67760-28 01/04/2001 1/28

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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Jan 4, 2001

Ms. Kari Mavian
Cheminova, Inc.
Oak Hill Park
1700 Route 23, Suite 300
Wayne, New Jersey 07470

Subject: Nufos 4E
EPA Reg. No. 67760-28
Submission dated Oct 10, 2000

Dear Ms. Mavian:

The revised product labeling referred to above, submitted in connection with the registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable provided you make the labeling change indicated below before you release the product for shipment bearing the amended labeling:

1) On page 1, you must revise the First Aid Instructions for "If Swallowed" to: "Call a physician or Poison Control center immediately. Do not induce vomiting. Contains an aromatic petroleum solvent. Do not give anything by mouth to an unconscious person."

The Agency is not required to publish a use deletion FR Notice for this product amendment because this label amendment does not involve a use deletion. Submit one copy of the revised final printed label before releasing the product for shipment.

A stamped copy of the label is enclosed for your records. If you have questions, please contact Dennis McNeilly at (703) 308-6742 or electronically at mcneilly.dennis@epa.gov.

Sincerely,

Dennis McNeilly, Chemist
Insecticide-Rodenticide Branch
Registration Division (7505C)

Enclosure: stamped label

2/28

RESTRICTED USE PESTICIDE

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.

CHLORPYRIFOS - BEFORE USING THIS PESTICIDE - STOP - READ THE LABEL

Nufos® 4E

Insecticide

ACCEPTED
with COMMENTS
In EPA Letter Dated:
JAN - 4 2001
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 67760-28

•For control of various insects infesting certain field, fruit, nut and vegetable crops

ACTIVE INGREDIENT:	
Chlorpyrifos: o,o-diethyl, o-(3,5,6-trichloro-2-pyridinyl) phosphorothioate	44.2%
INERT INGREDIENTS:	55.8%
TOTAL:	100.0%

This product contains 4 pounds of chlorpyrifos per gallon. Contains aromatic petroleum distillates.

KEEP OUT OF REACH OF CHILDREN

WARNING AVISO

AL USUARIO: Si usted no entiende la etiqueta, busque a alguien para que se la explique a Usted en detalle. (**TO THE USER**: If you do not understand the label, find someone to explain it to you in detail)

May be fatal if swallowed • Causes substantial but temporary eye injury or skin irritation • Harmful if absorbed through skin • Do not get in eyes, on skin, or on clothing

FIRST AID

(Organophosphorus Pesticide)

FIRST AID: In case of poisoning, call a physician or Poison Control Center immediately. Have person lie down and keep quiet.

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger (be aware that product contains aromatic petroleum distillates). If person is unconscious, do not give anything by mouth and do not induce vomiting.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

NOTE TO PHYSICIAN: This product is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote.

IN CASE OF MEDICAL EMERGENCY INVOLVING THIS PRODUCT, CALL TOLL FREE, DAY OR NIGHT, 800-228-5635, Ext. 153

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

EPA Reg. No.: 67760-28 Net Contents: _____ EPA Est. No.:

Manufactured for:
CHEMINOVA, INC.
1700 Route 23
Wayne, NJ 07470

®**Nufos** is a registered trademark of Cheminova

(SEE SEPARATE BOOKLET FOR FULL DIRECTIONS FOR USE)

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under Agricultural Use Requirements in the Directions for Use section for information about this standard.

TABLE OF CONTENTS *[optional]*

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN

WARNING

May be fatal if swallowed. Causes substantial but temporary eye injury or skin irritation. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category G on an EPA chemical resistance category selections chart.

Applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants
- Socks
- Chemical-resistant footwear
- Chemical-resistant (such as nitrile, butyl, barrier laminate or Viton) gloves
- Protective eyewear such as goggles and face shield
- Overhead exposure: Wear chemical-resistant headgear
- Mixers/Loaders: Wear a chemical-resistant apron
- For cleaning equipment: Add a chemical-resistant apron.

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

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

Organophosphorus pesticideIn case of poisoning, call a physician or Poison Control Center immediately. Have person lie down and keep quiet.

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger (be aware that product contains aromatic petroleum distillates). If person is unconscious, do not give anything by mouth and do not induce vomiting.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.

NOTE TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing cardiac and respiratory depression. **Antidote**: Administer atropine sulphate in large doses. TWO to FOUR mg intravenously or intramuscularly as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear. 2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for, atropine, which is a symptomatic and often lifesaving antidote. DO NOT GIVE MORPHINE OR TRANQUILIZERS. At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Continued absorption of **chlorpyrifos** may occur and relapse may occur after initial improvement. VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to birds and wildlife, and extremely toxic to fish and aquatic organisms. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate spills. Do not contaminate water by cleaning of equipment or disposal of equipment wastewaters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Protective information may be obtained from your cooperative agricultural extension service.

PHYSICAL OR CHEMICAL HAZARDS

Refer to additional precautionary information elsewhere on this label including **PERSONAL PROTECTIVE EQUIPMENT (PPE)** and **DIRECTIONS FOR USE** including **AGRICULTURAL USE REQUIREMENTS** and **STORAGE AND DISPOSAL**.

DIRECTIONS FOR USE

Restricted Use Pesticide

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. This product cannot be reformulated or repackaged into other end-use products.

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 exemptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170).

MIXING DIRECTIONS

To prepare the spray, add a portion of the required amount of water to the spray tank and with the spray tank agitator operating add the Nufos 4E. Complete filling the tank with the balance of water needed. Maintain sufficient agitation during both mixing and application to ensure uniformity of the spray mixture.

Nufos 4E may also be used in tank mixtures with certain herbicides and/or with non pressure fertilizer solutions as recommended under specific crop use directions. Prepare tank mixtures in the same manner as recommended above for use of Nufos 4E alone. When tank mixtures of Nufos 4E and herbicides are involved, add wettable powders first, flowables second, and emulsifiable concentrates last. Where a fertilizer solution is involved. it is strongly recommended that a fertilizer pesticide compatibility agent such as Unite or Compex be used. Maintain constant agitation during both mixing and application to ensure uniformity of the spray mixture. Do not allow spray mixtures to stand overnight.

Note: Test compatibility of the intended tank mixture before adding Nufos 4E to the spray or mix tank. Add proportionate amounts of each ingredient to a pint or quart jar, cap, shake, and let set 15 minutes. Formation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used.

SPRINKLER IRRIGATION

Nufos 4E may be applied by sprinkler irrigation for the following crop uses: alfalfa, citrus orchard floors, field corn, mint, sweet corn, cotton, cranberries, sorghum, soybeans, and wheat.

See the use sections for the individual crops for further application information. Do not apply this product to the above listed crops through any other type of irrigation system. Do not apply this product by chemigation to any other crop.

SPECIAL USE DIRECTIONS

The following use directions are to be followed when Nufos 4E is applied through sprinkler irrigation systems. Thoroughly clean the injection system and tank of any fertilizer or chemical residues, and dispose of the residues according to State and Federal laws. Flush the injector with soap and water. Determine the amount of insecticide needed to cover the desired acreage. Pump the required Nufos 4E into a steel tank, start mechanical or hydraulic agitation, and add in order the non emulsifiable oil and/or water. Continually agitate the mixture containing Nufos 4E. Set the sprinkler system to deliver the desired inches of water per acre. Start the water pump and sprinkler, and let the system achieve the desired pressure and speed before starting the injector. Start the injector and calibrate the injector system according to number 14 in **SPECIAL USE PRECAUTIONS** on this page. The mixture containing Nufos 4E must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving. This procedure is necessary to deliver the desired rate per acre in a uniform manner. When the application is finished, allow the entire irrigation and injector system to be thoroughly flushed clean before stopping the system.

SPECIAL USE PRECAUTIONS

The following use precautions will result in a safe and successful application of mixtures containing Nufos 4E:

1. Apply this product only through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, micro sprinkler, or hand move. Do not apply this product through any other type of irrigation system.
2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
3. If you have questions about calibration, you should contact state extension service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.
5. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

6. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. Refer to the American Society of Agricultural Engineer's Engineering Practice 409 for more information.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
8. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
11. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. The metering pump must provide a greater pressure than that of the irrigation system at the point of injection. The pump must meet Section 675 for "Electrically Driven or Controlled Irrigation Machines" NEC 70 and must contain Viton or Teflon seals.
12. To insure uniform mixing of the insecticide into the water line, inject the mixture through a nozzle placed in the fertilizer injection port or just ahead of an elbow or tee in the irrigation line so that the turbulence created at those points will assist in mixing. It is suggested that the injection point be higher than the insecticide tank to prevent siphoning.
13. The steel tank holding the insecticide mixture should be large enough to allow the system to complete a revolution with one filling. It should be free of rust, fertilizer, sediment, and foreign material, and equipped with an in-line strainer situated between the tank and the injector pump.
14. In order to calibrate the irrigation system and injector to apply the mixture containing Nufos 4E, determine the following:
    1. Calculate the number of acres irrigated by the system
    2. Set the irrigation rate and determine the number of minutes for the system to cover the intended treatment area
    3. Calculate the total gallons of insecticide mixture needed to cover the desired acreage. Divide the total gallons of insecticide mixture needed by the number of minutes to cover the treatment area. This value equals the gallons per minute output that the injector must deliver. Convert the gallons per minute to milliliters or ounces per minute. Calibrate the injector pump with the system in operation at the desired irrigation rate. It is suggested that the injector pump be calibrated at least twice before operation, and the system should be monitored during operation.
15. Do not apply when wind speed favors drift beyond the area intended for treatment. End guns must be turned off during the application, if they irrigate nontarget areas.
16. Do not allow irrigation water to collect or runoff and pose a hazard to livestock, wells, or adjoining crops.
17. Allow foliage to dry before reentering the field.
18. Do not apply through sprinkler systems which deliver a low coefficient of uniformity such as certain water drive units.

APPROVED CROPS

ALFALFA

Use Nufos 4E to control the following pests at the dosages indicated by application as a broadcast foliar spray:

PESTS	Nufos 4E
Aphids (suppression)	½ pint/acre

Corn rootworm adults (spotted cucumber beetles), grasshoppers	½-1 pint/acre
Alfalfa blotch leaf miners, alfalfa caterpillars, alfalfa weevil larvae and adults, armyworms, blue alfalfa aphids, cutworms, Egyptian alfalfa weevil larvae and adults, pea aphids, plant bugs, leafhoppers, spittlebugs	1-2 pints/acre

Note: Use higher rates to control spotted alfalfa aphids in California and Nevada. Stubble spray may be applied to control leafhoppers in the Northeast.

Mix the required dosage with enough water to ensure thorough coverage of crop foliage and apply using aerial (fixed wing or helicopter) or power operated ground spray equipment. For aerial application use 2 to 5 gallons of water per acre. For best coverage when using ground application, a minimum of 20 gallons of water per acre with hollow cone nozzles is recommended. Control may be reduced at low spray volumes under high temperature and wind conditions. Treat when field counts or crop injury indicates that damaging pest populations are developing or present; however, do not apply more than once per crop cutting. Some reduction in insect control may be evident under excessively cool conditions. For Egyptian alfalfa weevil control in California apply the specified dosage in a minimum of 5 gallons of water per acre when larvae are actively feeding and populations reach 15 to 20 larvae per 180° sweep with a 15-inch diameter net.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Nufos 4E should not be tank mixed with pesticides, surfactants, or fertilizer formulations unless prior use has shown the combination to be noninjurious under your current conditions of use. Some phytotoxic symptoms may be observed on young, tender rapidly growing alfalfa when treated with Nufos 4E. Alfalfa will outgrow the symptoms and no yield loss should be expected.

This product is highly toxic to bees exposed to direct treatment on alfalfa. Do not apply if nearby bees are clustered outside of hives and bees are foraging. Protective information may be obtained from your agricultural extension service.

Restrictions: Do not cut or graze treated alfalfa within 7 days after application of ½ pint of Nufos 4E per acre, within 14 days after application of 1 pint per acre, or within 21 days after application of rates above 1 pint per acre. Do not make more than 4 applications per year or apply more than once per crop cutting.

ASPARAGUS

Use Nufos 4E to control cutworms, asparagus aphids, and asparagus beetles by application at the rate of 2 pints per acre. Mix the specified dosage in sufficient water to ensure thorough coverage of treated plants and apply as a broadcast, foliar spray. For cutworms, it is preferable to apply Nufos 4E when the soil is moist and worms are active on or near the soil surface. Applications may be made during the fern stage for control of asparagus beetles and asparagus aphids when field counts or crop injury indicates that damaging pest populations are developing or present.

Restrictions

Do not make more than one preharvest application per season or apply within one day of harvest. Do not make more than two postharvest applications during the fern stage. Based on available residue data, the use of Nufos 4E on asparagus is limited to the Midwest and Pacific Northwest.

CHERRIES

Use Nufos 4E for the control of lesser peach tree borers, greater peach tree borers, and American plum borers by application as a trunk spray. Mix 1 ½ to 3 quarts of Nufos 4E with 100 gallons of water and apply as a coarse, low pressure spray to give uniform coverage of tree trunks and lower limbs. Make a second application two weeks after the first one and a third application after harvest. Avoid contact with

foliage in sweet cherries as premature leaf drop may result. Consult your State Agricultural Experiment Station or extension service specialist for proper time to treat in your area.

In addition, one of the three allowable applications per year may be applied as a dormant spray for control of San Jose scales, peach twig borers, and climbing cutworms. For control of these pests, tank mix ½ to 1 pint of Nufos 4E with 1 to 2 gallons of a petroleum oil recommended for dormant use in 100 gallons of water and spray the entire tree by application to runoff using ground spray equipment. For low volume (concentrate) sprays (40 to 100 gallons of spray mixture per acre) use the same amounts of Nufos 4E and spray oil per acre required for application as a dilute spray and apply in a manner that will ensure thorough coverage of the trees. Use the higher dosage of Nufos 4E for severe infestations. Use oil as recommended by your State Agricultural Experiment Station or extension service specialist.

Restrictions

Make only three applications per year. Do not apply within 6 days before harvest. Do not allow meat or dairy animals to graze in treated orchards.

CHRISTMAS TREES (NURSERIES AND PLANTATIONS)

Use Nufos 4E at the rate indicated to control the insects listed in the table below on the tree varieties listed.

Restrictions

Use Nufos 4E on tree plantations only in Connecticut, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, Washington, and Wisconsin.

Do not allow livestock to graze in treated areas.

Tree Variety	Insects Controlled	Dosage Nufos 4E	Remarks
Balsam fir Blue spruce Concolor fir Douglas fir Eastern white pine Fraser fir Grand fir Noble fir Scotch pine White spruce	Ants, aphids, adelgids (cooley), Eastern spruce galls, European pine sawflies, European pine shoot moths, grasshoppers, gypsy moths, mites [1] (European red spider, two spotted spider except in WA & OR), pales weevils (adult), pine needle midges, pine spittlebugs, plant bugs, spittlebugs, spruce budworms, spruce needleminer, scales [2] (pine needle, pine tortoise, spruce bud black pine, striped pine)	1 qt/acre	Do not treat plants under extreme heat and drought stress. Apply to foliage in sufficient water to ensure adequate coverage. [1] For effective control of adult spider mites if large numbers of eggs are present, apply a second spray 7-10 days after initial treatment to control newly hatched nymphs. [2] For scale control apply when scale crawlers are active.
	Pales weevils	3 qt/100 gal	Apply as a cut stump drench

CITRUS FRUITS

Use Nufos 4E at the rates indicated according to the designated geographic area to control the pests mentioned in this section. Use the lower rates for light infestations and increase the dosage for heavier infestations.

A petroleum spray oil recommended for use on citrus trees may be added to dilute spray mixtures only at a rate of up to 1.8 gallons per 100 gallons of water to improve control of aphids, mealybugs, scale insects, and thrips. Treat when insects become a problem or in accordance with the local spray schedule recommended by your State extension service specialist.

Nufos 4E may be applied in tank mixtures with ethion, dicofol, AgriMek* or Vendex*. See **MIXING DIRECTIONS** for further instructions. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for the other products used in combination with Nufos 4E.

Precautions

Observe local use directions for tank mix combinations especially in regard to applications of Nufos 4E plus spray oil. Consult with a county farm advisor, county agency, extension service personnel, agricultural commissioner, pest control advisor, or local Cheminova representative for such information regarding a given locality.

Do not apply when trees are stressed by drought or high temperatures.

Nufos 4E should not be tank mixed with Difolatan* 80 Sprills as crop injury may occur.

Nufos 4E is highly toxic to bees exposed to direct treatment and should not be applied when bees are actively visiting the area. During the bloom period in California, apply from one hour after sunset until two hours before sunrise.

Restrictions

Do not apply more than 2 applications or more than 15 pints of Nufos 4E or 7.5 lbs. active ingredient per acre per year. Do not make second foliar application within 30 days of the first application. Do not treat within 21 days of harvest for applications up to 7 pints of Nufos 4E per acre nor within 35 days for application of rates above 7 pints per acre. Do not do any work involving contact with trees within 2 days after treatment. Do not allow livestock to graze in treated areas.

Crop	Geographic Location	Pest	Dosage of Nufos 4E (pt/acre)	Spray Volume (gal/acre)	Remarks
Grapefruit, lemons, oranges, and other citrus fruit	California, Arizona	Aphids, katydids, Lepidopterous larvae, avocado leafrollers, cutworms, fruit tree leafrollers, orange tortrices, western tussocks moths	2-7	ground: 100-750 aerial: min. of 15	Do not use a spray concentration of Nufos 4E of less than ½ pt/100 gal of total volume.
		Scale insects (black scales, brown soft scales, California red scales)	8-12	100-2400	
		Thrips, (suppression), mealybugs	6-12	100-750	

		Additional Precautions for California and Arizona: Nufos 4E should not be used in combination with spray oil when temperatures are expected to exceed 95°F the day of application or for several consecutive days thereafter. Do not apply during the months of December, January or February.			
	Florida	Aphids, grasshoppers[a], orange dogs, mealybugs, scale insects (snow scales, Florida red scales, purple scales, long scales, chaff scales, black scales, brown soft scales)	2-7	ground: 100-1400 aerial: min. of 20	Do not use a spray concentration of Nufos 4E of less than ½ pt/100 gal of water per acre.
		Citrus rust mites	4-7	100-700	Do not use a spray concentration of Nufos 4E of less than 1 pt/100 gal of water per acre.
	[a] Lubber grasshoppers must be controlled when they are small (less than 1 inch in length) by direct contact with spray				
	Texas	Aphids, cutworms, katydids, mealybugs, scale insects (brown soft scales, California red scales, chaff scales)	4-7	200-700	Do not use less than ½ pt of Nufos 4E per 100 gallons of water in dilute applications.
		Citrus rust mites (suppression)	4-7	200-700	
Small transplanted grapefruit, orange and other citrus trees	Texas	Aphids, cutworms, katydids, mealybugs, scale insects (brown soft scales, California red scales, chaff scales)	Max. of 7	See Remarks.	Apply Nufos 4E at a rate of 1 fl oz/1 gal of water with a backpack sprayer. Apply to runoff.

CITRUS ORCHARD FLOORS

Use Nufos 4E to control red imported fire ants and other ant species by applying the specified dose in 25 or more gallons of water with ground application equipment that will uniformly apply the spray to the orchard floor. To control foraging ants and suppress mounds, apply Nufos 4E to the orchard floor at the rate of 3/4 to 1 quart per acre. Retreat as needed. For best insect control, uniform coverage of the orchard floor is necessary. Do not apply where weed growth or other obstructions would impede uniform coverage of the orchard floor. Do not apply in tank mixtures with Evik* herbicide. Foliar applications of Nufos 4E may be made in addition to the orchard floor treatments.

Nufos 4E may also be applied to citrus orchard floors through sprinkler irrigation systems only if the system uniformly covers the soil surface at the base of the tree. For best results, use the recommended amount of Nufos 4E per acre. See **SPRINKLER IRRIGATION** section for further information.

Restrictions
Do not apply more than 10 quarts of Nufos 4E or 10 lbs. active ingredient per acre per season. Do not apply last treatment within 28 days before harvest. Do not allow livestock to graze in treated areas. In Florida, do not apply more than 3 quarts per season.

CRANBERRIES

Use Nufos 4E by application as a broadcast, foliar spray to control brown spanworms, cranberry fruitworms, cranberry weevils, cutworms, fireworms, and Sparganothis fruitworms at the rate of 3 pints per acre. Mix the specified dosage in enough water to ensure thorough coverage and apply no less than 5 gallons of spray per acre when using aerial equipment or no less than 15 gallons of spray per acre when using ground equipment. For weevil control, apply once at flower bud development (late May, early June) and, if weevils are present, once after 100% bloom (early to mid July). For other insects, treat when field counts indicate damaging insect populations are developing or present. Apply only after the winter flood has been removed. To avoid pesticide contamination of flood waters, make no applications while bogs are flooded.

Nufos 4E may also be applied through sprinkler irrigation systems to control the above listed pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Restrictions
Do not make more than two applications per year or apply within 60 days before harvest.

FIELD CORN AND SWEET CORN (INCLUDING CORN GROWN FOR SEED)

For use to control cutworms, armyworms, corn earworms, corn rootworm adults, chinch bugs, grasshoppers, wireworms, flea beetle larvae and adults, aphids, billbugs, grubs, western bean cutworms, corn borers, symphylans, common stalk borers, and lesser cornstalk borers.

Preplant Incorporation Treatment
Use Nufos 4E at the following rates by application in sufficient water to the soil surface and incorporate into the soil:

PESTS	Nufos 4E
Cutworms, symphylans	2-4 pints/acre
Wireworms, billbugs, flea beetle larvae, grubs, seed corn maggots, seed corn beetles	4 pints/acre
Lesser cornstalk borers, corn rootworm larvae	6 pints/acre

Use recommended rate in not less than 10 gallons of water per acre and apply as a broadcast spray to the soil surface using suitable power-operated ground spray equipment. On the same day of treatment, incorporate the insecticide into the top 2 to 4 inches of soil using a disc, field cultivator or equivalent equipment.

Nufos 4E may also be applied in tank mixtures with non pressure fertilizer solutions and/or with Bladex*, Eradicane*, Sutan*, Lasso*, Dual*, and atrazine herbicides. See **MIXING DIRECTIONS** section for further information. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for the other products used in combination with Nufos 4E.

Preplant, At-Plant or Preemergence Treatment in Conservation Tillage

Use Nufos 4E at the following rates by application in sufficient water to surface trash and exposed soil:

PESTS	Nufos 4E
Cutworms, armyworms	1-2 pints/acre

Use recommended rate in not less than 20 gallons of water per acre and apply as a broadcast spray using suitable power operated ground spray equipment. Use higher rates for residual control.

Nufos 4E may also be applied in tank mixtures with non pressure fertilizer solutions and/or with paraquat and Roundup* and Glyfos* herbicides. See **MIXING DIRECTIONS** section for further information. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for the other products used in combination with Nufos 4E.

Cultivation Time Treatment

Use Nufos 4E at the rate of 2 pints per acre to control corn rootworm larvae. Apply Nufos 4E as a water emulsion on both sides of the row at the base of the plants just ahead of the cultivator shovels. Cover the insecticide with soil around the brace roots. The best time to apply a basal treatment of a soil insecticide with cultivation is near the beginning of egg hatch. A cultivation application of Nufos 4E may be made in addition to an at planting application of Nufos 15G or Lorsban* 15G granular insecticide.

Postemergence Treatment

Use Nufos 4E at the following rate by application in sufficient water to ensure thorough coverage of treated plants:

PESTS	Nufos 4E
Grasshoppers	½-1 pint/acre
Armyworms, chinch bugs, aphids, corn rootworm adults, webworms, western bean cutworms, European corn borers (see note)	1-2 pints/acre
Southwestern corn borers, corn earworms	1½-2 pints/acre
Billbugs, lesser cornstalk borers, flea beetle adults, common stalk borers	2-3 pints/acre

Note: The recommended dosage will control silk clipping by corn rootworm adults. For European corn borer control, use 1½ to 2 pints per acre when application is made with power-operated ground and aerial equipment and 1-2 pints/acre when application is made through a sprinkler irrigation system. See text below for generation specific treatment.

Treat when field counts indicate that pests are or may become a problem. For best billbug, chinch bug, and flea beetle control, apply with sufficient water to ensure a minimum spray volume of 20 to 40 gallons per acre and 40 psi using **ground spray equipment**. On corn less than 6 inches tall, apply the insecticide spray in a 9 to 12 inch wide band over the row. On corn greater than 6 inches tall, apply the insecticide spray using drop nozzles directed to the base of the plant. Do not reduce the dosage for banded or directed applications. Concentrate the full labeled dosage rate in the treated zone. When chinch bugs continue to immigrate to corn over a prolonged period or under extreme pressure, a second application of Nufos 4E may be needed.

For cutworm, webworm, western bean cutworm, armyworm, aphid, European and southwestern corn borer, grasshopper, lesser cornstalk borer, corn rootworm adult, corn earworm, and common stalk borer control, apply as a broadcast spray using either aerial (fixed wing or helicopter) or power-operated ground spray equipment. For aerial application use 2 to 5 gallons of spray per acre. Control may be reduced at low spray volumes under high temperature and wind conditions.
For cutworms, it is preferable to apply Nufos 4E when soil is moist and worms are active on or near the soil surface. If ground is dry, cloddy or crusty at time of treatment, worms may be protected from the spray and effectiveness will be reduced. If such conditions exist, shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment may improve control. Apply as needed to maintain control. Use higher rate for larger worms or when heavy cutworm infestations are expected or present. Fields should be monitored for cutworm presence or damage. A second application may be required if damage or density levels exceed economic thresholds established for your area. Consult your agricultural experiment station or extension service specialist for additional information concerning control practices in your area.

For webworm control, shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment is necessary.
For first-generation European corn borer control, treat when 25 to 50 percent of the corn plants show pinhole feeding or leaf-feeding scars. For maximum control potential, ground applications of Nufos 4E should be directed into the corn leaf whorls. Scout fields within 5 days after application to determine if a second application is needed. University research indicates that achieving greater than 50% control of first-generation European borer with a single liquid insecticide treatment is highly dependent on timing, insecticide placement and weather conditions. Treatment for control of second-generation European cornborer should be applied when field counts of egg masses indicate an infestation is present or about to develop.
For southwestern corn borer control, treat when field counts of egg masses indicate pests are or may become a problem. A second application may be applied 10 to 14 days later, if needed due to reinfestation. For common stalk borer control, treat approximately 11 days after application of Glyfos* or Roundup* herbicide or after complete burndown with paraquat herbicide (3 to 5 days). Do not use Nufos 4E in combination with the burndown herbicide for control of common stalk borer.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar insects. For best results, use the recommended rate of Nufos 4E in a tank mix with 2 pints per acre of non-emulsifiable oil. Maintain vigorous tank agitation to assure uniformity of the Nufos 4E plus oil mixture throughout the injection period. Nufos 4E may also be applied through sprinkler irrigation systems at the rate of 2 to 3 pints per acre to control corn rootworm larvae. Time application to coincide with the appearance of the second instar larvae. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. Apply with enough water to wet the root zone to the depth control is needed. Under saturated soil conditions, allow enough soil drying to occur so that an application using a minimum water rate will not produce runoff. Consult university extension personnel or other experienced consultants to determine the need to treat and to aid in application timing. See **SPRINKLER IRRIGATION** section for further information.

Restrictions

Do not apply within 35 days before harvest of grain. Do not apply more than a total of 15 pints of Nufos 4E or 7.5 lbs. active ingredient per acre per season. Do not allow livestock to graze in treated areas nor harvest treated corn silage as feed for meat or dairy animals within 14 days after last treatment. Do not feed treated corn fodder to meat or dairy animals within 35 days after last treatment.

SWEET CORN GROWN ONLY IN FLORIDA AND GEORGIA

Use Nufos 4E to control infestations of beet armyworms, fall armyworms and corn earworms by application as a broadcast, foliar spray at the rate of 1 to 2 pints per acre. Mix the specified dosage in enough water to ensure thorough coverage and apply using suitable aerial or ground spray equipment. For aerial application, use at least 2 gallons of spray per acre. Treat when field counts indicate damaging pest populations are developing or present. Re-treat as necessary to maintain control but do not apply more than twenty-two 1-pint or eleven 2-pint treatments per season.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar insects. For best results, use the recommended rate of Nufos 4E in a tank mix with 2 pints per acre of non-emulsifiable oil. Maintain vigorous tank agitation to assure uniformity of the Nufos 4E plus oil mixture throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Restrictions

Do not apply more than 22 pints of Nufos 4E or 11 lbs. active ingredient per acre per season. Do not harvest corn ears, allow livestock to graze in treated areas, nor feed treated silage, fodder, or grain to meat or dairy animals within 21 days after treatment. Do not use in conjunction with postplant broadcast, foliar applications of Nufos 15G .

COTTON

Use Nufos 4E for control of the following pests in all states except Arizona and California at the dosages indicated:

PESTS	Nufos 4E
Cotton fleahoppers, plant bugs (lygus, mirids)	3/8-1 pint/acre
Fall armyworms, grasshoppers, thrips, yellow-striped armyworms	½-1 pint/acre
Cotton aphids	½-2 pints/acre
Spider mites	1 pint/acre
Beet armyworms, cotton bollworms, tobacco budworms, cutworms, pink bollworms, salt marsh caterpillars	1½-2 pints/acre

Note: The recommended dosage rate of 3/8 pint per acre will not achieve the high degree of control of the higher label rate, but will minimize the damage done by plant bugs and cotton fleahoppers and allow the beneficial insects to survive, build up, and be available to aid in the control of bollworms infesting cotton. Use a higher dosage within the indicated rate range.

Use Nufos 4E for control of the following pests in Arizona and California at the dosages indicated:

PESTS	Nufos 4E
Armyworms, cotton aphids, cotton fleahoppers, lygus, salt marsh caterpillars, thrips	1-2 pints/acre
Cotton bollworms, tobacco budworms, boll weevils, cutworms, pink bollworms	2 pints/acre

Note: The 2 pint rate will aid in the suppression of cotton leaf perforator and spider mites.

Mix the required dosage with sufficient water to ensure thorough coverage of plants and apply using aerial or power operated ground spray equipment. For aerial application, use at least 1 gallon of spray per acre. Treat when field counts indicate damaging insect populations are developing or present. Re-treat as necessary to maintain control.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 to 5 days after initial treatment to control newly hatched nymphs.

For best results on bollworms and budworms, it is suggested that fields be scouted twice per week and treatments made when worms are 1/4 inch or less in length. The following table illustrates the size of worms in relation to age and stage of development (instar) as a guide to timing of treatments for best control.

From the table it can be seen that a scouting schedule of only once per week will not be satisfactory since the worms may be too big to control effectively by the seventh or eighth day.

Timing For The Best Worm Control

	Age (days)	Size	Instar
Get the worms at this stage	Hatch	1/16"	Hatch
	3	3/32"	I
	5	9/32"	II
	6	7/16"	III
	8	11/16"	IV

Proper application techniques help to ensure thorough spray coverage and correct dosage and are thus important in obtaining good control of pests. Consider these suggestions when applying Nufos 4E on cotton.

Aerial Application

Shorten boom length to avoid spray entering the vortices at the wing tips. Swath width should be reduced when wind direction is the same as direction of spraying.

The proper nozzle arrangement and swath width to avoid skips and vortices effect can be checked out by flying over a paper tape (adding machine paper) using water with or without soluble dye. (The dye gives a permanent record.)

Flying at a height of 5 to 15 feet above the target results in the best coverage.

Nozzle orientation of the boom is important. More break up occurs when nozzles are pointed straight down versus the straight back position. Desired droplet size (100 to 200 microns) can be obtained by angling the nozzles somewhere in this range.

Marking of swath by flagging or permanent markers is essential.

Ground Application

Orient the boom and nozzles so that uniform coverage is obtained. The swath width should not be wider than the boom; drift spray is wasted spray so do not depend on it. Use flat fan or disc-core hollow cone nozzles with maximum spacing of 20 inches and a spray pressure of 40-60 psi with a droplet size of 100-200 microns.

Restrictions

Do not apply within 14 days before harvest or make more than 6 applications per season. Do not allow livestock to graze in treated areas. Do not feed gin trash or treated forage to livestock.

FIGS

Use Nufos 4E at the rate of 2 quarts per acre for control of dried fruit beetles by application in sufficient water to the soil surface followed by incorporation into the top 3 inches of soil. Apply to fig orchard soil as a dormant application in late winter prior to beetle emergence and prior to leaf formation.

Restrictions

Make only one application per year. Do not apply within 7 months of harvest. Based on available residue data, use of Nufos 4E on figs is restricted to California.

GRAPES

Use Nufos 4E for control of grape root borers by application just before the pest emerges from the soil. Mix 4 ½ pints of Nufos 4E with 100 gallons of water and apply 2 quarts of the diluted spray mixture to the soil surface on a 15 square foot area around the base of each vine. Do not allow spray to contact fruit or foliage.

Restrictions
Do not make more than one application per season or apply within 35 days before harvest. Based upon available residue data. the use of Nufos 4E in grapes is restricted to states east of the Rocky Mountains.

MINT

Use Nufos 4E by application as a broadcast, foliar spray to control cutworms at the rate of 2 to 4 pints per acre and mint root borer at the rate of 4 pints per acre. Mix the specified dosage in water to give no less than 10 gallons of spray per acre and apply using ground spray equipment. For cutworm control, treat during May and June when field counts indicate damaging insect populations are developing or present. When larvae are less than 3/4 inch in length, use the 2 pint rate. When larvae are 3/4 inch or more in length, use the higher rate. **Make only one application during the growing season. Do not apply within 90 days before harvest**. For mint root borer control, apply post harvest when field counts indicate damaging insect populations are developing or present. Follow treatment with approximately 1 acre inch of sprinkler irrigation immediately after application to incorporate the insecticide into the soil. **Make only one post-harvest application per season**.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

NECTARINES, PEACHES

Use Nufos 4E for the control of peach tree borers by application as a trunk spray before newly hatched borers enter the trees. Mix 3 quarts of Nufos 4E with 100 gallons of water and apply as a coarse, low pressure spray to give uniform coverage of tree trunks. Thoroughly wet all bark areas from ground level to scaffold limbs. Do not allow spray to contact fruit. Consult your State Agricultural Experiment Station's or extension service specialist's written recommendations for proper time to treat in your area.

Nufos 4E may also be used as a preplant dip application for nonbearing peach trees at the equivalent application rate of 3 quarts per 100 gallons of water for control of peach tree borer. Dip trees several inches above the grafting bud scar and plant immediately or allow to dry before returning to storage. Do not allow peach trees to remain in contact with the dip solution.

Restrictions
Make only one application per season. Do not apply within 14 days before harvest. Do not allow meat or dairy animals to graze in treated orchards.

ONIONS (DRY BULB)

Use Nufos 4E to control onion maggots by application as an in-furrow drench. Apply Nufos 4E at the rate of 1.1 fluid ounce per 1000 linear feet of row at an 18-inch row spacing. Use a minimum of 40 gallons of total drench per acre. Incorporate to a depth of 1 to 2 inches.

Restrictions
Do not make more than one application per year.

PEANUTS

For suppression of wireworms, apply Nufos 4E at a rate of 4 pints per acre as a preplant broadcast spray to the soil surface followed by immediate soil incorporation to a depth of 3 to 4 inches. Use a minimum of 10 gallons of total spray per acre.

Restrictions

The combined total of preplant and postplant applications of Nufos 4E and Nufos 15G or Lorsban* 15G must not exceed 4 pounds active ingredient per acre per season. Do not make more than one application per season. Do not harvest within 21 days after treatment with Nufos 4E. Do not feed peanut forage or hay to meat or dairy animals.

SORGHUM, GRAIN SORGHUM (MILO)

Use Nufos 4E insecticide for control of the following pests at the dosages indicated:

Pests	Nufos 4E	Specific Directions
Sorghum midges	½ pint/acre	Apply when 30 to 50% of the seed heads are in bloom, repeat at 3-day intervals if necessary.
Grasshoppers, yellow sugar cane aphids and other aphids	½-1 pint/acre	
Greenbugs	½-2 pints/acre	For infestations of greenbugs that are difficult to control, use a higher dosage within the indicated rate range.
Chinch bugs, lesser cornstalk borers	1-2 pints/acre	Apply as a directed spray towards the base of the plant using power-operated ground spray equipment with sufficient water to ensure coverage of an 8 to 12 inch band centered on the row. On plants less than 6 inches high, apply an 8 to 12 inch band over the row. Do not reduce the dosage for banded or directed applications. Concentrate the full labeled dosage rate in the treated zone.
Webworms	1 pint/acre	
Armyworms, cutworms	1-2 pints/acre	
European and southwestern corn borers	1½-2 pints/acre	
Corn earworms	2 pints/acre	

Mix the specified dosage in enough water to ensure thorough coverage and apply using suitable aerial or ground spray equipment. To minimize chemical injury, do not apply Nufos 4E to drought stressed grain sorghum within 3 days following irrigation or rain except where the product is applied in irrigation water.

Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Precaution

Be aware that sorghum lines used in seed production fields may be more sensitive to chemical injury. Susceptible inbred lines or hybrids are likely to be at greater risk of yield-reducing chemical injury when sprayed at the higher rates of application. Do not apply more than 1 pint per acre of Nufos 4E to seed sorghum if the additional risk of crop injury is unacceptable.

Restrictions

The treated crop is not to be used for grain, forage, fodder, hay. or silage within 30 days after application of 1 pint of Nufos 4E per acre or within 60 days after application of rates above 1 pint per acre. Do not treat sweet varieties of sorghum. Do not apply more than 3 pints of Nufos 4E or 1.5 lbs. active ingredient per acre per season.

SOYBEANS

For use to control armyworms, bean leaf beetles, corn earworms, cutworms, European corn borers, grasshoppers, green cloverworms, lesser cornstalk borers, Mexican bean beetles, saltmarsh caterpillars and other woollybears, southern green stink bugs, spider mites, and velvetbean caterpillars.

Soil Treatment

Use Nufos 4E at the rate of 1 to 2 pints per acre to control cutworms and lesser cornstalk borers. Mix the specified dosage in a minimum of 10 gallons of spray per acre and apply to the soil surface using suitable ground spray equipment. Equivalent rates of insecticide spray required per 100 feet of row for various row spacing are given in the accompanying table. For at-plant treatments apply the insecticide over the row in a 4 to 6 inch band in front of the planter shoe or press wheel or after the press wheel followed by a drag chain for light incorporation. Do not apply as an in-furrow treatment. For postemergence rescue treatments, apply as a directed spray in a 9 to 12-inch band at the base of the plant. To plants under 6 inches high apply over the top in a 6- to 12-inch band. Treat when field counts or conditions indicate that pests are or may become a problem.

	Fluid Ounces of Spray Required Per 100 Feet of Row for Various Row Spacing			
Volume of Spray Per Acre	**36"**	**32"**	**28"**	**24"**
10 gallons	8.8	7.9	6.9	5.9
15 gallons	13.2	11.8	10.3	8.8
20 gallons	17.6	15.7	13.7	11.8

Foliar Treatment

Use Nufos 4E at the following rate by application in sufficient water to ensure thorough coverage of treated plants:

PESTS	Nufos 4E
European corn borers, southern green stink bugs	2 pints/acre
Bean leaf beetles, cutworms, corn earworms, saltmarsh caterpillars and other woolly bears	1-2 pints/acre
Mexican bean beetles, armyworms	1-1½ pints/acre
Velvetbean caterpillars, grasshoppers, green cloverworms, spider mites	½-1 pint/acre

Apply as a broadcast spray using either aerial or ground equipment when field counts indicate damaging insect populations are developing or present; re-treat as necessary to maintain control. For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 to 5 days after initial treatment to control newly hatched nymphs. **On determinate soybeans do not apply more than one application after pod set.** Nufos 4E may also be applied through **sprinkler irrigation systems** as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Nufos 4E per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Restrictions

Do not apply more than 6 pints of Nufos 4E per acre or 3 pounds of chlorpyrifos (active ingredient) per acre per season. Do not apply last treatment within 28 days before harvest nor apply last two treatments closer than 14 days apart. Do not allow livestock to graze in treated areas or otherwise feed treated soybean forage, hay, and straw to meat or dairy animals.

STRAWBERRIES

Use Nufos 4E by application as a broadcast foliar spray to control strawberry bud weevils at the rate of 1 quart per acre. Apply in a minimum of 40 gallons of spray per acre when buds first appear and 10 to 14 days later. Do not apply after berries start to form or when berries are present. Nufos 4E should not be tank mixed with pesticides, surfactants, or fertilizer formulations unless prior use has shown the combination noninjurious under your current conditions of use.

Phytotoxicity may occur when Nufos 4E is applied to strawberries experiencing high temperature and drought stress.

Restrictions
For pre-bloom use only. Do not make more than two applications per season or apply within 21 days before harvest.

SUNFLOWERS

For use to control cutworms, sunflower beetle larvae and adults, stem weevils, sunflower moths, banded sunflower moths, woollybears, seed weevils, and grasshoppers.

Preplant Incorporation Treatment
Use Nufos 4E at the following rates by application in sufficient water to the soil surface and incorporate into the soil:

PESTS	Nufos 4E
Cutworms	2-4 pints/acre

Use recommended rate in not less than 10 gallons of water per acre and apply as a broadcast spray to the soil surface using suitable power-operated ground spray equipment. On the same day of treatment, incorporate the insecticide into the top 2 to 4 inches of soil using a disc field cultivator or equivalent equipment.

Postemergence Treatment
Use Nufos 4E for control of the following pests at the dosage indicated by application in sufficient water to ensure thorough coverage of treated plants:

PESTS	Nufos 4E
Cutworms	2-3 pints/acre
Sunflower beetle larvae and adults, stem weevils, sunflower moths, banded sunflower moths, woollybears, seed weevils	1-1½ pints/acre
Grasshoppers	1 pint/acre

Apply as a broadcast spray using either aerial (fixed wing or helicopter) or power-operated ground spray equipment when field counts indicate that pests are or may become a problem. For cutworm control, a second treatment may be made 7 to 10 days later, if needed. For stem weevil control, optimal treatment time is within 5 to 7 days after adult weevils begin to appear. For sunflower moth control, make first application during early 1 to 5 percent bloom stage. A second treatment may be made 7 days later, if needed. For seed weevil control, treat when field counts indicate there are 10 to 12 adults per plant for oil crops and 1 to 3 adults per plant on confectionary crops. Additional treatments should be made at successive 7 to 10 day intervals if field counts indicate need to re-treat. For sunflower beetle larvae or adult control, treat when field counts indicate there are 10 larvae or 1 to 2 adults per seedling. Additional treatments may be made at successive 7 to 10 day intervals if field counts indicate need to re-treat.

Restrictions
Do not apply more than 9 pints of Nufos 4E or 4.5 lbs. active ingredient per acre per season. Do not apply within 42 days before harvest. Do not allow livestock to graze in treated areas.

SUGAR BEETS

Soil Treatment (at Planting or Preplant Incorporated)

To reduce feeding damage from early season insects such as cutworms, use Nufos 4E at planting or as a preplant treatment and incorporate to a depth of 1 to 2 inches. Do not apply as an in-furrow treatment. Apply 1 pint of Nufos 4E pre planted acre to a 10-inch wide band centered on the row for furrows 30 inches apart. (For rows 30 inches apart, this is equivalent to 9.2 fluid ounces of Nufos 4E per 10,000 feet of row.) For other row widths. adjust the spray volume per planted acre in proportion to the area actually treated.

Postemergence Treatment

Use Nufos 4E by application as a broadcast, foliar spray. Treat when field counts indicate that damaging insect populations are or may be a problem. Retreat as necessary to maintain control of target pests.

Broadcast application: Apply the specified dosage in a total spray volume of 2 to 5 gallons of water per acre using suitable aerial spray equipment or 10 to 30 gallons of water per acre when using power-operated ground equipment.

PESTS	Nufos 4E
Grasshoppers [1]	½-1 pints/acre
Sugar beet root maggot adults (present at time of applications)	1 pint/acre
Beet armyworms	1½ to 2 pints/acre
Cutworms	2 pints/acre

[1] The lower rate will control young nymphs.

Band application to control sugar beet root maggot: Apply 2 pints of Nufos 4E per acre on a broadcast basis, e.g., 2/3 pint/acre in a 7.5-inch band based on a 22-inch row spacing. For rows 22 inches apart, this is equivalent to 13.5 fluid ounces of Nufos 4E per 10,000 feet of row. For band application, do not apply less than 20 gallons of water per acre on a broadcast basis.

Restrictions

Do not apply within 30 days of harvest of beet roots and tops. Do not apply more than a total of 8 pints of Nufos 4E or 4 lbs. active ingredient on a broadcast basis, or make more than four applications per season. Do not allow livestock to graze in treated areas or harvest treated beet tops as feed for meat or dairy animals within 30 days of last treatment.

SWEET POTATOES

Use Nufos 4E to reduce the feeding damage caused by populations of conderus wireworms, systena flea beetles and the sweet potato flea beetles. Apply at the rate of 4 pints per acre as a broadcast (overall) spray to the soil surface followed by incorporation. Mix the specified dosage with enough water to obtain uniform coverage and apply as a coarse spray using suitable ground spray equipment. Incorporate the insecticide to a depth of 4 to 6 inches as soon as possible after application by using a rotary hoe, disc cultivator, or other suitable incorporation equipment. Plant the crop in the usual manner no later than 14 days after treatment (any delay in planting will reduce the length of time that Nufos 4E will protect against feeding damage). Nufos 4E will not control false wireworms or white fringe beetle or other grubs that attack sweet potatoes.

Restrictions

Do not make more than one application per season. Do not harvest within 125 days of treatment.

TOBACCO

Use Nufos 4E for preplant treatment to control larvae of cutworms, flea beetles, mole crickets, root maggots, and wireworms. Apply 2 to 3 quarts of Nufos 4E per acre in not less than 10 gallons of water as a broadcast (overall) spray to the soil surface 24-48 hours before bedding and transplanting. Immediately following application, incorporate the insecticide into the soil to a depth of 2 to 4 inches using suitable equipment. The application of Nufos 4E will also suppress the movement of imported fire ants into treated fields.

To control the above insects and low to moderate populations of rootknot nematodes in North Carolina, South Carolina, and Virginia, use Nufos 4E at the rate of 5 quarts per acre. To control the above insects and moderate

populations of rootknot nematodes in all tobacco growing regions, use Nufos 4E in a tank mix with Nemacur* 3 at the rate of 2 quarts of Nufos 4E plus 4 quarts of Nemacur* 3 per acre.

Read and carefully follow all applicable directions, restrictions, and precautions on labeling for Nemacur* 3 nematicide used in combination with Nufos 4E. Apply the specified dosage in not less than 10 gallons of water as a broadcast (overall) spray to the soil surface 24 to 48 hours before bedding and transplanting. Immediately following application, incorporate into the soil to a depth of at least 4 inches using suitable equipment. Where the nematode species *Meloidogyne arenaria* or *M. javanica* are present or high populations of *M. incognita*, apply Telone* II soil fumigant at the recommended label rate.

Before broadcast application of Nufos 4E onto existing beds, knock down beds to final shape for transplanting. Use of PTO driven implements that will incorporate Nufos 4E to a depth of 4 inches is recommended.

Restrictions
Do not make more than one application per season.

TREE FRUITS

Use Nufos 4E as a dormant or delayed dormant spray at the rates indicated to control the following insects on the crops listed. While Nufos 4E may be used without oil, oil is recommended to control additional pests such as European red mites.

Crop	Insect	Nufos 4E per 100 gallons of Spray*
Apples (post-bloom use on apple trees is prohibited)	Rosy apple aphids, San Jose scales, lygus, pandemis leafrollers, climbing cutworms, oblique banded leafrollers	½-1 pint (Use a minimum of 1.5 pints/acre)
Pears	San Jose scales, climbing cutworms, pear psylla adults	
Plums, prunes	San Jose scales, mealy plum aphids, climbing cutworms, peach twig borers	
Almonds, peaches, nectarines	San Jose scales, peach twig borers, climbing cutworms	

* Based on 200 to 600 gallons per acre as a dilute spray.

For dilute sprays, tank mix the specified dosage with 1 to 2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water and spray the entire tree by application to runoff using suitable ground spray equipment. (See **Additional Precautions Specific to California** (below) for use in California).

For low volume (concentrate) sprays, less than 200 gallons of spray mixture per acre, use the same amount of Nufos 4E as for a dilute spray and apply in a manner that will ensure thorough coverage of the trees. Use the higher dosage of Nufos 4E for severe infestations.

Use oil as recommended by your State Agricultural Experiment Station or extension service specialist.

Precautions
Because cold or dry conditions may cause Nufos 4E plus oil sprays to infuse trees resulting in bud damage or drop, do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not desiccated. Do not use more than 4 pints of Nufos 4E per acre.

Additional Precautions Specific to California: Use a minimum of 250 gallons of total spray volume per acre. Do not use more than 4 gallons of spray oil per acre on almonds, peaches, or nectarines. Do not use any adjuvants or surfactants in addition to or as a substitute for a petroleum spray oil in a tank mix with Nufos 4E. Do

not apply on almonds in the following counties in California: Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo, and Yuba.

Restrictions
Make only one application during the dormant season. Do not allow meat or dairy animals to graze in treated orchards.

TREE NUTS

Use Nufos 4E at the dosages indicated by application as a foliar spray to control pests listed in the following table. Mix the required dosage in sufficient water to ensure thorough and complete coverage of the foliage and crop and apply as a concentrate or dilute spray using conventional, power-operated spray equipment. For dilute sprays applied to tree nut crops, mix the required dosage in sufficient water to allow for spray to runoff. For concentrate sprays, apply an equivalent amount of Nufos 4E per acre. Treat when pests appear or in accordance with local conditions. Insect control by aerial application may be less than control by ground application because of less coverage. Consult your State Agricultural Experiment Station, certified pest control advisor, or extension service specialist for specific use information in your area.

ALMONDS, FILBERTS, WALNUTS

Use Nufos 4E at the rates indicated to control the listed pests.

Crop	Insects Controlled	Dosage Nufos 4E	Restrictions
Almonds	Navel orangeworms, peach twig borers, San Jose scales	4 pints/acre	Make no more than 3 foliar applications per season on almonds and filberts and no more than 2 applications per season on walnuts. Do not apply within 14 days of harvest. Do not allow livestock to graze in treated orchards.
Filberts	Eye-spotted bud moths, filbert aphids, filbert leafrollers, filbert worms, oblique-banded leafrollers, omnivorous leaftiers, winter moths	3-4 pints/acre	
Walnuts	Codling moths, walnut scales	4 pints/acre	

PECANS

Use Nufos 4E at the rates indicated to control the listed pests.

Insects Controlled	Dosage of Nufos 4E (Dilute or Concentrate) Pints/Acre	Remarks and Restrictions
Pecan nut casebearers, fall webworms	1½-4	Make no more than five applications per year.
Phylloxera spp.[1], black pecan aphids, hickory shuckworms[2], pecan leaf scorch mites (suppression)[3], fire ants[4] and other ant species	2-4	Do not apply within 28 days of harvest. Do not allow livestock to graze in treated orchards. Make no applications of tank mixtures closer to harvest than the longest pre-harvest interval

Yellow pecan aphid, black margined aphid	1-4 pints of Nufos 4E plus: 5.33 fl oz of Pydrin* 2.4E or 1.70 fl oz of Asana* 1.9EC, or 3.00 fl oz of Ammo* 2.5EC, or 2.56 fl oz of Cymbush* 3E	shown for any of the products in the tank mixture. For dilute applications with ground equipment use at least the minimum rate of Nufos 4E listed for the pest. Apply in 100-600 gallons of water per acre. For aerial applications use 5-15 gallons of water per acre. **Note:** With aerial application control may be reduced due to poor coverage. Up to 10 pints of Nufos 4E or 5 lbs. active ingredient may be applied per acre per year.

1 For best *Phylloxera* spp. control, make 2 applications at a 7 to 10 day interval using a minimum of 1.0 pint of Nufos 4E per acre starting at bud swell.

2 For best results make 2 applications, 10 to 14 days apart.

3 To suppress pecan leaf scorch mite, use a preventative program.

4 For ant control, apply as an orchard floor spray. Do not apply where weed growth or other obstructions prevent uniform coverage of the orchard floor.

ALMOND ORCHARD FLOORS

Use Nufos 4E to control southern fire ants and pavement ants by applying the specified dose with ground application equipment that will uniformly apply the spray to the orchard floor. Use when ant activity becomes evident within the orchard. Since worker ants cease most of their foraging activity at temperatures above 90°F, best results will be achieved with applications made at temperatures below 90°F at the time of application. Dosage of Nufos 4E and spray volume may vary depending on the irrigation method employed in the orchard as follows:

Ant Control in Sprinkler or Drip-irrigated Orchards

Apply Nufos 4E as a broadcast spray to the entire orchard floor using ground spray equipment at 4 to 8 pints per acre in 25 or more gallons of water. Use the high rate for heavy infestations and the low rate for light infestations. In orchards where ant activity is concentrated around the irrigation emitters, apply the high rate to a 6 to 8 foot band along the drip irrigation line and the low rate to the rest of the orchard.

Ant Control in Flood-irrigated Orchards

Apply Nufos 4E at 4 to 8 pints per acre in 25 or more gallons of water to the entire orchard floor using ground spray equipment. Apply the high rate to heavily infested areas and the low rate to lightly infested areas. Where ant colonies are abundant only in the berm areas, apply Nufos 4E at 8 pints per treated acre in 50 or more gallons of water to a 6 to 10 foot band along the tree line (berm).

Do not apply where weed growth or other obstructions would impede uniform coverage of the orchard floor. Mow or chemically control weeds before the application of Nufos 4E. Foliar applications of Nufos 4E may be made in addition to the orchard floor treatment.

Restrictions

Do not apply more than 16 pints of Nufos 4E or 8 lbs. active ingredient per year to the orchard floor. Do not apply the last treatment within 14 days of harvest. Do not allow livestock to graze in treated orchards.

VEGETABLES

Use Nufos 4E at the dosages indicated to control the pests listed in the following table. To avoid phytotoxicity in vegetables, except Brussels sprouts, do not mix with other pesticide products or treat plants that are under extreme heat and drought stress.

Crop	Insects Controlled	Dosage Nufos 4E	Use Directions	Restrictions
Cauliflower	Root maggots	1.6-2.4 fl oz/ 1000 linear ft of row	For **direct seeded crops** apply the specified dosage in a water-based spray as a 4-inch wide band over the row at planting time. Shallow incorporation is necessary. Placement behind the planter shoe and in front of the press wheel is recommended. For **transplanted crops**, apply Nufos 4E as a water-based spray directed to the base of the plants immediately after setting. Use a minimum of 40 gallons of total spray per acre. Do not add any additional adjuvents, surfactants or spreader stickers. Do not apply as a foliage application.	Do not apply more than 2 pints of Nufos 4E to cauliflower planted in 40 inch rows. Use proportional amounts for other rows spacings not to exceed 4 pints of Nufos 4E per acre. Do not apply more than 2.6 pints of Nufos 4E per acre to broccoli, Brussel sprouts, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnips planted in 40-inch rows. Do not apply more than 4½ pints of Nufos 4E per acre to these crops in 20-inch rows (or two rows per bed). Use proportional amounts for other row spacings not to exceed 4½ pints of Nufos 4E per acre.
Broccoli Brussels sprouts Cabbage Chinese cabbage Collards Kale Kohlrabi Turnips	Root maggots	1.6-2.75 fl oz/1000 linear ft of row		
Broccoli Cabbage	Root aphids	1.2 fl. oz./1000 linear ft. of row for single row plantings, and 2.4 fl. oz. / 1000 linear ft. of row for double row plantings.	Apply Nufos 4E in a water emulsion or with liquid fertilizer injected as a sidedress on each side of the row after plants are established. Avoid mechanical damage to crop roots. Use a minimum of 15 gallons of total spray volume per acre.	Do not make more than one application per season or apply within 30 days before harvest.

Brussels sprouts	Armyworms, cabbage aphid, cutworms, imported cabbage-worm, striped flea beetle (adult)	1 to 2 pints per acre	Apply Nufos 4E with conventional power-operated spray equipment in 20 to 150 gallons of water per acre. Apply when insects appear on foliage and at 7 to 14 day intervals thereafter as needed. Consult you State Agricultural Experiment Station, extension service specialist, or Integrated Pest Control Advisor for proper time to treat in your area.	Do not make more than 6 applications per season. Do not apply within 21 days before harvest.
Radishes	Root maggot	1.0 fl oz/1000 linear ft. of row	Apply the specified dosage as a water-based drench in the seed furrows with the seed at planting time. Use a minimum of 40 gallons of total drench per acre.	Do not apply more than 5½ pints of Nufos 4E or 2.75 lbs. active ingredient per acre or make more than one application per season.
Rutabagas	Root maggot	1.6-3.3 fl oz/1000 linear ft of row	Apply the specified dosage in a water-based spray as a 4-inch wide band over the row at planting time, behind the planter shoe and in front of the press wheel to achieve shallow incorporation. Use a minimum of 40 gallons of total spray volume per acre.	Do not apply more than 4½ pints of Nufos 4E or 2.25 lbs. active ingredient per acre or make more than one application per season. Do not use rutabaga tops for food or feed purposes.

WHEAT

For distribution and use on wheat only in Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, New Mexico, Nevada, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming.

Use and Dosage Recommendations

Apply Nufos 4E-SG at the rate of 1/2 to 1 pint per acre (0.25 to 0.5 lb ai/acre) to control aphids (including Russian wheat aphids) brown wheat mites or grasshoppers.

For control of wheat midges, use 1 pint of Nufos 4E-SG per acre. Treatment is recommended when 75% of the wheat heads have emerged from the boot and when midge adults are found in the crop (1 midge per 4-5 heads). Application timing is critical to ensure good control. If possible, apply in the late afternoon or early evening when temperatures exceed 50°F and wind speed is less than 7 mph.

For control of army cutworms and suppression of other cutworm species, use 1 pint of Nufos 4E-SG per acre. Control may be reduced under high temperature conditions (greater than 80°F), under dry soil

conditions, or if larvae are more than 1/2 inch long. Treat when field counts or crop injury indicates that damaging pest populations are developing or present. A second application of 1 pint/acre may be made for additional control.

Mix the required dosage with water and apply in a minimum of 2 gallons per acre finished spray volume. Apply using aerial (fixed wing or helicopter) or power-operated ground spray equipment. Nufos 4E-SG may also be applied through sprinkler-irrigation systems.

Report any bird or fish kills which may be associated with the use of chlorpyrifos by calling toll free 1-800-548-6113.

RESTRICTIONS

Do not make more than two applications per crop.
Do not apply within 28 days of harvest.
Do not allow livestock to graze or otherwise feed treated forage to livestock within 14 days of application.
Do not feed straw from treated wheat within 28 days of application.
Do not apply directly to bodies of water.
Do not apply product where runoff is likely to occur to aquatic habitats (including lakes, public reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries or other natural waters).
Do not apply when weather conditions favor drift or runoff from treated areas.

Ground Application

For ground applications, the distance from treated areas to aquatic habitats (including lakes, public reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries or other natural waters) must be 30 feet or more.
Do not make ground applications if wind speed is greater than 15 mph .
Do not apply at spray boom pressures greater than 45 psi.

Aerial Application

Do not apply by air within 300 feet of aquatic habitats (including lakes, public reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries or other natural waters).
Do not make aerial applications of Nufos 4E-SG when wind speeds exceed 10 mph or when an atmospheric temperature inversion exists.
Boom length should not exceed 75% of the wing span and release height for aerial applications should be no greater than 10 feet above the crop canopy.

WARRANTY DISCLAIMER

Cheminova 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 strict accordance with the directions, subject to the inherent risks set forth below. CHEMINOVA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABLITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Cheminova or the seller. All such risks shall be assumed by Buyer.

LIMITATION OF REMEDIES

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Cheminova's election, one of the following:

(1) Refund of purchase price paid by buyer or user for product bought, or

(2) Replacement of amount of product used.

Cheminova shall not be liable for losses or damages resulting from handling or use of this product unless Cheminova is promptly notified of such loss or damage in writing. In no case shall Cheminova be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Cheminova or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

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New label code: TBD Draft submitted to EPA 10/10/00
Last label code: 0/H15/0; 9/J18/9
10/10/00 KM incorporate CB comments. 10/02/00 KM combine with Nufos 4E-SG- add wheat to label.
6/21/00 KM made revisions per EPA MOA.