62719-575 07/26/2012 1/37

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

July 26 2012

Darin W Lickfeldt
Dow AgroSciences
9330 Zionsville Road
Indianapolis IN 46268

Dear Dr Lickfeldt

Subject Amended label to revise the directions for use in nurseries
Product Name Cobalt®
EPA Registration No 62719 575
EPA Decision No 465690

The labeling referred to above submitted in connection with registration under the Federal Insecticide Fungicide and Rodenticide Act is acceptable A stamped copy of the label is enclosed for your records Please submit one copy of your final printed labeling before you release the product for shipment Your release for shipment of the product constitutes acceptance of these conditions If these conditions are not complied with the registration will be subject to cancellation in accordance with FIFRA section 6(e) If you have any questions please contact Julie Chao by phone at (703) 308 8735 or by email at chao julie@epa gov

Regards

for Venus Eagle Product Manger (01)
Insecticide Rodenticide Branch
Registration Division (7505P)

Enclosure

(Base label)

RESTRICTED USE PESTICIDE
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator s certification

Cobalt®

Insecticide

For control of listed insects infesting listed field fruit nut, and vegetable crops

Active Ingredients	
chlorpyrifos O O diethyl O (3 5 6 trichloro 2 pyridinyl) phosphorothioate	30 00%
Gamma cyhalothrin cyclopropanecarboxylic acid 3 (2 chloro 3 3 3 trifluoro 1 propenyl) 2 2 dimethyl cyano(3 phenoxyphenyl) methyl ester	0 54%
Other Ingredients	69 46%
Total	100 00%

ACCEPTED
JUL 26 2012
Under the Federal Insecticide Fungicide, and Rodenticide Act, as amended, for the pesticide registered under

EPA Reg No 62719-575

Contains 2 5 lb chlorpyrifos and 0 045 lb *gamma* cyhalothrin per gallon
Contains petroleum distillate

Keep Out Of Reach Of Children

DANGER PELIGRO

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

Precautionary Statements

Hazard to Humans and Domestic Animals

First Aid

Organophosphate

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 swallowed Immediately call a poison control center or doctor Do not induce vomiting unless told to do so by a poison control center or doctor Do not give **any** liquid to the person 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

Note to physician Chlorpyrifos is a cholinesterase inhibitor Treat symptomatically If exposed plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful) Atropine only by injection is the preferable antidote Oximes such as 2 PAM/protopam may be therapeutic if used early however use only in conjunction with atropine In case of severe acute poisoning use antidote immediately after establishing an open airway and respiration

Note to physician Probable mucosal damage may contraindicate the use of gastric lavage

Note to physician Contains petroleum distillate – vomiting may cause aspiration pneumonia

Have the product container or label with you when calling a poison control center or doctor or going for treatment You may also contact 1 800 992 5994 for emergency medical treatment information

Corrosive Causes Irreversible Eye Damage May Be Fatal If Swallowed Harmful If Absorbed Through Skin Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reactions In Some Individuals

Do not get in eyes or on clothing Avoid contact with skin eyes or clothing Wash thoroughly with soap and water after handling and before eating drinking chewing gum or using tobacco Remove and wash contaminated clothing before reuse

Personal Protective Equipment (PPE)

Materials that are chemical resistant to this product are barrier laminate and viton

Mixers and loaders using a mechanical transfer loading system and applicators using aerial application equipment must wear

Long sleeved shirt and long pants
Shoes and socks
Protective eyewear

In addition to the above **mixers and loaders** using a mechanical transfer loading system must wear

Chemical resistant gloves
Chemical resistant apron
A NIOSH approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC 21C or a NIOSH approved respirator with any R P or HE filter

See Engineering Controls for additional requirements

All **other mixers loaders applicators and handlers** must wear

Coveralls over long sleeved shirt and long pants
Chemical resistant gloves
Chemical resistant apron when mixing or loading or exposed to the concentrate
Chemical resistant footwear plus socks
Chemical resistant headgear for overhead exposure
A NIOSH approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC 21C or a NIOSH approved respirator with any R P or HE filter

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product s concentrate Do not reuse them Follow manufacturer s instructions for cleaning/maintaining PPE If no such instructions for washables exist use detergent and hot water Keep and wash PPE separately from other laundry

Engineering Controls

Mixers and loaders supporting aerial applications must use a mechanical transfer system that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170 240(d)(4)] for dermal protection and must

Wear the personal protective equipment required above for mixers/loaders
Wear protective eyewear

Pilots must use an enclosed cockpit in a manner that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170 240(d)(6)]

Use of human flaggers is prohibited Mechanical flagging equipment must be used

When handlers use closed cab motorized ground application equipment in a manner that meets the requirements listed in the 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

This product is toxic to fish aquatic invertebrates small mammals birds and bees Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated areas Do not contaminate water when disposing of equipment washwaters or rinsate This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area

Physical or Chemical Hazards

Combustible *Do not use or store near heat or open flame*

Agricultural Use Requirements

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

(Storage and Disposal for rigid containers 5 gal or less)

Storage and Disposal

Do not contaminate water food or feed by storage and disposal

Pesticide Storage Store in original container in secured dry storage area Prevent cross contamination with other pesticides and fertilizers Do not store above 100 F for extended periods of time Storage below 20 F may result in formation of crystals If product crystallizes store at 50 to 70 F and agitate to redissolve crystals If container is damaged or spill occurs use product immediately or dispose of product and damaged container as indicated below

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

Container Handling Nonrefillable container Do not reuse or refill this container

Triple rinse or pressure 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 1/4 full with water and recap Shake for 10 seconds Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal Drain for 10 seconds after the flow begins to drip Repeat this procedure two more times **Pressure rinse** as follows Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal Insert pressure rinsing nozzle in the side of the container and rinse at about 40 psi for at least 30 seconds Drain for 10 seconds after the flow begins to drip Then offer for recycling if available or puncture and dispose of in a sanitary landfill or by incineration or by other procedures allowed by state and local authorities

(Storage and Disposal for refillable rigid containers larger than 5 gal)

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Container Handling Refillable container Refill this container with pesticide only Do not reuse this container for any other purpose
Cleaning the container before final disposal is the responsibility of the person disposing of the container Cleaning before refilling is the responsibility of the refiller To clean the container before final disposal empty the remaining contents from this container into application equipment or a mix tank Fill the container about 10% full with water and if possible spray all sides while adding water If practical agitate vigorously or recirculate water with the pump for two minutes Pour or pump rinsate into application equipment or rinsate collection system Repeat this rinsing procedure two more times Then offer for recycling if available or puncture and dispose of in a sanitary landfill or by incineration or by other procedures allowed by state and local authorities

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Refer to label booklet for Directions for Use

Notice Read the entire label Use only according to label directions **Before using this product read Warranty Disclaimer and Limitation of Remedies at end of label booklet If terms are unacceptable return at once unopened**

In case of emergency endangering health or the environment involving this product call 1 800 992 5994

Agricultural Chemical Do not ship or store with food feeds drugs or clothing

EPA Reg No 62719 575 EPA Est _____

®Trademark of Dow AgroSciences LLC
Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis IN 46268

Net Contents __

(Cover shipping container)

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Refer to inside of label booklet for additional precautionary information including Directions for Use

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Physical or Chemical Hazards

Combustible Do not use or store near heat or open flame

Directions for Use

Restricted Use Pesticide

It is a violation of Federal law to use this product in a manner inconsistent with its labeling
Read all Directions for Use carefully before applying

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

Do not apply this product in a way that will contact workers or other persons either directly or through drift Only protected handlers may be in the area during application For any requirements specific to your state or tribe consult the agency responsible for pesticide regulation

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR Part 170 This Standard contains requirements for the protection of agricultural workers on farms forests nurseries and greenhouses and handlers of agricultural pesticides It contains requirements for training decontamination notification and emergency assistance It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment restricted entry interval and notification to workers (as applicable) 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) The REI for each crop is listed in the directions for use associated with each crop

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

Certified crop advisors or persons entering under their direct supervision under certain circumstances may be exempt from the early reentry requirements pursuant to 40 CFR Part 170

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

Coveralls over short sleeved shirt and short pants
Chemical resistant gloves made out of any waterproof material
Chemical resistant footware plus socks
Chemical resistant headgear for overhead exposure

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas

Storage and Disposal

Do not contaminate water food or feed by storage and disposal

Pesticide Storage Store in original container in secured dry storage area Prevent cross contamination with other pesticides and fertilizers Do not store above 100 F for extended periods of time Storage below 20 F may result in formation of crystals If product crystallizes store at 50 to 70 F and agitate to redissolve crystals If container is damaged or spill occurs use product immediately or dispose of product and damaged container as indicated below

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

Nonrefillable containers 5 gallons or less

Container Handling Nonrefillable container Do not reuse or refill this container

Triple rinse or pressure 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 1/4 full with water and recap Shake for 10 seconds Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal Drain for 10 seconds after the flow begins to drip Repeat this procedure two more times **Pressure rinse** as follows Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal Insert pressure rinsing nozzle in the side of the container and rinse at about 40 psi for at least 30 seconds Drain for 10 seconds after the flow begins to drip Then

offer for recycling if available or puncture and dispose of in a sanitary landfill or by incineration or by other procedures allowed by state and local authorities

Refillable containers 5 gallons or larger
Container Handling Refillable container Refill this container with pesticide only Do not reuse this container for any other purpose
Cleaning the container before final disposal is the responsibility of the person disposing of the container Cleaning before refilling is the responsibility of the refiller To clean the container before final disposal empty the remaining contents from this container into application equipment or a mix tank Fill the container about 10% full with water and if possible spray all sides while adding water If practical agitate vigorously or recirculate water with the pump for two minutes Pour or pump rinsate into application equipment or rinsate collection system Repeat this rinsing procedure two more times Then offer for recycling if available or puncture and dispose of in a sanitary landfill or by incineration or by other procedures allowed by state and local authorities

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Product Information

Cobalt® insecticide is an emulsifiable concentrate for use in listed crops This product resists washoff once it is dry Target pests and application rates are provided in the accompanying tables

Use Precautions

Insect control may be reduced at low spray volumes under high temperature and wind conditions

Some reduction in insect control may occur under unusually cool conditions

Flood irrigation To avoid contamination of irrigation tail waters do not flood irrigate within 24 hours following a soil surface or foliar application of Cobalt

Spray Drift Management

Buffer Zones
In New York State a 25 ft vegetated non cropped buffer strip not traversed by drainage tiles must be maintained between a treated field and a coastal salt marsh or stream that drains into a coastal salt marsh for both aerial or ground application For aerial applications the 25 ft vegetated non cropped buffer strip for runoff protection would be part of the larger 50 ft buffer strip (or 450 ft buffer strip for ULV application) required for spray drift

Vegetative Buffer Strip Construct and maintain a minimum 10 foot wide vegetative filter strip of grass or other permanent vegetation between the field edge and down gradient aquatic habitat (such as lakes

reservoirs rivers permanent streams marshes or natural ponds estuaries and commercial fish farm ponds)

Only apply products containing gamma cyhalothrin onto fields where a maintained vegetative buffer strip of at least 10 feet exists between the field and down gradient aquatic habitat

For guidance refer to the following publication for information on constructing and maintaining effective buffers *Conservation Buffers to Reduce Pesticide Losses Natural Resources Conservation Services* USDA NRCS 2000 Fort Worth Texas 21 pp http www in nrcs usda gov/technical/agronomy/ newconbuf pdf

Buffer Zone for Ground Application (Groundboom or Overhead Chemigation) Do not apply within 25 feet of aquatic habitats (such as lakes reservoirs rivers streams marshes ponds estuaries and commercial fish ponds)

Buffer Zone for Ground Application (Airblast) Do not apply within 50 feet of aquatic habitats (such as lakes reservoirs rivers streams marshes ponds estuaries and commercial fish ponds)

Buffer Zone for ULV Aerial Application Do not apply within 450 feet of aquatic habitats (such as lakes reservoirs rivers streams marshes ponds estuaries and commercial fish ponds)

Buffer Zone for Non ULV Aerial Application Do not apply within 150 feet of aquatic habitats (such as lakes reservoirs rivers streams marshes ponds estuaries and commercial fish ponds)

Spray Drift Requirements
Wind Direction and Speed Only apply this product if the wind direction favors on target deposition Do not apply when the wind velocity exceeds 15 mph

Temperature Inversion Do not make aerial or ground applications during a temperature inversion Inversions are characterized by stable air and increasing temperatures with height above the ground Mist or fog may indicate the presence of an inversion in humid areas The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface

Droplet Size Use only medium or coarser spray nozzles (for ground and non ULV aerial application) according to ASABE (S572 1) definition for standard nozzles In conditions of low humidity and high temperatures applicators should use a coarser droplet size

Additional Requirements for Ground Applications
- Wind speed must be measured adjacent to the application site on the upwind side immediately prior to application
- For groundboom applications apply using a nozzle height of no more than 4 feet above the ground or crop canopy
  For airblast applications turn off outward pointing nozzles at row ends and when spraying the outer two rows To minimize spray loss over the top in orchard applications spray must be directed into the canopy

Additional Requirements for Aerial Applications
Mount the spray boom on the aircraft so as to minimize drift caused by wingtip or rotor vortices Use the minimum practical boom length and do not exceed 75% of the wingspan or 80% of the rotor diameter
- Flight speed and nozzle orientation must be considered in determining droplet size
- Release spray at the lowest height consistent with pest control and flight safety Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety

- When applications are made with a crosswind the swath will be displaced downwind The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind

Application Directions

Broadcast Foliar Application
Apply with conventional power operated spray equipment using nozzles and spray pressures specified for insecticides Apply Cobalt in a spray volume of not less than 2 gallons per acre (gpa) for aerial application equipment (fixed wing or helicopter) or not less than 10 gpa for ground equipment unless otherwise specified Increase spray volume to ensure adequate coverage with increased density and height of crop canopy

Ground Application Orient the boom and nozzles so that uniform coverage is obtained The swath width should not be wider than the boom Follow nozzle manufacturer s specifications for insecticide nozzles with respect to nozzle type pressure and spacing

Broadcast Soil Application
Apply with conventional power operated spray equipment that will apply the product uniformly to the soil surface Use nozzles that produce medium or coarse droplets Unless otherwise indicated apply in a spray volume of 10 gpa or more For band application use proportionally less spray volume

Aerial Application
Use a minimum spray volume of 2 gpa Mark swaths by mechanical flagging permanent markers or GPS equipment

Chemigation Application
Apply Cobalt through properly equipped chemigation systems for insect control in alfalfa corn (field and sweet) cotton sorghum soybean and wheat or other crops as specified in Dow AgroSciences supplemental labeling Do not apply this product by chemigation unless specified in crop specific directions in this label or Dow AgroSciences supplemental labeling Do not apply to labeled crops through any other type of irrigation system

Note Unless otherwise indicated in specific use directions the application rates for chemigation are the same as those for broadcast application

General Directions for Sprinkler Chemigation Cobalt may be applied through overhead sprinkler irrigation systems that will apply water uniformly including center pivot lateral move end tow side (wheel) roll traveler big gun solid set micro sprinkler or hand move Do not apply this product through any other type of irrigation system Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units

For continuously moving systems the mixture containing Cobalt must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving If continuously moving irritation equipment is used apply in no more than 0 25 inch of water For irrigation systems that do not move during operation apply in no more than 0 25 inch of irrigation immediately before the end of the irrigation cycle

Chemigation Preparation The following use directions must be followed when Cobalt is applied through sprinkler irrigation systems Thoroughly clean the chemigation system and tank of any fertilizer or chemical residues and dispose of the residues according to state and federal laws Flush the injection system with soap or a cleaning agent and water Determine the amount of Cobalt needed to cover the desired acreage Mix according to instructions in the Mixing Directions section and bring mixture to desired volume Continually agitate the mixture during mixing and application

Chemigation Equipment Calibration In order to calibrate the irrigation system and injector to apply the mixture containing Cobalt determine the following 1) Calculate the number of acres irrigated by the system 2) Calculate the amount of product required and premix 3) Determine the irrigation rate and determine the number of minutes for the system to cover the intended treatment area 4) Calculate the total gallons of insecticide mixture needed to cover the desired acreage Divide the total gallons of insecticide mixture needed by the number of minutes (minus time to flush out) to cover the treatment area This value equals the gallons per minute output that the injector or eductor must deliver Convert the gallons per minute to milliliters or ounces per minute if needed Calibrate the injector system with the system in operation at the desired irrigation rate It is suggested that the injection pump/system be checked at least twice before operation and the system monitored during operation

Chemigation Equipment Requirements

- The system must contain an air gap an approved back flow prevention device a functional check valve vacuum relief valve (including inspection port) and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow Refer to the American *Society of Agricultural Engineer s Engineering Practice 409 for more information or state specific* regulations
- 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 when the water pressure drops too low or water flow stops
  The irrigation line or water pump must include a functional pressure switch that 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 (or flow meter or eductor) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock
  To ensure uniform mixing of the insecticide into the water line inject the mixture in the center of the pipe diameter or just ahead of an elbow or tee in the irrigation line so that the turbulence created at those points will assist in mixing The injection point must be located after all back flow prevention devices on the water line
- The tank holding the insecticide mixture must be free of rust fertilizer sediment and foreign material and equipped with an in line strainer situated between the tank and the injection point

Chemigation Operation Start the water pump and system and let the system achieve the desired pressure and speed before starting the injector Check for leaks and uniformity and make repairs before any chemigation takes place Start the injector system and calibrate according to manufacturer s specifications This procedure is necessary to deliver the desired rate per acre in a uniform manner When the application is finished flush and clean the entire irrigation and injector system prior to shutting down the system

Chemigation Precautions

- Crop injury lack of effectiveness or illegal pesticide residues in the crop can result from non uniform distribution of treated water
  If you have questions about calibration contact state extension service specialists equipment manufacturers or other experts
- A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person shall operate the system and make necessary adjustments should the need arise and continuously monitor the injection

Chemigation Restrictions

Do not add crop oil when Cobalt is applied by chemigation

Do not connect an irrigation system used for pesticide application (including greenhouse systems) to a public water system
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
- Do not apply when wind speed favors drift beyond the area intended for treatment End guns must be turned off during the application if they irrigate non target areas
- Do not allow irrigation water to collect or run off and pose a hazard to livestock wells or adjoining crops
- Do not enter treated area during the reentry interval unless required PPE is worn
  Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units

Maximum Application Rate
Do not exceed the allowed maximum application rate of ai per acre per year by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
alfalfa	0 06	0 12
Brussels sprout	0 12	0 24
conifer	0 12	0 24
corn	0 06	0 12
cotton	0 1	0 2
sorghum	0 04	0 08
soybean	0 03	0 06
sunflower	0 1	0 2
tree fruits	0 1	0 2
tree nuts	0 08	0 16
wheat	0 03	0 06

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Mixing Directions

Cobalt – Alone
To prepare the spray add a portion of the required amount of water to the spray tank and with the spray tank agitator operating add Cobalt Complete filling the tank with the balance of water needed Maintain sufficient agitation during both mixing and application to ensure uniformity of the spray mixture

Cobalt – Tank Mix

Cobalt is compatible with insecticides herbicides miticides and fungicides and non pressure fertilizer solutions commonly used except for alkaline materials such as Bordeaux mixture and lime Conduct a small jar compatibility test be run prior to tank mixing Prepare tank mixtures in the same manner as directed above for use of Cobalt alone When tank mixing Cobalt with herbicides add wettable powders first flowables second and emulsifiable concentrates last For best results when a fertilizer solution is involved use a fertilizer pesticide compatibility agent such as Unite or Complex Maintain constant agitation during both mixing and application to ensure uniformity of the spray mixture Do not allow spray mixtures to stand overnight

Tank Mix Compatibility Test Test compatibility of the intended tank mixture before adding Cobalt to the spray or mix tank Add proportional amounts of each tank mix ingredient to a pint or quart jar cap shake and let set 15 minutes Formation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used

Uses

Alfalfa

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Foliar Application including Chemigation
Apply as a broadcast foliar spray using aircraft or ground spray equipment Use a higher rate in the rate range for increased pest pressure Use a minimum spray volume of 2 gpa for aerial application (fixed wing or helicopter) or 10 gpa for ground equipment Use a spray volume of 5 gpa or more by air or up to 20 gpa by ground when foliage is dense and/or pest population is high and/or under high temperature and wind conditions Some reduction in insect control may occur under unusually cool conditions

Chemigation Cobalt may be applied through sprinkler irrigation systems to control listed foliar pests *Use specified broadcast application rates See Chemigation Application section*

Target Pests	Cobalt (fl oz/acre)
corn rootworm adults (spotted cucumber beetle) grasshoppers leafhoppers	7 13
alfalfa caterpillar blue alfalfa aphid cutworm spp green cloverworm pea aphid spotted alfalfa aphid (suppression) (not for use in California) velvetbean caterpillar webworm spp	13 26

alfalfa blotch leafminer	19 38
alfalfa seed chalcid adult	
alfalfa weevil larvae and adults	
armyworms	
bean leaf beetle	
blister beetle sp	
clover leaf weevil spp	
clover root borer adult	
clover root curculio spp adult	
clover stem borer adult	
corn earworm	
cowpea aphid	
cowpea curculio adult	
cowpea weevil adult	
Egyptian alfalfa weevil larvae and adults	
grape colapsis adult	
green June beetle adult	
green peach aphid	
Japanese beetle adult	
looper spp	
Mexican bean beetle	
pea weevil adult	
plant bugs	
spider mites	
spittlebug spp	
stink bug spp	
sweet clover weevil adult	
threecornered alfalfa hopper	
thrips spp	
whitefringed beetle spp adult	

Specific Use Precautions

- Do not tank mix Cobalt with other pesticides surfactants or fertilizer formulations unless prior use has shown the combination to be non injurious to alfalfa under current conditions of use Some phytotoxic symptoms may be observed on young tender rapidly growing alfalfa treated with Cobalt Alfalfa will outgrow these symptoms and no yield loss should be expected
- This product is highly toxic to bees exposed to direct treatment on alfalfa Do not apply if nearby bees are clustered outside of hives and bees are foraging in the treated area Protective information may be obtained from your Agricultural Extension Service
- To avoid contamination of irrigation tail waters do not flood irrigate within 24 hours following an application of Cobalt

Specific Use Restrictions

Preharvest Interval Do not cut or graze treated alfalfa within 7 days after application of 7 to 13 fl oz of Cobalt per acre within 14 days after application of 13 to 26 fl oz per acre or within 21 days after application of rates above 26 fl oz per acre

Do not make more than four applications of Cobalt or other product containing chlorpyrifos per season or apply any product containing chlorpyrifos more than once per alfalfa cutting

Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
alfalfa	0 06	0 12

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Brussels Sprout

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Foliar Application
Apply with conventional power operated spray equipment in 20 to 150 gpa of water Use a higher rate in the rate range when there is increased pest pressure Consult your state agricultural experiment station extension service specialist or integrated pest control advisor for proper time to treat in your area

Target Pests	Cobalt (fl oz/acre)
cabbage aphid grasshoppers	13 19
cutworms fall armyworms imported cabbage worm	13 26
beet armyworm cabbage looper cabbage webworm southern cabbage worm stink bugs striped flea beetle (adult) yellowstriped armyworm	19 38

Specific Use Restrictions
- **Preharvest Interval** Do not apply within 21 days before harvest
- Do not make more than three applications of any product containing chlorpyrifos per crop
- Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
Brussels sprout	0 12	0 24

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Conifer and Deciduous Trees (Plantations, Nurseries, and Seed Orchards)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Use in nurseries is restricted to wholesale nursery operations Wholesale nursery operations are commercial agricultural operations which do not sell or distribute directly to consumers or the general public through retail sales Plants trees fruit vegetables or any parts of the plants trees fruits or vegetables treated with this product cannot be sold or distributed directly to consumers or the general public through retail sales

Apply Cobalt as required by scouting to control exposed foliage flower cone seed and bark feeding insects Base timing and frequency of applications upon insect populations reaching locally determined economic thresholds

Foliar Application
Unless otherwise indicated apply only as a foliar spray using power operated ground equipment Thorough coverage of foliage is essential Use a minimum 10 gpa of finished spray with ground equipment Use higher volume of finished spray 20 gpa or more when foliage is dense and/or pest density is high and/or under high temperature and wind conditions

Target Pests		Cobalt (fl oz/acre)
aphids European pine sawfly gypsy moth pales weevil (adult)	pine needle scale (1) pine tortoise scale (1) spittlebugs spruce budworm	51 1
pales weevil (2)		15 33 (153 3 fl oz/100 gal)
coneworm spp (3)	seed bug spp (3)	0 5 2 (5 12 – 20 fl oz/100 gal)

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions
1 For **scale control** apply when scale crawlers are active
2 Apply as a cut stump drench
3 **Coneworm/Seed Bug/Thrips spp in Seed Orchards**
For high volume sprayers dilute 5 12 fl oz of Cobalt per 100 gallons of water and apply 5 to 10 gallons of finished spray per tree
- For low volume sprayers dilute 20 fl oz of Cobalt per 100 gallons of water and apply 100 gallons of finished spray volume per acre

Specific Use Precautions
Phytotoxicity Do not apply under conditions of extreme heat or drought stress Environmental factors and varietal differences significantly influence potential phytotoxic expression **Testing has shown that *Cobalt may be used at specified rates on the following conifer species without serious* phytotoxicity balsam fir concolor fir Douglas fir eastern white pine Fraser fir grand fir noble fir Scotch pine white spruce** Before treating large numbers of other conifer species treat a small block of plants and observe 7 to 10 days for symptoms of phytotoxicity **Note** The user assumes responsibility for determining if it is safe to treat other conifer species with Cobalt under commercial growing conditions

Specific Use Restrictions
- **Preharvest Interval** Do not apply within 30 days of harvest
- **Chemigation** Do not apply this product through any type of irrigation system
- Do not make more than three applications of Cobalt or other product containing chlorpyrifos per season
- Do not make a second application of Cobalt or other product containing chlorpyrifos within 7 days of the first application

- Do not allow meat or dairy animals to graze in treated areas
- In plantations and nurseries do not apply more than 0 12 lb gamma cyhalothrin per acre per year
- In seed orchards do not apply more than 0 25 lb gamma cyhalothrin per acre per year

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
conifer	0 12	0 24

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Corn (Field, Sweet Seed)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Conservation Tillage Preplant At Plant or Preemergence Applications
Apply as a broadcast spray to surface trash and exposed soil using power operated ground spray equipment Use a total spray volume of 20 gpa or more Use a higher rate in the rate range to extend residual control

Tank Mixing Cobalt may also be applied in tank mixtures with paraquat or glyphosate herbicide and/or liquid fertilizer solutions See Mixing Directions section for tank mixing instructions Read and carefully follow all applicable directions restrictions and precautions on labeling for each product use in combination with Cobalt

Target Pests	Cobalt (fl oz/acre)
armyworms cutworms	13 – 38

At Plant T Band Application
Apply as a liquid T band in fields with no more than 30% cover of crop residue remaining on the soil surface Apply Cobalt at a rate of 3 8 fl oz per 1000 linear feet of row (51 fl oz per acre with 40 inch row spacing) in a minimum spray volume of 5 gpa Position a flat fan nozzle over the open seed furrow immediately behind the planter shoe in front of the press wheel and adjust to provide a 5 to 6 inch band width centered over the row Incorporate into the top 1 inch of soil using tines chains or other suitable equipment

The following table provides equivalent application rates for various row spacings when Cobalt is applied at the rate of 2 87 fl oz per 1000 ft of row for grubs seed corn beetle seed corn maggot and wireworms or applied at a rate of 1 89 fl oz per 1000 ft of row for cutworms alone

Target Pests	Amount of Cobalt Required	
	Row Spacing (inches)	fl oz/acre
cutworms	30	33
	36	28
	38	27
	40	26

grubs	30	50
seed corn beetle	36	42
seed corn maggot	38	40
wireworms	40	38

Sprayer Calibration Information for Band Application

Fluid Ounces of Spray Required Per 100 Feet of Row for Various Row Spacings and Spray Volumes				
Volume of Spray Per Acre (gal)	**30**	**36**	**38**	**40**
5	3 67	4 41	4 65	4 90
10	7 34	8 82	9 30	9 80
15	11 00	13 23	13 95	14 70
20	14 68	17 64	18 60	19 69

Postemergence Application including Chemigation
Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment Use higher carrier volume when foliage is dense and/or pest pressure is high and/or under high temperatures and wind conditions Cobalt may be tank mixed with glyphosate products when application is to be made to glyphosate tolerant corn

Chemigation Cobalt may be broadcast applied postemergence through sprinkler irrigation systems at specified application rates to control listed foliar pests For best results tank mix Cobalt with 2 pints of non emulsifiable oil See Chemigation Application section

Target Pests	**Cobalt (fl oz/acre)**
grasshoppers	7 13
aphids armyworms bean leaf beetle cereal leaf beetle corn rootworm adults (2) cutworms (3) flea beetle adults (1) green cloverworm greenbug meadow spittlebug southern corn leaf beetle webworms (4) western bean cutworm	13 26
aster leafhopper chinch bugs (1) corn earworm European corn borer (5) hop vine borer sap beetle southwestern corn borer (6) stalk borer stink bug spp tarnished plant bug	19 38

billbugs (1) common stalk borer (9) corn rootworm larvae (7) (8) Japanese beetle adult lesser cornstalk borer	38 42

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 **Billbug chinch bug** or **flea beetle** For best control ground apply in a minimum spray volume of 20 to 40 gpa at 40 psi If corn is less than 6 inches tall apply in a 9 to 12 inch wide band over the row For corn more than 6 inches tall apply using drop nozzles directed to the base of the plant Do not reduce the application rate for banded or directed applications Concentrate the full labeled dosage rate in the treated zone When chinch bugs continue to immigrate to corn over a prolonged period or under extreme pest pressure a second application may be needed

2 The specified dosage will control silk clipping by **corn rootworm adults**

3 **Cutworms** It is preferable to apply Cobalt when soil is moist and worms are active on or near the soil surface If ground is dry cloddy or crusted at time of treatment worms may be protected from the spray and effectiveness will be reduced Shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment may improve control A second application may be required if damage or density levels exceed economic thresholds established for your area

4 **Webworm** For control shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment is necessary

5 **European corn borer** For control use 26 to 38 fl oz per acre when application is made with power operated ground or aerial equipment or 19 to 38 fl oz per acre when application is made through a sprinkler irrigation system University research indicates that achieving greater than 50% control of first generation European borer with a single liquid insecticide treatment is highly dependent upon timing insecticide placement and weather conditions

6 **Southwestern corn borer** A second application may be applied 21 days later if needed due to reinfestation

7 **Corn rootworm larvae** For postemergence control apply at cultivation Direct the spray to both sides of the row at the base of the plants just ahead of the cultivator shovels Cover the insecticide with soil around the brace roots A cultivation application of Cobalt may be made in addition to an at planting application of Lorsban® 15G insecticide

8 Cobalt may also be applied through sprinkler irrigation systems at the rate of 38 to 42 fl oz per acre to control **corn rootworm larvae** Time application to coincide with the appearance of the second instar larvae Apply with enough water to wet the root zone to the depth control needed If soils are wet allow enough soil drying to occur such that an application using a minimum amount of water will not produce surface runoff See Chemigation Application section

9 Do not use Cobalt in combination with a burndown herbicide for control of common stalk borer For **common stalk borer** control treat approximately 11 days after application of glyphosate or after burndown with paraquat herbicide is complete (3 to 5 days)

Specific Use Restrictions

- **Preharvest Interval** Do not apply within 21 days before harvest of grain ears forage or fodder
- Do not make more than three applications of any product containing chlorpyrifos per season including the maximum allowed of two granular applications at the 1 lb ai chlorpyrifos rate
- Do not apply more than a total of 126 fl oz of Cobalt per acre per season
- Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application
- If more than 1 lb ai granular chlorpyrifos per acre is applied at plant (for a maximum of 1 3 lb ai chlorpyrifos per acre per season) only one additional application of a liquid product containing chlorpyrifos at 1 lb ai chlorpyrifos per acre is allowed per season for a total of 2 3 lb ai chlorpyrifos per acre per season

- Do not allow meat or dairy animals to graze in treated areas nor harvest treated corn silage as feed for meat or dairy animals within 14 days after last treatment
- Do not apply in tank mixes with Steadfast or Lightning herbicides
- Do not apply more than 84 fl oz after silk initiation
- Do not apply more than 42 fl oz after corn has reached the milk stage (yellow kernels with milky fluid)

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
corn	0 06	0 12

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Cotton

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Foliar Application including Chemigation
Apply as a broadcast foliar spray using aircraft or ground spray equipment (see separate rate table for Arizona and California) Use a higher rate in the rate range when there is increased pest pressure Use sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment Increase spray volume when foliage is dense and/or pest population is high and/or under high temperature and wind conditions Treat when field counts indicate damaging insect populations are developing or present

Chemigation Cobalt may be applied through sprinkler irrigation systems at specified broadcast application rates to control listed foliar pests See Chemigation Application section

Proper application methods are necessary to ensure thorough spray coverage and correct rate and minimize off target drift Follow Application Directions for ground and aerial application and Spray Drift Management recommendations in Product Information section of this label

All States Except Arizona and California

Target Pests	Cobalt (fl oz/acre)
cabbage looper cotton leafperforator cutworms grasshoppers	13 – 26

bollworm (2) cotton aphid cotton fleahopper (1) cotton leafworm cutworms spp European corn borer fall armyworm plant bugs (1) (*Lygus Mirids*) saltmarsh caterpillar thrips spp yellowstriped armyworm	19 38
beet armyworm boll weevil pink bollworm stink bug spp	26 38
bandedwing whitefly sweetpotato whitefly tobacco whitefly	38 – 42

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 Suppression that will minimize damage from **plant bugs** and **cotton fleahoppers** Use higher rates for increased levels of control

2 **Bollworms** For best results scout fields twice per week and apply when worms are 1/4 inch or less in length

Arizona and California

Target Pests	Cobalt (fl oz/acre)
armyworms bollworm (2) cotton aphid cotton fleahopper cotton leaf perforator cutworms *Lygus* salt marsh caterpillar silverleaf whitefly (1) thrips	26 – 42
pink bollworm	38 42

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 **Silverleaf whitefly** Apply in tank mix combination with the specified rate of another insecticide labeled for control or suppression

2 **Bollworms** For best results scout fields twice per week and apply when worms are 1/4 inch or less in length

Specific Use Restrictions

Preharvest Interval Do not apply within 21 days before harvest

- Do not make more than three applications of Cobalt or other product containing chlorpyrifos per crop season
- Do not apply more than a total of 126 fl oz of Cobalt per acre per season

- Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application
  Do not allow meat or dairy animals to graze in treated areas
  Do not feed gin trash or treated forage to meat or dairy animals
  Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
cotton	0 1	0 2

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Sorghum Grain Sorghum (Milo)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Postemergence Application including Chemigation
Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment Control may be reduced at low spray volumes under high temperature and wind conditions

Chemigation Cobalt may be applied through sprinkler irrigation systems at specified broadcast application rates to control listed foliar pests See Chemigation Application section

Target Pests	Cobalt (fl oz/acre)
grasshoppers sorghum midge (1) yellow sugar cane aphid and other aphids	7 13
chinch bugs (3) cutworms fall armyworms flea beetle spp greenbug (2) lesser cornstalk borer (3) yellowstriped armyworm	13 38
beet armyworm corn earworm European and southwestern corn borer stink bug spp webworms	19 38

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions
1 **Sorghum midge** Apply when 30% to 50% of the seed heads are in bloom
2 **Greenbug** Use a higher rate in the rate range when pest populations are high

3 **Chinch bugs and lesser cornstalk borer** Apply as a directed spray toward the base of the plant using power operated ground spray equipment with sufficient water to ensure coverage of an 8 to 12 inch band centered in the row For plants less than 6 inches high apply an 8 to 12 inch band centered over the row Do not reduce the dosage for banded or directed applications Concentrate the full labeled dosage rate in the treated zone

Specific Use Precautions

To minimize the potential for chemical injury do not apply Cobalt to drought stressed grain sorghum within three days following irrigation or rain except where the product is applied in irrigation water Be aware that sorghum lines used in seed production fields may be more susceptible to chemical injury Susceptible inbred lines or hybrids are likely to be at greater risk of yield reducing chemical injury when treated at the higher application rates Do not apply more than 26 fl oz of Cobalt per acre to seed sorghum if the additional risk of crop injury is unacceptable

Specific Use Restrictions

- **Preharvest Interval** Do not harvest for grain forage fodder hay or silage within 30 days after application of 26 fl oz of Cobalt per acre or within 60 days after application of rates above 26 fl oz per acre
- Do not make more than three applications of Cobalt or other product containing chlorpyrifos per use season
- Do not apply more than a total of 77 fl oz of Cobalt per acre per season
- Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application
- Do not treat sweet varieties of sorghum
- Do not apply more than 28 fl oz per acre per season once crop is in soft dough stage

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
sorghum	0 04	0 08

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Soybean

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Conservation Tillage At Plant or Preemergence Applications

Apply as a broadcast spray to surface trash and exposed soil using power operated ground spray equipment Use a total spray volume of 20 gpa or more User a higher rate in the rate range to extend residual control

Tank Mixing Cobalt may also be applied in tank mixtures with paraquat or glyphosate herbicide and/or liquid fertilizer solutions See Mixing Directions section for tank mixing instructions Read and carefully follow all applicable directions restrictions and precautions on labeling for each product use in combination with Cobalt

Target Pests	Cobalt (fl oz/acre)

cutworms grasshoppers lesser corn stalk borer	13 – 38

Postemergence Application including Chemigation
Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment Use higher carrier volume when foliage is dense and/or pest pressure is high and/or under high temperatures and wind conditions Apply when field counts indicate damaging pest populations are developing or present Cobalt may be tank mixed with glyphosate products when application is to be made to glyphosate tolerant soybeans Use a higher rate in the rate range when there is increased pest pressure

Chemigation Cobalt may be applied through sprinkler irrigation systems at specified broadcast application rates to control listed foliar pests See Chemigation Application section

Target Pests	Cobalt (fl oz/acre)
grasshoppers green cloverworm velvetbean caterpillar	7 13
blister beetle spp cabbage looper cutworms painted lady caterpillar saltmarsh caterpillar silverspotted skipper soybean aphid spider mites webworm spp wollybear caterpillar yellowstriped armyworm	13 26
bean leaf beetle corn earworm Japanese beetle adult Mexican bean beetle Mexican corn rootworm adult northern corn rootworm adult potato leafhopper southern corn rootworm beetle adult stink bug spp threecornered alfalfa hopper thrips spp western corn rootworm beetle adult	19 – 38
beet armyworm European corn borer lesser cornstalk borer	26 38

Specific Use Precaution
On determinate soybeans do not make more than one application after pod set

Specific Use Restrictions
Preharvest Interval Do not apply within 30 days before harvest
Do not make more than three applications of Cobalt or other products containing chlorpyrifos per year

Do not apply more than a total of 85 fl oz of Cobalt per acre per season
Do not make a second application of Cobalt or other product containing chlorpyrifos within 14 days of the first application
Do not allow meat or dairy animals to graze in treated areas or otherwise feed treated soybean forage hay and straw to meat or dairy animals
Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
soybean	0 03	0 06

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Sunflower

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

Postemergence Application
Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment Use a higher rate in the rate range when there is increased pest pressure

Target Pests	Cobalt (fl oz/acre)
grasshoppers	7 13
banded sunflower moth cutworms fall armyworm painted lady caterpillar seed weevil (4) stem weevil (2) sunflower beetle larvae and adults (1) sunflower moth (3) woolly bears	19 38
beet armyworm head clipper weevil adult Japanese beetle adult leafhopper spp meadow spittlebug spotter cabbage looper stink bug spp sunflower maggot adult tarnished plant bug (*Lygus*) (5)	26 – 38

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 **Sunflower beetle** For control of larvae or adults treat when field counts indicate 10 larvae or 1 to 2 adults per seedling
2 **Stem weevil** Optimal treatment time is within 5 to 7 days after adult weevils begin to appear
3 **Sunflower moth** To control make first application during early 1% to 5% bloom stage
4 **Seed weevil** To control apply when field counts indicate 10 to 12 adults per plant for oil crop varieties and 1 to 3 adults per plant on confectionery crop varieties
5 **Tarnished plant bug (*Lygus*)** Use a higher rate in the rate range where populations are heavy Apply at the onset of pollen spread or approximately 10% bloom (R 5 growth stage) For best protection make a second application 10 days later Use sufficient water to ensure thorough coverage of treated plants

Specific Use Restrictions

Preharvest Interval Do not apply within 45 days before harvest

Do not make more than three applications of Cobalt or other products containing chlorpyrifos per season

Do not apply more than a total of 114 fl oz of Cobalt per acre per season or after bloom initiation

Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application

Do not allow meat or dairy animals to graze in treated areas

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
sunflower	0 1	0 2

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Tree Fruits[1] and Almond (Dormant/Delayed Dormant Sprays)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 days for tree fruits and 24 hours for almond unless PPE required for early entry is worn

[1]Apple cherry nectarine peach pear plum prune

Apply as a dormant or delayed dormant spray While Cobalt may be used without oil for best results use oil to control additional pests See precautions for use of oil below Apply as a concentrate or dilute spray using conventional power operated spray equipment For dilute sprays (greater than 200 gpa) use sufficient spray volume to completely wet tree foliage but not to point of runoff For concentrate sprays (less than 200 gpa) uniformly apply an equivalent amount of Cobalt per acre

Use a higher rate in the rate range when there is increased pest pressure

Use Precautions for Tree Fruits and Almond

Cold or dry conditions may cause Cobalt plus oil sprays to infuse into trees resulting in bud damage or bud drop Do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not desiccated

To avoid contamination of irrigation tail waters do not flood irrigate within 24 hours of application of Cobalt

Use Restrictions for Tree Fruits and Almond

Make only one application of chlorpyrifos during the dormant season
Do not use more than a total of 2 lb ai chlorpyrifos (6 25 pints of Cobalt) per acre per season as a dormant/delayed dormant application
Do not allow meat or dairy animals to graze in treated orchards
Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
tree fruits	0 1	0 2
tree nuts	0 08	0 16

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Almond Cherry Nectarine Peach Pear Plum Prune

Target Pests	Cobalt (pint/acre)
American plum borer greater peach tree borer lesser peach tree borer peach twig borer	4 – 6 25

Specific Use Precautions for Almond Cherry Nectarine Peach Pear Plum Prune
Avoid contact with foliage in sweet cherries as premature leaf drop may result

Specific Use Restrictions for Almond Cherry Nectarine Peach Pear Plum Prune
Do not make a soil or foliar application of Cobalt or product containing chlorpyrifos within 10 days of a dormant/delayed dormant application of chlorpyrifos to the orchard
Do not exceed the maximum rate of 0 08 lb ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the Maximum Application Rate table

Additional Restrictions Specific to California for Almond Cherry Nectarine Peach Pear Plum Prune
Do not use more than 1% dormant oil in almond orchards less than 4 years old
Use a minimum of 100 gpa of total spray volume
Use up to 2% supreme oil with no more than 4 gpa on almonds
Use up to 2% supreme oil with no more than 6 gpa on peaches and nectarines
Refer to the University of California pest management guide for pears plums and prunes
Do not use any adjuvants or surfactants in addition to or as a substitute for a petroleum spray oil in a tank mix with Cobalt
Do not apply on almonds in the following counties in California Butte Colusa Glenn Solano Sutter Tehama Yolo and Yuba

Apple

Target Pests	Cobalt (pint/acre)
rosy apple aphid san jose scale	4 – 6 25

Specific Use Restrictions for Apple

Post bloom application to apples is prohibited

Additional Restrictions Specific to California for Apple
Use a minimum of 100 gpa of total spray volume
Refer to the University of California pest management guide for apples
Do not use any adjuvants or surfactants in addition to or as a substitute for a petroleum spray oil in a tank mix with Cobalt

Tree Fruits[1] and Almond (Trunk Spray or Preplant Dip)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 days for tree fruits and 24 hours for almond unless PPE required for early entry is worn

[1]Cherry nectarine peach plum

Apply Cobalt to tree trunks and lower branches using a coarse low pressure spray to control pests listed in the following table Use a higher rate in the rate range when there is increased pest pressure Unless otherwise specified a second application may be made after two weeks and a third application may be made after harvest Apply as required by scouting usually at intervals of five days or more Base timing and frequency of applications upon insect populations reaching locally determined economic thresholds and IPM recommendations Avoid spray contact with foliage in sweet cherries as premature leaf drop may result Consult your state agricultural experiment station or extension service specialist for proper application timing for your area

Crops	Target Pests	Cobalt (fl oz/100 gal)
cherry	American plum borer greater peach tree borer lesser peach tree borer	76 65 – 153 3
almond peach nectarine plum	peach tree borers (1) (2)	153 3

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions
1 **Preplant Dip Application (Peaches and Nectarines Only)** For preplant control of **peachtree borer** use Cobalt at the equivalent application rate of 3 quarts per 100 gallons of water Dip trees several inches above the grafting bud scar and plant immediately or allow them to dry before returning to storage Do not allow peach trees to remain in contact with the dip solution
2 **Peach tree borer** For control in established trees apply before newly hatched borers enter the tree Use as a coarse low pressure trunk spray and thoroughly wet all bark areas from ground level to scaffold limbs Do not allow spray to contact fruit Consult written recommendations provided by your State agricultural experiment station or extension service specialist for proper time to treat in your area

Specific Use Restrictions
Preharvest Interval Do not apply within 14 days before harvest of almonds nectarines peaches and plums or within 21 days before harvest of cherries
Do not make more than one chlorpyrifos application per year in peaches and nectarines and no more than three chlorpyrifos applications per year in cherries
Do not exceed the maximum rate of 0 08 lb ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both

gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the Maximum Application Rate table
Do not allow meat or dairy animals to graze in treated orchards
Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
tree fruits	0 1	0 2
tree nuts	0 08	0 16

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Tree Nuts[1] (Foliar Sprays)

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

[1]Almond filbert pecan walnut

Foliar Application
Apply Cobalt as a foliar spray at the dosages indicated to control pests listed in the following table Mix the required dosage in sufficient water to ensure thorough and complete coverage of the foliage and crop and apply as a concentrate or dilute spray using conventional power operated spray equipment For dilute sprays applied to tree nut crops mix the required dosage in sufficient water to allow for spray to runoff For concentrate sprays apply an equivalent amount of Cobalt per acre Treat when pests appear or in accordance with local conditions Aerial application may result in less effective insect control because of reduced coverage Consult your State agricultural experiment station certified pest control advisor or extension service specialist for specific use information in your area

Crops	Target Pests		Cobalt (fl oz/acre)
almond	ant spp leaffooted bug leafroller spp	navel orangeworm peach twig borer stink bug spp	26 57
filbert	eye spotted bud moth filbert aphid filbert leafroller filbert worm	obliquebanded leafroller omnivorous leaftier stink bug spp winter moth	
pecan	blackmargined aphid fall webworm	pecan nut casebearer yellow pecan aphid	19 – 57
	ant spp black pecan aphid hickory shuckworm (2) *Phylloxera* spp (3)	pecan leaf scorch mite (suppression) (4) spittlebugs (1) stink bug spp	26 57
walnut	ant app codling moth leaffooted bug leafrollers navel orangeworm	stink bug spp walnut aphid walnut husk fly walnut scale	

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 **Spittlebug** For control use a dosage of 57 fl oz per acre for concentrate sprays
2 **Hickory shuckworm** For best results make two applications 10 to 14 days apart
3 ***Phylloxera* spp** For best control make two applications at a 10 day interval using a minimum of 26 fl oz of Cobalt per acre starting at bud swell
4 **Pecan leaf scorch mite** For suppression use a preventative program

Specific Use Precautions

- Cobalt is highly toxic to bees exposed to direct treatment and should not be applied when bees are foraging in the treated area
- To avoid contamination of irrigation tail waters do not flood irrigate within 24 hours of application of Cobalt

Specific Use Restrictions

- **Preharvest Interval** Do not apply within 14 days of harvest of almonds filberts and walnuts or 28 days of harvest of pecans
- Do not make more than three total applications per season of Cobalt or other product containing chlorpyrifos to almonds pecans and filberts and no more than two applications per season on walnuts
- Do not apply more than a total of 171 fl oz of Cobalt per acre per season as a foliar spray
- Do not make a second application of Cobalt or other product containing chlorpyrifos within 10 days of the first application
- Do not allow meat or dairy animals to graze in treated orchards

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
tree nuts	0 08	0 16

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

Wheat

Worker Restricted Entry Interval Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn

(For use only in Arizona California Colorado Idaho Kansas Minnesota Montana Nebraska New Mexico Nevada North Dakota Oklahoma Oregon South Dakota Texas Utah Washington and Wyoming)

Postemergence Application including Chemigation

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment

Chemigation Cobalt may be applied through sprinkler irrigation systems at specified broadcast application rates to control listed foliar pests See Chemigation Application section

Target Pests	Cobalt (fl oz/acre)
aphid spp (1)	7 13

English grain aphid greenbug oat bird cherry aphid Russian wheat aphid brown wheat mite grasshoppers	
army cutworms (2) armyworm spp cereal leaf beetle (3) cutworms (2) flea beetle spp grass sawfly orange wheat blossom midge wheat midge (4)	13 – 25
stink bug spp	19 25

Numbers in parentheses ( ) refer to Pest Specific Use Directions

Pest Specific Use Directions

1 Consult university extension bulletins for local treatment recommendations
2 Control may be reduced under high temperature conditions (greater than 80 F) under dry soil conditions or if larvae are more than 1/2 inch long
3 Target application when eggs are near hatching and larvae is emerging as monitored by plant inspection
4 **Wheat midge** For control treat when 75% of the wheat heads have emerged from the boot and when midge adults are found in the crop (1 midge per 4 to 5 heads) If possible apply in the late afternoon or early evening when temperatures exceed 50 F and wind speed is less than 7 mph

Specific Use Restrictions

- **Preharvest Interval** Do not apply within 14 days before harvest for forage and hay and within 30 days before harvest for grain and straw
- *Do not make more than two applications of Cobalt or product containing chlorpyrifos per season*
- Maximum single application rate is 25 fl oz of Cobalt per acre
- Do not allow meat or dairy animals to graze or otherwise feed on treated forage within 7 days after last treatment
- Do not feed straw from treated wheat within 30 days of application

Maximum Application Rate Do not exceed the maximum application rate of ai per acre per year allowed by using other gamma cyhalothrin or lambda cyhalothrin containing products The maximum rate allowed for use if both gamma cyhalothrin and lambda cyhalothrin products are used during the same crop growing season can be calculated based upon the listed maximum rates in the following table

Crop	Gamma Cyhalothrin (lb ai/acre/season)	Lambda Cyhalothrin (lb ai/acre/season)
wheat	0 06	0 12

When the maximum application rate of gamma cyhalothrin is reached no lambda cyhalothrin product can be used The lambda cyhalothrin quantity can be divided by 2 to calculate the total ai based upon gamma cyhalothrin

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