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INTEGRATED VEGETATION MANAGEMENT ASSOCIATION - MANITOBA / SASKATCHEWAN INC.
PO BOX 101, STN MAIN, WINNIPEG, MANITOBA, R3C 2G1

FOCUS

FALL 2009

ACKNOWLEDGEMENTS

The articles on Pesticide Spray Drift, Vegetation Management for Saskpower and Manitoba Hydro were gleaned from the internet.

The Croplife article was the presentation made at the Federal/Provincial/Territorial Committee on Pest Management and Pesticides 2009 Annual Meeting held in Winnipeg earlier this year.

FOCUS is intended for information purposes only. The Integrated Vegetation Management Association of Manitoba/Saskatchewan does not endorse any method, product or personal opinion over another, but rather is attempting to give current information on all methods available for vegetation management.

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November 2, 2009

Hope everyone had a good summer, it certainly was a mixed up season!

Our tour and seminar was held Wednesday and Thursday, September 9 and 10 from the Holiday Inn, Winnipeg South. There were 47 in attendance representing 31 companies and agencies. The seminar presentations are all available in the members section of our website.
The link is http://www.ivmamansask.com.

There have been several changes made during the past few months; we have changed our name to Integrated Vegetation Management Association of Manitoba/Saskatchewan to better reflect the purpose of the organization, and have changed our logo to the above.

We have also proposed two student bursaries of $500.00, one for Manitoba and one for Saskatchewan. These bursaries will be available to IVMA-Man/Sask members and member dependents enrolled in second year or later studies in a recognized field of study relating to vegetation management. There will be more information on this shortly.

There is a possibility of a ban, by the province of Manitoba, on pesticide use for cosmetic purposes in Manitoba. Letters have been sent to the Premier and appropriate Ministers in the Provincial Legislative Assembly expressing our concerns. Ross May is part of a committee established by Croplife Canada to recommend courses of possible action. We will keep you informed on any happenings as they occur.

This will be my last letter for the Focus. I will be retiring as Business Manager from the association at the end of the year. I have been involved with the IVMA-Man/Sask since its inception in 1987 and have certainly enjoyed my association with all the members over the years.

Errol Taggart
Business Manager
IVMAMan/Sask

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0408-7497-B

CropLife Canada

FPT meeting, Winnipeg, Manitoba

September 29, 2009

CropLife Canada

CropLife Canada is the trade association representing the manufacturers, developers and distributors of plant science innovations – pest control products and plant biotechnology – for use in agriculture, urban and public health settings


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CANADA
representing the plant science industry
représentant de l'industrie de la phytologie


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Bayer CropScience


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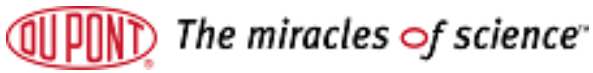
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VALENT


VITERRA

Health & Safety – A Shared Goal

CropLife Canada is committed to health and safety

- Our industry invests significantly in developing products that are safe and effective
- We acknowledge and support a strong, science-based regulatory system for all pesticides
- We encourage responsible use of pesticides for all their uses including:
  - urban green spaces, including lawns and gardens
  - agriculture/horticulture/forestry/industrial vegetation management
  - structural pest control
  - golf courses and recreational turf
  - personal use including insect repellents and pool chemicals

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- Our products are valuable tools that contribute to improved human health and a better environment
- Users of our products
  - offer healthy foods to the world's growing population
  - protect the environment and human health
  - make urban spaces nicer places to be
- These tools are being unfairly stigmatized and innovation will suffer

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MIXED MESSAGING

CropLife CANADA

Health Canada Santé Canada

"Pesticides are regulated by Health Canada under the *Pest Control Products Act*, and are among the most stringently regulated substances in Canada. The Pest Management Regulatory Agency is the branch of Health Canada that administers the Act on behalf of the Minister of Health. Our primary objective is to prevent unacceptable risks to people and the environment from the use of pesticides.

To accomplish this, each pesticide goes through a thorough scientific evaluation to determine if it meets current health and environmental standards. Only those pesticide products that meet Health Canada's standards and that are proven to be effective can be accepted for use in Canada."

- Health Canada Pest Management Regulatory Agency website

CropLife CANADA

Health Canada Santé Canada

"The Pest Management Regulatory Agency (PMRA) carefully reviews all the data submitted (including the raw data) to determine if the product is acceptable for use in Canada, and cross-checks between studies as an additional measure of validation of the final decisions. The Agency may also compare its results with regulatory counterparts in other countries such as the U.S. and members of the European Union, to ensure that similar conclusions are drawn from the evaluations."

- Health Canada Pest Management Regulatory Agency website

CropLife CANADA

Health Canada Santé Canada

“Non-occupational risks are not of concern

Risks to homeowners and their children from contact with treated lawns and turf are not of concern.

Occupational risks are not of concern provided additional risk-reduction measures are observed.

The risk estimates associated with applying, mixing and loading activities for label uses are acceptable for all scenarios approved for continued registration, provided the label directions are respected, including the limits on the amount of product handled per day for some formulations/uses and the personal protective equipment indicated. These measures are needed to minimize potential exposure and protect worker health.”

- PMRA Reevaluation of 2,4-D (RVD 2008-11)

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"The policy is banning 2,4-D for sale or use in fertilizer/herbicide combination products. It is still available for use as a spot-targeted herbicide."

"Herbicide-only products (including those containing 2,4-D) will still be available to homeowners. These products use less herbicide to target weeds and do not have to be spread over an entire lawn."

- Government of Alberta website

"**Health Canada indicates** that 'Btk poses little threat to human health either through handling products directly or through indirect exposure such as during a spray program…Studies have shown that even if Btk spores are ingested or inhaled, they are eliminated without any adverse health effects.'"

Pesticide Safety

- Protecting Yourself
- Protective Clothing
- Avoiding Spray Drift
- Container Disposal
- Disposal of Containers
- 10 Rules for Safe Application
- Protecting Your Eyes, Face and Lungs
- Laundering Pesticide Soiled Clothing
- Rinsing
- Pesticide Formulations & Compatibilities

Développement durable, Environnement et Parcs
Québec

“ Pesticides can comprise human health. Children are particularly vulnerable to the noxious effects of pesticides due to their physiology …. and higher exposure level that results from their behaviour …. Pets are also vulnerable to these products.”

“A number of pesticides, including some that are routinely applied to lawns, are suspected of causing more long-term health effects, either because they are carcinogenic or they disrupt the reproductive, endocrine, immunity or nervous systems.”

- Government of Québec website

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The Ontario Cosmetic Pesticides Ban

"Using pesticides on our lawns and gardens is unnecessary and harms our environment along with the health of our families and pets.

"As kids grow, their small bodies can be more sensitive to the effects of pesticides. And because they spend a lot of time playing outdoors, they have a greater chance of coming into contact with harmful pesticides.

"That's why Ontario has banned the use and sale of pesticides for cosmetic purposes."

- Ontario Ministry of Environment website

"…since the pesticide products in question have been duly reviewed and deemed safe through the federal registration process, no credible risks to human health or the environment have been identified that would warrant a non-voluntary approach … **(a ban) would also see the Province imposing restrictions that are not supported by the PMRA's science-based risk assessment of the products in question**."

-NB Dept. of Env't consultation paper July 17, 2008

"As of Fall 2009, the sale and use of more than 200 over-the-counter lawn care pesticide products will be banned in the province of New Brunswick. The use of lawn care products for domestic lawns containing 2,4-D will also be banned."

- NB Environment website 2009

PMRA's stated priorities

Current Priorities

- Meeting Performance Standards
- Implementing PPIP
- Maintaining Global Review participation
- Increasing Public Confidence

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Summary

- How will PMRA achieve its goal of increasing public confidence?
- How can FPT members improve the disparity of information being provided?
- What is the future role of FPT re urban pesticides?
- Does FPT think this ongoing urban pesticide debate is stigmatizing all uses?
- Does FPT think this will have a negative impact on other use areas including minor use, etc.?

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Diurex 80 WDG

- Low-dust Water Dispersible Granule Diuron formulation. A proven herbicide with trusted technology.
- Ideal for all your Commercial Vegetative Management needs where bare ground is desired.
- Many annual and perennial weeds controlled on non-crop areas. Short and long-term rates available.
- Best applied before growth begins to control germinating weeds.
- Activated by moisture once in the weed root zone.

Always read and follow label directions

Diurex 80WDG is registered by Makhteshim-Agan of North America Inc.

A Better Way to Control Weeds With Casoron® G4

- Casoron G4 is a granular herbicides that provides the ideal answer for weed control in shelterbelts, hedgerows and around bare ground or non-crop areas.
- Eliminates the need for labour-intensive and costly hand weeding
- Convenient formulation for small areas or spot treatments
- Easily applied with a granular applicator and can be used annually for long-lasting seasonal residual control of annual and perennial weeds

Always read and follow label directions

Casoron G4 is a registered trademark of Crompton Co./Cie, a Chemtura Company

Oracle® Dicamba Herbicide

- Oracle tank mixes with 2,4-D Amine, 2,4-D Ester, 2,4-D/2,4-DP or glyphosate herbicides control many coniferous, and deciduous brush species and unwanted vegetation.
- May be used in non crop areas such as right-of-ways, utility, roadsides, hydro, pipelines and railway right-of ways, airports, military bases, turf, wasteland and similar non-crop areas.
- Apply in spring or early summer to conifers and deciduous brush species (once leaves have fully expanded), stop application at least 3 weeks prior to change of leaf color in the fall.
- See label for aerial application recommendations.

Always read and follow label directions

Oracle is a registered trademark of Gharda USA, Inc

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www.uap.ca

This hand seeding gives these desired plants an early advantage, stabilizes soils in the right-of-way and allows them to out-compete the taller growing trees. The SaskPower Shand Greenhouse plays an important role in this aspect of our integrated vegetation management efforts, by supplying many of the native shrub seedlings we use.

Selective herbicide application

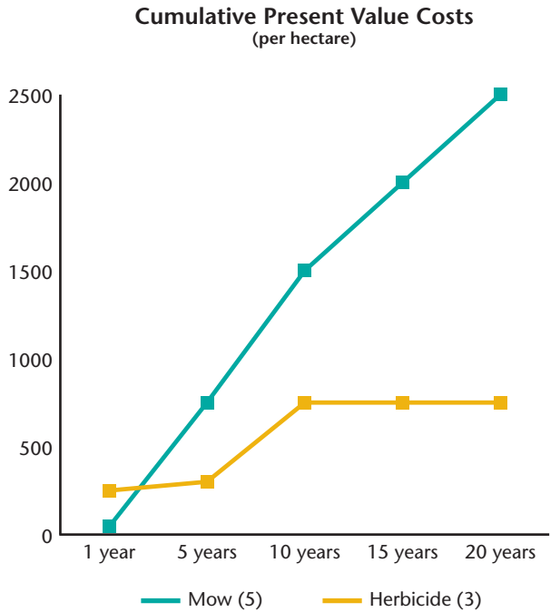
The selective use of herbicides on transmission and distribution line rights-of-way encourages low, dense plant cover that discourages the invasion of tree seedlings. Herbicide is generally used one or two growing seasons after brush mowing, to address the re-sprouting that inevitably occurs.

Once low-growing vegetation is established on the right-of-way, only problem trees are selected for treatment. The end result is an increase in the number of desirable species, such as shrubs, wildflowers and berry-producing plants, which are important for wildlife habitat and do not pose a threat to power lines.

All herbicides used by SaskPower are regulated through the federal government's *Pest Control Products Act.* All applications of herbicides are conducted by certified commercial contractors or by SaskPower personnel who hold a Pesticide Applicator License, issued under the authority of the *Pest Control Products (Saskatchewan) Act.* SaskPower does not use herbicides within 30 metres of waterbodies.

Vegetation management cost comparisons

By managing vegetation on rights-of-way using a combination of mechanical, native vegetation and selective herbicide options, SaskPower is being both fiscally and environmentally responsible. Cost projections based on the results of similar programs demonstrate that introducing herbicides to vegetation management programs can produce long-term cost savings. The graph shows that this integrated approach can result in significant cost reductions as early as five years into the program.



The above graph illustrates the effects of the mechanical treatments on cumulative per right-of-way hectare costs of maintenance versus the effects of herbicide applications.

SaskPower's integrated vegetation management policy balances our commitment to protect the environment, with our mandate to provide customers with safe, reliable and cost-effective sources of electricity.

The Western Red Lily can be found on rights-of-way in Saskatchewan.

For more information contact:
SaskPower Environmental Programs
2025 Victoria Avenue
Regina, Saskatchewan S4P 0S1

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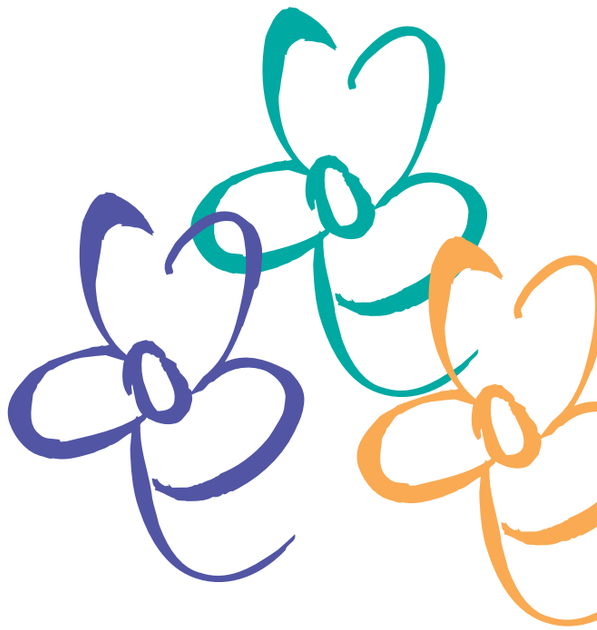
integrated vegetation management



SaskPower

At SaskPower, integrated vegetation management is one of several long-term programs designed to meet our corporate commitment to protect the environment, while providing our customers with safe, reliable and cost-effective sources of electricity.

What is integrated vegetation management?

Integrated vegetation management uses an understanding of plant ecology to manage vegetation in a variety of effective, economical and environmentally responsible ways.

Seedlings are grown at the SaskPower Shand Greenhouse.

Maintaining vegetation around power lines helps to ensure their safe operation.

SaskPower is committed to an integrated vegetation management strategy that:

- incorporates ecological principles;
- considers community values in establishing standards of maintenance;
- receives land-owner consent;
- is cost-effective;
- uses herbicides responsibly; and
- complies with SaskPower's environment policy, as well as all relevant federal and provincial legislation and municipal bylaws.

Our integrated vegetation management policy outlines a variety of options for removing plant species along transmission and distribution line rights-of-way, while also encouraging the establishment of plant species that provide important wildlife habitat. These options include:

- mechanical methods;
- seeded and naturally occurring native vegetation; and
- selective herbicide use.

Why is it needed?

Across the province, SaskPower manages over 150,000 kilometres of transmission and distribution lines. To ensure the safe operation of these lines, SaskPower maintains vegetation along all power line rights-of-way, which can vary in width from 10 to 70 meters depending on the height of the surrounding vegetation. By using integrated vegetation management practices to promote the development of low-growing vegetation, we reduce the possibility of branches or limbs falling across a line during a storm, which can cause damage and interrupt electrical service. In forested areas, if trees come in contact with high voltage lines, they could cause forest fires.

Benefits for wildlife

Maintaining transmission and distribution line rights-of-way is not only important to ensure the safe delivery of electrical service to our customers, it also provides habitat for many types of wildlife. The low-growing plants and shrubs that grow in rights-of-way, as a result of our integrated vegetation management practices, provide important sources of food and cover to many animals.

Mechanical methods

When appropriate, SaskPower uses mechanical methods for vegetation management; including brush mowing, mulching, tree-trimming and slashing. Special equipment is capable of mowing saplings up to six inches (15 cm) in diameter. Problem trees may be hand-cut on an individual basis. Slashing (hand-cutting using chainsaws or bush-saws) is performed near significant waterbodies and on erosion-sensitive slopes. By tailoring the vegetation management program to the specific site, SaskPower ensures that vegetation removal does not cause land degradation.

Suitable to many types of terrain, mechanical methods deliver immediate control of all vegetation. These methods, however, provide only short-term vegetation control (five to eight years). Over the long term, sprouting from undisturbed roots will occur unless the mowed area is also treated with herbicides.

The Saskatoon is an example of low-growing vegetation compatible with rights-of-way.

Native vegetation

Growth of desirable plants such as grasses, herbs, wildflowers, shrubs and low-growing trees may occur naturally following mechanical removal of vegetation. However, in some cases, seeds of low-growing native vegetation are planted along a transmission or distribution line right-of-way.

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ARSENAL® Herbicide is non-volatile and stays where it's sprayed. The active ingredient, *imazapyr*, is absorbed through the roots and leaves of targeted plants and binds with an enzyme found only in plants. Once absorbed into sensitive plants, *imazapyr* inhibits amino acid synthesis essential for plant growth. This action stops growth within days and eliminates the plant down to the root to prevent re-sprouting.

ARSENAL Herbicide is formulated as an aqueous water-based solution making it simple to measure, pour and rinse, for safe and quick cleanups.

For more information on **ARSENAL Herbicide** uses on Industrial non-cropland and in forestry, visit: www.truenorthspecialty.com

ALWAYS READ AND FOLLOW LABEL DIRECTIONS

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ARSENAL® herbicide

Information Note: Pesticide Spray Drift in Residential Areas

August 2009

What is pesticide spray drift?

Pesticide spray drift occurs when a pesticide (for example, herbicide, insecticide, fungicide) stays suspended in air long enough to drift off the area being sprayed. Spray drift occurs downwind of the application site and, generally, the amount of drift decreases rapidly as distance from the area being sprayed increases. In residential areas, spray drift could result from applications to lawns, gardens and parks or from applications on nearby agricultural areas.

The potential for drift depends on many factors, including weather conditions and the type of spray equipment being used. That's why Health Canada's Pest Management Regulatory Agency (PMRA) ensures that pesticide labels have directions for use that include advice on how to minimize spray drift.

What does Health Canada do to protect against the risks of spray drift?

Under normal use conditions specified on the label, pesticide residues from spray drift are not a concern for users or bystanders. However, an excessive amount of spray drift into non-target areas has the potential to affect human health or the environment. For this reason, the impact of pesticide spray drift on people and the environment, which includes non-target plants and wildlife, is taken into account as part of the pesticide risk assessment process when a pesticide is considered for registration or is being re-evaluated.

Human health risk assessments of pesticides examine direct exposure to users (both professional applicators and residential users) and bystanders who may be nearby during application. The potential for exposure to pesticide residues deposited on the ground or foliage after application is also considered. The PMRA must ensure that these anticipated exposures would not pose a health concern. Additional precautions are usually included in the label directions to further reduce potential human exposure to spray drift, such as directions to avoid spraying when bystanders are present.

Environmental risk assessments examine how a product travels through air, soil and groundwater and how long it stays in those areas. The potential for a product to adversely affect non-target plants and wildlife, both on the ground and in the water, is also considered. When necessary, the PMRA requires specific directions on the product label to minimize any potential effects to non-target plants and wildlife.

Other examples of label directions that the PMRA may require to further minimize the potential for both human and environmental impacts from spray drift include:

- specifying the use of certain types of application equipment;
- instructions to spray only at certain times of the day and only in weather conditions that will minimize drift;
- specifying the amount of pesticide that may be used for a given area; and

- establishing an untreated area, called a buffer zone, between an area to be treated and any nearby area that must be protected.

What can I do to minimize the potential for spray drift?

If you wish to apply pesticides to your lawn or garden, it is important to be aware of jurisdictional (provincial, municipal, local) regulations concerning the use of pesticides. You can minimize pesticide use as well as the potential for exposure by:

- Learning about the pest and how to control it by using Integrated Pest Management (IPM) techniques. IPM is an approach that combines a variety of biological, physical, chemical and cultural tools to manage pests, thereby reducing reliance on pesticides;
- Reading, understanding and following all label directions and precautions;
- Considering the use of spot treatments on problem areas rather than a full (broadcast) application. This reduces spray drift as well as the overall amount of product used; and
- Avoiding spray applications when bystanders or animals are present.

To further reduce the potential for spray drift:

- avoid spraying under no wind, gusty wind, or high wind conditions; and
- avoid spraying at times of very low humidity, or during foggy or drizzly conditions.

It is good practice to notify neighbours of your intent to spray pesticides. They may choose to take additional precautions such as closing windows, removing and/or covering outdoor toys and eating areas, or by simply avoiding being in proximity to the area to be sprayed.

You may also choose to hire a professional pesticide applicator who is licensed/certified by your provincial regulator. Professional applicators are trained and certified to properly and safely use pesticides, including how to use appropriate application methods and choose equipment that minimizes spray drift. Professional applicators must follow provincial requirements for buffer zones and maximum allowable wind speeds for pesticide application.

Should I be concerned about exposure if I smell pesticides after an application to a neighbour's lawn or garden?

Each pesticide has its own specific vapour component, which accounts for the odour detected near application sites. Although some pesticides can have strong odour that may be disagreeable, the odour itself is not harmful and tends to dissipate quickly. Fertilizers may also be a source of strong odour.

What does Health Canada do to reduce the risk of spray drift?

Health Canada restricts how pesticides are to be used. Best management practices are encouraged and promoted through applicator training initiatives and label statements. Health Canada and provincial authorities have developed national standards for pesticide education, training and certification in Canada, which include factors affecting drift and methods to reduce potential for drift to non-target areas during application. There are also compliance and enforcement programs in place that monitor the use of pesticides.

Who should I contact if I have concerns about spray drift?

- Incidents of spray drift can be reported to your local provincial or territorial government.
- Questions about health or environmental concerns associated with pesticides can be directed to Health Canada's Pest Management Information Service.

Need more information?

The following links on Health Canada's website provide further information on the topics discussed in this document.

Pesticide Risk Assessment

- Fact Sheet on the Regulation of Pesticides in Canada
- Information Note on Assessing Human Health Risks During Pesticide Review in Canada
- Science Policy Notice SPN2000-01- *A Decision Framework for Risk Assessment and Risk Management in the Pest Management Regulatory Agency*
- Science Policy Notice SPN2002-01- *Children's Health Priorities within the PMRA*

Responsible Pest Management

- Healthy Lawns
- Pest Notes

Provincial / Territorial Government Offices

New Brunswick
Pesticides Management Unit
New Brunswick Department of Environment
Telephone: 1-800-561-4036

Nova Scotia
Environmental Monitoring and Compliance
Nova Scotia Environment
Telephone: 1-877-936-8476

Newfoundland & Labrador
Pesticides Control Section
Department of Environment and Conservation
Telephone: 1-800-563-6181

Prince Edward Island
Prince Edward Island Department of Environment, Energy and Forestry
Pesticide Control Hotline
Telephone: 1-800-454-3231

Quebec
Centre d'information de Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP)

Telephone: 1-800-561-1616
E-mail: info@mddep.gouv.qc.ca

Ontario
Ontario Environment
Telephone: 1-800-565-4923

Manitoba
Manitoba Agriculture, Food and Rural Initiatives (MAFRI)
Contact Specific Regional Office

Alberta
Alberta Environment
Environmental Hotline
Telephone: 1-800-222-6514

Saskatchewan
Saskatchewan Agriculture
Telephone: 1-866-457-2377
E-mail: aginfo@gov.sk.ca

British Columbia
Ministry of Agriculture and Lands Offices
Contact Specific Regional Office

Northwest Territories
Environment Division
Department of Environment and Natural Resources
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Payload Herbicide is a low use rate pre-emergent herbicide that provides residual control of susceptible weeds including:

*** Red Root Pigweed * Green Pigweed * Common Ragweed * Dandelion ***

*** Green Foxtail * Eastern Black Nightshade * Hairy Nightshade ***

For burndown control of emerged weeds, *Payload* Herbicide can be tank mixed with *VisionMAX*® (glyphosate).

Use Pattern

Payload Herbicide, when used as directed, can be used for non-selective vegetation control to maintain bare ground non-crop areas that must be kept weed-free.

Apply *Payload* Herbicide to:
- Bare ground to railroad beds, under guard rails, and above-ground pipelines.
- Bare ground in parking and storage areas, plant sites, substations, pumping stations, oil yards/substations and tank farms.
- Bare ground areas of airports, brick yards, industrial plant sites, lumber yards, and storage areas.
- Bare ground around farm buildings and along fence rows.
- Road surfaces and gravel shoulders.

Flumioxazin Half-lives

Soil Photolysis: 3.2 days
Aerobic Soil Metabolism: 11.9 - 17.5 days
Hydrolysis: pH 5: 3.4 - 5.1 days;
pH 7: 21.4 - 24.6 hours;
pH 9: 14.6 - 22.0 minutes

Round-Up **Payload**

Environmental Fate

Flumioxazin degrades rapidly in water and soil. Dissipation occurs by a combination of hydrolysis and microbial oxidation. Although flumioxazin dissipates rapidly, discrete intermediates do not accumulate and the ultimate environmental products are incorporated into soil organic matter and carbon dioxide. Based on column leaching studies and the short aerobic soil half-life, the potential for flumioxazin or its degradation products to leach is low. The low use rate and rapid soil dissipation results in low carryover potential.

Application Information

Pre-emergence Activity:

- Apply *Payload* Herbicide pre-emergence to the weeds
- *Payload* Herbicide forms a thin herbicidal barrier at the soil surface – which should not be disturbed
- Weed seedling shoots absorb *Payload* Herbicide as they emerge through this barrier
- When weeds are exposed to sunlight, necrosis occurs

Pre-emergence Applications:

- Apply 280-420 g of *Payload* Herbicide per broadcast hectare
- Applications should be made to weed-free soil surface
- Approximately half an inch of rainfall or irrigation is needed to activate *Payload* Herbicide
- Dry weather following applications may reduce effectiveness
- Apply a maximum of 2 applications per year

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Read and follow the label instructions before using.

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Transmission Line & Transmission Station

VEGETATION MANAGEMENT PRACTICES

Manitoba Hydro

In operating and maintaining its major transmission line system Manitoba Hydro must manage the vegetation that grows under the transmission lines and in the transmission stations. This publication has been prepared to provide background information and a general understanding of Manitoba Hydro's transmission line system vegetation management practices.

Does Manitoba Hydro Have A Vegetation Control Policy?

Vegetation control practices fall within Manitoba Hydro's responsibilities to build, operate and maintain transmission line facilities that provide a reliable supply of electricity while being safe to the public and respectful of the environment. Manitoba Hydro must take steps to prevent trees from growing to a height where they could interfere with the reliable operation of a transmission line; impede access to crews to do maintenance and repairs; create a fire hazard; or create an unsafe condition to people or the environment. Keeping transformer station yards in a weed free condition is also part of this ongoing responsibility.

Manitoba Hydro's Environmental Management Policy states....

Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that Corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its business, thereby:

- Preventing or minimizing any adverse impacts, including pollution, on the environment, and enhancing positive impacts;
- Meeting or surpassing regulatory requirements and other commitments;
- Considering the interests and utilizing the knowledge of customers, employees, communities, and stakeholders who may be affected by Manitoba Hydro's actions;
- Reviewing our environmental objectives and targets annually to ensure improvement in environmental performance;
- Continually improving the Environmental Management System;
- Documenting and reporting activities and environmental performance.

All measures to control tree growth on transmission lines and weed growth in transmission stations are implemented with full respect for these environmental policies.

Before a transmission line (115 000 volts and higher) is constructed and operated Manitoba Hydro conducts a detailed site selection and environmental assessment (SSEA) study. The SSEA process includes a comprehensive public involvement program to ensure input from communities, landowners, and other stakeholders with an interest in the project. The SSEA process is designed to study and document the environment within which the line is to be located. It also assesses and documents potential impacts associated with constructing and operating the transmission line. Through the identification of these potential impacts measures can be prescribed to avoid, reduce, eliminate or compensate for impacts incurred when

the line is constructed and operated. The SSEA will also consider impacts associated with line clearing and right-of-way maintenance including the need for future tree control programs. The SSEA results are documented in an Environmental Impact Statement which is used to support an application to Regulatory authorities for environmental approval(s) to build and operate the transmission line or transmission station.

Why Does Manitoba Hydro Need Vegetation Management Practices?

Transmission Lines

Before a transmission line can be built and operated Manitoba Hydro must first clear the tree growth from the right-of-way. The voltage of the transmission line and the type of structure used determine the width of the right-of-way and the width of clearing required. Transmission line rights-of-way are typically cleared to a width of 40 - 60 meters using tracked dozer type equipment. ***Manitoba Hydro does not use herbicides to clear new rights-of-way before building the lines.***

The root system of the cleared deciduous trees (those that lose their leaves in the fall) will send up suckers or re-growth in the first spring following clearing operations. Physical disturbance of the surface layers during right-of-way clearing and line construction also causes seeds from the cones of cleared spruce, pine and tamarack trees to become embedded in soil where they may germinate new seedlings. If not controlled, tree suckers and seedlings will grow to a size and density where they would be a physical barrier affecting the ability to access the right-of-way to do line inspection, maintenance and repairs and could eventually grow to a height where they become a very serious threat to the safe, reliable operation of the transmission line. This situation poses hazards to people, property, forests, customers and the transmission line itself. Manitoba Hydro cannot allow trees to grow to a size and density where they become a threat to line operation, line reliability or public safety. Vegetation control is practiced periodically throughout the life of a transmission line to prevent this from happening.

Transmission Stations

Manitoba Hydro designs its transmission station facilities as level, well drained, stone-surfaced and fenced industrial sites. Specific design criteria for buildings and grounds maintenance procedures must be met when operating and maintaining transmission stations. These ensure Manitoba Hydro meets or exceeds safety, station grounding and operational requirements. Weed control is important as weeds may contribute to:

- poor drainage conditions
- altered electrical grounding of the station
- fire hazard situations in the spring and fall
- hazardous conditions for workers who require well drained and dry surface material to maximize electrical safety when working around live wires and energized equipment
- reducing the ability for trucks and heavy equipment to move around the station yard
- the general unsightliness of the facility
- non-compliance with provincial Noxious Weed Act

Most other utilities around the world have concluded, after many years of implementing programs to control weed growth in and around transformer station yards, proper herbicide applications offer the only effective method to control weeds which grow in all transmission station yards. Other methods including hand weeding, hand cultivation, weed blankets, hot steam and biological control methods, have proven to be non-practical and/or ineffective.

What Is A Vegetation Control Cycle?

Transmission Lines

A "vegetation control cycle" is the period of time between implementing consecutive vegetation / tree control programs on a transmission line right-of-way. Most electrical utilities have an objective of making this time period as long as possible to reduce costs and impact on the environment. Any transmission line right-of-way will see many vegetation control cycles during its period of operation (50+ years). The length of a control cycle will depend on the tree species being controlled and the methods being used to control the species. Some methods have a short cycle time but are more effective and desirable for controlling very young tree suckers while others can have a longer cycle if trees can be allowed to grow taller before they are controlled. Experience shows that throughout the life of any transmission line it will be necessary to use a number of tree control methods on a right-of-way. Combinations of methods in successive years can also be effective in lengthening the control cycle.

Several methods are available to Manitoba Hydro for controlling tree growth (suckers & saplings) on power line rights-of-way. These range from mechanical removal – to hand cutting – to broadcast and selective spraying of tree re-growth with herbicides – to selective herbicide treatments to individual stems and stumps – to doing nothing where desirable vegetation has occupied the right-of-way.

As described and illustrated in Drawing # 1 (inside back cover) the vegetation control cycle for a particular transmission line really starts in the first spring following the initial right-of-way clearing for line construction. It is in this first spring that the roots of the cleared deciduous trees and shrubs start to send up suckers or re-growth. Profuse and dense suckering will always occur after cutting down deciduous species like birch, poplar, elm, aspen, ash, willow, maple, oak, willow, maple, cranberry, saskatoon, chokecherry, alder, willow and dogwood. Many of the ground cover plants including herbs, sedges and grasses will also begin to re-occupy the right-of-way at this time.

During clearing and construction activities, which typically occur under frozen ground conditions, the heavy equipment working on the right-of-way will physically crush seed cones releasing spruce, pine and tamarack seeds which may also germinate in this first summer following clearing of the right-of-way.

By the end of the first summer, particularly in areas where deciduous trees were initially cleared, there will be sucker growth that reaches 1-2 meters in height. The sucker growth tends to be very thick and can be mixed with pioneer plant species like Fireweed. It is typically after the second summer, for a new line, that Manitoba Hydro will conduct its first line patrol to document where there is prolific re-growth of deciduous trees. After a few summers following line construction the coniferous species are only very small seedlings hidden in the overgrowth of suckering trees and pioneer plants species such as Fireweed and grasses/sedges. This is the time when right-of-way managers plan for the future vegetation control needs of the line.

The vegetation re-growth information will be used to plan for the first vegetation / tree control program for the transmission line right-of-way. This is the start of the vegetation control cycle. The first vegetation control cycle is complete only when a tree control program is implemented, results monitored and a second tree control program planned. Vegetation management must be continuous for the life of the transmission line.

Transmission Stations

Undertaking vegetation control programs in all transmission station yards is also critical. The control cycle begins with conducting an annual weed control survey in each transformer station yard to document the weed problems present. This information is then used to plan actions to remove the weed problem. The specific control actions may be implemented almost immediately or may be planned for implementation in the following year. In many stations it is necessary to undertake some weed control annually using herbicide products approved for controlling weeds in these types of facilities.

Who is responsible for the tree control programs on transmission line rights-of-way?

Manitoba Hydro does vegetation control on both the distribution system (lower voltage lines supplying customers) and transmission system. This document primarily addresses the transmission system.

The responsibility of maintaining the transmission system lies with the Transmission Line Construction & Line Maintenance Division of Manitoba Hydro's Transmission & Distribution Business Unit. Within the Division the responsibility for vegetation control on transmission lines falls within the responsibilities of the Transmission Line Maintenance Managers – North & South. These two groups are responsible for the day to day maintenance of all the transmission lines within their assigned geographical area. This organizational group is most knowledgeable of the lines themselves and the terrain crossed and is properly equipped to access all portions of the lines at any time of year.

Manitoba Hydro's Forestry Section staff is available to the Division to provide supporting expertise and advice related to a variety of tree control methodologies including non-herbicide and herbicide methods. This group maintains good knowledge and expertise related to tree control methods and equipment and the herbicide products used on Manitoba Hydro property. The Forestry Section obtains the necessary provincial authorizations (Pesticide Use Permits) required in accordance with the Pesticide Use Permit Regulation of the Manitoba Pesticide & Fertilizer Control Act. This group must also submit to Manitoba Conservation "Post Seasonal Reports" in accordance with this same regulation. The Forestry Section also ensures all those in direct supervision of staff applying herbicides on Manitoba Hydro's transmission lines and transmission stations are properly licensed in Manitoba to conduct this type of work.

What methods are used to control tree growth on rights-of-way?

Mechanical Clearing Methods

a.) Winter Shearing

Currently the most extensively used tree control method on northern transmission line rights-of-way is the Winter Shearing method (Figure 1). There has not been any large scale northern transmission line herbicide use since 1990. The Winter Shearing method is used only in the winter months and involves wide-track crawler tractors equipped with a front mounted V-Blade traversing back and forth along right-of-way sections to shear off the woody growth at the frozen ground surface. Some northern rights-of-way have seen 2 & 3 control cycles using this method. The advantages of this method include:

- the work is done during frozen conditions on rights-of-way which could not be easily accessed during non-frozen ground conditions

- the method is more economical on a cost per hectare basis (Figure 2) than other methods which could only be practiced during summer months (e.g., herbicide control, mowing)
- with good productivity rates (e.g., hectares per hour) the method allows for a large number of hectares of tree re-growth to be controlled in a single season using a small labor force
- the method allows for a longer period of time between treatments (5-12 years depending on location and site conditions)
- results are immediate
- work is done in winter months when there is less wildlife use of the rights-of-way

The sheared material is generally pushed into windrows as the crawler tractors move back & forth along the right-of-way. The material left on the right-of-way will settle down onto the soil surface after snow melt and will decompose to return organic material to the soil. The method however does not reduce the number of hectares of deciduous tree re-growth requiring re-treatment over time because the sheared trees will sucker back. In areas of spruce or pine re-growth only, this method does result in a long control cycle by removing trees until such time that seeds from these species again germinate on the right-of-way.

Figure 1: Northern Transmission Line Tree Control History 1990 - 2002

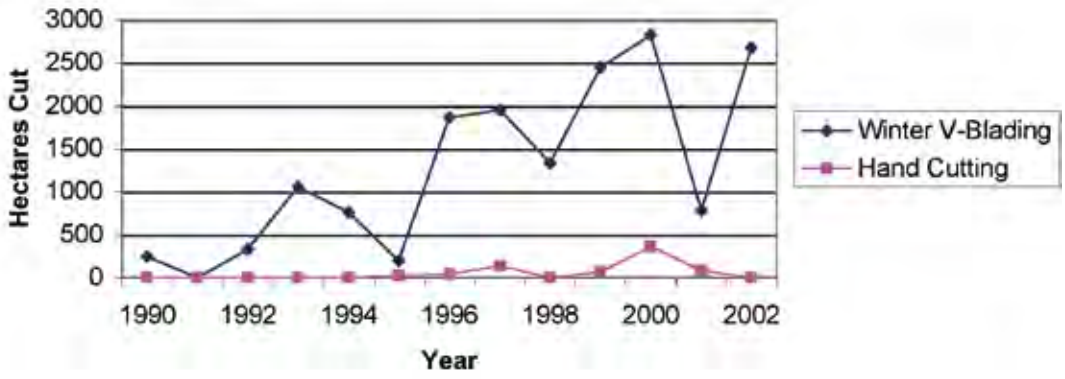
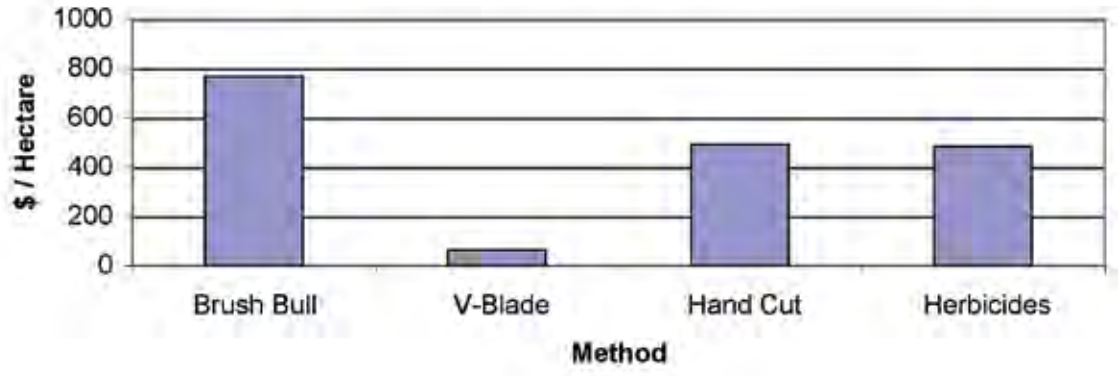


Figure 2: Cost Comparison Of Northern Transmission Line Tree Control Methods

(Herbicidle Costs are For Southern Transmission Line Work)



b.) Mowing (Brush Bulls / Mulchers)

Tree re-growth on rights-of-way can be mowed using rubber tired or tracked tractor units equipped with a special mower head or flail type cutting head. Typically these units can mow a 6 -8 foot (2.5 – 3m) swath as they move along the right-of-way. This type of equipment is used where larger re-growth is present. The equipment is designed to chip or grind the woody material into smaller pieces which are dispersed behind the cutting unit as it works. The woody material will settle on the ground surface and eventually decompose adding organics to the soil. These units are typically only used where summer access is possible and do not work well under snow cover conditions.

As with the winter shearing these units do not eliminate the deciduous tree re-growth. The deciduous tree roots will continue to sucker back onto the right-of-way and repeat cycles are required every 5-7 years.

c.) Hand Cutting

Hand cutting involves the use of brush saws and/or chainsaws to cut down tree re-growth and to remove tall danger trees along right-of-way edges. This method is labor intensive and it's use by the remoteness of many transmission lines. To work in remote areas with this method on a large scale would require aerial support and temporary or mobile work camps and support systems. Hand cutting on transmission lines is typically done in small and sensitive areas like river bank buffers and park areas. It is also done periodically to control individual tall trees that are close to interfering with transmission line operation and safety. This method is used frequently on small areas during line patrols. Hand cutting tends to be a very costly method to remove large areas of tree re-growth occurring on transmission line rights-of-way.

Herbicide Treatments

Throughout North America there are many well accepted herbicide control products and methods for transmission line rights-of-way. Herbicides are a very effective tool which a right-of-way manager can integrate with several other tree control methods over a long period of time. Herbicides provide a tool to effectively strive for development of stable plant communities on the rights-of-way. Stable plant communities have very long periods of "do nothing" between control cycles. There are several herbicide methods currently available to Manitoba Hydro as follows:

a.) Broadcast Ground Spraying

In using this method, specially designed rubber-tired or tracked herbicide spray units traverse back and forth along the right-of-way to deposit large droplets of a solution of water and herbicide product over the leaves of the tree re-growth. The herbicide solution is delivered through a specially designed spray nozzle that produces large droplets that do not easily drift off target. Broadcast spraying is typically done in areas of dense young (1-2m tall) tree growth covering the entire right-of-way width and then only when trees are actively growing and when the weather conditions allow safe application of the herbicide solution.

b.) Selective Handgun Spraying

In selective handgun spraying a solution of water and herbicide is delivered to target trees through a hand operated spray gun . This method is very effective in that the operator can direct the herbicide solution at the undesirable species while avoiding, where possible, desirable low shrubs and other plant species. This promotes growth of desirable species on the right-of-way as the unsprayed plants will continue to grow and thrive. These plants will then compete against trees for nutrients and growing space and thusly help to reduce the return of undesirable tree species onto the right-of-way. This method is widely used with other tree control methods to move toward establishing stable plant communities on rights-of-way.

c.) Basal Bark Sprays

In this method a spray solution is carefully directed to the lower portion of the stem of target tree species. The method can be used when the tree is actively growing or when it is dormant for the winter. The method is highly selective and works well to remove small pockets of low density deciduous tree re-growth. In this method a solution of oil and herbicide is typically used.

d.) Stem Injections

This is a very selective herbicide application method where herbicide is injected into the bark of an individual tree. This method works well in areas such as river crossing buffers which are typically very sensitive to broadcast herbicide application. The herbicide stays within the individual tree stem and is not released to the surrounding environment. Because of the highly selective application method its use is more common in small areas with a few stems to be treated or where one may not want to use hand cutting or mechanical cutting methods.

e.) Stump Treatments

This method involves the application of a herbicide solution to a recently cut deciduous tree stump. It will prevent the tree roots from sending up "suckers" and thusly provides long term control. This method works well in conjunction with hand cutting of small areas. It also works well where it has been necessary to return many times to small areas to re-cut trees growing back in the area. It also works well in small areas which are difficult and costly to access repeatedly. As the method is used on individual stumps it is highly selective in what is controlled.

Biological Control

Manitoba Hydro has funded some research into biological control but does not yet have proven methods that are known to work on our rights-of-way. It is very apparent a carefully prescribed tree control program, will over time, encourage the growth of desirable species on rights-of-way which will then act as a form of biological control. This makes it hard for a tree species that have been removed to seed back onto a right-of-way. Natural competition from other plants is a form of biological control.

Danger Tree Removal

Manitoba Hydro must monitor all transmission line rights-of-way edges for trees that may fall onto the lines. These trees are called "danger trees". They are typically removed during line patrols using chainsaws. Occasionally where transmission lines are located on rights-of-way where the initial clearing widths were minimized it is necessary after several years to conduct a widening of the right-of-way using hand cutting methods.

g.) Tree Trimming

Tree trimming is required on transmission line rights-of-way where taller trees are allowed to remain under or adjacent to the lines for aesthetic or environmental reasons. These situations typically occur in cities, towns and in specific locations within provincial or federal parks. Tree trimming on energized transmission lines is done exclusively by Manitoba Hydro staff who are fully qualified to work in and around energized transmission lines. Special electrical knowledge and training is required to work around energized circuits. Tree trimming also requires special equipment, tree trimming skills and knowledge to work on tall trees. Tree trimming contractors who have certified utility arborists on the crews are however often used on lower voltage distribution lines.

How does Manitoba Hydro choose which method to use?

When prescribing tree control practices for transmission lines several factors must be carefully considered. Consideration of the volume of work or length of line to be treated; vehicle access limitations; environmental sensitivities; the species, growth stage and size of the tree problem (age/height/density); workload planning; timing; contract versus in-house options; and finally costs involved are all important factors. Several of the methods described in the previous section may be used during the life of a transmission line to control tree growth.

A "one method only" approach to any line will not work well over the long term due to the wide variety of terrain and environmental conditions that exist on and adjacent to transmission lines. For example, if a winter shearing program is prescribed to control tree re-growth on a section of high voltage transmission line right-of-way it will also be necessary to prescribe other methods and approaches to control tree growth in smaller sensitive areas or segments within the overall line section. In such cases there could be several stream and river crossing with sensitive riparian areas where winter shearing would not be used. In these situations chainsaw hand clearing followed by a herbicides applied to the freshly cut stumps may be prescribed. The two prescriptions may not happen at the same time depending on the situation, location, timing and workload priorities.

There are many situations and circumstances where herbicides are not an option for controlling tree growth on portions of transmission lines. In some cases the Manitoba Environment Act License issued for the line prohibits their use and in others Manitoba Hydro will decide that given the location and situation at hand herbicides cannot be used (e.g., trees are too tall, herbicides are not suitable in the local environment or the species present, herbicide use will present a risk to adjacent land use, timing is wrong, costs are too high, and right-of-way access in summer time is not available).

In making a decision on what method to use, all of the tree control methods described earlier, which are well accepted in the industry, are available as options to be considered for the problem at hand. The objective is to prescribe a method or combination of methods that provide acceptable tree control at a reasonable cost while trying to achieve a long tree control cycle and ultimately a stable plant community on the right-of-way.

Why are chemicals called herbicides used?

Herbicide application, when properly prescribed and applied, is recognized as an accepted and effective method to control tree growth. There are Federally approved & registered products specifically designed for right-of-way tree control situations. The Province of Manitoba also decides which herbicide products can be used in Manitoba and under what conditions they may be used. The Province also sets guidelines for the rates at which products may be used; how they may be applied; when they may be applied; and where they may not be used. Direct supervisors of herbicide applicators working for Manitoba Hydro on Manitoba Hydro rights-of-way must be trained and licensed by the Province before applying herbicides to rights-of-way. In point of fact most applicators themselves are also licensed by Manitoba.

Manitoba Hydro must also apply each year to Manitoba Conservation for "Pesticide Use Permits" issued under the Manitoba Environment Act before any herbicide program is implemented. Manitoba Hydro must also provide a "Post Seasonal Report" to Manitoba Conservation by year end. This report provides specific information on the work that was done including the herbicide products used, the quantities used of each product, the locations where each product's was applied, the name of the applicator(s) and other information as required by the Province. These Regulatory requirements of Canada and Manitoba are in place to ensure only approved herbicides are used safely and properly.

How does Manitoba Hydro notify the public of its proposed vegetation control programs?

Herbicide Programs

Manitoba Hydro's Forestry Section inititiates public notifications related to proposed herbicide applications to rights-of-way and transmission stations in accordance with requirements of the Provincial Pesticide Use Permit Regulation and in accordance with Manitoba Hydro's internal public notification policies.

The Provincial Pesticide Use Permit process requires Manitoba Hydro apply for a pesticide use permit issued by Manitoba Conservation. In making this application Manitoba Hydro must identify which pesticide (i.e.; herbicide) products are intended to be used; where they are intended to be used; the equipment/methodology to be used; and which Provincially Licensed Applicators will be applying the pesticide. The Regulation also requires the public be notified when an application for a Pesticide Use Permit has been made. To achieve this Manitoba Hydro will typically place advertisements in the Winnipeg Free Press and/or local newspaper in the vicinity of where the work is to be completed. Manitoba Hydro will also contact landowners with property adjacent to the right of way that is to be treated with a herbicide to inform them of the proposed work and to address concerns related to carrying out the program adjacent to their land. This would also include contacting First Nations should herbicide use be proposed on Reserve Lands.

Non-herbicide Programs

When non-herbicide tree control work is to occur on private property it is Manitoba Hydro's policy to contact the landowner prior to entering the property to do the work. For work that is to occur on First Nations Reserve lands Manitoba Hydro would, in advance of the program, contact the Chief & Council of the affected First Nation. Where work is to be done on rights-of-way crossing Crown lands Manitoba Hydro must obtain a Work Permit from Manitoba Conservation prior to work beginning.

What has been the history of northern herbicide use since 1990?

There are over 4200 kilometers of transmission lines in northern Manitoba to be monitored annually for tree re-growth problems. The last transmission line spraying of significance on a northern transmission line occurred in 1990 on a 230 kV transmission line running between Flin Flon and The Pas. Instead of using herbicides, right-of-way vegetation managers treat approximately 2000 hectares of right-of-way each winter using hand cutting, mechanical mowing and winter shearing methods to control tree re-growth.

Since 1985 the use of herbicides on northern transmission lines has diminished to where only very small sections of transmission rights-of-way have recently been treated with herbicide. These involved application of herbicide to woody growth in and around tower bases to allow annual monitoring of tower footing movement and to highly selective individual stem treatments on small sections of rights-of-way.

Since 1985 Manitoba Hydro has, in its overall use of herbicides, significantly reduced the amount of active ingredient (ai) used per treated hectare of right-of-way or station yard (Figure 3 & 4). A review of Post Seasonal Control Reports since 1985 confirms that since 1991 tree control programs using herbicide products have been, for the most part, on the distribution lines (66 kilovolt & lower lines) and not on transmission lines (115 kilovolt & higher lines). Although Figure 5 shows a slightly increasing trend in the amount of area treated annually with herbicides to control tree re-growth this trend is exclusively due to increased use of herbicides on the distribution system. The trend of increasing hectares of weed control each year is largely due to recent acquisition of Centra Gas and Winnipeg Hydro. Manitoba Hydro has also, since 1985, significantly reduced the use of soil residual herbicide products. This trend is confirmed

in Figure 6. Herbicide products used by Manitoba Hydro today are much more selective in the species they control and have minimal soil residue lingering into the next growing season.

Although aircraft are still commonly used elsewhere in North America to apply herbicides, Manitoba Hydro does not use aircraft to apply herbicides to rights-of-way and has no plans to re-introduce the method in the foreseeable future. Manitoba Hydro does however remain current with respect to various application methodologies and equipment available in the industry and will assess its suitability for Manitoba Hydro's right-of-way situations.

With the exception of the North Central Project (because of specific conditions of its Environment Act Licence prohibiting herbicide use on the project) herbicides are used in all transmission stations in northern Manitoba. Manitoba Hydro makes use of herbicide products to control weeds in transmission stations which are effective but do not have long term soil residual properties (i.e.: where herbicide effects on plants can be seen into the second growing season). Additionally Manitoba Hydro has, since 1985, significantly reduced the active herbicide ingredient applied per hectare annually in station weed control programs.

Figure 3: Tree Control Herbicide Programs
(Transmission & Distribution Lines Combined)
Active Ingredient Use 1985 - 2002

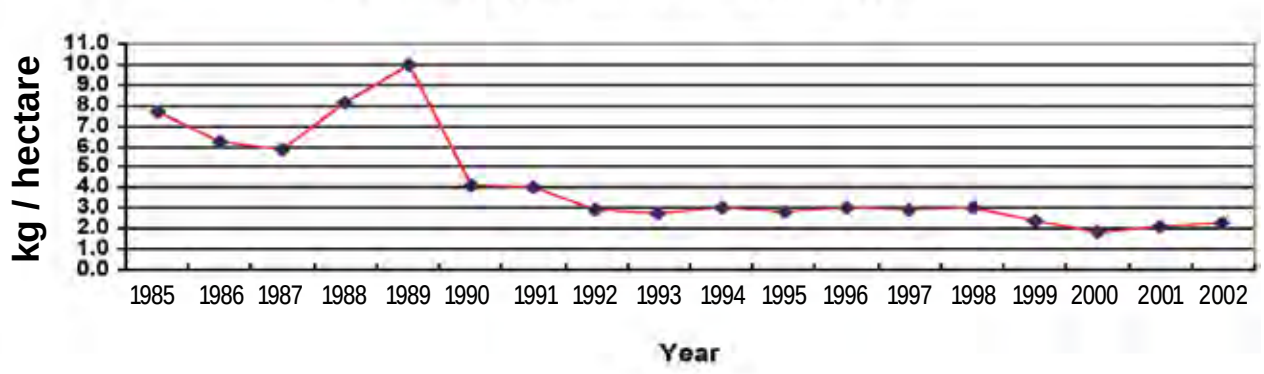


Figure 4: Station Weed Control Herbicide Programs
(Transmission & Distribution Combined)
Active Ingredient Use 1985 - 2002

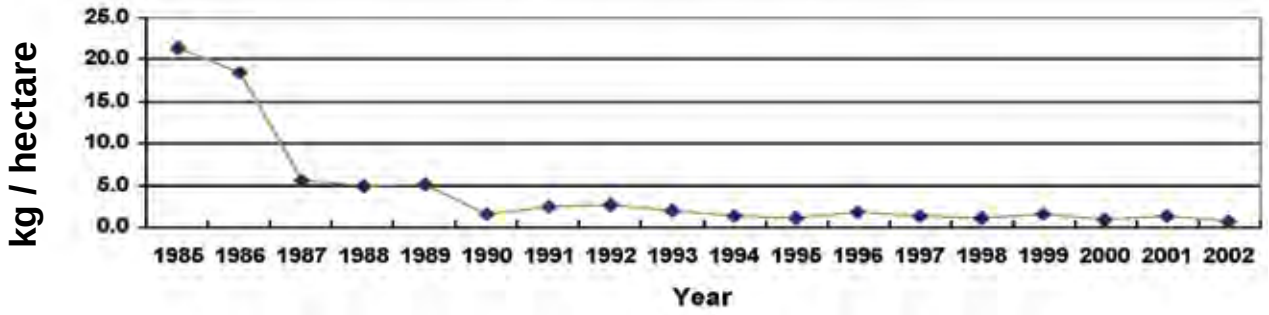
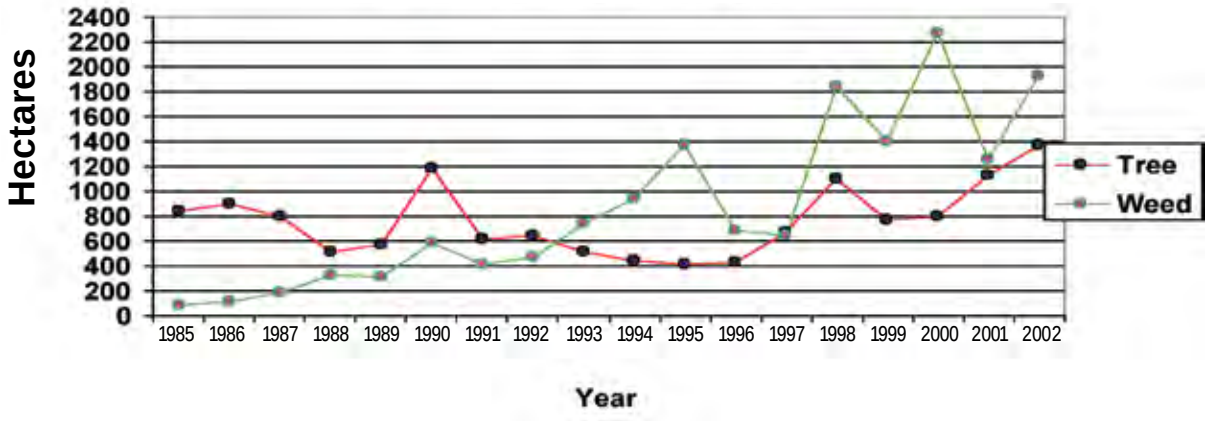


Figure 5: Tree & Weed Control Herbicide Programs
(Transmission & Distribution Combined)
Area Treated 1985 - 2002



Drawing #1 — Vegetation Control Cycle

Step 1

"RIGHT-OF-WAY CLEARING"

Trees on the Transmission line right-of-way are cleared to allow line construction and operation

Step 2

"RIGHT-OF-WAY RECOVERY FROM TREE CLEARING"

In the spring of the first summer following right-of-way clearing the roots of the deciduous trees and shrubs start to send up suckers. The pioneer plants species (herbs/forbs/grasses/sedges) start to grow back within the Right-of-way. Seeds released from crushed pine and spruce seed cones may germinate and grow under the suckers and other plants now growing on the right-of-way

Step 3

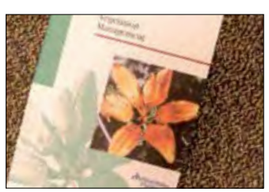
"DOCUMENT TREE RE-GROWTH"

After two growing seasons following the clearing of the right-of-way the first transmission line patrol is completed to monitor & document tree re-growth occurring on the new right-of-way. This survey will document those locations (recorded by span #'s) along the right-of-way with deciduous tree suckering now present

Step 4

"A VEGETATION MANAGEMENT PLAN"

The line patrol information is analyzed and compiled to develop a long term plan and approach, including budget estimates, scheduling information and a prescription for method(s) that could be used for controlling the tree re-growth



Step 5

"PLAN FOR IMPLEMENTATION"

The Vegetation Management Plan is further refined where more detailed plans are developed including:

- assignment of dollars to the tree control program
- confirming the method(s) to be used to control the tree re-growth
- finalizing work schedules
- obtaining all necessary regulatory approvals prior to work being started
- preparing contract specifications where required
- selection & awarding of Contract(s)/ organizing of MH work crews

Step 6

"IMPLEMENT TREE CONTROL PROGRAM(S)"

Conduct of the tree control program(s) on the right-of-way

Step 7

"ASSESS RESULTS"

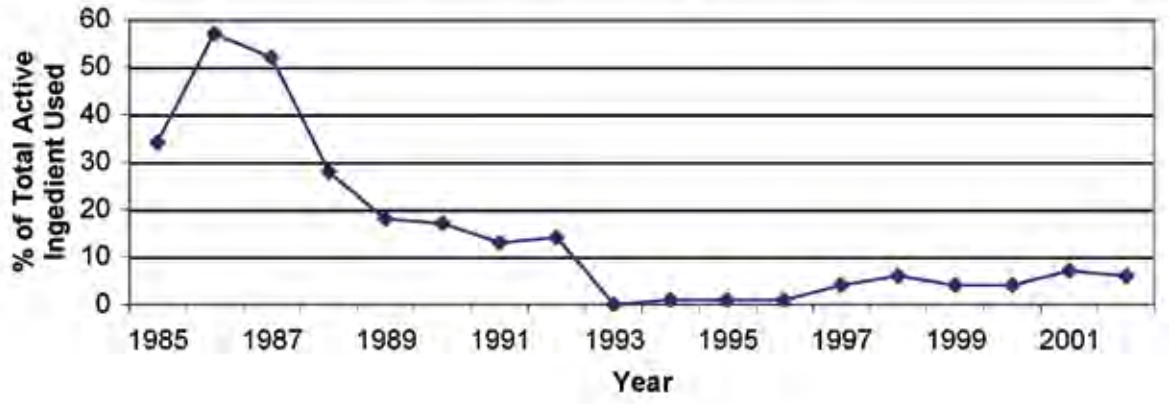
Patrol the work areas to assess effectiveness of control methods and to develop plans to correct deficiencies

Step 8

"DOCUMENT TREE RE-GROWTH"

Two years after the previous tree control work conduct another line patrol to document and map the locations and extent of tree growth problems on the right-of-way

Figure 6: Residual Herbicide Use Expressed As A Percent Of Total Active Ingredient Use



In Closing…

Tree and weed control responsibilities required to operate and maintain transmission lines and transformer stations are taken very seriously at Manitoba Hydro. This work must be carried out periodically on all transmission lines and transmission stations. However Manitoba Hydro also takes its environmental stewardship policies very seriously when prescribing methods and conducting any work to control tree and weed growth on transmission facilities. In this way the environment can be protected as the work is being done.

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