



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460**

**OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION**

September 27, 2023

Robyn Clark
Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, NC 27419

Subject: Registration Amendment – Amended Terms and Conditions, and Revised Labeling
Product Names: Fortenza, Fortenza Red, Minecto Duo Insecticide, Minecto Pro, Mainspring GNL, Zyrox Fly Granular Bait, Spinner Insecticide, Ference, Mainspring Flora and A16901B Residential Insecticide
EPA Registration Numbers: 100-1420, 100-1418, 100-1421, 100-1592, 100-1543, 100-1541, 100-1424, 100-1551, 100-1585 and 100-1423
Application Date: June 15, 2023
Decision Numbers: 593337, 593338, 593342, 593343, 593341, 593344, 594352, 593336, 593339 and 593334

Dear Ms. Clark:

The amended labels referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, are acceptable. Accordingly, EPA has approved the requested registration amendments, provided Syngenta Crop Protection, LLC (“Syngenta”) complies with all terms and conditions listed below.

Terms and Conditions

Syngenta must comply with all the following terms and conditions. Release for shipment of these products constitutes acceptance of the below conditions. If these conditions are not complied with, the registrations will be subject to cancellation in accordance with FIFRA section 6.

Endangered Species Protection and Formal Consultation

1. For this action, EPA conducted effects determinations under the Endangered Species Act (ESA). In its final effects determinations (included in a biological evaluation), EPA made may affect, likely to adversely affect (LAA), determinations for certain listed species and designated critical habitats for products containing cyantraniliprole (including this product). For these LAA determinations, EPA also assessed the potential likelihood of jeopardy or adverse modification in its effects determination, consistent with 50 C.F.R. § 402.40(b)(1). EPA predicted no potential likelihood of jeopardy for listed species or adverse modification for designated critical habitat. On September 25, 2023, EPA initiated formal consultation with the

Services. The Services will make the final determination as to the potential for jeopardy for listed species or adverse modification for designated critical habitat in any final biological opinions issued at the completion of consultation.

If, following formal consultation with Service(s), additional modifications are identified in any applicable Biological Opinion, EPA will notify Syngenta in writing within 45 calendar days of the issuance of the Biological Opinion of any necessary changes. Within 30 calendar days of receiving EPA's notice, Syngenta must submit an amendment application incorporating the necessary changes, including amended labels. Alternatively, Syngenta may respond by submitting a request for voluntary cancellation of this product. If Syngenta fails to comply with this term, Syngenta has agreed in prior written acceptance of these terms that EPA may cancel the registration under an expedited process under FIFRA 6(e).

Implementation of Revised Labeling

2. To ensure the prompt adoption of the mitigations in this registration amendment in newly produced product and previously produced product that is still under Syngenta's control, Syngenta must submit state registrations for approval, in all states where products are currently registered, for the products with the labeling associated with this approval letter no later than November 30, 2023.
3. In accordance with 40 C.F.R. § 152.130(c), product may be distributed or sold by Syngenta under the previously approved labeling for no longer than 12 months from the date of this letter or 75 days after the final state approval from those submitted under Term #2, whichever is earlier.
4. Nothing in Terms #2-3 should be read to obligate Syngenta to provide additional labeling for product that bears the previously approved label but is not under Syngenta's control as of the date of this letter. However, Syngenta should conduct outreach for users of this product to update them on the forthcoming changes to the label and their importance in mitigating potential effects to listed species and avoiding violations of the Endangered Species Act.

EPA's Rationale for Approving This Registration Amendment

FIFRA section 3(c)(5) requires EPA to unconditionally approve a registration amendment if:

- "its composition is such as to warrant the proposed claims for it";¹
- "its labeling and other material required to be submitted comply with the requirements of [FIFRA]";²

¹ FIFRA § 3(c)(5)(A), 7 U.S.C. § 136a(c)(5)(A). Here, EPA reviewed the proposed labeling and determined that the claims made for the product were consistent with composition of the product based on the data submitted.

² FIFRA § 3(c)(5)(B), 7 U.S.C. § 136a(c)(5)(B). Here, EPA reviewed the submitted labeling and other materials submitted and found them to be compliant with the requirements of FIFRA. Additionally, there are no data gaps.

- “it will perform its intended function without unreasonable adverse effects on the environment”;³ and
- “when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.”⁴

Prior to approving the previous registrations and registration amendments for this product and others containing cyantraniliprole, EPA considered risks and benefits of approving the registrations and registration amendments. To determine the risks and benefits, the Agency reviews a large body of information to determine the effects of using these products. In assessing the risks from use of products containing cyantraniliprole, EPA has conducted both human health risk assessments⁵ and ecological and environment fate risk assessments.⁶ EPA also updated its ecological and environmental fate risk assessments in support of the 2023 draft biological evaluation (BE).⁷ EPA believes that that these risk assessments (and the benefits discussed below) are also applicable to the action to approve this amended registration.

³ FIFRA § 3(c)(5)(C), 7 U.S.C. § 136a(c)(5)(C).

⁴ FIFRA § 3(c)(5)(D), 7 U.S.C. § 136a(c)(5)(D).

⁵ Summary of Analytical Chemistry and Residue Data (Jan. 25, 2013) ([EPA-HQ-OPP-2011-0668-0009](#)); Dietary Exposure and Risk Assessment (Jan. 29, 2013) ([EPA-HQ-OPP-2011-0668-0010](#)); Occupational and Residential Exposure and Risk Assessment for the Proposed New Uses of the New Active Insecticide Cyantraniliprole (Feb. 28, 2013) ([EPA-HQ-OPP-2011-0668-0011](#)); Aggregate Human Health Risk Assessment for the Proposed New Uses of the New Active Insecticide Cyantraniliprole (Mar. 7, 2013) ([EPA-HQ-OPP-2011-0668-0012](#)); Chronic Aggregate Dietary Exposure and Risk Assessments in Support of a Section 3 Registration Action (Sept. 7, 2016) ([EPA-HQ-OPP-2014-0357-0009](#)); Human Health Risk Assessment for Various Proposed Uses and Several Tolerance Requests without U.S. Registration (Jan. 12, 2017) ([EPA-HQ-OPP-2014-0357-0011](#)); Summary of Analytical Chemistry and Residue Data (Apr. 21, 2016) ([EPA-HQ-OPP-2014-0357-0012](#)); Summary of Analytical Chemistry and Residue Data (Aug. 8, 2016) ([EPA-HQ-OPP-2014-0357-0013](#)); Human Health Risk Assessment for Proposed Uses and Tolerance Requests on Coffee; Caneberry Subgroup 13-07A; Low Growing Berry Subgroup 13-07H, Except Strawberry, Lowbush Blueberry and Lingonberry; Brassica Leafy Greens Subgroup 4-16A; Leafy Greens Subgroup 4-16B (June 20, 2018) ([EPA-HQ-OPP-2017-0694-0011](#)); Chronic Aggregate Dietary Exposure and Risk Assessments for Proposed Uses and Tolerance Requests on Coffee; Caneberry Subgroup 13-07A; Low Growing Berry Subgroup 13-07H, Except Strawberry, Lowbush Blueberry and Lingonberry; Brassica Leafy Greens Subgroup 4-16A (May 30, 2018) ([EPA-HQ-OPP-2017-0694-0012](#)); Human Health Risk Assessment for an Inadvertent Tolerance on Sugarcane (Feb. 28, 2022) ([EPA-HQ-OPP-2021-0154-0007](#)); Highly Refined Chronic Aggregate Dietary Exposure and Risk Assessments for Proposed Inadvertent Use and Tolerance Request on Sugarcane (Feb. 28, 2022) ([EPA-HQ-OPP-2021-0154-0008](#)).

⁶ Environmental Fate and Ecological Risk Assessment for the Registration of the New Chemical Cyantraniliprole – Amended (April 30, 2013) ([EPA-HQ-OPP-2011-0668-0008](#)); Environmental Risk Assessment of Proposed New Global Chemical Cyantraniliprole – Addendum (Jan. 24, 2014) ([EPA-HQ-OPP-2011-0668-0055](#)); Revised Drinking Water Assessment including Ground Water Exposure Refinements for Proposed New Uses on Leafy, Bulb, Fruiting, and Cucurbit Vegetables with Two Seasons of Applications (June 9, 2016) ([EPA-HQ-OPP-2014-0357-0010](#)); Ecological Risk Assessment and Drinking Water Assessment for the IR-4 New Use Petition for Pronamide on Low Growing Berry Subgroup except Strawberry, Subgroup 13-07H; Stone Fruit Crop group 12-12; Pome Crop Group 11-10; Caneberry subgroup 13-07A; Bushberry subgroup 13-07B; and Small Fruit Vine Climbing Subgroup (except Fuzzy Kiwifruit Subgroup 13-07F) (May 14, 2018) ([EPA-HQ-OPP-2017-0694-0013](#)).

⁷ See EPA’s Draft Biological Evaluation for Cyantraniliprole and supporting documentation, available at [EPA-HQ-OPP-2011-0668](#), Document ID Nos. 71-72, 75-87.

In the human health risk assessments, EPA did not select an acute dietary toxicity endpoint because the Agency did not identify any effect attributed to a single dose (*i.e.*, CTP is not expected to pose an acute risk to humans). In general, CTP produces both adverse and adaptive changes in the liver, thyroid gland, and adrenal cortex. With repeat dosing, consistent findings of mild to moderate increases in liver weights are observed across multiple species (rats, mice, dogs). CTP was classified as “not likely to be carcinogenic to humans” based upon data demonstrating lack of treatment-related increase in tumor incidence in rats and mice. No cumulative effects were identified. CTP presents no mutagenicity, neurotoxicity, immunotoxicity, developmental reproductive toxicity.

In the environmental risk assessments, EPA identified risks of concern for both aquatic and terrestrial invertebrates. Overall, however, the major risks of concerns are for direct effects to freshwater, estuarine/marine, and benthic invertebrates. EPA did not identify direct risks of concerns for birds, reptiles, amphibians, freshwater fish, terrestrial plants, or aquatic plants.

EPA also considered the benefits of products containing cyantraniliprole, including CTP’s activity on a wide variety of target insects on a variety of crops. CTP is effective for controlling aphids, weevils and thrips—all major agricultural pests. CTP is not expected to pose any acute risk to humans and was registered in 2013 as a reduced risk pesticide due to it posing lower relative risk to alternative chemicals available at that time. CTP also poses lower risk to non-target organisms relative to alternatives and is compatible with IPM practices.

This amended registration includes additional mitigation measures to address effects to listed species, including the following:

- Requirement that applicators use coarse/coarser droplets for ground and aerial applications to reduce spray drift
- Requirement that aerial applications abide by wind-directional buffers, as identified in Bulletins Live Two (BLT), also to reduce spray drift
- Increase in distance of vegetative filter strips from 25 to 30 feet to mitigate the potential for runoff to aquatic habitats
- Use of a 25’ buffer for airblast applications to dormant, non-bearing and/or vegetation that is not yet fully leafed out
- Requirement that treated seeds be immediately covered or collected if spilled during loading

After consideration, EPA has determined that approving this amended registration will not cause unreasonable adverse effects because the amended registrations are not expected to result in increased exposures⁸ and because EPA continues to believe that—consistent with the 2014 registration decision⁹

⁸ While the mitigations in the amended registrations are intended to reduce exposures to listed species, EPA expects that the mitigations will (1) not increase exposures to other non-listed non-target organisms, and (2) will generally reduce exposures to all non-target organisms (both listed and non-listed).

⁹ For EPA’s full risk-benefit analysis, *see* Registration of New Active Ingredient Cyantraniliprole, at 13-14 (Jan. 24, 2014) ([EPA-HQ-OPP-2011-0668-0057](#)).

Page 5 of 5

EPA Reg. Nos.

Decision Nos. 593337, 593338, 593342, 593343, 593341, 593344, 594352, 593336, 593339 and 593334

and other previous registration decision for products contain cyantraniliprole—the benefits of these registrations outweigh any remaining risks of concern from its use and there are no human dietary risks from uses of cyantraniliprole that are inconsistent with the FFDCA safety standard.¹⁰ Accordingly, EPA is approving these registration amendments because the FIFRA registration standard is met.

Conclusion

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. Consistent with Terms 2-5 above, and notwithstanding 40 C.F.R. § 152.130(c), you may only distribute or sell¹¹ this product under either the final stamped label associated with this approval letter or with accompanying labeling that incorporates the mitigations in this registration amendment.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 C.F.R. § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the product will be referred to EPA's Office of Enforcement and Compliance.

If you have any questions, please contact Gene Benbow at 703-712-9669 or at benbow.gene@epa.gov.

Sincerely,



Deanna (Dee) Colby, Chief
Invertebrate & Vertebrate Branch 3
Registration Division
Office of Pesticide Programs

Enclosure

¹⁰ See FIFRA § 2(bb) (defining “unreasonable adverse effects on the environment” as, in relevant part, “any unreasonable risk to [humans] or the environment, taking into account the economic, social, and environmental costs and benefits of the use of the pesticide” or any “human dietary risks” from pesticidal residues in or on food).

¹¹ See FIFRA § 2(gg), 7 U.S.C. § 136(gg); 40 C.F.R. § 152.3.

[Master Label]

GROUP	28	INSECTICIDE
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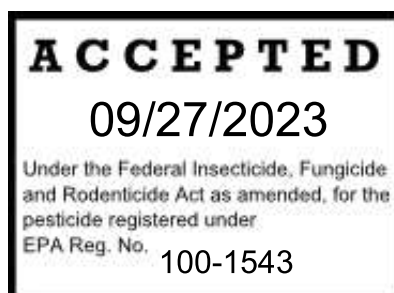
Mainspring™ GNL

Insecticide

For control of insects on ornamental plants; ornamental bulb, corm and tuber crops; conifers; Christmas trees; [vegetable plants] and non-bearing fruit and nut trees grown in greenhouses and nurseries (including field- and container-grown plants grown outdoors and in shade houses, lath houses and other ornamental production structures), conifer nurseries, retail nurseries, residential and commercial landscapes, and interior plantscapes

[Optional marketing statements]

1. [Effective on both chewing and sucking pests]
2. [Effective thrips control]
3. [Effective whitefly control]
4. [Excellent for insecticide resistance management programs]
5. [Controls resistant insect pests]
6. [Mode of action like no other in greenhouse and nursery production]
7. [Excellent choice for IPM programs]
8. [Low application rates]
9. [Has both contact and systemic activity]
10. [Systemic activity by foliar or soil application]
11. [Flexible application methods, can be foliar or soil applied]
12. [Taken up by the roots and systemically moves through the plant]
13. [Systemically protects plants from labeled insect pests]
14. [Root absorbed, with systemic movement through plant]
15. [Systemically moves through the plant]
16. [Starts impacting labeled insect pests upon ingestion [contact]]
17. [Insect feeding stops upon ingestion]
18. [Provides quick cessation of insect feeding and residual control]
19. [Effective control of ornamental insect pests on trees and shrubs]
20. [Protects ornamentals from Japanese beetle adults [and other pests]]
21. [Protects ornamentals from Japanese beetles [and leaf feeding caterpillars]]



Active Ingredient:	
Cyantraniliprole*:	
3-bromo-1-(3-chloro-2-pyridinyl)-N- [4-cyano-2-methyl-6-[(methylamino) carbonyl]phenyl]-1H-pyrazole-5-carboxamide:	18.66%
Other Ingredients:	81.34%
Total:	100.00%

Mainspring™ GNL is a suspension concentrate (SC) formulation containing 1.67 pounds of cyantraniliprole per gallon.

*Cyantraniliprole belongs to the anthranilic diamide chemical class.

KEEP OUT OF REACH OF CHILDREN. / MANTÉNGASE FUERA DEL ALCANCE DE LOS NIÑOS.

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.)

[See additional precautionary statements and directions for use inside booklet. Vea más declaraciones de precaución e instrucciones del uso en folleto.]

EPA Reg. No. 100-1543
EPA Est. No.

Net Contents

FIRST AID
Have the product container or label with you when calling a poison control center or doctor or going for treatment.
HOT LINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire or Accident), Call 1-800-888-8372
Cuando llame a un centro de control de envenenamiento, a un médico, o intente obtener tratamiento, tenga a la mano el envase o la etiqueta del producto. Para más información sobre el tratamiento médico de emergencia, llame al 1-800-888-8372.

PRECAUTIONARY STATEMENTS

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Shoes plus socks.

After the product has been diluted in accordance with label directions for use, shirt, pants, socks, and shoes are sufficient Personal Protective Equipment (PPE). Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are available, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users Should: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Equipo de Protección Personal (PPE)

Los aplicadores y otros manipuladores de pesticidas necesitan usar:

- Camisa de manga larga y pantalones largos.
- Zapatos y calcetines.

Después de diluir el pesticida de acuerdo a las instrucciones de uso en la etiqueta, es suficiente usar el equipo de protección como camisa de manga larga, pantalones, calcetines y zapatos. Sigue las instrucciones del fabricante para la limpieza/mantenimiento del Equipo de Protección Personal. En el caso de no existir dichas instrucciones de limpieza para equipos de protección, utilice detergente y agua

caliente. Mantenga y lave el Equipo de Protección Personal separadamente de otras prendas de vestir.

Recomendaciones de Seguridad para los Manipuladores de Pesticidas

Los Manipuladores Deben: Lávese minuciosamente con agua y jabón después de manipular los pesticidas, y antes de comer, beber, masticar chicle, usar tabaco o utilizar el sanitario. Quítese la ropa sucia y lávela antes de volverla a usar.

Environmental Hazards

This pesticide is toxic to aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

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 foraging the treatment area.

Surface Water Advisory

This product may impact surface water quality due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having a high potential for reaching surface water via runoff for several months or more after application.

- Do not apply within 50 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds).
- Do not cultivate within 30 feet of the aquatic area to allow growth of a vegetative filter strip.
- Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.

Ground Water Advisory

This chemical may leach into ground water if used in areas where soils are permeable, particularly where the water table is shallow.

Spray Drift Advisory

Mainspring GNL may be applied by ground equipment or aerial application.

Ground Application

For broadcast applications made at planting or prior to the emergence of crops, applicators are required to use a coarse or coarser droplet size (ASABE S572.1). For all other broadcast applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).

Aerial Application

Avoid spraying at a height greater than 10 ft above the ground or vegetative canopy unless a greater application height is necessary for pilot safety.

If the windspeed is 10 miles per hour or less, applicators must use $\frac{3}{4}$ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use a full swath displacement upwind at the downwind edge of the field.

DO NOT apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.

DO NOT apply during temperature inversions.

For fixed wing and helicopter aerial applications made at planting or prior to the emergence of crops, applicators are required to use a coarse or coarser droplet size (ASABE S572.1). For all other fixed wing and helicopter aerial applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1)

Physical or Chemical Hazards

DO NOT place product near or allow product to come into contact with strong oxidizing substances (such as potassium permanganate) since a hazardous chemical reaction may occur.

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 resulting from seed treatment, soil application, and 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 in and 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

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions, or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and (2) Buyer and User assume the risk of any such use. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.**

To the extent permitted by applicable law, in no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your state or tribe, consult the state or tribal agency responsible for pesticide regulation.

Read and understand the entire label before using this product. Mainspring GNL must be used in accordance with the directions of this label.

1. FOR FOOD CROPS AND COMMERCIALY GROWN OUTDOOR ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT WHICH 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.

NON-AGRICULTURAL PRODUCTS:



Do not apply Mainspring GNL while bees are foraging. Do not apply Mainspring GNL to plants that are flowering. Only apply after all flower petals have fallen off.

ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS

Before using this product, you must obtain any applicable Endangered Species Protection Bulletins ('Bulletins') within six months prior to or on the day of application.

To obtain Bulletins, go to Bulletins Live! Two (BLT) at

<https://www.epa.gov/pesticides/bulletins>. When using this product, you must follow all directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of federal law to use this product in a manner inconsistent with its labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.

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 (sod farms included), 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 the label about personal protective equipment, restricted-entry interval, and notification to workers (as applicable).

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 State or Tribal agency responsible for pesticide regulation.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

For early entry into 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, wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Exception: If the product is drenched, 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. No restricted-entry interval (REI) is required following soil-injected, soil-incorporated or soil drench application.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are not within the scope of the Worker Protection Standard for agricultural pesticides, 40 CFR Part 170. The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Professional applications to golf courses, residential, industrial and commercial lawns and landscapes, and sports fields are not within the scope of the Worker Protection Standard. Do not enter or allow others to enter the treated area until sprays have dried

USE RESTRICTIONS AND PRECAUTIONS

• For crops and plants grown outdoors:

- Do not apply more than 32 fluid ounces of product per acre per year (equivalent to 0.4 lb of active ingredient per acre per year).
- Unless otherwise stated for a specific crop or plant, do not apply a total of more than 0.4 lb ai/A of cyantraniliprole-containing products per year. This is the total from all application methods (e.g., seed, soil, foliar).
- [Do not apply to greenhouse- or field-grown vegetables. Only apply to vegetable plants grown in enclosed structures.]
- **DO NOT** allow chemigation water to run off or puddle following application.
- Avoid application to areas that are waterlogged or saturated or frozen, which will not allow penetration into the root zone of the plant.
- Keep people and pets away from treated area until treatment has dried.
- Wait a minimum of 7 days to retreat.

Nassau and Suffolk Counties, State of New York: Mainspring GNL may only be applied for listed greenhouse and interior plantscape uses. **DO NOT** apply Mainspring GNL to any outdoor use site, including shade houses, lath houses or other non-enclosed ornamental production structures.

SURFACE WATER PROTECTION STATEMENT

For foliar uses: **DO NOT** apply during rain.

PRODUCT INFORMATION

Mainspring GNL is an insecticide that controls listed insect pests on ornamental plants; ornamental bulb, corm and tuber crops; conifers; Christmas trees; [vegetable plants] and non-bearing fruit and nut trees grown in greenhouses and nurseries (including field- and container-grown plants grown outdoors and in shade houses, lath houses and other ornamental production structures), conifer nurseries, retail nurseries, residential and commercial landscapes, and interior plantscapes.

Mainspring GNL may be applied to plants and grassy areas that are grown for aesthetic recreational or other property maintenance purposes or climatic modification in or around home lawns, residential dwellings, business and office complexes, shopping complexes, multi-family residential complexes, institutional buildings, airports, cemeteries, interior plantscapes, ornamental gardens, wildlife plantings, parks, playgrounds, schools, daycare facilities, other landscaped areas. Mainspring GNL may also be applied to plants in and around small and large companion-animal (including horses) boarding and exercising areas providing the animals exposed to the treated areas are not used for human consumption.

Mainspring GNL can be applied as a foliar spray, a soil broadcast spray, a soil drench, and soil injection and by chemigation. When applied as a foliar spray, the product will have translaminar and systemic movement, providing residual efficacy of foliar insect pests. When Mainspring GNL is applied by drench to the root system of plants, it will be translocated upward in the plant due to its systemic activity. Systemic upward movement in herbaceous plants will be quicker than in those of woody plants, such as trees and shrubs. Soil applications should be made prior to anticipated pest infestation to allow adequate systemic movement to achieve optimum levels of control.

Mainspring GNL controls a broad range of chewing and sucking pests. Insecticidal activity is primarily through ingestion. This results in paralysis, rapid inhibition of feeding and disruption of other key physiological functions. Depending on the target pest, mortality occurs within two to seven days. The rapid cessation of feeding results in less plant injury. It is recommended that Mainspring GNL be applied when pest populations are low to prevent targeted insects from increasing to damaging levels.

Integrated Pest Management (IPM) Programs

Mainspring GNL can be used in an IPM program with biological agents for controlling ornamental pest. Beneficial arthropods can help control other insect and mite pests and reduce the potential for secondary pest outbreaks. Mainspring GNL can reduce the target pest species that serve as a food source for beneficial arthropods, which can indirectly affect their populations. If Mainspring GNL is tank-mixed with a product that negatively impacts beneficial arthropods, the full benefit of Mainspring GNL to an IPM program may not be realized.

Resistance Management

GROUP	28	INSECTICIDE
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Mainspring GNL is in GROUP 28 of the EPA's Insecticide and Acaricide Groups based on Target Site of Action.

Some insects are known to develop resistance to products that have been used repeatedly for control. When this occurs, the label use rates can fail to reduce the pest population below threshold levels. As the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. These strategies may include incorporation of cultural and biological control practices, alternation of active classes of insecticides on succeeding generations and targeting the most susceptible life stage. Consult your local Cooperative Extension Service specialist or pest control advisor for the latest information on resistance management in your area or crop.

Plant Safety

Mainspring GNL has been found to be generally safe when applied according to label use directions to the listed plants. Phytotoxicity testing has not been performed on all possible species and cultivars. Individual plant species or cultivars may be sensitive to the final spray solution, including tank mixes. If local experience is not available, a small number of plants should be treated and observed for phytotoxicity for at least one week before making an application to the entire planting to ensure plant safety.

APPLICATION EQUIPMENT CLEANING

Prior to application, start with clean, well maintained application equipment. Immediately following application, thoroughly clean all application equipment to reduce the risk of forming hardened deposits that might become difficult to remove. Drain application equipment. Thoroughly rinse application equipment and flush hoses, boom and nozzles with clean water. Clean all other associated application equipment. Take all necessary safety precautions when cleaning equipment. **DO NOT** clean equipment near wells, water sources or desirable vegetation. Dispose of waste rinse water in accordance with local regulations.

CALIBRATION OF APPLICATION EQUIPMENT

Proper maintenance and calibration of spraying and chemigation equipment are essential for optimal insect pest control. If you have questions about calibration, contact a State Extension Service specialist, the equipment manufacturer or other experts.

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 if the need arises.

MIXING INSTRUCTIONS

Mainspring GNL is a suspension concentrate (SC) formulation. Mainspring GNL must be diluted with water before application.

Mainspring GNL readily mixes with water and may be used in many different types of application equipment and applied to either the foliage or root system. Mix product with the required amount of water and apply according to label use directions.

The pH of application mixtures containing Mainspring GNL should be adjusted to a pH of 8 or less using a commercially available acidifier. When applying Mainspring GNL by chemigation, adjust the pH of the chemigation systems supply or nurse tank using a commercially available acidifier. Adjust the pH of application mixtures after all products being applied have been added to the tank and uniformly mixed for broadcast and drench applications.

Mixing Directions

1. Use clean, well maintained and properly calibrated application equipment.
2. Fill sprayer tank 1/4 to 1/2 full of water.

3. Shake the container of Mainspring GNL well before pouring.
4. Add the appropriate amount of Mainspring GNL directly into the spray tank.
5. If preparing a tank mixture, follow the tank-mixing sequence below.
6. Mix the spray solution thoroughly and continue agitation to keep the insecticide in suspension. Use mechanical or hydraulic agitation. Do not use air agitation.
7. It is recommended that the mixture not be stored in the spray or mix tank overnight.

Tank mixtures

Mainspring GNL may be tank-mixed with other pesticides. When tank-mixing Mainspring GNL with other pesticides, observe the restrictions and precautions on all product labels.

- **DO NOT** exceed the label application rates for any product.
- **DO NOT** mix Mainspring GNL with any product containing a label prohibition against such mixing.
- Always follow the tank mix instructions of the product label that is most restrictive.

The physical compatibility of Mainspring GNL may vary with different sources of pesticide products and local cultural practices. A jar compatibility test is recommended prior to tank-mixing with other pesticides, fertilizers or adjuvants to ensure the compatibility of Mainspring GNL with the other products. For a jar compatibility test, mix the proper proportions of any pesticides, adjuvants, or fertilizers in water in a pint or quart jar and allow it to stand at least 20 minutes. If the combination remains mixed or can be re-mixed readily, the mixture is considered physically compatible.

Tank-mixing Sequence

Add different formulation types in the sequence indicated below. Allow time for complete mixing and dispersion after the addition of each product.

1. Water-soluble bags
2. Water-dispersible granules
3. Wettable powders
4. Mainspring GNL and other water-based suspension concentrates
5. Water-soluble concentrates
6. Oil-based suspension concentrates
7. Emulsifiable concentrates
8. Adjuvants, surfactants, oils
9. Soluble fertilizers

APPLICATION PROCEDURES

Mainspring GNL may be used in many different types of application equipment and applied to either the foliage or root system. Mix product with the required amount of water and apply as desired dependent upon the selected use pattern.

Consult your Cooperative Extension Service specialist or pest control advisor for regionally specific information regarding application timing.

MANDATORY SPRAY DRIFT REDUCTION MANAGEMENT

Do not apply when wind speed favors drift beyond the area intended for treatment. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all of these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

Importance of Droplet Size: An important factor influencing drift is droplet size. Select nozzles and pressure that deliver medium spray droplets as indicated in nozzle manufacturer's catalogs and in accordance with ASAE Standard S-572. Nozzles that deliver coarse spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain crop coverage. For aerial application, spray should be released at the lowest possible height consistent with good pest control. For aerial applications, do not release spray at a height greater than 10 ft above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety. Low humidity and high temperature increase the evaporation rate of spray droplets and therefore the likelihood of spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.

Wind Speed Restrictions:

For Aerial Applications:

If the windspeed is 10 miles per hour or less, applicators must use $\frac{3}{4}$ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use a full swath displacement upwind at the downwind edge of the field.

Do not apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.

For broadcast applications made at planting or prior to the emergence of crops: applicators are required to use a coarse or coarser droplet size (ASABE S572.1). For all other broadcast applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1)

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, the movement of smoke from a ground source can also identify inversions. 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 air mixing.

FOLIAR APPLICATION

Foliar application rates are listed in Table 1. Foliar applications offer locally systemic activity with residual control of listed pests. Mix the Mainspring GNL with the required amount of water and apply as a full coverage foliar spray to control the target pest. Apply Mainspring GNL when pest populations are low to prevent them from increasing to damaging levels

When making foliar applications to plants with hard-to-wet foliage, such as holly, ivy, or pine, the addition of a spreading adjuvant is recommended. Do not use adjuvants with binding or sticking properties as these may reduce absorption of Mainspring GNL by the plant. Use sufficient water volume to provide thorough and uniform coverage. Avoid making applications where uniform coverage cannot be obtained or where excessive spray drift can occur.

If making a low volume, or mist-type application, use the equivalent amount of product as you would when making an application with higher volumes of water for a given area.

TABLE 1. FOLIAR APPLICATION TO LISTED PLANTS GROWN IN GREENHOUSES, NURSERIES (INCLUDING FIELD- AND CONTAINER-GROWN PLANTS IN SHADE AND LATH HOUSES) AND INTERIOR PLANTSCAPES, AND RESIDENTIAL AND COMMERCIAL LANDSCAPES

Ornamentals		
Breeding crops	Foliage plants	Shrubs
Bulb, corm and tuber crops (such as tulips, calla lilies)	Ground covers	Succulents
Evergreens, including conifers	Ornamental grasses	Trees, including non-bearing fruit and nut trees ¹
Flowering plants	Palms	[Vegetable plants]
Flowers grown for seed production	Perennial plants	Vines (non-bearing) ¹
Pot and bedding plants		
Target Pests	Amount of Mainspring GNL	Use Directions
Aphids	4 – 8 fl oz per 100 gal 1.2 – 2.4 ml per gal	Start treatments at first signs of pest infestation.

Lace bugs Leaf-feeding beetles (such as Japanese beetle adults and viburnum leaf beetle larvae) Leaf-feeding caterpillars (such as fall webworms, gypsy moths, redbud leaf-folders) Leafminers Soft scales (such as oak lecanium scales) Thrips Whiteflies ²	2 – 8 fl oz per 100 gal 0.6 – 2.4 ml per gal	Reapply on a 7- to 14-day interval.
All pests listed above – maximum residual control	16 fl oz per 100 gal 4.7 ml per gal	

USE RESTRICTIONS

Maximum Rate per Crop:

- For crops and plants grown indoors, do not apply more than 32 fl oz of Mainspring GNL per acre per crop per year (equivalent to 0.4 lb of active ingredient per acre per crop per year).
- For crops and plants grown outdoors, do not apply more than 32 fl oz of Mainspring GNL per acre per year (equivalent to 0.4 lb of active ingredient per acre per year).

One fl oz = 29.5 milliliters

¹Non-bearing fruit and nut trees and vines are those trees and vines that will not bear edible fruit or nuts for one year after application.

² May observe less activity on *Trialeurodes* spp.

BROADCAST APPLICATION

Broadcast applications of Mainspring GNL may be applied for white grub, annual bluegrass weevils, billbugs, chinch bugs (suppression), turf caterpillars, European crane flies, and spittlebugs in grassy, weedy, or bare soil areas, including residential and commercial landscapes. Broadcast application rates for these areas are presented in **Table 2**. Apply in sufficient water to uniformly cover the area being treated (a minimum of 2 gallons per 1,000 square feet is recommended). Irrigate immediately after application or allow rainfall to move the product into the soil. Use properly calibrated application equipment that will produce a uniform, coarse droplet spray, using a low pressure setting to eliminate off target drift. Mainspring GNL may be applied either before planting or after plants have been established.

APPLICATION TIMING

White Grubs: Apply Mainspring GNL from [April][May][June] to [early] September for preventative and early curative control of listed white grub species. The need for an application may be based on historical monitoring of the site, previous records or experiences, current season adult trapping or other methods. Irrigate turf immediately after application or allow rainfall to move the product into the soil.

Annual Bluegrass Weevil: Apply Mainspring GNL when overwintered adult annual bluegrass weevils are observed in late April or early May to prevent damage from first generation larvae in late-May and June. An application of Mainspring GNL at this time will also provide white grub control.

Billbugs: Apply Mainspring GNL when overwintered adult billbugs are first observed. This will usually occur in late April or early May in regions with cool-season turfgrasses. An application of Mainspring GNL at this time will also provide white grub control.

Chinch Bugs: For suppression of chinch bugs, apply Mainspring GNL before eggs hatch.

European Crane Fly: Apply Mainspring GNL between July and November to control the fall generation of European crane fly larvae in turfgrass. An application of Mainspring GNL in early July will also provide excellent white grub control. The higher rate listed in Table 1 may be required to achieve control when applications are made in November.

Spittlebugs: Mainspring GNL will provide control of two-lined spittlebug when applications are made in spring or summer.

Turf Caterpillars: Mainspring GNL will provide excellent curative and residual caterpillar control in turfgrass. To ensure optimum control, delay watering (irrigation) or mowing for 24 hours after application. Mowing vegetation to lowest possible height will ensure more consistent control. Apply in sufficient water to uniformly cover the area being treated (a minimum of 2 gallons per 1,000 square feet is recommended for grassy, weedy, or bare soil areas).

TABLE 2: BROADCAST APPLICATIONS OF MAINSPRING GNL IN AND AROUND GREENHOUSES, NURSERIES, INTERIOR PLANTSCAPES, LATH AND SHADE HOUSES, AND RESIDENTIAL AND COMMERCIAL LANDSCAPES.

Use Sites			
Grassy, weedy, mulched or bare soil areas in and around greenhouses, nurseries, interior plantscapes, lathouses, shadehouses and residential and commercial landscapes. Also for areas under trees and shrubs that are being grown in-ground.			
Target Pest	Application Rate (Product per Acre)	Application Rate (Product per 1,000 sq ft)	Use Directions
Turf caterpillars (including armyworms, cutworms, and sod webworms)	2 – 16 fl oz	0.046 – 0.367 fl oz 1.4 – 10.9 ml	Mowing vegetation to lowest possible height prior to application will ensure more consistent control.
White grubs (including <i>Aphodius</i> spp., Asiatic garden beetle, black turfgrass ataenius ¹ , Japanese beetle, May/June beetles (<i>Phyllophaga</i> spp.), northern masked chafer, oriental beetle, southern masked chafer and sugarcane grub)	8 – 16 fl oz	0.184 – 0.367 fl oz 5.4 – 10.9 ml	Apply in sufficient water to uniformly cover the area being treated (a minimum of 2 gal/1,000 sq ft is recommended for grassy, weedy, mulched or bare soil areas).

Annual bluegrass weevil	12 – 20 fl oz	0.275 – 0.459 fl oz 8.1 – 13.6 ml	
Billbugs	8 – 20 fl oz	0.184 – 0.459 fl oz 5.4 – 13.6 ml	
Chinch bugs (suppression only)	8 – 20 fl oz	0.184 – 0.459 fl oz 5.4 – 13.6 ml	
European Crane Fly	8 – 16 fl oz	0.184 – 0.367 fl oz 5.4 – 10.9 ml	
Spittlebugs	12 – 20 fl oz	0.275 – 0.459 fl oz 8.1 – 13.6 ml	
USE RESTRICTION			
Maximum Rate per Crop: For crops and plants grown outdoors, do not apply more than 32 fl oz of Mainspring GNL/A per year (equivalent to 0.4 lb of active ingredient/A per year).			

¹ Applications targeting black turfgrass aetaenius larvae should be made from peak adult flight through peak egg hatch to ensure control of the first-generation larvae. A second application may be required to control second-generation black turfgrass aetaenius.

APPLICATION TO SOIL MEDIA

Mainspring GNL can be applied to the growing media of containerized plants to control listed ornamental pests. Apply Mainspring GNL when pest populations are low to prevent the increase of that population to damaging levels. Apply to moist soil media. **DO NOT** apply to dry or saturated soil media. For optimal performance, **DO NOT** apply drench to soil media until roots have grown after transplanting. **DO NOT** leach treated soil media for at least 7 days after application or performance may be reduced. Heavy rainfall or excessive irrigation after application could reduce insect control performance. In general, higher rates will be needed to control insect pests on woody plants as compared to those on herbaceous plants.

Drench Application

For drench applications, prepare a dilute drench solution by mixing Mainspring GNL in water at the rate listed in **Table 3**. Apply drench solution to containers, flats, trays, benches or beds according to the application rates given in **Table 3**. Drench volume should be sufficient to thoroughly wet soil media without overflowing or leaching from the container. Follow the drench application with moderate irrigation. Irrigate carefully during the next 10 days to avoid loss of active ingredient from the container.

TABLE 3. DRENCH APPLICATION TO SOIL MEDIA OF LISTED CONTAINERIZED PLANTS GROWN IN GREENHOUSES, NURSERIES (INCLUDING FIELD- AND CONTAINER-GROWN PLANTS IN SHADE AND LATH HOUSES), INTERIOR PLANTSCAPES, AND RESIDENTIAL AND COMMERCIAL LANDSCAPES

Ornamentals				
Breeding crops		Foliage plants	Shrubs	
Bulb, corm and tuber crops (such as tulips, calla lilies)		Ground covers	Succulents	
Evergreens, including conifers		Ornamental grasses	Trees, including non-bearing fruit and nut trees ¹	
Flowering plants		Palms	[Vegetable plants]	
Flowers grown for seed production		Perennial plants	Vines (non-bearing) ¹	
		Pot and bedding plants		
Target Pests	Amount of Mainspring GNL	Amount of drench solution to apply per container		Use Directions
Aphids	8 – 12 fl oz per 100 gal	Container Size (inches)	Fl oz solution/ container	Start treatment at the first sign of pest infestation. Reapply as needed according to use directions.
Leaf-feeding caterpillars (such as armyworms and loopers)	2.4 – 3.6 ml per gal	4	2 - 3	
Leafminers		5	3 - 4	
Thrips (foliar feeding)		6	4	
Whiteflies (such as <i>Bemesia</i> spp. (Biotype B & Q)) ²		7	5 - 7	
Other ornamental pests		8	6 - 10	
		10	16 - 20	
For larger containers, apply 6 – 8 fl oz of dilute solution per gallon of soil media.				Apply the specified volume of product to the growing container based on container size. Follow with moderate irrigation. Irrigate carefully over the next 10 days and avoid leaching of the container.
For flats, trays, benches, or beds, apply sufficient amount of drench solution to adequately wet soil media without leaching.				
USE RESTRICTIONS				
Maximum Rate per Crop:				
<ul style="list-style-type: none"> For crops and plants grown indoors, do not apply more than 32 fl oz Mainspring GNL per acre per crop per year (equivalent to 0.4 lb of active ingredient per acre per crop per year). For crops and plants grown outdoors, do not apply more than 32 fl oz Mainspring GNL per acre per year (equivalent to 0.4 lb of active ingredient per acre per year). 				

One fl oz = 29.5 milliliters

¹ Non-bearing fruit and nut trees and vines are those trees and vines that will not bear edible fruit or nuts for one year after application.

² May observe less activity on *Trialeurodes* spp.

Application through Irrigation systems (Chemigation)

Mainspring GNL may be applied by injection into an irrigation system, either alone or in combination with other pesticides or chemicals that are registered for application through irrigation systems. Dilution ratios are normally 1:100 to 1:200, depending on the system. Application dosages are presented in Table 4 below.

Apply this product only through micro-irrigation (individual spaghetti tube), drip irrigation, overhead irrigation, ebb and flood irrigation, or motorized calibrated irrigation equipment. **DO NOT** apply through any other type of irrigation system. Non-uniform distribution of Mainspring GNL applied by chemigation can result in reduced product effectiveness.

Apply Mainspring GNL under the instructions specified in the specific use recommendations and not according to the irrigation schedule unless the events coincide. In general, set the equipment to apply the minimum amount of water per acre. Run the system at 86–90% of the manufacturer's maximum rated travel speed.

Users should check with state and local regulatory agencies for potential use restrictions before applying any agricultural chemical through sprinkler irrigation equipment.

If you have questions about calibration, you should 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 shut the system down and make necessary adjustments should the need arise.

Using Water from Public Water Systems

DO NOT APPLY MAINSPRING GNL THROUGH ANY IRRIGATION SYSTEM PHYSICALLY CONNECTED TO A PUBLIC WATER SYSTEM.

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. Mainspring GNL may be applied through irrigation systems which may be supplied by a public water system **ONLY** if the water from the public water system is 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. Before beginning chemigation, always make sure that the air gap exists and that there is no blockage of the overflow of the reservoir tank.

Any irrigation system using water supplied from a public water system must also meet the following requirements:

Operating Instructions for All Recommended Types of Irrigation Systems

1. The system must be calibrated to uniformly apply the rates specified. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts.
2. 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.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing, check valve to prevent the flow of fluid back toward the injection pump.
4. 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.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
6. 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.
7. 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.
8. Do not apply when wind speed favors drift beyond the area intended for treatment.

Chemigation using Micro, Drip, Overhead or Motorized Irrigation Equipment

To prepare injector tank solution, add Mainspring GNL to 1 gallon of injector tank water. An injection ratio of 1:100 is recommended (1 part injector tank solution to 100 parts irrigation water).

TABLE 4. CHEMIGATION USING MICRO, DRIP, OVERHEAD, OR MOTORIZED IRRIGATION EQUIPMENT OF SOIL MEDIA OF CONTAINERIZED PLANTS GROWN IN GREENHOUSES, NURSERIES (INCLUDING FIELD- AND CONTAINER-GROWN PLANTS IN SHADE AND LATH HOUSES) , RESIDENTIAL AND COMMERCIAL LANDSCAPES, AND INTERIOR PLANTSCAPES

Ornamentals			
Breeding crops	Foliage plants	Shrubs	
Bulb, corm and tuber crops (such as tulips, calla lilies)	Ground covers	Succulents	
Evergreens, including conifers	Ornamental grasses	Trees, including non-bearing fruit and nut trees ¹	
Flowering plants	Palms	[Vegetable plants]	
Flowers grown for seed production	Perennial plants	Vines (non-bearing) ¹	
Flowers grown for seed production	Pot and bedding plants		
Target Pests	Chemigation Rate		Use Directions
Aphids Leaf-feeding caterpillars (such as armyworms and loopers) Leafminers Thrips (foliar feeding) Whiteflies (such as <i>Bemesia</i> spp. (Biotype B &Q)) ² Other ornamental pests	Injection Ratio	Fl oz product/gallon injector tank water	Start treatments prior to establishment of high pest pressure and reapply as needed. Apply the specified volume of product to the growing container based on container size. Follow with moderate irrigation. Irrigate carefully over the next 10 days and avoid leaching of the container.
	1 to 100	8 - 12	
	Irrigation system should be calibrated to deliver 6-8 fl oz of dilute solution per gallon of soil media.		
USE RESTRICTIONS			
Maximum Rate per Crop:			
<ul style="list-style-type: none"> For crops and plants grown indoors, do not apply more than 32 fl oz Mainspring GNL per acre per crop per year (equivalent to 0.4 lb of active ingredient per acre per crop per year). For crops and plants grown outdoors, do not apply more than 32 fl oz Mainspring GNL per acre per year (equivalent to 0.4 lb of active ingredient per acre per year). 			

One fl oz = 29.5 milliliters

¹ Non-bearing fruit and nut trees and vines are those trees and vines that will not bear edible fruit or nuts for one year after application.

² May observe less activity on *Trialeurodes* spp.

Ebb-and-Flood Chemigation

To calculate the volume of water needed for chemigation using ebb-and-flood irrigation:

1. Bring a minimum of 10 containers to a soil moisture of field capacity.
2. Allow the soil media to dry.
3. Bring the containers back to field capacity.
4. Multiply the amount of water needed to bring the soil in a single container back to field capacity by the total number of containers to be chemigated.
5. Add this volume to the amount of water needed to flood the area to be treated.

TABLE 5. CHEMIGATION (EBB-AND-FLOOD) OF SOIL MEDIA OF CONTAINERIZED PLANTS GROWN IN GREENHOUSES AND INTERIOR PLANTSCAPES

Ornamentals			
Breeding crops	Foliage plants	Shrubs	
Bulb, corm and tuber crops (such as tulips, calla lilies)	Ground covers	Succulents	
Evergreens, including conifers	Ornamental grasses	Trees, including non-bearing fruit and nut trees ¹	
Flowering plants	Palms	[Vegetable plants]	
Flowers grown for seed production	Perennial plants	Vines (non-bearing) ¹	
Flowers grown for seed production	Pot and bedding plants		
Target Pests	Chemigation Rate		Use Directions
Aphids	Container Size (inches)	Fl oz Mainspring GNL/ 1,000 containers	Start treatment at the first sign of pest infestation. Reapply as needed according to use directions.
Leaf-feeding caterpillars (such as armyworms and loopers)			
Leafminers	4	1.9 – 2.8	Apply the specified volume of product to the growing container based on container size. Follow with moderate irrigation. Irrigate carefully over the next 10 days and avoid leaching of the container.
Thrips (foliar feeding)	5	2.5 – 3.8	
Whiteflies (such as <i>Bemesia</i> spp. (Biotype B & Q)) ²	6	2.5 – 3.8	
Other ornamental pests	7	4.4 – 6.6	
	8	6.3 – 9.5	
	10	12.7 – 19.0	
	For larger containers, apply 6 fl oz of Mainspring GNL per 1,000 gallons of soil media.		
USE RESTRICTION			
Maximum Rate per Crop: For crops and plants grown indoors, do not apply more than 32 fl oz of product per acre per crop per year (equivalent to 0.4 lb of active ingredient per acre per crop per year).			

One fl oz = 29.5 milliliters

¹ Non-bearing fruit and nut trees and vines are those trees and vines that will not bear edible fruit or nuts for one year after application.

² May observe less activity on *Trialeurodes* spp.

IN-GROUND SOIL DRENCH & INJECTION APPLICATIONS

Mainspring GNL is a systemic product and will be translocated upward into the plant from root uptake. Soil treatment application rates are listed in **Table 6**. To assure optimum effectiveness, the product must be placed where the growing portion of the target plant can absorb the active ingredient. For this reason, basal application within one to three feet of the root flare of trees and shrubs is recommended. Application can be made by soil injection, soil drenches and soil broadcast sprays. When making soil applications to plants with woody stems, systemic activity will be delayed until the active ingredient is translocated throughout the plant. In some cases, this delay could be 60 days or longer. For this reason, applications should be made prior to anticipated pest infestation to achieve optimum levels of control.

Calculations for soil injection/drench applications of Mainspring GNL:

- 1: Calibrate the application equipment to determine its flow rate in gallons per minute.
- 2: Select an injecting/drenching volume per inch of tree diameter at breast height (DBH) or foot of shrub height.
- 3: Refer to the **Table 7** below to determine the amount of time that is required to deliver the desired volume per injection/drench site. The example highlighted in **Table 7** shows that 10 seconds are required per inch of tree DBH or foot of shrub height when injecting/drenching 1 quart of solution per site using a flow rate of 1.5 gallons per minute.
- 4: Determine how much solution to mix.
- 5: Refer to the **Table 8** below to determine the amount of Mainspring GNL that must be mixed in the desired volume of water based on the injection volume identified above.

TABLE 6. SPECIFIC USE INSTRUCTIONS FOR SYSTEMIC SOIL TREATMENTS WITH MAINSPRING GNL TO IN-GROUND-GROWN PLANTS IN AND AROUND GREENHOUSES, NURSERIES (INCLUDING FIELD- AND CONTAINER-GROWN PLANTS IN SHADE AND LATH HOUSES), INTERIOR PLANTSCAPES, AND COMMERCIAL AND RESIDENTIAL LANDSCAPES

Ornamentals		
Evergreens, including conifers Foliage plants Palms	Shrubs Trees, including non-bearing fruit and nut trees ¹	
Target Pests	Dosage (per foot of height or per inch of trunk diameter at breast height {DBH})	Use Directions
Aphids (such as Spirea aphids) Lace bugs Soft scales (such as Magnolia scale)	0.125 – 0.25 fl oz	<p>Soil Drench: Mix required dose in water and uniformly apply to soil around base of the plant. Refer to Tables 7 and 8 for proper calibration and mixing. Pull back mulch before drenching. Keep soil moist for 7 days after application.</p> <p>Soil Injection: Mix require dose in water and inject into soil around the base of the plant. Refer to Tables 7 and 8 for proper calibration and mixing.</p>
Adelgids (including hemlock woolly adelgid) Borers (including beetle and caterpillar larvae) Leaf- feeding beetles (Including elm flea weevils and Japanese beetle adults) Leaf-feeding caterpillars (including redbud leaf-folders and gypsy moths) Leafminers (including birch leafminers and boxwood leafminers) Plant bugs (including honeylocust plant bugs) Psyllids (including boxwood psyllid) Whiteflies	0.25 fl oz	
USE RESTRICTIONS		
<p>Maximum Rate per Crop:</p> <ul style="list-style-type: none"> For crops and plants grown indoors, do not apply more than 32 fl oz Mainspring GNL per acre per crop per year (equivalent to 0.4 lb of active ingredient per acre per crop per year). For crops and plants grown outdoors, do not apply more than 32 fl oz Mainspring GNL per acre per year (equivalent to 0.4 lb of active ingredient per acre per year). 		

¹ Non-bearing fruit and nut trees and vines are those trees and vines that will not bear fruit or nuts for one year after application.

TABLE 7: ORNAMENTAL SOIL TREATMENT APPLICATION CALIBRATION CHART

Volume per Site*	Flow Rate (Gallons per minute)					
	0.5 gallon	0.75 gallon	1 gallon	1.5 gallons	2 gallons	3 gallons
1 pint	15.0 sec	10.0 sec	7.5 sec	5.0 sec	3.75 sec	2.5 sec.
1 quart	30.0 sec	20.0 sec	15.0 sec	10.0 sec	7.5 sec	5.0 sec
2 quarts	1.0 min	40.0 sec	30.0 sec	20.0 sec	15.0 sec	10.0 sec
1 gallon	2.0 min	1 min 20 sec	1.0 min	40.0 sec	30.0 sec	20.0 sec

*Site = Soil injection site – the selected volume is applied per inch of tree DBH or foot of shrub

TABLE 8: ORNAMENTAL SOIL TREATMENT APPLICATION MIXING CHART

Volume per Site*	Application Rate Per Inch DBH or Foot Ht (fl oz)	Fl oz product per 100 gallons	Fl oz product per 50 gallons	Fl oz product per 25 gallons	Fl oz product per 10 gallons	Fl oz product per 1 gallon
1 pint	0.125	100	50	25	10	1
	0.25	200	100	50	20	2
1 quart	0.125	50	25	12.5	5	0.5
	0.25	100	50	25	10	1
2 quarts	0.125	25	12.5	6.25	2.5	0.25
	0.25	50	25	12.5	5	0.5
1 gallon	0.125	12.5	6.25	3.125	1.25	0.125
	0.25	25	12.5	6.25	2.5	0.25

*Site = Soil injection site – the selected volume is applied per inch of tree DBH or foot of shrub

Broadcast Applications to Flower Beds and Groundcovers

Mainspring GNL may be applied for white grub control in flower beds and ground covers. Flower bed and groundcover application rates are listed in **Table 9**. Apply in sufficient water to uniformly cover the area being treated (a minimum of 2 gallons per 1,000 square feet is recommended for flower beds and groundcover applications). Irrigate immediately after application or allow rainfall to move the product into the soil. Mainspring GNL may be applied before planting or after plants have been established.

**TABLE 9: ORNAMENTAL FLOWERS AND GROWDCOVERS SOIL TREATMENT
SOIL TREATMENT APPLICATION RATES**

Target Pest	Fl oz product per acre	Fl oz product per 1,000 sq ft	Lb ai per acre
White grubs (including <i>Aphodius</i> spp., Asiatic garden beetle, black turfgrass ataeenius ¹ , Japanese beetle, May/June beetles (<i>Phyllophaga</i> spp.), northern masked chafer, oriental beetle, southern masked chafer and sugarcane grub)	8 - 16	0.184 – 0.367	0.104 – 0.208
USE RESTRICTION			
Maximum Rate per Crop: For crops and plants grown outdoors, do not apply more than 32 fl oz Mainspring GNL /A per year (equivalent to 0.4 lb of active ingredient/A per crop per year).			

¹ Applications targeting black turfgrass ataeenius larvae should be made from peak adult flight through peak egg hatch to ensure control of the first-generation larvae. A second application may be required to control second-generation black turfgrass aetaenius.

Bark Applications

Apply Mainspring GNL to the trunks and lower branches of trees and shrubs to control clearwing moth borer larvae. Bark treatment application rates are listed in **Table 10**. Make applications after the emergence of adult moths and before their eggs hatch. Thorough coverage of the bark is required for satisfactory control. Adult emergence varies according to the pest species, host tree, environmental conditions and geographic location. Consult your local Cooperative Extension Service specialist or pest control advisor for regionally specific information regarding application timing.

TABLE 10: ORNAMENTAL BARK TREATMENT APPLICATION RATES

Target Pests	Fl oz product per 100 gallons	Lb ai per 100 gallons	PPM	Percent ai (wt/vol)
Clearwing borers, including peachtree borer	4	0.052	62.5	0.00625
	8	0.104	125	0.0125
	16	0.208	250	0.025
For maximum residual control of the pests listed above	32	0.416	500	0.05
USE RESTRICTION				
Maximum Rate per Crop: For crops and plants grown outdoors, do not apply more than 32 fl oz of Mainspring GNL/A per year (equivalent to 0.4 lb of active ingredient/A per year).				

STORAGE AND DISPOSAL

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

Pesticide Storage

Do not subject to temperatures below 32 degrees F. Store product in original container only in a location inaccessible to children and pets. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Not for use or storage in or around the home.

Pesticide Disposal

Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Handling [(less than or equal to 5 gallons)]

Non-refillable container. Do not reuse or refill this container. 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 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. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Container Handling [(greater than 5 gallons)]

Non-refillable container. Do not reuse or refill this container. 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 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this 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 approved by state and local authorities.

Container Handling [(greater than 5 gallons)]

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 person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank.

Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 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 approved by state and local authorities.

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