TRURANGE®

Long-term control with TruRange® herbicide results in:

+ Control of broadleaf weeds and encroaching brush
+ Restored native plant communities
+ Improved wildlife habitat quality
+ Increased forage production

Restoration of desirable vegetation in rangeland and permanent pastures

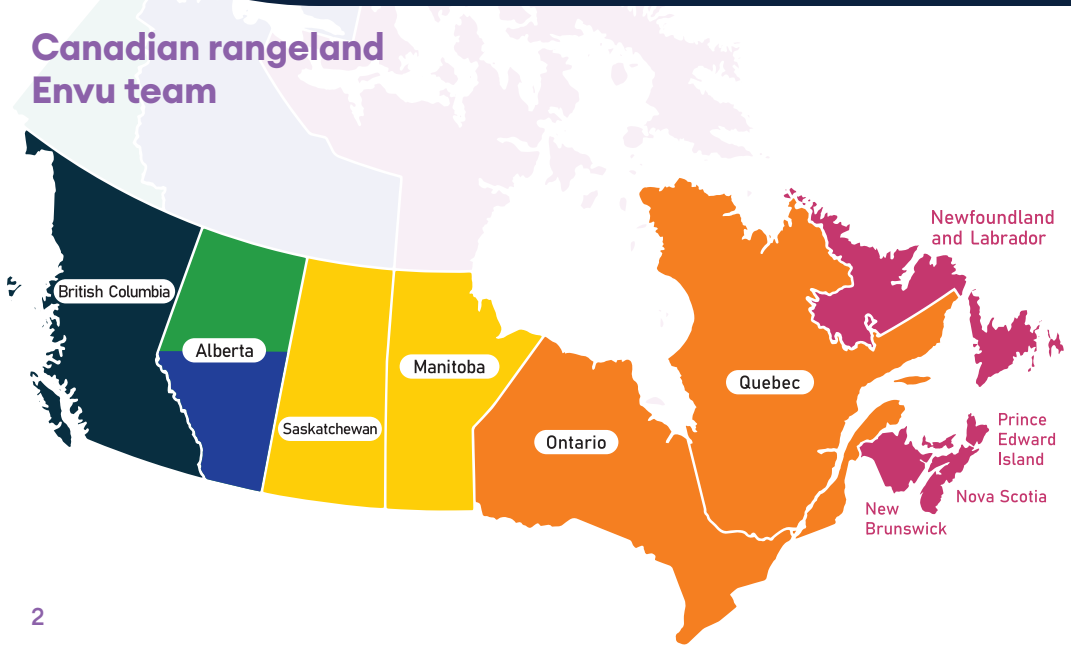
Stewardship guide

TruRange® herbicide provides extended control of over 70 weed and brush species including Canada thistle, dandelion, leafy spurge, western snowberry and wild rose for up to 24 months.

TruRange herbicide offers a new way for ranchers to provide high-quality forage for their cattle in an environmentally sustainable and effective manner. TruRange herbicide provides residual weed and brush control in one easy-to-use, low-rate product with no grazing restrictions. With less active ingredients going into the environment, TruRange herbicide brings innovation and sustainability to pasture and rangeland management.

Vicki Maloney, Ph.D.
VM Solutions Development and Tech Services Manager

Canadian rangeland Envu team



Darrell Chambers
Segment Sales Manager

Will Roberts
Key Account Manager

Vicki Maloney, Ph.D.
VM Solutions Development and Tech Services Manager

British Columbia:
Darrell Chambers
403-498-7006
Lives in AB

Southern & Central Alberta:
Megan Kneller
587-434-3411
Lives in AB

Northern Alberta:
Ken Houle
403-598-3189
Lives in AB

Saskatchewan & Manitoba:
Brett Armstrong
403-461-6008
Lives in SK

Ontario & Quebec:
Will Roberts
226-821-5845
Lives in ON

Atlantic Canada:
Laura Anderson
782-641-7916
Lives in NS

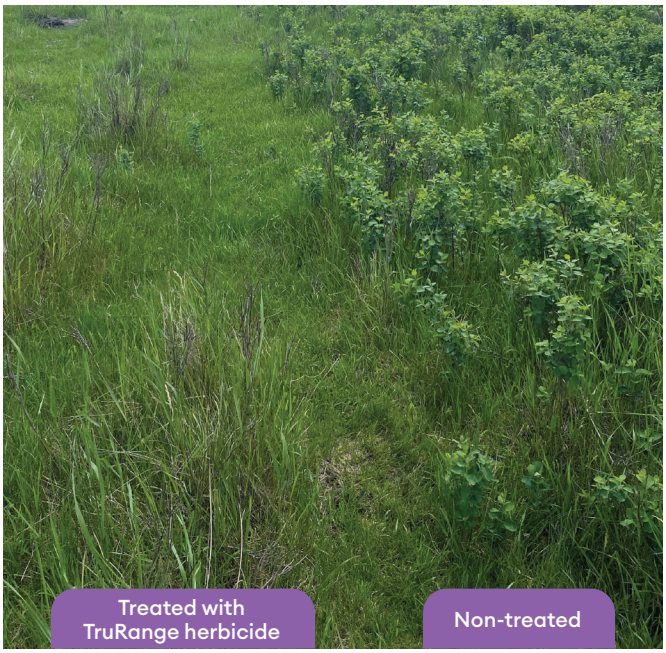
Rangeland restoration with TruRange® herbicide

Land managers and ranchers in Canada continue to battle invasive and noxious weeds and woody (tree/brush) species that threaten to invade many of the nation's rangeland and pastures. These species are problematic because many can be toxic to livestock, reduce forage quality and quantity, and have negative ecological and environmental impacts. Productive and sustainable lands are critical to the agricultural economy and the environment. Invasive weed species such as Canada thistle, leafy spurge, tall buttercup and western snowberry are changing western natural areas and rangeland in a cycle that favours their spread at the expense of desirable vegetation.

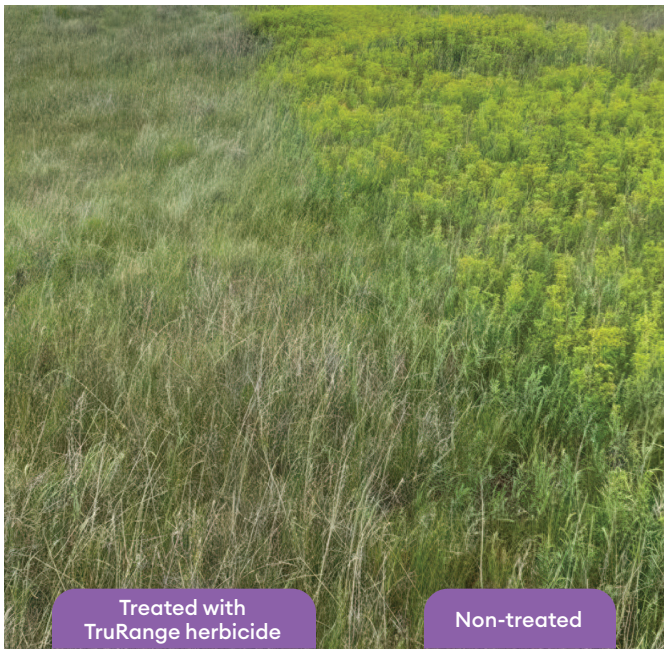
- Many invasive weed and brush species are aggressive, fast-growing, and have the ability to quickly invade and become the dominant vegetative species within a few years.
- These species are problematic because many are toxic to livestock, reduce forage quality and quantity, and have negative ecological and environmental impacts.
- In areas with perennial forb populations, pollinator habitat is reduced with fewer flowering forbs present and reduced flower abundance.
- The combination of two powerful active ingredients allows you to use less product to control weeds and brush compared to other range and pasture herbicides. The result is long-lasting, broad-spectrum control of unwanted weeds and brush with less active ingredients per acre.

One of the two active ingredients in TruRange® herbicide, aminocyclopyrachlor (ACP), is quickly taken up by the leaves, stems and roots of plants and interferes with the hormonal balance necessary for normal shoot and root development, providing the control of difficult perennial broadleaf weeds and brush typical of rangeland and unimproved pastures. While the second active ingredient, metsulfuron-methyl (MSM), is an acetolactate synthase (ALS) inhibitor herbicide that inhibits the biosynthesis of the branched-chain amino acids isoleucine, leucine and valine and thus rapidly impedes the growth of the susceptible species. Management of these unwanted species is necessary to promote perennial forage grasses for livestock grazing and to restore plant biodiversity for wildlife and pollinators. These sites are either not hayed (such as rangeland) or are not suited for haying. Trial work across Canada and the western U.S. has documented that TruRange herbicide is a highly effective tool for the control of many invasive rangeland weeds.

TruRange herbicide has proven effective for the long-term control of many perennial species. Additionally, TruRange herbicide is highly efficacious for many species for which there are limited long-term chemical control options available, including diffuse knapweed, leafy spurge, spotted knapweed and western snowberry. Combining effective and long-term control of perennial species reduces the need for repeated applications (or, at a minimum, lengthens the time between retreatments) of products that are not as effective. Fewer applications also reduce both the cost and the amount of herbicide being applied in the environment, which lowers potential environmental exposure.



Two-year continued control of western snowberry
Photo: Dr. Vicki Maloney, Envu



One-year continued control of leafy-spurge
Photo: Dave Gavlon, Rancher

TruRange® herbicide label

Directions for using TruRange® herbicide for the extended broad-spectrum control of broadleaf weeds and encroaching brush are currently available on the PMRA-approved label (2020-11-25, Sub. No. 2020-0819).

Species controlled

TruRange herbicide provides extended control of over 70 weed and brush species including Canada thistle, dandelion, leafy spurge, western snowberry and wild rose for up to 24 months.

Major rangeland weeds controlled with TruRange herbicide		
Annual sowthistle	Hemp-nettle	Stork's-bill
Ball mustard	Kochia (including ALS-resistant)	Sumac (smooth, staghorn)
Bluebur	Lady's-thumb	Sweet clover (white, yellow)
Canada goldenrod*	Leafy spurge	Tall buttercup*
Canada thistle	Norwegian cinquefoil*	Tartary buckwheat
Chickweed	Orange hawkweed	Volunteer canola (except Clearfield varieties)
Common groundsel	Ox-eye daisy	Western snowberry
Common tansy	Perennial sowthistle	White cockle
Common yarrow	Poison ivy	Wild carrot
Corn spurry	Prostrate pigweed	Wild chervil
Cow cockle	Redroot pigweed	Wild mustard
Dandelion	Russian thistle	Wild parsnip
Diffuse knapweed	Scentless chamomille	Wild rose
Flixweed	Shepherd's-purse	Yellow starthistle
Giant hogweed* (up to 4-leaf)	Spotted knapweed	
Green smartweed	Stinkweed	

*Season-long control

TruRange herbicide provides extended control of over 70 weed and brush species.

Application considerations

TruRange® herbicide is a dispersible granule that is mixed in water and applied as a spray. TruRange herbicide may be applied broadcast using ground spray equipment, fixed-wing aircraft or by helicopter.

For control of broadleaf weeds and small brush, the labelled rate is 68 g/acre (167 g/ha). This rate provides control of 44 different weeds including thistle, dandelion, leafy spurge, western snowberry and wild rose. One jug treats 20 acres at 68 g/acre.

For brush control, the application rate is 135 g/acre (334 g/ha). This rate provides control of 29 different brush species including balsam poplar up to 2.5 m, trembling aspen under 3 m and sandbar willow up to 2.5 m. One jug treats 10 acres at 135 g/acre.

For control of trees such as balsam fir, Douglas fir, black spruce and white spruce between 2 and 3 m, the recommended rate is 202 g/acre (499 g/ha).

It is recommended to add a nonionic surfactant such as Hasten™ or Intake™ at 0.25% volume per volume (e.g., 1,000 L solution × 0.25% = 2.5 L of adjuvant required) to TruRange herbicide. Other acceptable adjuvants include Merge® (1% v/v) or a crop oil concentrate (1% v/v). The minimum recommended water volume is 20 gal/acre or 200 L/ha for broadleaf weeds. Higher water volumes will improve the speed of control and efficacy through improved coverage. Applying TruRange herbicide below the minimum labelled water volume could result in a decrease in efficacy. TruRange herbicide is rainfast at four hours after application, and warm, moist conditions following treatment promote the activity of TruRange herbicide, while cold, dry conditions may reduce or delay activity.

For best results, applications of TruRange herbicide should be made when brush species and weeds are actively growing. Complete coverage of all foliage and stems is required for brush control. Applications should be made after the target species have leafed out but before fall colouration has begun. Do not treat brush species that exceed 2.5 m in height (unless otherwise indicated), or control may be decreased. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigour of competing desirable vegetation. Best results for long-term weed and brush control occur when grasses and other desired vegetation are allowed to recover from adverse environmental conditions and compete with undesirable brush or weeds. For more application information, please read the label.

For aerial applications using either fixed-wing aircraft or helicopter spray equipment, ensure that appropriate buffer zones are maintained. Aerial applications should not be conducted during periods of dead calm or when winds are gusty and when wind speed is greater than 10 km/h at the flying height at the site of application. DO NOT apply with spray droplets smaller than the American Society of Agricultural and Biological Engineers (ASABE) coarse classification. To reduce drift caused by turbulent wingtip vortices, the nozzle distribution along the spray boom length MUST NOT exceed 65% of the wing or rotor span. For aerial applications near susceptible crops or other desirable plants, use a drift control additive or drift control system as recommended by the manufacturer. In general, aerial application spray volumes range from 30 to 50 liters per hectare.

Rates for different-sized spray tanks

Weed rate – 68 g/ac with recommended minimum of 20 gal/ac (76 L) of water	**Brush rate** – 135 g/ac with recommended minimum of 50 gal/ac (189 L) of water	**Tree rate** – 202 g/ac with recommended 50 gal/ac (189 L) to 100 gal/ac (378 L) of water

Tank size	TruRange herbicide weed rate	Acres
Backpack spray tanks		
2.64 gal / 10 L 9 g 0.13	9 g	0.13
4 gal / 15 L 14 g 0.2	14 g	0.2
Quad spray tanks		
15 gal / 57 L	51 g	0.75
20 gal / 76 L	68 g	1
25 gal / 95 L	85 g	1.25
UTV/tractor spray tanks		
100 gal / 378 L	340 g	5

Tank-mixing TruRange herbicide with other herbicides

In some cases, tank-mixing a pest control product with another pest control product or fertilizer can result in biological effects that could include but are not limited to reduced pest efficacy or increased host crop injury.

1

Start by adding half the water to the tank

Add each component separately and mix thoroughly before adding the next component

2

End by adding the remaining water and mix thoroughly

If the mix sits more than a few hours, mix thoroughly before spraying

Follow all use restrictions on the TruRange herbicide label and for all tank-mix partners. It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. Note the most restrictive language may come from different labels.

Application stewardship

Rangeland and pasture buffer zones

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands) and sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands).

Method of application	Buffer zones (metres) required for the protection of:		
	Freshwater habitat of depths:		Terrestrial habitat
	Less than 1 m	Greater than 1 m	
Field sprayer*	5	2	45
Fixed-wing aerial	200	45	800
Rotary-wing aerial	95	30	700

*Buffer zones are not applicable for hand-held or backpack sprayers and spot treatment. For field-sprayer application, buffer zones can be reduced with the use of drift-reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the canopy, the labelled buffer zone can be reduced by 30%.

TruRange® herbicide buffer zones can be modified based on weather conditions and spray equipment configuration by accessing the **Buffer Zone Calculator** on the pesticides portion of the Canada.ca website.

Manure management

Aminocyclopyrachlor (ACP), an ingredient in TruRange herbicide, passes through an animal's digestive tract and is excreted in urine and manure at levels that may cause injury to susceptible plants. Therefore, it is not recommended to transfer grazed animals from areas treated with TruRange herbicide in the prior 18 months to areas where sensitive crops occur without first allowing three days of grazing on untreated areas. Furthermore, manure should not be applied as mulch or compost around desirable plants. However, manure may be applied on rangeland and on the farm as long as any damage that may occur to susceptible plants can be tolerated. After removing animals from grazing on treated areas or eating forage or hay from treated areas and waiting three days for treated material to clear the animal's digestive system, the animal's manure is no longer subject to the above restrictions.

Grazing, hay and other plant material management

There are no grazing or haying restrictions for nonlactating or lactating animals (including cattle, horses, sheep and goats) when using TruRange® herbicide as directed. Grazing animals do not have to be moved off the rangeland or pasture before, during or after applying TruRange herbicide. Hay cut from grass that has been treated with TruRange herbicide within the prior 18 months must only be used on-farm. Plant material from the treated area is no longer subject to the above restrictions 18 months after treatment.

Avoiding damage to desirable species and protecting crops and other sensitive areas

TruRange herbicide is quickly taken up by the leaves, stems and roots of plants, with the most noticeable symptom being a bending and twisting of stems and leaves. Other advanced symptoms include severe chlorosis, necrosis, stem thickening, growth stunting, leaf crinkling, calloused stems and leaf veins, leaf cupping, and enlarged roots. Certain species may be sensitive to low levels of TruRange herbicide including, but not limited to, conifers, deciduous trees and ornamental shrubs.* Injury or loss of desirable vegetation may result if TruRange herbicide is applied on or near areas where their roots extend or in locations where the treated soil may be washed or moved into contact with their roots. Root zone areas of desirable trees or vegetation are affected by local conditions and can extend beyond the tree canopy. If further information is needed regarding the root zone area, consult the appropriate provincial extension service, professional consultant or other qualified authority. Additionally, treatment of powdery, dry soil and light, sandy soils when there is little likelihood of rainfall soon after treatment may result in off-target movement and possible damage to susceptible crops and desirable vegetation when soil particles are moved by wind or water. Injury to crops or desirable vegetation may result if treated soil is washed, blown or moved onto land used to produce crops or land containing desirable vegetation. Do not apply TruRange herbicide when these conditions are identified and powdery, dry soil or light, sandy soils are known to be prevalent in the area to be treated.

*See label for full list of species

Adaptive management

TruRange herbicide can be an important component of integrated vegetation management (IVM) programs to treat certain invasive and noxious weed species infestations. For more information, consult local IVM associations and/or invasive plant councils. These organizations can provide guidance on best management practices and the development of IVM programs. A rapid response needs to be taken to quickly contain, deny reproduction and, if possible, eliminate the invader.

TRURANGE®

Resistance management

TruRange® herbicide includes both a Group 2 (metsulfuron-methyl) and Group 4 (aminocyclopyrachlor) as modes of action. As such, any weed population may contain or develop plants naturally resistant to Group 2 and/or Group 4 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to the site of action, but specific to individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance management strategies should be followed.

To delay herbicide resistance:

- Always read the label and use the proper rates and application methods to ensure sufficient coverage.
- Where possible, rotate the use of TruRange herbicide or other Group 2 and 4 herbicides within a growing season (sequence) or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted. To delay resistance, the less resistance-prone partner should control the target weed(s) as effectively as the more resistance-prone partner.
- Herbicide use should be based on an integrated weed management program that includes scouting and historical information related to herbicide use and crop rotation and considers tillage (or other mechanical control methods), cultural (for example, higher crop seeding rates, precision fertilizer application method and timing to favour the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Monitor weed populations after herbicide application for signs of resistance development (for example, only one weed species on the herbicide label is not controlled). If resistance is suspected, prevent weed seed production in the affected area if possible with an alternative herbicide from a different group. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields and planting clean seeds.
- Have suspected resistant weed seeds tested by a qualified laboratory to confirm resistance and identify alternative herbicide options.

Darrell Chambers	VM Segment Sales Manager • Sales – British Columbia • darrell.chambers@envu.com • 403-498-7006
Megan Herauf	Sales – Alberta • megan.herauf@envu.com • 587-434-3411
Ken Houle	Sales – Central and Northern Alberta • kenneth.houle@envu.com • 403-598-3189
Brett Armstrong	Sales – Saskatchewan and Manitoba • brett.armstrong@envu.com • 403-461-6008
Will Roberts	Sales – Ontario, Quebec and Atlantic Canada • william.roberts@envu.com • 226-821-5845
Vicki Maloney	VM Stewardship Manager – Canada • vicki.maloney@envu.com • 403-805-0542

envu™ Range & Pasture

ca.envu.com | 1-800-331-2867