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CHLOROPICRIN 100 LIQUID SOIL FUMIGANT

RESTRICTED PRODUCT

Only to be sold to and used by individuals holding an appropriate pesticide applicator certificate or license recognized by the provincial/territorial pesticide regulatory agency where the pesticide application occurs.

THIS PRODUCT CAN ONLY BE USED IN CONJUNCTION WITH
A DETAILED FUMIGATION MANAGEMENT PLAN

DANGER POISON

DANGER--CORROSIVE TO EYES AND SKIN

READ THE ENTIRE LABEL,
INCLUDING INSTRUCTIONS FOR PREPRATION OF A FUMIGATION MANAGEMENT PLAN,
BEFORE USING

KEEP OUT OF REACH OF CHILDREN

ACTIVE INGREDIENT: CHLOROPICRIN 99%

REGISTRATION NO. 25863
PEST CONTROL PRODUCTS ACT

NET CONTENTS: _____ (55 L to 416 L)

Manufactured By:
TriEst Ag Group, Inc.
1101 Industrial Boulevard Greenville, NC 27834
U.S.A.
252-758-4263

Distributed By:
Douglas Agricultural Services, Inc.
1511 Charlotteville West Quarter Line Rd., RR #6
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NOTICE TO USER
This pest control product is to be used only in accordance with the directions on the 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.

NATURE OF RESTRICTION
This product is only to be sold to and used by individuals holding an appropriate pesticide applicator certificate or licence recognized by the provincial/territorial pesticide regulatory agency where the pesticide application is to occur. This restriction applies to all fumigant handlers, as defined in the **DIRECTIONS FOR USE, Handler Restrictions** section of this label.

This product can only be used in conjunction with a detailed Fumigation Management Plan. Prior to the start of application, the applicator must verify that a site-specific Fumigation Management Plan exists for each application block.

This product is accompanied by an approved label, including Instructions for Preparation of a Fumigation Management Plan. READ AND UNDERSTAND THE ENTIRE LABEL BEFORE USING.

This product is to be stored apart from lodging for humans, animal quarters, and normal work areas to avoid inadvertent exposure.

PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN
HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS

- FATAL OR POISONOUS IF SWALLOWED.
- EXTREMELY HAZARDOUS BY SKIN CONTACT.
- DO NOT GET ON SKIN AND DO NOT GET ON CLOTHING.
- MAY BE FATAL IF INHALED – AVOID INHALING/BREATHING SPRAYS, ETC.
- DO NOT GET IN EYES.
- CORROSIVE TO THE EYES AND SKIN.
- THIS FUMIGANT IS A HIGHLY HAZARDOUS MATERIAL AND MUST BE HANDLED WITH CARE ONLY BY THOSE INDIVIDUALS EXPERIENCED WITH ITS PROPER USE.
- READ THE ENTIRE LABEL, INCLUDING INSTRUCTIONS FOR PREPARATION OF A FUMIGATION MANAGEMENT PLAN.

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.

TOXICOLOGICAL INFORMATION
POISONOUS LIQUID AND VAPOUR. INHALATION MAY BE FATAL. CHLOROPICRIN 100 LIQUID SOIL FUMIGANT IS READILY IDENTIFIABLE BY SMELL. EXPOSURE TO VERY LOW CONCENTRATIONS OF VAPOUR WILL CAUSE IRRITATION OF EYES, NOSE AND THROAT. CONTINUED EXPOSURES AFTER IRRITATION IS EVIDENT OR HIGHER CONCENTRATIONS, MAY CAUSE PAINFUL IRRITATION TO EYES OR TEMPORARY BLINDNESS. LIQUID WILL CAUSE CHEMICAL BURNS TO SKIN OR EYES. DO NOT GET ON SKIN, IN EYES OR ON CLOTHING. HARMFUL OR FATAL IF SWALLOWED.

CHLOROPICRIN 100 LIQUID SOIL FUMIGANT has the capacity to cause marked irritation to the upper respiratory tract and is a strong lachrymator (tear producing eye irritant). Low concentrations, below those necessary to cause serious systemic intoxication, are capable of causing severely painful eye irritation, hence will not be voluntarily tolerated. However, the effect may be so powerful that a person may become temporarily blinded and panic-stricken and that in turn may lead to accidents.

NOTE TO PHYSICIAN

If swallowed, empty stomach contents by gastric lavage. CHLOROPICRIN 100 LIQUID SOIL FUMIGANT is a volatile liquid that is the active ingredient in tear gas. As a gas it is a powerful lachrymator. Early symptoms of overexposure are lachrymation, respiratory distress, and vomiting. Pulmonary edema may develop later. Treat symptomatically.

PHYSICAL/CHEMICAL HAZARDS

Do not use containers or application equipment made of magnesium, aluminum, or their alloys, as under certain conditions this fumigant may be severely corrosive to such metals.

Do not permit water to be used to clean the fumigant pressure system, as corrosion will result. Diesel oil is satisfactory for this purpose.

HANDLER USE PRECAUTIONS

Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Avoid touching eyes and face until you have washed your hands.

Avoid touching 'clean' surfaces (for example, steering wheel, door handles, counter tops) after handling this product, or thoroughly clean these surfaces with water and detergent after touching them.

CHLOROPICRIN 100 LIQUID SOIL FUMIGANT is heavier than air and can be trapped inside clothing and cause skin injury.

Remove clothing immediately if pesticide comes in contact with skin through soaked clothing or spills. Then wash skin thoroughly and put on clean clothing. Keep such clothing and shoes outdoors until thoroughly aerated. Then follow the personal protective equipment (PPE) manufacturer's instructions for cleaning/maintaining PPE. Wash contaminated clothing separately from other clothes before re-use.

If the liquid contacts skin where rings or bandages are worn, remove them and wash the exposed skin with soap and water.

Always have adequate clean water available to wash the skin.

Store personal protective equipment out of reach of children and pets.

Remove personal protective equipment immediately after handling this product. Remove personal protective equipment outside in a pre-determined area separate from living or working areas. As soon as possible, wash thoroughly and change into clean clothing. Clean personal protective equipment after each day's use.

Air-expose shoes or clothing outside and do not wear until free of all traces of fumigant.

Wash the outside of the gloves before removing.

Follow personal protective equipment manufacturer's instructions for cleaning/maintaining protective eyewear, faceshields and respirators.

Respirators should be stored in a sealed plastic bag until the next use, to preserve the life of the filter. Regularly change respirator cartridge filters.

Use hot water, heavy-duty liquid detergent, the highest water level setting, and the longest wash cycle. Keep and wash personal protective equipment and work clothing separately from other laundry.

If heavily soiled, wash personal protective equipment two or three times. After washing, run the washing machine through a complete cycle with detergent. If possible, line-dry the clothing.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them.

Repair/replace torn or broken personal protective equipment.

Never use the mouth to siphon product from containers or to blow out clogged lines, nozzles, etc.

Handle this fumigant in the open, when possible, with the operator "upwind" from the container where there is good ventilation.

Check the fumigant pressure system, when used, for leaks before beginning application.

Do not spill. If liquid fumigant splashes or spills on shoes or clothing, remove them at once, as fumes from the contaminated area will be an intolerable source of irritation.

In case of the rupture of a hose or fitting while applying the fumigant, immediately stop the tractor and motor. Get off the tractor and get to a place where the problem can be observed without exposure to the fumes. Approach from upwind, with respiratory protection if required and make necessary repairs.

When changing the cylinders, be certain they are turned off and the fumigant system is not under pressure.

PERSONAL PROTECTIVE EQUIPMENT

When performing tasks with potential for contact with liquid fumigant, wear a loose-fitting or well-ventilated long-sleeved shirt, long pants, chemical-resistant gloves, a chemical-resistant apron, chemical-resistant footwear with socks, and protective eyewear (for example, full-face shield or safety glasses. DO NOT wear goggles).

When performing tasks with NO potential for contact with liquid fumigant, wear a loose-fitting or well ventilated long-sleeved shirt, long pants, and shoes plus socks.

Some materials that are chemical-resistant to this product are nitrile rubber and high-density polyethylene. The personal protective equipment must be adequately cleaned and maintained.

In addition, when an air-purifying respirator is required under this label's **DIRECTIONS FOR USE, Respiratory Protection and Stop Work Triggers** section, all fumigant handlers must wear at a minimum either:

- a NIOSH certified full facepiece air-purifying respirator equipped with an organic vapour (OV, NIOSH approval number prefix TC-23C) cartridge and a particulate pre-filter (Type N, R, P or HE, NIOSH approval number prefix number TC-84A), or
- a gas mask with a canister approved for organic vapour (NIOSH approval number prefix TC-14G).

Respirators must fit properly. Any obstruction to a proper fit should be removed (for example, beard, long sideburns).

All fumigant handlers must have an air-purifying respirator and appropriate cartridges immediately available to them.

FIRST AID

IF SWALLOWED: 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 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 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.

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.

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

ENVIRONMENTAL PRECAUTIONS

Toxic to aquatic organisms, birds and small wild mammals.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

The use of this chemical may result in it leaching to groundwater, particularly in areas where soils are permeable (e.g. sandy soil) and/or the depth to the water table is shallow. While chloropicrin has certain properties and characteristics in common with chemicals that have been detected in groundwater (high solubility in water and low adsorption to soil), volatilization of this fumigant is expected to be the major route of dissipation from the treatment site.

DIRECTIONS FOR USE

HANDLER RESTRICTIONS

Any person involved in the use of this product is considered a fumigant handler.

All fumigant handlers must hold an appropriate pesticide applicator certificate or license recognized by the provincial/territorial pesticide regulatory agency where the pesticide application is to occur.

Only fumigant handlers with an appropriate pesticide applicator certificate or license may be in the application block from the start of the application until the Application Period expires, and in the spray buffer zone during the Spray Buffer Zone Period.

Exception: Emergency personnel and local, provincial or federal officials performing inspections, sampling or other similar duties may enter the application block and/or spray buffer zone as required.

- The application block is the area within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways).
- A buffer zone is an area established around the perimeter of an application block.
- Application *starts* when the fumigant is first introduced into the soil and is *complete* when the fumigant has stopped being delivered/dispensed into the soil and the soil has been sealed.
- The duration of the Application Block Period and the Spray Buffer Zone Period is outlined in the **Application Block Period and Notification** and **Spray Buffer Zone Requirements** sections of this label.

In addition, only fumigant handlers can perform tasks with potential for contact with liquid fumigant including:

- cleaning up fumigant spills;
- handling or disposing of fumigant containers, and
- cleaning, handling, adjusting, or repairing the parts of fumigation equipment that contain fumigant residues.

All fumigant handlers, emergency personnel, and local, provincial or federal officials must wear the appropriate personal protective equipment outlined in the **PRECAUTIONS, Personal Protective Equipment** section of this label.

At least two fumigant handlers must be present at all times to monitor one another.

APPLICATION BLOCK PERIOD AND NOTIFICATION

Application Block Period

Entry into the application block by any person (other than PPE-equipped handlers, emergency personnel, and local, provincial, or federal officials performing inspection, sampling, or other similar official duties) is PROHIBITED during the Application Block Period.

For all non-tarped applications, the Application Block Period begins at the start of application and expires 5 days after the application is complete.

For all tarped applications, the Application Block Period begins at the start of the application and expires a minimum of 5 days after application is complete, as specified in Table A below.

Table A Required Application Block Period following soil fumigation

IF	Tarps are not perforated within 14 days after application	**AND**	Tarps are not removed for at least 14 days after application	THE APPLICATION BLOCK PERIOD EXPIRES	5 days after application is complete
	Tarps are perforated within 14 days after application		Tarps are not removed for at least 14 days after application		48 hours after tarp perforation is complete (minimum 7 days[a])
			Tarps are removed within 14 days of application		after tarp perforation and removal is complete (minimum 5 days)

[a] Unless tarps were perforated or removed earlier than 5 days following application based on weather conditions (see **Tarp Perforation and/or Removal** section).

Notification

The applicator must verbally warn workers of the application. Fumigant Application signs must be posted on all entrances to the application block.

Fumigant Application signs must conform to the following requirements:

- The printed side of the sign must face away from the treated area toward areas from which people can approach.
- Signs must be clearly legible during entire posting period. The sign must be at least 35 cm by 25 cm in size, and made of substantial material that can be expected to withstand adverse weather conditions.
- Signs must be posted prior to the start of the application (but no sooner than 24 hours prior to application) and remain posted for the duration of the Application Block Period.
- Signs must be removed within 3 days after the end of the Application Block Period.
- The applicator is responsible for ensuring the Fumigant Application signs are removed.

The signs must contain the following information in ENGLISH and FRENCH:

- The “skull and crossbones” symbol
- “DANGER” (Letters must be at least 7 cm in height.)
- “Area under fumigation, DO NOT ENTER”
- “Chloropicrin Fumigant in USE”
- The date and time of fumigation
- The date and time the Application Block Period is over
- The name of the product
- Name, address, and telephone number of the applicator

RESPIRATORY PROTECTION AND STOP WORK TRIGGERS

The procedure outlined in Table B below must be followed to determine whether an air-purifying respirator is required, or if operations must cease.

The respiratory protection and stop work triggers outlined in Table B below apply to anyone present in the application block from the start of the application until the Application Block Period expires, or in the buffer zone during the Buffer Zone Period, including emergency personnel, and local, provincial or federal officials.

Table B Respiratory Protection and Stop Work Triggers

1.	If at any time any handler experiences **sensory irritation** (tearing, burning of the eyes or nose), when not wearing a respirator:	Then EITHER: An air-purifying respirator must be worn by all handlers who remain in the application block and surrounding buffer zone. In addition, air monitoring samples **for chloropicrin** must be collected at least every 2 hours in the breathing zone of a handler performing a representative handling task. OR Operations must cease and handlers not wearing an air-purifying respirator must leave the application block and surrounding buffer zone.
	Handlers can remove respirators or resume operations provided that:	Two consecutive breathing-zone samples taken at the handling site at least 15 minutes apart show that levels of chloropicrin have decreased to less than 0.15 ppm at the location where the irritation is first experienced, and Handlers do not experience sensory irritation.
2.	If at any time any handler experiences **sensory irritation** when wearing a respirator, OR an **air sample** is greater than or equal to **1.5 ppm**	Operations must cease and handlers must leave the application block and surrounding buffer zone.
	Handlers can resume work activities with air-purifying respirators provided that:	Two consecutive breathing zone samples for chloropicrin taken at least 15 minutes apart are less than 1.5 ppm at the location where irritation was first experienced, Handlers do not experience sensory irritation while wearing the air-purifying respirator, Respirator cartridges/canisters have been changed, and Air monitoring samples collected at least every 2 hours in the breathing zone of a handler performing a representative handling task continue to be less than 1.5 ppm.

	Handlers can resume work activities without air-purifying respirators provided that:	Two consecutive breathing zone samples for chloropicrin taken at the handling site at least 15 minutes apart show levels of chloropicrin have decreased to less than 0.15 ppm at the location where the irritation was first experienced, and Handlers do not experience sensory irritation.

FUMIGANT AIR MONITORING

When using monitoring devices to monitor air concentration levels, a direct reading detection device, such as a colorimetric device (for example, Matheson-Kitagawa, Draeger or Sensidyne) must be used. The devices must have a sensitivity of at least 0.15 ppm for chloropicrin.

When breathing zones samples are required, they must be taken outside respiratory protection equipment and within a 25 cm radius of the handler's nose and mouth.

When air monitoring samples must be collected in the breathing zone of a handler performing a representative task, the locations and handler activities sampled must represent the exposure occurring for each handler present in the application block.

TARP PERFORATION AND/OR REMOVAL

Tarps must be perforated (cut, punched, poked, or sliced) by mechanical methods, except for the following situations (where tarps can be perforated manually):

- At the beginning of each row when a coulter blade (or other device which performs similarly) is used on a motorized vehicle such as an ATV.
- In fields that are 0.4 hectare or less.
- During flood prevention activities

Tarps must not be perforated or removed until a minimum of 5 days (120 hours) have elapsed after the application is complete, unless a weather condition exists which necessitates early tarp perforation or removal, as follows:

- *Early tarp perforation following bedded applications*: Tarp perforation is allowed before the 5 days (120 hours) have elapsed for flood prevention activities.
- *Early tarp removal following broadcast applications*: Tarps may be removed before the required 5 days (120 hours) if adverse weather conditions have compromised the integrity of the tarp, provided that the compromised tarp poses a safety hazard. *Adverse weather* includes high wind, hail, or storms that blow tarps off the field and create a hazard, for example, tarps blowing into power lines and onto roads. A *compromised tarp* is a tarp that due to an adverse weather condition is no longer performing its intended function and is creating a hazard.
- If tarps are perforated within 14 days after the application is complete, tarp removal must not begin until at least 2 hours after tarp perforation is complete.
- If tarps are not perforated or removed within 14 days after application is complete, planting or transplanting may take place while the tarps are being perforated.

If tarps are perforated but not removed within 14 days after the application is complete, planting or transplanting must not begin until at least 48 hours after the tarp perforation is complete.

Additional Requirements for Broadcast Applications:

- Each tarp panel must be perforated.
- Tarp perforation must be completed before noon.
- Tarps must not be perforated if rainfall is expected within 12 hours.

MANDATORY GOOD AGRICULTURAL PRACTICES:

The following Good Agricultural Practices must be followed during all fumigant applications. Tarps (when tarps are used)

- A written tarp plan must be developed and included in the Fumigation Management Plan.
- Tarps must be installed immediately after the fumigant is applied to the soil.
- Once a tarp is perforated, the application is no longer considered tarped.
- Tarps must be checked regularly for damage, tears, and other problems.

Weather Conditions

The weather forecast must be checked by the applicator:

- on the day of, but prior to the start of the application, and
- if the application takes longer than 24 hours, on a daily basis.

DO NOT apply if light wind conditions (< 3 km/hr) are forecast to persist for more than 18 consecutive hours from the time the application starts until 48 hours after the application is complete.

DO NOT apply when a temperature inversion is occurring, or is predicted to occur within 48 hours after application is complete, as fumigant vapours may drift. Temperature inversions are weather conditions in which warm air sits above and traps cooler air near the Earth's surface. The resulting calm air masses at ground level traps vapour in a confined area and can move off-site in unpredictable directions. These conditions typically exist within an hour prior to sunset and continue past sunrise and may persist as late as noontime. Temperature inversions are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or smog. Their presence can also be identified by smoke from a ground source that flattens out below a ceiling layer and moves laterally in a concentrated cloud.

Apply only when the potential for drift to areas of human habitation or areas of human activity (such as houses, cottages, schools and recreational areas) is minimal. Take into account wind speed, wind direction, temperature, application equipment and sprayer settings

Soil Preparation

Soil must be properly prepared and, at the surface, generally be free of clods. The area to be fumigated must be tilled to a depth of 13 to 20 cm.

Field trash must be properly managed. Residue from a previous crop must be worked into the soil to allow for decomposition prior to fumigation. Little or no crop residue must be present on the soil surface. Crop residue that is present must not interfere with the soil seal. Removing the crop residue prior to fumigation is important to limit the natural "chimneys" that occur in the soil when crop residue is present. These "chimneys" allow the soil fumigants to move through the soil quickly and escape into the atmosphere. This may create potentially harmful conditions for workers and bystanders and limit the efficacy of the fumigant. However, crop residue on the field serves to prevent soil erosion from both wind and water and is an important consideration. To accommodate erosion control, fumigant efficacy, and human health protection, clear fields of crop residue as close to the start of the application as possible to limit the length of time that the soil would be exposed to potentially erosive weather conditions.

Trash pulled by the shanks to the ends of the field must be covered with tarp or soil following application.

Soil Temperature

The soil temperature at the depth of injection must not exceed 32 °C at the beginning of the application. If air temperatures have been above 37 °C in any of the three days prior to application, then soil temperature must be measured and recorded in the Fumigation Management Plan. Record temperature at the application depth or 30 cm, whichever is shallower.

Soil Sealing

- *For Broadcast and Strip Untarped Applications:* Use a disc or similar equipment to uniformly mix the soil to at least a depth of 8-10 cm to eliminate the chisel or plow traces. Following elimination of the chisel trace, the soil surface must be compacted with a cultipacker, ring roller, or roller in combination with tillage equipment.
- *For Bedded Untarped Applications*: Preformed beds must be sealed by disruption of the chisel trace using press sealers, bed shapers, cultipackers, or by re-shaping (relisting, lifting and replacing, etc.) the beds immediately following injection. Beds formed at the time of application must be sealed by disrupting the chisel trace using press sealers, or bed shapers.
- *For Tarped Applications*: The use of a tarp does not eliminate the need to minimize chisel traces prior to application of the tarp, such as by using a nobel plow or other injection shank that disrupts the chisel traces.

Soil Moisture

Measure soil moisture at a depth of 20 cm at either end of the field, no more than 48 hours prior to the start of the application. The soil must be moist 20 cm below the surface. The amount of moisture needed in this zone will vary according to the soil type. Surface soil generally dries rapidly and must not be considered in this determination.

Soil moisture must be determined by one of the following methods:

- the United States Department of Agriculture (USDA) Feel and Appearance Method for testing (see Table C), or
- an instrument, such as a tensiometer.

Available water capacity must be equal or greater than 50%. If there is less than 50% available water capacity 20 cm below the surface, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 20 cm, soil moisture can be adjusted by discing or plowing before the start of the application. To conserve existing soil moisture, pretreatment irrigation or pretreatment tillage should be done as close to the time of application as possible.

Table C Overview of the USDA Feel and Appearance Method for Estimating Soil Moisture as Appropriate for Fumigant Application

Soil Texture	Soil Properties
Coarse textured soils (fine sand and loamy fine sand)	• soil is moist enough to form a weak ball with loose and clustered sand grains on fingers • darkened color • moderate water staining on fingers • will not ribbon

Soil Texture	Soil Properties

Moderately coarse textured soils (sandy loam and fine sandy loam)	• soil is moist enough to form a ball with defined finger marks • very light soil/water staining on fingers • darkened color • will not stick
Medium textured soils (sandy clay loam, loam, and silt loam)	• soil is moist enough to form a ball • very light staining on fingers • darkened color • pliable • forms a weak ribbon between the thumb and forefinger
Fine textured soils (clay, clay loam, and silty clay loam)	• soil is moist enough to form a smooth ball with defined finger marks • light soil/water staining on fingers • ribbons between thumb and forefinger

NOTE: For fields with more than one soil texture, soil moisture content in the lightest textured (most sandy) areas must comply with this soil moisture requirement. Whenever possible, the field should be divided into areas of similar soil texture and the soil moisture of each area should be adjusted as needed. Coarser textured soils can be fumigated under conditions of higher soil moisture than finer textured soils; however, if the soil moisture is too high, fumigant movement will be retarded and effectiveness of the treatment will be reduced. Previous and/or local experience with the soil to be treated or the crop to be planted can often serve as a guide to conditions that will be acceptable. If there is uncertainty in determining the soil moisture content of the area to be treated, a local extension service agent, soil conservationist, or pest control advisor (agriculture consultant) should be consulted for assistance.

Application Depth

- *For Tarped Applications:* The injection point must be a minimum of 20 cm from the nearest final soil/air interface.
- *For Untarped-Bedded Applications*: The injection point must be a minimum of 30 cm from the nearest final soil/air interface.
- *For Untarped-Broadcast and Strip Applications*: The injection point must be a minimum of 25 cm from the nearest final soil/air interface.
- *For Untarped-Broadcast Deep Applications*: The injection point must be a minimum of 45 cm from the nearest final soil/air interface.

Prevention of End Row Spillage

Do not apply or allow fumigant to spill onto the soil surface. For example, this can be achieved by each injection line either having a check valve located as close as possible to the final injection point, or by draining/purging the line of any remaining fumigant prior to lifting injection shanks from the ground.

GENERAL INFORMATION

CHLOROPICRIN 100 LIQUID SOIL FUMIGANT is a preplant fumigant for early season control of root knot and root lesion nematodes and soil-borne diseases caused by *Phytophthora* spp. (eg. black shank), *Thielaviopsis* spp. (eg. black root-rot), *Fusarium* spp. and *Pythium* spp.

PRIOR TO APPLICATION

Prior to application, the soil should be in condition for planting and with sufficient moisture to support seed germination.

METHOD OF APPLICATION

BROADCAST APPLICATION

Apply CHLOROPICRIN 100 LIQUID SOIL FUMIGANT by means of chisels spaced no more than 30 cm apart.

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests. DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes. DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. DO NOT apply to areas adjacent to fields where valuable crops are growing nor adjacent to buildings occupied by humans or livestock.

For details on application depth and soil sealing, refer to **Mandatory Good Agricultural Practice**s and **Tarp Perforation and/or Removal** sections in this label.

RECOMMENDED RATE - PREPLANT SOIL FUMIGATION

TOBACCO, STRAWBERRIES, RASPBERRIES, TOMATOES, PEPPERS AND POTATOES

Land to be planted to	**Litres product per hectare**	**Method of application**
Tobacco	93	Broadcast or banded*
Strawberries and raspberries	93	Broadcast only
Tomatoes and peppers	93	Broadcast or banded *
Potatoes	55	Banded* only

* For banded applications, the broadcast equivalent application rate must be calculated to determine the buffer zone distance required by this label. The broadcast equivalent application rate relates to the rate of fumigant applied within the entire perimeter of the application block. Refer to **Calculating the Broadcast Equivalent Application Rate** section in this label.

STRAWBERRY RUNNER PRODUCTION

Land to be planted to	**Litres product per hectare**	**Method of application**
Strawberry runner	140	Broadcast tarped only

AFTER APPLICATION

Leave the soil undisturbed for 10 to 14 days. Wet soil retards diffusion of the fumigant, thus requiring a longer exposure period. At the end of the exposure period, aerate the soil by ploughing or deep cultivation. If heavy rains accompanied by low temperatures occur during the exposure period, working the soil several times is essential for thorough aeration. Aerate for at least 5 days after opening row.

Safety Germination Test

- The following test can be carried out to establish when it is safe to use any soil following treatment.
- Take a minimum of six random samples from the treated area. For large areas, take 15 samples for each hectare. These samples must be representative of the whole area and the depth of soil treated. Where the area treated is large, the samples may be bulked, then well-mixed and re-sampled. Samples should be taken down to the depth at which incorporation was made.
- Put the soil into glass jars or similar non-porous containers. These should be about half filled. Level the soil, moisten if necessary, add moistened cotton pads or filter paper and

sprinkle with cress seed. Carefully seal the top of the jars with screw tops or polyethylene held on with rubber band. Prepare a similar test sample using untreated soil. Place the jars in a warm room where germination should occur in approximately 48 hours, at which time they should be checked. Residues of the product are still present if there is any suppression of germination or discolouration of sprouting cress in the treated soil when compared with the untreated sample. In that case, the time before planting should be extended for a further few days. An additional aeration may help speed up removal of the gases from the soil.

- Repeat the Safety Germination Test until the cress seeds germinate evenly in all the jars. It is then safe to plant in the soil.

Note: Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertilizer and fumigant are applied to soils that are cold, wet, acid or high in organic matter. TO AVOID INJURY TO PLANT ROOTS, FERTILIZE AS INDICATED BY SOIL TESTS MADE AFTER FUMIGATION. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic soils, do not use fertilizers containing ammonium salts. Use only fertilizers containing nitrates until after the crop is well established and the soil temperature is above 18°C (65°F). In mineral soils, do not apply more than 2/3 of the total nitrogen requirements for the crop from fertilizers containing ammonium salts until the crop is well established and the soil temperature is above 18°C (65°F). Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

The DIRECTIONS FOR USE for the uses described in this section of the label were developed by persons other than TriEst Ag Group, Inc under the User Requested Minor Use Label Expansion program. For these uses, TriEst Ag Group, Inc. has not fully assessed performance (efficacy) and/or crop tolerance (phytotoxicity) under all environmental conditions or for all crop varieties when used in accordance with the label. The user should test the product on a small area first, under local conditions and using standard practices, to confirm the product is suitable for widespread application.

GENERAL INFORMATION

CHLOROPICRIN 100 LIQUID SOIL FUMIGANT is a pre-plant fumigant for early season control of root knot and root lesion nematodes and soil-borne diseases caused by *Phytophthora* spp., *Fusarium* spp., *Pythium* spp. , and *Thielaviopsis* spp. in fields to be planted to root and tuber vegetables, bulb vegetables, cucurbit vegetables, stalk, stem and leaf petiole vegetables, pome fruit, stone fruit, forest nurseries , outdoor ornamentals, Field-Grown cannabis and Hemp. CHLOROPICRIN 100 LIQUID SOIL FUMIGANT will also control *Phytophthora* spp. and *Thielaviopsis* spp. on cucurbit vegetables and pink root on onions.

PRIOR TO APPLICATION

Prior to application, the soil should be in condition for planting and with sufficient moisture to support seed germination.

METHOD OF APPLICATION

BROADCAST APPLICATION

- Apply CHLOROPICRIN 100 LIQUID SOIL FUMIGANT by means of chisels spaced no more than 30 cm apart.
- As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests. DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes. DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. DO NOT apply to areas adjacent to fields where valuable crops are growing nor adjacent to buildings occupied by humans or livestock.
- For details on application depth and soil sealing, refer to ***Mandatory Good Agricultural Practices*** and ***Tarp Perforation and/or Removal*** sections in this label.

RECOMMENDED RATES -- PREPLANT SOIL FUMIGATION

Land to be Planted to	Litres product per hectare	Method of application
Root and Tuber Vegetables (CG1) (except potatoes)	93	Broadcast or banded*
Bulb Vegetables (CG 3-07)	93	Broadcast or banded*
Onions (pink root control)	93 – 140**	Broadcast or banded*
Cucurbit Vegetables (CG 9) (*Phytophthora* and *Thielaviopsis*)	93	Broadcast or banded*
Stalk, stem and leaf petiole vegetables (CG 22)	93	Broadcast or banded*
Outdoor Ornamentals	93	Broadcast only
Forest Nurseries	93	Broadcast only
Pome Fruit (CG 11)	93 - 140	Banded application only
Stone Fruit (CG 12)	93 - 140	Banded application only
Field-grown Cannabis and Hemp	93	Broadcast or banded

*For banded applications, the broadcast equivalent application rate must be calculated to determine the spray buffer zone distance required by this label. The broadcast equivalent application rate relates to the rate of fumigant applied within the entire perimeter of the application block. Refer to ***Calculating the Broadcast Equivalent Application Rate*** section in this label.

** Use the lower rate when there is a history of low disease pressure in the field.

AFTER APPLICATION

Leave the soil undisturbed for 10 to 14 days. Wet soil retards diffusion of the fumigant, thus requiring a longer exposure period. At the end of the exposure period, aerate the soil by plowing or deep cultivation. If heavy rains accompanied by low temperatures occur during the exposure period, working the soil several times is essential for thorough aeration. Aerate for at least 5 days after opening row.

SAFETY GERMINATION TEST

The following test can be carried out to establish when it is safe to use any soil following treatment.

- Take a minimum of six random samples from the treated area. For large areas, take 15 samples for each hectare. These samples must be representative of the whole area and the depth of soil treated. Where the area treated is large, the samples may be bulked, then well-mixed and re-sampled. Samples should be taken down to the depth at which incorporation was made.
- Put the soil into glass jars or similar non-porous containers. These should be about half filled. Level the soil, moisten if necessary, add moistened cotton pads or filter paper and sprinkle with cress seed. Carefully seal the top of the jars with screw tops or polyethylene held on with rubber band. Prepare a similar test sample using untreated soil. Place the jars in a warm room where germination should occur in approximately 48 hours, at which time they should be checked. Residues of the product are still present if there is any suppression of germination or discolouration of sprouting cress in the treated soil when compared with the untreated sample. In that case, the time before planting should be extended for a further few days. An additional aeration may help speed up removal of the gases from the soil.
- Repeat the Safety Germination Test until the cress seeds germinate evenly in all the jars. It is then safe to plant in the soil.

NOTE: Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertilizer and fumigant are applied to soils that are cold, wet, acid or high in organic matter. TO AVOID INJURY TO PLANT ROOTS, FERTILIZE AS INDICATED BY SOIL TESTS MADE AFTER FUMIGATION. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic soils, do not use fertilizers containing ammonium salts. Use only fertilizers containing nitrates until after the crop is well established and the soil temperature is above 18 °C (65 °F). In mineral soils, do not apply more than 2/3 of the total nitrogen requirements for the crop from fertilizers containing ammonium salts until the crop is well established and the soil temperature is above 18 °C (65 °F). Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

SPRAY BUFFER ZONE REQUIREMENTS

A spray buffer zone must be established for every fumigant application. A spray buffer zone is an area established around the perimeter of each application block. The following describes the spray buffer zone requirements:

- The spray buffer zone must extend outward from the edge of the application block perimeter equally in all directions.
- The Spray Buffer Zone Period begins at the start of the application and lasts for a minimum of 48 hours after the application is complete.
- Only fumigant handlers, emergency personnel, and local, provincial, or federal officials performing inspection, sampling, or other similar official duties may be in the buffer zone during the Spray Buffer Zone Period.
- All non-handlers, including field workers, nearby residents, pedestrians, and other bystanders, must be excluded from the buffer zone during the Buffer Zone Period except for transit (i.e. vehicular and bicycle traffic) through the buffer zone.

Spray Buffer Zone Proximity

Before the start of the application, the applicator must determine whether the spray buffer zone will overlap any other chloropicrin spray buffer zone(s).

To reduce the potential for off-site movement from multiple fumigated fields, spray buffer zones from multiple chloropicrin application blocks must not overlap UNLESS a minimum of 12 hours have elapsed

from the time the earlier application(s) is complete until the start of the latter application.

Spray Buffer zones must not include buildings used for storage (such as sheds, barns, garages) UNLESS these buildings are not occupied during the Spray Buffer Zone Period and do not share a common wall with an occupied structure.

Spray Buffer zones must not include residential areas (for example, employee housing, private property), buildings (for example, commercial, industrial), outdoor residential areas (for example, lawns, gardens, play areas) and other areas that people may occupy, UNLESS:

- the occupants provide written agreement, prior to the start of the application, that they will voluntarily vacate the buffer zone during the entire Spray Buffer Zone Period, and
- re-entry by occupants and other non-handlers must not occur until:
  - the Spray Buffer Zone Period has ended, and
  - no sensory irritation (tearing, burning of the eyes or nose) is experienced upon re-entry.

Spray Buffer zones must not include agricultural areas owned/operated by persons other than the owner/operator of the application block, UNLESS:

- the owner/operator of the application block can ensure that the spray buffer zone will not overlap with a spray buffer zone from any adjacent property owners, except as provided for above, and
- the owner of the other property provides written agreement that they, their employees, and other persons will stay out of the buffer zone during the entire Spray Buffer Zone Period.

Spray Buffer zones must not include public or private roadways and rights of way UNLESS:

- the area is not occupied during the Spray Buffer Zone Period, and
- entry by non-handlers is prohibited during the Spray Buffer Zone Period, except for transit (i.e. vehicular and bicycle traffic) through the spray buffer zone.

IMPORTANT: Spray buffer zones are not permitted to include bus stops or other locations where persons wait for public transit.

Spray buffer zones must not include any other publicly owned and/or operated areas such as parks, sidewalks, permanents walking paths, playgrounds and athletic fields UNLESS:

- the area is not occupied during the Spray Buffer Zone Period,
- entry by non-handlers is prohibited during the Spray Buffer Zone Period, and
- written permission to include the public area in the spray buffer zone is granted by the appropriate provincial/territorial and/or local authorities responsible for management and operation of the area.

<u>Restrictions for Difficult to Evacuate Sites</u>

Difficult-to-evacuate sites include schools (preschool to grade 12), provincial/territorial-licensed daycare centers, nursing homes, assisted living facilities, hospitals, in-patient clinics, and prisons.

No fumigant application with a spray buffer zone greater than 90 metres is permitted within 400 metres of difficult to evacuate sites unless the site is not occupied by children, students (preschool to grade 12), patients, or prisoners during the application and the 36-hour period following the end of application.

No fumigant application with a spray buffer zone of 90 metres or less is permitted within 200 metres of the difficult to evacuate sites unless the site is not occupied during the application by children, students (preschool to grade 12), patients, or prisoners and the 36-hour period following the end of application.

<u>Posting Requirements for Spray Buffer Zones</u>

Posting of Spray Buffer Zone signs is required unless there is a physical barrier that prevents bystander access to the buffer zone.

Spray Buffer Zone signs must be placed along or outside the perimeter of the spray buffer zone, at all usual points of entry and along likely routes of approach from areas where people not under the owner's control may approach the spray buffer zone.

- Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
- Some examples of likely routes of approach include, but are not limited to, the area between a spray buffer zone and a roadway, or the area between a buffer zone and a housing development.
- When posting, the applicator must ensure compliance with local/provincial laws and regulations.

Spray Buffer Zone signs must conform to the following requirements:

- The printed side of the sign must face away from the application block toward areas from which people could approach.
- Signs must be clearly legible during entire posting period. The sign must be at least 35 cm by 25 cm in size, and made of substantial material that can be expected to withstand adverse weather conditions.
- Signs must be posted prior to the start of the application (but no sooner than 24 hours prior to application) and remain posted until the Spray Buffer Zone Period has expired.
- Signs must be removed within 3 days after the end of the Spray Buffer Zone Period.
- The applicator is responsible for ensuring the Spray Buffer Zone signs are removed.

The Spray Buffer Zone signs must contain the following information in ENGLISH and FRENCH:

- The "Do not walk" symbol
- "DO NOT ENTER except for vehicular or bicycle traffic" (For "DO NOT ENTER", letters must be at least 7 cm in height.)
- "Chloropicrin CHLOROPICRIN 100 LIQUID Fumigant SPRAY BUFFER ZONE"
- The date and time the Spray Buffer Zone Period is over
- The name, address, and telephone number of the applicator
- Exception: If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks' spray buffer zones may be posted. Spray Buffer Zone signs must be posted no sooner than 24 hours prior to the start of the first application. The signs must remain posted until the last Spray Buffer Zone Period expires and signs must be removed within 3 days after the Spray Buffer Zone Period for the last block has expired.

CALCULATING THE BROADCAST EQUIVALENT APPLICATION RATE

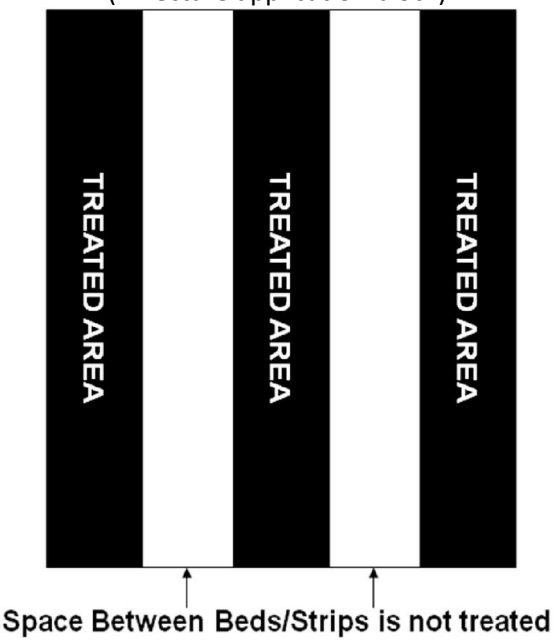
To calculate the broadcast equivalent rate for bedded or strip applications the following information is needed:

- litres of product per treated hectare
- strip or bed bottom width (cm)
- center-to-center row spacing (cm)
- application block size (hectares)

Litres of product **per treated hectare** is the ratio of total amount of product applied to the size of the total area treated (e.g., the rate of product applied in the bed.) For bedded or strip applications, the total area treated is the summation of the area (i.e., length x width) of each treated bed bottom or strip that is located within the application block as shown by the black areas in Figure 1 (for example, black areas are 0.6 ha or 60% of the area within the application block). The area of the space between the beds/strips is not factored in the total area treated.

The **application block size** is the area within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

Figure 1. Bedded/Strip Application
(1 hectare application block)

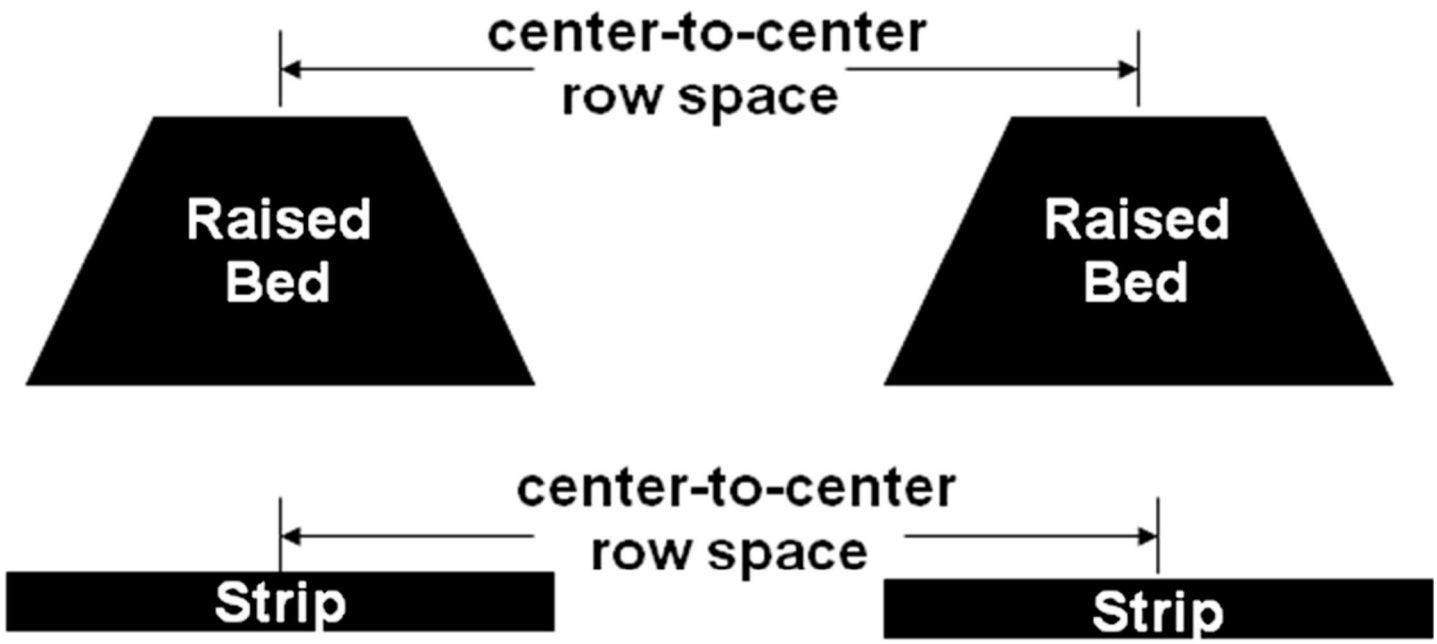


The "broadcast equivalent rate" must be calculated with the following formula:

$$\text{Broadcast equivalent rate (Litres of product/hectare)} = \frac{\text{strip or bed bottom width (cm)}}{\text{center-to-center row spacing (cm)}} \times \text{Litres of product per treated hectare applied in the strip or bed}$$

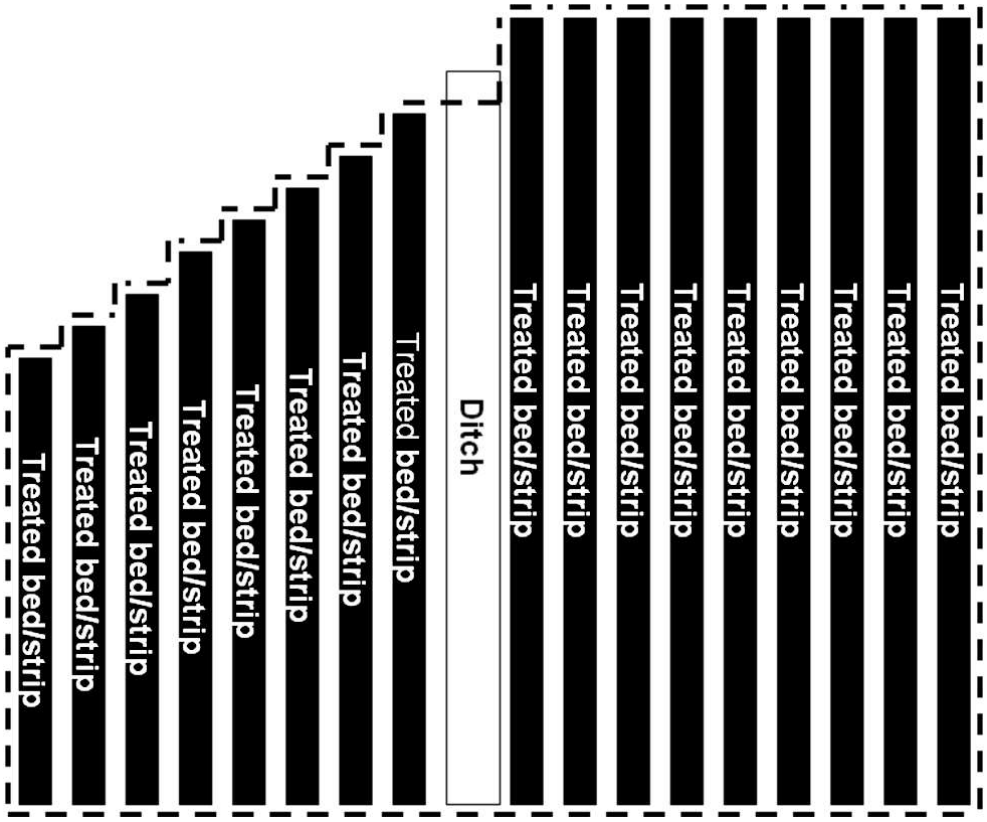
- The bed width must be measured from the bottom edge of the bed.
- The center-to-center row spacing must be calculated as shown in Figure 2.
- If there are any ditches, waterways, drive rows and other areas that are not fumigated that are in the application block, multiply the above broadcast equivalent equation by: **(total area of strips or beds + row spacing)/(application block size)**. A sample calculation is provided below.

Figure 2. Center Row Spacing



Sample broadcast equivalent rate calculation
Assumptions:

- Application method is shank bedded
- Bed width is 80 cm (measured at the bottom of bed)
- Center-to-center row spacing is 160 cm
- 93 litres of product per treated hectare is applied in the beds
- Total application block size is 4 hectares
- Ditch in the middle of application block is 0.1 hectare
- Area of beds plus row spacing is 3.9 hectares



$$\textbf{broadcast equivalent application rate (L product/ha)} = \frac{\text{bed width (cm)}}{\text{center-to-center row spacing (cm)}} \times \frac{\text{area of beds plus row spacing (ha)}}{\text{application block size (ha)}} \times \text{L product/ha applied in the bed}$$

$$\textbf{broadcast equivalent application rate (L product/ha)} = \frac{80\text{ cm}}{160\text{ cm}} \times \frac{3.9\text{ ha}}{4.0\text{ (ha)}} \times 93\text{ L product/ha}$$

$$\textbf{broadcast equivalent application rate (L product/ha)} = 45\text{ L product/ha}$$

BUFFER ZONE DISTANCES

Buffer zone distances must be calculated based on the buffer zone look-up tables provided in this label, using the broadcast equivalent application rate (see **Calculating the Broadcast Equivalent Application Rate** section) and the size of the application block. Where applicable, round up to the nearest block size. Applications are prohibited for rates and block sizes that exceed what is presented in the buffer zone tables.

Eight (8) metres is the minimum buffer distance regardless of site-specific application parameters.

If the buffer zone distance, after applying all applicable buffer zone credits (see **Spray Buffer Zone Credits** section), is greater than 0.8 km (800 metres) then the application is prohibited.

Table D Buffer Zone Distances (Metres) for Strip Tarped Applications

Broadcast Equivalent Application Rate L prod /ha	Application Block Size (hectares)																					
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
≤ 33	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	10	11	11
34-36	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	11	12	13	14	15
37-39	8	8	8	8	8	8	8	8	8	8	8	8	8	10	10	10	11	13	14	15	17	18	19
40-42	8	8	8	8	8	8	8	8	8	8	8	8	8	10	11	16	17	19	20	22	24	25	27
43-45	8	8	8	8	8	8	8	8	8	8	8	8	8	11	14	19	23	26	31	34	36	39	41
46-48	8	8	8	8	8	8	8	8	8	8	8	8	8	12	16	23	31	36	40	43	47	50	53
49-51	8	8	8	8	8	8	8	8	10	10	11	15	18	22	26	34	39	42	46	50	54	58	61
52-54	8	8	8	8	8	8	8	10	10	12	15	21	27	32	36	40	45	49	54	58	63	67	72
55-60	8	8	8	8	8	8	8	10	11	15	18	28	37	41	46	50	55	60	64	70	75	80	85
61-63	8	8	8	8	8	10	11	13	16	20	25	35	46	51	57	60	66	71	76	83	89	95	102
64-66	8	8	8	8	8	12	15	20	25	29	33	44	54	61	68	73	79	85	91	99	107	114	122
67-69	8	8	8	8	8	14	20	27	34	38	42	52	62	71	79	85	93	100	106	115	124	133	142
70-72	8	8	8	8	8	17	25	34	43	47	51	61	71	81	90	100	109	117	125	135	145	156	166
73-76	8	8	10	10	10	21	31	40	48	52	57	67	78	86	94	109	119	128	136	148	159	170	182
77-79	8	8	10	11	12	25	37	45	54	58	62	73	85	91	97	119	130	139	148	161	173	185	198
80-85	8	8	11	13	15	29	43	51	59	63	68	80	92	96	101	128	140	151	160	174	187	200	213
86-88	8	8	12	16	18	33	47	56	64	69	73	86	99	104	110	138	151	162	172	186	201	215	229
89-91	8	8	14	19	22	36	50	60	70	75	79	93	106	115	124	147	161	173	184	199	215	230	245
92-93	8	8	15	23	27	40	53	64	75	80	85	99	114	125	137	157	171	184	196	212	228	245	261

Table E Buffer Zone Distances (Metres) for Bed Tarped Applications

Broadcast Equivalent Application Rate L prod/ha	Application Block Size (hectares)																						
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
≤ 51	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	11	13	14
52-54	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	16	19	20	22	23	25
55-61	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	13	19	24	29	32	34	37	39
62-64	8	8	8	8	8	8	8	8	8	8	8	8	8	13	17	23	29	37	45	48	52	56	59
65-67	8	8	8	8	8	8	8	8	8	8	8	8	8	17	26	33	39	49	60	65	70	75	80
68-70	8	8	8	8	8	8	8	8	8	8	8	14	20	29	38	44	50	59	68	74	80	85	91
71-73	8	8	8	8	8	8	8	8	8	8	8	20	31	40	49	55	61	69	77	83	89	96	102
74-76	8	8	8	8	8	8	8	8	8	14	20	42	48	56	65	71	77	87	97	105	113	121	129
77-79	8	8	8	8	8	8	8	8	13	22	29	45	52	62	73	79	84	95	106	114	123	132	141
80-85	8	8	8	8	8	8	8	8	19	29	39	48	55	68	81	87	92	103	115	124	134	143	153
86-88	8	8	8	8	8	8	8	17	24	34	44	58	65	77	90	97	103	119	134	145	156	167	178
89-91	8	8	8	8	8	8	8	26	29	39	49	68	74	86	98	106	115	134	153	166	178	191	204
92-93	8	8	8	8	8	8	16	32	35	44	55	71	77	92	106	114	122	141	161	174	187	201	214

Table F Buffer Zone Distances (Metres) for Non-Compacted Bed and Strip Untarped Applications[a]

Broadcast Equivalent Application Rate L prod /ha	Application Block Size (hectare)																					
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
≤ 27	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	13	16	19	23
28-30	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	23	25	27	29	31
31-33	8	8	8	8	8	8	8	8	8	8	8	8	13	20	28	29	29	37	45	49	53	57	60
34-36	8	8	8	8	8	8	8	8	8	8	8	8	17	33	48	49	51	59	68	73	79	84	90
37-39	8	8	8	8	8	8	8	8	8	13	17	27	33	45	58	61	64	70	77	83	89	96	102
40-42	8	8	8	8	8	8	8	8	8	19	26	46	49	58	68	72	77	81	86	93	100	107	114
43-45	8	8	8	8	8	8	8	17	20	31	37	56	59	68	77	87	97	107	116	126	136	145	155
46-48	8	8	8	8	8	8	8	25	31	43	48	66	69	78	87	103	118	132	147	159	171	183	196
49-51	8	8	8	8	8	14	29	39	46	61	66	74	84	100	115	130	145	159	173	187	201	216	230
52-54	8	8	8	8	8	21	38	48	56	69	74	85	101	116	130	145	161	173	186	201	217	232	247
55-61	8	8	8	8	8	28	46	57	66	77	81	97	118	132	145	161	176	187	199	215	232	248	265
62-64	8	8	10	14	17	36	52	62	71	82	90	107	132	147	162	176	190	204	218	236	254	272	290
65-67	8	8	12	21	25	43	57	68	77	87	98	118	147	163	179	192	205	221	237	256	276	296	315
68-70	8	8	14	25	30	47	61	73	86	97	107	128	156	174	193	207	222	237	252	273	294	315	336
71-73	8	8	15	29	36	51	66	78	95	107	116	138	165	186	206	223	240	253	267	289	312	334	356
74-76	8	8	16	32	40	61	77	95	107	122	133	150	176	199	221	237	253	274	295	319	344	368	393
77-79	10	11	21	37	45	65	82	101	112	128	139	163	186	207	229	244	259	283	308	333	359	384	410
80-85	10	15	26	42	49	69	87	107	116	133	145	176	196	216	237	250	264	292	321	347	374	401	427
86-88	13	18	31	46	53	74	93	113	127	141	157	187	202	227	252	266	281	305	330	357	385	412	439
89-91	14	22	36	50	57	80	98	118	138	148	168	199	208	237	267	282	298	318	339	367	395	423	452
92-93	14	23	39	53	61	84	103	124	143	156	173	204	223	249	275	296	317	333	349	378	407	436	465

[a] The Buffer Zone Distance for compacted beds (i.e. compacted at the time of application in one pass) untarped applications is 8 metres.

Table G Buffer Zone Distances (Metres) for Broadcast Tarped Applications

Broadcast Application Rate L prod /ha	Application Block Size (hectare)																						
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
93	8	8	8	8	8	16	24	28	32	36	41	51	60	68	75	82	89	95	101	109	118	126	135
140	11	18	31	41	46	57	67	77	87	101	115	129	143	156	170	182	194	206	217	235	253	271	289

Table H Buffer Zone Distances (Metres) for Broadcast Untarped Applications

Broadcast Application Rate L prod /ha	Application Block Size (hectare)																						
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
93	22	50	81	98	106	138	169	199	229	254	279	317	356	401	446	481	517	552	587	636	685	734	783

Table I Buffer Zone Distances (Metres) for Broadcast Deep (46 cm) Untarped Applications

Broadcast Application Rate L prod /ha	Application Block Size (hectare)																						
	0.5	1	2	3	4	6	8	10	12	14	16	20	24	28	32	36	40	44	48	52	56	60	64
93	16	33	55	69	76	101	125	146	167	184	201	232	264	292	321	333	345	357	370	400	431	462	493

SPRAY BUFFER ZONE CREDITS

The buffer zone distances (from the buffer zone look-up tables) for chloropicrin applications can be reduced by the percentages listed in Table J, if the conditions outlined below are met. Credits may be added, but cannot exceed 80%.

IMPORTANT: The buffer zone distance is a minimum of 8 metres regardless of the buffer zone credits available.

Table J Spray Buffer Zone Credits and Conditions

Credit Type	Spray Buffer Zone Distance	Condition
Tarp	20-60 %	See www.tarpcredits.epa.gov for a list of tarps that have been tested and determined by the US EPA to qualify for buffer reduction credits. Only tarps listed on this website qualify for buffer reduction credits.
Potassium thiosulfate	15%	If potassium thiosulfate (KTS) is applied at a minimum rate of 335 kg/ha.
Water seals	15%	If 0.6 to 1.3 cm of water is applied.
Soil organic content	10%	If the organic content of soil in the application block is ≥1%-2%.
	20%	If the organic content of the soil in the application block is >2%- 3%.
	30%	If the organic content of the soil in the application block is >3%.
Soil temperature	10%	If the soil temperature is measured to be 10 °C or less, temperature measurements must be recorded at the application depth or at a soil depth of 30 cm, whichever is shallower.
Soil clay content	10%	If the clay content of the soil in the application block is greater than 27%.

Examples of spray buffer calculation if a credit is applicable

If the spray buffer zone is 15 metres, and the application qualifies for a spray buffer zone reduction credit since the soil organic content is 1.5%, then the spray buffer zone can be reduced by 10% (i.e. reduced by 1.5 metres based on the following calculation: 15 metres – [15metres x 10%] = 13.5 metres).

If the spray buffer zone is 15 metres, and the application qualifies for two spray buffer zone credits since the soil organic content is 1.5% and the clay content is greater than 27%, then the spray buffer zone can be reduced by 20% (10% organic content credit + 10% clay content credit), i.e. reduced by 3 metres based on the following calculation 15 metres - (15 metres x 20%) = 12 metres.

EMERGENCY PREPAREDNESS AND RESPONSE MEASURES

If the spray buffer zone is 8 metres, then the Emergency Preparedness and Response Measures are not applicable.

If any of the conditions outlined in Table K apply, **either** the directions for Fumigant Site Monitoring **or** the directions for Response Information for Neighbours must be followed:

Table K Triggers for Emergency Preparedness and Response Measures

The Emergency Preparedness and Response Measures are triggered if	Spray Buffer zone distance is		Residences and businesses are located
	>8 to ≤ 30 m	and	Within 15 m from the outer edge of the spray buffer zone
	>30 to ≤ 60 m		Within 30 m from the outer edge of the spray buffer zone
	>60 to ≤ 90 m		Within 90 m from the outer edge of the spray buffer zone
	>90 m or if spray buffer zone overlaps another chloropicrin buffer zone		Within 90 m from the outer edge of the spray buffer zone

Fumigation Site Monitoring

From the start of the fumigant application until the Spray Buffer Zone Period expires, the applicator must monitor for sensory irritation (tearing, burning of the eyes or nose) in areas between the spray buffer zone outer perimeter and residences and businesses that trigger this requirement.

Monitoring for sensory irritation must begin in the evening on the day of application and continue until the Buffer Zone Period expires. Monitor a minimum of 8 times during the Buffer Zone Period, including these periods:

- one (1) hour before sunset,
- during the night,
- one (1) hour after sunrise, and
- during daylight hours.

Implement the emergency response plan stated in the Fumigation Management Plan immediately if a handler conducting air monitoring experiences sensory irritation.

Response Information for Neighbours

The applicator must ensure that residences and businesses that trigger the requirement have been provided the response information at least **1 week** before the application starts. The information provided may include application dates that range no more than **4 weeks**. If the application does not occur when specified, the information must be delivered again.

The response information must include:

- The location of the application block.
- The fumigant(s) applied including the active ingredient, name of the fumigant product(s), and the Product Registration Number.
- Contact information for the applicator and property owner/operator.
- Time period in which the fumigation is planned to take place.
- Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and who to call if you believe you are being exposed (911 in most cases).
- How to find additional information about fumigants.

The method used to share the response information for neighbours can be accomplished through mailings, door hangers, or other methods that will effectively inform people in residences and businesses within the required distance from the edge of the buffer zone.

EMERGENCY RESPONSE PLAN

The applicator must include in the Fumigation Management Plan a written emergency response plan that identifies:

- evacuation routes,
- locations of telephones,
- contact information for first responders,
- local and provincial health and environment authorities, and
- emergency procedures/responsibilities (for example, adding water to the field, repairing tarps, fixing equipment, evacuating upwind) if:
  - there is an incident,
  - sensory irritation is experienced outside of the buffer zone, and/or
  - there are equipment/tarp/seal failure or complaints, or other emergencies.

HANDLING

- The valve protection bonnet and safety cap should be removed only when fumigant is about to be removed from the cylinder. The safety cap and valve protection bonnet must be replaced when the cylinder is not in use.
- Cylinders should never be subjected to rough handling or to abnormal mechanical shock such as dropping, bumping, dragging or sliding.
- Ropes, slings, hooks, tongs and similar device to which the cylinders can be firmly secured should be used for transporting the heavier cylinders.

SPILL OR LEAK PROCEDURE

- Evacuate everyone from the immediate area of the spill or leak.
- Only those people identified under the Handler Restrictions section of this label are permitted to enter the affected area to correct a problem and clean-up.
- Wear the personal protective equipment (including a respirator) specified in the Personal Protective Clothing and Equipment section of this label.
- Move leaking or damaged containers outdoors or to an isolated location.
- Observe strict safety precautions.
- Work upwind, if possible.
- Allow spilled fumigant to evaporate or to absorb onto vermiculite, dry sand, earth or similar absorbent material. Such material should be disposed of on site or at an approved disposal facility.
- Do not permit entry into the spill or leak area by any person until two consecutive breathing- zone samples taken at least 15 minutes apart show that levels of chloropicrin have decreased to less than 0.15 ppm and no sensory irritation is experienced.

STORAGE

Store container tightly closed and away from seeds, feeds, fertilizer, plants and foodstuffs, in a cool, dry, well-ventilated building.

DISPOSAL

- CONTAINER: DO NOT reuse this container for any purpose. For disposal, this empty container may be returned to the point of purchase (distributor/dealer).
- PRODUCT: 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.
- CYLINDERS: When cylinder is empty, close valve, screw safety cap onto valve outlet and replace protection bonnet before returning to shipper. Only the registrant or his designee is authorized to refill cylinders. Do not use cylinders for any other purpose. Return empty cylinders, freight prepaid, to the

TriEst Ag Group, Inc. location from which shipment was made. Do not ship cylinders without safety caps or valve protection bonnets. When a cylinder is partially full and there is no further requirement for the product, contact the company for return instructions.

T.D.G.A. SHIPPING DIRECTIONS

Shipping of full cylinders must be accompanied by a Dangerous Goods Bill of Lading with the proper shipping name: CHLOROPICRIN 100 LIQUID SOIL FUMIGANT, Hazard Class 6.1, UN 1580, Poison/Inhalation Hazard, Hazard Zone B. Any quantity requires placarding. Return of empty cylinders must be accompanied by a Bill of Lading with the proper shipping name: Empty Void Last Contained Class 6.1 UN 1580. Note: Full or empty containers of chloropicrin may not be transported in a passenger vehicle (car, van, etc.) where the passenger seating area is not separated from the pesticide storage area.

FUMIGATION MANAGEMENT PLAN

Prior to the start of application, the applicator must verify that a site-specific Fumigation Management Plan (FMP) exists for each application block.

The Fumigation Management Plan must be prepared by the applicator or the site owner/operator.

The applicator must verify in writing (sign and date) that the site-specific Fumigation Management Plan(s) reflects current site conditions before the start of the application.

The applicator must ensure the Fumigation Management Plan is at the application block during all handling activities.

In addition, the applicator must complete a Post-Application Summary within 30 days after the application is complete.

Instructions for Preparation of a Fumigation Management Plan

Each site-specific Fumigation Management Plan must contain the following elements:

1. Applicator information: name, phone number, certificate/license number, date of certification/licensing, specify if commercial or private applicator, employer name, and employer address.

2. General site information:
   - Application block location, address or global positioning system (GPS) coordinates.
   - Name, address, and phone number of owner/operator of the application block.
   - Map, aerial photo, or detailed sketch showing:
     - application block location,
     - application block dimensions,
     - spray buffer zones dimensions,
     - property lines,
     - roadways, rights-of-ways, sidewalks, permanent walking paths and bus stops,
     - nearby application blocks,
     - surrounding structures (occupied and non-occupied),
     - locations of Spray Buffer Zone signs, and
     - locations of difficult to evacuate sites with distances from the application site.

3. General application information:

- Target application date/window
- Fumigant product name of fumigant
- Product Registration Number

4. Tarp plan (if tarps are used):
- Schedule for checking tarps for damage, tears, and other problems
- Equipment/methods used to perforate tarps
- Target dates for perforating tarps
- Target dates for removing tarps

5. Soil Conditions:
- Description of soil texture and moisture in application block
- Method used to determine soil moisture
- Soil temperature measurements (only required if air temperatures were above 37ºC in any of the days prior to the application)

6. Spray Buffer zones:
- Application method
- Injection depth
- Application rate from the spray buffer zone look-up table on label
- Application block size from the spray buffer zone look-up table on label
- Buffer zone credits applied and measurements taken (if applicable)
- Buffer zone distance
- Description of areas in the buffer zone that are not under the control of the owner/operator of the application block. If buffer zones extend onto areas not under the control of the owner, the written agreement must be attached to the Fumigation Management Plan.

7. Details of the *Emergency Response Plan* as described in the Emergency Response Plan section of this label.

8. *Posting of Fumigant Treated Area and Spray Buffer Zone:*
- Person(s) who will post and remove (if different) Fumigant Treated Area and Spray Buffer Zone signs

9. *Emergency Preparedness and Response Measures (if applicable):*
- Fumigant site monitoring (if applicable):
  - When and where it will be conducted
- Response information from neighbours (if applicable):
  - List of residences and businesses informed
  - Name and phone number of person providing information
  - Method of providing the information

10. *Handler (including applicator) Information and Personal Protective Equipment:*
- Name, address and phone numbers of handlers
- Names, addresses, and phone numbers for employers of handlers
- Date of certification/licensing recognized by the provincial or territorial pesticide regulatory agency for each handler
- Applicable handler personal protective equipment.

11. *Air monitoring plan:*
- Indicate whether operations will cease, or continue with use of an air-purifying respirator, in the

case sensory irritation is experienced
- For monitoring the breathing zone:
  - representative handler tasks to be monitored
  - monitoring equipment to be used
  - timing of the monitoring

12. *Good Agricultural Practices (GAPs):*
- Identify applicable mandatory Good Agricultural Practices

13. *Pesticide product labels and material safety data sheets (MSDS) :*
- Ensure that pesticide product labels and material safety data sheets are on-site and readily available for employees to review.

Instructions for Preparation of Post-Application Summary

The Post-Application Summary must contain the following elements:

1. *Application Information*
   - Actual date and time of the application
   - Application rate
   - Size of application block

2. *Weather conditions*
   Summary of the weather during application and the 48-hour period after the application is complete, including:
   - wind speed, and
   - temperature inversion (if applicable).

3. *Tarp damage and repair information (if applicable):*
   - Date of tarp damage discovery
   - Location and size of tarp damage
   - Description of tarp, tarp seal and/or tarp equipment failure
   - Date and time of tarp repair completion

4. *Tarp perforation/removal details (if applicable):*
   - Date and time tarps were perforated
   - Date and time tarps were removed
   - Record if tarps were perforated and/or removed early (as per conditions specified on the label). Describe the conditions that caused early tarp perforation and/or removal.

5. *Complaint details (if applicable):*
   - Person filing complaint (for example, on-site handler, person off-site)
   - If off-site person, name, address, and phone number of person filing complaint
   - Description of control measures or emergency procedures followed after complaint

6. Description of *incidents, equipment failure, or other emergency and emergency procedures* followed (if applicable).

7. *Air monitoring results:*
   - When sensory irritation was experienced:
     - Date, time, location, and handler task/activity where irritation was observed

    - Resulting action (for example, implement emergency response plan, cease operations, continue operations with air-purifying respirators)
- When using a direct read detection device:
    - Sample date(s), time(s), location(s), and concentration(s)
    - Handler task/activity monitored (if applicable)
    - Resulting action (for example, cease operations, continue operations with air- purifying respirators)

8. *Fumigant Treated Area and Spray Buffer Zone Signs:*
    - Dates of posting and removal

9. *Deviations from the Fumigation Management Plan*
    - For example, changes in emergency response actions, changes in handler information, changes in handlers responsible for completing emergency tasks, and changes in communication between applicator, owner/operator, and other handlers.

Record keeping procedures

The owner/operator of the application block as well as the applicator must keep signed copies of the site-specific Fumigation Management Plan and the Post-Application Summary for 2 years from the date of application.