

67760-97

2/5/2014

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



OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

Jennifer DeCarlo
Cheminova Inc.
1600 Wilson Blvd., Suite 700
Arlington, VA 22209

Subject: Amended label to add pollinator language
Product Name: Couraze 4F EPA Reg. No. 67760-97
EPA Decision No. 485476
Submission dated October 16, 2013

FEB 05 2014

Dear Ms. DeCarlo:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act is acceptable. A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release the product for shipment with the new labeling. See 40 CFR 156.10(a)(6).

Under 40 CFR 152.130(d), EPA may establish dates by which all product distributed or sold by the registrant must bear revised labeling. The following paragraphs set forth the schedule for ensuring that that your product bears revised labeling within a reasonable time period.

- Any product released for shipment after 2/28/14 must bear the new label.

If these conditions are not complied with, EPA will take appropriate action against this registration. If you have any questions please contact Dr. Jennifer Urbanski at 703-347-0156 or urbanski.jennifer@epa.gov.

Regards,

A handwritten signature in black ink, appearing to read "Venus Eagle", with a long horizontal flourish extending to the right.

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

COURAZE 4F

ACTIVE INGREDIENT	% BY WT.
Imidacloprid; 1-[6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine	40.1%
OTHER INGREDIENTS:	59.9%
TOTAL:	100.0%

Contains 4 lbs. of active ingredient per gallon

EPA Reg. No. 67760-97

EPA Est. No.

ACCEPTED

FEB 05 2014

Under the Federal Insecticide, Fungicide,
and Rodenticide Act, as amended, for the
pesticide registered under:

Manufactured for:

Cheminova, Inc.
P. O. Box 110566
One Park Drive
Research Triangle Park, NC 27709

NET CONTENTS: 1 GALLON

EPA. Reg. No: 67760-97

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
IF SWALLOWED:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING:	• 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:
IF IN EYES:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF INHALED:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact Cheminova, Inc. 1-866-303-6950 for emergency medical treatment information.	
NOTE TO PHYSICIAN: No specific antidote is available. Treat the patient symptomatically.	

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

Harmful if swallowed, absorbed through skin, or inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

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 STATEMENT

When handlers use closed systems, enclosed cabs, or aircraft 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

Users should:

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

ENVIRONMENTAL HAZARDS

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

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops/plants or weeds. Do not apply this product or allow it to drift to blooming crops/plants or weeds if bees are foraging 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 ground water contamination.

PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST

FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.



Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:

<http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>.

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to: www.aapco.org/officials.html. Pesticide incidents should also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

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.

For Aerial Applications

For aerial applications, mount the spray boom on the aircraft so to minimize drift caused by wing tip vortices. Use the minimum practical boom length. Do not exceed 75% of the wing span or rotor diameter. Release the spray at the lowest possible height consistent with good pest control and flight safety. Do not use applications more than 10 feet above the crop canopy.

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 specifications, applications should be made to deliver the largest droplet spectrum that provides sufficient control and coverage. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the airstream as much as possible and by avoiding excessive spray boom pressure.

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, 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 aerial or 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 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.

Airblast (Air Assist) Specific Recommendations for Tree Crops and Vineyards

Airblast sprayers carry droplets into the canopy of trees/vines via a radially, or laterally directed air stream. Follow specific drift management practices:

- Adjust deflectors and aiming devices so that spray is only directed into the canopy.
- Block off upward pointed nozzles when there is no overhanging canopy.
- Use only enough air volume to penetrate the canopy and provide good coverage.
- Do not allow the spray to go beyond the edge of the cultivated area (i.e., turn off sprayer when turning at end rows).
- Only spray inward, toward the orchard or vineyard, for application to the outside rows.

No-Spray Zone Requirements for Soil and Foliar Applications

Do not apply by ground, within 25 feet, or by air within 150 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, 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 4F on erodible soils, employ the best management practice 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 4F contains a Group 4A insecticide. Insect biotypes with acquired or inherent tolerance to Group 4A insecticides may eventually dominate the insect population if Group 4A insecticides are used repeatedly as the predominant method of control for targeted species. This may eventually result in partial or total loss of control of those species by Couraze 4F and to other Group 4A insecticides.

The active ingredient in Couraze 4F is a member of the neonicotinoid chemical class. Insect pests resistant to other chemical classes have not shown cross-resistance to Couraze 4F. 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 4F be made; 2) foliar applications of products from the same class not be made following a long residual, soil application of Couraze 4F, or other neonicotinoid products.

If a soil application of Couraze 4F has not been made during a crop season and foliar applications are to be made, avoid using a block of more than three consecutive applications of Couraze 4F and/or other Group 4A products having the same or similar mode of action. Following a neonicotinoid block of treatments, Cheminova strongly encourages the rotation to a block of applications with effective products with a different mode of action before using additional applications of neonicotinoid products. Using a block rotation or windowed approach, along with other IPM practices, is considered an effective use strategy for preventing or delaying an insect's ability to develop resistance to this class of chemistry.

Do not use foliar applications of Couraze 4F or other Group 4A products from neonicotinoid chemical class to be used on crops previously treated with a long-residual, soil-applied products from the neonicotinoid chemical class.

Other Group 4A, neonicotinoid products used as foliar treatments include: Actara, Assail, Calypso, Centric, Clutch, Couraze, Galian, Impulse, Intruder, Leverage, Nuprid; Pasada, Provado, Trimax Pro, and Venom.

Other Group 4A, neonicotinoid products used as soil/seed treatments include: Admire Pro, Advise, Alias, Belay, Couraze, Cruiser, Gaucho, Macho, Macho Max, Nuprid, Platinum, Venom, and Widow.

Contact your Cooperative 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.

See individual crops for specific pollinator protection application restrictions. If none exist under the specific crop, for foliar applications, follow these application directions for crops that are contracted to have pollinator services or for food/feed & commercially grown ornamentals that are attractive to pollinators:

1. FOR CROPS UNDER CONTRACTED POLLINATION SERVICES



Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless the following condition has been met:

If an application must be made when managed bees are at the treatment site, the beekeeper providing the pollination services must be notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.

2. FOR FOOD CROPS AND COMMERCIALY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS



Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless one of the following conditions is met:

- The application is made to the target site after sunset
- The application is made to the target site when temperatures are below 55°F
- The application is made in accordance with a government-initiated public health response
- The application is made in accordance with an active state administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying

- The application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.

Do not apply this product, by any application method, to linden, basswood or other *Tilia* species in the State of Oregon.

AGRICULTURAL USE REQUIREMENTS

Use this product 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 intervals. The requirements in this box only 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

APPLICATION DIRECTIONS

For soil applications of Couraze 4F, direct product into the seed or root zone of crop. Failure to place Couraze 4F into root zone may result in loss of control or delay in onset of activity. Couraze 4F may be applied with ground or chemigation application equipment.

Do not apply Couraze 4F in enclosed structures such as planthouses or greenhouses except as specified in the TOBACCO, CUCURBIT VEGETABLES, FRUITING VEGETABLES and GREENHOUSE VEGETABLES, (Mature plants in production greenhouses): Cucumber, Tomato only sections of this label.

Apply foliar applications of Couraze 4F as a directed or broadcast foliar spray. Thorough coverage of foliage is necessary without runoff for optimum insecticidal efficacy. Use adequate spray volumes, property calibrated application equipment, and spray adjuvant if necessary to obtain thorough coverage. Failure to provide adequate coverage and retention of Couraze 4F on leaves and fruit may result in loss of insect control or delay in onset of activity. Couraze 4F may be applied with properly calibrated ground or aerial application equipment. Minimum spray volumes unless otherwise specified on crop specific application sections are 10 gallons per acre' by ground and 5 gallons per acre by air. Couraze 4F may also be applied by overhead chemigation (see additional information in "Chemigation" section of this label below) if allowed in crop specific application section.

When applied as a soil application, optimum activity of Couraze 4F results from applications to the root-zone of plants to be protected. The earlier Couraze 4F is available to a developing plant, the earlier the protection begins. Couraze 4F is continuously taken into the roots over a long period of time and the systemic nature of Couraze 4F allows movement from roots through the xylem tissue to all vegetative parts of the plant. This results in extended residual activity of Couraze 4F, the control of insects, and the prevention and/or reduction of virus transmission or symptom expression, and plant health benefits. The

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rate of Couraze 4F applied affects the length of the plant protection period. Higher rates within the specified rate range can be used when infestations occur later in crop development or where pest pressure is continuous. Couraze 4F 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 crop-specific, pests-controlled sections of this label. Additionally, specific application information for Couraze 4F 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 application of Couraze 4F. Complete control of these pests/diseases may require supplemental control measures.

Use of Couraze 4F on crops grown for production of true seed intended for private or commercial planting is not permitted unless allowed under state specific, supplemental labeling. Additional information on uses of Couraze 4F for these crops and other questions may be obtained from the Cooperative Extension Service, PCAs, consultants, or local Cheminova, Inc. representatives.

Application should be made only to plants grown in field-type soils, potting media, or mixtures thereof. Do not apply to plants grown in non-soil medias such as perlite, vermiculite, rock wool, or other soil-less media, or plants growing hydroponically. Couraze 4F should be pre-mixed with water or other appropriate diluents prior to application. Keep Couraze 4F and water suspension agitated to avoid settling.

Do not apply more than 0.5 lb. active ingredient per acre per crop season regardless of formulation or method of application, unless specified within a crop specific, application section for a given crop.

MIXING INSTRUCTIONS

To prepare the application mixture, add a portion of the required amount of water to the spray tank and with agitation, add Couraze 4F. Complete filling tank with balance of water needed. Maintain sufficient agitation during both mixing and application. Couraze 4F may also be used with other pesticides and/or fertilizer solutions. Please see "Compatibility" section of this label. When tank mixtures of Couraze 4F 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 or wettable granules first; Couraze 4F and other suspension concentrate (flowable) 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. Maintain constant agitation during both mixing and application to ensure uniformity of spray mixture.

Compatibility

Test compatibility of the intended mixture before adding Couraze 4F 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 set for 5 minutes. Poor mixing or formation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used.

CHEMIGATION

Types of Irrigation Systems: Foliar chemigation applications of Couraze 4F may be made to crops through overhead sprinkler systems if specified in crop specific recommended application sections. Soil chemigation applications of Couraze 4F may only be made to crops through chemigation as specified in crop specific application sections and only through low pressure systems specifically recommended for a given crop. Do not apply Couraze 4F through any other type of irrigation system.

Foliar chemigation applications of Couraze 4F should be made as concentrated as possible. Retention of Couraze 4F on target site of insect infestation is necessary for optimum activity. Chemigation of Couraze

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4F in water volumes exceeding .10 inches per acre are not recommended. See crop specific recommended application sections of the label for more information.

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 Cooperative 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 where 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 systems 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, back flow preventer (RPZ), 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 to 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 where 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 any crop specified on an imidacloprid label, or 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, Christmas trees, corn

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(field, pop, and sweet), cranberry, Globe artichoke, grape, mustard seed, okra, potato, rapeseed, strawberry, sorghum, soybean, sugarbeet, sunflower, tobacco, watercress, wheat and all crops from the following Crop Groups as recognized and defined by EPA. Crops contained within a particular group are subject to change. For information related to specific crops, please contact your Cheminova representative or refer to EPA website (www.epa.gov) for latest crop groups.

ROOT VEGETABLES – Crops of Crop Group 1

LEAFY GREEN VEGETABLES – Crops of Crop Group 4

BRASSICA (COLE) LEAFY VEGETABLES – Crops of Crop Group 5

LEGUME VEGETABLES – Crops of Crop Group 6 including: Edible Podded plus Dried plus Succulent Shelled, Pease and Beans

FRUITING VEGETABLES – Crops of Crop Group 8

CUCURBIT VEGETABLES – Crops of Crop Group 9

CITRUS – Crops of Crop Group 10

POME FRUIT – Crops of Crop Group 11

STONE FRUIT – Crops of Crop Groups 12

BUSHBERRY and CANEBERRY – Crops of Crop Group 13

HERBS – Crops of Crop Subgroup 19A

TROPICAL FRUIT – Including Acerola, Atemoya, Avocado, Birida, Black sapote, Canistel, Cherimoya, Custard apple, Feijoa, Llama, Jaboticaba, Guava, Longan, Lychee, Mamey sapote, Mango, Papaya, Passionfruit, Persimmon, Pulasan, Rambutan, Sapodilla, Soursop, Spanish lime, Star apple, Starfruit, Sugar apple, Was jambu

30 DAY PLANT-BACK:

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

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.

FIELD CROPS

Cotton

Soil Application

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Cotton aphid, Plant bugs, Thrips, Whiteflies	0.65	8.5 – 10.55 (depending on row-spacing)
Restrictions: - Maximum Couraze 4F allowed per year when making soil applications: 10.55 fluid ounces per acre (0.33 lb active ingredient per acre). - Regardless of formulation or method of application, apply no more than 0.5 lb. active ingredient per acre per season, including seed treatment, soil, and foliar uses. - Do not graze treated fields after any application of Couraze 4F. See Resistance Management Section of this label. Applications: Apply specified dosage in one of the following methods: - In-furrow spray during planting directed on or below seed. - In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting. - Chemigation into root zone through low pressure drip or trickle irrigation.		

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Cotton aphid, Cotton flea hopper, Bandedwinged whitefly, Plant bugs (excludes <i>Lygus hesperus</i>), Green stink bug, Southern green stink bug, Bollworm/budworm (ovicidal effect)	1 - 2
Pest Suppressed	

Lygus bug (<i>Lygus hesperus</i>), Whiteflies (other than bandedwinged whitefly)	1.52 - 2
Applications: 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 optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Notes and Restrictions: • Pre-harvest interval (PHI): 14 days • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per year when making foliar applications: 10 fluid ounces per acre (0.31 lb. AI per acre) • Regardless of formulation or method of application, apply no more than 0.5 lb. active ingredient per acre per season, including seed, soil, and foliar uses. • Do not graze treated fields after any application of Couraze 4F. • Couraze 4F may be applied through properly calibrated ground, aerial, or chemigation application equipment.	

Tank Mix Recommendations

Pests Controlled (In addition to pests listed above)	Couraze 4F Rate fluid ounces per acre	Bidrin® 8* Rate fluid ounces per acre
For early season control of: Thrips	1 – 1.52	1.6 – 3.2
For mid to late season control of: Plant bugs, Stink bugs (including Brown stink bug), Grasshoppers, Saltmarsh caterpillar, Cotton leaf perforator	1 – 1.52	4.0 – 8.0
Restrictions (In addition to Restrictions listed above): * Refer to the Bidrin 8 product label for specific use recommendations. Observe all restrictions and precautions that appear on the label.		

PEANUT¹

Soil Application

Pests Controlled	Rate: Fluid ounces per acre*
Aphids Leafhoppers Whiteflies	8.0 – 12.0
Pests Suppressed	
Thrips	8.0 – 12.0
Restrictions Pre-Harvest Interval (PHI): 14 days Maximum COURAZE allowed per year: 12.0 fluid ounces/Acre (0.38 lb AI/Acre) 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 COURAZE 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 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. ^{1/} Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre*
Aphids Leafhoppers Whiteflies	1.5

Restrictions**Pre-Harvest Interval (PHI): 14 days****Minimum interval between applications: 5 days****Maximum COURAZE allowed between crop season: 4.2 fluid ounces/Acre (0.13 lb AI/Acre)****1/ Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.****POTATO****Soil Application**

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Potato psyllid	0.45 – 0.65	6.5 – 10.0
Pests/Diseases Suppressed	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Symptoms of: Potato leaf roll virus (PLRV), Potato yellows, Net necrosis, Wireworms (with in-furrow spray at-planting)	0.45 – 0.65	6.5 – 10.0
Restrictions: - Maximum Couraze 4F allowed per year when making soil applications: 10.0 fluid ounces per acre (0.31 lb active ingredient per acre) Application: Apply specified dosage in one of the following methods: - In-furrow spray during planting directed on seed pieces or seed potatoes. - Subsurface side-dress on both sides of the row covered with 3 or more inches of soil. - Narrow band spray at ground cracking directly over the row during hilling covered with 3 or more inches of soil. - 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 4F applications must be placed below soil surface and in contact with seed piece or within root zone. For potatoes grown on highly permeable soils with shallow water table, at-plant applications of Couraze 4F may be made in a 2 to 4 inch band (width of planter-shoe opening) and completely covered.		

Seed Piece Application

Pests Controlled	Rate: Fluid ounces per 100 lbs. of seed	Rate: Fluid ounces per acre*
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Potato psyllid, Wireworms (seed-piece protection)	0.2-0.4	4.0-8.0
Pests/Diseases Suppressed	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Symptoms of: Potato leaf roll virus (PLRV), Potato yellows, Net necrosis	0.4	8.0
Restrictions: - Maximum Couraze 4F allowed per year when making seed piece treatment applications: 10.0 fluid ounces per acre (0.31 lb. active ingredient per acre) - Do not use treated seed-pieces for food feed, or fodder. - Do not apply any subsequent application of Couraze 4F (in-furrow), Gaucho, Leverage, Provado, or similar Group 4A insecticide following a seed piece treatment with Couraze 4F. 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 4F. Agitate or stir spray solution as needed. Fungicidal or inert absorbent dusts may be applied after Couraze 4F 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 4F treated seed pieces to sunlight and in accordance with the recommendation of your local Extension service: .		
* Based on a seeding rate of 2000 lbs. per acre.		

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre*
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Psyllids	1.5

Applications: 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 optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.

Restrictions:

- Pre-Harvest Interval (PHI): 7 days
- Minimum interval between applications: 7 days
- Maximum Couraze 4F allowed per year when making foliar applications: 6.4 fluid ounces per acre (0.2 lb AI per acre)

TOBACCO

Soil Application

Pests Controlled	Rate: Fluid Ounces per 1000 plants (as seedling tray drench)	Rate: Fluid ounces per 1000 plants (in-furrow or transplant-water)
Aphids, Flea beetles	0.5	0.7
Mole crickets, Whiteflies, Wireworms	0.7 – 1.4	0.9 – 1.4
Pests/Disease Suppressed		
Cutworms Symptoms of: Tomato spotted wilt virus (TSWV)	0.7 – 1.4	0.9 – 1.4
Restrictions: • Maximum Couraze 4F allowed per year when making soil applications or foliar sprays to seedlings: 16.0 fluid ounces per acre (0.5 lb. active ingredient per acre) • Pre-Harvest Interval (PHI): 14 days Applications: Apply specified dosage in one of the following methods: • 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 4F from foliage into potting media. Failure to wash Couraze 4F 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. • In-furrow spray or transplant water drench during setting. • Carefully handle transplants during setting to avoid dislodging treated potting media from roots. Important Note: Proper tray drench applications of Couraze 4F have been shown to be the most efficacious method of application. However, the specified rate of Couraze 4F may be applied as 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 4F into the plant and a delay in control.		

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids	0.8 – 1.6
Flea beetles, Japanese beetles	1.6
Applications: 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 optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	
Restrictions: • Pre-Harvest Interval (PHI): 14 days • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per year when making foliar applications: 9.0 fluid ounces per acre (0.28 lb. AI per acre)	

VEGETABLE AND SMALL FRUIT CROPS

CUCURBIT VEGETABLES¹ : Crops of Crop Group 9: 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* melon 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*)

Soil Application

Field Application Rates. See details below for additional planthouse rates.	
Pests Controlled	Rate: Fluid ounces per acre.
Aphids, Cucumber beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	8.0 – 12.0
Pests/Diseases Suppressed	
Bacterial wilt (as vectored by various cucumber beetles), Leaf silvering resulting from whitefly feeding	8.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces per acre (0.38 lb/active ingredient per acre) Applications: Apply the specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. • In-furrow spray directed on or below seed. • Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 1/2 inches with sufficient irrigation within 24 hours of application. • Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting. • Post-seeding drench, transplant water drench, or hill drench. • Subsurface side-dress on both sides of each row. Couraze 4F must be incorporated into root zone.	

Planthouse Application Rates	
Pest Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.05
Restrictions: • Maximum amount Couraze 4F applied in the planthouse: 0.05 fluid ounces (0.00156 lb. active ingredient per 1000 plants) • Maximum number Couraze 4F 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 methods: • Uniform, broadcast high volume foliar spray, followed immediately by sufficient overhead irrigation to wash Couraze 4F from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Couraze 4F from foliage may result in reduced pest control. • 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 cucurbit vegetables have been tested for tolerance to Couraze 4F 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. * Use not permitted in CA unless otherwise directed by state-specific 24(c) labeling.	

GREENHOUSE VEGETABLES; (Mature plants in production greenhouses): Cucumber, Tomato only**Soil Application**

Pests Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.7
Restrictions: • Pre-Harvest Interval (PHI): 0 day • Maximum number Couraze 4F applications per year when making soil applications: 1 Applications: 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. Make application only to plants grown in field-type soils, potting media, or mixtures thereof. Do not apply to plants grown in non-soil medias such as perlite, vermiculite, rock wool or other soil-less media, or plants growing hydroponically. 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. Repellency of bumble bee pollinators and negative effects on some beneficials (<i>Orius</i> spp.) can occur when Couraze 4F is applied.	
Many varieties of vegetables have been tested for tolerance to Couraze 4F and show good safety. However, certain varieties may show more sensitivity to Couraze 4F. 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 24(c) labeling.	

FRUITING VEGETABLES¹: Crops of Crop Group 8 plus Okra: Eggplant, Ground cherry, Okra, Pepper (including bell, chili, cooking, pimento, and sweet), Tomato, Pepinos, Tomatillo**Soil Application**

Field Application Rates. See details below for additional planthouse rates.	
Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Colorado potato beetle, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	Okra and Pepper; 8.0-16.0 Other Crops; 8.0-12.0
Diseases Suppressed	
Symptoms of: Tomato mottle virus, Tomato spotted wilt virus, Tomato yellow leaf curl virus	Okra and Pepper; 8.0-16.0 Other Crops; 8.0-12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed on pepper and okra crops per crop season when making soil applications: 16.0 fluid ounces/Acre (0.5 lb. A.I. per acre) • Maximum Couraze 4F allowed on other fruiting vegetable crops per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb. A.I. per acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. • In-furrow spray directed on or below seed. • Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 ½ inches with sufficient irrigation within 24 hours of application. • Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting. • Post-seeding drench, transplant-water drench, or hill drench. • Subsurface side-dress on both sides of each row. Couraze 4F must be incorporated into root-zone.	

Planthouse Application Rates	
Pests Controlled	Rate: Fluid ounces per 1000 plants
Aphids, Whiteflies	0.05

Restrictions:

- Maximum amount Couraze 4F applied in the planthouse: 0.05 fluid ounces (0.00156lb.A.I. per 1000 plants).
- Maximum number Couraze 4F 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:

- Uniform, broadcast high-volume foliar spray followed immediately by sufficient overhead irrigation to wash Couraze 4F from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Couraze 4F from foliage may result in reduced pest control.
- 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 specified 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 4F 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 24(c) labeling.

* Use not permitted in CA unless otherwise directed by state-specific 24(c) labeling.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Colorado potato beetle, Leafhoppers, Whiteflies	1.5 – 2.4
Pepper weevil	2.4

Restrictions:

- Pre-harvest interval (PHI): 0 day
- Minimum interval between applications: 5 days
- Maximum Couraze 4F allowed per crop season when making foliar applications: 7.6 fluid ounces per acre (0.24 lb. AI per acre)

Applications:

Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups.

For pepper weevil, apply specified dosage of Couraze 4F by ground equipment only, timing applications prior to a damaging population becoming established. Good coverage of foliage and fruit is necessary for optimum control. Applications of Couraze 4F 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, Inc. representative, Extension Specialist or crop advisor.

When targeting adult whiteflies, use higher specified rates.

¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.

GLOBE ARTICHOKE ¹**Soil Application**

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers	7.0 – 14.0

Restrictions:

- Pre-harvest interval (PHI): 7 days
- Maximum Couraze 4F allowed per year: 14.0 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.
2. In-furrow spray of planting directed on or below seed.

¹ Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

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Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers	1.6 – 4.0
Restrictions: • Pre-harvest interval (PHI): 7 days • Minimum interval between applications: 14 days • Maximum Couraze 4F allowed per year when making foliar applications: 16 fluid ounces per acre (0.5lb AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	

HERBS¹ : Crops of Crop Subgroup 19A: Angelica, Balm (lemon balm), Basil (fresh and dried), Borage, Bumet, Chamomile, Catnip, Chervil (dried), Chinese chive, Chive, Clary, Coriander (cilantro or Chinese parsley leaves), Costmary, Cilantro (leaf), Curry (leaf), Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage (leaf), Marigold, Marjoram, Nasturtium, Parsley (dried), Pennyroyal, Rosemary, Rue, Sage, Savory (summer and winter), Sweet bay (bay leaf), Tansy, Tarragon, Thyme, Wintergreen, Woodruff, Wormwood.

Soil Application

Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	8.0 – 12.0
Pests Suppressed Thrips (foliage feeding thrips only)	
Restrictions: • Pre-Harvest Interval (PHI): 14 days • Maximum Couraze 4F per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb AI/Acre) Applications: Apply specified dosage in one of the following methods: • In-furrow spray during planting directed on or below seed. • In-furrow spray or transplant water drench during selling or transplanting. • Shanked into or below eventual seed line. • Chemigation into root zone through low pressure drip, trickle micro-sprinkler, or equivalent equipment. Notes: Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Cheminova, Inc. strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.	
¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 5 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 4.2 fluid ounces per acre (0.13 lb. AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups. Couraze 4F 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, Inc., strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.	
¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

BRASSICA (COLE) LEAFY VEGETABLES¹ : Crops of Crop Group 5 : 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, Turnip tops (leaves).

Soil Application

Pests Controlled	Rate: Fluid ounces per acre (on 36 inch rows)
Aphids, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	5.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38lb AI per acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler or equivalent equipment. • In-furrow spray directed on or below seed. • Narrow (2 inches or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application. • Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting. • Post-seeding drench, transplant water drench, or hill drench. • Subsurface side-dress on both sides of each row. Couraze 4F must be incorporated into root zone. ¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per Acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.5
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 5 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 7.7 fluid ounces/Acre (0.23 lb AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups. ¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

LEAFY GREENS VEGETABLES¹ - Crops of Crop Subgroup 4A plus Watercress : Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Chervil, Chrysanthemum (edible leaved and garland), Cilantro, 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), Radicchio (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)

Soil Application

Pests controlled	Rate: Fluid ounces per acre (on 36 inch rows)
Aphids, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	5.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces per acre (0.38 lb AI per Acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. • In-furrow spray directed on or below seed. • Narrow (2 inches or less) surface band spray over seed line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application. • Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting. • Post-seeding drench, transplant water drench or hill drench. • Subsurface side-dress on both sides of each row. Couraze 4F must be incorporated into root zone. ¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

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Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.5
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 5 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 7.7 fluid ounces per acre (0.23lb AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	
Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups.	
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 applications. Applications must be made to fully leafed-up canopies only.	
¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

LEAFY PETIOLE VEGETABLES¹ — Crops of Crop Subgroup 4B : Cardoon, Celery, Lettuce, Chinese celery (fresh leaves and stalk only), Florence fennel (including sweet anise, sweet fennel, Finocchio), Rhubarb, Swiss chard \
Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, thrips (foliage feeding thrips only), Whiteflies	5.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 45 days • Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38lb AI per acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. • In-furrow spray directed on or below seed. • Narrow. (2 inches or less) surface band spray over seed line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation within 24 hours of application. • Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting. • Post-seeding drench, transplant water drench, or hill drench. • Subsurface side-dress on both sides of each row. Couraze 4F must be incorporated into root zone.	
¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

LEGUME VEGETABLES¹ except soybean, dry: Crops of Crop Group 6: 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]
Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	8.0 – 12.0
Diseases suppressed	
Symptoms of: Bean common mosaic virus (BCMV), Bean golden mosaic virus (BGMV), Beet curly top hybrigeminivirus (BCTV)	8.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb AI per acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. • In-furrow spray at planting directed on or below seed.	

- In a narrow (2 inches or less) surface band over seed-line during planting incorporated to a depth of 1 to 1-1/2 inches with sufficient irrigation with 24-hours following application.
- In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting.
- As a post-seeding drench, transplant drench, or hill drench.

¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies	1.4
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 4.2 fluid ounces per acre (0.13lb AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups.	
¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	

ROOT VEGETABLES¹ - Crops of Crop Subgroup 1B (except Sugarbeet) and Kava: Beet (garden)², Burdock (edible)², Carrot², Celeriac², Chervil (turnip-rooted)², Chicory², Ginseng, Horseradish, Kava2/3, Parsley (turnip-rooted), Parsnip², Radish², Oriental radish (diakon)², Rutabaga², Salsify (oyster plant), Salsify (black)², Salsify (Spanish), Skirret, and Turnip²

Soil Application

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	0.35 - 0.85	5.0 - 12.0
Restrictions: - Pre-Harvest Interval (PHI): 21 days - Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38 lb AI per acre) - Maximum Couraze 4F soil applications per crop season: 1 Application: Apply specified dosage in one of the following methods: - Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. - In-furrow spray (rate specified per 1000 row-feet) or, shanked-in 1 to 2 inches below seed depth during planting. - 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 specified rates where infestations occur later in crop development, or where pest pressure is continuous. Couraze 4F rates less than 0.7 fluid ounces/1000 row-feet will not provide adequate residual pest control. Couraze 4F 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 24(c) labeling.		
² Tops or greens from these crops may be utilized for food or feed.		
³ Not permitted for use in California unless otherwise directed by state-specific 24(c) labeling.		

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
Restrictions: - Pre-Harvest Interval (PHI): 7 days - Minimum interval between applications: 5 days - Maximum Couraze 4F allowed per crop season when making soil applications: 1.4 fluid ounces per acre (0.044 lb AI per acre) on Radish, 4.2 fluid ounces per acre (0.13 lb AI per acre) on other crops. - Maximum Couraze 4F soil application(s) per crop season: 1 on radish, 3 on all other crops Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	
Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups.	
¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	
² Tops or greens from these crops may be utilized for food or feed.	
³ Not permitted for use in California unless otherwise directed by state-specific 24(c) labeling.	

TUBEROUS and CORM VEGETABLES¹ - Crops of Crop Subgroup 1C: Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Canna (edible, Queensland arrowroot), Cassava (bitter and sweet)², Chayote (root), Chufa, Dasheen (taro)², Ginger, Leren, Sweet potato, Tanier (cocoyam)², Turmeric, Yam bean (jicama, manioc pea). Yam (true)² (For recommended applications on potato, see Field Crops section)

Soil Application

Pests Controlled	Rate: Fluid ounces per 1000 row-feet	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Thrips (foliage feeding thrips only), Whiteflies	0.35 - 0.85	5.0 - 12.0
Restrictions: - Pre-Harvest Interval (PHI) from planting application: 3 days (leaves); 125 days (corms) - Maximum Couraze 4F allowed per crop season when making soil applications: 12.0 fluid ounces/Acre (0.38lb AI per acre) - Maximum Couraze 4F soil applications per crop season: 1 Applications: Apply specified dosage in one of the following methods: - In-furrow spray (rate specified per 1000 row-feet) over planting materials (hulis) or shanked-in 1to 2 inches below hulis depth at planting. - Side-dress not more than 0.3 fluid ounces/1000 row-feet no later than 45 days after planting. Observe the same PHI as above.		

Important Note: The rate applied affects the length of control. Use higher specified rates where infestations occur late in crop development, or where pest pressure is continuous. Couraze 4F rates less than 0.35 fluid ounces/1000 row-feet may not provide adequate residual pest control. Couraze 4F 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 24(c) labeling.

² Tops or greens from these crops may be utilized for food or feed.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Flea beetles, Leafhoppers, Whiteflies	1.4
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 5 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 1.4 fluid ounces per acre (0.044 lb. AI per acre) on Radish, 4.2 fluid ounces per acre (0.13 lb. AI per acre) on other crops. • Maximum Couraze 4F application(s) per crop season: 3 on all crops Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	
Crops contained within certain Crop Groups recognized by EPA are subject to change. Refer to the EPA website (www.epa.gov) for latest Crop Groups.	
¹ Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.	
² Tops or greens from these crops may be utilized for food or feed.	

STRAWBERRY¹

Soil Application

Annual and Perennial Crops	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Whiteflies	12.0 – 16.0
Restrictions: • Pre-Harvest Interval (PHI): 14 days • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.50 lb AI per acre). • Do not apply immediately prior to bud opening or during bloom or when bees are foraging. Applications: Apply specified dosage in one of the following methods: • 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. • As a plant material or plant hole treatment just prior to, or during transplanting. • 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 4F into root zone are not recommended. The rate applied affects the length of control. Use higher specified 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 per acre
White grub complex (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle, Oriental beetle)	8.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 14 days • Maximum Couraze 4F allowed per year when making soil applications: 12.0 fluid ounces per acre (0.38lb A.I. per 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 4F in one of the following methods: • As a ground spray via boom or backpack sprayer in a minimum of 20 gallons of water per acre. • 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. • As a chemigation application with 600 to 1000 gallons of water followed by 0.1 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 4F into egg-deposition zone may result in decreased activity.	
¹ Do not use both application methods on the same crop in the same season.	

Foliar Application

Annual and Perennial Crops	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Spittlebugs, Whiteflies	1.5
Restrictions: • Pre-harvest Interval (PHI): 7 days • Minimum interval between applications: 5 days • Maximum Couraze 4F allowed per year when making foliar applications: 4.5 fluid ounces per acre (0.14 lb. AI per acre). • Do not apply during bloom or within 10 days prior to bloom or when bees are foraging. Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	

SUGARBEET**Soil Application-For use only in CA**

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies, Flea beetles	3.0 – 6.0
Diseases Suppressed	
Symptoms of: Western yellows/Beet curly tophybrigenivirus (BCTV)	3.0 – 6.0
Restrictions: • Maximum Couraze 4F allowed per year when making soil applications: 6.0 fluid ounces/Acre (0.18 lb AI per acre) • Do not apply immediately prior to bud opening or during bloom or when bees are foraging. Applications: Apply specified dosage in the following method: 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 24(c) labeling.	

Rate: Fluid ounces/ Acre	Rate: Fluid ounces/1000 row-feet									
	Based on average row spacing (in inches):									
	10	15	20	25	30	34	36	38	40	45
5.0	0.11	0.16	0.22	0.28	0.33	0.38	0.39	0.41	0.44	0.49
5.5	0.13	0.18	0.24	0.30	0.37	0.41	0.44	0.46	0.48	0.54
6.0	0.13	0.20	0.26	0.33	0.39	0.45	0.47	0.51	0.53	0.60
6.5	0.14	0.22	0.29	0.36	0.43	0.48	0.52	0.54	0.57	0.64
7.0	0.15	0.23	0.31	0.38	0.46	0.53	0.55	0.59	0.62	0.69
7.5	0.16	0.25	0.33	0.41	0.49	0.56	0.60	0.63	0.66	0.75
8.0	0.17	0.26	0.36	0.44	0.53	0.60	0.63	0.67	0.70	0.79
8.5	0.18	0.28	0.38	0.47	0.56	0.63	0.68	0.71	0.75	0.84
9.0	0.20	0.30	0.39	0.49	0.60	0.68	0.71	0.75	0.79	0.89
9.5	0.21	0.31	0.41	0.52	0.63	0.71	0.75	0.79	0.84	0.94
10.0	0.22	0.33	0.44	0.55	0.66	0.75	0.79	0.84	0.89	0.99
10.5	0.23	0.34	0.46	0.57	0.69	0.78	0.83	0.87	0.92	1.03
11.0	0.24	0.37	0.48	0.61	0.72	0.83	0.87	0.92	0.97	1.09
11.5	0.25	0.38	0.51	0.63	0.76	0.86	0.91	0.97	1.01	1.14
12.0	0.26	0.39	0.53	0.66	0.79	0.90	0.95	1.00	1.06	1.18
12.5	0.28	0.41	0.55	0.69	0.83	0.93	0.99	1.05	1.10	1.24
13.0	0.29	0.43	0.57	0.71	0.86	0.98	1.03	1.09	1.14	1.29
13.5	0.30	0.45	0.60	0.75	0.89	1.01	1.07	1.13	1.18	1.33

14.0	0.31	0.46	0.62	0.77	0.92	1.05	1.10	1.17	1.23	1.39
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Important Note: The Couraze 4F rate applied affects the length of control and to a considerable extent, the degree of control or effect. Row spacing X Couraze 4F 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 infestation may occur later in crop development or where pest pressure is continuous. Cheminova, Inc. offers no warranty for use of Couraze 4F at rates below 0.36 fluid ounces/1000 row-feet.

TREE, BUSH, and VINE CROPS

BANANA and PLANTAIN¹

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers	8.0 – 16.0
Pests Suppressed	
Scales	8.0 – 16.0
Restrictions: - Pre-Harvest Interval (PHI): 0 day - Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces per Acre (0.5 lb AI per A) Applications: Apply specified dosage in the following method: - Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Thrips	3.2
Restrictions: - Pre-Harvest Interval (PHI): 0 day - Minimum interval between applications: 14 days - Maximum Couraze 4F allowed per year when making foliar applications: 16.0 fluid ounces Per acre (0.5lb AI per acre) Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines. Apply specified dosage as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 4F may be applied through properly calibrated ground or aerial application equipment. Aerial applications of Couraze 4F 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 per 100 gallons, finished spray solution may improve coverage and pest control. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

BUSHBERRY : Crops of Crop Subgroup 13B : Blueberry, Currant, Elderberry, Gooseberry, Huckleberry, Juneberry, Ligonberry, Saial

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Japanese beetle: (adults, feeding on foliage) White grub complex: (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	8.6 – 16.0
Restrictions: - Pre-Harvest Interval (PHI): 7 days - Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.50 lb AI per acre) - Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage in one of the following methods: - Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. 18-inch band on each side of the row followed by irrigation immediately after application. For optimal grub control, apply Couraze 4F to control 1 st or 2nd instar larvae. Application may be made post-bloom up to 7 days prior to harvest or post-harvest until October 1 st . For optimum control of Japanese beetle larvae, make applications from June 1 to July 15. 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 4F to moist soil. If necessary, apply one hour of irrigation water immediately before application of Couraze 4F. To ensure maximum efficacy of soil surface spray, 1/2 to 1 inch of irrigation water or rainfall should be applied or received within 24 hours of application of Couraze 4F to facilitate movement into the soil and into the root zone.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters	1.2-1.6
Blueberry maggot, Japanese beetle (adults), Thrips (foliage feeding thrips only)	2.4-3.2
Restrictions: - Pre-Harvest Interval (PHI): 3 days - Minimum interval between applications: 7 days - Maximum Couraze 4F allowed per year when making foliar applications: 16.0 fluid ounces per acre (0.5lb AI per acre) - Maximum number of Couraze 4F applications per crop season when making foliar applications: 5 - Minimum application volume (water): 20.0 GPA-ground, 5.0 GPA-aerial. - Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (www.epa.gov) for latest crop groups.	

CANEBERRY - Crops of Crop Subgroup 13A including: Blackberry (*Rubus eubatus*, including bingleberry, black satin berry, boysenberry, Cherokee blackberry, Chesterberry, Cheyenne blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, Himalayaberry, hullberry, Lavacaberry, Loganberry, lowberry, Lucretiaberry, mammoth blackberry, marion berry, nectarberry, olallieberry, Oregon evergreen berry, phenomenal berry, rangeberry, ravenberry, rossberry, Shawnee blackberry, youngberry, and varieties and/or hybrids of these) **Raspberry** (black and red, *Rubus occidentalis*, *Rubus strigosus*, *Rubus idaeus*)

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies	8.0 – 16.0
Rednecked cane borer	12.0 – 16.0
Pests Suppressed	
Thrips (foliage feeding thrips only)	8.0 – 16.0
Restrictions: - Pre-Harvest Interval (PHI): 7 days - Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5 lb AI per acre) - Do not apply pre-bloom or during bloom or when bees are foraging. Soil Application: Apply specified dosage in one of the following methods: - Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. - Basal, soil drench in a minimum of 500 gallons solution per acre.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphid Leafhoppers Whiteflies	3.2
Restrictions: - Pre-Harvest Interval (PHI): 3 days - Minimum interval between applications: 7 days - Maximum Couraze allowed per year: 9.6 fluid ounces per Acre - Do not apply pre-bloom or during bloom or when bees are foraging.	
¹ Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.	

CITRUS (Containerized) - Crops of Crop Group 10: Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Satsuma mandarin, Tangelo, and other cultivars and/or hybrids of these.

Soil Application

Pests Controlled	Rate ml/ 0.1 ft ³ container media
Aphid, Asian citrus psyllid, Blackfly, Citrus leafminer, Leafhoppers/Sharpshooters, Mealybugs, Scales, Whiteflies, Citrus root weevil (larval complex)	0.38 – 0.57
Pests Suppressed	
Citrus thrips (foliage feeding thrips only)	0.57
Citrus (containerized) – Soil Applications For commercial nursery production in standard 'citra pot' of 0.1 ft ³ volume 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. Basal, soil drench in a minimum of 30 milliliters (ml) total solution per 'citra pot'. 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/transplanting prior to insect infestation. Retreat if necessary but do not apply more than 3.42 ml per plant per season. For control of larvae of the citrus root weevil complex, apply prior to neonate larvae entering potting media.	
Citrus (containerized) – Soil Application Restrictions Pre-Harvest Interval (PHI): 1 day Maximum Couraze 4F allowed per application: 0.57 ml/ 0.1 ft ³ container media Maximum Couraze 4F allowed per year: 3.42 ml/plant Do not apply pre-bloom or during bloom or when bees are foraging.	
Citrus (containerized) – Soil Application Notes Application: Determine volume of container and calculate dosage based on 0.57 ml/0.1 ft ³ potting media. Apply calculated dosage of Couraze 4F per container as described above. Do not exceed a rate of 3.42 ml per plant per year regardless of container size. Phytotoxic Response Potential: If no experience with Couraze 4F on containerized citrus of a specific variety/hybrid, treat only a few plants and observe for phytotoxic effects for up to 60 days prior to treating entire nursery. Please note: Not all varieties or hybrids of citrus have been tested for phytotoxic response following a Couraze 4F application.	

CITRUS (Field): Crops of Crop Group 10 : Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Satsuma mandarin, Tangelo, and other cultivars and/or hybrids of these.

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Asian citrus psyllid, Blackfly, Citrus leafminer, Leafhoppers/Sharpshooters, Mealybugs, Scales, Termites (FL only), Whiteflies	8.0 – 16.0
Pests/Diseases Suppressed	
Citrus nematode, Symptoms of: Citrus tristeza virus (CTV) through vector control, Citrus yellows, Thrips (foliage feeding thrips only)	16.0
Restrictions: - Pre-Harvest Interval (PHI): 0 day - Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5 lb AI per Acre) Applications: Apply specified dosage in one of the following methods: - 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 pre-wetted to break soil surface tension prior to applications of Couraze 4F. Chemigation application can be made separate to normal irrigation but followed by 10 to 20 minutes of additional watering to move Couraze 4F into root zone. Allow 24 hours before initiating subsequent irrigations. - 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 root zone. This method is suitable for very coarse soils with 0.75% organic matter or less. - 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. - 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.	

- 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 4F over several consecutive growing seasons provides the greatest degree of nematode suppression and yields the greatest plant response.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Asian citrus psyllid, Blackfly, Leafhoppers/Sharpshooters, Leafminers, Mealybugs, Scales, Whiteflies	4.0 – 8.0 (depending on tree size, target pest and infestation pressure)
Pests Suppressed	
Thrips (foliage feeding thrips only)	4.0 – 8.0
Restrictions: • Pre-Harvest Interval (PHI): 0 day • Minimum interval between applications: 10 days • Maximum COURAZE 4F allowed per year when making foliar applications: 16 fluid ounces per acre (0.5 lb AI per acre) • Do not apply during bloom or within 10 days prior to bloom or when bees are foraging.	

COFFEE¹

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Leafminers	8.0 – 16.0
Pests Suppressed	
Scales	8.0 – 16.0
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Maximum Couraze 4F allowed per season when making soil applications: 16.0 fluid ounces per Acre (0.5 lb AI per acre) • Do not apply pre-bloom or during bloom or when bees are foraging Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. • Subsurface side-dress shanked into the root-zone on both side of the plants followed by irrigation. • Basal, soil drench in sufficient water to insure incorporation into the root zone followed by irrigation.	

¹Not permitted for use in California unless otherwise directed by state-specific 24(c) label.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers, Whiteflies	3.2
Pest suppressed	
Scales	3.2
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per crop season when making foliar applications: 16 fluid ounces per Acre (0.5lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage as a broadcast or directed spray to infested area insuring thorough coverage. Couraze 4F may be applied through properly calibrated ground or aerial application equipment. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. COURAZE 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines.	

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CRANBERRY

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Rootgrubs (Scarabaeidae), Rootworms (Chrysomelidae)	8.0 – 16.0
Restrictions: • Pre-Harvest Interval (PHI): 30 days • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging Applications: Apply Couraze 4F to moist soil. Apply specified dosage in one of the following methods: • As a soil spray (ground application) directed to the root and crown area using a minimum of 20 gal of water per acre. • As a chemigation application with 600 to 1000 gal water. Immediately upon application, Couraze 4F must be incorporated into root-zone by 0.1-0.3 inches 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 4F 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 4F 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: American bunch grape, Muscadine grape and Vinifera grape

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
European fruit lecanium, Leafhoppers/Sharpshooters, Mealybugs, <i>Phylloxera</i> * spp	8.0 – 16.0
Pest/Disease Suppressed	
Grapeleaf skeletonizer, Nematodes, Pierce's disease	12.0 – 16.0
Restrictions: • Pre-Harvest Interval (PHI): 30 days • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5lb AI/Acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. • Subsurface side-dress shanked into the root zone on both sides of the plants followed by irrigation. • Hill drench in sufficient water to insure incorporation into the root zone followed by irrigation. • For suppression of nematodes, apply 7 fluid ounces in a single application or two 3.5 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 4F 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 7 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 4F over several, consecutive growing seasons controls existing <i>Phylloxera</i> infestations over time or prevents <i>Phylloxera</i> from becoming established.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Leafhoppers, Sharpshooters, Mealybugs	1.2 – 1.6
Grapeleaf skeletonizer	1.5 – 1.6

Restrictions:

- Pre-Harvest Interval (PHI): 0 days
- Minimum interval between applications: 14 days
- Maximum Couraze 4F allowed per year when making foliar applications: 3.2 fluid ounces/Acre (0.1 lb AI/Acre)

Couraze 4F may be applied by ground application only.

Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application, of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines.

HOP¹**Soil Application**

Pests Controlled	Rate: Fluid ounces per acre
Aphids	9.6
Restrictions: • Pre-Harvest Interval (PHI): 60 days • Maximum Couraze 4F allowed per year when making soil applications: 9.6 fluid ounces/Acre (0.3 lb AI/Acre) Applications: Apply specified dosage in one of the following methods: • Chemigation into root zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. • Subsurface side-dress shanked into the root zone on both sides of the plants followed by irrigation. • Hill drench in sufficient water to insure incorporation into the root zone followed by irrigation. The higher labeled 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 state-specific 24(c) labeling.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids	3.2
Restrictions: • Pre-Harvest Interval (PHI): 28 days • Minimum interval between applications: 21 days • Maximum Couraze 4F allowed per year when making foliar applications: 9.6 fluid ounces/Acre (0.3 lb AI/Acre) Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines.	

POME FRUIT – Crops of Crop Group 11: Apple, Crabapple, Loquat, Mayhew, Pear (including Oriental pear), Quince**Soil application**

Pests Controlled	Rate: Fluid ounces per acre
Aphids (including Woolly apple aphid), Leafhoppers	8.0 – 12.0
Restrictions: Pre-harvest interval (PHI): 21 days • Maximum Couraze 4F allowed per year when making soil applications: 12.0 fluid ounces/Acre (0.38 lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging Applications: Apply specified dosage in the following method: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment.	

Foliar application

Pests Controlled	Rate: Fluid ounces per acre
Leafhoppers	1.6 – 3.2
Aphids (except Woolly apple aphid), Apple maggot, Leafminers, San Jose scale	3.2

FOR PEAR ONLY: Mealybugs, Pear psylla	8
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 10 days • Maximum Couraze 4F allowed per year when making foliar applications: 16 fluid ounces/Acre (0.5 lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging Applications: Applications targeting apple maggot should be combined with manufacturer's recommended rate of a sticker, such as Nu-Film 17. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines. Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (www.epa.gov) for latest crop groups.	

POMEGRANATE¹

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Whiteflies	8.0 – 16.0
Restrictions: • Pre-Harvest Interval (PHI): 0 day • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5 lb AI per acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage in the following method: • Chemigation into the root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Whiteflies	3.2
Pests suppressed	
Scales	3.2
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per year when making foliar applications: 9.6 fluid ounces/Acre (0.3 lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines.	
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STONE FRUIT - Crops of Crop Group 12 : Apricot, Cherry (including sweet and tart), Nectarine, Peach, Plum (including Chickasaw, Damson, and Japanese), Plumcot, Prune (fresh and dried)

Soil Application

In-field, Soil Application	
Pests Controlled	Rate: Fluid ounces per acre
Aphids (including Woolly apple aphid), Leafhoppers	8.0 – 12.0
Restrictions: • Pre-Harvest Interval (PHI): 21 days • Maximum Couraze 4F allowed per year when making soil applications: 12.0 fluid ounces/Acre (0.38 lb AI per acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage in the following method:	

• Chemigation into the root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment.	
Preplant, Root Dip Application	
Pests Controlled	Rate: Fluid ounces per 10 gallons root-dip solution
Black peach aphid (infesting roots)	1.0
Mix Couraze 4F at 1.0 fluid ounces per 10 gallons of water. Thoroughly wet bare-root transplant to slightly above the graft union by soaking roots in the Couraze 4F solution for up to 5 minutes. Allow solution to dry on roots and transplant trees as soon as possible following treatment.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Green June beetle, Japanese beetle, Leafhoppers/Sharpshooters, Plant bugs, Rose chafer, San Jose scale	1.6 – 3.2
Cherry Fruit fly	2.4 – 3.2
Pests Suppressed	
Plum curculio, Stink bugs	3.2
Restrictions for Apricot, Nectarine, Peach: • Pre-Harvest Interval (PHI): 0 day • Minimum interval between applications: 7 days • Maximum Couraze 4F allowed per year when making foliar applications: 9.6 fluid ounces/Acre (0.3lb 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 foraging. Restrictions for Cherries, Plums, Plumcot, Prune: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 10 days • Maximum Couraze 4F allowed per year when making foliar applications: 16.0 fluid ounces/Acre (0.5lb 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 foraging. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines. Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (www.epa.gov) for latest crop groups.	

TREE NUTS¹ except almond - Crops of Crop Group 14 Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut (black and English)

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Mealybugs, Spittlebugs, Termites, Whiteflies	8.0 – 16.0
Pests/Diseases Suppressed	
Pecan scab (from reduction in honeydew deposition)	8.0 – 16.0
Thrips (foliage-feeding thrips only)	16.0
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5lb AI/Acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage prior to or at onset of pest infestation in one of the following methods: • Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent irrigation equipment. Pre-wet soil prior to applications of Couraze 4F and allow soil to dry following application and prior to subsequent irrigation. • Emitter or spot application in a minimum of 4 fluid ounces of mixture per emitter site. • Shank or subsurface side-dress, injected to a 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. • 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 specified rates when applied by shank or subsurface sidedress, used on larger 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.	

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Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids (except black pecan aphid), Leafhoppers/Sharpshooters, <i>Phylloxera</i> spp. (leaf infestations), Spittlebugs, Whiteflies	1.4 – 2.8
Black pecan aphid, Mealybugs, San Jose scale	3.2
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 6 days • Maximum Couraze 4F allowed per year when making foliar applications: 11.5 fluid ounces/Acre (0.36lb 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 foraging. Applications: Applications for control of San Jose scale should be timed according to crawler stage, treating each successive generation two applications on a 10 to 14 day interval may be required to achieve control. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines. Crops contained within certain crop groups recognized by EPA are subject to change. Refer to EPA website (www.epa.gov) for latest crop groups.	
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TROPICAL FRUIT: Acerola, Atemoya¹, Avocado, Birida¹, Black sapote, Canistel, Cherimoya¹, Custard apple¹, Feijoa, Jaboticaba, Guava, Llama¹, Longan, Lychee, Marney sapote, Mango, Papaya, Passionfruit, Persimmon, Pulasan, Rambutan, Sapodilla, Soursop¹, Spanish lime, Star apple, Starfruit, Sugar apple¹, Wax jambu

Soil Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Avocado lacebug, Leafhoppers, Whiteflies	12.0 – 16.0
Pests Suppressed	
Scales, Thrips (foliage feeding thrips only)	16.0
Restrictions: • Pre-Harvest Interval (PHI): 6 days • Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5 lb AI/A). • Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage in the following method: • Chemigation through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leafhoppers/Sharpshooters, Mealybugs, Thrips (foliage feeding thrips only), Whiteflies	3.2
Pests Suppressed	
Scales	3.2
Restrictions: • Pre-Harvest Interval (PHI): 7 days • Minimum interval between applications: 10 days • Maximum Couraze 4F allowed per year when making foliar applications: 16.0 fluid ounces per acre (0.5 lb AI/A). • Do not apply pre-bloom or during bloom or when bees are foraging. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or from improved control of other pests. Aerial application of Couraze 4F may result in slower activity and reduced control relative to results from ground application. For tree and vine crops, recommended application rates are based on full-size, mature trees or vines. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

OTHER CROPS

CHRISTMAS TREE¹**Soil Application**

Pests Controlled	Rate: Fluid ounces per acre
White grub complex (damage from grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	8.0 – 16.0
Restrictions: - Maximum Couraze 4F allowed per year when making soil applications: 16.0 fluid ounces/Acre (0.5 lb AI/Acre) Applications: Soil incorporation and movement of Couraze 4F to the root zone is required for activity. Couraze 4F can be incorporated most readily when applied to moist soil. Apply specified dosage in one of the following methods: - Chemigation into root zone through low pressure drip, trickle, micro-sprinkler, or equivalent equipment. 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 4F during adult flight activity, or up to mid-July, when 1 st instar larvae are present. ¹ Not permitted for use in California unless otherwise directed by state-specific 24(c) label.	

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Adelgids, Sawflies	1.6 – 3.2
Restrictions: - Minimum interval between applications: 7 days - Maximum Couraze 4F allowed per year when making foliar applications: 16.0 fluid ounces/Acre (0.5 lb AI/Acre) Applications: Gall-forming adelgids - time applications to coincide with full bud-swell of earliest bud-breaking trees. Once galls form spraying will be ineffective. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests.	

POPLAR/COTTONWOOD¹ – (includes members of the genus *Populus* grown for pulp or timber)**Soil Application**

Field Application Rates. See details below for Cuttings/Whips Application rates.	
Pests Controlled	Rate: Fluid ounces per acre
Aphids, Cottonwood leaf beetle	8.0 – 16.0
Pest Suppressed	
<i>Phylloxera popularia</i>	8.0 – 16.0
Restrictions: - Maximum Couraze 4F allowed at-plant per year: 16.0 fluid ounces/Acre (0.5 lb AI/A). - Do not apply pre-bloom or during bloom or when bees are foraging. Applications: Apply specified dosage in the following method: - Chemigation through low-pressure drip irrigation. - 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 season, when the beetles first begin feeding. Larger trees may require earlier treatment as a result of slower uptake. For <i>Phylloxera</i> , apply early in the year from break of dormancy through May.	

Cutting/Whip Application Rates. See details above for Field Application Rates.	
Pests Controlled	Cutting/Whip Soaking Solution fluid ounces Couraze 4F Needed per 100 gallons
Cottonwood leaf beetle	6.6 – 13.3 (unhydrated cuttings/whips) 13.3 – 20.0 (partially hydrated cuttings/whips)
Pest Suppressed	
Aphids, <i>Phylloxera popularia</i>	6.6 – 13.3 (unhydrated cuttings/whips) 13.3 – 20.0 (partially hydrated cuttings/whips)
Restrictions: Maximum Couraze 4F allowed at-plant per crop season: 16.0 fluid ounces/Acre (0.5 lb AI/A). 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 *Populus* spp. clones/varieties/hybrids have been tested for crop safety. Without specific knowledge about a particular *Populus* spp. clone/variety/hybrid, Cheminova, Inc. recommends that small numbers of cuttings/whips of each be treated and evaluated prior to commercial use.

Apply Couraze 4F 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.

Proper care should be taken 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.

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

Foliar Application

Pests Controlled	Rate: Fluid ounces per acre
Aphids, Leaf beetles	1.6 – 3.2
Restrictions: • Minimum interval between applications: 10 days • Maximum Couraze 4F allowed per year when making foliar applications: 16 fluid ounces per acre (0.51b AI per acre) • Do not apply pre-bloom or during bloom or when bees are foraging. Apply specified rate per acre as a broadcast or directed foliar spray to infested area as pest populations begin to build. Thorough uniform coverage is necessary to achieve optimum control. A spray adjuvant may be used to improve coverage. Couraze 4F may not knockdown established and heavy insect populations. Two applications may be required to achieve control. Scout fields and retreat if needed. Couraze 4F may be tank mixed with other insecticides as recommended for knockdown of pests or for improved control of other pests. Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.	

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal or cleaning of equipment. Open dumping is prohibited.

PESTICIDE STORAGE: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in cool, dry place. Do not store diluted spray.

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

CONTAINER HANDLING: 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 ¼ 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 ¼ 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.

WARRANTY DISCLAIMER

Cheminova warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. 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.

INHERENT RISKS OF USE

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

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 one of the following, at Cheminova's election:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

To the extent consistent with applicable law, Cheminova shall not be liable for consequential, incidental, or special damages or losses in any matter.

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

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