# Spike™

**Herbicide**

## COMMERCIAL

| GROUP | 2 | HERBICIDE |
|---|---|---|

**WARNING - EYE IRRITANT**
**POTENTIAL SKIN SENSITIZER**

Nufarm Agriculture Inc.
5507 1st Street SE
Calgary, Alberta T2H 1H9
1-800-868-5444

24 Hour Emergency Response Number
1-800-424-9300

™ Spike is a trademark of
Nufarm Agriculture Inc.

**GUARANTEE:**
Tribenuron methyl … 75%

Warning: contains the allergens milk and sulfites

**READ THE LABEL AND THIS BOOKLET BEFORE USING**

For Sale for Use on Wheat (spring and durum), Barley, and Summerfallow in the Prairie Provinces and the Peace River Region of British Columbia.

REGISTRATION NO. 29653
PEST CONTROL PRODUCTS ACT

Nufarm

**PRECAUTIONS:**
WARNING - EYE IRRITANT.
POTENTIAL SKIN SENSITIZER.
DO NOT APPLY BY AIR.
KEEP OUT OF REACH OF CHILDREN.
MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AVOID BREATHING SPRAY MIST. USE WITH ADEQUATE VENTILATION.
AVOID CONTACT WITH SKIN, EYES AND CLOTHING.
DO NOT CONTAMINATE ANY BODY OF WATER.
WEAR SUITABLE CHEMICAL RESISTANT GLOVES AND GOGGLES OR FACE SHIELD DURING MIXING AND LOADING.
MAY IRRITATE SKIN AND EYES. WHEN USING, DO NOT EAT, DRINK OR SMOKE.
WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING. REMOVE CONTAMINATED CLOTHING IMMEDIATELY AFTER USE.

If this pest control product is to be used on a commodity that may be exported to the U.S. and you require information on acceptable residue levels in the U.S., visit CropLife Canada's web site at: www.croplife.ca.

**FIRST AID:**
**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

**IF INGESTED:** Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to mouth, if possible. Call a poison control centre or doctor for further treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

**EMERGENCY NUMBERS:**
For spills or transportation accidents, Chemtrex, 1-800-424-9300.
For health or environmental emergencies, Prosar, 1-877-325-1840.
For product and use information, Nufarm Agriculture Inc., 1-800-868-5444.

**TOXICOLOGICAL INFORMATION:**
Treat symptomatically.



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**IMPORTANT INFORMATION - READ BEFORE USING:**
Injury to or loss of desirable trees, shrubs, flowers, vegetables, fruits or other vegetation may result from failure to observe the following: Do not apply, drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of spray to desirable plants. Do not contaminate any body of water, including irrigation water that may be used on crops.

**DO NOT APPLY BY AIR.**

Do not apply in high winds or on hot days (over 27 degrees C).

Carefully observe sprayer clean-up instructions, as spray tank residue may damage crops other than spring wheat, durum wheat, barley or summerfallow. Thoroughly clean all traces of tank mix from application equipment immediately after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately). Wash away any spray mixture from the outside of spray tank, nozzle or spray rig.

A MINIMUM RECROPPING INTERVAL OF 2 MONTHS SHOULD BE LEFT BETWEEN THE APPLICATION OF THIS PRODUCT AND SEEDING OF THE NEXT CROP. After 2 months, the following crops can be seeded: canola, flax, lentils, and alfalfa.

DO NOT APPLY SPIKE HERBICIDE WITH A CARRIER OTHER THAN WATER OR ANY ADDITIVE OTHER THAN THOSE INDICATED ON THIS LABEL. Other carriers may accelerate breakdown of this product and reduce its effectiveness.

**GENERAL INFORMATION:**
SPIKE HERBICIDE provides control of certain broad-leaved weeds in spring planted wheat (including durum), barley and summerfallow.

Warm, moist growing conditions promote active weed growth and enhance the activity of SPIKE HERBICIDE by allowing maximum foliar uptake and contact activity. Weeds hardened off by environmental stress such as cold weather, drought stress or excessive heat may not be adequately controlled or suppressed, and regrowth may occur. SPIKE HERBICIDE may only be applied using ground spray equipment. For best results, ensure thorough spray coverage of target weeds.

SPIKE HERBICIDE rapidly stops growth of susceptible weeds. However, typical symptoms (discolouration) of dying weeds may not be noticeable for 1 to 3 weeks after application, depending on growing conditions and weed susceptibility. Degree of control and duration of effect depend on weed sensitivity, weed size, spray coverage and growing conditions. Activity of the herbicide mixture may be delayed by cold, dry conditions after application.



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**DIRECTIONS FOR USE:**
**FOR CONTROL OF FLIXWEED AND STINKWEED (FALL ROSETTES AND SPRING SEEDLINGS) IN SUMMERFALLOW**

**SPIKE HERBICIDE + 2,4-D ESTER TANK MIX:**
Apply SPIKE HERBICIDE at 10 g/ha with 2,4-D Ester at 420 g/ha (0.6 L 2,4-D Ester LV-700). AGRAL 90 is not required in this tank mix.

Apply the tank mix in the spring after emergence, up to the early flowering stage of the target weeds. Only weeds that have emerged at the time of application will be controlled.

**CONTROL OF BROADLEAF WEEDS AND GRASSES IN FALLOW AND PRE-SEED TO SPRING WHEAT (INCLUDING DURUM) AND BARLEY.**

Fields treated with SPIKE HERBICIDE can be seeded to spring wheat (including durum) or barley a minimum of 24 hours after application.

Apply SPIKE HERBICIDE at 10 grams per hectare, tank mixed with one of the following companion herbicides and adjuvant (where required) in a total spray volume of 55-110 L/ha.

Consult the labels of the glyphosate products to be used as tankmix partners with SPIKE HERBICIDE for specific instructions of “Directions for Use” and restrictions.

*Allow at least 10 days to elapse before tillage.*



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| Companion Herbicide | Application Rate (grams acid equivalent per hectare) | Application Stage | Weeds Controlled | Weeds Suppressed* |
|---|---|---|---|---|
| Glyphosate (present as potassium salt, isopropylamine salt, ammonium salt or trimethylsulfonium salt) | 450 g ae/ha | Up to 8 cm<br><br>Up to 15 cm<br><br>Up to 3-leaf<br><br>Rosette | Canada fleabane, Common ragweed, Narrow-leaved hawk's beard<br><br>Dandelion, Downy brome, Flixweed Giant foxtail, Green foxtail, Hemp nettle, Kochia, Lady's thumb, Lamb's-quarters, Persian darnel, Redroot pigweed, Russian thistle, Stinkweed, Volunteer barley, Volunteer canola (including glyphosate-tolerant varieties),Volunteer flax, Volunteer wheat, Wild mustard, Wild oats<br><br>Wild buckwheat, Cow cockle | Canada thistle |
| Glyphosate (present as potassium salt, isopropylamine salt, ammonium salt or trimethylsulfonium salt)<br><br>plus<br><br>Agral* 90 | 270 g ae/ha<br><br>0.35% v/v | Any stage<br><br>Seedlings and rosettes (non-flowering)<br><br>Up to 10 cm<br><br>Up to 8 cm | Volunteer canola (including glyphosate tolerant varieties)<br><br>Kochia, Lamb's-quarters,<br><br>Green foxtail, Lady's thumb, Stinkweed, Volunteer barley, Volunteer wheat, Wild mustard, Wild oats (1-3- leaf)<br>Wild buckwheat (1-3 leaf) | Narrow-leaved hawk's beard<br><br>Redroot pigweed, Russian thistle |
| Glyphosate (present as potassium salt, isopropylamine salt, ammonium salt or trimethylsulfonium salt)<br><br>plus<br><br>Agral* 90 | 360 g ae/ha<br><br>0.35 % v/v | Rosettes (non-flowering) | Dandelion (top growth) | Canada thistle (top growth) |



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*Weed suppression is a visual reduction in weed competition (reduced population or vigour) as compared to an untreated area. Degree of suppression will vary with size of weed and environmental conditions prior to and following treatment.

**MIXING INSTRUCTIONS:**

1. Add one-third of the necessary volume of water to the spray tank.
2. With the agitator running, add the required amount of SPIKE HERBICIDE.
3. When SPIKE HERBICIDE is in suspension, add the required amount of the appropriate tank mix partners.
   SPIKE HERBICIDE + 2,4-D Ester: once SPIKE HERBICIDE is completely in suspension, add the required amount of 2,4-D Ester while maintaining agitation. Do not add a surfactant.
   SPIKE HERBICIDE + Glyphosate: once SPIKE HERBICIDE is completely in suspension, add the required amount of glyphosate while maintaining agitation.
4. Add the rest of the water. If an antifoam agent is required, add this last.
5. Use a minimum spray volume of 55 L/ha on spring wheat (including durum), barley and summerfallow.
6. For repeat tankloads, reduce the material remaining in the tank to 10% of the original volume or less before proceeding with step 1. If this is not possible, pre-slurry SPIKE HERBICIDE in a small amount (5-10 L) of water before adding to the tank.

Continuous agitation is required to keep SPIKE HERBICIDE in suspension. If the spray preparation is left standing without agitation, thoroughly agitate to resuspend the mixture before spraying. Use spray preparation within 24 hours or product degradation may occur.

**MINIMUM RECROPPING INTERVAL AND CROP ROTATION GUIDELINES:**

A minimum recrop interval of 2 months should be left between the application of this product and seeding of the next crop. The following crops can be seeded two months after application of SPIKE HERBICIDE + 2,4-D Ester: canola, flax, lentils, and alfalfa.

**EQUIPMENT-SPRAY VOLUMES:**

Apply the spray mixture uniformly with properly calibrated ground equipment only. Ensure thorough coverage and a uniform spray pattern. Flat fan nozzles are recommended (minimum 55 litres spray volume per hectare). Use 50 mesh filter screens or larger (metal or nylon).

Continuous agitation is required to keep the spray materials in suspension. Apply uniformly and avoid overlapping. Shut off spray boom while starting, turning, slowing or stopping to prevent crop injury from over application.

Reduce drift with high water volume, low pressure, coarse sprays and drop nozzles. Do not apply with more than 275 kPa spray pressure.

**DO NOT APPLY BY AIR.**

**SPRAYER CLEANUP:**

It is difficult to remove all traces of 2,4-D Ester and MCPA Amine from a sprayer.



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A sprayer used to apply these herbicides should not be used to spray crops sensitive to these herbicides. The following clean-out procedure will remove traces of SPIKE HERBICIDE from the sprayer.

1. Drain tank; then flush tank, boom and hoses with clean water for a minimum of ten minutes to remove all visible residues.
2. Fill the tank with clean water then add 1 litre household AMMONIA (containing a minimum of 3% ammonia) per 100 litres of water. Fill boom and hoses with solution and allow sprayer to sit for 15 minutes. Drain.
3. Repeat step 2.
4. Nozzles and screens should be removed and cleaned separately. To remove traces of ammonia, rinse the tank, hoses and booms thoroughly with clean water.
5. Dispose of tank rinseate according to Provincial directions.

**CAUTION:** Do not use ammonia with chlorine bleach. Using ammonia with chlorine bleach will release a gas with a musty chlorine odour that can cause eye, nose, throat, and lung irritation. Do not clean equipment in an enclosed area.

**RESISTANCE-MANAGEMENT RECOMMENDATIONS:**

For resistance management, SPIKE HERBICIDE is a Group 2 herbicide. Any weed population may contain or develop plants naturally resistant to SPIKE HERBICIDE and other Group 2 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 site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

**To delay herbicide resistance:**

- Where possible rotate the used of SPIKE HERBICIDE or other Group 2 herbicides 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
- Herbicide use should be based on an IPM program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical), cultural, biological and other chemical control practices.
- Monitor treated weed populations for resistance development.
- Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact Nufarm Agriculture Inc. at 1-800-868-5444 or at www.nufarm.ca.

**USE PRECAUTIONS:**

Licensed wheat and barley varieties have shown acceptable tolerance to SPIKE HERBICIDE. Consult Nufarm Agriculture Inc. prior to use on unlicensed varieties for crop tolerance information.



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Do not apply to irrigated land where tail water will be used to irrigate other cropland. Do not contaminate irrigation water.

Do not use on highly variable soils that have large gravely or sandy areas, eroded knolls or calcium deposits.

If rain occurs soon after application control may be reduced. At least 4-6 hours of dry weather is needed to allow the tank mixture to be absorbed by weed foliage. Environmental conditions that slow the drying of the spray mixture on the foliage such as high relative humidity, cool air temperatures or cloud cover, may increase the time required.

Use a maximum of 10 grams of SPIKE HERBICIDE per hectare per year on spring planted wheat, barley, and summerfallow.

Do not apply to spring wheat, durum wheat or barley undersown with legumes or grasses as injury to the forage may result.

Do not remove soil from treated fields for use on lawns, in gardens or for backfill.

Under certain conditions such as prolonged cool weather temperature or wide fluctuations in day/night temperatures just prior to or soon after treatment, temporary yellowing and/or crop stunting may occur.

OVERSPRAY OR DRIFT TO IMPORTANT WILDLIFE HABITATS SUCH AS SHELTERBELTS, WETLANDS, SLOUGHS OR DRY SLOUGH BORDERS, OR WOODLOTS, SHOULD BE AVOIDED. LEAVE A 15-METER BUFFER ZONE BETWEEN THE LAST SPRAY SWATH AND THE EDGE OF ANY OF THESE HABITATS.

Control of weeds growing in wheel tracks may be reduced if SPIKE HERBICIDE is applied under dry, dusty conditions.

**STORAGE AND DISPOSAL:**
**STORAGE:**
Store products in original containers only, away from fertilizer, seeds, food or feed. Not for use or storage in or around the home. Keep container closed.

**DISPOSAL:**
**FOR REFILLABLE CONTAINERS:**
For disposal, this container may be returned to the point of purchase (distributor/dealer). It must be refilled by the distributor/dealer with the same product. Do not reuse this container for any other purpose.

For information on the disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.



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**NOTICE TO USER:**

This pest control product is to be used only in accordance with the directions on this label. It is an offence under the *PEST CONTROL PRODUCTS ACT* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

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**NOTES:**