

Specimen Label

RESTRICTED USE PESTICIDE

Due to high acute inhalation toxicity and carcinogenicity. For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.



Soil Fumigant

®Trademark of Dow AgroSciences LLC

A multi-purpose liquid fumigant for preplant treatment of soil to control plant parasitic nematodes, symphylans and to help manage certain soil borne diseases in cropland

Not for use in greenhouses or other enclosed areas.

Not for formulation or manufacturing use. Do not formulate this product into other products.

Active Ingredient:	(by weight)
1,3-dichloropropene	97.5%
Other Ingredients.....	2.5%
Total.....	100.0%

1 gallon of Telone II weighs 10.15 lb at 70°F. Contains 9.85 lb of 1,3-dichloropropene per gallon.

Precautionary Statements

Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-32

WARNING

Hazardous Liquid and Vapor

- **Do not swallow any of this product. May be fatal if swallowed.**
- **Do not get in eyes. Causes substantial, but temporary eye injury.**
- **Do not get on skin. May be fatal if absorbed through the skin. Causes skin irritation and, if confined, skin burns. May cause allergic skin reaction.**
- **Do not breathe vapor. May be fatal if inhaled. May cause lung, liver, and kidney damage and respiratory system irritation upon prolonged contact.**
- **The use of this product may be hazardous to your health. This product contains 1,3-dichloropropene, which has been determined to cause tumors in laboratory animals. Risks can be reduced by exactly following directions for use, precautionary statements, by wearing the personal protective equipment specified in this labeling.**

Personal Protective Equipment (PPE)

Chemical-Resistant Materials: Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category H on an EPA chemical resistance category selection chart. PPE constructed of daranex, neoprene, and chlorinated polyethylene provide short-term contact or splash protection against liquid in this product. Longer-term protection is provided by PPE constructed of viton, Teflon, and EVAL barrier laminates (for example, responder suits manufactured by Life-guard or silvershield gloves manufactured by North). Where chemical-resistant materials are required, leather, canvas, or cotton materials offer no protection from this product and must not be worn as the sole article of protection when contact with

this product is possible. Where coveralls are required, they must be loose-fitting and constructed of woven fabrics (e.g., tight knit cotton or cotton/polyester), non-woven fabrics (e.g., tyvek or sontara), or fabrics containing microporous Teflon.

1. Handlers Performing Tasks with Liquid Contact Potential

Tasks with liquid contact potential are tasks performed outdoors or in a well-ventilated area. They include:

- Equipment calibration or adjustment
- Equipment clean-up and repair
- Product sampling
- Any activity less than 6 feet from an unshielded pressurized hose containing this product
- Rinsate disposal
- Fumigant transfer
- Clean-up of small spills
- Preparing containers for aeration
- Any other task not otherwise listed in (2), (3), or (4) below

Handlers performing tasks with liquid contact potential must wear at minimum:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). See further respirator requirements in the User Safety Requirements section on this label.

2a. Handlers Performing Tasks with No Liquid Contact Potential – Broadcast, In-Bed Applications, or Applications at the Time of Bedding Except as in 2b.

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area. These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- A respirator is not required (not applicable in California) if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

2b. Handlers Performing Tasks with No Liquid Contact Potential - Pre-Bed, Row Product Applications (e.g., Yetter Rig) (Not Applicable in California)

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area. These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)

- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

3. Handlers in Treated Area 1 to 5 Days After Application

Only the following handler tasks may be performed in the treated area within 5 days after the application is complete:

- Assessing/adjusting the soil seal
- Assessing pest control, application technique, or application efficacy
- Sampling air or soil for this product
- Removing tarp or plastic film

All other tasks are prohibited until the 5-day period has expired.

Handlers in treated area 1 to 5 days after application must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- A respirator is not required if the occupants are within an enclosed cab (not applicable in California) that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

4. Handlers Exposed to High Concentrations

Handlers exposed to high airborne concentrations of this product, such as cleanup following large spills and exposure to this product in poorly ventilated areas, must wear at minimum:

- Chemical-resistant suit
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear
- Supplied-air respirator with MSHA/NIOSH approval number prefix TC-19C or self-contained breathing apparatus (SCBA) with MSHA/NIOSH approval number prefix TC-13F. See further respirator requirements in the User Safety Requirements section on this label.

Note: In-tank cleaning of bulk tanks must be performed only by persons who have been specifically trained for this activity. Refer to OSHA 29 CFR Part 1910.146 and the Storage and Handling Guide.

Engineering Controls Requirements

Mechanical Transfer System: Personal protective equipment specified for Direct Contact Activities must be worn by the operator of the mechanical transfer system. The operator of the mechanical transfer system must follow instructions on proper operation of the system found in the "Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone® II soil fumigant for more information or for these materials.

End-Row Spillage Control: The dispensing system must shut off the feed stream when chisels are raised out of the ground. Do not stop or park near any area where dribble from chisel tips has fallen. The applicator must follow instructions on proper operation and maintenance of the system found in the "Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone II for more information or for these materials.

- A flow shutoff device must be placed as close as is technically feasible to the fluid discharge point. This can be a ball, poppet, or diaphragm check valve, or full flow shutoff device such as an electric or pneumatically actuated valve.
- Service any system immediately if continuous drip occurs.
- If mechanical check valves and orifices are used, place the check valve above the orifice. Also, isolate the check valve from upstream pressure by installing a main line shut off or bypass valve prior to the manifold.
- Pipe diameter from check valve to injection point must not exceed 1/4 inches ID National Pipe Standard (NPS). Preferably, use the smallest diameter pipe or tubing possible which achieves the required flow rate.

- Alternate end-row spillage devices or methods such as, but not limited to, micro-bore restricted flow tubing or line purge systems may be used if they provide equal or superior control versus check valves.

With all bulk and non-bulk containers, Telone II must be transferred through connecting hoses, pipes, and/or couplings sufficiently tight to prevent workers or other persons from coming in contact with liquid Telone II.

- All hoses, piping, and tanks used in connection with Telone II shall be of the type appropriate for use under the pressure and vacuum conditions to be encountered.
- External sight gauges shall be equipped with valves so that pipes to sight gauge can be shut off in case of breakage or leakage.
- The mechanical transfer system must be adequate to make necessary measurements of the pesticide being used.
- Shut-off devices must be installed on the exit end of all hoses and at all disconnect points to prevent leakage of Telone product when the transfer is stopped and hose is removed or disconnected. A dry coupler that will **minimize pesticide leakage** must be installed at the disconnect point.
- The pressure in hoses used to move Telone II beyond a pump **must not exceed** the manufacturer's maximum pressure specification.

User Safety Requirements

- 1. Respirator Requirements:** When a respirator is required for use with this product, the following criteria must be met:
 - a. Cartridges or canisters must be replaced daily or when odor or irritation from this product becomes apparent, whichever is sooner.
 - b. Respirators must be fit-tested and fit-checked using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
 - c. Respirator users must be trained using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
 - d. Respirator users must be examined by a qualified medical practitioner to ensure physical ability to safely wear the style of respirator to be worn.
- 2. Dispose of Contaminated Clothing:** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.
- 3. Clean and Maintain PPE:** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each day's use.
- 4. Contact with Mouth:** Never siphon this product by mouth or use mouth to blow out clogged lines, nozzles, etc.
- 5. Heat Illness Avoidance:** Use measures to avoid or minimize heat illness while using this product. These measures include gradual adjustment to heat and respirator stress, fans for cooling, cooling vests, frequent breaks to cool down, frequent intake of drinking water, and maintaining weight from day to day.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

First Aid

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. If breathing is difficult, give oxygen. Call a poison control center or doctor for further treatment advice.

If on skin or clothing: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a poison control center or doctor for treatment advice. If water is not immediately available, remove excess chemical from skin with adsorbent material such as towel or dry soil, then proceed at once to a location where water is available and thoroughly wash contaminated skin with plenty of water. Call a poison control center or doctor for treatment advice.

If in eyes: Immediately flush eyes with plenty of water. 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 center or doctor for treatment advice.

First Aid (Cont.)

If swallowed: Call a poison control center 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 center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Note to physician: Because rapid absorption may occur through lungs if product is aspirated and cause systemic effects, the decision to induce vomiting or not should be made by a physician. If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

Environmental Hazards

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment rinsate. See Storage and Disposal section. In case of spills properly dispose of contaminated materials.

Groundwater advisory: 1,3-dichloropropene is known to move through soil and under certain conditions has the potential to reach groundwater as a result of agricultural use. Application in areas where soils are permeable and groundwater is near the surface could result in groundwater contamination. Do not apply within 100 feet of any well used for potable water. Do not apply this product within 100 feet from the edge of karst topographical features. Karst topography is identified from landscape features that result from the dissolving activity of water in carbonate rock formations (limestone, dolomite and marble). Surface features that are associated with karst topography include sinkholes, caverns, springs, and sinking or disappearing streams. In North Dakota, South Dakota, Wisconsin, Minnesota, New York, Maine, New Hampshire, Vermont, Massachusetts, Utah, and Montana: Where groundwater aquifers exist at a depth of 50 feet or less from the surface, do not apply this product where soils are Hydrologic Group A.

Physical or Chemical Hazards

Combustible. Do not use or store near heat or open flame.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), restricted-entry intervals, and notification to workers. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS).

Entry Restriction:

Entry (including early entry that would otherwise be permitted under the WPS) by any person -- other than a correctly trained and equipped handler who is performing a handling task permitted on this labeling -- is **prohibited** from the start of application until 5 days after application. **In addition**, if tarps are used for the application, non-handler entry is prohibited while tarps are being removed.

Notification:

Notify workers of the application by warning them orally and by posting fumigant warning signs at entrances to treated areas. The sign must bear the skull and crossbones symbol and state: (1) "**DANGER/ PELIGRO**," (2) Areas under fumigation, **DO NOT ENTER/NO ENTRE**," (3) the date and time of fumigation, (4) "Telone II Fumigant in use," and (5) name, address, and telephone number of the applicator." Post the fumigant warning sign instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, size and timing of posting and removal.

Agricultural Use Requirements

PPE for Reentry During the Entry-Restricted Period:

PPE for entry that is permitted by this labeling is listed in the "Hazards to Humans and Domestic Animals" section of this labeling.

Storage and Disposal

Do not contaminate water, food and feed by storage and disposal.

Pesticide Storage: Store in tightly-closed original container away from dwellings. Prolonged exposure of the container to direct sunlight must be avoided. Do not allow contamination of seeds, plants, fertilizers, or other pesticide chemicals.

Pesticide Disposal: Pesticide wastes are toxic. Improper disposal of excess pesticide and rinsates is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance. Because Telone II is corrosive under certain conditions, flush all application equipment with fuel oil, kerosene or a similar type of petroleum solvent immediately after use. Fill pumps and meters with new motor oil or a 50% motor oil/fuel oil mixture before storing. **Do not use water.** Dispose of rinsate by applicable Federal, state and local regulations. Never introduce rinsate or unused Telone II into surface or underground water supplies.

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

General Information

Telone® II soil fumigant is a multi-purpose liquid fumigant for preplant treatment of cropland soil. Telone II can be used as part of a nematode management program involving crop rotation, planting of resistant varieties, sanitation, and other cultural practices designed to reduce nematode infestations.

Telone II may be applied as a preplant soil treatment as part of a management program to aid in reducing the damaging effects of certain soil pests; **plant parasitic** nematodes [citrus, burrowing, cyst formers (golden, sugarbeet, soybean, carrot and wheat), dagger, lance, pin, needle, reniform, ring, root knot, root lesion, spiral, sting and stubby root; **symphylans** (garden centipedes); and **wireworms**.

Telone II can also be used to suppress sugar beet Rhizomania disease, *Fusarium* wilt of cotton and *Verticillium* wilt of mint, and aid in the control of bacterial canker of peaches.

Soil sampling for the type and number of pests present is recommended before fumigation. In fields where pre-treatment soil samples indicate the presence of high population levels of nematodes, a successful fumigation cannot be expected to eradicate entire populations. Therefore, post-treatment (mid-season and/or preharvest) sampling is recommended to determine the need for additional pest management practices.

Supplemental labels are available for certain crops in selected geographies. Refer to these supplemental labels for specific use directions. Consult a Dow AgroSciences representative for additional information.

Consult State Agricultural Experiment Station or Extension Service specialists for information on other practices such as post-harvest destruction of crop residues, weed control or other cultural practices, and use of nematode resistant crop varieties that may aid in reducing crop losses from soil borne pests.

General Use Precautions

Soil fumigation using Telone II should be conducted only according to directions and conditions of use described in this labeling.

Recontamination Prevention: Telone II will help manage certain soil borne pests that are present in the soil treatment zone at 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 soil borne 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 before entering treated fields. Cultural practices, which provide post-harvest destruction of crop residues and weeds prior to fumigation and practices which prevent weed infestation following fumigation and prior to planting, will help prevent recontamination.

Do not use containers, pumps or other transfer equipment made of aluminum, magnesium or their alloys, as under certain conditions Telone II may be severely corrosive to such metals.

Equipment Clean-Up: Because Telone II is corrosive under certain conditions, flush all application equipment with fuel oil, kerosene or a similar type of petroleum solvent immediately after use. Fill pumps and meters with new motor oil or a 50% motor oil/fuel oil mixture before storing. **Do not use water.** Dispose of rinsate by incorporation into field just treated or by other approved means. Never introduce rinsate or unused Telone II into surface or underground water supplies.

Chemigation: Do not apply Telone II through any type of irrigation system.

Fertility Interactions: 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 either cold, wet, acidic, or high in organic matter. To avoid injury to certain crops including red beets, carrots, corn, radishes, cole crops, legumes (beans), lettuce, onions, and sugarbeets, 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, fertilizers containing ammonium salts are not recommended.

When using high rates of Telone II as required by certain state nursery regulations, liming of highly acid soils before fumigation may stimulate nitrification and reduce the possibility of ammonia toxicity. Certain nursery crops such as citrus seedlings, *Cornus* sp., *Crataegus* sp., spruce, and vegetable crops such as cauliflower have shown evidence of phosphorus deficiency following fumigation. To avoid this possible effect, additional phosphate fertilizer (foliar applied) is recommended where experience indicates a deficiency may occur.

Use Restrictions for Certain Florida Counties: For application of this product in Brevard, Broward, Charlotte, Citrus, Collier, Dade, DeSoto, Glades, Hardee, Hendry, Hernando, Highlands, Hillsborough, Indian River, Lake, Lee, Manatee, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Sarasota, Seminole, St. Lucie, Sumter, and Volusia counties, applicators must have labeling for FIFRA Section 24(c) Special Local Need (SLN) FL990003 in their possession and comply with stated requirements.

Use Restrictions for Certain New York Counties: This product is prohibited from sale, use or distribution in Nassau and Suffolk counties.

Application Directions

Application Timing

Telone® II soil fumigant 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. Because Telone II does not provide residual control of soil pests, it should be used as a preplant application before planting each crop. The following soil temperature and moisture conditions should exist at time of treatment. Failure to meet these conditions may result in unsatisfactory product performance:

Soil Conditions

Soil temperature at the depth of application must be between 40°F and 80°F. In areas where the soil temperature in the spring may not reach 40°F in time to allow application of Telone II prior to planting, late summer or early fall treatment is recommended.

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 application depths greater than 18 inches, the soil should be moist within a 16-inch 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 2 inches below the soil surface to at least 12 inches 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 2 to 6 inch depth, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 6 inches, it may be brought to the surface by disking or plowing before or during the injection. To conserve existing soil moisture, pretreatment or treatment tillage practices should be done as close to the time of application as possible. 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 you do not know how to determine the soil moisture content of the area to be treated, consult your local extension service or soil conservation service specialist or pest control advisor (ag consultant) for assistance.

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 1 to 2 inches of soil is recommended before and/or immediately after fumigation.

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, moderately coarse, 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, silty clay loam, candy clay, silty 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.

Soil Preparation

The soil should be free of clods. Large clods can prevent effective soil sealing and reduce effectiveness of Telone II. Plant residues should be thoroughly incorporated into the soil prior to treatment to avoid interfering with application. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Little or no crop residue should be present on the soil surface. Crop residue that is present should lie flat to permit the soil to be sealed effectively. Compacted soil layers within the desired treatment zone should be fractured before or during application of the fumigant. Deviation from the above conditions may result in unsatisfactory results.

Placement of Fumigant

Telone II may be applied as either a broadcast (overall) or row treatment. It must be placed at least 12 inches below the final soil surface. When soil conditions allow, placement at a minimum of 14 inches below the final soil surface is recommended. Deeper placement is required when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests. For row application, the fumigant must be placed at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top).

Application Methods and Equipment

Broadcast Application: Use chisel (shank) or coulter (e.g., Yetter 30-inch Avenger), offset wing shank, Nobel (sweep) plow, or plow-sole application equipment. For best results when using chisel equipment, use ripper-type, forward-swept shanks. Nobel plow equipment is particularly useful for fall fumigation when the soil still contains some non-decomposed standing plant material. Subsoiling may be necessary before application as described under Soil Preparation. 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 chisel and coulter equipment, a fumigant shank spacing of 12 to 24 inches is recommended. Do not exceed the maximum shank and outlet spacing of 24 inches. The outlet spacing for this equipment may be up to 1 1/2 times the application depth but generally should be equal to the application depth and should not exceed the soil-shattering capability of the chisels.

With plow-sole equipment, a 12-inch outlet spacing is recommended. Do not exceed an outlet spacing of 18 inches.

With Nobel (sweep) plow equipment, use an outlet spacing of 9 to 12 inches along the sweeps. Application should be made to a depth of at least 15 inches.

Broadcast application can be made in the same direction or at an angle to the direction of row planting. Refer to Table 1 for broadcast treatment rates for various crops.

Row Application (for row spacing greater than 24 inches): Use chisel equipment to treat a band of soil where the crop is to be planted, i.e., the plant row. When multiple chisels per plant row are used, space the chisels (fumigant outlets) no more than 12 inches apart. Regardless of the number or spacing of chisels used, the fumigant must be placed at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top).

With certain deeper rooted crops such as potatoes and sugarbeets, higher rates may be necessary to ensure adequate treatment of the zone of soil where primary root growth occurs.

To prevent seed germination problems caused by improper seed-to-soil contact or improper planting depth regardless of application method, do not place the seed directly over the furrow left by the applicator chisel(s)/coulter(s). When 1 chisel is used per plant row, place the seed about 4 inches to one side of the chisel furrow. When 2 chisels are used per plant row, plant the seed offset from the chisel trace.

Sealing the Soil After Application

For broadcast treatment (flat fumigation), immediately after chisel application of Telone II, the soil must be "sealed" to prevent fumigant loss and ensure that an effective concentration of fumigant is maintained within the soil for a period of several days. To create an effective seal it is important that the shank traces be disrupted and the soil surface compacted. Disruption of shank traces can be accomplished with equipment that will uniformly mix the soil to a depth of 3 to 4 inches to eliminate chisel or plow traces which can allow direct escape of the fumigant. A tandem disc or similar equipment may be used for this purpose. To maximize soil sealing, steps should also be taken to compact the soil surface to further retard the rate of fumigant loss by following with a ring roller or cultipacker in combination with the aforementioned tillage equipment. Compaction of the soil surface alone does not effectively disrupt chisel or plow traces. When using coulter (e.g., Yetter 30-inch Avenger) applications, additional sealing may not be necessary when soil moisture conditions are optimal and a beaver tail is used.

For row treatment, forming the beds at the time of application should be accomplished in a manner that places the fumigant at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top). The closest soil/air interface could be the furrow for multiple knife applications or the top of the bed for single knife applications. It is recommended that additional soil sealing be accomplished by going over the bed with a bed shaper, press sealer, rolling cultivator, ring roller, or rolling basket.

Sealing can also be improved by applying non-perforated plastic film, such as polyethylene, over the entire area or in strips. Use of a film to seal the soil surface does not eliminate the need to eliminate chisel traces prior to application of the plastic film. When using coulter (e.g., Yetter prebedder) applications, a beaver tail may be used for sealing.

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

Soil Fumigation Interval

Leave the soil undisturbed and unplanted for at least 7 days after application of the fumigant. A longer undisturbed fumigation interval is required if the soil becomes cold or wet, and for deep-rooted tree, shrub and vine planting sites.

Following completion of the fumigation interval; to prevent phytotoxicity, allow the fumigant to dissipate completely before planting the crop. Dissipation is usually complete when Telone II can no longer be detected at the application depth. Under optimum soil conditions for dissipation, a period of 1 week for each 10 gallons per treated acre is generally required for complete dissipation. If virtually impermeable films (VIF) are used a longer dissipation period may be needed. Rapidly germinating seed (i.e., lettuce or radish) and/or seed or transplants to be grown may be used as a bioassay to determine if Telone II is present in the soil at concentrations sufficient to cause plant injury.

To hasten dissipation especially if heavy rains or low temperatures occur during the treatment period, till the soil to the depth of fumigant application. Use a knife-like chisel without turning the soil to reduce the possibility of recontaminating the treated soil. Dissipation is usually complete when the odor of Telone II is no longer evident at the application depth. Seed may be used as a bioassay to determine if Telone II is present in the soil at concentrations sufficient to cause plant injury. Do not plant if the odor of Telone II is present within the zone of fumigation.

Buffer Zone: An application of Telone II shall not be made within 100 feet of an occupied structure, such as a school, hospital, business or residence. No person shall be present at this structure at any time during the seven consecutive day period following application. **This buffer zone does not apply to use on soils that will not experience an additional 1,3-D treatment for at least three years. For example, on soils to be planted with fruit trees, nut and nursery crops, perennial vines, hops, mint or pineapple. Note:** Telone II shall not be applied to soils more frequently than once each year.

Uses

Control of Nematodes

Telone® II soil fumigant is recommended for control of nematodes and symphylans, and suppression of wireworms in soils to be planted to vegetable crops, field crops, fruit and nut crops, and nursery crops.

Table 1. Broadcast Application Rates and Use Information for Control of Nematodes and Symphylans¹, Suppression of Wireworms¹, and to Help Manage Certain Soil Borne Diseases in Soils Planted to Crops Listed

Crops (listed but not limited to)	Soil Type	Broadcast Application Rates ¹ (Gallons/Acre)
Vegetable Crops ²	Mineral ³ Muck or Peat ⁵	9 - 12 ⁴ 25
Field Crops	Mineral Muck or Peat	9 - 12 ⁴ 18
Fruit and Nut Crops ^{6,7,8,9,10}	Mineral	27 - 35
Nursery Crops ¹¹	Mineral	42 - 55

¹**Note:** For control of symphylans (garden centipedes) or suppression of wireworms consult the Soil Insects section below for more specific directions and application rates.

¹Rates given may be concentrated in the row, but in no case should the amount applied per acre exceed the maximum broadcast application rates [gallons per acre (gpa)] given in the above table.

²Potatoes: Before fumigation, soil sampling for the type and number of pests present is recommended and can help to determine the need for additional treatment with a contact nematicide. Preharvest tuber sampling for nematodes also is recommended. If the nematode population is high enough to damage the crop, potatoes can be harvested early. Do not store potatoes with a detectable nematode infestation.

Row treatment is not recommended for potatoes in irrigated areas of western and northwestern states.

In Colorado, Idaho, Nevada, Oregon, Utah and Washington, and in Modoc and Siskiyou counties of California refer to supplemental labeling for Telone II entitled: "For the Control of Nematodes and the Suppression of Wireworms in Soils to be Planted to Potatoes, Onions, or Carrots" for directions for use.

³Mineral soil includes sand, sandy loam, silt, and clay loam. Use the higher rates for finer textured (heavier) soils.

⁴For cyst-forming nematodes increase dosage to 18 gpa.

⁵Greater than 20% organic matter content.

⁶Pineapple: Application may be made at the time of planting. For best results, seal the soil with polyethylene film, which acts as a gas permeability barrier.

⁷Tree Planting Sites in the Western U.S.: Use 24 fl oz (1.5 pints) of Telone II by applying the fumigant at a single point in the center of each

planting site at a depth of 5 feet below the original soil surface, or into at least 3 points per planting site, at a depth of 3 feet below the original soil surface. The recommended procedure is to prepare the site by backhoeing to break up restrictive soil layers that may retard fumigant movement. The backhoe site should be dug in the approximate dimensions of 10 x 10 x 10 feet. The hole should then be backfilled and the fumigant applied using a closed-system application tube. For sites where no restrictive soil layers are present, the fumigant can be applied to a depth of 5 feet using an injection auger. If backhoe procedure is not used, product performance may be reduced. To prevent phytotoxicity, assure that the chemical has dissipated completely before planting. Dissipation is slower in cold, wet soils. Prepare and treat planting sites in the fall and plant in the spring. In other areas of the U.S., the above may be followed. Regardless of method, ensure thorough fumigation of the desired treatment area. Do not place in groundwater.

⁸For shallow-rooted plants grown only year, use 15 to 27 gpa.

⁹Citrus Fruits: For burrowing nematode control, inject Telone II on 18-inch centers at least 12 inches deep. For buffers within existing groves or for tree planting sites within existing groves, do not apply within 5 feet of living trees. Keep the field free of plants susceptible to burrowing nematodes for 2 years before replanting to citrus.

¹⁰Stone Fruits: Within existing groves or for tree planting sites within existing groves, do not apply within 5 feet of living trees.

¹¹When used according to state nursery regulations, Telone II may be used in the production of certified nursery stock.

Control of Plant Diseases

Bacterial Canker of Peaches: To aid in the control of this disease apply Telone II as a preplant broadcast treatment to light (sandy) soils at the rate of 35 gpa preferably in the fall when the soil is warm (55 to 80°F at injection depth) and moist. Inject the fumigant at least 18 inches deep with chisels mounted on 12- to 18-inch centers.

Fusarium Wilt of Cotton: The effects of this disease can be suppressed by controlling the root knot nematodes associated with this disease/nematode complex. Use Telone II as a row treatment at the rate of 12 gpa.

Sugar Beet *Rhizomania* Disease: Use Telone II to suppress the effects of this disease by preplant broadcast application at the rate of 10 to 18 gpa broadcast equivalent. Use the higher rates for heavier (finer textured) soils and/or for higher levels of disease infestation. Telone II is believed to reduce the activity of *Polymyxa beta*, which has been identified as the vector of the *Rhizomania* disease virus.

Verticillium Wilt of Mint: To aid in the control of this disease, apply Telone II as a broadcast treatment at 25 to 30 gpa in the spring, or preferably in the fall.

Control of Soil Insects

Symphylans (Garden Centipedes): Use Telone II for treatment of soil to be planted to crops where these pests have been shown to be a problem. Apply the fumigant only as a broadcast treatment at the rate of 18 to 35 gpa. Applications made during late summer or early fall when the soil is warm are recommended.

Wireworms: Use Telone II for treatment of soil to be planted to crops where these pests have been shown to be a problem. Apply the fumigant as a broadcast treatment at 20 gpa by injection at least 14 inches below the final soil surface.

Supplemental labels are available for certain crops in selected geographies. Refer to these supplemental labels for specific use directions. Consult a Dow AgroSciences representative for additional information.

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Revisions:

1. Added restrictions for California.