2017 Southern Alberta WATER CHARTER

Lethbridge County was proud to sign the 2017 Southern Alberta Water Charter, along with many others in the community. This initiative will take steps to improve watershed health throughout Southern Alberta. Lethbridge County will contribute to the Charter by helping to produce collaborative Oldman Watershed Council videos to better educate the public about watershed health. We will post updates to our website as we create these videos.

I am going to go out on a limb here and say that it is great that we have signed the 2017 Water Charter. However, I have to say Lethbridge County has been committed to Watershed Health for longer than the 11 years that I have been here. The fact that my Rural Extension Specialist (RES) position exists and that this type of position has been associated with Lethbridge County for over 20 years, speaks volumes. The many organizations and groups that I am affiliated with helps the county understand present and future sustainable agriculture initiatives.

The Lethbridge County Nutrient Management newsletter is testament to the efforts that the County has taken to help our agricultural producers become environmentally sustainable. Along with the nutrient management topics, riparian articles and water quality information, we include valuable weed management discussions that can help producers understand their weed control obligations as agricultural producers. This newsletter discusses spotted and diffuse knapweed throughout. We have heard that folks are struggling with European Elm Scale. There is a brief article for folks to find information on European Elm Scale. As well there is an article with contact information on helping make energy efficiency affordable. There is a new announcement, as of July 20/17 that the Solar PV Program will be reopening on Wednesday, July 26th, 12:00 pm (noon).

Please prepare the following information BEFORE submitting an application, and attach to your completed application. Any application submitted without this information will be considered incomplete and returned to the applicant.
1. Verification of your Distribution Rate Class from your energy retailer;
2. A signed copy of your Micro-Generation Agreement offer (“pre-approval”) from the wire owner;
3. An electricity bill for one month’s electricity (current within the last 24 months);
4. A solar PV quote for the equipment you intend to install.

Have a Great Summer

Lethbridge County Agriculture Service Board
#100, 905-4th Avenue South Lethbridge, AB, T1J 4E4
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SOUTHERN ALBERTA WATER CHARTER 2017

Whereas, the United Nations General Assembly, “Recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights.” (20 July 2010 Resolution 64/292)

And Whereas, the Government of Canada has stated: “Pollution of the water resources of Canada is a significant and rapidly increasing threat to the health, well-being and prosperity of the people of Canada and to the quality of the Canadian environment at large and as a result it has become a matter of urgent national concern the measures be taken to provide for water quality management in those areas where they are significantly affected.” (Canada Water Act, R.S.C., 1985, c. C-21)

And Whereas, the Province of Alberta has stated: “Water is not only a resource, it is a life source. We all have the responsibility to ensure a healthy, safe and sustainable water supply for our communities, environment and economy - our quality of life depends on it. The Government of Alberta's renewed Water for Life strategy has three main goals: Safe, secure drinking water; Healthy aquatic ecosystems; and Reliable, quality water supplies for a sustainable economy.” (Water for Life: Alberta's strategy for sustainability, 2003- Nov 2003)

And Whereas, the Oldman Watershed Council has stated: “Southern Alberta has a water heritage worth protecting. The Oldman Watershed provides world-class recreational opportunities; rich economic benefits; home to wildlife and many species at risk; a source of spiritual meaning; life and prosperity from the headwaters through to the Hudson Bay. Our goal is to ensure clean, clear drinking water for generations to come.” (www.oldmanwatershed.ca, accessed 2016)

Therefore, I, Lorne Hickey, Reeve of the Lethbridge County, on behalf of the Lethbridge County, do command to the following new project and/or program in 2017, for the benefit of people, animals and ecosystems in the Oldman watershed:

The Lethbridge County proudly declares:
1) Active participation in the Southern Alberta Water Charter
2) Collaboration with OWV videos
3) Encouragement of citizens to participate
4) Commitment by the Lethbridge County to the better management and health of the Oldman watershed

Oldman Watershed Council
April 7, 2017

Gary Secrist
Agriculture Fieldman

Dwayne Rogness
Rural Extension Specialist (RES)
403-380-1598

Terry Mrozowich, ASB Foreman

Kevin Virostek, Foreman/Weed Inspector
European elm scale is an insect that attacks a variety of elm trees. These insects feed on the trees and produce a large amount of honeydew which eventually covers the leaves and bark in a black coloured mold. The honeydew can also become a nuisance when it covers patios, decks and vehicles. Heavy infestation may kill weakened trees and cause branch dieback in healthy trees. Often a thin canopy in a tree is a symptom of heavy infestation.

**SIGNS & SYMPTOMS**

- Visible mature insects (10 mm long, oval and greyish-brown with a white waxy fringe) on the branches or where the branches intersect the trunk
- Late leaf out in the spring
- Stunted, yellowing leaves leading to premature leaf drop and die back
- Honeydew secretions on leaves, branches, sidewalks, patios, vehicles, etc.
- Black sooty mold growth on the leaves, branches and trunk

European Elm Scale is doing a lot of damage to many elm trees in Lethbridge County and the City of Lethbridge. The City of Lethbridge has been working hard to treat as many trees as they can. They have a lot of experience with European Elm Scale, this information is from their website. I have included the link below so that folks can go to their website to find out what you can do to help increase the survival of infected trees.

http://www.lethbridge.ca/Things-To-Do/Parks/Pages/EuropeanElmScale.asp

Alberta Agriculture and Forestry has a Woodlot Extension Specialist named Toso Bozic. Toso is always happy and willing to answer any questions folks have for him. His contact information is as follows, Toso Bozic, Woodlot Extension Specialist 780-415-2681.

If your elm tree is showing signs of stress from European Elm Scale it is recommended that you contact a qualified arborist that can administer a pesticide injection to combat the insect. Information about local arborists can be found in the Yellow Pages.
Knapweeds are aggressive, invasive weeds. They are listed as Prohibited Noxious weeds under the Alberta Weed Control Act. Under this designation they must be eradicated when found in Alberta. They are commonly found in pastures, riparian areas, cultivated fields, roadsides, railroads and disturbed sites. They increase costs to land stewards, consume soil nutrients, they pose an increase in fire hazard and crowd out native vegetation. Knapweeds have little forage value, thus reducing grazing potential of pastures and rangeland, affecting both domestic livestock and wildlife.

The best knapweed control is prevention. Learn to identify your Knapweeds to keep an infestation from becoming established, see page 8.

Diffuse and spotted knapweed are introduced weeds that threaten to spread throughout the uncultivated drylands of Western Canada. By 1972 approximately 30,000 ha, mostly in British Columbia, were infested, with forage reductions of up to 88%. Presently the infestation may be increasing by 10% a year and it is estimated that 8.4-10.7 million ha are susceptible to invasion by one or the other species in Western Canada. This would be disastrous to both ranching and wildlife in the region. Biological control, which is likely to require the introduction of six agents and cost a total of $1.8 million, is the most cost-effective solution. However, until it can be fully implemented (10-20 yr) new infestations can be spot-treated with picloram. It is also economic to convert dense stands to tame pasture after killing the knapweed with picloram at 0.5 kg/ha although the knapweed is likely to begin reinvasion after 4 years.

Knapweeds, are a family of highly competitive weeds and have long been a threat to many of the native rangelands in the United States and interior British Columbia. They have made their way into parts of Alberta and Saskatchewan and could possibly further their expansion if precautions are not taken.

Knapweed was introduced into North America in the late 1800’s, most likely as a contaminant in alfalfa or grass seed. This highly aggressive weed has now infected approximately 40,470 hectares (100,000 acres) of native rangeland in interior British Columbia and could potentially spread to affect 1 million hectares (2.7 million acres) in the future. It has been reported in Alberta to occupy about 145 different sites of which the size is not known. Knapweed is most commonly found in areas of disturbance. It makes its habitat on light textured soils where competition is minimal. It is easily transported through vehicles, machinery, trains, hay, wind, animals (some birds and rodents eat the seeds), and florists (some have used it in dried floral arrangements).

Knapweed is a problem that cannot be ignored. If control and preventive measures are not taken, this weed could creep its way into our native grasslands, becoming a large threat to biodiversity. Environmental and economic impacts of spotted and diffuse knapweed are summarized as follows. Spotted and diffuse knapweed threaten long-term productivity of grazing lands by reducing bio-diversity and increasing soil erosion. These weeds out-compete native species, change plant community structure, degrade or eliminate habitat for native animals, reduce forage for livestock and wildlife. Pollination of native plants may also be compromised by dense infestations of spotted knapweed.

Economic impact to agriculture and wildlands from these weeds is substantial. In 1996, the potential annual loss from knapweeds just to the state of Montana was estimated to be $42 million.

The main economic loss from diffuse and spotted knapweed results from the elimination of superior forage species from the rangeland. The losses vary with the productivity and management of the land, the price of hay and beef and the control measures used against the weed. The loss figures calculated for this information reflect equivalent hay production only. Bluebunch wheatgrass-rough fescue range in good condition near Kamloops, B.C. has an annual production of 493 kg/ha available forage (45% of the total yield should be left as a carryover).
In contrast, knapweed infested range may produce only 62 kg/ha available forage. With hay at $55/tonne, the loss of $24/ha is probably close to the potential average for the region; however, actual production because of overgrazing is lower. Therefore, the average loss from knapweed is assumed to be $12/ha. On this basis the annual loss for the area infested in 1972 was $350,000 and the annual loss to British Columbia if the weed extends to the limits of its range would be about $58 million. These numbers are from a research paper completed in 1972 but it is easy to use current numbers and still see the devastating losses that are associated with knapweed establishment.

It is important to note that there are many management techniques needed to control knapweed. An Integrated Pest Management Program (IPM) is needed if you want to get good control on these invasive weeds. This can take many years if the infestation is significant.

IPM is a decision-making process that includes identification and inventory of invasive plant populations, assessment of the risks that they pose, development of well-informed control options that may include a number of methods, site treatment, and monitoring.

**AWARENESS** – People have been the major cause of the spread of knapweeds (i.e. clothing, vehicles). Becoming aware and alerting others to the problem will encourage quick and direct action to prevent further introduction and spread.

**PREVENTION** – Probably the most efficient way to control knapweeds is through prevention. Identification is essential. Know what knapweeds look like and become familiar with their characteristics. The most effective method of control is early detection and removal. Since knapweeds thrive on disturbed sites, watch for them in areas such as pastures, roadsides and streambanks, as well as hay feeding spots. Detection and control of a few plants now will be much more cost effective as compared to dealing with a larger acreage later. Other methods of prevention include exercising caution when purchasing hay from infested states, provinces, or areas; as well as managing pasture areas to prevent overgrazing. Knapweed seeds attach easily to pant cuffs, shoelaces, and the undercarriage of vehicles. Therefore, caution should be taken when visiting infested areas, that the seeds are not transported from your shoes or vehicle.

**MONITORING** – Noxious weeds cannot be prevented if we are not looking for them. Monitoring infested sites as well as potential new sites (disturbed sites) is a key component to keeping knapweed under control. Keep an eye out for knapweed plants in your pastures as well as surrounding area. Consistent monitoring now will solve many problems that may occur in the future.
COST OF KNAPWEED TO WESTERN CANADA

MANAGEMENT TECHNIQUES

Due to the longevity of their seeds, eradication of established knapweed stands is often difficult. Stress and the prevention of seed production is the key to successful control and management. It should also be noted that often, the use of just one management technique will not effectively control the plant. A combination of techniques, such as chemical and cultural methods, proves to be the most successful. This is known as integrated weed management.

Hand Pulling
Hand pulling or picking can often be effective in eliminating single plants or small groups of plants. It is labor intensive to pull a large area infested with knapweed. If the soil has been severely disturbed, this may not be a reliable method of control, as it just encourages other infestations. If hand pulling is to be an option, it is important that the entire root of the weed is removed with the rest of the plant. Pulling is not a viable option for Russian knapweed because of its deep, persistent root system.

Mowing
Mowing may be a temporary option to control seed production and prevent spread, but very rarely will it cause eradication. If mowing is used as a management method, it should occur just after flowering but before the seed matures. Mowing after the seed is viable only contributes to the spread of the knapweed. Mowing will need to be repeated later in the season in order to be effective in preventing seed production. Short term evidence has shown that Russian knapweed, which is slightly less aggressive, may be successfully controlled through mowing if done twice per year for several years, but there is still no significant evidence that this will work as a method of control in the long run.

Grazing
Grazing is not a recommended control measure for knapweeds. It provides very little forage value to livestock; therefore it may be difficult to get them to graze it. Preventing overgrazing is the best way to keep knapweed at bay, as it likes disturbed bare sites.

Fire
Fire is not recommended as knapweed does not burn easily.

Chemical Control
Chemical Control There are many different herbicides that have been used to control knapweed. Refer to the “Crop Protection Guide (the Blue Book) published annually by Alberta Agriculture and Forestry.
Helping Make Energy Efficiency Affordable

There are many technologies and practices farmers and ranchers can implement on their operations to reduce their energy footprint and protect (and possibly even increase) profit margins. Carbon emission reduction and energy sustainability can both be practiced while also running an economically sustainable farm.

Increasing energy efficiency often requires an up-front investment in order to obtain equipment that will save energy and money. Unfortunately, the initial costs of energy efficient products can be prohibitive for some producers. The Government of Alberta, through Growing Forward 2 (GF2) a federal, provincial, territorial initiative, offers two incentive-based programs aimed at helping Alberta farmers and ranchers reduce energy consumption and thus costs.

The GF2 On-Farm Energy Management Program (OFEMP) and the GF2 On-Farm Solar Photovoltaic (OFSPV) Program offer farmers and ranchers the opportunity to become energy efficient by sharing the cost to purchase energy efficient or renewable technologies.

These initiatives are intended to make energy efficient technology as affordable as current technology, making the environmentally friendly choice also the economically sensible choice.

Eligible projects of OFEMP include:
- Construction projects that install high-efficiency equipment from the program’s Funding List;
- Retrofit projects that improve operation energy usage per unit of production; and
- Installation of sub-metres to monitor on-farm electricity and/or natural gas usage.

Eligible OFSPV systems must be:
- Grid-tied, not off-grid;
- Approved under Alberta’s Micro-Generation Legislation;
- Positioned to optimize sunshine and minimize shading;
- Have manufacturer-warranties on: Solar modules, Racking, Inverters and/or Micro-inverters; and
- Producing power that is used in the production of a primary commodity.

The government has partnered with three grassroots organizations staffed with Energy Outreach Officers whose role is to promote the OFEMP and the OFSPV Program to Alberta communities. Energy Outreach Officers are available to attend community events, talk about energy efficient technologies, as well as answer questions about the OFEMP and OFSPV Program and explain the benefits of these programs to farmers and ranchers. The Outreach Officers are also more than happy to meet one-on-one with farmers and ranchers to help them find potential energy efficiency solutions for their operation. You can get in touch with your regional Outreach Officer by contacting your municipality, or by calling your regional representative directly.

CONTACT INFORMATION
South-central Alberta, from Clearwater County to Cypress County.
SouthGrow Regional Initiative.
SouthGrow’s mission is “To accelerate and enhance quality of life, development and sustainability for the communities of the SouthGrow region of Alberta.”
Energy Outreach Officer – Vern Steinborn
Phone: (403) 894-0050
Email: vern.steinborn@southgrow.com
To learn more about the OFEMP and the OFSPV Program visit www.growingforward.alberta.ca

Key Points regarding the new On-Farm Solar PV Program

Program Conditions:
1. Retroactive projects will no longer be accepted.
   If a project has been initiated (ordering or purchasing equipment, equipment delivery, component construction, etc.) prior to the approval of the application, it will NOT be accepted.
2. The grant rate has changed to align more closely with the Residential and Commercial solar programs. Grant funding is calculated as follows:
   a) <100 kW: $0.75/W to maximum 35% eligible cost share
   b) 100.01 – 150 kW: $0.56/W to maximum 27% eligible cost share
3. In order to qualify for the On-Farm Solar PV grant program, an applicant must have an Electrical Distribution Rate Class that is rated as Farm, or equivalent, as of the month of January 2017. Proof of this rate class will be required, and can be found either on your electrical bill or obtained from your electricity retailer.
4. If you do not have an Electrical Distribution Rate Class that is rated as Farm, or equivalent, please refer to http://solar.efficiencyalberta.ca/ to determine if you may qualify under other provincial solar programs.

To learn more about the OFEMP and the OFSPV Program visit www.growingforward.alberta.ca/Prog...
1. Spotted Knapweed
Picloram (Tordon 22K, Grazon) and Clopyralid (Lontrel) are the most effectively used chemicals for spotted knapweed control. Dicamba has also shown decent activity on spotted knapweed when applied at the correct rate and timing. Picloram causes the largest initial decrease in native species but over the long-term still shows benefits from the release of spotted knapweed competition. 2,4-D can be used as a method of suppressing spotted knapweed if applied when the plant is in the rosette stage. Unfortunately this is not always effective as 2,4-D does not inhibit germination of the seeds in the soil. Dicamba and 2,4-D treatments will need to be repeated often as there is no continued residue activity.

2. Diffuse Knapweed
Diffuse knapweed seems to be best controlled with 2,4-D or Glyphosate, although this only provides seasonal control. If longer control (approximately two or more seasons) is desired, then Dicamba (Banvel) and Picloram would be the best options when applied to actively growing weeds. Dyceer can also be used if applied when the leaves are fully expanded.

Biological Control
Several insects have been released in North America to control the spread of the different types of knapweed. Only Russian knapweed is present in sufficient numbers to make a biological control program feasible. A gall nematode (Subanguina picridis) is available for Russian knapweed but control levels have not yet been determined. There have been various agents introduced into the United States for the control of spotted and diffuse knapweed, but little research has been done in Canada to determine if these agents are adaptable to our conditions. Control strategies for these less common knapweeds should instead focus on locating new stands and preventing their spread through other management methods.

Other Methods of Control
A very effective method of controlling knapweed is by stressing the weed (for example, with the application of chemicals) and then reseeding the area to a competitive perennial grass species. This should only be an option if knapweed has infected tame pastures or cropland, as it is not recommended to break native grasslands. It should be noted though, that the reintroduction of grasses may be difficult due to the build-up of allelopathic chemicals in the top layer of soil and tillage may be required in order to disperse the allelochemicals through the soil to allow germination of new grasses. If chosen to do so, sod-forming grasses help prevent invasion better than bunchgrasses. If a native pasture has been infested and the knapweed stand is not too old and well-established, growth of the native grass species may be stimulated by irrigation (if possible). This may increase the competition of the grass therefore keeping the weed under stress. Using irrigation is also a method that could apply to tame pastures if one does not wish to reseed.

Knapweeds are an extremely aggressive species with the potential to rapidly invade native grasslands, thus threatening the diversity of native habitat. Awareness of this weed needs to be raised and the expansion of the weed in Alberta prevented. Management of knapweeds must include an integrated approach using numerous methods of control and monitoring, with the main focus being prevention.

I don’t usually single out folks for jobs well done in the County. However, we would like to commend Tollestrup Construction for their efforts to control knapweed at their river bottom site by Coalhurst. They have had great success this year with knapweed control. Director of Operations Doug Atwood says “without a sound Integrated Pest Management Program, we could not get the knapweed control that we have been able to achieve”
Knapweeds are aggressive, invasive weeds. They are listed as Prohibited Noxious weed under the Alberta Weed Control Act. Under this designation they must be eradicated when found in Alberta.

They are commonly found in pastures, cultivated fields, roadsides, railroads and disturbed sites. They increase costs to land stewards, consume soil nutrients, pose an increase in fire hazard and easily crowd out native vegetation. Knapweeds have little forage value, thus reducing grazing potential of pastures and rangeland, affecting both domestic livestock and wildlife.

The best knapweed control is prevention.
Learn to identify your Knapweeds to keep an infestation from becoming established.

**Bighead Knapweed** *(present in Alberta)*
*Centaurea macrocephala*

- **Height:** 50-170 cm
- **Growth Habit:** Perennial with several un-branched stems
- **Leaves:** Light-green in color, leaf much longer than wide, wavy/sloping margins, taper at ends, upper leaves are narrow and elliptical
- **Flower:** Yellow color and approx. 6 cm across
- **Found:** Commonly grown as ornamental, but has potential as an invader if allowed to escape

**Diffuse Knapweed** *(present in Alberta)*
*Centaurea diffusa*

- **Height:** 30-80 cm
- **Growth Habit:** Annual or short lived perennial that is very branched
- **Leaves:** Silvery-green, lower leaves are very divided, upper leaves are narrow and elliptical
- **Bract:** Covered with "comb-like" spines
- **Flower:** Usually white but can be rose or purple and approx. 1.5 cm across
- **Found:** Disturbed sites in grasslands, woodlands and open coniferous forests

**Spotted Knapweed** *(present in Alberta)*
*Centaurea stoebe ssp. micranthos*

- **Height:** 30-150 cm
- **Growth Habit:** Biennial or short lived perennial, with many stems that branch
- **Leaves:** Medium-green with a silvery-gray cast; deeply lobed on young plants becoming elliptical with maturity
- **Bract:** Fringed tips dark & short
- **Flower:** Purple, pink or sometimes white and approx. 4 cm across
- **Found:** Roadsides, fields and open forests

**Meadow Knapweed** *(present in Alberta)*
*Centaurea x moncktonii*

- **Height:** 30-150 cm
- **Growth Habit:** Perennial that is openly branched near top
- **Leaves:** Deep-green, leaves are much longer than wide, hairy and stalkless. Basal leaves occasionally with wavy margins or lobed, taper at both ends, upper leaves are smaller and not lobed
- **Bract:** Spine at tip of bract strongly curved backward, longer than spines at side of bract
- **Flower:** Rose to purple and approx. 2 cm across
- **Found:** Roadsides, riverbanks, pastures, meadows, forest openings and waste areas

**Russian Knapweed** *(present in Alberta)*
*Rhaponticum repens*

- **Height:** 30-100 cm
- **Growth Habit:** Hardy, long lived perennial, branched stem with creeping roots
- **Leaves:** Silvery-green, hairy, lower leaves long and lobed; upper leaves smaller & toothed
- **Bract:** Pearly and papery, with no noticeable fringes or spines
- **Flower:** Pink to purple and approx. 1 cm across
- **Found:** Fields, roadsides, riverbanks, ditches, clear cuts and cultivated ground

**Tyrol Knapweed** *(present in Alberta)*
*Centaurea nigrescens*

- **Height:** 30-150 cm
- **Growth Habit:** Perennial that is openly branched near top
- **Leaves:** Basal oblong leaves are much longer than wide, Lobed leaves, terminal lobe much larger than other lobes, upper leaves are smaller, with few lobes
- **Bract:** Bract tipped with triangular fringe, which ends abruptly, not tapering down the side of long slender green base of the bract
- **Flower Color:** Rose to purple and approx. 3 cm across
- **Found:** Roadsides, fields and waste areas