SHELL

D-D® Soil Fumigant

KEEP CONTAINER AND CONTENTS AWAY FROM HEAT OR OPEN FLAME (FLAMMABLE LIQUID, N.O.S.)

ACTIVE INGREDIENTS — **BY WEIGI**

Chlorinated C_3 Hydrocarbons, including 1,3-Dichloropropene, 1,2 Dichloropropane, 3,3-Dichloropropene, 2,3-Dichloropropene, and Other Related Chlorinated Hydrocarbons 100.0

EPA Reg. No. 201-119 AA

GENERAL DIRECTIONS

Use D-D Soil Fumigant at full strength as a preplanting treatment by injection in the soil only, for control of cyst (soybean, golden, tobacco, sugar beet), root knot, root lesion or meadow, burrowing, citrus, stem and bulb, sting, ring, awl, spiral, lance, pin, stubby root, stylet, dagger, and other plant parasitic nematodes, symphylids and wireworms. Nematodes, wireworms and symphylids appear on many field, forage, vegetable, nursery crops, grasses, ornamentals, small fruits, citrus, avocados, nut and deciduous fruits, mint, hops, sugar beets and vineyards. For best results, treat prior to each crop planting. Do not use on heavy clay soils. Avoid reinfestation of treated soil from transplants, tools, equipment, or crop remains from infested areas.

WHEN TO TREAT

Treat in spring or fall, whenever soil conditions are suitable. Soil temperature 6 inches deep should be between 40 and 80°F. (Cold or wet soils retain fumigant longer. Dry or hot soils release fumigant too rapidly.) Fall treatment is suggested for land to be planted to early planted crops such as celery, tomatoes and nursery stock. Early fall treatment allows planting a fall cover crop.

A three-month period should be allowed before planting treated muck and heavy soils to allow complete aeration. For symphylid control, time application in accordance with local, state and federal recommendations.

SOIL PREPARATION

Plow to a depth of 6 to 12 inches. Disc soil thoroughly to break up clods and cut up trash. Cover trash or allow to rot before fumigation. Soil should be smooth and free from debris with adequate moisture for good germination. Deep tillage, 12 to 18 inches, often improves results, especially in heavy and muck soils.

APPLICATION

Over-all (Broadcast) Application: Apply with chisel or plow-sole equipment. Apply in uniform streams 10 to 12 inches apart and at least 6 to 12 inches deep in the soil. With chisel application, seal chisel channels with a drag, ring roller, or press wheel behind the applicator. With plow-sole applications, disc IMMEDIATELY to break clods and then seal with roller or drag.

Row (Band) Treatment: Adjust injection chisels to same spacing as planter. Inject at least 6 to 12 inches below the final soil surface. Seal with roller or drag. Plant directly in treated strips.

Split Application (Use only for dosages in excess of 80 gallons per acre): Apply one half the suggested dosage, wait one to two weeks and plow, turning the treated soil completely over. (Discing is not satisfactory.) Then apply the remainder and seal with drag or roller.

Citrus Replanting Sites: Space chisels 18 to 20 inches apart and inject 12 to 14 inches deep over-all.

For Deciduous Orchards, Forest and Nursery Crop Planting Sites: Treat large areas over-all or in strips 10 feet wide. Individual tree sites can be treated by injecting with a handgun in a 10 foot square area. Inject 10 to 12 inches deep with injections spaced 12 inches apart. When using a handgun, seal the injection hole with the foot.

WHEN TO PLANT

Under normal conditions, a waiting period of one week for each 10 gallons of D-D Soil Fumigant used on a broadcast basis should be allowed. (Pineapple land can be treated at time of planting.) Allow additional time before planting if temperatures are below 60°F. or if there has been heavy rain.

Soil treated with massive doses of fumigant before planting, such as for deep-rooted tree and shrub planting sites, requires a 3 to 6 months waiting period. Before planting, plow or open planting hole to thoroughly aerate soil.

BACTERIAL CANKER AND DECLINE OF PEACH TREES

Use as a pre-plant treatment of light (sandy) soils using 40-60 gallons of D-D Soil Fumigant per acre. Apply by chisel injections at 10-12 inch depth on 12-inch spacings. Seal soil soon after treatment with ring roller or drag. Soil should be warm (50-85°F. at 6 in. depth), moist and cultivated thoroughly before application. Remove roots and other plant debris prior to treatment. Fall application usually is best because of warm soil. Pre-irrigation may be necessary to provide sufficient moisture. A waiting period of one week should be allowed for each 10 gallons of D-D Soil Fumigant used on a broadcast basis.

MISCELLANEOUS USES

White Potatoes in Northwestern States: To control quackgrass in fields to be planted to white potatoes, apply D-D Soil Fumigant as a spring or preferably a fall broadcast (over-all) treatment using 20 to 28 gallons per acre. For suppression of the damaging effects of **Verticillium** wilt in fields to be planted to white potatoes, apply D-D Soil Fumigant as a spring or preferably a fall broadcast (over-all) treatment using 40 to 48 gallons per acre.

Field Bindweed (Perennial Morningglory) Suppression: Use 30-50 gallons of D-D Soil Fumigant per acre over-all as a spring or preferably fall treatment to aid in the control of field bindweed (perennial morningglory) on bare ground. Prior to planting, see section on "When to Plant."

Mint in Northwestern States: Use 40 gallons of D-D Soil Fumigant per acre as a spring or preferably a fall treatment to aid in the reduction of the damaging effects of verticillium wilt in disease-infested land to be used for mint production. After treatment allow at least 7 to 8 weeks or until the odor of the fumigant has left the soil before planting. Consult local Agricultural Experiment Station authorities for the use of other practices such as flaming the stubble, weed control and cultural practices when using D-D Soil Fumigant as an aid in reducing damage caused by verticillium wilt.

PRECAUTIONS IN USING

CAUTION: NOTE CAREFULLY. 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, acid, or high in organic matter. To avoid injury to plant roots, fertilize as indicated by soil test following fumigation. To avoid ammonia injury, nitrate starvation, or both to crops, avoid using fertilizers containing ammonium salts and use only fertilizers containing nitrates until after the crop is well established and the soil temperature is above 65°F. Certain crops, including cotton, sugarcane and pineapple, are tolerant to ammonia, and the above rule does not apply to them. Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

Wear goggles and polyethylene gloves when handling material. Wash with soap and water after handling and before eating or smoking. Do not store in or use containers or equipment made of aluminum, magnesium or their alloys. Store in cool place away from dwellings. Avoid reinfesting treated soil. After use, always empty and clean applicator thoroughly with kerosene or fuel oil. Avoid using water in equipment. To protect fish and wildlife, do not spill or empty containers, or rinse equipment or containers, into streams, ponds or other bodies of water. Avoid reinfesting treated soil.

Do not reuse empty containers. Destroy when empty. Keep empty container away from heat or open flame. Containers should be disposed of first by rinsing, then by punching holes in them and burying with wastes on noncrop lands away from water supplies.

WARNING!

Do not use, pour, spill or store near heat or open flame.

In case of contact, IMMEDIATELY remove all contaminated clothing or shoes and wash skin thoroughly with soap and water; for eyes, flush with water for at least 15 minutes. Do not wear contaminated clothing or shoes until entirely free of chemical odor. Wash clothing before re-use. In case of spillage in closed areas, do not enter without a mask or respirator of a type passed by the U.S. Bureau of Mines for Chlorinated C_3 Hydrocarbons protection.

CROP	TYPE OF TREATMENT	SOIL TYPE	DOSAGE (GALLONS PER ACRE)[1] [2]
Field Crops (tobacco,[3] cotton, etc.) Floral Crops Grasses and Turf Ornamentals Small Fruits Vegetables	Row (42")	Mineral	7½ to 10
		Muck or Peat	15 to 20
	Over-all (or broadcast)	Mineral	18 to 25[4]
		Muck or Peat	40[5] to 60
Sugar Beets Root knot nematode	Row (42")	Mineral	9
	Over-all	Mineral	20
Sugar beet nematode	Row (42")	Mineral	15 to 20
	Over-all	Mineral	25 to 30
Deciduous Orchards Forest Nurseries Nut Trees Ornamental Nurseries[6] Strawberries Vineyards	Strip-treatment	Mineral	Treat a 10 ft. wide strip in which new trees are to be planted at 40 gal/acre.[7]
	Over all	Mineral	40 to 60
Pineapple	Row	Mineral	40 to 60
Citrus, Avocados Florida	Over-all	Sandy	60
California	Over-all	Sandy Loam Clay Loam	60 to 100 80 to 150 120 to 200

[1] One gallon of D-D Soil Fumigant weighs 10 pounds.

[2] For symphylid control apply 30 to 40 gallons of D-D Soil Fumigant per acre in accordance with local, state and federal recommendations. To control wireworms, use dosages recommended for nematodes in broadcast treatments.

[3] To calibrate equipment for tobacco—The following steps will help calibrate your gravity flow applicator for row treatment of tobacco to insure 10 gallons of D-D per acre. Measure 156 feet of row (52 steps). Lower injector 8-10 inches in soil. Place tube into pint or quart jar. Start tractor and open valve on gravity flow. After 156 feet, applicator must deliver 1 pint. This is 10 gallons per acre. If less, decrease tractor speed. If more, increase speed. Once set maintain the same tractor speed. Calibrate each outlet separately.

[4] For cyst-forming nematodes, increase dosage to 25 to 30 gallons per acre.

[5] For muck soils containing less than 30% organic matter, reduce dosage to 30 gallons per acre.

[6] In California, consult local recommendations for specific rates on individual nursery crops.

[7] Examples: A. If trees are to be planted in rows 20 feet apart, only half of the area is treated (alternate 10 ft. strips), thus, only 20 gallons are applied—the part treated is at the over-all rate of 40 gallons per acre.

B. Formula for calculating dosage rate on strips.

$$\frac{\text{Width of Strip to be Treated}}{\text{Row Spacing}} \times \text{Over-all Rate} = \text{Actual gallons to be applied.}$$

NOTICE OF WARRANTY

SHELL CHEMICAL COMPANY MAKES NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PURPOSE, OR OTHERWISE, EXPRESS OR IMPLIED, concerning this product or its use, which extend beyond the statements on this label.

SHELL CHEMICAL COMPANY, A Division of Shell Oil Company, AGRICULTURAL CHEMICALS, SAN RAMON, CA. 94583

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WARNING!

KEEP OUT OF REACH OF CHILDREN.

(See below for other precautions).

Do Not Use, Pour, Spill or Store Near Heat or Open
May be fatal if swallowed, inhaled, or absorbed thr
Hazardous vapor and liquid.
Causes burns of skin or eyes.
Do not get in eyes, on skin or on clothing.
Do not breathe vapor.
Use with adequate ventilation.
Keep out of reach of children.
Keep container closed.
Do not contaminate feed and foodstuffs.
Do not store near seeds, fertilizers or plants.

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IY, A Division of Shell Oil Company, AGRICULTURAL CHEMICALS, SAN RAMON, CA. 94583

ACCEPTED

JAN 12 1976

Under the Federal Insecticide Fungicide and Rodenticide Act for the pesticide registered under EPA Reg. No. 201-119