

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

CASWELL F.

NOV 7 1991

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

SUBJECT: 1E04022. Dyfonate^R 4-EC (Fonofos) Insecticide.
Interregional Research Project No. 4 (IR-4) Petition
For Tolerance In or On Squash.

Tox. Chem. No. 454B
Project No. 1-2431

TO: Hoyt Jamerson, PM Team #43
Registration Support Branch
Registration Division (H7505C)

FROM: Pamela M. Hurley Ph.D., Toxicologist
Section I, Toxicology Branch I
Health Effects Division (H7509C)

Pamela M. Hurley
10/17/91

THRU: Roger L. Gardner, Section Head
Section I, Toxicology Branch I
Health Effects Division (H7509C)

Roger L. Gardner *KB*
10-28-91 11/5/91

Record No(s). S402568

Background and Request:

The Interregional Project No. 4 out of Rutgers University on behalf of the IR-4 Project and the Agricultural Experiment Stations of California, Florida, Georgia, Indiana, Mississippi, New York, Oregon, South Carolina, and Texas has submitted a petition proposing a tolerance for fonofos and its oxygen analogue in or on squash. The proposed tolerance will be for the residues of o-ethyl s-phenyl ethylphosphonodithioate including its oxygen analog s-ethyl s-phenyl ethylphosphonothiolate in or on the raw agricultural commodity, squash at 0.1 ppm. The product will be applied as a broadcast spray and incorporated into the soil using suitable tillage equipment prior to planting. One application of 4 quarts of Dyfonate 4-EC per acre (4.0 lb. a.i./A) will be used. There are no currently registered products labelled for this particular use. Parathion and diazinon are ineffective against white fringed beetle larvae.

Toxicology Branch Response:

Tolerances are established in a number of commodities for o-ethyl s-phenyl ethylphosphonodithioate (all for 0.1 ppm except for asparagus (0.5 ppm)). The following toxicological data are required for the establishment of tolerances. Those requirements that are satisfied are noted:

	<u>Required</u>	<u>Satisfied</u>
<u>Technical Product</u>		
Acute oral LD ₅₀	Yes	Yes
Acute dermal LD ₅₀	Yes	Yes
Acute inhalation LC ₅₀	Yes	Yes
Primary eye irritation	Yes	Yes
Primary dermal irritation	Yes	Yes
Dermal sensitization	Yes	No
Acute neurotoxicity	Yes	No
90-day subchronic oral rodent	Yes	(comment 1)
nonrodent	Yes	Reserved (comment 2)
90-day neurotoxicity (hen)	Yes	Yes (comment 3)
90-day neurotoxicity (mammal)	Yes	No (comment 1)
6-month dog (ocular effects)	Yes	No (comment 1)
Chronic feeding rodent	Yes	Reserved (comment 2)
nonrodent	Yes	Yes
Oncogenicity rat	Yes	Reserved (comment 2)
mouse	Yes	Reserved (comment 2)
Teratology rabbit	Yes	Reserved (comment 2)
mouse	Yes	Yes
2-Generation reproduction	Yes	Yes
Gene mutation	Yes	Yes
Chromosome aberration	Yes	Yes
Other genotoxic effects	Yes	Yes
Metabolism	Yes	Yes

End-Use Product: Dyfonate 4-EC

Acute oral LD ₅₀	Yes	Yes
Acute dermal LD ₅₀	Yes	Yes
Acute inhalation LC ₅₀	Yes	No
Primary eye irritation	Yes	Yes (comment 4)
Primary dermal irritation	Yes	Yes (comment 5)
Dermal sensitization	Yes	No

1. This study has been requested in the FIFRA '88 requirements.
2. A chronic/oncogenicity feeding study in the rat, an oncogenicity study in the mouse and a teratology study in the rabbit have been submitted and are in the process of Agency review.
3. An acceptable 2-year chronic feeding study in dogs is available. Therefore, the requirement for a subchronic feeding study in dogs has been satisfied.
4. It should be noted that this formulation is extremely toxic via the eye. Animals died during the eye irritation study.
5. This formulation is extremely toxic via the dermal route. Therefore, a dermal irritation study is not required.
6. The major toxicology data gaps are as follows:

Chronic/oncogenicity feeding study in rodents
Oncogenicity study in mice
Teratology study in a second species
Acute neurotoxicity study
90-day neurotoxicity study in mammals
6-month ocular toxicity study in dogs

The first 3 studies have been submitted to the Agency and are currently under review. The latter 3 studies are required under FIFRA'88.

7. A provisional RfD on this chemical is available, based on a 2-year feeding study in dogs. The NOEL is 0.2 mg/kg/day and the LOEL is 1.5 mg/kg/day, based on RBC cholinesterase inhibition, cholinergic symptoms, increased liver weights and microscopic changes in the liver and small intestine. The provisional RfD is 0.002 mg/kg/day, calculated from the NOEL, using an uncertainty factor of 100.
8. The Registration Division should consult the TAS printout on this chemical to determine the magnitude of the incremented increase in exposure.

9. An 8-point summary is attached.

8-Point Review

[Prepared for 1E04022, Dyfonate^R 4-EC (Fonofos) on October 17, 1991]

1. Toxicity data with technical grade fonofos considered in support of this tolerance (selected studies).

Acute oral LD ₅₀ , rats	10.8 mg/kg in males 5.8 mg/kg in females
90-day feeding, rats	2-year Chronic/Oncogenicity study in the rat is currently under review.
90-day neurotoxicity, hen	No neurological or histological signs of organophosphate type delayed neurotoxicity.
Chronic feeding, rat	2-year Chronic/Oncogenicity study in the rat is currently under review.
Chronic oral, dog	ChE NOEL 0.2 mg/kg/day, ChE LOEL 1.5 mg/kg/day (RBC ChE inhibition, increase in liver weight, microscopic changes in liver and small intestine, tremors, lacrimation, salivation)
Chronic/Onco, mouse	Oncogenicity study in mouse is currently under review.
Teratology, mouse	NOEL maternal tox. 6 mg/kg/day, LOEL 8 mg/kg/d, (symptoms of neurotoxicity). NOEL developmental toxicity 2 mg/kg/day, LOEL 6 mg/kg/day (sternebral malalignment, slight dilation of 4th cerebral ventricles)

Teratology, rabbit

Rabbit teratology study currently under review.

Reproduction - 3 generation, rat

Reproductive and fetotox. NOEL > 31.6 ppm (HDT)

Metabolism, rat

Single oral doses of 2.0, 4.0, or 8.0 mg/kg were eliminated > 90% in urine and feces at 48 hours.

Mutagenicity - Gene mutation

Tested in Ames assay at: 0.32, 1.6, 8.0, 40, 200, 1000 and 5000 ug/plate. Tested up to levels of cytotoxicity. It did not induce a significant increase in the number of reverse mutations when compared to the vehicle control, DMSO and to the absolute control.

Mutagenicity - Chrom. Aberr.

Tested for potential to induce chromosomal aberrations in an in vitro assay in human lymphocytes up to cytotoxic levels. The dose levels tested were 10, 50 and 100 ug/ml both with and without metabolic activation. Fonofos did not induce a significant increase in chromosomal aberrations under the conditions of the study. Positive controls verified the sensitivity of the assay.

Mutagenicity - Other
genotoxic effects

Tested in a mouse micronucleus test at 6 and 9.5 mg/kg. There were no statistically or biologically significant increases in the frequency of micronucleated polychromatic erythrocytes in mice treated with fonofos at either dose level at any of the sampling times investigated, when the data from both sexes were considered separately or when combined (when compared to vehicle control values). The percentage of polychromatic erythrocytes in the treated animals when compared to the controls indicates that there was some indication of cytotoxicity to the bone marrow cells at the dose levels tested.

2. Additional toxicity data considered desirable: Acute neurotoxicity, 90-day neurotoxicity in mammals, 6-month study for ocular effects in dogs.
3. The required data for this chemical will be requested under the FIFRA '88 mandate.
4. Tolerances are established in a number of commodities for o-ethyl s-phenyl ethylphosphonodithioate (all for 0.1 ppm except for asparagus (0.5 ppm)). Other tolerances for this pesticide may be obtained from the TAS printout.
5. The relationship of these tolerances on the contribution to the diet and the MPI must be addressed by the Dietary Exposure Branch and the TAS system.
6. A provisional RfD on this chemical is available, based on a 2-year feeding study in dogs. The NOEL is 0.2 mg/kg/day and the LOEL is 1.5 mg/kg/day, based on RBC cholinesterase inhibition, cholinergic symptoms, increased liver weights and microscopic changes in the liver and small intestine. The provisional RfD is 0.002 mg/kg/day, calculated from the NOEL, using an uncertainty factor of 100.

7. The Toxicology Branch is not aware of any pending regulatory actions against registration of this pesticide.
8. None.

SECTION F

PROPOSED TOLERANCE FOR RESIDUES OF THE PESTICIDE CHEMICAL,
FONOFOS INCLUDING ITS OXYGEN ANALOG IN OR ON SQUASH

AMENDS 40 CFR 180.221

The petitioner, IR-4, on behalf of the Agricultural Experiment Stations of California, Florida, Georgia, Indiana, Mississippi, New York, Oregon, South Carolina, and Texas requests establishment of a tolerance for the residues of the insecticide, O-ethyl S-phenyl ethylphosphonodithioate including its oxygen analog, S-ethyl S-phenyl ethylphosphonothioate in or on the raw agricultural commodity, squash at 0.1 ppm.

DYFONATE® 4-EC

EMULSIFIABLE LIQUID—
INSECTICIDE

RESTRICTED USE PESTICIDE

Due to ACUTE DERMAL TOXICITY

For retail sale to and application only by Certified Applicators or personnel under their direct supervision and only for those uses covered by the certified applicator's certification.

Complete Directions For Use,
Use Precautions and Recommendations

ACTIVE INGREDIENTS:	
O-Ethyl S-phenyl ethylphosphonodithioate*	47.3%
Xylene Range Aromatic Solvent	39.1%
INERT INGREDIENTS: 13.6%	
TOTAL	100.0%

(Contains 4 Pounds DYFONATE per gallon)

*Dyfonate

EPA Reg. No. 10182-212

KEEP OUT OF REACH OF CHILDREN.



PELIGRO

PRECAUCION AL USUARIO: SI USTED NO LEE INGLES, NO USE ESTE PRODUCTO HASTA QUE LA ETIQUETA LE HAYA SIDO EXPLICADA AMPLIAMENTE.

Danger—Read All Label Directions Before Using

STATEMENT OF PRACTICAL TREATMENT

Call a Physician Immediately: If a known exposure occurs, or if poisoning is suspected, do not wait for symptoms to develop. Immediately initiate the recommended procedures below. Simultaneously contact a physician, or the nearest hospital, or the nearest Poison Control Center. Inform the person contacted of the type and extent of exposure, describe the victim's symptoms, and follow the advice given.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE CALL 1-800-F-A-S-T-M-E-D (327-8633).

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.

Note: Be sure to advise the physician that the compound is a cholinesterase inhibitor, and follow the physician's advice.

Poison Symptoms—DYFONATE 4-EC is a highly toxic cholinesterase inhibitor. Symptoms include headache, blurred vision, weakness, nausea, discomfort in the chest, abdominal cramps, vomiting, diarrhea, salivation, sweating and pinpoint pupils.

Always Call a Physician in Case of Suspected Poisoning

Atropine by Injection is Antidotal

First Aid—If patient has stopped breathing, immediately remove from contaminated area, then start artificial respiration, preferably by mechanical means. If swallowed immediately dilute the swallowed material by giving large quantities of water and induce vomiting by gagging the victim with a finger or blunt object placed on the back of the victim's tongue. Give fluids until vomitus is clear. Never give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center. If inhaled, remove to fresh air. Get medical attention if respiratory irritation occurs. For eye contact, flush with large amounts of running water for at least 15 minutes. Hold eyelids apart to insure rinsing of the entire surface of the eyes. Get medical attention. For skin contact, remove contaminated clothing and immediately wash skin thoroughly for 15 minutes with soap and water. Avoid abrading the skin.

Information for Physician—Initial measures include removal of secretions, maintenance of a patent airway and, if necessary, artificial respiration.

When cyanosis is relieved, atropine may be administered in large therapeutic doses, repeated as necessary to the point of tolerance. If symptoms warrant further treatment, protopam chloride (pralidoxime chloride, 2-PAM chloride) has shown utility as adjunctive therapy. Never use morphine. Continued absorption of the poison may occur, resulting in a fatal relapse after initial improvement; very close supervision of the patient is indicated for at least 48 to 72 hours.

IN CASE OF SPILL

ISOLATE the spill.

Hold this package, other cargo and vehicles involved. IMMEDIATELY TELEPHONE (24-hour service) for emergency assistance: 800-424-9300.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS



Danger: Poisonous if Swallowed, Inhaled or Absorbed Through the Skin. Rapidly Absorbed Through the Skin. Do Not Get in the Eyes, on Skin, or on Clothing. Do Not Breathe Spray Mist.

Use a respirator approved by the National Institute for Occupational Safety and Health (30 CFR Part 11—Subpart M) for protection against pesticide inhalation.

Wear rubber gloves, shoes, protective clothing and goggles when handling or applying.

Wash hands, arms, and face thoroughly with soap and water after handling and before eating or smoking. Routinely shower or bathe after work and wash all clothing with soap and hot water before re-using. In case of contact, immediately remove contaminated clothing and wash thoroughly with soap and water.

Do not transport or store DYFONATE 4-EC with any food or feed intended for human or animal consumption.

Not for use or storage in or around the home.

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

Do not apply or allow to drift to areas occupied by unprotected humans or beneficial animals or onto adjoining food, fiber or pasture crops. Do not contaminate food or feed.

REENTRY STATEMENT

- Do not enter treated areas for 24 hours after application unless appropriate protective clothing is worn.
- Foliar Applications (over the top) for Sorghum: Do not allow worker reentry into treated fields within 48 hours of application unless appropriate protective clothing is worn. Protective clothing means, at least, a hat or other suitable head covering, gloves, a long-sleeved shirt and long-legged trousers or coverall type garment (all closely woven fabric covering the body, including the arms and legs), shoes and socks.
- Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.
- Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.
- Do not apply or allow to drift to areas occupied by beneficial animals or onto adjoining food, fiber or pasture crops. Do not contaminate food or feed.
- Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers.

When oral warnings are given, warnings shall be given in a language customarily understood by workers and must indicate the specific period of time that treated areas may not be entered without protective clothing. Oral warnings must also include appropriate first aid instructions in case of accidental exposure. These instructions are given in the STATEMENT OF PRACTICAL TREATMENT at the beginning of this label.

Written warnings must include the following information. "WARNING. Area treated with DYFONATE® Agricultural Insecticide on (date of application). Do not enter treated areas for 24 hours (48 hours for foliar applications in sorghum) after application unless appropriate protective clothing is worn (or other reentry interval if your state has a more restrictive interval for this product). If accidental exposure occurs, follow the

INSECTICIDE



instructions below." (Written warnings must include the STATEMENT OF PRACTICAL TREATMENT given at the beginning of this label.)

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and wildlife. Birds feeding in treated areas may be killed. Remove or cover if spills occur. Runoff from treated areas may be hazardous to fish in neighboring areas. Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of waste. For guidance contact your regional office of the EPA. Apply this product only as specified on the label.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

GENERAL PRECAUTIONS

Read all directions before using.

Do not apply to any crop, or in any manner not specified on this label.

Do not rotate with carrots.

INSECTS CONTROLLED

Black Cutworm	<i>Agrotis ipsilon*</i>
Cabbage Maggot	<i>Hylemya brassicae</i>
Corn Leaf Aphid	<i>Rhopalosiphum maidis</i>
Garden Symphylan	<i>Scutigera immaculata</i>
Onion Maggot	<i>Hylemya antiqua</i>
Greenbug	<i>Schizaphis graminum</i>
Seed Corn Maggot	<i>Hylema platura</i>
Flea Beetles:	
Elongate Flea Beetle	<i>Systema elongata</i>
Palestriped Flea Beetle	<i>Systema blanda</i>
Threespotted Flea Beetle	<i>Disonycha triangularis</i>
Rootworms:	
Northern Corn Rootworm	<i>Diabrotica longicornis</i>
Southern Corn Rootworm	<i>Diabrotica undecimpunctata howardi</i>
Western Corn Rootworm	<i>Diabrotica virgifera</i>
Wireworms:	
Corn Wireworm	<i>Melanotus communis</i>
Pacific Coast Wireworm	<i>Limonius canus</i>
Southern Potato Wireworm	<i>Conoderus falli</i>
Sugarbeet Wireworm	<i>Limonius californicus</i>
Tobacco Wireworm	<i>Conoderus vespertinus</i>
Western Field Wireworm	<i>Limonius infuscatus</i>
Wheat Wireworm	<i>Agriotes mancus</i>
<i>Ctenicera lobata</i>	
<i>Dalopius pallidus</i>	

* Suppression only

DIRECTIONS FOR USE

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

Do not apply this product through any type of irrigation system.

Application should be made only with tractor mounted spray equipment or larger, custom applicator type vehicles. Application should be made by trained personnel only, using approved protective equipment. Pour the recommended amount of DYFONATE 4-EC into nearly filled spray tank. Add balance of water to fill tank. Keep agitator running during filling and spraying operations. Apply in 20 to 50 gallons of water per broadcast acre using a properly calibrated, low-pressure sprayer having good agitation.

DYFONATE 4-EC may be combined with solution, slurry, and suspension fertilizers. In addition, certain herbicides may be combined with DYFONATE 4-EC, both with and without fertilizer. Read the recommendations for specific uses. Before combining in the spray tank, physical compatibility with these fluid fertilizers must be determined. See Appendix 1 for special directions regarding these combinations. Even though found to be compatible, agitation must be maintained during filling and application operations to insure uniform distribution of material.

Preplant broadcast applications should be mixed (incorporated) into the soil to a depth of 2 to 3 inches.

RECOMMENDATIONS

BEANS (GREEN AND DRY):

For control of garden symphylans and wireworms, apply 2 quarts (for symphylans) or 1 gallon (for symphylans and wireworms) DYFONATE 4-EC per acre, broadcast prior to planting and incorporate into the soil using suitable tillage equipment. (For garden symphylans only, reduce the rate proportionately for band treatments.)

For control of seed corn maggot: Northwestern U.S.: Apply 2 quarts to 1 gallon DYFONATE 4-EC per acre, broadcast on soil surface, prior to planting and incorporate to a depth of 2 to 4 inches using suitable tillage equipment. Use higher rate where population pressure is severe. Northeastern U.S.: Apply 1 gallon DYFONATE 4-EC per acre, broadcast on soil surface, prior to planting and incorporate to a depth of 2 to 4 inches using suitable tillage equipment.

All treatments may be applied as a tank mix with EPTAM 7-E Selective Herbicide in fluid fertilizer and/or water. Follow the appropriate regional recommendations in the crop section of the EPTAM 7-E label for broadcast, preplant incorporated applications. Use only fluid fertilizers compatible with EPTAM 7-E and DYFONATE 4-EC (see Appendix 1). Observe all use precautions and limitations on the EPTAM 7-E label.

BEANS (LIMA):

For control of garden symphylans and wireworms, apply 2 quarts (for symphylans) or 1 gallon (for symphylans and wireworms) DYFONATE 4-EC per acre, broadcast, prior to planting and incorporate into the soil using suitable tillage equipment. The higher rate is recommended on lima beans grown in California only. (For garden symphylans only, reduce the rate proportionately for band treatment.)

COLE CROPS (BROCCOLI, BRUSSELS SPROUTS, CABBAGE, CAULIFLOWER):

Garden Symphylans: Prior to or at time of seeding or transplanting apply 2 quarts DYFONATE 4-EC per acre, broadcast, and incorporate into the soil using suitable tillage equipment. (Reduce the rate proportionately for band treatments.)

Cabbage Maggot (Northeastern U.S. only)—For transplant cole crops: use 1 to 2 quarts DYFONATE 4-EC in 200 to 400 gallons of water per acre. Apply with a sprayer equipped with drop nozzles to direct a drenching spray to the base of the plants. Apply immediately after transplanting.

CORN (FIELD, SWEET AND POPCORN):

NOTE: May be used in corn grown for grain or silage.

A. Band application for control of northern, southern and western corn rootworms—Apply at planting, 1/4 to 1 quart DYFONATE 4-EC per acre in a 6 to 8 inch band over corn rows 38 to 40 inches apart.

Incorporate to the top 1/2 to 1 inch of soil by making application ahead of the press wheels or by use of special covering devices or by dragging a short length of chain behind the press wheels.

Do not place DYFONATE 4-EC in direct contact with seed.

B. Broadcast application for control of symphylans, northern, southern and western corn rootworms, and wireworms, and for suppression of black cutworm—Apply 2 quarts (for symphylans), 3 quarts (for symphylans and corn rootworms), or 4 quarts (for symphylans, corn rootworms, wireworms and black cutworm) DYFONATE 4-EC per acre prior to planting and incorporate into the soil using suitable tillage equipment. This treatment may be applied as a tank mix with ERADICANE 6.7-E or SUTAN® + 6.7-E selective herbicides or their recommended tank mixes with ATRAZINE 80W or 4L BLADEX 80W or 4L. A compatible fluid fertilizer (see Appendix 1) or water may be used as carrier. Follow all directions, limitations, and use precautions on the ERADICANE 6.7-E, SUTAN + 6.7-E, ATRAZINE, and BLADEX labels. Do not tank mix DYFONATE with ERADICANE 6.7-E on sweet corn or popcorn.

C. Split boot application for control of northern and western corn rootworms (recommended in the Northcentral and Midwestern corn-growing areas only)—Apply, at planting, 1 quart DYFONATE 4-EC in 5 to 20 gallons of compatible fluid fertilizer, (see Appendix 1), per acre (40 inch row spacing) in subsurface split bands on each side of the corn row, 1 1/4 to 1 1/2 inches to each side of the seed and 1 to 2 inches deep. Do not place DYFONATE 4-EC in direct contact with the seed.

MINT (PEPPERMINT, SPEARMINT): For control of garden symphylans apply 2 quarts DYFONATE 4-EC per acre, broadcast, and incorporate into the soil using suitable tillage equipment prior to planting or on established plantings prior to Spring growth. (Do not apply terbacil for at least 3 weeks before or after the DYFONATE 4-EC application.)

BULB ONIONS: For control of onion maggot, apply as a furrow treatment at time of planting. Based on a 20 inch row spacing, apply at a rate of 1 quart DYFONATE 4-EC per acre (1 quart per 26,135 feet of row; 3 1/2 fluid ounces per 2,613 feet of row; 1 1/4 fluid ounces per 1,000 feet of row). Use on organic soils only (soils containing 10% or more organic matter).

PEPPERS: For control of garden symphylans and wireworms, apply 2 quarts (for symphylans) or 4 quarts (for symphylans and wireworms) DYFONATE 4-EC per acre, broadcast, prior to planting and incorporate into the soil using suitable tillage equipment. (For garden symphylans only, reduce the rate proportionately for band treatments.)



POTATOES (IRISH):

A. Broadcast preplant application for control of garden symphylans and wireworms:

Apply 2 quarts (for symphylans) or 4 quarts (for symphylans and wireworms) DYPONATE 4-EC per acre prior to planting and incorporate into the soil using suitable tillage equipment. This treatment may also be applied in certain areas as a tank mix with EPTAM® 7-E selective herbicide in a compatible fluid fertilizer and/or water (see Appendix 1). Follow recommendations in the crop section of the EPTAM 7-E label for broadcast, preplant incorporated applications. For use in the Northern, Western, and Pacific Northwest Regions only. Observe all use precautions and limitations on the EPTAM 7-E label.

B. Banded preplant soil injection with fluid fertilizer for control of wireworms (Northwestern U.S. only):

Apply through fluid fertilizer shank immediately ahead of the planter. Set the shank to run 8 to 10 inches deep. Apply 2 quarts DYPONATE 4-EC per crop acre, based on 36" row spacing, in the recommended quantity of compatible liquid fertilizer (see Appendix 1).

NOTE: For heavy wireworm infestations, use the broadcast application only.

SORGHUM (MILO): For control of corn leaf aphid and greenbug, apply 3/4 to 1 quart DYPONATE 4-EC in 5 to 30 gallons of water per acre over the top using aerial or ground application equipment. Do not apply within 14 days of harvest nor feed or graze to livestock within 14 days of applications. Limit use to 2 applications per crop.

STRAWBERRIES: For control of symphylans apply 2 quarts DYPONATE 4-EC per acre, broadcast, and incorporate into the soil using suitable tillage equipment prior to planting. (Reduce the rate proportionately for band treatments.)

SUGAR BEETS: For control of garden symphylans and wireworms, apply 2 quarts (for symphylans) or 1 gallon (for symphylans and wireworms) DYPONATE 4-EC per acre, broadcast, prior to planting and incorporate into the soil using suitable tillage equipment. (For garden symphylans only, reduce the rate proportionately for band treatments.)

SUGARCANE: At planting—For wireworm control, apply 4 quarts DYPONATE 4-EC per acre in a 14 inch band on cane rows 60 inches apart. This is equivalent to 11 to 14 1/2 fluid ounces of DYPONATE 4-EC per 1,000 linear feet of row. Apply over the top of sugarcane seed pieces immediately ahead of covering discs.

TABLE BEETS: For control of cabbage maggot and garden symphylans, apply 2 quarts DYPONATE 4-EC per acre, broadcast, prior to planting. Incorporate into the soil using suitable tillage equipment. (For garden symphylans only, reduce the rate proportionately for band treatments.)

TOBACCO: For control of wireworms, apply 1 to 2 quarts DYPONATE 4-EC per acre, broadcast, prior to bedding and transplanting and incorporate into the soil using suitable tillage equipment.

Flue Cured Tobaccos only: DYPONATE 4-EC in combination with TILLAM 6-E controls wireworms and certain weeds (see TILLAM 6-E label) in tobacco. Add to spray tank and apply 1 quart DYPONATE 4-EC and 2 1/2 quarts TILLAM 6-E in 20 to 50 gallons of water per acre (see Appendix 1). Use a properly calibrated, low-pressure, boom-type sprayer having good agitation. **IMPORTANT:** Refer to both DYPONATE 4-EC and TILLAM 6-E labels for pertinent directions for use, and use precautions and restrictions. The soil should be well worked and dry enough to permit good soil incorporation. The tank mix must be incorporated (mixed) into the soil immediately after application to prevent loss of the herbicide by evaporation. Whenever possible, application and incorporation should be done in the same operation. Use powerdriven cultivation equipment set to cut to a depth of 3" in light soil and 3" to 4" in heavy soil, or a tandem disc set to cut to a depth of 4" to 6". Cross disc at right angles for thorough mixing. The bedding operation should follow the incorporation as soon as practical. Planting may be done immediately after bedding or at a later date; however, to insure long term weed control, the crop should be planted as soon as possible after application and bedding.

TOMATOES: For control of garden symphylans, apply 2 quarts of DYPONATE 4-EC per acre, broadcast, prior to planting and incorporate into the soil using suitable tillage equipment. (Reduce the rate proportionately for band treatments.)

Appendix 1

Procedure for Testing the Tank-Mix Compatibility of DYPONATE 4-EC with Fluid Fertilizers and DYPONATE 4-EC with Herbicides and Water or Fluid Fertilizers.

This procedure is suggested for determining whether DYPONATE 4-EC and a specific fluid fertilizer and/or the specifically approved herbicide(s) may be combined for spray-tank application.

Materials Required:

1. a. DYPONATE 4-EC.
b. DYPONATE 4-EC/herbicide combinations (EPTAM 7-E, ERADICANE 6.7-E, SUTAN + 6.7-E, TILLAM 6-E, ATRAZINE 80W or 4L, or BLADDEX 80W or 4L.
2. Water or fluid fertilizer to be used.
3. Adjuvant for tank mix—Compex, Sponto 16B-D, Unite or equivalent. The adjuvant which performs best depends on the specific fertilizer being considered.
4. Two one-quart, wide-mouth glass jars with tops.
5. Measuring spoons (a graduated cylinder or pipette will provide more accurate measurement).
6. Measuring cup, 8 oz. (237 mL)

Procedure:

1. Add one pint (2 cups or approximately 473 mL) of the test water or fluid fertilizer to each of the quart jars.
2. Add adjuvant to one of the jars and mix (see rate tables).
3. Carefully add the pesticides to each jar (see rate tables) as follows:
 - a. If only DYPONATE 4-EC is to be used, add it directly to each jar.
 - b. If a tank mix with a herbicide emulsifiable concentrate is to be used, add the herbicide first and mix, and then add the DYPONATE 4-EC.
 - c. If a tank mix with a herbicide emulsifiable concentrate and a wettable powder or flowable formulation is to be used, add and mix the pesticides in the following order:
 - 1) add and mix the wettable powder or flowable formulation first (premixing these in water prior to addition to fluid fertilizer often provides a more compatible mix with fluid fertilizer),
 - 2) add and mix the herbicide emulsifiable concentrate second,
 - 3) and finally, add the DYPONATE 4-EC.
4. Securely close each jar using the top and mix the contents by inverting the jar ten times.
5. Inspect the mixtures immediately and after standing for thirty minutes without mixing.
6. Dispose of jar mixes according to disposal statements contained within this label.

A mixture may be incompatible if either of the following conditions is observed:

- a. an oil layer or large oil globules are observed, or
- b. sludge or clumps are present.

If either mixture remains uniform for thirty minutes, the combination may be used. Should either mixture separate after thirty minutes, but remix readily with ten jar inversions, the combination can be used if good agitation is maintained in the spray tank. If nondispersible oil, sludge or clumps persist, the combination must not be used.

If the mixture with the adjuvant stays mixed, or remixes readily to form a uniform dispersion, but the one without adjuvant does not, be sure to use the adjuvant in the spray tank. Add the adjuvant first to the water or fluid fertilizer at the recommended rate. Minimize foaming by using moderate agitation.

Rate Table for DYPONATE 4-EC/EPTAM 7-E and ADJUVANT* with the FLUID FERTILIZER

Gallons of Fluid Fertilizer To Be Applied Per Acre	Milliliters or Teaspoons of DYPONATE 4-EC* To Be Added to 1 Pint of Fertilizer		Milliliters or Teaspoons of EPTAM 7-E* To Be Added to 1 Pint of Fertilizer	
	mL	Teaspoon	mL	Teaspoon
10	12	2 1/2	6 1/2	1 1/2
15	8	1 1/2	5	1
20	6	1 1/4	3 1/2	3/4
25	5	1	2 1/2	3/4
40	3	1/2	1 1/2	3/4

* Based on a field rate of one pound active ingredient per acre in the fertilizer volumes indicated. Adjust volumes proportionately to correspond with intended field rates in terms of pounds active ingredients per acre (e.g. for a field rate of 3 pounds

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of actual EPTAM 7-E in 20 gallons of fertilizer per acre, add 10 mL or 2 tsp. of EPTAM 7-E to each jar for compatibility testing purposes.)

** A typical adjuvant rate of use is 3 pints per 100 gallons of fluid fertilizer. Two (2) mL or one-half (1/2) tsp. of adjuvant should be added to 1 pint of fertilizer in order to equal a rate of 3 pints of adjuvant per 100 gallons of fluid fertilizer.

Rate Table for DYPONATE 4-EC and ADJUVANT** with the Fluid Fertilizer

Gallons of Fluid Fertilizer To Be Applied Per Acre	Milliliters or Teaspoons of DYPONATE 4-EC* To Be Added to 1 Pint of Fertilizer	
	mL	Tsp.
10	12	2 1/2
15	8	1 1/2
20	6	1 1/4
25	5	1
40	3	3/4

* Based on a fluid rate of one pound active ingredient per acre in the fertilizer volumes indicated. Adjust volumes proportionately to correspond with intended rate in terms of pounds active ingredient per acre (e.g. for a field rate of 2 pounds active ingredient in 10 gallons of fertilizer per acre, add 24 mL or 5 tsp. DYPONATE 4-EC to each jar for compatibility testing purposes.)

** A typical adjuvant rate of use is 3 pints per 100 gallons of fluid fertilizer. Two (2) mL or one-half (1/2) tsp. of adjuvant should be added to 1 pint of fertilizer in order to equal a rate of 3 pints of adjuvant per 100 gallons of fluid fertilizer.

Rate Table for DYPONATE 4-EC/ERADICANE 6.7-E and DYPONATE 4-EC/SUTAN + 6.7-E and ADJUVANT** with FLUID FERTILIZER

Gallons of Fluid Fertilizer To Be Applied Per Acre	Milliliters or Teaspoons of DYPONATE 4-EC* To Be Added to 1 Pint of Fertilizer		Milliliters or Teaspoons of ERADICANE 6.7-E* or SUTAN + 6.7-E To Be Added to 1 Pint of Fertilizer	
	mL	Tsp.	mL	Tsp.
10	12	2 1/2	7	1 1/2
15	8	1 1/2	5	1
20	6	1 1/4	3 1/2	3/4
25	5	1	2 1/2	1/2
40	3	3/4	1 1/2	1/2

* Based on a field rate of one pound active ingredient per acre in the fertilizer volumes indicated. Adjust volumes proportionately to correspond with intended field rates in terms of pounds active ingredients per acre (e.g. for a field rate of 4 pounds of actual SUTAN + 6.7-E in 20 gallons of fertilizer per acre, add 14 mL or 3 tsp. of SUTAN + 6.7-E to each jar for compatibility testing purposes.)

** A typical adjuvant rate of use is 3 pints per 100 gallons of fluid fertilizer. Two (2) mL or one-half (1/2) tsp. of adjuvant should be added to 1 pint of fertilizer in order to equal a rate of 3 pints of adjuvant per 100 gallons of fluid fertilizer.

Rate Table for DYPONATE 4-EC/ERADICANE 6.7-E/ ATRAZINE or BLADEX and DYPONATE 4-EC/SUTAN + 6.7-E/ ATRAZINE or BLADEX and ADJUVANT** with water or FLUID FERTILIZER

Gallons of Water or Fluid Fertilizer to Be Applied/Acre	10		15		20		25		40	
	mL	Tsp.	mL	Tsp.	mL	Tsp.	mL	Tsp.	mL	Tsp.
Milliliters or Teaspoons of DYPONATE 4-EC* To Be Added to 1 Pint of Water or Fertilizer	12	2 1/2	8	1 1/2	6	1 1/4	5	1	3	3/4
Milliliters or Teaspoons of ERADICANE 6.7-E* or SUTAN + 6.7-E* To Be Added to 1 Pint of Water or Fertilizer	7	1 1/2	5	1	3 1/2	3/4	2 1/2	1/2	1 1/2	1/2
Milliliters or Teaspoons of ATRAZINE 80W* or BLADEX 80W* To Be Added to 1 Pint of Water or Fertilizer	22	4 1/2	15	3	11	2 1/4	8 1/2	1 1/4	5	1

Gallons of Water or Fluid Fertilizer to Be Applied/Acre	10		15		20		25		40	
	mL	Tsp.	mL	Tsp.	mL	Tsp.	mL	Tsp.	mL	Tsp.
Milliliters or Teaspoons of ATRAZINE 4L* or BLADEX 4L* To Be Added to 1 Pint of Water or Fertilizer	12	2 1/2	8	1 1/2	6	1 1/4	5	1	3	3/4

* Based on a field rate of one pound active ingredient per acre in the water or fertilizer volumes indicated. Adjust volumes proportionately to correspond with intended field rates in terms of pounds active ingredients per acre (e.g. for a field rate of 4 pounds of actual SUTAN + 6.7-E in 40 gallons of fertilizer per acre, add 7 mL or 1 1/4 tsp. of SUTAN + 6.7-E to each jar for compatibility testing purposes, i.e., 4 times the 10-gallon rate for 1 pound equals 28 mL or 6 tsp.; then dividing by the dilution factor four [40 + 10 = 4] gives 7 mL or 1 1/4 tsp. per pint, which is equivalent to 4 pounds actual SUTAN + 6.7-E/40 gallons.)

** A typical adjuvant rate of use is 3 pints per 100 gallons of fluid fertilizer. Two (2) mL or one-half (1/2) tsp. of adjuvant should be added to 1 pint of fertilizer in order to equal a rate of 3 pints of adjuvant per 100 gallons of fluid fertilizer.

Rate Table for DYPONATE 4-EC/TILLAM 6-E and ADJUVANT**

Gallons of Fluid Fertilizer To Be Applied Per Acre	Milliliters or Teaspoons of DYPONATE 4-EC* To Be Added to 1 Pint of Fertilizer		Milliliters or Teaspoons of TILLAM 6-E* To Be Added to 1 Pint of Fertilizer	
	mL	Tsp.	mL	Tsp.
10	12	2 1/2	8	1 1/2
15	8	1 1/2	5 1/2	1
20	6	1 1/4	4	3/4
25	5	1	3 1/2	3/4
40	3	3/4	2	1/2

* Based on a field rate of one pound active ingredient per acre in the fertilizer volumes indicated. Adjust volumes proportionately to correspond with intended field rates in terms of pounds active ingredients per acre (e.g. for a field rate of 4 pounds of actual TILLAM 6-E in 20 gallons of fertilizer per acre, add 10 mL or 2 tsp. of TILLAM 6-E to each jar for compatibility testing purposes.)

** A typical adjuvant rate of use is 3 pints per 100 gallons of fluid fertilizer. Two (2) mL or one-half (1/2) tsp. of adjuvant should be added to 1 pint of fertilizer in order to equal a rate of 3 pints of adjuvant per 100 gallons of fluid fertilizer.

Tank Mix Directions

1. Fill the spray tank at least 1/2 full of the appropriate carrier fluid. Be sure tank is clean and not contaminated with 2,4-D type herbicides, oil residue or other materials.
2. Start agitation and continue moderate agitation throughout mixing and application procedures.
3. Add the proper amount of adjuvant and mix (if adjuvant is to be used).
4. Next add the ATRAZINE 80W or 4L or BLADEX 80W or 4L (if it is to be combined in the tank) and mix to disperse it thoroughly.
5. Then add the herbicide emulsifiable concentrate (EPTAM 7-E, ERADICANE 6.7-E, SUTAN + 6.7-E or TILLAM 6-E) and mix thoroughly.
6. Lastly, add the DYPONATE 4-EC.
7. Complete filling the remaining portion of the tank with carrier fluid; mix thoroughly.
8. The tank-mix combination should not be left in the spray tank for prolonged periods; batches should be mixed and applied the same day.

NOTE: Constant moderate agitation is required for successful tank-mix preparation and application. Avoid excessive agitation which can cause tank-mix incompatibility. All return lines to the tank must discharge below liquid level.



STORAGE AND DISPOSAL

STORAGE: Minimum storage temperature: MINUS 40°F. Any steel container may be corroded by its contents. Dents or damage may promote corrosion. Use damaged and older containers FIRST. Inspect rusted cans for leaks.

PROHIBITIONS: Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate 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.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

NOTICE TO BUYER AND USER:

Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal use conditions, or under conditions not rea-

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