Title

Petition for a Three-Year Extension of Exclusive Use Data Protection for Pyrifluquinazon As Provided For Under FIFRA Section 3(c)(1)(F)(ii)

Data Requirement
None

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No Claim of Confidentiality

No claim of confidentiality, on any basis whatsoever, is made for any information contained in this document. I acknowledge that information not designated as within the scope of FIFRA sec. 10(d)(1)(A), (B), or (C) and which pertains to a registered or previously registered pesticide is not entitled to confidential treatment and may be released to the public, subject to the provisions regarding disclosure to multinational entities under FIFRA 10(g).

Submitter:  Date: 07/08/2019

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Good Laboratory Practice Compliance Statement

Good Laboratory Practice Standards, 40 CFR Part 160, are not applicable to this submission.

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Section 1. Pyrifluquinazon Products and Background Information

Table 1. Registered Pesticide Products Containing Pyrifluquinazon

Product	EPA Registration Number	Alternate Brand Names
Pyrifluquinazon Technical	71711-38	Not applicable
Pyrifluquinazon Insecticide	71711-37	PQZ Insecticide

General Background Information

Pyrifluquinazon is currently registered under FIFRA section 3(c)(5) for use on the following crops:

- Brassica Head and Stem Vegetables (Crop Group 5-16)
- Citrus Fruits (Crop Group 10-10)
- Cotton
- Cucurbit Vegetables (Crop Group 9)
- Fruiting Vegetable (Crop Group 8-10)
- Leaf Petiole Vegetables (Crop Subgroup 22B)
- Leafy Vegetables (Crop Group 4-16)
- Pome Fruits (Crop Group 11-10)
- Small Fruit Vine Climbing (Crop Subgroup 13-07F) Excluding Fuzzy Kiwifruit
- Indoor Greenhouse use on ornamental plants
- Tuberous and Corm Vegetables (Crop Subgroup 1C)
- Stone Fruit Group (Crop Group 12-12)
- Tree Nuts (Crop Group 14-12)
- Greenhouse Cucumbers
- Greenhouse Lettuce
- Greenhouse Peppers
- Greenhouse Tomatoes

The active ingredient pyrifluquinazon is a contact and translaminar insecticide belonging to the Pyridine azomethine derivatives class of insecticides. It is registered for control of a narrow spectrum of insect pests in the Hemiptera and Thysonoptera insect orders. Pyrifluquinazon is very effective against its target pests, including those resistant to pyrethroid, organophosphate, and spinosyn chemistries. Pyrifluquinazon is effective on most developmental stages of target insects, including adults which are responsible for transmitting and spreading plant viruses.

The rapid effect on the target insect, strong residual activity and translaminar properties, allow pyrifluquinazon to provide immediate and long-lasting protection against insect pests and the viruses they transmit. Pyrifluquinazon has been classified as a Chordotonal Organ TRPV Channel Modulator within Subgroup 9B by the Insecticide Resistance Action Committee (IRAC)[1]. Group 9 insecticides bind to and disrupt the gating of the Nan-Iav TRPV (Transient Receptor Potential Vanilloid) channel complexes in insect chordotonal stretch receptor organs. Pyrifluquinazon overstimulates the stretch receptors resulting in disruption of insect feeding and coordination. While pyrifluquinazon is not

considered to have a unique mode of action, it does offer a new mode of action for some of its target pests including thrips, whitefly, mealybug, and leafhopper.

Details on the crops and specific documentation supporting this petition for extension of the exclusive use period for the studies submitted to the Agency for pyrifluquinazon per the required criteria cited in FIFRA Section 3(c)(1)(F)(ii) are provided in Section 3.

Residue trials were conducted in crops and the crop group representative crops, including major and minor crops, to support the numerous minor crops on which pyrifluquinazon is currently registered.

Table 2 shows the minor use crop candidates included in this petition for extension of exclusive use of data and the corresponding residue data used to support the registration of these minor crops.

Pyrifluquinazon provides an additional mode-of-action rotation partner to reduce the selection pressure on commercially available insecticides and helps to preserve these chemical classes for continued use in the future. To date, pyrifluquinazon has shown no cross-resistance to other insecticides currently in the market. Pyrifluquinazon's mode of action and its selective activity to beneficial insects makes it a useful tool for inclusion in IPM systems.

Section 2. FIFRA Section 3(c)(1)(F)(ii) Criteria

Nichino America Inc., the sole registrant of the proprietary insecticide pyrifluquinazon for agricultural crop and ornamental plant use, is hereby petitioning the Environmental Protection Agency for a three-year extension of exclusive use data protection, as provided under FIFRA Section 3(c)(1)(F)(ii).

FIFRA Section 3(c)(1)(F)(ii) states that:
The period of exclusive data use provided under clause (i) shall be extended 1 additional year for each 3 minor uses registered after the date of enactment of this clause and within 7 years of the commencement of the exclusive use period, up to a total of 3 additional years for all minor uses registered by the Administrator if the Administrator, in consultation with the Secretary of Agriculture, determines that, there are insufficient efficacious alternative registered pesticides available for the use;
(I) The alternatives to the minor use pesticide pose greater risks to the environment or human health;
(II) The minor use pesticide plays or will play a significant part in managing pest resistance; or
(III) The minor use pesticide plays or will play a significant part in an integrated pest management program.

Further, in the US EPA question & answer document[2] concerning the exclusive use extension policy, the Agency clarifies that only one of the four criteria are necessary to qualify for consideration:

"To qualify to be considered under § 3(c)(1)(F)(ii) of FIFRA for an extension of the exclusive use period, the minor uses must be registered within the first 7 years from the start of the exclusive use period and meet one of the four criteria listed in FIFRA § 3(c)(1)(F)(ii)."

The four criteria listed in FIFRA § 3(c)(1)(F)(ii) include:
1. There are insufficient efficacious alternative registered pesticides available for the use;
2. The alternatives to the minor use pesticide pose greater risks to the environment or human health;
3. The minor use pesticide plays or will play a significant part in managing pest resistance; OR
4. The minor use pesticide plays or will play a significant part in an integrated pest management program."

Additionally, in the same question & answer document, the Agency states that all minor-use crops contained in a given crop grouping potentially qualify for consideration:

"If the data for the representative crops in a crop grouping have been submitted and support establishment of the crop grouping, the Agency will count the non-representative minor crops within a crop grouping provided that they were registered within 7 years of the commencement of the initial exclusive use period for the active ingredient and the registrant is marketing the product for the minor crops. However, the non-representative minor crops must meet one of the four criteria identified in § 3(c)(1)(F)(ii) in order to be eligible to be considered for extension of exclusive use data protection."

As described in this petition, the pyrifluquinazon registrations meet the criteria cited in FIFRA Section 3(c)(1)(F)(ii) for consideration of extension of the exclusive use period for data protection. Pyrifluquinazon Technical (EPA Reg. No 71711-38) and the end-use product Pyrifluquinazon Insecticide (EPA Reg. No. 71711-37) were approved for ornamental greenhouse use on January 03, 2013, and for indoor and outdoor food crop use on November 19, 2018, by the US EPA.

Section 3. Pyrifluquinazon Minor Use Crop Candidates

Table 1. Pyrifluquinazon Minor Use Crop Candidates

Commodities	Crop Groups	Residue data to support	MRID #
Arugula	4	Leaf lettuce, head lettuce, spinach, celery	49083769
Endive	4	Leaf lettuce, head lettuce, spinach, celery	49083769
Radicchio (red chicory)	4	Leaf lettuce, head lettuce, spinach, celery	49083769
Spinach	4	Leaf lettuce, head lettuce, spinach, celery	49083769
Swiss chard	4	Leaf lettuce, head lettuce, spinach, celery	49083769
Eggplant	8-10	Tomato, pepper	49083758
Pepper, bell,	8-10	Tomato, pepper	49083758
Pepper, nonbell	8-10	Tomato, pepper	49083758
Grapefruit	10-10	Orange, grapefruit, lemon	49083763
Kumquat	10-10	Orange, grapefruit, lemon	49083763
Lemon	10-10	Orange, grapefruit, lemon	49083763
Lime	10-10	Orange, grapefruit, lemon	49083763
Tangelo	10-10	Orange, grapefruit, lemon	49083763
Tangerine (Mandarin)	10-10	Orange, grapefruit, lemon	49083763
Cherry, sweet	12-12	Cherry, peach, plum	49083772
Cherry, tart	12-12	Cherry, peach, plum	49083772
Plum	12-12	Cherry, peach, plum	49083772
Peach	12-12	Cherry, peach, plum	49083772
Broccoli	5-16	Broccoli or cauliflower, cabbage, mustard green	49083770
Brussell Sprouts	5-16	Broccoli or cauliflower, cabbage, mustard green	49083770
Cabbage	5-16	Broccoli or cauliflower, cabbage, mustard green	49083770
Cauliflower	5-16	Broccoli or cauliflower, cabbage, mustard green	49083770
Cantaloupe	9	Melon, muskmelon, squash, summer squash	49083771
Watermelon	9	Melon, muskmelon, squash, summer squash	49083771
Squash	9	Melon, muskmelon, squash, summer squash	49083771

A total of 25 minor use crop candidates, supported by residue data from either individual crop or representative crops of crop groups, were registered within the requisite seven-year period (prior to January 03, 2020) and added to the FIFRA section 3(c)(5) pyrifluquinazon technical and end-use product labels.

Section 4. Minor Use Crop Candidate Justification for Exclusive Use of Pyrifluquinazon

In the 2016 US EPA question & answer document[3], the Agency suggested "the request package may be written on a crop-by-crop basis to make it easier for the reviewer to assess your request. BEAD finds information presented in a bulleted list easier to follow rather than a narrative. For each crop/site OPP recommends that the applicant/registrant describe the following:

- The date of first registration and date when the minor uses were registered.
- How the pesticide is being marketed for these minor uses.
- The acres grown (with reference to the source of these data), minor crop status can be determined based on total acreage or economics (see sections below).
- The target pest (i.e. a pest that can lead to economic impacts if not controlled) or beneficial insect (i.e. the pesticide is less toxic to beneficial insects).
- The criterion that is being met (BEAD only reviews criteria I, III, and IV) and a detailed description of why the pesticide meets the criteria, and all supporting evidence (publications, websites, reports, etc.)."

The information for each crop group will be presented using each of these bullet points.

4.1 Crop Group 4: Leafy Vegetables

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on the Leafy Vegetables crop group 4-16 was received on November 19, 2018.

- Nichino America is currently marketing pyrifluquinazon under the brand PQZ Insecticide (PQZ) on leafy vegetables to growers by use of informational technical sheets, advertisements, and sales calls to distributors, crop consultants, and growers. Product launch meetings were conducted with growers and Pest Control Advisors to advise on the proper use of the product in several of the states where the product is registered. Numerous efficacy studies have been conducted in Arizona and California evaluating PQZ against key pests of leafy vegetables including aphid and whitefly. PQZ is still pending registration in California.

- Acres grown according to 2017 US Census of Agriculture[4]:
  - Arugula not listed
  - Endive 2,432
  - Radicchio not listed
  - Spinach 69,969
  - Swiss chard not listed

- PQZ use on leafy vegetables has been targeted primarily against whitefly and aphid control. Aphids and whitefly feed by piercing leaves with needlelike mouthparts and sucking plant juices. Excessive feeding by heavy infestations can stunt plant growth, and some aphid and whitefly species can vector viruses that are pathogenic to many leafy vegetables. However, it is the contamination of harvestable plant material (e.g., lettuce heads, celery hearts) by the insects themselves that makes aphid and whitefly economically important. Contamination of leafy vegetables with just a few

aphids, will often downgrade quality, or even render the product unmarketable. Several aphid species are known to infest and damage leafy vegetables. Among them, the green peach aphid, *Myzus persicae*, is generally considered the most significant because of its broad host range, propensity for insecticide resistance, and tendency to rapidly infest plants.

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

Pyrifluquinazon is one of the only two IRAC Group 9B insecticides registered for use against aphids on leafy vegetables[5]. Although pymetrozine (Fulfill Insecticide, EPA Reg. No. 66222-274), a 9B insecticide, is registered for use on leafy vegetables to control aphids and suppress whitefly, is typically not used because it is not as effective nor as broad spectrum against aphids as the standard[6]. Furthermore, pymetrozine only provides suppression of whitefly[7] whereas PQZ offers excellent control of these two pests. Dr. John Palumbo at the University of Arizona considers Pyrifluquinazon "As efficacious as Movento®" (EPA Reg. No. 264-1050 and 264-1065) which is the current standard for aphid control in leafy vegetables"[8]. PQZ provides a more effective and broader spectrum 9B insecticide for use in leafy vegetables. In the United States several aphid species are known to infest leafy vegetables, including the green peach aphid which is known for its propensity to develop resistance and its tendency to rapidly infest plants. In areas where leafy vegetables are grown, early threshold foliar sprays are recommended to effectively manage aphids and multiple applications should be made as necessary to prevent the pest from infesting the crop[9]. For this reason, growers need to have multiple effective products with different modes of action to help prevent aphids from developing

4.2 Crop Group 8-10: Fruiting Vegetables

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on the Fruiting Vegetables crop group 8-10 was received on November 19, 2018.

- Nichino America is currently marketing pyrifluquinazon under the brand PQZ Insecticide on Fruiting vegetable to growers by use of informational technical sheets, advertisements, and sales calls to distributors, crop consultants, and growers. Product launch meetings were conducted with growers and Pest Control Advisors to advise on the proper use of the product in Florida and several other states where the product is registered. Numerous efficacy studies have been conducted in Florida evaluating PQZ against key pests of fruiting vegetables including whitefly and aphids.

- Acres grown according to 2017 US Census of Agriculture[4]:
    - Eggplant 5,365
    - Pepper, bell 48,801
    - Pepper, nonbell 24,165

- Pyrifluquinazon primary use in fruiting vegetables will be against aphid and whitefly. Both pests feed on the phloem extracting large quantities of sap which they excrete onto the foliage below. The honeydew they excrete serves as a food source for the growth of

sooty mold which reduces photosynthesis. Whitefly and aphids are also known to be vectors of several viruses including: Tomato Yellow Leaf Curl virus, Tobacco etch virus, Potato virus Y, and Pepper mottle virus in fruiting vegetables.

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

Universities recommend rotating insecticide mode of actions to avoid promoting resistance[10]. Fruiting vegetable growers need additional tools to help manage whitefly and aphid resistance. While several insecticides are registered to control aphid and whitefly in fruiting vegetables, not many are able to control the adult stage which is responsible for the transmission of viruses[20]. Pyrifluquinazon has proven to be very efficacious against adult whitefly[11] and complements other insecticides as part of an effective whitefly and aphid spray rotation program in fruiting vegetables. Pyrifluquinazon is the only IRAC Group 9B insecticide that can provide effective control of whitefly in fruiting vegetables[11] as Fulfill Insecticide (EPA Reg. No. 66222-274) only claims suppression of whitefly on its label[7]. Pyrifluquinazon provides a new and more effective tool for controlling this pest in fruiting vegetables.

4.3 Crop Group 10-10: Citrus Fruits

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on Citrus Fruits was received on November 19, 2018.

- Nichino America is currently marketing pyrifluquinazon under the brand: PQZ Insecticide on citrus crops to growers by use of informational technical sheets, advertisements in grower magazines, providing technical presentations and sales calls to distributors, consultants, and growers. On-farm demonstrations and launch meeting were conducted to educate growers on the benefits of using pyrifluquinazon against citrus pests. Pyrifluquinazon is pending registration in California.

- Acres grown according to 2017 US Census of Agriculture[4]
  - Grapefruit 68,390
  - Kumquat 258
  - Lemon 66,501
  - Lime 1,296
  - Tangelo 7,806
  - Tangerine 77,701

- Pyrifluquinazon is being positioned specifically as a citrus thrips insecticide in citrus although it also controls aphids and suppresses California red scale.

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

Pyrifluquinazon is the only active IRAC Group 9B insecticide registered for use against citrus thrips[13], aphids[14], and red scale[15], in citrus. Resistance of citrus thrips to pyrethroids, carbamates, abamectin and spinosyn chemistry has been reported from

California citrus orchards[13]. To make the resistance situation even more complicated, studies conducted in 2013-14 by Haviland and Rill found resistance in populations of citrus thrips to spinetoram, spinosad and pyrethroids in blueberry[16]. Researchers believe that these resistant populations are migrating to citrus orchards as it is common for blueberries and citrus crops to be grown side by side. Pyrifluquinazon's new mode of action provides citrus growers an additional tool to help prevent the further development of resistance to other commonly used citrus thrips insecticides.

4.4 Crop Group 12-12: Stone Fruits

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on stone fruit on received on November 19, 2018.

- Nichino America is currently marketing PQZ Insecticide (EPA Reg. No. 71711-37) on stone fruit crops to growers by use of informational sales sheets, technical presentations, and sales calls to distributors and growers. Pyrifluquinazon is pending registration in California.

- Acres grown according to 2017 US Census of Agriculture[4]:
    - Cherries (Tart) 46,449
    - Cherries (Sweet) 105,978
    - Peach 112,861
    - Plum and Prune 69,590

- Pyrifluquinazon provides effective control of aphids including: Black peach aphid, mealy plum aphid, and black cherry aphid in stone fruit crops. Aphid builds up in large numbers on the undersurface of leaves in spring and causes leaves to become slightly curled and stunted. High populations can devitalize the tree, retard growth, and reduce sugar content of fruit. Honeydew dropping on fruit can cause fruit cracking and reduce quality.

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

  Pyrifluquinazon is the only IRAC Group 9B insecticide registered for use against aphids in stone fruit[7,12]. For this reason, pyrifluquinazon is an ideal rotational chemistry with the most commonly used aphid control programs that include neonicotinoids, organophosphates, and pyrethroid insecticides. Use of pyrifluquinazon against aphids in stone fruit will provide a valuable rotation tool to help prevent aphids from developing resistance to registered products or replace non-selective insecticides.

4.5 Crop Group 5-16: Brassica Head and Stem Vegetables

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on Brassica Head and Stem Vegetables was received on November 19, 2018.

- Nichino America is currently marketing pyrifluquinazon under the brand PQZ

Insecticide on brassica vegetables to growers by use of informational technical sheets, advertisements, and sales calls to distributors, crop consultants, and growers. Product launch meetings were conducted with growers and Pest Control Advisors to advise on the proper use of the product in several of the states where the product is registered. Numerous efficacy studies have been conducted in Arizona and California evaluating PQZ against key pests of leafy vegetables including aphid and whitefly. PQZ is pending registration for food crop use in California.

- Acres grown according to 2017 US Census of Agriculture[4]:
  - Broccoli 135,185
  - Brussels Sprouts 9,445
  - Cabbage head 72,296
  - Cauliflower 50,331

- PQZ use on brassica head and stem vegetables has been targeted primarily against whitefly and aphid control. Aphids and whitefly feed by piercing leaves with needlelike mouthparts and removing plant juices. Large populations can stunt or kill small plants, but the most serious problem is contamination of the harvested crop.

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

  Pyrifluquinazon is one of the only two IRAC Group 9B insecticides registered for use against aphids and whitefly in brassica crops[6]. Although pymetrozine (Fulfill), a 9B insecticide, is registered for use on brassica to control aphids and suppress whitefly, it is not as effective and broad spectrum against aphids as the standards[6,17]. Furthermore, pymetrozine only provides suppression of whitefly[7] where as PQZ offers excellent control of this pest[5]. Dr. John Palumbo at the University of Arizona considers Pyrifluquinazon as efficacious as the standards against aphids and whitefly in brassica vegetables[8]. PQZ provides a more effective and broader spectrum 9B insecticide for use in brassica vegetables compared to pymetrozine. Pyrifluquinazon effectiveness against aphid and whitefly provide growers with a different mode of action which can be rotated with the current standards to prevent the development of insecticide resistance.

4.6 Crop Group 9: Cucurbit Vegetables

- Pyrifluquinazon Technical was granted US registration on January 03, 2013 and the registration for use on the cucurbit vegetable crop group was received on November 19, 2018.

- Nichino America is currently marketing pyrifluquinazon under the brand PQZ Insecticide on cucurbit vegetables to growers by use of informational technical sheets, advertisements, technical presentations at trade shows and sales calls to distributors, crop consultants, and growers. Product launch meetings were conducted with growers and Pest Control Advisors to advise on the proper use of the product in several of the states where the product is registered. Numerous university efficacy studies have been conducted in Arizona and California evaluating pyrifluquinazon against whitefly and the viruses they can transmit. Pyrifluquinazon registration approval of food crop use is pending in California.

- Acres grown according to 2017 US Census of Agriculture[4]:
  - Cantaloupes 71,436
  - Watermelon 129,790
  - Squash 70,190

- Pyrifluquinazon use on cucurbit vegetables has been targeted primarily against whitefly and the viruses transmitted by this insect. Whitefly feed by piercing leaves with needlelike mouthparts and removing plant juices. Excessive feeding by heavy infestations can stunt plant growth and contaminate fruit. Adult whitefly can vector viruses including Cucurbit Yellow Stunting Disorder Virus (CYSDV) and Squash Leaf Curl Virus (SLCV). Whitefly and CYSDV has been a devastating problem for cantaloupe growers in Southern CA and AZ since 2006[18].

- Criterion III: The minor use pesticide plays or will play a significant part in managing pest resistance.

Management of whitefly and the viruses they transmit is achieved primarily by the proper application and timing of both soil and foliar applied insecticides[18]. Rotation of chemistries with different modes of action is critical to maintaining the chemical control strategy viable. Pyrifluquinazon is one of the only two IRAC Group 9B insecticides registered for use against whitefly on cucurbit crops and is the only insecticide in this group listed as an effective alternative to control whitefly in cantaloupes by the University of Arizona[19]. Furthermore, according to the Fullfil Insecticide (EPA Reg. No. 100-912) label, pymetrozine only provides suppression and its effectiveness against whitefly is inconsistent[7]. Dr. John Palumbo at the University of Arizona has evaluated pyrifluquinazon very thoroughly in over 40 efficacy studies in cantaloupes and considers pyrifluquinazon "As efficacious as the standards against adult whitefly and at reducing the transmission of Cucurbit Yellow Stunting Disorder (CYSD) virus"; he also believes pyrifluquinazon will become an important product for whitefly management in desert melons[8]. Pyrifluquinazon provides PCAs with a much-needed alternative for effective adult whitefly/CYSDV management on cucurbit crops and to prevent the development or insecticide resistance

Section 5. Conclusion

Pyrifluquinazon is a new selective insecticide effective against citrus thrips, aphids and whitefly which are three key insect pests in minor use crops. In addition, pyrifluquinazon has demonstrated to reduce the transmission of virus whitefly can transmit in cucurbit and fruiting vegetables. Pyrifluquinazon is one of the only two insecticides belonging to the IRAC 9B insecticide group, and pyrifluquinazon has demonstrated to be much more efficacious on aphid and whitefly compared to pymetrozine. For this reason, pyrifluquinazon represents a new and better tool compared to the previous IRAC 9B option to be integrated into resistant management programs on minor use crops.

For IPM strategies to be effective, a critical number of pesticides with different modes of action are needed to reduce the development of resistance. Pyrifluquinazon provides a new and more effective resistance management tool to extend the life of other commercially available insecticides registered for use in minor use crops.

Supported by the information and references cited within this document, Nichino America contends

that pyrifluquinazon registrations for 25 minor crops satisfy criteria III (“The minor use pesticide plays or will play a significant part in managing pest resistance”) for granting the three-year extension of exclusive use data protection as provided under FIFRA Section 3(c) (1) (F) (ii).

Section 6. References

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Section 7. EPA-Approved Master Labels

7.1 Pyrifluquinazon Technical Label

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

November 19, 2018

Ms. Regiane Pereira
Regulatory Manager
Nichino America
4550 Linden Hill Road
Wilmington, DE 19808

Subject: PRIA Label Amendment – New Uses (First Food and Outdoor Uses)
Product Name: Pyrifluquinazon Technical
EPA Registration Number: 71711-38
Application Date: August 1, 2016
Decision Number: 520080

Dear Ms. Pereira:

The application referred to above, submitted under the Federal Insecticide, Fungicide and Rodenticide Act, as amended is acceptable under FIFRA sec 3 (c)(5). You must submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.

A stamped copy of your labeling is attached for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

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 the Federal Insecticide Fungicide and Rodenticide Act 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 CFR 156.10(a)(5) list 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 website will be referred to the EPA's Office of Enforcement and Compliance.

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

New Use PRIA Unconditional v.20150320

with FIFRA section 6. If you have any questions, please contact Debra Rate by phone at (703) 306-0309, or via email at rate.debra@epa.gov.

Sincerely,

Richard Gebken
Product Manager 10
Invertebrate & Vertebrate Branch 2
Registration Division (7505P)
Office of Pesticide Programs

Attachment

NICHINO AMERICA

PYRIFLUQUINAZON | GROUP 9B | INSECTICIDE

ACCEPTED
11/19/2018
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 71711-38

Pyrifluquinazon Technical

For Formulating Use Only

ACTIVE INGREDIENT:

Pyrifluquinazon 2(1H)-Quinazolinone, 1-acetyl-3,4-dihydro-3-[(3-pyridinylmethyl)amino]-6-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-.....98.4%

OTHER INGREDIENTS 1.6%

TOTAL 100.0%

EPA Reg. No. 71711-38 **EPA Est. No. _____**

KEEP OUT OF REACH OF CHILDREN

WARNING - AVISO

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.)

FIRST AID	
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If on skin	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For additional information on this pesticide product, including human health concerns and medical emergencies, call 1-800-348-5832 for emergency medical treatment information.	

Net Contents: _____

Active Ingredient Made in Japan

Nichino America, Inc.
4550 Linden Hill Road, suite 501
Wilmington, DE 19808
888-740-7700

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
WARNING - AVISO

May be fatal if swallowed. Harmful if absorbed through skin. Harmful if inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. 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.

Environmental Hazards
Do not discharge effluent containing this product directly into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the Environmental Protection Agency.

Physical and Chemical Hazards
Do not expose contents to sunlight. Do not store contents in metal containers. Do not store contents at high temperatures (>120ºF).

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Only for formulation into an insecticide, for:

(1) The following uses:

- Brassica Head and Stem Vegetables (Crop Group 5-16)
- Citrus Fruits (Crop Group 10-10)
- Cotton
- Cucurbit Vegetables (Crop Group 9)
- Fruiting Vegetables (Crop Group 8-10)
- Leaf Petiole Vegetables (Crop Subgroup 22B)
- Leafy Vegetables (Crop Group 4-16)
- Pome Fruits (Crop Group 11-10)
- Small Fruit Vine Climbing (Crop Subgroup 13-07F) excluding Fuzzy Kiwifruit
- Stone Fruits (Crop Group 12-12)
- Tree Nuts (Crop Group 14-12)
- Tuberous and Corm Vegetables (Crop Subgroup 1C)
- Greenhouse Cucumbers
- Greenhouse Lettuce
- Greenhouse Peppers
- Greenhouse Tomatoes
- Indoor greenhouse use on ornamental plants

(2) Uses for which US EPA has accepted the required data and/or citations of data that the formulator has submitted in support of registration;

(3) Uses for experimental purposes that are in compliance with USEPA requirements.

Formulation Information
Each formulator is responsible for obtaining EPA registration for his/her own end-use products. Technical information on formulations of this product as well as its physical and chemical characteristics may be obtained from Nichino America, Inc.

STORAGE AND DISPOSAL

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

STORAGE: Store in original container, and keep tightly closed when not in use. Store in a cool, dry place.

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 fiber drum with liner]
Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into formulation equipment. Then offer for recycling if available or dispose of liner in a sanitary landfill or by other procedures approved by state and local authorities. If drum is contaminated and cannot be reused, dispose of it in the manner required for its liner.

In case of fire or spills, information may be obtained by calling 1-800-424-9300.

IMPORTANT: READ BEFORE USE

By using this product, user or buyer accepts the following conditions, warranty, disclaimer of warranties, and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be accurate and must be followed carefully. However, because of extreme weather and soil conditions, use methods and other factors beyond the control of Nichino America, Inc. (NAI), it is impossible for NAI to eliminate all risks associated with the use of this product. As a result, crop injury or ineffectiveness is always possible. To the extent consistent with applicable law, all such risks are assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of NAI is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, NAI disclaims any liability whatsoever for incidental or consequential damages, including, but not limited to, liability arising out of breach of contract, express or implied warranty (including warranties of merchantability and fitness for a particular purpose), tort, negligence, strict liability, or otherwise.

LIMITATIONS OF LIABILITY: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT THE ELECTION OF NICHINO AMERICA, THE REPLACEMENT OF PRODUCT.

7.2 Pyrifluquinazon Insecticide Label

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

November 19, 2018

Ms. Regiane Pereira
Regulatory Manager
Nichino America
4550 Linden Hill Road
Wilmington, DE 19808

Subject: PRIA Label Amendment – New Uses (First Food and Outdoor Uses)
Product Name: Pyrifluquinazon Insecticide
EPA Registration Number: 71711-37
Application Date: August 1, 2016
Decision Number: 520081

Dear Ms. Pereira:

The application referred to above, submitted under the Federal Insecticide, Fungicide and Rodenticide Act, as amended is acceptable under FIFRA sec 3 (c)(5). You must submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.

A stamped copy of your labeling is attached for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

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 the Federal Insecticide Fungicide and Rodenticide Act 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 CFR 156.10(a)(5) list 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 website will be referred to the EPA's Office of Enforcement and Compliance.

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New Use PRIA Unconditional v.20150320

with FIFRA section 6. If you have any questions, please contact Debra Rate by phone at (703) 306-0309, or via email at rate.debra@epa.gov.

Sincerely,

Richard Gebken
Product Manager 10
Invertebrate & Vertebrate Branch 2
Registration Division (7505P)
Office of Pesticide Programs

Attachment

[71711-37 Pyrifluquinazon Master Label]

NICHINO AMERICA

PYRIFLUQUINAZON | GROUP 9B | INSECTICIDE

Pyrifluquinazon Insecticide

ACCEPTED
11/19/2018
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 71711-37

Active Ingredient:

Pyrifluquinazon 2(1H)-Quinazolinone, 1-acetyl-3,4-dihydro-3-[(3-pyridinylmethyl)amino]-6-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-	**20.2%**
Other Ingredients:	**79.8%**
Total	**100.0%**

Contains 1.87 lbs. active ingredient per U.S. gallon

EPA Reg No. 71711-37 **EPA Est. No. _____**

[Alternate brand names: PQZ™ Insecticide; Pyrifluquinazon 20% SC insecticide, Pyrifluquinazon 20SC insecticide, Rycar® insecticide]

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID	
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed	• Call poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For additional information on this pesticide product, including human health concerns and medical emergencies, call 1-800-348-5832.	

Net Contents: _____

[Manufactured in ___,] [formulated in ___,] [and] [packaged in __] for:
NICHINO AMERICA, INC.
4550 Linden Hill Rd, suite 501.
Wilmington, DE 19808
888-740-7700

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[71711-37 Pyrifluquinazon Master Label]

PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals
CAUTION

Harmful if absorbed through skin. Harmful if swallowed. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Wear long-sleeved shirt and long pants, socks, shoes, and chemical-resistant gloves. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE)
Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, polyvinyl chloride (PVC) ≥ 14 mils, or Viton® ≥ 14 mils.
- Shoes plus socks

User Safety Requirements
Follow the 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.

User Safety Recommendations:
Users should:

- Wash hands thoroughly 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 pesticide is toxic to aquatic invertebrates.
- Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark. Do not contaminate water when disposing of equipment washwater or rinsate.
- Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

Surface Water Advisory:
This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having a medium potential for reaching both surface water and aquatic sediment via runoff for several days after application.

Vegetative Buffer Zone Advisory:
A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of pyrifluquinazon from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

[71711-37 Pyrifluquinazon Master Label]

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container, and keep tightly closed when not in use. Store in a cool, dry place.

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 plastic container (less than 5 gallons)]

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank . Fill the container ¼ full with water 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 reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

[Nonrefillable plastic container (greater than 5 gallons)]

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. 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 a 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 reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

[Refillable plastic container]

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 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. Return to point of sale or offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

In case of fire or spills, information may be obtained by calling 1-800-424-9300.

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Page 3 of 29

[Sub-Label A: Outdoor Crop Use]

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.

AGRICULTURAL USE REQUIREMENTS

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

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:

- Coveralls
- Chemical-resistant gloves, made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, polyvinyl chloride (PVC) ≥ 14 mils, or Viton® ≥ 14 mils
- Shoes plus socks

GENERAL INFORMATION

PYRIFLUQUINAZON insecticide is formulated as a suspension concentrate containing 1.87 lbs. of active ingredient per gallon. PYRIFLUQUINAZON insecticide works primarily through contact action, by ingestion, and is translaminar.

PYRIFLUQUINAZON insecticide should be used in a program with other products to provide season long protection. Apply as a spray as directed in the "Application Directions" section of this label.

RESISTANCE MANAGEMENT

For resistance management, Pyrifluquinazon Insecticide contains a Group 9B insecticide. Any insecticide population may contain individuals naturally resistant to Pyrifluquinazon Insecticide and other Group 9B insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

[Sub-Label A: Outdoor Crop Use]

To delay insecticide/acaricide resistance, take the following steps:

- Rotate the use of Pyrifluquinazon Insecticide or other Group 9B insecticides within a growing season, or among growing seasons, with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group that are equally effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):
    - Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
    - Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management.
    - When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
    - Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
    - The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide/acaricides use that includes scouting, uses historical information related to pesticide use, crop rotation, record keeping, and which considers cultural, biological and other chemical control practices.
- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance contact Nichino America representatives at 1-888-740-7700.

MIXING DIRECTIONS

Shake well before using. Read and follow all label directions for each tankmix product prior to any tank mixing with PYRIFLUQUINAZON insecticide. This product can be mixed with other registered pesticides for use on labeled crops or sites, in accordance with the most restrictive use directions and precautions. Do not exceed any labeled dose rate.

[Sub-Label A: Outdoor Crop Use]

It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

PYRIFLUQUINAZON Insecticide Alone: Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and then turn on agitation. Pour recommended amount of product on the surface of water in the spray tank. Add the remaining water volume to the spray tank with agitation running. Keep agitation running during filling and spraying operations. If spraying must be stopped before emptying the sprayer, resume agitation before spraying the remainder of the load.

PYRIFLUQUINAZON insecticide is physically and biologically compatible with many registered pesticides, fertilizers, or micronutrients. Contact your supplier for advice when considering mixing PYRIFLUQUINAZON insecticide with other pesticides, fertilizers, or micronutrients. If you have no experience with the combination you are considering, you should conduct a test to determine physical compatibility. To determine physical compatibility, add the recommended proportions of each chemical with the same proportion of water, as will be present in the chemical supply tank, into a suitable container, mix thoroughly and allow to stand for five minutes. If the combination remains mixed, or can be readily re-mixed, the mixture is considered physically compatible.

PYRIFLUQUINAZON Insecticide Tank Mixtures: Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and turn on agitation. If using a buffering agent, add after filling the tank with ¾ amount of water. Add the recommended amount of tankmix products in the following order while maintaining agitation:

1) products in water-soluble packets
2) wettable powders
3) water-dispersible granulars and/or soluble powders
4) flowable liquids (including PYRIFLUQUINAZON insecticide)
5) emulsifiable concentrates
6) adjuvants and/or oils
7) remaining amount of water to achieve the desired level

APPLICATION DIRECTIONS

- Applications should be made immediately after the spray solution is prepared.
- Apply with properly calibrated spray equipment.
- Apply by ground using the recommended water spray volume found in the **Application Rate Chart for PYRIFLUQUINAZON Insecticide** section of this label.
- Applications may be made by ground with high or low volume spray equipment that provides thorough spray coverage of the plant.
- Do not apply PYRIFLUQUINAZON insecticide through any type of irrigation system, except those described in the CHEMIGATION section.

[Sub-Label A: Outdoor Crop Use]

- For best results, apply when pest populations are beginning to build, before reaching economic thresholds. Consult your local agricultural advisor, state cooperative extension service, or regional Nichino America representative for further information.

USE RECOMMENDATIONS

- Use sufficient water volume to ensure thorough coverage of foliage. Thorough spray coverage is critical to obtain control of the target pest(s).
- Apply when pest populations are beginning to build, or as directed under application directions for specific crops.

APPLICATION RESTRICTIONS

- Chemigation is limited to [*Brassica* head and stem vegetables (crop group 5-16),] [cotton,] [cucurbit vegetables (crop group 9),] [fruiting vegetables (crop group 8-10),] [leaf petiole vegetables (crop subgroup 22B),] [leafy vegetables (crop group 4-16),] [tuberous and corm vegetables (crop subgroup 1C)] only.
- Do not apply by air.

ROTATIONAL CROP RESTRICTIONS:

Crop	Plantback Timing
All crops on this label	0 days after application
Herbs (Crop Subgroup 19A) Stalk and Stem Vegetable (Crop Subgroup 22A)	60 days after application
All other crops	365 days after application

CHEMIGATION

Apply this product alone or in combination with other products which are registered for application through irrigation systems.

- Apply this product only through center pivot, solid set, hand move, or moving wheel irrigation systems. Do not apply this product through any other type of irrigation system.
- Crop injury, lack of performance, 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.
- Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 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.

[Sub-Label A: Outdoor Crop Use]

Chemigation Systems Connected to Public Water Systems

- Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, 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.
- Apply by chemigation using a minimum of 0.10 to 0.25 acre-inches of water.

Sprinkler Chemigation

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

[Sub-Label A: Outdoor Crop Use]

- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

Chemigation Calibration and Application Instructions

Apply PYRIFLUQUINAZON insecticide under the schedule specified in the Use Directions, not according to the irrigation schedule unless the events coincide. The following calibration and application techniques are provided for user reference, but do not constitute a warranty of fitness for application through sprinkler irrigation equipment. Check with state and local regulatory agencies for potential use restrictions before applying any agricultural chemical through sprinkler irrigation equipment.

Center Pivot Irrigation Equipment:

Notes: (1) Use only drive systems which provide uniform water distribution. (2) Do not use end guns when chemigating PYRIFLUQUINAZON insecticide to avoid non-uniform application. (3) Plug the first nozzle closest to the well head to protect the water source.

1. Determine the size of the area to be treated.
2. Determine the time required to apply ¼ - ½ inch of water over the area to be treated when the system and injection system area operate at normal pressures as recommended by the equipment manufacturer. Run the system at 80-95% of the manufacturer's rated maximum travel speed.
3. Using water, determine the injection pump output when operated at normal line pressure.
4. Determine the amount of PYRIFLUQUINAZON insecticide and any tankmix partners required to treat the area covered by the irrigation system.
5. Add to the solution tank the required amount of PYRIFLUQUINAZON insecticide and tankmix partners, and sufficient water to meet the injection time requirements.
6. Make sure the system is fully charged with water before starting injection of the PYRIFLUQUINAZON insecticide solution. Time the injection to last at least as long as it takes to bring the system to full pressure.
7. Maintain constant agitation in the solution tank during the injection period.
8. Inject the specified amount of PYRIFLUQUINAZON insecticide per acre continuously for one complete revolution of the system.
9. Stop the injection equipment after treatment is completed. Continue to operate the system until the PYRIFLUQUINAZON insecticide solution has cleared all of the sprinkler heads.

[Sub-Label A: Outdoor Crop Use]

10. Allow time for all lines to flush the PYRIFLUQUINAZON insecticide solution through all nozzles before turning off irrigation water.
11. Apply using a minimum of 0.10 to 0.25 acre-inches of water.

Solid Set, Hand Move, and Moving Wheel Irrigation Equipment:

1. Determine the acreage covered by the sprinklers.
2. Fill injector solution tank with plain water and calibrate the flow rate of the system to deliver the contents of the tank over a 20-40 minute time interval.
3. Determine the amount of PYRIFLUQUINAZON insecticide required to treat the area covered by the irrigation system.
4. Add the required amount of PYRIFLUQUINAZON insecticide and any other tankmix partners into the same quantity of water used to calibrate the injection period.
5. Operate the system at the same pressure and time interval established during the calibration.
6. Inject specified amount of PYRIFLUQUINAZON insecticide per acre for: (1) a 20-40 minute period at the end of a regular irrigation set; or (2) as a 20-40 minute injection as a separate application not associated with a regular irrigation to maximize retention of the insecticide on the foliage.
7. Maintain constant agitation in the solution tank during the injection period.
8. Stop injection equipment after treatment is completed. Continue to operate the system until the PYRIFLUQUINAZON insecticide solution has cleared the last sprinkler head. To ensure lines are flushed and free from remaining pesticides, a dye indicator may be injected into the lines to mark the end of the application period.
9. Apply using a minimum of 0.10 to 0.25 acre-inches of water.

Chemigation Monitoring: A person knowledgeable of the chemigation system and equipment responsible for its operation, or under the supervision of a responsible person, shall shut the system down and make necessary adjustments should the need arise. Follow the appropriate personal protective equipment (PPE) guidelines.

SPRAY ADJUVANTS

For maximum performance, the use of an agricultural spray adjuvant with PYRIFLUQUINAZON insecticide is recommended to increase spray coverage of the crops and pests being treated. Select an adjuvant that is labeled for agricultural use and follow its use directions.

SPRAY DRIFT MANAGEMENT

Avoid spray drift to all other crops and nontarget areas. Do not apply when weather conditions may cause drift. Do not allow this product to drift onto nontarget areas. Drift may result in illegal residues or injury to adjacent crops and vegetation.

[Sub-Label A: Outdoor Crop Use]

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

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

Droplet size, boom height, and wind speed are the primary factors determining drift. The specific application conditions required for the use of this product are described below.

Controlling Droplet Size – General Techniques:
Volume
Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

Pressure
Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.

Boom Height:
Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. The boom should remain level with the crop and have minimal bounce.

Wind
Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. Do not apply when wind speed is greater than 10 mph. Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY CONDITIONS. **Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. This cloud can move in unpredictable directions due to the light and variable winds common

during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning.

Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. 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.

Sensitive Areas
The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Shielded Sprayers
Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with the uniform deposition of the product.

Air Assisted (Air Blast) Field Crop Sprayers
Air assisted field crop sprayers carry droplets to the target via a downward directed air stream. Some may reduce the potential for drift, but if a sprayer is unsuitable for the application and/or set up improperly, high drift potential can result. It is the responsibility of the applicator to determine that a sprayer is suitable for the intended application, is configured properly, and that drift is not occurring.
Note: Air assisted field sprayers can affect product performance by affecting spray coverage and canopy penetration.

Air Assisted (Air Blast) Tree and Vine Sprayers
Air assisted tree and vine sprayers carry droplets into the canopy of trees and vines via a radially or laterally directed air stream. In addition to the general drift management practices already described, the following specific practices will further reduce the potential for drift:

- Adjust the deflectors and aiming devices so that spray is only directed into the canopy.
- Block off upward pointed nozzles when there is no overhanging canopy.
- Use only enough air volume to penetrate the canopy and provide good coverage.
- Do not allow spray to go beyond the edge of the cultivated area. Spray the outside row only from outside the planting.

[Sub-Label A: Outdoor Crop Use]

APPLICATION RATE CHART FOR PYRIFLUQUINAZON INSECTICIDE

Brassica Head and Stem Vegetables (Crop Group 5-16) [Not for use in California] broccoli; Brussels sprouts; cabbage; cabbage, Chinese napa; cauliflower; cultivars, varieties, and hybrids of these commodities		
Pest	**Rate/Acre**	**Directions for Use**
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Do not apply more than 14.4 fl oz (0.210 lb ai) per acre per year. • Do not make more than 6 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

Citrus Fruits (Crop Group 10-10) [Not for use in California] Australian desert lime; Australian finger lime; Australian round lime; Brown River finger lime; calamondin; citron; citrus hybrids; grapefruit; Japanese summer grapefruit; kumquat; lemon; lime; Mediterranean mandarin; Mount White lime; New Guinea wild lime; orange, sour; orange, sweet; pummelo; Russell River lime; satsuma mandarin; sweet lime; tachibana orange; Tahiti lime; tangelo; tangerine (mandarin, clementine); tangor; trifoliate orange; uniq fruit; cultivars, varieties, and/or hybrids of these		
Pest	**Rate/Acre**	**Directions for Use**
Citrus thrips	6.4 fl oz (0.094 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 100 gallons of water per acre. • Do not apply by air. • Do not apply through any type of irrigation system. • Do not apply to citrus nurseries or citrus in greenhouses. • Do not apply by Alternate Row Middle (ARM) spray method. • In Florida, do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • In all other states, do not apply more than 12.8 fl oz (0.187 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day • Do not apply this product while bees are foraging. • Do not apply this product until flowering is complete and all petals have fallen.
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	

Cotton [Not for use in California]		
Pest	**Rate/Acre**	**Directions for Use**
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 7 days
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

Cucurbit Vegetables (Crop Group 9) [Not for use in California]
chayote (fruit); Chinese waxgourd (Chinese preserving melon); citron melon; cucumber; gherkin; gourd, edible (includes hyotan, cucuzza, hechima, Chinese okra); *Momordica spp* (includes balsam apple, balsam pear, bitter melon, Chinese cucumber); muskmelon (hybrids and/or cultivars of *Cucumis melo*) (includes true cantaloupe, cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, and snake melon); pumpkin; squash, summer (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini); squash, winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash); watermelon (includes hybrids and/or varieties of *Citrullus lanatus*).

Pest	Rate/Acre	Directions for Use
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • Do not apply more than 4.8 fl oz (0.070 lb ai) per crop cycle. • Do not make more than 2 applications per crop cycle. • Do not apply more than 9.6 fl oz (0.140 lb ai) per acre per year. • Do not make more than 4 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day
Leafhoppers	3.2 fl oz (0.047 lb ai)	
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

Fruiting Vegetables (Crop Group 8-10) [Not for use in California]
African eggplant; bush tomato; cocona; currant tomato; eggplant; garden huckleberry; goji berry; groundcherry; martynia; naranjilla; okra; pea eggplant; pepino; pepper, bell; pepper, nonbell; roselle; scarlet eggplant; sunberry; tomatillo; tomato; tree tomato; cultivars, varieties, and/or hybrids of these

Pest	Rate/Acre	Directions for Use
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Do not apply more than 9.6 fl oz (0.140 lb ai) per acre per year. • Do not make more than 4 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day
Leafhoppers	3.2 fl oz (0.047 lb ai)	
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

Leaf Petiole Vegetables (Crop Subgroup 22B) [Not for use in California]
cardoon; celery; celery, Chinese; fuki; rhubarb; udo; zuiki; cultivars, varieties, and hybrids of these commodities

Pest	Rate/Acre	Directions for Use
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Do not apply more than 14.4 fl oz (0.210 lb ai) per acre per year. • Do not make more than 6 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

Leafy Vegetables (Crop Group 4-16) [Not for use in California] amaranth, Chinese; amaranth, leafy; arugula; aster, Indian; blackjack; broccoli, Chinese; broccoli raab; cabbage, abyssinian; cabbage, Chinese, bok choy; cabbage, seakale; cat's whiskers; cham-chwi; cham-na-mul; chervil, fresh leaves; chipilin; chrysanthemum, garland; cilantro, fresh leaves; collards; corn salad; cosmos; cress, garden; cress, upland; dandelion, leaves; dang-gwi, leaves; dillweed; dock; dol-nam-mul; ebolo; endive; escarole; fameflower; feather cockscomb; Good King Henry; hanover salad; huauzontle; jute, leaves; kale; lettuce, bitter; lettuce, head; lettuce, leaf; maca, leaves; mizuna; mustard greens; orach; parsley, fresh leaves; plantain, buckhorn; primrose, English; purslane, garden; purslane, winter; radicchio; radish, leaves; rape greens; rocket, wild; shepherd's purse; spinach; spinach, Malabar; spinach, New Zealand; spinach, tanier; Swiss chard; turnip greens; violet, Chinese, leaves; watercress; cultivars, varieties, and hybrids of these commodities		
Pest	**Rate/Acre**	**Directions for Use**
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • For applications made to watercress, production fields must be drained of water at least 24 hours prior to application and water must not be reapplied to the field for a minimum of 24 hours following the application. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Do not apply more than 14.4 fl oz (0.210 lb ai) per acre per year. • Do not make more than 6 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 1 day
Whiteflies	1.6 to 3.2 fl oz (0.023 to 0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

Pome Fruits (Crop Group 11-10) [Not for use in California] apple; azarole; crabapple; loquat; mayhaw; medlar; pear; pear, Asian; quince; quince, Chinese; quince, Japanese; tejocote; cultivars, varieties, and/or hybrids of these		
Pest	**Rate/Acre**	**Directions for Use**
Aphids (excluding woolly apple aphid)	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 100 gallons of water per acre. • Do not apply by air. • Do not apply through any type of irrigation system. • Do not apply by Alternate Row Middle (ARM) spray method. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 14 days

Small Fruit Vine Climbing (Crop Subgroup 13-07F) excluding fuzzy kiwifruit [Not for use in California] Amur River grape; gooseberry; grape; kiwifruit, hardy; Maypop; schisandra berry; cultivars, varieties, and/or hybrids of these		
Pest	**Rate/Acre**	**Directions for Use**
Leafhoppers Mealybugs	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 100 gallons of water per acre. • Do not apply by air. • Do not apply through any type of irrigation system. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 3 days

[Sub-Label A: Outdoor Crop Use]

Stone Fruits (Crop Group 12-12) [Not for use in California] apricot; apricot, Japanese; capulin; cherry, black; cherry, Nanking; cherry, sweet; cherry, tart; Jujube, Chinese; nectarine; peach; plum; plum, American; plum, beach; plum, Canada; plum, cherry; plum, Chickasaw; plum, Damson; plum, Japanese; plum, Klamath; plum, prune; plumcot; sloe; cultivars, varieties, and/or hybrids of these		
Pest	**Rate/Acre**	**Directions for Use**
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 100 gallons of water per acre. • Do not apply by air. • Do not apply through any type of irrigation system. • Do not apply by Alternate Row Middle (ARM) spray method. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 7 days

[Sub-Label A: Outdoor Crop Use]

Tree Nuts (Crop Group 14-12) [Not for use in California]
African nut-tree; almond; beechnut; Brazil nut; Brazilian pine; bunya; bur oak; butternut; Cajou nut; candlenut; cashew; chestnut; chinquapin; coconut; coquito nut; dika nut; ginkgo; Guiana chestnut; hazelnut (filbert); heartnut; hickory nut; Japanese horse-chestnut; macadamia nut; mongongo nut; monkey-pot; monkey puzzle nut; Okari nut; Pachira nut; peach palm nut; pecan; pequi; Pili nut; pine nut; pistachio; Sapucaia nut; tropical almond; walnut, black; walnut, English; yellowhorn; cultivars, varieties, and/or hybrids of these

Pest	Rate/Acre	Directions for Use
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 100 gallons of water per acre. • Do not apply by air. • Do not apply through any type of irrigation system. • Do not apply by Alternate Row Middle (ARM) spray method. • Do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 7 days between applications. • Preharvest interval (PHI): 7 days
Mealybugs	3.2 fl oz (0.047 lb ai)	

Tuberous and Corm Vegetables (Crop Subgroup 1C) [Not for use in California]
arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; canna, edible; cassava, bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; potato; sweet potato; tanier; turmeric; yam bean; yam, true

Pest	Rate/Acre	Directions for Use
Aphids	2.4 to 3.2 fl oz (0.035 to 0.047 lb ai)	**USE RESTRICTIONS** • Apply by ground using a minimum of 20 gallons of water per acre. • Do not apply by air. • In Florida, do not apply more than 4.8 fl oz (0.070 lb ai) per acre per year. • In all other states, do not apply more than 6.4 fl oz (0.094 lb ai) per acre per year. • Do not make more than 2 applications per year. • Allow a minimum of 14 days between applications. • Preharvest interval (PHI): 14 days • Do not feed tops to livestock.
Potato psyllid	3.2 fl oz (0.047 lb ai)	

[Sub-Label A: Outdoor Crop Use]

IMPORTANT: READ BEFORE USE

By using this product, user or buyer accepts the following conditions, warranty, disclaimer of warranties, and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be accurate and must be followed carefully. However, because of extreme weather and soil conditions, use methods and other factors beyond the control of Nichino America, Inc. (NAI), it is impossible for NAI to eliminate all risks associated with the use of this product. As a result, crop injury or ineffectiveness is always possible. To the extent consistent with applicable law, all such risks are assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of NAI is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, NAI disclaims any liability whatsoever for incidental or consequential damages, including, but not limited to, liability arising out of breach of contract, express or implied warranty (including warranties of merchantability and fitness for a particular purpose), tort, negligence, strict liability, or otherwise.

LIMITATIONS OF LIABILITY: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT THE ELECTION OF NICHINO AMERICA, THE REPLACEMENT OF PRODUCT.

Protected by Patent Number 645535

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

For Indoor Greenhouse Use on Lettuce, Tomato, Pepper, Cucumber, and Ornamental Plants

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Use of this product in residential areas is prohibited.

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.

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

- Coveralls
- Chemical-resistant gloves, made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, polyvinyl chloride (PVC) ≥ 14 mils, or Viton® ≥ 14 mils.
- Shoes plus socks

GENERAL INFORMATION
PYRIFLUQUINAZON Insecticide is formulated as a suspension concentrate containing 1.87 lbs. of active ingredient per gallon. PYRIFLUQUINAZON Insecticide works primarily through contact action, by ingestion, and is translaminar.
PYRIFLUQUINAZON Insecticide should be used in a program with other products to provide season long protection. Apply as a spray as directed in the "Application Directions" section of this label.

RESISTANCE MANAGEMENT
For resistance management, Pyrifluquinazon Insecticide contains a Group 9B insecticide. Any insecticide population may contain individuals naturally resistant to Pyrifluquinazon Insecticide and other Group 9B insecticides. The resistant individuals

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed. To delay insecticide/acaricide resistance, take the following steps:

- Rotate the use of Pyrifluquinazon Insecticide or other Group 9B insecticides within a growing season, or among growing seasons, with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group that are equally effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):
  - Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
  - Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management.
  - When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
  - Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
  - The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide/acaricides use that includes scouting, uses historical information related to pesticide use, crop rotation, record keeping, and which considers cultural, biological and other chemical control practices.
- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance contact Nichino America representatives at 1-888-740-7700.

MIXING DIRECTIONS

Shake well before using. Read and follow all label directions for each tankmix product prior to any tank mixing with PYRIFLUQUINAZON Insecticide. This product can be mixed with other registered pesticides for use on labeled crops or sites, in accordance with the most restrictive use directions and precautions. Do not exceed any labeled dose rate.

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

PYRIFLUQUINAZON Insecticide Alone: Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and then turn on agitation. Pour recommended amount of product on the surface of water in the spray tank. Add the remaining water volume to the spray tank with agitation running. Keep agitation running during filling and spraying operations. If spraying must be stopped before emptying the sprayer, resume agitation before spraying the remainder of the load.

PYRIFLUQUINAZON Insecticide is physically and biologically compatible with many registered pesticides, fertilizers, or micronutrients. Contact your supplier for advice when considering mixing PYRIFLUQUINAZON Insecticide with other pesticides, fertilizers, or micronutrients. If you have no experience with the combination you are considering, you should conduct a test to determine physical compatibility. To determine physical compatibility, add the recommended proportions of each chemical with the same proportion of water, as will be present in the chemical supply tank, into a suitable container, mix thoroughly and allow to stand for five minutes. If the combination remains mixed, or can be readily re-mixed, the mixture is considered physically compatible.

PYRIFLUQUINAZON Insecticide Tank Mixtures: Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and turn on agitation. If using a buffering agent, add after filling the tank with ¾ amount of water. Add the recommended amount of tankmix products in the following order while maintaining agitation:

1) products in water-soluble packets
2) wettable powders
3) water-dispersible granulars and/or soluble powders
4) flowable liquids (including PYRIFLUQUINAZON Insecticide)
5) emulsifiable concentrates
6) adjuvants and/or oils
7) remaining amount of water to achieve the desired level

APPLICATION DIRECTIONS

The use directions for this product are based on the results of product testing programs on a wide variety of plants. No evidence of phytotoxic effects was observed. However, not all plant species and their varieties and cultivars have been tested with possible tank-mix combinations, sequential pesticide treatments, and adjuvants and surfactants. Local conditions also can influence crop tolerance and may not match those under which testing has been conducted. Therefore, before using PYRIFLUQUINAZON Insecticide, test the product on a sample of the crop to be treated to ensure that a phytotoxic response will not occur as a result of applications.

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

PYRIFLUQUINAZON Insecticide works primarily through contact action, by ingestion, and is translaminar, so thorough spray coverage is necessary for control of listed insects on the label. Applications should be made immediately after the spray solution is prepared. Under severe insect pressure, use the maximum rates and the shorter spray interval as specified on the label. Dense foliage or excessive growth will often prevent adequate coverage; adjust spray volumes accordingly. Mix with sufficient water and apply as a foliar spray to obtain uniform coverage. Treat plants when pests are immature or at a susceptible stage and populations are building, before crop damage occurs.

Applications may be made with high or low volume spray equipment that provides thorough coverage of the plant. Apply with properly calibrated spray equipment. A wetting agent or other spray adjuvant, approved for use on the crop, may be added to spray solutions according to the manufacturer's use instructions to achieve optimum control.

USE RECOMMENDATIONS
Apply in sufficient water to obtain complete coverage of all plant parts. Follow the spray equipment manufacturer's directions to determine the amount of spray solution required to obtain thorough coverage. Consult the spray equipment manufacturer's operator's manual, spray nozzle catalogs and/or your crop advisor for more information.

APPLICATION RESTRICTIONS
Chemigation is limited to [greenhouse lettuce,] [greenhouse tomato,] [greenhouse pepper,] [and] [greenhouse cucumber] only.

CHEMIGATION
Apply PYRIFLUQUINAZON Insecticide only through overhead irrigation, or handheld or motorized calibrated irrigation equipment.

Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. Do not connect an irrigation system used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers, or other experts.

The normal dilution ratio is 1:10 to 1:200, depending on the system. Always meter the product into the irrigation water during the first part of the irrigation cycle. The product may be mixed separately prior to injection. Agitation may be necessary if the mixture is allowed to stand more than 24 hours.

Remove scale, pesticide residue and other foreign matter from the tank and entire irrigation system.

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Chemigation Monitoring: A person knowledgeable of the chemigation system and equipment responsible for its operation, or under the supervision of a responsible person, shall shut the system down and make necessary adjustments should the need arise. Follow the appropriate personal protective equipment (PPE) guidelines.

USE RESTRICTIONS FOR INDOOR GREENHOUSE USE

- **Florida**: Do not compost any discarded plant materials that have been treated within this product.
- Do not apply this product as a smoke or aerosol.
- Do not harvest cut flowers for 48 hours after spraying.
- Do not compost any discarded plant materials that have been treated with this product.
- Do not apply this product to plants used for food or animal feed that are not listed on this label.
- Do not apply to fruit trees and vines that will bear harvestable fruit within 12 months.

CONTROLLING PESTICIDE RUNOFF IN GREENHOUSES

Do not allow pesticide spray solution to run off outside of the application area. Do not use in greenhouses that discharge irrigation runoff to surface water drains. If applied in an area with a non-permeable floor and a floor drainage system, excess application spray or irrigation runoff must be collected and subjected to secondary wastewater treatment.

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

APPLICATION RATE CHART FOR PYRIFLUQUINAZON INSECTICIDE

GREENHOUSE CUCUMBERS, LETTUCE, PEPPERS, AND TOMATOES [Not for use in California]		
Pest	**Dilution Rate**	**Directions for Use**
Whiteflies	1.6 to 3.2 fl oz / 100 gallons 47 to 95 mL / 100 gallons (0.023 to 0.047 lb ai / 100 gallons)	**USE RESTRICTIONS** • 100 gallons of finished spray solution will typically cover 20,000 sq. ft. of greenhouse. • . • Do not make more than 2 applications per crop cycle. • Lettuce, tomatoes and cucumbers: Allow a minimum of 10 days between applications. • Peppers: Allow a minimum of 7 days between applications. • Preharvest Interval (PHI): 1 day • Do not apply in Ultra Low Volume Equipment.
Aphids	2.4 to 3.2 fl oz / 100 gallons 71 to 95 mL / 100 gallons (0.035 to 0.047 lb ai / 100 gallons)	
Leafhoppers (except lettuce)	3.2 fl oz / 100 gallons 95 mL / 100 gallons (0.047 lb ai / 100 gallons)	

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

GREENHOUSE ORNAMENTAL PLANTS		
Pests	**Dilution Rate**	**Directions for Use**
Whiteflies	1.6 to 3.2 fl oz / 100 gallons 47 to 95 mL / 100 gallons (0.023 to 0.047 lb ai / 100 gallons)	**USE RESTRICTIONS** • 100 gallons of finished spray solution will typically cover 20,000 sq. ft. of greenhouse. • Do not apply more than 12.8 fl oz or 378 mL (0.187 lb ai) per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow a minimum of 10 days between applications. • Use in sufficient volume to obtain uniform plant coverage. • Do not harvest cut flowers for 48 hours after spraying.
Aphids Leafhoppers Chilli Thrips	2.4 to 3.2 fl oz / 100 gallons 71 to 95 mL / 100 gallons (0.035 to 0.047 lb ai / 100 gallons)	
Mealybugs	6.4 fl oz / 100 gallons 189 mL / 100 gallons (0.094 lb ai / 100 gallons)	

[Sub-Label B: Greenhouse Crop and Greenhouse Ornamental Use]

IMPORTANT: READ BEFORE USE

By using this product, user or buyer accepts the following conditions, warranty, disclaimer of warranties, and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be accurate and must be followed carefully. However, because of extreme weather and soil conditions, use methods and other factors beyond the control of Nichino America, Inc. (NAI), it is impossible for NAI to eliminate all risks associated with the use of this product. As a result, crop injury or ineffectiveness is always possible. To the extent consistent with applicable law, all such risks are assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of NAI is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, NAI disclaims any liability whatsoever for incidental or consequential damages, including, but not limited to, liability arising out of breach of contract, express or implied warranty (including warranties of merchantability and fitness for a particular purpose), tort, negligence, strict liability, or otherwise.

LIMITATIONS OF LIABILITY: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT THE ELECTION OF NICHINO AMERICA, THE REPLACEMENT OF PRODUCT.

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