

# DANGEROUS POISON

**KEEP OUT OF REACH OF CHILDREN****READ SAFETY DIRECTIONS BEFORE OPENING OR USING**

# STRIKE60

## SOIL FUMIGANT

**ACTIVE CONSTITUENTS:****567 g/kg (801 g/L) CHLOROPICRIN****371 g/kg (525 g/L) 1,3-DICHLOROPROPENE**

**For the control of a wide range of soilborne diseases, plant parasitic nematodes, symphylans and wireworms, and for the suppression of weeds, as specified in the directions for use table**

**May be applied by drip irrigation or tyne equipment.**

**Supply of this product may be restricted by SUSMP Appendix J to persons authorised under relevant State legislation.**

**NET CONTENTS:****\_\_\_\_\_kg**

APVMA Approval No.: 80597/135300



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**HEALTHY FIELDS. HEALTHY YIELDS.****DIRECTIONS FOR USE:****RESTRAINTS**

DO NOT apply through drip irrigation systems without adequate dilution with irrigation water.

DO NOT use when soil temperature is below 10°C or above 27°C.

DO NOT treat soil when very wet or very dry at depth of fumigation.

DO NOT use transplants, tools, or move crop residues or soil (e.g., on clothing and footwear) that could carry pests from infested land onto treated areas.

DO NOT apply to non-tarped soil when applying through drip irrigation systems.

DO NOT fumigate more than once per crop.

**VAPOUR DRIFT RESTRAINTS**Specific definitions for terms used in this section of the label can be found at [www.apvma.gov.au/spraydrift](http://www.apvma.gov.au/spraydrift).

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from vapour drift. The buffer zones in the relevant buffer zone table below provide guidance but may not be sufficient in all situations.

DO NOT apply unless minimum distances between the application site and sensitive areas are observed (see 'Mandatory buffer zones' in the following table).

Mandatory buffer zones	
Aquatic areas	Vegetation areas
5 metres	1.5 metres

**Broadacre Equivalent Application Rates for the control of a wide range of soilborne diseases, plant parasitic nematodes, symphylans and wireworms, and for the suppression of weeds**

Crop	Pest	Soil Type	Broadacre Rates <sup>1</sup> kg/ha (L/ha)	Critical Comments
Vegetables, Field crops and Nursery crops	<b>Soilborne diseases</b> (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i> ); <b>Plant parasitic Nematodes</b> ;	Light to medium soils (e.g., coarse-textured sands, sandy loams and loams, and coarse-textured clay loams).	265-450 kg/ha <sup>2,3,4</sup> (187-310 L/ha) 26.5-45 g/m <sup>2</sup> of row	<b>Use the same rate for both irrigation applied and tyne applied treatments.</b>
Fruit and Nut crops including Strawberries	<b>Symphylans</b> (garden centipedes); <b>Wireworms</b> ; <b>Suppression of weeds</b> (see Footnote 3).	Use the higher rate for medium soils.  Product is not recommended for use on heavy soils (e.g., fine-textured clay loams and clays or soils with very high organic matter such as peats)		<b>Preplant treatment only:</b> At time of application, soil should be in good seed bed condition and generally free of large clods and undecomposed plant material.  <b>For application timing, soil conditions, soil preparation, placement of fumigant, and application methods and equipment:</b> See APPLICATION.
<b>Exposure period:</b> Leave soil undisturbed for at least 7 days after treatment.				
<b>Aeration period before planting:</b> Use a minimum of 21 days, although longer periods must be used under certain conditions (see also <b>Soil Fumigation Interval under APPLICATION</b> ).				

**Irrigation Dilution Rate:** Use from 600 mL up to 1.8 Litres of Strike 60 Drip in 1000 Litres of water (approx. 800 g to 2.4 kg of Strike 60 Drip in 1000 Litres of water). This approximates to an application rate of 500 to 1500 parts per million (ppm) of 1,3-dichloropropene in the irrigation water.  
**DO NOT exceed a concentration of 1.8 Litres (2.4 kg) Strike 60 Drip in 1000 Litres of water.**

- Rates given are broadacre equivalent. Based on the width of the area to be treated, reduce the broadacre rates proportionately or calculate on the amount needed per square metre. In no case should the amount applied per hectare exceed the maximum broadacre application rates (kg/ha or L/ha) given in the above table.
- For cyst-forming nematodes use the maximum rate.
- For control of apple replant diseases and for suppression of weeds, the maximum rate is recommended. Some weed species, e.g., nutgrass, may not be suppressed by Strike 60 Drip.
- For high disease pressure, use the maximum rate.

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.**

**THIS PRODUCT IS TOO HAZARDOUS FOR USE IN THE HOME GARDEN.**

**IN TASMANIA, THIS PRODUCT IS NOT TO BE SOLD OR USED WITHOUT A LICENCE FROM THE REGISTRAR OF PESTICIDES.**

**IN SOUTH AUSTRALIA, THIS PRODUCT IS NOT TO BE SOLD OR USED WITHOUT A LICENCE FROM THE HEALTH COMMISSION.**

**GENERAL INSTRUCTIONS**

Strike 60 Drip is a multi-purpose liquid fumigant for preplant treatment of cropland soil using either type application or a drip irrigation system. Strike 60 Drip should be used as part of a management programme involving rotation, resistant varieties, and other cultural practices designed to alleviate soilborne diseases, plant parasitic nematodes, wireworms and symphylans. Strike 60 Drip may also suppress some weeds.

**General Information - Tyne and Drip Irrigation Application Methods**

- Before fumigation, soil sampling for the type and number of pests present is recommended. In fields where pre-treatment soil samples indicate the presence of high population levels of soilborne nematodes, a successful fumigation cannot be expected to eradicate entire populations. Therefore, post-treatment sampling is recommended to determine the need for additional pest management practices.
- For best results, it may be necessary to treat soils planted to annual crops every year.
- Fumigation may temporarily raise the level of ammonium nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertiliser are applied to soils before fumigation, especially if the soils are cold, wet, acid or high in organic matter. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic soils, DO NOT use fertilisers containing ammonium salts and use only fertilisers containing nitrates, until after the crop is well established and the soil temperature is above 18°C. In low organic soils, do not apply more than 2/3 of the nitrogen requirements from fertilizers containing ammonium salts until the crop is well established and the soil temperature is above 18°C.
- Certain nursery crops such as citrus seedlings and vegetable crops such as cauliflower have shown evidence of phosphorus deficiency following fumigation. To avoid this possible effect, additional phosphate fertiliser (foliar applied) is recommended where experience indicates a deficiency may occur.
- No soil treatment will completely eradicate soil pests. Fumigation efficacy may vary due to weather, soil type and preparation, pest population density in and around the treated area, the presence of crop debris, and cultural practices following fumigation (among other reasons). For the best results, consult TriCal's Agronomists for their professional advice on rates and only use lower dose rates in conjunction with a soil testing program.

**APPLICATION****1. Information for Both Tyne and Drip Irrigation Applications****Placement of Fumigant**

Strike 60 Drip may be applied as either a broadacre (overall) or row treatment via shank application or by drip or trickle irrigation. Deeper placement is recommended when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests. The amount of water applied in drip irrigation treatments must be sufficient to ensure adequate wetting of the soil in the desired fumigation zone.

**Application Timing**

Strike 60 Drip can be applied at any time of the year when soil conditions permit. Conditions that allow rapid diffusion of the fumigant as a gas through the soil normally give best results. Strike 60 Drip does not provide residual control of soil pests and must be applied before planting each crop. Below are application guidelines and soil condition requirements required at the time of application. Failure to meet these conditions may result in unsatisfactory product performance.

**Soil Temperature**

Optimal temperatures for application are between 15°C and 25°C at the intended depth of fumigation.

**Soil Preparation**

The soil should be generally free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of Strike 60 Drip. Plant residues should be thoroughly incorporated into the soil prior to treatment to avoid interfering with application. Undecomposed plant material may harbour pests that will not be controlled by fumigation. Little or no crop residue should be present on the soil surface. Compacted soil layers within the desired treatment zone should be fractured before application of the fumigant. Deviation from the above conditions may result in unsatisfactory results.

**Recontamination Prevention**

Strike 60 Drip will control pests that are present in the soil treatment zone at the time of fumigation. It will not control pests that are introduced into soil after fumigation. To avoid reinfestation of treated soil, DO NOT use irrigation water, transplants,

seed pieces, or equipment that could carry soilborne pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from below the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully and ensure shoes and/or clothing are cleaned of soil before entering treated fields.

**Soil Fumigation Intervals**

- Exposure Period:** Leave the soil undisturbed for at least 7 days after application of the fumigant. A longer undisturbed interval is required if the soil becomes either cold or wetter than required and for deep-rooted tree, shrub and vine planting sites.
- Planting Interval:** To prevent phytotoxicity after the exposure period, make sure the fumigant has dissipated completely before planting the crop. Do not plant crops if the odour of Strike 60 Drip is present. Under optimal dissipation conditions, as occurs in warm, moist soil situations, allow 1 week for every 100 L/ha used with a minimum interval of 21 days following application before planting the crop unless an approved plant germination test verifies that the product has dissipated sufficiently to allow planting. A longer aeration period will be required if the soil is cold, wet or was "surface-sealed" under wet conditions and for deep-rooted tree, shrub and vine planting sites. Higher organic matter levels may also require a longer planting interval. Saturated, cool to cold soil can remain phytotoxic for a long period. Seed may be used as a bioassay to determine if Strike 60 Drip is present in the soil at concentrations sufficient to cause plant injury.

**2. Information for Drip Irrigation Applications ONLY****Calibration**

Calibration must be done in a manner that does not release Strike 60 Drip above the soil. Recommended methods are use of a flow meter or determining flow rate by dispensing an alternative fluid such as water or diesel fuel into collection cups. Apply Strike 60 Drip as a preplant application through surface or buried drip or trickle irrigation systems. All applications must be sealed with plastic fumigation tarp. The volume of water required must be sufficient to wet the soil to the depth required for treatment. Pre-irrigation may be needed to wet soil sufficiently. The use of a plastic tarp as mulch to cover beds during and after fumigation will improve efficacy of drip applications. The fumigant retention properties of plastic tarps vary and may affect results. Check with the tarp supplier regarding retention characteristics.

**Application Methods and Equipment**

Drip emitters should be spaced evenly apart and close enough to wet the entire bed. Planting should occur within the treated area.

**Step 1:** The irrigation system must be thoroughly checked for leaks before the start of the application. Leak detection requires that the irrigation system be at full operating pressure. Any leaks discovered during the pre-application check must be repaired prior to the start of the application.

**Step 2:** Pre-application priming of the beds with irrigation water 1-3 days before application will enhance the distribution of Strike 60 Drip. Moderate pre-irrigation may enhance coverage in very sandy soils, very dry conditions, or in soils with deep buried tape. Less pre-irrigation is generally needed for heavier soils.

**Step 3: Apply appropriate rate (see DIRECTIONS for USE) of Strike 60 Drip in enough water so that the soil moisture throughout the treatment zone, including near the soil surface, is at or near field capacity.** Strike 60 Drip must be metered into the water supply and should pass through a mixing device (such as a centrifugal pump or static mixer, coarse filter or fine strainer) to assure proper agitation before it is distributed into the drip irrigation line system. Do not exceed a concentration of 1.8 Litres (2.4 kg) of Strike 60 Drip in 1000 Litres of irrigation water. Do not allow treatment solution to accumulate on the soil surface. If ponding, puddling or run-off occurs, then 1) discontinue application immediately, and 2) cover with soil to absorb.

**Step 4:** After application of Strike 60 Drip, continue to irrigate the area with sufficient untreated water to flush the mixture from the irrigation system completely. Make sure any rigid PVC dead end or low spots are drained or flushed completely. Do not allow any Strike 60 Drip to remain in the irrigation system. Leave the soil undisturbed for at least 21 days; then proceed with normal crop management activities.

**Special Use Preparations for Chemigation Application Equipment**

- Apply this product only through surface or buried tape drip irrigation systems. Do not apply this product through any other type of irrigation system.
- Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact the distributor, equipment manufacturers, or other experts.
- Do not connect irrigation system used for pesticide application to a public water system unless the pesticide label prescribed safety devices for public water systems are in place.
- Do not apply this product through any other type of irrigation system except as described in the labelling.
- Only a person knowledgeable of the chemigation system and responsible for its operation, or a person under the supervision of the responsible person, shall operate the system and make necessary adjustments should the need arise.
- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent back flow contamination of the water source.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the chemical supply or injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, automatic valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain a functional interlock to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Injection system must use a metering pump, such as a positive displacement injection or diaphragm pump, venturi system, or a pressure-safe cylinder containing Strike 60 Drip equipped with a metering valve and flow meter. This equipment must be constructed of materials compatible with Strike 60 Drip and capable of being fitted with a system interlock.
- Strike 60 Drip should be injected into the centre of the irrigation water stream by using a suitable dip tube. This will prevent damage from undiluted fumigant contacting PVC pipe at the point of injection.

**3. Information for Tyne Applications ONLY****Soil Moisture**

It is critical to manage soil moisture properly before fumigation. Plan fumigation for seasons, crop rotations, or irrigation schedules which leave moisture in the soil. For fumigation depths of 40 to 45 cm (as for apple replants), the soil should be moist within a 40 cm radius upwards from the point of injection as determined by the feel method (see below). For all other applications - the soil must be moist from 5 cm below the soil surface to at least 30 cm deep as determined by the feel method (see below). The amount of moisture needed in this zone will vary according to soil type. The surface soil generally dries very rapidly and should not be considered in this determination. If there is insufficient moisture at the 5 cm to 15 cm depth, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 15 cm, it may be brought to the surface by disking or ploughing before or during the injection.

In general, no irrigation should immediately precede subsoiling or fumigation. However, when irrigation is available and surface soil moisture conditions are not likely to provide an adequate seal against fumigant loss, a very light sprinkler irrigation to wet the top 2.5 to 5 cm of soil may be used to bring soil moisture content to the desired level.

**The following descriptions will aid in determining acceptable soil moisture conditions by the "feel method".** For coarse soils (sand and loamy sand), there must be enough moisture to allow formation of a weak ball when compressed in the hand. Due to soil texture, this ball is easily broken with little disturbance. In loamy, or medium textured soils (coarse sandy loam, sandy loam and fine

sandy loam), a soil sample with the proper moisture content can be formed into a ball which holds together with moderate disturbance, but does not stick between the thumb and forefinger. Fine textured soils (clay loam, silt clay loam, sandy clay, silt clay, sandy clay loam and clay), should be pliable and not crumbly, but should not form a ribbon when compressed between the thumb and forefinger.

**Placement of Fumigant**

Strike 60 Drip may be applied as either a broadacre (overall) or row treatment. It should be placed at least 20 cm below the final soil surface, although placement to 30 cm below the final soil surface is recommended. Deeper placement is recommended when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

**Application Methods and Equipment**

Use equipment specifically designed for tyne application of fumigants to soil.

**Minimising End Row Spillage:** Product spillage at the end of rows should be minimised. An effective flow shutoff device must be used to prevent discharge of fluid at the end of rows. After shutting off flow, run tynes underground for 30 cm to limit spillage that may occur when the tyne is raised from the ground.

**Broadacre Application:** Choose application equipment that allows the deepest application and best soil seal under existing conditions. The fumigant outlet spacing varies with the type of application equipment used. **With tyne equipment:** a fumigant tyne spacing of 30 cm is recommended. The outlet spacing for this equipment may be up to 1½ times the application depth but generally should be equal to the application depth and should not exceed the soil-shattering capability of the tynes.

**Row Application (for row spacing greater than 60 cm):** Use tyne equipment to treat a band of soil where the crop is to be planted, i.e., the plant row. When multiple tynes per plant row are used, space the tynes (fumigant outlets) 20 to 30 cm. Regardless of the number or spacing of tynes used, the fumigant must be placed at least 30 cm from the nearest soil/air interface (e.g., furrow). To prevent seed germination problems caused by improper seed-to-soil contact or improper seeding depth, do not place the seed directly over the furrow left by the applicator tynes(s).

**Sealing the Soil after Application**

Immediately after tyne application of Strike 60 Drip, the soil must be "surface-sealed" to prevent fumigant loss and ensure that an effective concentration of fumigant is maintained within the soil for a period of several days. **For broadacre treatment (flat fumigation),** sealing can be accomplished with equipment that will uniformly mix the soil to a depth of 8 to 10 cm to effectively eliminate tyne or plough traces which can allow direct escape of the fumigant. A tandem disc or similar equipment may be used for this purpose. To improve sealing, the soil surface should be compacted with a ring roller or roller in combination with tillage equipment to further retard the rate of fumigant loss. Compaction of the soil surface alone does not effectively disrupt tyne or plough traces.

**For row treatment,** forming the beds at the time of application should be accomplished in a manner that places the fumigant at least 30 cm from the nearest soil/air interface (e.g., furrow). The closest soil/air interface could be the furrow for multiple tyne applications or the top of the beds for single tyne applications. Row treatments into pre-formed beds must be sealed by disrupting the tyne trace using press sealers, ring rollers, or by reforming the beds and following with such equipment.

To maximise sealing, apply un-perforated plastic film such as low-density polyethylene or virtually impermeable film (VIF) over the entire area or in strips. Use a film to seal the soil surface does not eliminate the need to eliminate tyne traces prior to application of the plastic film.

Proper soil conditions at the time of application (see **Soil Preparation**) are important to ensure proper placement of fumigant (see **Placement of Fumigant**) and obtaining adequate sealing. Prior tillage should be adequate to eliminate clods and thoroughly mix crop residues into the soil.

**4. After Fumigation with Either Drip Irrigation or Tyne Applications****CLEANING EQUIPMENT**

- Clean equipment of all soil or plant debris before using but DO NOT allow water to enter fumigant lines or containers.
- Since this product is corrosive under certain conditions, flush all application equipment with diesel oil or kerosene immediately after use. Dispose of flushing solution by incorporation into the treated field or by other means in accordance with appropriate State legislation.
- Fill pumps and meters with new motor oil or a 50% motor oil/diesel oil mixture before storing.

**PRECAUTIONS**

Signs or placards as follows must be prominently shown at all approaches to the fumigation site.

**"DANGER - KEEP OUT - POISONOUS GAS - FUMIGATION IN PROGRESS - KEEP AWAY"**

These signs should also include contractor's name and address plus "Poisons Information Centre, Phone: Australia 13 11 26".

Workers conducting any activity within 2 metres of unshielded, pressurised hoses containing Strike 60 Drip must wear the protective equipment as defined in the product's Safety Directions. Other workers in the general application area should wear normal work clothing and non-sparking rubber boots or overboots (not steel-capped).

DO NOT enter the fumigation risk area, where chloropicrin concentrations exceed 0.1 ppm (0.67 mg/m<sup>3</sup>) without appropriate personal protective equipment including cotton overalls buttoned to the neck and wrist, chemical-resistant gloves, chemical-resistant footwear (rubber boots or overboots, not steel-capped) and half-facepiece respirator with organic vapour cartridge plus goggles.

Flammable liquid and vapour. Toxic if swallowed. Fatal in contact with skin. Fatal if inhaled. May cause an allergic skin reaction. Causes serious eye damage. Causes severe skin burns and eye damage. May cause respiratory irritation. Suspected of causing cancer. Causes damage to organs (respiratory system). Causes damage to organs (lung, liver, kidney, respiratory system) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.



# UN 3489

**TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. (CHLOROPICRIN; 1,3-DICHLOROPROPENE)**

**IN A TRANSPORT EMERGENCY  
DIAL 000  
POLICE OR FIRE BRIGADE**

*For specialist advice in the event of  
A CHEMICAL EMERGENCY  
(Spill, Leak, Fire, Exposure or Accident), Call  
CHEMTREC: 1 800 862 115*

**NOTICE**

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use. No warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of the product contrary to label instructions or under off-label permits not endorsed by Trical Australia Pty Ltd, or under abnormal conditions.

Batch No.:

D.O.M.:

Strike 60 Drip weighs 1415 g/L.