin or eyes come in contact with chemicals we need to rinse with water for at least 15 minutes. Do you have enough clean water with you?

Are you also prepared for spills? Having adequate and appropriate spill response equipment is essential to contain the spill until you can get cleanup equipment.

Chemical resistance is becoming a larger issue. In some cases it has its advantages (canola), but for the most part weed herbicide resistance is detrimental. Group rotation is an important consideration when choosing what pesticide to apply. Also residuals need to be kept in mind for successful crop rotation.

Anyone that uses pesticides needs to have an under-

Example

If you want a volume of 6.5 gallons / acre, at a working speed of 10 mph, the nozzle to be used will be a lilac 110025 nozzle at 30 psi.

Sprayer speed



Color	Code ISO	Mesh	(psi)	Gpm	GALLONS / ACRE NOZZLE SPACING: 20 INCHES								
					7 mph	8 mph	9 mph	10 mph	12 mph	14 mph	18 mph	22 mph	
GREEN	CVI 110015	80	Mesh	20	0.11	4.5	4	3.5	3.2	2.6	2.3	1.8	1.4
				30	0.13	5.6	4.9	4.4	3.9	3.3	2.8	2.2	1.8
				35	0.14	6	5.3	4.7	4.2	3.5	3	2.3	1.9
				40	0.15	6.4	5.6	5	4.5	3.8	3.2	2.5	2.1
YELLOW	CVI 11002	80	Mesh	20	0.14	6.1	5.3	4.8	4.3	3.6	3.1	2.4	1.9
				30	0.18	7.5	6.5	5.8	5.2	4.4	3.7	2.9	2.4
				35	0.19	8.1	7.1	6.3	5.6	4.7	4	3.2	2.6
				40	0.20	8.6	7.5	6.7	6	5	4.3	3.4	2.7
LILAC	CVI 110025	50	Mesh	20	0.18	7.6	6.6	5.9	5.3	4.4	3.8	3	2.4
				30	0.22	9.3	8.1	7.2	6.5	5.4	4.6	3.6	3
				35	0.24	10.1	8.8	7.8	7	5.9	5	3.9	3.2
				40	0.25	10.7	9.4	8.3	7.5	6.3	5.4	4.2	3.4

Nozzle to be selected

What You Should Know About Spraying *continued*

standing of what they are doing. You need to know your target species and know if there are any protected species where you are spraying. Soils impact chemical properties such as residual and translocation. With all the rain this year it is tempting to spray on the first nice day, however spraying into saturated soils results in chemical runoff. It is also easy for people with the 100+ foot booms to spray over the wet spots, wetlands and drainage areas without much thought that the chemical then enters the water cycle (surface waters) and can eventually end up in your groundwater.

The weather and time of day that you spray can greatly affect your results. Rainfastness of your chemical should be recognized, as well as the temperature at the time of application as different groups of chemicals are more easily volatilized. Spraying when there is low relative humidity can increase drift due to the affect of droplet size with evaporation. Spraying is best when wind speeds are between 5-15 kilometers an hour. NEVER spray when it is dead calm as a temperature inversion can occur. A temperature inversion usually happens in the early morning (or late evening), when there is very little air mixing occurring. When spraying in this condition the droplets can stay suspended in the air and form a concentrated cloud for a period after the application. When the wind does pick up the cloud can move to adjacent lands up to several miles away, potentially harming non target areas and species. To avoid inversion, spray later in the day and not in the early morning. The chemical will most likely be more effective to be sprayed during the day as the plant will be actively growing and take up the chemical.



With a very wet year, more fungicides are going to be utilized. Scouting the fields for early detection is key to prevent and/or control disease.

Thresholds for insects should be monitored. Insecticides should be the last resort as many are non-species specific and do far more damage than good, killing beneficial species. If insecticides are used, they should be sprayed in the early morning to protect pollinators such as bees, which will not be active at that time of day.

At the end of the day you must meet the challenge to control pests, remain profitable getting the most out of your pesticide application without harming your neighbors or the environment. If you are farming in a populated area with acres bordering your fields, be courteous and give them a heads up to what you are doing so they can protect their families and pets by avoiding exposure.

For an effective spray try to: use a coarse spray; calibrate all nozzles; operate in the middle of the pressure range; increase water volume to improve canopy penetration; and keep booms and travel speeds low. And if you want to make up time to get more spraying done try using a nurse tank to fill faster.

Buffer Zone Calculator

The Buffer Zone Calculator is an interactive tool that enables pesticide applicators to modify the size of the Buffer Zone (BZ) specified on a pesticide product label when spraying their fields. By combining information on current weather conditions and their sprayer configuration, applicators may find that BZ distances on product labels can be reduced.

The Buffer Zone Calculator can be found online on the Health Canada Website at:

<http://www.hc-sc.gc.ca/cps-spc/pest/agri-commerce/drift-derive/calculator-calculatrice-eng.php>

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.

GROWING FORWARD

Growing Forward Stewardship Programs

Program Area	Eligible Costs	Cost Share
Riparian Area Fencing and Management	Permanent fencing (controlled access or exclusion): <ul style="list-style-type: none"> • 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
Portable Shelters and Windbreaks	Construction materials and supplies for portable windbreaks/shelters; In-kind labour (\$25/hour); Note: costs are eligible to a maximum of 120 feet per 100 cows	50% to a funding maximum of \$10,000
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
Improved Pesticide Management	Low-drift nozzles and air-induction nozzles; Selectable nozzle bodies (hold 2-5 nozzles); Sprayer cones or shrouds; Chemical handling system with jug rinse; Sectional control operating system and hardware; Auto boom height operating system and hardware; Pumps designed specifically for chemical transfer from totes and barrels; Chemical meters	50% at funding maximum of \$10,000
Fuel Storage	Double wall fuel tanks that are ULC or CSA approved; Meters, hoses and auto shut-off nozzles; Electrical, connections and installation	30% at a funding maximum of \$3,000
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

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.

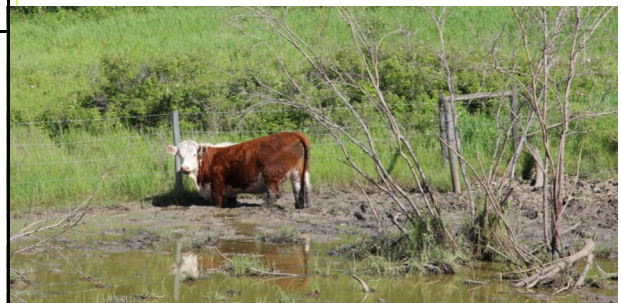
Having a completed EFP allows producers to access different funding opportunities, such as the Growing Forward Stewardship Program. It is also useful in product branding that demonstrates specific environmental standards.

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.

ENVIRONMENTAL FARM PLANS

HUNGRY FOR LAND: SMALL FARMERS FEED THE WORLD WITH LESS THAN A QUARTER OF ALL FARMLAND

GRAIN WWW.GRAIN.ORG

Governments and international agencies frequently boast that small farmers control the largest share of the world's agricultural land. Inaugurating 2014 as the International Year of Family Farming, José Graziano da Silva, Director General of the United Nations Food and Agriculture Organization (FAO), sang the praises of family farmers but didn't once mention the need for land reform. Instead he stated that family farms already manage most of the world's farmland¹ – a whopping 70%, according to his team.² Another report published by various UN agencies in 2008 concluded that small farms occupy 60% of all arable land worldwide.³ Other studies have come to similar conclusions.⁴



But if most of the world's farmland is in small farmers' hands, then why are so many of their organizations clamoring for land redistribution and agrarian reform? Because rural peoples' access to land is under attack everywhere. From Honduras to Kenya and from Palestine to the Philippines, people are being dislodged from their farms and villages. Those who resist are being jailed or killed. Widespread agrarian strikes in Colombia, protests by community leaders in Madagascar, nationwide marches by landless folk in India, occupations in Andalusia – the list of actions and struggles goes on and on. The bottom line is that land is becoming more and more concentrated in the hands of the rich and powerful, not that small farmers are doing well.

Rural people don't simply make a living off the land, after all. Their land and territories are the backbone of their identities, their cultural landscape and their source of well-being. Yet land is being taken away from them and concentrated in fewer and fewer hands at an alarming pace.

Then there is the other part of the picture: that concerning food. While it is now increasingly common to hear that small farmers produce the majority of the world's food, even if that is outside of market systems, we are also constantly being fed the message that the "more efficient" industrial food system is needed to feed the world. At the same time, we are told that 80% of the world's hungry people live in rural areas, many of them farmers or landless farm workers.

How do we make sense of all this? What is true and what is not? What action do we take to deal with these imbalances? To help answer some of these questions, GRAIN decided to take a closer look at the facts.⁵ We tried to find out how much land is really in the hands of small farmers, and how much food they produce on that land.

The figures and what they tell us

When we looked at the data, we came across quite a number of difficulties. Countries define "small farmer" differently. There are no centralized statistics on who has what land. There are no databases recording how much food comes from where. And different sources give widely varying figures for the amount of agricultural land available in each country.

In compiling the figures, we used official statistics from national agricultural census bureaus in each country wherever possible, complemented by FAOSTAT (FAO's statistical database) and other FAO sources where necessary. For statistical guidance on what a "small farm" is, we generally used the definition provided by each national authority, since the conditions of small farms in different countries and regions can vary widely. Where national definitions were not available, we used the World Bank's criteria.

In light of this, there are important limitations to the data – and our compilation and assessment of them. (See Annex 1 for a fuller discussion of the data.) The dataset that we produced is fully referenced and publicly available online and forms an integral part of this report.⁷

The Family Dairy Farm
Sallerup, Denmark



HUNGRY FOR LAND CONTINUED

Despite the inherent shortcomings of the data, we feel confident in drawing six major conclusions:

1. **The vast majority of farms in the world today are small and getting smaller**
2. **Small farms are currently squeezed onto less than a quarter of the world's farmland**
3. **We are fast losing farms and farmers in many places, while big farms are getting bigger**
4. **Small farms continue to be the major food producers in the world**
5. **Small farms are overall more productive than big farms**
6. **Most small farmers are women**

Many of these conclusions might seem obvious, but two things shocked us.

Table 1: Global distribution of agricultural land

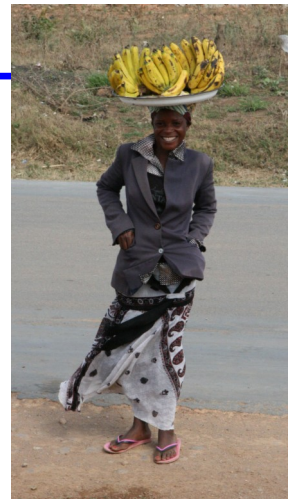
	Agricultural land (thousands of ha)	Number of farms (thousands)	Number of small farms (thousands)	Small farms as % of all farms	Agricultural land in the hands of small farmers (thousands of ha)	% of agricultural land in the hands of small farmers	Average size of small farms (ha)
Africa	1,242,624	94,591	84,757	89.6%	182,766	14.7%	2.2
Asia-Pacific	1,990,228	447,614	420,348	93.9%	689,737	34.7%	1.6
China	521,775	200,555	200,160	99.8%	370,000	70.9%	1.8
India	179,759	138,348	127,605	92.2%	71,152	39.6%	0.6
Europe	474,552	42,013	37,182	88.5%	82,337	17.4%	2.2
Latin America & Caribbean	894,314	22,333	17,894	80.1%	172,686	19.3%	9.7
North America	478,436	2,410	1,850	76.8%	125,102	26.1%	67.6
TOTAL	5,080,154	608,962	562,031	92.3%	1,252,628	24.7%	2.2

Notes: All figures on agricultural land obtained from FAOSTAT. Figures on number and size of farms obtained from national authorities wherever possible. Click to download [the full dataset as a spreadsheet](#).

The other shock was to learn that, today, small farms have less than a quarter of the world's agricultural land – or less than a fifth if one excludes China and India from the calculation. Such farms are getting smaller all the time, and if this trend persists they might not be able to continue to feed the world.

For the full article go to: <http://www.grain.org/article/entries/4929-hungry-for-land-small-farmers-feed-the-world-with-less-than-a-quarter-of-all-farmland>

GRAIN is a small international non-profit organization that works to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems.



One was to see the extent of land concentration today, a problem that agrarian reform programs of the 20th century were supposed to have solved. What we see happening in many countries right now is a kind of reverse agrarian reform, whether it's through corporate land grabbing in Africa, the recent agribusiness-driven coup d'état in Paraguay, the massive expansion of soybean plantations in Latin America, the opening up of Burma to foreign investors, or the extension of the European Union and its agricultural model eastward. In all of these processes, control over land is being usurped from small producers and their families, with elites and corporate powers pushing people onto smaller and smaller land holdings, or off the land entirely into camps or cities.

Photos Below: Onion fields with citrus trees in behind; workers picking nectarines off trees in Australia; Tanzanian citizens prepping fields; smaller fields in Germany.



Lakeland Agricultural Research Association

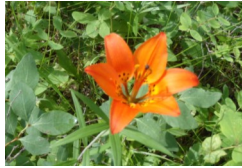
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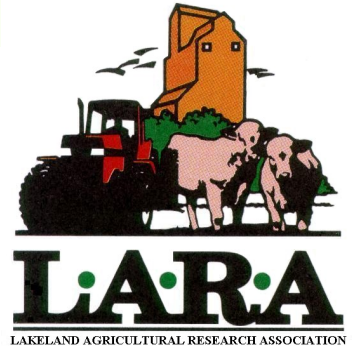
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Sustainable farming encompasses a wide range of practices and principles; combining environmental stewardship with profitability and ensuring that the family farm will be there for generations to come.



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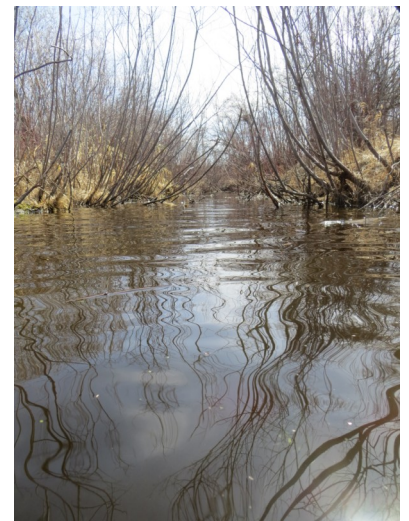
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RIPARIAN HEALTH ASSESSMENT

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.

This Riparian Health Assessment is a tool designed to evaluate the selected site. It can provide a foundation to build an action plan and identify priorities. The assessment provides a snapshot in time and to be an effective tool for monitoring should be done on the same riparian area several years apart.

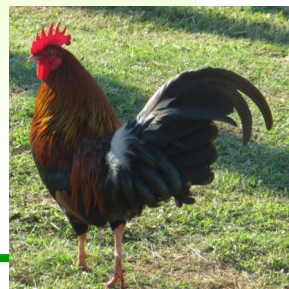
If you would like a FREE Riparian Health Assessment conducted on your property please call Kellie at the LARA office.



Upcoming Events to Watch For:

Summer Field Days:

- ◆ July 24, Lac La Biche
- ◆ July 29, Fort Kent
- ◆ August 6, St. Paul



NEW BMPs Covered by Growing Forward 2

- ◆ Shelterbelt Establishment
- ◆ Sectional Control for Seeding and Fertilizing Equipment
- ◆ Grain Bag Plastic Rolling Equipment