

67760-91

01/16/2009

1
51

U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs

Registration Division (H7505P)

1200 Pennsylvania Avenue NW

Washington, D.C. 20460

EPA Reg.

Number:

67760-91

Date of Issuance:

Term of Issuance: Conditional

Name of Pesticide Product:

Couraze 2F Insecticide

NOTICE OF PESTICIDE:

☒ Registration☐ Reregistration

(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Diane Allemang
Vice President, Global Regulatory Affairs
Cheminova, Inc.
1600 Wilson Blvd., Suite 700
Arlington, VA 22209

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(A). Once a pesticide is registered, however, it is not regarded as permanently acceptable. Registration does not eliminate the need for continual reassessment of pesticides. If the Agency determines that, at any time, additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under FIFRA section (3)(c)(2)(B).

1. Revise the EPA Registration Number to read, EPA Reg. No. "67760-91".

Signature of Approving Official:

Venus Eagle
Product Manager 01
Insecticide-Rodenticide Branch
Registration Division (7505P)

Date:

JAN 16 2009

Page Two
67760-91
D#-396842

2. Send a copy of the enforcement analytical method to the EPA Analytical Laboratory at the following address:

USA EPA Analytical Laboratory
701 Mapes Road
Ft. Meade, MD 20755-5350

3. Within eighteen months of the date of this registration, submit to the Agency the required one year storage stability study (830.6317) for the proposed product under warehouse conditions. The corrosion characteristics study (830.6320) may be carried out concurrently. It is recommended that observations be made at 0, 3, 6, 9, and 12 months.

4. Submit two copies of your final printed label before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitute acceptance of these conditions.

A stamped copy of the label is enclosed for your records. If you have any questions regarding this notice contact Dani Daniel at 703 305-5409.

Group

4A

Insecticide

3
51

COURAZE™ 2F Insecticide

ACTIVE INGREDIENT:

Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine 21.4%

Other Ingredients: 78.6%

Total: 100.0%

Contains 2 pounds of imidacloprid per gallon

Shake well before using.

EPA Reg. No.

EPA EST NO.:

NET CONTENTS:

STOP – READ LABEL BEFORE USE

KEEP OUT OF REACH OF CHILDREN
CAUTION

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

**IN CASE OF A MEDICAL EMERGENCY INVOLVING THIS PRODUCT, CALL TOLL FREE,
DAY OR NIGHT, 1-866-303-6950**

Read the entire label before using this product.

Use only according to label instructions.

Read "DISCLAIMER" before buying or using. If terms are not acceptable, return product unopened without delay.

SEE BELOW FOR ADDITIONAL PRECAUTIONARY STATEMENTS AND USE DIRECTIONS

Distributed by:
CHEMINOVA INC.
P.O. Box 110566
One Park Drive, Suite 150
Research Triangle Park, NC 27709
919-474-6600
www.cheminova.us.com

COURAZE™ is a trademark of Cheminova

ACCEPTED
With COMMENTS
In EPA Letter Dated:
JAN 16 2009
Under the Federal Insecticide, Fungicide
and Rodenticide Act, As amended, for the
pesticide Registered under EPA Reg. No:

67760-91

4
51

FIRST AID	
IF SWALLOWED:	<ul style="list-style-type: none"> -Call a poison control center or doctor immediately for treatment advice. -Have person sip a glass of water if able to swallow. -Do not induce vomiting unless told to do so by a poison control center or doctor. -Do not give anything by mouth to an unconscious person.
IF IN EYES:	<ul style="list-style-type: none"> -Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. -Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING:	<ul style="list-style-type: none"> -Take off contaminated clothing. -Rinse skin immediately with plenty of water for 15-20 minutes. -Call a poison control center or doctor for treatment advice.
Have a product container or label with you when calling a poison control center or doctor or going for treatment. In case of medical emergency call toll free 1-866-303-6950.	
NOTE TO PHYSICIAN: No specific antidote is available. Treat the patient symptomatically.	

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION**

Harmful if absorbed through skin or if swallowed. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material such as, barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining personal protective equipment, PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS STATEMENTS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. User Safety Recommendations

User Safety Recommendations

User should:

- Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.
- 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

5
51

removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, areas where surface water is present, or to intertidal areas below the mean high-water mark. Do not contaminate water when disposing of equipment washwaters.

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. This product is toxic to wildlife and highly toxic to aquatic invertebrates.

This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

TAKE THE FOLLOWING PRECAUTIONS WHEN MIXING AND APPLYING IN THE VICINITY OF AQUATIC AREAS SUCH AS LAKES; RESERVOIRS; RIVERS; PERMANENT STREAMS, MARSHES OR NATURAL PONDS; ESTUARIES AND COMMERCIAL FISH FARM PONDS.

Spray Drift Management

The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator is responsible for considering all of these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

Importance of Droplet Size

An important factor influencing drift is droplet size. Small droplets (<150-200 microns) drift to a greater extent than large droplets. Within typical equipment specification, make applications to deliver the largest droplet spectrum that provides sufficient control and coverage. Formation of very small droplets may be minimized by appropriate nozzle selection.

Wind Speed Restrictions

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size, crop canopy, and equipment specifications determine drift potential at any given wind speed. Do not apply when winds are greater than 15 mph and avoid gusty and windless conditions. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.

Restrictions During Temperature Inversions

Do not make ground applications during temperature inversions. Drift potential is high during temperature inversions. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however if fog is not present, inversions can also be identified by the movement of smoke from a ground source. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical mixing.

Mixing and Loading Requirements

To avoid potential contamination of groundwater, the use of a properly designed and maintained containment pad for mixing and loading of any pesticide into application equipment is recommended. If a containment pad is not used, maintain a minimum distance of 25 feet between mixing and loading area and potential surface to groundwater conduits such as field sumps, uncased well heads, sinkholes, or field drains.

No-Spray Zone Requirements for Soil Applications

Do not apply within 25 feet, of lakes; reservoirs; rivers; permanent streams, marshes, or natural ponds; or estuaries and commercial fish farm ponds.

Runoff Management

Do not cultivate within 10 feet of the aquatic areas to allow growth of a vegetative filter strip. When using Couraze 2F on erodible soils, employ the best management practices for minimizing runoff. Consult your local Natural Resources Conservation Service for recommendations in your use area.

Endangered Species Notice

Under the Endangered Species Act, it is a Federal Offense to use any pesticide in a manner that results in the death of a member of an endangered species. Consult your local county bulletin, County Extension Agent, or Pesticide State Lead Agency for information concerning endangered species in your area.

Resistance Management

Some insects are known to develop resistance to insecticides after repeated use. As with any insecticide, the use of this product should conform to resistance management strategies established for the use area.

Couraze 2F contains a Group 4A insecticide. Insect biotypes with acquired or inherent resistance to Group 4A may eventually dominate the insect population if Group 4A insecticides are used repeatedly as the predominant method of control for targeted species.

The active ingredient in Couraze 2F belongs to the neonicotinoid chemical class. Insect pests resistant to other chemical classes have not shown cross-resistance to Couraze 2F. In order to maintain susceptibility to this class of chemistry in insect species with high resistance development potential, it is recommended that for each crop season: 1) only a single, soil application of Couraze 2F be made; 2) foliar applications of products from this same class should not be made following a long-residual, soil application of Couraze 2F, or other neonicotinoid products.

Other Group 4A, neonicotinoid products used as foliar treatments include: Actara, Assail, Calypso, Centric, Intruder, Leverage, Provado, and Trimax.

Other Group 4A, neonicotinoid products used as soil treatments include: Platinum.

Contact your local extension specialist, certified crop advisor, and/or product manufacturer for additional insect resistance management recommendations. Also, for more information on Insect Resistance Management (IRM), visit the Insecticide Resistance Action Committee (IRAC) on the web at <http://www.irac-online.org/>.

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 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.

7
51

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material such as, barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC), or viton
- Shoes plus socks

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Handle and open container in a manner as to prevent spillage. If the container is leaking, invert to prevent leakage. If container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides below. In spill or leak incidents, keep unauthorized people away.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Nonrefillable containers 5 gallons or less:

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

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Nonrefillable containers 5 gallons or larger:

Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container $\frac{1}{4}$ full with water.

Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank and store rinsate for later use or disposal. Repeat this procedure two more times.

Application Instructions

Foliar applications - apply as directed or broadcast foliar spray. Thorough coverage of foliage, without runoff, is necessary for optimum insecticidal efficacy. Use adequate spray volumes, properly calibrated application equipment, and a spray adjuvant if necessary to obtain thorough coverage. Failure to provide adequate coverage and retention of Couraze 2F may result in loss of insect control or delay in onset of activity. Couraze 2F may be applied with properly calibrated ground or aerial application equipment. Minimum recommended spray volumes, unless otherwise specified on crop-specific recommended application sections, are 10 gallons/acre by ground application and five gallons/acre through aerial equipment. Couraze 2F may also be applied by overhead chemigation (see "Chemigation Directions For Use" section below).

Soil applications - direct Couraze 2F into the seed or root-zone of crop. Failure to place Couraze 2F into root-zone may result in loss of control or delay in onset of activity. Couraze 2F may be applied with ground or chemigation application (see "Chemigation Directions For Use" section below). Do not apply with aerial application equipment. Couraze 2F intended for soil activity may be applied to foliage if product is washed from the foliage to the soil prior to drying on foliage. Optimum activity of soil applied Couraze 2F results from applications to the root-zone of plants to be protected. The earlier Couraze 2F is available to a developing plant, the earlier the protection begins. Couraze 2F is continuously taken into the roots over a long period of time and the systemic nature of Couraze 2F allows movement from roots through the xylem tissue to all vegetative parts of the plant. This results in extended residual activity of Couraze 2F, the control of insects and the prevention and/or reduction of virus transmission or symptom expression, and plant health benefits. The rate of Couraze 2F applied affects the length of the plant protection period. Higher rates are recommended when infestations occur later in crop development, or where pest pressure is continuous. Couraze 2F as a soil-applied treatment will generally not control insects infesting flowers, blooms, or fruit. Additional crop protection may be required for insects feeding in or on these plant parts and for insects not listed in the sections "crop-specific pests controlled" of this label. Additional, specific Couraze 2F application recommendations are also provided in the crop-specific sections of this label.

Additional, specific instructions for Couraze 2F application are also provided in the crop-specific sections of this label. Suppression, or less than complete control of certain diseases and insect pests, including reduced feeding, may also result from Couraze 2F applications. Complete control of these pests/diseases may require supplemental control measures.

Couraze 2F use on crops grown for production of true seed intended for private or commercial planting is generally not recommended but may be allowed under State specific, supplemental labeling. As with any insecticide, care should be taken to minimize exposure of Couraze 2F to honey bees and other pollinators. Additional information on Couraze 2F uses for these crops and other questions may be obtained from the Cooperative Extension Service, PCAs, consultants, or local Cheminova representatives.

Premix Couraze 2F with water or other appropriate diluent prior to application. Keep Couraze 2F and water suspension agitated to avoid settling.

Do not apply more than 0.50 lb. active ingredient per acre, per crop year, regardless of

9
51

formulation or method of application, unless specified within a crop-specific, Application Rates section for a given crop.

Additional Product Use information may be obtained by calling 1-800-548-6113 or visiting our website at www.cheminova.us.com.

Mixing Instructions

To prepare the application mixture, add a portion of the required amount of water to the tank and, with agitation, add Couraze 2F. Finish filling tank with balance of water needed. Maintain sufficient agitation during both mixing and application. Couraze 2F may also be used with other pesticides and/or fertilizer solutions. **Please see Compatibility Note below.** When tank mixtures of Couraze 2F and other pesticides are involved, prepare the tank mixture as recommended above and follow suggested Mixing Order below.

Mixing Order

When pesticide mixtures are needed, add wettable powders first, Couraze 2F and other flowable (suspension concentrate) products second, and emulsifiable concentrates last. Ensure good agitation as each component is added. Do not add an additional component until the previous is thoroughly mixed. If a fertilizer solution is added, a fertilizer/pesticide compatibility agent may be needed. When tank mixtures of Couraze 2F maintain constant agitation during both mixing and application to ensure uniformity of spray mixture as specified above and follow the mixing order below.

Compatibility Note

Test compatibility of the intended mixture before adding Couraze 2F to the spray or mix tank. Add proportionate amounts of each ingredient in the appropriate order to a pint or quart jar, cap, shake for 5 minutes, and let stand for 5 minutes. Poor mixing or formation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used. For further information, contact your local Cheminova representative.

CHEMIGATION – DIRECTIONS FOR USE

Types of Irrigation Systems

Chemigation applications of Couraze 2F may only be made to crops through chemigation systems as specified in crop-specific Application sections and only through low-pressure systems unless specifically stated for a given crop. Do not apply Couraze 2F through any other type of irrigation system.

Uniform Water Distribution and System Calibration

The irrigation system must provide uniform distribution of treated water. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. The system must be calibrated to uniformly apply the rates specified. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers, or other experts.

Chemigation Monitoring

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.

Drift

Do not apply when wind speed favors drift beyond the area intended for treatment.

Required System Safety Devices

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. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. 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. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point that pesticide distribution is adversely affected. 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.

Using Water from Public Water Systems

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone (RPZ) back-flow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. The pesticide injection pipeline must contain a functional automatic quick-closing check valve to prevent the flow of fluid back toward the injection. The pesticide injection pipeline must 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. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops or, in cases where there is no water pump, when the water pressure decreases to the point that pesticide distribution is adversely affected. 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.

ROTATIONAL CROPS*

Treated areas may be replanted with a crop specified on an imidacloprid label or with any crop for which a tolerance exists for the active ingredient as soon as practical following the last application. For crops not listed on an imidacloprid label, or for crops for which no tolerances for the active ingredient have been established, a 12-month plant-back interval is required.

Immediate Plant-back:

All crops on this label plus the following crops not on this label: barley, canola, corn (field, sweet and pop), rapeseed, sorghum, soybean, sugar beet, and wheat.

30-Day Plant-back:

Cereals (including buckwheat, millet, oats, rice, rye, and triticale), and safflower

11
51

10-Month Plant-back:

Onion and bulb vegetables

12-Month Plant-back:

All other crops

*Cover crops for soil building or erosion control may be planted any time, but do not graze or harvest for food or feed

12
51

FIELD CROPS

Application Rates of Couraze 2F

Apply specified rate per acre as a broadcast or directed foliar spray to an infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimal control. A spray adjuvant may be used to improve coverage. Couraze 2F may not knockdown established and heavy insect populations. Two applications of Couraze2F may be required to achieve control. Scout fields and treat again if needed. Couraze 2F may be tank-mixed with other insecticides as previously stated for knockdown of pests or for improved control of other pests.

COTTON

Pests Controlled (Foliar Application)	Rate – fluid ounces/Acre
Cotton aphids Cotton fleahoppers Bandedwinged whitefly Plant bugs (excludes <i>Lygus hesperus</i>) Green stink bug Southern green stink bug Bollworm/Budworm (ovicidal effect)	2 – 4.0
Pests Suppressed	
Lygus bug (<i>Lygus hesperus</i>) Whiteflies (other than bandedwinged whitefly)	3 – 4.0
Restrictions Pre-Harvest Interval (PHI): 14 days Minimum interval between applications: 7 days Maximum Couraze 2F allowed per crop season: 20 fluid ounces/Acre (0.31 lb. AI/A) Do not graze treated fields after any application of Couraze 2F. Couraze 2F may be applied through properly calibrated ground, aerial or chemigation application equipment.	

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 row-feet	Rate fluid ounces/Acre
Cotton aphid Plant bugs Thrips Whiteflies	1.3	17.0 – 21.1 (Depending on row-spacing)

13
51

Restrictions

Maximum Couraze 2F allowed per crop season: **21.1 fluid ounces/Acre** (0.33 lb. AI/Acre)

Regardless of formulation or method of application, apply no more than 0.5 lb. active ingredient of imidacloprid per acre per season, including seed treatment soil and foliar uses.

Do not apply more than a total of 6 applications of the active ingredient per season.

Do not graze treated fields after any application of Couraze 2F. Please see Resistance Management section of this label.

Apply specified dosage of Couraze 2F in one of the following methods:

1. In-furrow spray during planting directed on or below seed;
2. In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting;
3. Chemigation into the root-zone through low-pressure drip or trickle irrigation.

Peanut¹

Pests Controlled (Foliar Application)	Rate – fluid ounces/Acre
Aphids Fleahoppers Whiteflies	3.0
Restrictions Pre-Harvest Interval (PHI): 14 days Minimum interval between applications: 5 days Maximum Couraze 2F allowed per crop season: 8.4 fluid ounces/Acre (0.13 lb. AI/A)	
¹ Use not permitted in California unless otherwise directed by supplemental labeling	

Pests Controlled (Soil Application)	Rate – fluid ounces/Acre
Aphids Fleahoppers Whiteflies	16.0 – 24.0
Pests Suppressed	
Thrips	16.0 – 24.0
Restrictions Pre-Harvest Interval (PHI): 14 days Maximum COURAZE 2F allowed per season: 24.0 fluid ounces/Acre (0.38 lb. AI/A)	

14
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51

Applications

Apply specified dosage in one of the following methods:

1. In-furrow spray during planting directed on or below seed;
2. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

Important Note

Increases in Tomato spotted wilt virus (TSWV) incidence have been observed with applications of ADMIRE on multiple varieties of peanut. This may also be the case with other tospoviruses, or other viruses transmitted by various thrips species or perhaps, other pests. Prior to applying COURAZE 2F to peanuts, Cheminova recommends consultation with the State, Cooperative Extension Service, or Cheminova representative, for recommendations. Growers are advised to weigh insect control benefits against potential increase in viral disease levels. In areas where TSWV or other tospovirus are endemic, growers are encouraged to use virus resistant varieties and consult the University of Georgia, Tomato spotted wilt virus index, before applying COURAZE 2F.

¹ Use not permitted in California unless otherwise directed by supplemental labeling

15
51

POTATO

Pests Controlled (Foliar Application)	Rate – fluid ounces/Acre
Aphids Colorado potato beetle Flea beetles Leafhoppers Psyllids	3.0
Restrictions Pre-Harvest Interval (PHI): 7 days Minimum interval between applications: 7 days Maximum Couraze 2F allowed per crop season: 12.8 fluid ounces/Acre (0.20 lb. AI/A)	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment.	

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 row-feet	Rate fluid ounces/Acre
Aphids Colorado potato beetle Flea beetles Leafhoppers Potato psyllid	0.9-1.3	13.0-20.0 (depending on row spacing)
Pests/Diseases Suppressed		
Symptoms of: Potato leaf roll virus (PLRV) Potato yellows Net necrosis (PLRV) Wireworms (with in-furrow spray at planting)	0.9 – 1.3	13.0 – 20.0 (depending on row spacing)
Restrictions Maximum Couraze 2F allowed for potato per crop season: 20.0 fluid ounces/Acre (0.31 lb. AI/Acre)		
Apply specified dosage of Couraze 2F in one of the following methods: 1. In-furrow spray during planting directed on seed pieces or seed potatoes; 2. Subsurface side-dress on both sides of the row covered with 3 or more inches of soil; 3. Narrow band spray at ground cracking directly over the row during hilling covered with 3 or more inches of soil; 4. Narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting. For effective pest control or suppression, Couraze 2F applications must be placed below the soil surface and in contact with seed piece or within the root-zone. For potatoes grown on highly permeable soils with a shallow water table, at-planting applications of Couraze 2F may be made in a 2- to 4-inch band (width of planter shoe opening) and completely covered.		

16
57

POTATO¹
(Seed-Piece Treatment)

Pests Controlled	Rate fluid ounces/100 lbs seed	Rate fluid ounces/Acre^{1/}
Aphids Colorado potato beetle Flea beetles Leafhoppers Potato psyllid Wireworms (seed-piece protection)	0.4 - 0.8	8.0 - 16.0
Pests/Diseases Suppressed		
Symptoms of: Potato leaf roll virus (PLRV) Potato yellows Net necrosis (PLRV)	0.8	16.0
Restrictions Maximum Couraze 2F allowed per crop season: 20.0 fluid ounces/Acre (0.31 lb AI/Acre) Do not use treated seed-pieces for food, feed, or fodder. Do not apply any subsequent application of Couraze 2F (in-furrow), or Gaucho®, Leverage® or Provado® following a Couraze 2F seed-piece treatment.		
Seed-Piece Application Apply specified dosage as a diluted spray onto seed-pieces using a shielded spray system. Dilute with 3 parts water, or less, to 1 part Couraze 2F. Agitate or stir spray solution as needed. Fungicidal or inert absorbent dusts may be applied after Couraze 2F application. Apply only in areas with adequate ventilation or in areas that are equipped to remove spray mist or dust. Plant seed-pieces as soon as possible after treating, avoiding prolonged exposure of Couraze 2F treated seed-pieces to sunlight and in accordance with the recommendation of your local Extension specialist. Consult your local Cheminova representative or crop protection product dealer for information relevant to your area.		
^{1/} Based on a seeding rate of 2,000 lbs./acre.		

TOBACCO

Pests Controlled (Foliar Application)	Rate - fluid ounces/Acre
Aphids	1.6 - 3.2
Flea beetles Japanese beetles	3.2
Restrictions Pre-Harvest Interval (PHI): 14 days Minimum interval between applications: 7 days Maximum Couraze 2F allowed per crop season: 17.9 fluid ounces/Acre (0.28 lb. AI/Acre)	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment.	

17
51

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 plants (as seedling tray drench)	Rate fluid ounces/1,000 plants (in- furrow or transplant-water)
Aphids Flea beetles	1.0	1.4
Mole crickets Whiteflies Wireworms	1.4 – 2.8	1.8 – 2.8
Pests / Diseases Suppressed		
Cutworms Symptoms of: Tomato spotted wilt virus (TSWV)	1.4 – 2.8	1.8 – 2.8
Restrictions Pre-Harvest Interval (PHI): 14 days Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre)		
Applications Apply specified dosage of Couraze 2F in one of the following methods: 1. Uniform, broadcast foliar spray to seedlings in trays (tray drench) not more than 7 days prior to transplanting followed immediately by overhead irrigation to wash Couraze 2F from foliage into potting media. Failure to wash Couraze 2F from foliage may result in a reduction in pest control. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots. 2. In-furrow spray or transplant-water drench during setting. 3. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.		
Important Note: Proper tray drench applications of Couraze 2F have been shown to be the most efficacious method of application. However, the specified rate of Couraze 2F may be applied as a combination of the tray drench in the planthouse and/or transplant-water drench in field. Adverse growing conditions may cause a delay in uptake of Couraze 2F into the plant and a delay in control.		

VEGETABLE and SMALL FRUIT CROPS

Applications Rates of Couraze 2F

CUCURBIT VEGETABLES ^{1/}

Crops of Crop Group 9 including: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), citron melon, Cuban pumpkin, cucumber, gherkin, gourd (edible, includes hyotan, cucuzza, hechima, Chinese okra), *Momordica* spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), muskmelon (hybrids and/or cultivars of *Cucumis melo* including true cantaloupe, cantaloupe, casaba, Crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, snake melon and winter melon), pumpkin, squash (includes summer squash types such as: butternut squash, calabaza, crookneck squash, Hubbard squash, scallop squash, straightneck squash, vegetable marrow and zucchini, and winter squash types such as acorn squash and spaghetti squash), watermelon (includes hybrids and/or varieties of *Citrullus lanatus*)

Field Application Rates. See details below for additional Planthouse Application Rates.

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Cucumber beetles Leafhoppers 16.0 – 24.0 Thrips (foliage-feeding thrips only) Whiteflies	12.8 – 19.2

Pests / Diseases Suppressed

Bacterial wilt (as vectored by various cucumber beetles)
Leaf silvering resulting from whitefly feeding

12.8 – 19.2

Restrictions

Pre-Harvest Interval (PHI): **21 days**

Maximum Couraze 2F allowed per application: **24.0 fluid ounces/Acre** (0.38 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Couraze 2F must be incorporated into root-zone.

Planthouse Application Rates^{2/}

Pests Controlled (Soil Media Application)	Rate fluid ounces/1,000 Plants
Aphids Whiteflies	0.1

Restrictions

Maximum amount Couraze 2F applied in the planthouse: **0.1 fluid ounce (0.00156 lb. AI)/ 1,000 plants.**

Maximum number Couraze 2F applications in planthouse: **1**

Applications

Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to transplanting, in one of the following manners:

1. Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash Couraze 2F from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Couraze 2F from foliage may result in reduced pest control;
2. Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray. The application made in the planthouse will provide only short-term protection and is not intended as a substitution

19
51

for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection. Applications of higher rates or increased number of applications in the planthouse may result in significant plant injury. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots.

Important Note: Not all varieties of cucurbit vegetables have been tested for tolerance to Couraze 2F applied to seedling flats. It is therefore recommended to treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

^{2/} Use not permitted in CA unless otherwise directed by supplemental labeling.

GREENHOUSE VEGETABLES ^{1/}

(Mature plants in production greenhouses)

Cucumber, Tomato, only

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 plants
Aphids Whiteflies	1.4

Restrictions

Pre-Harvest Interval (PHI): **0 days**

Maximum number Couraze 2F applications per crop season: **1**

Apply specified dosage in a minimum of 16 gallons of water for tomatoes and 21 gallons of water for cucumbers using soil drenches, micro-irrigation, drip irrigation, or hand-held or motorized calibrated irrigation equipment. Do not apply to immature plants since phytotoxicity may occur.

Make applications when infestation pressure surpasses threshold and beneficials are not able to maintain pest populations below damage thresholds. Repelling bumble bee pollinators and negative effects on some beneficials (*Orius* sp.) can occur when Couraze 2F is applied.

Many varieties of vegetables have been tested for tolerance to Couraze 2F and show good safety. However, certain varieties may show more sensitivity to Couraze 2F. Therefore, treatment of a few plants is recommended before treating the whole greenhouse.

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

FRUITING VEGETABLES ^{1/}

Crops of Crop Group 8 plus Okra including: eggplant, ground cherry, okra, pepper (including bell, chili, cooking, pimento and sweet) tomato, pepinos, tomatillo

Field application rates. See details below for additional planthouse rates.	
Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Colorado potato beetle Leafhoppers Whiteflies	3.0 – 5.0
Pepper weevil (Pepper only)	5.0
Restrictions Pre-Harvest Interval (PHI): 0 days Minimum interval between applications: 5 days Maximum Couraze 2F allowed per crop season: 15 fluid ounces/Acre (0.24 lb AI/A) Applications: For all pests listed except pepper weevil, apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment. For pepper weevil, apply specified dosage of Couraze 2F as a broadcast or directed spray by ground equipment to infested area, timing applications prior to a damaging population becoming established. Good coverage of foliage and fruit is necessary for optimal control. Applications of Couraze 2F must be incorporated into a full-season program, where alternations of effective products from multiple classes of chemistry and different modes of action are utilized in a blocked or windowed approach. For additional information, please contact your Cheminova representative, Extension Specialist or crop advisor. When targeting adult whiteflies, use higher rate.	
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.	

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 Plants
Aphids Colorado potato beetle Flea beetles Leafhoppers Thrips (foliage-feeding thrips, only) Whiteflies	Okra and Pepper 16.0 – 32.0 Other Crops 16.0 – 24.0
Pests/Diseases Suppressed	Rate Fluid ounces/Acre
Symptoms of Tomato mottle virus Tomato spotted wilt virus Tomato yellow leaf curl virus	Okra and Pepper 16.0 – 32.0 Other Crops 16.0 p- 24.0

21
51

Restrictions

Pre-Harvest Interval (PHI): **21 days**

Maximum Couraze 2F allowed on pepper and okra crops per application: **32.0 fluid ounce** (0.50 lb. AI)

Maximum Couraze 2F allowed on other fruiting vegetable crops per application: **24.0 fluid ounces/Acre** (0.38 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Couraze 2F must be incorporated into root-zone.

Planthouse application Rates^{2/}

Pests Controlled	Rate fluid ounces/1000 plants
Aphids Whiteflies	0.1

Restrictions

Maximum amount Couraze 2F applied in the planthouse: 0.1 fl oz (0.00156 lb ai)/1000 plants.

Maximum number Couraze 2F applications in planthouse: 1.

Applications

Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to transplanting, in one of the following manners:

1. Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash Couraze 2F from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Couraze 2F from foliage may result in reduced pest control;
2. Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray.

The application made in the planthouse will only provide short-term protection and is not intended as a substitution for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection. Applications of higher rates or increased number of applications in planthouse may result in significant plant injury. Transplants should be handled carefully during setting to avoid dislodging treated potting media from roots.

Important Note: not all varieties of fruiting vegetables have been tested for tolerance to Couraze 2F applied to seedling flats. It is therefore recommended to treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

^{2/} Use not permitted in CA unless otherwise directed by supplemental labeling.

GLOBE ARTICHOKE

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers	3.2-8.0
Restrictions Pre-Harvest Interval (PHI): 7 days Minimum interval between applications: 14 days Maximum Couraze2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/A)	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment.	

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Leafhoppers	16.0-32.0
Restrictions Pre-Harvest Interval (PHI): 7 days Maximum Couraze2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/A)	
Applications Apply specified dosage of Couraze 2F in the following method: <ol style="list-style-type: none"> 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment; 2. In-furrow spray at planting directed on or below seed ^{1/} Use not permitted in CA unless otherwise directed by supplemental labeling.	

HERBS

Crops of Crop Subgroup 19A including: angelica, balm (lemon balm), basil (fresh and dried), borage, bumet, camomile, catnip, chervil (dried), Chinese chive, chive, clary, coriander (cilantro or Chinese parsley leaves), costmary, culantro (leaf), curry (leaf), dillweed, horehound, hyssop, lavender, lemongrass, lovage (leaf), marigold, mrjoram, nasturtium, parsley (dried), pennyroyal, rosemary, rue, sage, savory (summer and winter), sweet bay (bay leaf), tansy, tarragon, thyme, wintergreen, woodruff, wormwood.

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Whiteflies	3.0

23
51

Restrictions

Pre-Harvest Interval (PHI): **14 days**

Maximum Couraze 2F allowed per crop season: **8.4 fluid ounces/Acre** (0.13 lb. AI/A)

Applications

Couraze 2F may be applied through properly calibrated ground and aerial application equipment. Thorough coverage with direct contact of the spray material to the target pests is required for optimum control. The addition of an organosilicone-based spray adjuvant at a rate not to exceed the adjuvant manufacturer's recommended use rate may improve coverage and control.

Note

Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Cheminova strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Whiteflies	16.0 – 24.0
Pests Suppressed	
Thrips (foliage feeding thrips only)	16.0 - 24.0

Restrictions

Pre-Harvest Interval (PHI): **14 days**

Maximum Couraze 2F allowed per crop season: **24.0 fluid ounces/Acre** (0.38 lb. AI/A)

Applications

Apply specific dosage in one of the following methods:

1. In furrows spray during planting directed on or below seed;
2. In furrow spray or transplant water drench during setting or transplanting
3. Shankd into or below eventual seed line;
4. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

Note

Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Cheminova strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

BRASSICA (COLE) LEAFY VEGETABLES ^{1/}

Crops of Crop Group 5 including: Broccoli, broccoli raab (rapini), Brussels sprouts, cabbage, cauliflower, Cavalo broccoli, Chinese (gai lon) broccoli, Chinese (bok choy) cabbage, Chinese (napa) cabbage, Chinese mustard (gai choy) cabbage, collards, kale, kohlrabi, mizuna, mustard greens, mustard spinach, rape greens

LEAFY GREEN VEGETABLES ^{1/}

Crops of Crop Subgroup 4A Plus Watercress including: Amaranth (leafy amaranth, Chinese

24
51

spinach, tampala), arugula (Roquette), chervil, chrysanthemum (edible leaved and garland), corn salad, cress (garden), cress (upland, yellow rocket, winter cress), dandelion, dock (sorrel), endive (escarole), lettuce (head and leaf), orach, parsley, purslane (garden and winter), raddicchio (red chicory), spinach (including New Zealand and vine [Malabar spinach, Indian spinach]), watercress (commercial production only, applications must not be made to native cress growing in streams or other bodies of water), watercress (upland)

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Whiteflies	3.0
Restrictions Pre-Harvest Interval (PHI): 7 days Minimum interval between applications: 5 days Maximum Couraze 2F allowed per crop season: 15.4 fluid ounces/Acre (0.24 lb. AI/A)	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment. For applications made to watercress, production fields must be drained of water at least 24 hours prior to application and water must not be reapplied to the field for a minimum of 24 hours following the application. Applications must be made to fully leafed-up canopies only.	
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.	

Pests Controlled (Soil Application)	Rate fluid ounces/Acre (on 36-inch rows)
Aphids Leafhoppers Thrips (foliage feeding thrips only) Whiteflies	10.0 – 24.0
Restrictions Pre-Harvest Interval (PHI): 21 days Maximum Couraze 2F allowed per application: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre)	
Applications Apply specified dosage of Couraze 2F in one of the following methods: <ol style="list-style-type: none"> 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment; 2. In-furrow spray directed on or below seed; 3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2" with sufficient irrigation within 24 hours of application; 4. Narrow-band spray directly below eventual seed row in bedding operation 14 or fewer days before planting; 5. Post-seeding drench, transplant-water drench, or hill drench; 6. Subsurface side-dress on both sides of each row. Couraze 2F must be incorporated into root-zone. 	
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.	

25
51

LEAFY PETIOLE VEGETABLES ^{1/}

Crops of Crop Subgroup 4B including: Cardoon, celery, celtuce, Chinese celery (fresh leaves and stalk only), Florence fennel (including sweet anise, sweet fennel, finocchio), rhubarb, swiss chard

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Whiteflies	10.0 – 24.0
Restrictions Pre-Harvest Interval (PHI): 45 days Maximum Couraze 2F allowed per application: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre) Applications Apply specified dosage of Couraze 2F in one of the following methods: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment; 2. In-furrow spray directed on or below seed; 3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2" with sufficient irrigation within 24 hours of application; 4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting; 5. Post-seeding drench, transplant-water drench, or hill drench; 6. Subsurface side-dress on both sides of each row. Couraze 2F must be incorporated into root-zone. ^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.	

LEGUME VEGETABLES ^{1/} except soybean, dry

Crops of Crop Group 6 including Edible Podded and Succulent Shelled Pea and Bean and Dried Shelled Pea and Bean

Bean (*Lupinus* spp., includes grain lupin, sweet lupin, white lupin, and white sweet lupin)

Bean (*Phaseolus* spp., includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean)

Bean (*Vigna* spp., includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, Southern pea, urd bean, yardlong bean)

Pea (*Pisum* spp., includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea)

Other Beans and Peas [Broad bean (fava), Chickpea (garbanzo bean), Guar, Jackbean, Lablab bean (hyacinth bean), Lentil, Pigeon pea, Soybean (immature seed), Sword bean]

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Whiteflies	2.8

26
51

Restrictions

Pre-Harvest Interval (PHI): **7 days**

Minimum interval between applications: **7 days**

Maximum Couraze 2F allowed per crop season: **8.4 fluid ounces/Acre** (0.13 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment.

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

27
51

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Thrips (foliage-feeding thrips, only) Whiteflies	16.0 – 24.0
Pests / Diseases Suppressed	
Symptoms of: Bean common mosaic virus (BCMV) Bean golden mosaic virus (BGMV) Beet curly top hybriqe minivirus (BCTV)	16.0 – 24.0
Restrictions Pre-Harvest Interval (PHI): 21 days Maximum Couraze 2F allowed per crop season: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre) Applications Apply specified dosage of Couraze 2F in one of the following methods: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment; 2. In-furrow spray at planting directed on or below seed; 3. In a narrow (2" or less) surface band over seed-line during planting incorporated to a depth of 1 to 1-1/2" with sufficient irrigation within 24 hours following application; 4. In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting; 5. As a post-seeding drench, transplant drench, or hill drench.	
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.	

ROOT VEGETABLES ^{1/}

Crops of Crop Subgroup 1B except sugarbeet plus kava including: Beet (garden) ^{2/}, burdock (edible) ^{2/}, carrot ^{2/}, celeriac ^{2/}, chervil (turnip-rooted) ^{2/}, chicory ^{2/}, ginseng, horseradish, kava ^{2/3/}, parsley (turnip-rooted), parsnip ^{2/}, radish ^{2/}, oriental radish (daikon) ^{2/}, rutabaga ^{2/}, salsify (oyster plant), salsify (black) ^{2/}, salsify (Spanish), skirret and Turnip ^{2/}

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 row-feet	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Thrips (foliage feeding thrips only) Whiteflies	0.7 – 1.7	10.0 – 24.0

28
51

Restrictions

Pre-Harvest Interval (PHI): **21 days**

Maximum Couraze 2F allowed per crop season: **24.0 fluid ounces/Acre** (0.38 lb. AI/Acre)

Maximum Couraze 2F applications per crop season: **1**

Application

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray (rate specified per 1,000 row-feet) or, shanked-in 1 to 2 inches below seed depth during planting;
3. In a narrow (2 inches or less) band directly (1 to 2 inches) below the eventual seed row in a bedding operation 14 or fewer days before planting.

Important Note: The rate applied affects the length of control. Use higher rates where infestations occur later in crop development, or where pest pressure is continuous. Couraze 2F rates less than 0.7 fluid ounces/1,000 row-feet will not provide adequate residual pest control. Couraze 2F treated crops grown on very high organic matter soils (muck) may also require additional pest management control.

^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

^{2/} Tops or greens from these crops may be utilized for food or feed.

^{3/} Use not permitted in California unless otherwise directed by supplemental labeling.

TUBEROUS and CORM VEGETABLES ^{1/}

Crops of Crop Group 1 (except sugarbeet) plus kava including: arracacha, arrowroot, Artichoke (Chinese and Jerusalem), beet (garden), ^{2/} burdock (edible) ^{2/}, canna (edible, Queensland arrowroot), carrot^{2/}, cassava (bitter & sweet) ^{2/}, celeriac^{2/}, chayote (root), chervil (turnip-rooted)^{2/}, chicory^{2/}, chufa, dasheen (taro)^{2/}, ginger, ginseng, horseradish, kava^{2/3/}, leren, parsley (turnip-rooted), parsip^{2/}, radish^{2/}, Oriental radish (diakon) ^{2/}, rutabaga^{2/}, salsify (black) ^{2/}, salsify (oyster plant), salsify (Spanish), skirret, sweetpotato^{2/}, tanier (cocoyam)^{2/}, turmeric, turnip^{2/}, yam bean (jicama, manioc pea), yam (true) ^{2/}

(For recommended applications on potato see Field Crops section)

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Whiteflies	2.8

29
51

Restrictions

Pre-Harvest Interval (PHI) from planting application: **7 days**

Minimum interval between applications: **5 days**

Maximum Couraze 2F allowed per crop season: **2.8 fluid ounces/Acre** on radishes; **8.6 fluid ounces/Acre** (0.13 lb. AI/Acre) on other crops

Maximum Couraze 2F applications per crop season: **1** on radishes; **3** on other crops

Applications

Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment.

¹Use not permitted in CA unless otherwise directed by supplemental labeling.

²Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.

30
51

Pests Controlled (Soil Application)	Rate fluid ounces/1,000 row-feet	Rate fluid ounces/Acre
Aphids Flea beetles Leafhoppers Whiteflies	0.7 – 1.7	10.0 – 24.0
Restrictions Pre-Harvest Interval (PHI) from planting application: 3 days (leaves); 125 days (corms) Maximum Couraze 2F allowed per crop season: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre) Maximum Couraze 2F applications per crop season: 1		
Application Apply specified dosage of Couraze 2F in one of the following methods: 1. In-furrow spray (rate specified per 1,000 row-feet) over planting material (hulis) or shanked-in 1 to 2 inches below hulis depth at planting; 2. Side-dress not more than 0.6 fluid ounces/1,000 row-feet no later than 45 days after planting. Observe same PHI as above.		
Important Note: The rate applied affects the length of control. Use higher rates where infestations occur later in crop development, or where pest pressure is continuous. Couraze 2F rates less than 0.7 fluid ounces/1,000 row-feet may not provide adequate residual pest control.		
Couraze 2F treated crops grown on very high organic matter soils (muck) may also require additional pest management control.		
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling. ^{2/} Tops or greens from these crops may be utilized for food or feed.		

STRAWBERRY ^{1/2/}

Annual And Perennial Crops	
Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Spittlebugs Whiteflies	3.0
Restrictions Pre-Harvest Interval (PHI): 7 days Minimum interval between applications: 5 days Maximum Couraze 2F allowed per crop season: 9.0 fluid ounces/Acre (0.14 lb. AI/Acre)	
Applications Do not apply during bloom or within 10 days prior to bloom or when bees are actively foraging.	
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling. ^{2/} Do not use both application methods on the same crop in the same season.	

31
51

STRAWBERRY^{1/}

Annual And Perennial Crops

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Whiteflies	24.0 – 32.0

Restrictions

Pre-Harvest Interval (PHI): 14 days

Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment after plants are established or on perennial crops in early spring prior to bud opening;
2. As a plant material or plant hole treatment just prior to, or during transplanting.
3. As a band spray over-the-row in a minimum of 20 gallons of water per acre, followed immediately by overhead irrigation to incorporate product into root-zone. Plastic or other mulches that limit movement of Couraze 2F into root zone are not recommended.

The rate applied affects the length of control. Use higher rates where infestations may occur later in crop development or where pest pressure is continuous.

Post-harvest Use on Perennial Crops

Pests Controlled	Rate fluid ounces/Acre
White grub complex (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle, Oriental beetle)	16.0 – 24.0

Restrictions

Pre-Harvest Interval (PHI): 14 days

Maximum Couraze 2F allowed per season: **24.0 fluid ounces/Acre** (0.38 lb. AI/Acre)

Applications

Apply a single application post harvest to coincide with renovation of strawberry fields and during active egg-laying period of beetles. Apply specified dosage of Couraze 2F in one of the following methods:

1. As a ground spray via boom or backpack sprayer in a minimum of 20 gallons of water per acre;
2. As a row-band spray using an adjusted amount of product based on the treated row band area in proportion to the amount required per full acre. The bandwidth should be equivalent to the width of the anticipated fruiting bed;
3. As a chemigation application with 600 to 1,000 gallons of water followed by 0.10 to 0.25 inches irrigation.

Important Note: All soil-surface applications must be followed by 0.25 inches of rainfall or overhead irrigation water per acre within 2 hours of application. Failure to adequately incorporate Couraze 2F into egg-deposition zone may result in decreased activity of beetle grubs.

^{1/} Do not use both application methods on the same crop in the same season.

SUGARBEET ^{1/}
(for use only in CA)

32
51

Pests Controlled (Soil Application)		Rate fluid ounces/Acre
Aphids Leafhoppers Whiteflies Flea beetles		6.0 – 12.0
Pests / Diseases Suppressed		
Symptoms of: Western yellows / Beet curly top hybrige minivirus (BCTV)		6.0 – 12.0
Restrictions Maximum Couraze 2F allowed per crop season: 12.0 fluid ounces/Acre (0.18 lb. AI/Acre) Do not apply immediately prior to bud opening or during bloom when bees are actively foraging.		
Applications Apply specified dosage of Couraze 2F in the following method: 1. Apply specified dosage in sufficient carrier volume to insure uniform application. Apply directly below each seed furrow either during the bedding operation immediately prior to planting or at the time of planting. The low rate may be applied to aid establishment of stands in whitefly areas, or for early season control of the other pests listed.		
^{1/} Not for use on crops grown for seed unless allowed by state-specific supplemental labeling.		

Couraze 2F CONVERSION CHART FOR LINEAR APPLICATION								
RATE fluid ounces/Acre	RATE fluid ounces/1,000 row-feet Based on average row spacing (in inches):							
	10	15	20	25	30	35	40	45
10	0.19	0.29	0.38	0.48	0.57	0.67	0.76	0.86
12	0.23	0.34	0.54	0.57	0.69	0.80	0.92	1.03
14	0.27	0.40	0.54	0.67	0.80	0.94	1.07	1.21
16	0.31	0.46	0.61	0.77	0.92	1.07	1.22	1.38
18	0.34	0.52	0.69	0.86	1.03	1.21	1.38	1.55
20	0.38	0.57	0.76	0.96	1.15	1.35	1.53	1.72
22	0.42	0.63	0.84	1.05	1.26	1.47	1.68	1.89
24	0.46	0.69	0.92	1.15	1.38	1.61	1.84	2.07
26	0.50	0.75	0.99	1.24	1.49	1.74	1.99	2.24
28	0.54	0.80	1.07	1.34	1.61	1.87	2.14	2.41
30	0.57	0.86	1.15	1.43	1.72	2.01	2.29	2.58
32	0.61	0.92	1.22	1.52	1.84	2.14	2.45	2.75
Important Note: The Couraze 2F rate applied affects the length of control and to a considerable extent, the degree of control or effect. Row-spacing X Couraze 2F rate combinations in shaded blocks may not provide adequate residual pest control and are not recommended for long-term, residual control. Use higher labeled rates where infestations may occur later in crop development or where pest pressure is continuous. Cheminova offers no warranty for use of Couraze 2F at rates below 0.7 fluid ounces/1,000 row-feet.								

33
51

TREE, BUSH and VINE CROPS
Applications Rates – Couraze 2F

Banana and Plantain

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Thrips	6.4
Restrictions Pre-Harvest Interval (PHI): 0 days Minimum interval between applications: 14 days Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/Acre) Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment. Aerial application of Couraze 2F may result in slower activity and reduced control relative to results from ground application. Addition of an organosilicone adjuvant at a rate not to exceed 2.0 fluid ounces/100 gallons, finished spray solution may improve coverage and pest control.	

Pests Controlled (Soil Application)^{1/}	Rate fluid ounces/Acre
Aphids Leafhoppers	16.0 – 32.0
Pests Suppressed	
Scales	16.0 – 32.0
Restrictions Pre-Harvest Interval (PHI): 0 days Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/Acre) Applications Apply specified dosage in the following method: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment ^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

BUSHBERRY

Crops of Crop Group 13B including: blueberry, currant, elderberry, gooseberry, huckleberry, juneberry, lingonberry, salal

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers/Sharpshooters	2.4 – 3.2
Japanese beetle (adults) Thrips Blueberry maggot	4.8 – 6.4

34
51

Restrictions

Pre-Harvest Interval (PHI): **3 days**

Minimum interval between applications: **7 days**

Maximum Couraze 2F allowed per crop season: **32 fluid ounces/Acre** (0.5 lb. AI/Acre)

Maximum number of Couraze 2F applications per crop season: **5**

Maximum application volume (water: 20.0 GPA – ground; 5.0 GPA – aerial).

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment.

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Japanese beetle (adults, feeding on foliage) White grub complex (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	16.0 – 32.0

Restrictions

Pre-Harvest Interval (PHI): **7 days**

Maximum Couraze 2F allowed per season: **32.0 fluid ounces/Acre** (0.50 lb. AI/Acre)

Do not apply pre-bloom or when bees are actively foraging.

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. 18-inch band on each side of the row followed with 0.25 inches of irrigation immediately after application.

For optimal grub control, apply Couraze 2F to control 1st or 2nd instar larvae. Application may be made post-bloom up to 7 days prior to harvest, or post-harvest until October 1st. For optimum control of Japanese beetle larvae, make applications from June 1 to July 15. Do not apply during bloom.

Application to grass covered rows, row middles, drive lanes, headlands, and other grassy areas in and around the berry field will control resident grub populations. Applications directed to the root-zone will help protect berry plant roots from grub feeding.

Apply Couraze 2F to moist soil. If necessary, apply one hour of irrigation water immediately before application of Couraze 2F. To ensure maximum efficacy, 1/2 to 1 inch of irrigation water or rainfall should be applied or received within 24 hours of application of Couraze 2F to facilitate movement into the soil and into the root-zone.

CANEBERRY^{1/}

Crops of the Caneberry, Crop Subgroup 13A including:

Blackberry (*Rubus* spp. – including Andean blackberry, arctic blackberry, bingleberry, black satin berry, boysenberry, brombeere, California blackberry, Chesterberry, Cherokee blackberry, Cheyene blackberry, common blackberry, coryberry, darrowberry, dewberry, dirksen thornless berry, evergreen blackberry, Himalayaberry, hullberry, lavacaberry, loganberry, lowberry, lucretiaberry, mammoth blackberry, marionberry, moras, mures deronce, nectarberry, northern dewberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry,

rossberry, Shawnee blackberry, Southern dewberry, tayberry, youngberry, zarzamora, and varieties and/or hybrids of these.)

Raspberry (*Rubus* spp. – including bababerry, black raspberry, blackcap, caneberry, framboise, frambueso, himbeere, keriberry, mayberry, red raspberry, thimbleberry, tulameen, yellow raspberry, and varieties and/or hybrids of these, and wild raspberry)

35
51

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Thrips	6.4
Restrictions Pre-Harvest Interval (PHI): 3 days Minimum interval between applications: 7 days Maximum Couraze 2F allowed per crop season: 19 fluid ounces/Acre (0.3 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Whiteflies	16.0 – 32.0
Rednecked cane borer	24.0 – 32.0
Pests Suppressed	
Thrips (foliage feeding thrips only)	16.0 – 32.0
Restrictions Pre-Harvest Interval (PHI): 7 days Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Soil Application Apply specified dosage in one of the following methods: <ol style="list-style-type: none"> 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment; 2. Basal, soil drench in a minimum of 500 gallons solution per acre. 	

CITRUS (Containerized)

Crops of Crop Group 10 including: calamondin, citrus citron, citrus hybrids (includes chironja, tangelo, and tangor), grapefruit, kumquat, lemon, lime, mandarin (tangerine), pummelo, orange (sweet and sour), tangelo, satsuma mandarin, white sapote (*Casimiroa* spp), and other cultivars and/or hybrids of these.

Pests Controlled (Soil Application)	Rate mL / ft 3 container media
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36
51

Aphids Asian citrus psyllid Black fly Citrus leafminer Leafhoppers/Sharpshooters Mealybugs Scales Whiteflies	0.75
Citrus root weevil (larval complex)	1.25 – 2.50
Pests / Diseases Suppressed	
Citrus thrips	2.50
Application Determine volume of container and calculate dosage necessary to treat container. Apply calculated dosage of Couraze 2F per container as a soil drench or through low-pressure drip or trickle irrigation water. Use sufficient carrier volume to ensure thorough uniform distribution throughout the media without loss of gravitational water from the container. For optimal results, treatment should be made at planting prior to insect infestation. Retreat if necessary. For control of larvae of the citrus root weevil complex, application should be made prior to neonate larvae entering potting media. Utilize higher dosage for heavy infestations.	

CITRUS (Field)

Crops of Crop Group 10 including: calamondin, citrus citron, citrus hybrids (includes chironja, tangelo, and tangor), grapefruit, kumquat, lemon, lime, mandarin (tangerine), pummelo, orange (sweet and sour), tangelo, satsuma mandarin, white sapote (Casimiroa spp), and other cultivars and/or hybrids of these.

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Asian citrus psyllid Black fly Leafhoppers/Sharpshooters Leafminers Mealybugs Scales Whiteflies	8 – 16 (depending on tree size, target pest and infestation pressure)
Pests Suppressed	
Thrips (foliage feeding thrips only)	8 – 16
Restrictions Pre-Harvest Interval (PHI): 0 days Minimum interval between applications: 10 days Maximum Couraze 2F allowed per crop season: 32 fluid ounces/Acre (0.5 lb. AI/Acre) Do not apply during bloom or within 10 days prior to bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment. Aerial application of Couraze 2F may result in slower activity and reduced control to results form ground application.	
Scales – time applications to the crawler stage. Treat each generation.	

37
51

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Asian citrus psyllid Black fly Citrus leafminer Leafhoppers/Sharpshooters Mealybugs Scales Termites (FL only) Whiteflies	16.0 – 32.0
Pests / Diseases Suppressed	
Citrus nematode Symptoms of: Citrus tristeza virus (CTV) through vector control Citrus yellows Thrips (foliage feeding thrips only)	32.0
Restrictions Pre-Harvest Interval (PHI): 0 day Maximum Couraze 2F allowed per season: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre) Applications Apply specified dosage of Couraze 2F in one of the following methods: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to newly planted trees or those previously trained to drip, trickle or micro-sprinkler irrigation. Soil should be lightly prewetted to break soil surface tension prior to applications of Couraze 2F. Chemigation application can be made separate to normal irrigation but followed by 10 to 20 minutes of additional watering to move Couraze 2F into root-zone. Allow 24 hours before initiating subsequent irrigations; 2. Soil surface band spray on both sides of the tree. Bands should overlap at the tree base to create a continuous band within the drip-line area of the tree, to be followed immediately with light sprinkler irrigation sufficient to move the product into the upper portion of the rootzone. this method is suitable for very coarse soils with 0.75% organic matter or less; 3. Drench to base of tree not exceeding one-quart total solution per tree immediately around trunk of tree and extending outward covering the entire fibrous root system of the tree. Only recommended for trees up to 8 feet tall; 4. For control of existing termite infestations, apply specified dosage in 1 to 4 quarts of total solution volume, depending on size of tree, as a drench application to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk. 5. For suppression of citrus nematode, apply specified dosage through low-pressure chemigation or soil surface band spray only, ensuring complete coverage of the root system and utilizing application directions stated above for the respective application method. Repeated and regular use of Couraze 2F over several consecutive growing seasons provides the greatest degree of nematode suppression and yields the greatest plant response.	

COFFEE^{1/}

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Thrips	6.4

38
51

Restrictions

Pre-Harvest Interval (PHI): **7 days**

Minimum interval between applications: **7 days**

Maximum Couraze 2F allowed per crop season: **32.0 fluid ounces/Acre** (0.5 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment. Aerial application of Couraze 2F may result in slower activity and reduced control relative to results from ground application.

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Leafhoppers Thrips	16.0 – 32.0
Pests Suppressed	
Scales	16.0 -32.0

Restrictions

Pre-Harvest Interval (PHI): **7 days**

Maximum Couraze 2F allowed per crop season: **32.0 fluid ounces/Acre** (0.5 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply specified dosage in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. Subsurface side-dress Shanked into the root-zone on both sides of the plants followed by irrigation;
3. Basal, soil drench in sufficient water to insure incorporation into the root-zone followed by irrigation.

^{1/}Use not permitted in CA unless otherwise directed by supplemental labeling.

CRANBERRY

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Rootgrubs (<i>Scarabaeidae</i>) Rootworms (<i>Chrysomelidae</i>)	16.0 – 32.0

39
51

Restrictions

Pre-Harvest Interval (PHI): **30 days**

Maximum Couraze 2F allowed per season: **32.0 fluid ounces/Acre** (0.50 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply Couraze 2F to moist soil. Apply specified dosage of Couraze 2F in one of the following methods:

1. As a soil spray (ground application) directed to the root and crown area using a minimum of 20 gal of water per acre;
2. As a chemigation application with 600 to 1,000 gal water. Immediately upon application, Couraze 2F must be incorporated into root-zone by 0.1 – 0.3 inch water/Acre, either with the chemigation application or through irrigation/rainfall if not applied through chemigation. Inadequate incorporation within 24 hours of application may result in reduced control.

Rootgrubs and Rootworms

Best control may be achieved when application is made post-bloom immediately after bees are removed. Applications should target early instar larvae. Couraze 2F has not been tested for crop response in tank mixes with other registered fungicides or insecticides. If tank mixing is desired, premix a sample of the Couraze 2F and the desired fungicide or insecticide partner at labeled rates and apply to a small area. Evaluate crop response within 48 hours and for at least two weeks prior to utilizing the tank mix on larger acreage. If crop injury results from the premix test, do not apply the tank mix to larger acreage.

GRAPE

Including: American bunch grape, muscadine grape and vinifera grape

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Leafhoppers/Sharpshooters	2.4 – 3.2
Meal bugs	3.0 – 3.2
Grapeleaf skeletonizer	

Restrictions

Pre-Harvest Interval (PHI): **0 days**

Minimum intervals between applications: **14 days**

Maximum Couraze 2F allowed per season: **6.4 fluid ounces/Acre** (0.1 lb. AI/Acre)

Couraze 2F may be applied by ground application only.

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
European fruit lecanium Leafhoppers/Sharpshooters Mealybugs <i>Phylloxera</i> * spp	16.0 – 32.0
Pests / Diseases Suppressed	
Grapeleaf skeletonizer Nematodes Pierce's disease	24.0 – 32.0

40
51

Restrictions

Pre-Harvest Interval (PHI): **30 days**

Maximum Couraze 2F allowed per season: **32.0 fluid ounces/Acre** (0.50 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation;
3. Hill drench in sufficient water to insure incorporation into the root-zone followed by irrigation.
4. For suppression of nematodes, apply 14 fluid ounces in a single application or two 7 fluid ounce applications on a 30 to 45 day interval. Treatment(s) should be applied only by 1) chemigation into root-zone through above ground low-pressure drip, trickle, micro-sprinkler or equivalent equipment; or 2) French plow technique, followed immediately by sufficient irrigation to move the product into the entire root-zone of the plant. Repeated and regular use of Couraze 2F over several consecutive growing seasons provides the greatest degree of nematode suppression and yields the greatest plant response.

For optimum results, make application(s) between bud-break and the pea-berry stage. A total of 14 fluid ounces/Acre is recommended under any of the following conditions:

1. Where vigorous vine growth is expected;
2. IN warmer growing areas;
3. Where mealybug and European fruit lecanium populations are expected to be heavy;
4. Where vine populations exceed 600 per acre, or;
5. For suppression of nematodes.

* Repeated and regular use of Couraze 2F over several, consecutive growing seasons controls existing Phylloxera infestations over time or prevents Phylloxera from becoming established.

HOP ^{1/}

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids	6.4
Restrictions Pre-Harvest Interval (PHI): 28 days Minimum interval between applications: 21 days Maximum Couraze 2F allowed per crop season: 19.2 fluid ounces/Acre (0.3 lb. AI/Acre)	
Applications Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial application equipment.	

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids	19.2

Restrictions

Pre-Harvest Interval (PHI): **60 days**

Maximum Couraze 2F allowed per season: **19.2 fluid ounces/Acre** (0.3 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation;
3. Hill drench in sufficient water to insure incorporation into the root-zone followed by irrigation. Higher dosage is recommended where extended residual control is desired or for treating larger vines or vines with dense foliage volume.

^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.

41
51

42
51

POME FRUIT

Crops of Crop Group 11 including: apple, crabapple, loquat, mayhaw, pear (including Oriental pear), quince

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Leafhoppers	3.2 – 6.4
Aphids (except wooly apple aphid) Apple maggot Leafminers San Jose scale	6.4
FOR PEAR ONLY Mealybugs Pear psylla	16.0
Restrictions	
Pre-Harvest Interval (PHI): 7 days	
Minimum interval between applications: 10 days	
Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/A)	
Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Combine applications targeting apple maggot with a sticker, at the manufacturer's specified rate, such as Nu-Film 17 or similar.	
Applications	
Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment. Aerial application of Couraze 2F may result in slower activity and reduced control to results from ground application.	

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids (including wooly apple aphid) Leafhoppers	16.0 – 24.0
Restrictions	
Pre-Harvest Interval (PHI): 21 days	
Maximum Couraze 2F allowed per season: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre)	
Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications	
Apply specified dosage of Couraze 2F in the following method: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.	

POMEGRANATE

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers/Sharpshooters Whiteflies	6.4
Pests Suppressed	

43
51

Scales	6.4
Restrictions	
Pre-Harvest Interval (PHI): 7 days	
Minimum interval between applications: 7 days	
Maximum Couraze 2F allowed per crop season: 19.2 fluid ounces/Acre (0.3 lb. AI/A)	
Do not apply pre-bloom or during bloom or when bees are actively foraging.	

Pests Controlled (Soil Application) ^{1/}	Rate fluid ounces/Acre
Aphids Leafhoppers/Sharpshooters Whiteflies	16.0 – 32.0
Restrictions Pre-Harvest Interval (PHI): 0 days Maximum Couraze 2F allowed per season: 32.0 fluid ounces/Acre (0.5 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F in the following method: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

STONE FRUIT

Crops of Crop Group 12 including: apricot, cherry (including sweet and tart), nectarine, peach, plum (including chickasaw, damson and Japanese), plumcot, prune (fresh and dried)

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Green June beetles Japanese beetles Leafhoppers/Sharpshooters Plant bugs Rose chafer San Jose scale	3.2 – 6.4
Cherry fruit fly	4.8 – 6.4
Pests Suppressed	
Plum curculio Stink bugs	6.4

44
51

Restrictions
Pre-Harvest Interval (PHI): 0 days
Minimum interval between applications: 7 days
Maximum Couraze 2F allowed per crop season: 19.2 fluid ounces/Acre (0.3 lb. AI/A)
Maximum application volume (water): 50 GPA – ground application; 25 GPA – aerial application.
Do not apply pre-bloom or during bloom or when bees are actively foraging.
Restrictions for cherries, plums, plumcot, prune
Pre-Harvest Interval (PHI): 7 days
Minimum interval between applications: 10 days
Maximum Couraze 2F allowed per crop season: 32.0 fluid ounces/Acre (0.5 lb. AI/A)
Maximum application volume (water): 50 GPA – ground application; 25 GPA – aerial application.
Do not apply pre-bloom or during bloom or when bees are actively foraging.
Applications
Apply specified dosage of Couraze 2F as a broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment. Aerial application of Couraze 2F may result in slower activity and reduced control to results from ground application.

In-field, Soil Application	
Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids (including woolly apple aphid) Leafhoppers	16.0 – 24.0
Restrictions Pre-Harvest Interval (PHI): 21 days Maximum Couraze 2F allowed per season: 24.0 fluid ounces/Acre (0.38 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F in the following method: 1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.	
Pre-plant, Root Dip Application	
Pests Controlled	Rate fluid ounces/10 gallons root dip solution
Black peach aphid (infesting roots)	2.0
Mix Couraze 2F at 2.0 fluid ounces per 10 gallons of water. Thoroughly wet bare-root transplant to slightly above the graft union by soaking roots in the Couraze 2F solution for up to 5 minutes. Allow solution to dry on roots and transplant trees as soon as possible following treatment.	

Tree Nuts

Crops of Crop Group 14 including: almond, beechnut, Brazil nut, butternut, cashew, chestnut, chinquapin, filbert, hickory nut, macadamia nut, pecan, pistachio, walnut (black and English)

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
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45
51

Aphids (except black pecan aphid) Leafhoppers/Sharpshooters Phylloxera sp. (leaf infestations) Spittlebugs Whiteflies	2.8 - 5.6
Black pecan aphid Mealybugs San Jose scale	6.4
Restrictions Pre-Harvest Interval (PHI): 7 days Minimum interval between applications: 6 days Maximum Couraze 2F allowed per crop season: 23 fluid ounces/Acre (0.36 lb. AI/Acre) Minimum application volume (water): 50 GPA – ground application , 25 GPA – aerial application Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Time applications for San Jose scale according to crawler stage, treating each successive generation. Two applications on a 10 to 14-day interval may be required to achieve control.	

Pests Controlled (Soil Application)^{1/}	Rate fluid ounces/Acre
Aphids Leafhoppers/Sharpshooters Mealybugs Spittlebugs Termites Whiteflies	16.0 – 32.0
Pests / Diseases Suppressed	
Pecan scab (from reduction in honeydew deposition)	16.0 – 32.0
Thrips (foliage feeding thrips only)	32.0

46
51

Restrictions

Pre-Harvest Interval (PHI): **7 day**

Maximum Couraze 2F allowed per season: **32.0 fluid ounces/Acre** (0.5 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply specified dosage prior to or at onset of pest infestation in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. pre-wet soil prior to applications of Couraze 2F and allow soil to dry following application and prior to subsequent irrigation.
2. Emitter or spot irrigation in a minimum of 4 fluid ounces of mixture per emitter site;
3. Shank or subsurface side-dress, injected to a side depth just above or just within the root zone and between the trunk and drip line of the tree canopy. Product should be applied in a minimum of 10 gallons per acre using multiple shanks on both sides of trees. Ensure product placement is below sod or orchard floor debris. Irrigation covering entire treated area should follow within 48 hours to promote uptake by root system.
4. For control of termites, apply specified dosage to slightly moist soil as a high volume drench to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk. Utilize sufficient carrier volume to penetrate the soil to a depth of 18 – 24 inches to obtain optimum control. Allow soil to dry following treatment and prior to applying any irrigation.

Remarks

Use the higher rates when applied by shank or subsurface sidedress, used on target trees, soils with high clay content, for high plant populations, and/or where extended control is desired.

Under some conditions, control may not occur for 14 or more days or until two (2) irrigations have been made. Applications made later in the season may result in reduced efficacy.

^{1/} Use not permitted in California unless otherwise directed by supplemental labeling, except pecan.

TROPICAL FRUIT

Including: acerola, avocado, black sapote, canistel, feijoa, jaboticaba, guava, longan, lychee, mamey sapote, mango, papaya, passionfruit, persimmon, pulasan, rambutan, sapodilla, spanish lime, star apple, starfruit, wax jambu

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leafhoppers/Sharpshooters Mealy bugs Thrips (foliage feeding thrips only) Whiteflies	6.4

47
51

Restrictions

Pre-Harvest Interval (PHI): **7 days**

Minimum interval between applications: **10 days**

Maximum Couraze 2F allowed per application: **32.0 fluid ounces/Acre** (0.5 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Apply specified dosage of Couraze 2F as broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment. Aerial application of Couraze 2F may result in slower activity and reduced control relative to results from ground application.

Pests Controlled (Soil Application)^{1/}	Rate fluid ounces/Acre
Aphids Leafhoppers Whiteflies	24.0 – 32.0
Pests/Diseases Suppressed	
Scales Thrips (foliage feeding thrips only)	32.0
Restrictions Pre-Harvest Interval (PHI): 6 days Maximum Couraze 2F allowed per application: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F in the following method: 1. Chemigation through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

OTHER CROPS

Application Rates – Couraze 2F Flowable

Apply specified rate per acre as foliar spray as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimal control. A spray adjuvant may be used to improve coverage. Couraze 2F may not knock down established and heavy insect populations.

Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 2F may be tank-mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.

CHRISTMAS TREE

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Adelgids Aphids Sawflies	3.2 – 6.4

48
51

Restrictions

Minimum interval between applications: **7 days**

Maximum Couraze 2F allowed per application: **32.0 fluid ounces/Acre** (0.5 lb. AI/Acre)

Applications

Apply specified dosage of Couraze 2F as broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment. Aerial application of Couraze 2F may result in slower activity and reduced control relative to results from ground application.

Gall-forming adelgids – time applications to coincide with full bud-swell or first bud-break of earliest bud-breaking trees. Once galls form, spraying will be ineffective.

Pests Controlled (Soil Application) ^{1/}	Rate fluid ounces/Acre
White grub complex (damage from grubs of Asiatic garden beetle, European and masked chafer, Japanese beetle and Oriental beetle)	16.0 – 32.0

Restrictions

Maximum Couraze 2F allowed per season: **32.0 fluid ounces/Acre** (0.50 lb. AI/Acre)

Do not apply pre-bloom or during bloom or when bees are actively foraging.

Applications

Soil incorporation and movement of Couraze 2F to the root-zone is required for activity. Couraze 2F can be incorporated most readily when applied to moist soil. Apply specified dosage in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. 18-inch band on each side of the row (small trees) to full broadcast application (large trees) followed by rainfall or 0.25 – 1 inch of irrigation within 12 hours after application.

For optimal grub control, apply Couraze 2F during adult flight activity, or up to mid-July, when 1st instar larvae are present.

^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.

49
51

POPLAR/COTTONWOOD ^{1/}

(includes members of the genus Populus grown for pulp or timber)

Pests Controlled (Foliar Application)	Rate fluid ounces/Acre
Aphids Leaf beetles	3.2 – 6.4
Restrictions Minimum interval between applications: 10 days Maximum Couraze 2F allowed per application: 32.0 fluid ounces/Acre (0.5 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F as broadcast or directed spray to infested area ensuring thorough coverage. Couraze 2F may be applied through properly calibrated ground or aerial equipment. Aerial application of Couraze 2F may result in slower activity and reduced control relative to results from ground application.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

POPLAR/COTTONWOOD ^{1/}

(includes members of the genus Populus grown for pulp or timber)

Pests Controlled (Soil Application)	Rate fluid ounces/Acre
Aphids Cottonwood leaf beetle	16.0 – 32.0
Pests/Diseases Suppressed	
Phylloxera popularia	16.0 – 32.0
Restrictions Maximum Couraze 2F allowed at-plant per crop season: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre) Do not apply pre-bloom or during bloom or when bees are actively foraging.	
Applications Apply specified dosage of Couraze 2F in the following method: <ol style="list-style-type: none"> 1. Chemigation through low-pressure drip irrigation. 2. For narrow-row, cutting orchards/nurseries used for plant propagation, shank into root-zone followed by adequate irrigation to promote uptake. (Adequate irrigation depends on soil moisture level at application. Under dry conditions, 0.25 inches/Acre is recommended) For Cottonwood leaf beetle, protection against damage will occur when application is made early, when the beetles first begin feeding. Larger trees may require earlier treatment as a result of slower uptake. For Phylloxera, apply early in the year, from break of dormancy through May.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

50
51

Cutting/Whip Application Rates. See details above for Field Application Rates	
Pest Controlled	Cutting/Whip Soaking Solution fluid ounces Couraze 2F needed per 100 gallons
Cottonwood leaf beetle	13.3 – 26.6 (unhydrated cuttings/whips) 26.6 – 40.1 (partially hydrated cuttings/whips)
Pests Suppressed	
Aphids <i>Phylloxera popularia</i>	13.3 – 26.6 (unhydrated cuttings/whips) 26.6 – 40.1 (partially hydrated cuttings/whips)
Restrictions Maximum Couraze 2F allowed at-plant per crop season: 32.0 fluid ounces/Acre (0.50 lb. AI/Acre)	
Applications Moisture content of cuttings/whips prior to application, the solution concentration and the length of soaking interval interact to affect the amount of product absorbed into plant material. For a constant soaking interval of 24 hours, drier cuttings/whips absorb a higher quantity of solution and require a lower concentration. Conversely, more hydrated cuttings/whips absorb less solution and require a higher concentration. Soaking of cuttings/whips should occur in a covered container in absence of UV light. Not all <i>Populus</i> sp. clones/varieties/hybrids have been tested for crop safety. Without specific knowledge about a particular <i>Populus</i> sp. clone/variety/hybrid, Cheminova recommends that small numbers of cuttings/whips of each be treated and evaluated prior to commercial use.	
Apply Couraze 2F in one of the following cuttings/whips soaking methods: For freshly cut (unhydrated) cuttings/whips, soak plant material in specified solution concentration for 24 hours prior to cold storage. After removal from cold storage, plant as needed. For previously hydrated cuttings/whips removed from cold storage, allow plant material to reach room temperature and soak in specified solution concentration for 24 hours prior to planting. Take proper care in disposal of any residual soaking solution. Solution may be applied to existing trees or other registered crops as long as all product label precautions and restrictions are observed.	
^{1/} Use not permitted in California unless otherwise directed by supplemental labeling.	

WARRANTY DISCLAIMER

To the extent consistent with applicable law, 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. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CHEMINOVA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

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51
51

LIMITATION OF REMEDIES

To the extent consistent with applicable law, 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.

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