



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

MEMORANDUM

Date: December 8, 2004

Subject: Fluazifop-P-butyl. Revised TRED - Report on FQPA Tolerance Reassessment Progress and Interim Risk Management Decisions. Residue Chemistry Considerations. Case No. 2285.

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Table of Contents

| | |
|--|----|
| Executive Summary | 4 |
| Residue Chemistry Deficiencies | 5 |
| Background | 5 |
| RESIDUE CHARACTERIZATION | 8 |
| 860.1200 Directions for Use | 8 |
| Product List | 8 |
| Use Pattern Table | 8 |
| 860.1300 Nature of the Residue - Plants | 9 |
| Soybean: | 9 |
| Carrot: | 10 |
| Celery: | 11 |
| Grape: | 12 |
| Sugar beet: | 12 |
| 860.1300 Nature of the Residue - Livestock | 13 |
| 860.1340 Residue Analytical Methods | 14 |
| Enforcement methods: | 14 |
| Data collection methods: | 14 |
| 860.1360 Multiresidue Methods | 15 |
| 860.1380 Storage Stability | 15 |
| 860.1400 Water, Fish, and Irrigated Crops | 15 |
| 860.1460 Food Handling | 16 |
| 860.1480 Meat, Milk, Poultry, and Eggs | 16 |
| 860.1500 Crop Field Trials | 17 |
| Root and Tuber Vegetable Group (Group 1) | 18 |
| Bulb Vegetable Group (Group 3) | 18 |
| Leafy Vegetable Group (except Brassica) (Group 4) | 19 |
| Legume Vegetable Group (Group 6) | 19 |
| Foliage of Legume Vegetable Group (Group 7) | 20 |
| Fruiting Vegetable Group (Group 8) | 20 |
| Stone Fruit Group (Group 12) | 21 |
| Tree Nut Group (Group 14) | 21 |
| Miscellaneous Commodities | 22 |
| Nonfood Uses | 23 |
| 860.1520 Processed Food and Feed | 24 |
| 860.1650 Submittal of Analytical Reference Standards | 24 |
| 860.1850 Confined Accumulation in Rotational Crops | 25 |
| 860.1900 Field Accumulation in Rotational Crops | 25 |
| | |
| Residue Chemistry Science Assessment for Reregistration of Fluazifop-P-butyl (PC Code 122809). | 26 |
| | |
| TOLERANCE REASSESSMENT SUMMARY | 32 |
| Tolerance Reassessments for Fluazifop-P-butyl | 32 |

| | |
|--|----|
| Tolerances Listed Under 40 CFR §180.411(a)(1): | 33 |
| Tolerances Listed Under 40 CFR §180.411(a)(2): | 33 |
| The established tolerance for spinach should be revoked. There are currently no registered uses of fluazifop-P-butyl on spinach. | |
| <u>Tolerances To Be Proposed Under 40 CFR §180.411(a):</u> | 34 |
| Tolerances Listed Under 40 CFR §180.411(c)(1): | 34 |
| Tolerances Listed Under 40 CFR §180.411(c)(2): | 34 |
| Proposed Tolerances: | 34 |
| Tolerance Reassessment Summary for Fluazifop-P-butyl. | 35 |
| Codex/International Harmonization | 36 |
| BIBLIOGRAPHY | 37 |
| Study Citations | 37 |
| Agency Memoranda Citations | 43 |
| APPENDIX 1 | 45 |

Executive Summary

Fluazifop-P-butyl [(*R*)-2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic acid, butyl ester] is a selective herbicide registered for use to provide postemergence control of perennial and annual grass weeds. Fluazifop-P-butyl is currently registered for food/feed use on apricot, asparagus, carrot, cherry, coffee, cotton, endive (escarole), garlic, macadamia nut, nectarine, onion, peach, pecan, pepper, plum, prune, rhubarb, soybean, sweet potato, and yam. Fluazifop-P-butyl products are registered in the U.S. to Syngenta Crop Protection, Inc. under the trade names Fusilade®, Fusion®, and Typhoon®. Currently, the 0.086, 0.47, 1, 2, and 4 lb/gal emulsifiable concentrate (EC) formulations of fluazifop-P-butyl are registered for use on food/feed crops. The products are typically applied as postemergence foliar or soil applications using ground or aerial equipment; preplant, at-planting and/or postharvest applications (to the plant) are also registered for some crops.

Fluazifop-P-butyl is the resolved isomer (R enantiomer) of fluazifop-butyl [(*R,S*)-2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic acid, butyl ester]. The fluazifop-butyl isomers are List B chemicals. Fluazifop-butyl (PC code 122805) has been canceled, and only fluazifop-P-butyl is being supported for reregistration.

The nature of the residue in plants and livestock is not adequately understood; additional plant metabolism studies with a root crop and a leafy vegetable, as well as ruminant and poultry metabolism studies must be submitted. In a meeting on March 3, 2004, the Metabolism Assessment Review Committee (MARC) concluded that for tolerance expression, parent and fluazifop-acid (free and conjugated) are the residues of concern since they are adequate to determine misuse (DP Barcode: 298939, S. Kinard, 6/22/04).

Tolerances are established under 40 CFR §180.411(a)(1) and (c)(1) for residues of fluazifop-butyl and free and conjugated fluazifop, expressed as fluazifop, in/on cotton commodities, soybean commodities, tabasco pepper, and animal commodities, and under §180.411(a)(2) and (c)(2) for residues of fluazifop-P-butyl and free and conjugated fluazifop (R isomer), expressed as fluazifop, in/on asparagus, carrots, coffee, endive, stone fruit, macadamia nuts, onion, pecans, rhubarb, spinach, and sweet potatoes.

For enforcement of tolerances for fluazifop-P-butyl residues of concern, an HPLC/UV method is available for crop commodities, and HPLC/UV and GC/MS methods are available for animal commodities. The stated quantitation limits are 0.02-0.05 ppm for crop commodities, 0.01 ppm for milk, and 0.02 ppm for animal tissues.

The Phase 4 Reviews for fluazifop-butyl and fluazifop-P-butyl were completed 2/26/91. The Phase 4 Reviews identified many studies that were adequate for Phase 5 review; however, Phase 5 review of these studies has not yet been completed. The information contained in this document outlines the Residue Chemistry Science Assessments with respect to the Report on FQPA Tolerance Reassessment Progress and Interim Risk Management Decisions (TRED) for fluazifop-P-butyl.

Residue Chemistry Deficiencies

- Several label amendments are required.
- New plant metabolism studies, with a root crop and a leafy vegetable, must be submitted.
- New livestock metabolism studies, with ruminants and poultry, must be submitted.
- The tolerance enforcement methods must be radiovalidated in conjunction with the required plant and animal metabolism studies.
- The registrant must submit a regulatory method for poultry eggs.
- Additional storage stability data are needed for the following commodities: asparagus, carrot, coffee, cotton meal, cotton hulls, cotton refined oil, peppers, soybean meal, soybean hulls, soybean refined oil, stone fruit, prunes, sweet potato, poultry tissues, and eggs. Additional storage stability data are needed to support the required crop field trial and processing studies.
- Additional crop field trial data are required for asparagus, carrot, cotton seed, cotton gin byproducts, and dry bulb onion.
- A coffee processing study must be submitted.
- New confined rotational crop studies must be submitted.
- The available analytical reference standard for the resolved isomer of fluazifop has expired (2/03). An updated certificate of analysis or a new lot of standard must be submitted.

Background

The PC Code and nomenclature of fluazifop-P-butyl are listed below in Table 1, and the physicochemical properties of fluazifop-P-butyl are listed in Table 2. The chemical names and structures of fluazifop-P-butyl residues of concern are presented in Table 3.

| | |
|--------------------------------------|---|
| Chemical structure | |
| Common name | Fluazifop-P-butyl |
| Molecular Formula | C ₁₉ H ₂₀ F ₃ NO ₄ |
| Molecular Weight | 383.37 |
| IUPAC Name | butyl (2 <i>R</i>)-2-(4-{[5-(trifluoromethyl)pyridin-2-yl]oxy} phenoxy)propanoate |
| CAS Name | (<i>R</i>)- 2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic acid, butyl ester |
| CAS Registry Number | 79241-46-6 |
| PC Code | 122809 |
| Current Food/Feed Site Registrations | Apricot, asparagus, carrot, cherry, coffee, cotton, endive (escarole), garlic, macadamia nut, nectarine, onion, peach, pecan, pepper, plum, prune, rhubarb, soybeans, sweet potato, yam |

| Parameter | Value | Reference |
|--|--|--|
| Melting point/range | Decomposes at 210 °C 164 °C at 0.02 mm Hg | 2002 Farm Chemicals Handbook RCB No. 1674, 2/3/87, L. Cheng |
| pH | Not dispersible in water | RCB No. 1674, 2/3/87, L. Cheng |
| Density | 1.22 g/cc (PAI) and 1.20 g/cc (T) at 20 °C | RCB No. 809, 6/3/86, L. Cheng |
| Water solubility | 1 mg/L | RCB No. 1674, 2/3/87, L. Cheng |
| Solvent solubility | Soluble in most organic solvents >500 g/L in acetone, dichloromethane, ethyl acetate, hexane, methanol, toluene, and xylene | 2002 Farm Chemicals Handbook RCB No. 1674, 2/3/87, L. Cheng |
| Vapor pressure | 3 x 10 ⁻⁸ KPa at 20 °C | RCB No. 809, 6/3/86, L. Cheng |
| Dissociation constant, pK _a | -3.1 (by calculation) | RCB No. 809, 6/3/86, L. Cheng |
| Octanol/water partition coefficient, Log(K _{ow}) | 4.5 at 20 °C | RCB No. 809, 6/3/86, L. Cheng |
| UV/visible absorption spectrum | not available | |

| Table 3. Chemical Names and Structures of Fluazifop-P-butyl and its Residues of Concern. | | |
|--|--|-----------|
| Common Name | Chemical Name | Structure |
| Fluazifop-P-butyl | (<i>R</i>)-2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoic acid, butyl ester | |
| Fluazifop-butyl | (<i>R,S</i>)-2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)-propanoic acid, butyl ester | |
| Fluazifop, resolved isomer | (<i>R</i>)-2-(4-[5-(trifluoromethyl)-2-pyridinyloxy]phenoxy)propionic acid | |
| Fluazifop | 2-(4-[5-(trifluoromethyl)-2-pyridinyloxy]phenoxy)propionic acid | |

RESIDUE CHARACTERIZATION

860.1200 Directions for Use

Product List

An August 7, 03 product registration query of the Agency's OPPIN database identified seven end-use products (EPs) containing fluazifop-P-butyl as the active ingredient which are registered to Syngenta Crop Protection, Inc. for food/feed uses. These EPs, as well as all active Special Local Need (SLN) registrations, are listed in Table 4.

| EPA Reg. No. | Formulation | Product Name |
|-----------------------|-------------------------|-------------------------|
| 100-994 | 2 lb/gal EC (24.9%) | PP005 2E Herbicide |
| 100-1003 | 1 lb/gal EC (13%) | Fusilade 2000 Herbicide |
| 100-1059 | 2 lb/gal EC (24.15%) | Fusion Herbicide |
| 100-1069 | 4 lb/gal EC (43.8%) | Fusilade 4 EC Herbicide |
| 100-1070 ¹ | 2 lb/gal EC (24.5%) | Fusilade DX Herbicide |
| 100-1071 | 0.47 lb/gal EC (5.3%) | Typhoon Herbicide |
| 100-1116 | 0.086 lb/gal EC (1.02%) | Typhoon D Herbicide |

¹ Including SLN Nos. CA970023, LA950002, LA950013, PR970004, and WA950029.

Use Pattern Table

A comprehensive summary of the registered food/feed use patterns of fluazifop-P-butyl, as prepared by the Biological and Economic Analysis Division (BEAD), is presented in Appendix 1. A tabular summary of the residue chemistry science assessments for reregistration of fluazifop-P-butyl is presented in Table 6. The conclusions listed in Table 6 regarding the reregistration eligibility of fluazifop-P-butyl food/feed uses are based on the use patterns to be supported by the basic producer, Syngenta Crop Protection, Inc. When end-use product DCIs are developed, Registration Division (RD) should require that all end-use product labels (e.g., MAI labels, SLNs, and products subject to the generic data exemption) be amended such that they are consistent with the basic producer's labels.

The registrant must submit translated copies of labels for all foreign uses of fluazifop-P-butyl on coffee destined for import into the U.S. In addition, the following label amendments are required:

- All product labels which contain use directions for Florigraze perennial peanuts must be amended to refer to this crop as “‘Florigraze’ rhizoma peanuts” or “‘Florigraze’ perennial (rhizoma) peanuts.”

- According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product includes uses on nonbearing ginseng, olive, and/or small fruits. All labels which include these uses must be modified to specify that the crop may not be harvested for food/feed use within one year of treatment.
- According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product lists a maximum seasonal rate of 0.75 lb ai/A for soybean. The affected label(s) must be modified to specify a maximum seasonal application rate of 0.5 lb ai/A to soybeans, to be consistent with the basic producer's labels.
- According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product lists a 14-day PHI for pecans. The affected label(s) must be modified to specify a 30-day PHI for pecans, to be consistent with the basic producer's labels.
- The rotational crop restriction on the product labels for EPA Reg. Nos. 100-1071 and 100-1116 which prohibits the grazing of rotated small grain crops and the harvesting of these crops for livestock forage and straw is impractical and must be removed.

860.1300 Nature of the Residue - Plants

The nature of the residue in soybeans is understood. New plant metabolism studies with a root/tuber crop (such as carrot or sweet potato) and a leafy vegetable (such as endive or celery) must be submitted.

ICI Americas, Inc., now known as Syngenta Crop Protection, Inc., previously submitted metabolism studies with carrots, celery, grapes, soybeans, and sugar beets. These studies have been reviewed by HED. The soybean study was found to be adequate to satisfy data requirements. The carrot, celery, and sugar beet studies were found to be inadequate to satisfy data requirements because of insufficient characterization/identification of radioactive residues, failure to characterize/identify residues in major crop commodities (carrot and sugar beet tops), failure to confirm metabolite identifications using a second method, and/or the lack of supporting storage stability information/data. The grape metabolism study was found to be unacceptable to describe the metabolism of fluazifop-P-butyl in grapes because no characterization of residues was conducted; it was concluded that the study may be used to provide an indication of the levels of radioactivity taken up by grape plants following soil treatment. Brief descriptions of each of the studies follow.

Soybean: Total radioactive residues (TRR) were 11.1 ppm in soybeans collected 63 days following a single foliar application of [phenyl-¹⁴C] fluazifop-butyl (racemic mixture) at 0.91 lb ai/A (1.8x the maximum seasonal rate according to the BEAD table). The foliage was not collected or analyzed; product labels currently bear a restriction against grazing or harvesting forage or hay. Soybeans were subjected to extraction and characterization/identification of residues. Unconjugated fluazifop (compound II) was found to account for 28% TRR, lipophilic conjugates of fluazifop were found to account for 23.4% TRR, and polar conjugates of 2-(4-

hydroxyphenoxy)propionic acid (compound III) were found to account for 25.5% TRR. The lipophilic conjugates consisted of fluzifop conjugated with glyceride esters, some of which were identified as glycerol dioleate, glycerol dilinoleate, and a hybrid oleate-linoleate ester of glycerol. The maximum residue of any individual lipophilic conjugate of fluzifop was <7.2%. The unidentified portion of the residue, 19.4% TRR, consisted of unextracted radioactivity (3.5%), unidentified ether-soluble radioactivity containing at least 6 compounds (8.3%), and water-soluble radioactivity (7.8%). Therefore, the majority of the residue in soybeans was found to be fluzifop acid in free or conjugated forms.

HED notes that the above study was accepted (in 1991) even though the molecule was only labeled in one ring, and the identification of 2-(4-hydroxyphenoxy)propionic acid indicates that the molecule does split between the two rings.

Carrot: In the carrot study, test substances of [phenyl- ^{14}C]fluzifop-butyl, [pyridyl- ^{14}C]fluzifop-butyl, and [phenyl- ^{14}C]fluzifop-P-butyl were each applied as a single foliar broadcast spray to immature carrot plants (64 days after planting) at 0.451-0.475 lb ai/A (fluzifop-butyl; ~0.6x the maximum seasonal rate) or 0.219 lb ai/A (fluzifop-P-butyl; 0.3x the maximum seasonal rate). Mature carrot roots were harvested 46 days following treatment; carrot tops were not collected for analysis. TRR were 0.18 and 0.33 ppm in carrot roots treated with [phenyl- ^{14}C]fluzifop-butyl and [pyridyl- ^{14}C]fluzifop-butyl, respectively. TRR were 0.15 ppm in carrot roots treated with [phenyl- ^{14}C]fluzifop-P-butyl.

Fluzifop was the major residue identified in **fluzifop-butyl phenyl label roots**, accounting for 45.7% TRR (28.9% TRR free and 16.8% TRR conjugated). The metabolites 2-[4-(5-trifluoromethyl-2-pyridyloxy)phenoxy]propanol (11.3% TRR free and 1.8% TRR conjugated) and 2-(4-hydroxyphenoxy)propionic acid (4.8% TRR conjugated) were also identified.

Fluzifop was the major residue identified in **fluzifop-butyl pyridyl label roots**, accounting for 43.5% TRR (25.6% TRR free and 17.9% TRR conjugated). The metabolite 2-[4-(5-trifluoromethyl-2-pyridyloxy)phenoxy]propanol (7.7% TRR free and 2.8% TRR conjugated) was also identified in fluzifop-butyl pyridyl label roots. Based on ^{19}F -NMR analysis, the registrant estimated that ~4.4% and ~1% TRR were present in carrot roots as polar conjugates of an unknown (U4) and 5-trifluoromethyl-2-(1H)pyridone, respectively. Because U4 was observed in the ^{19}F -NMR spectrum, the registrant concluded that it contained a CF_3 moiety.

Fluzifop was the major residue identified in **fluzifop-P-butyl phenyl label roots**, accounting for 63.1% TRR (38.6% TRR free and 24.5% TRR conjugated). The metabolite 2-(4-hydroxyphenoxy)propionic acid (6.4% TRR conjugated) was also identified. ^{19}F -NMR analysis of the organosoluble phase following acid hydrolysis of aqueous-soluble residues indicated the presence of 5-trifluoromethyl-2-(1H)pyridone and U4, in a similar ratio to the ratio observed in the ^{19}F -NMR spectrum of fluzifop-butyl pyridyl label roots. Based on the fact that U4 was not observed in the TLC analysis of this fraction, the registrant concluded that U4 did not contain the phenyl ring and was formed by cleavage of fluzifop at the central linkage. The registrant concluded that 5-trifluoromethyl-2-(1H)pyridone and U4 were not formed stereospecifically

from the R- or S-enantiomers of fluazifop.

Because the metabolite 2-[4-(5-trifluoromethyl-2-pyridyloxy)phenoxy]propanol was observed only at trace levels (<1% TRR) in carrot roots treated with fluazifop-P-butyl but accounted for ~10% TRR in carrot roots treated with fluazifop-butyl, the registrant concluded that 2-[4-(5-trifluoromethyl-2-pyridyloxy)phenoxy]propanol was formed stereospecifically from the S-enantiomer of fluazifop-butyl. The registrant also concluded that additional unknowns (U1 and U2/U3) characterized (each present at <7% TRR, ≤0.021 ppm) in the organosoluble fraction of fluazifop-butyl phenyl and pyridyl label root extracts contained an intact diphenyl ether moiety (because they were found in roots from both labels). In addition, because these unknowns were not found in fluazifop-P-butyl phenyl label roots, the registrant concluded that they were formed by the metabolism of the S-enantiomer of fluazifop-butyl and not the R-enantiomer.

Celery: In the celery study, [phenyl-¹⁴C]fluazifop-P-butyl and [pyridyl-¹⁴C]fluazifop-P-butyl were each applied as two foliar broadcast spray applications to celery plants 35 and 50 days after transplanting. For the phenyl label study, celery plants received 0.40 lb ai/A at the first application and 0.16 lb ai/A at the second application, for a total rate of 0.56 lb ai/A (0.75x the maximum seasonal rate for leafy vegetables). For the pyridyl label study, celery plants received 0.37 lb ai/A at the first application and 0.32 lb ai/A at the second application, for a total application rate of 0.70 lb ai/A (0.9x the maximum seasonal rate for leafy vegetables). Mature celery plants were harvested 30 days following treatment, and the stem and top leaves were separated for analysis. TRR were 0.31 and 0.05 ppm, respectively, in celery leaves and stem treated with [phenyl-¹⁴C]fluazifop-P-butyl and were 0.64 and 0.08 ppm, respectively, in celery leaves and stem treated with [pyridyl-¹⁴C]fluazifop-P-butyl.

In **phenyl label stem**, fluazifop was the major residue identified (11.0% TRR free, 31.4% TRR conjugated). Metabolites 2-(4-hydroxyphenoxy) propionic acid (18.2% TRR conjugated) and 2-[4-(3-hydroxy-5-trifluoromethyl-2-pyridyloxy)phenoxy]propionic acid (4.2% TRR conjugated) were also identified. In **phenyl label leaves**, fluazifop was the major residue identified (4.7% TRR free, 47.9% TRR conjugated); the parent fluazifop-P-butyl was also identified at minor levels (2.0% TRR). Metabolites 2-(4-hydroxyphenoxy) propionic acid (7.9% TRR conjugated) and 2-[4-(3-hydroxy-5-trifluoromethyl-2-pyridyloxy)phenoxy]propionic acid (2.0% TRR conjugated) were also identified. In addition, 2-[4-(5-trifluoromethyl-2-pyridyloxy)phenoxy]propanol was identified at very low levels (<1% TRR conjugated).

In **pyridyl label stem**, fluazifop was the major residue identified (10.0% TRR free, 29.6% TRR conjugated). Metabolites 5-trifluoromethyl-2-pyridone (2.0% TRR free, 0.8% TRR conjugated) and 2-[4-(3-hydroxy-5-trifluoromethyl-2-pyridyloxy)phenoxy]propionic acid (1.1% TRR conjugated) were also identified. In **pyridyl label leaves**, fluazifop was the major residue identified (2.7% TRR free, 60.0% TRR conjugated). Metabolites 5-trifluoromethyl-2-pyridone (9.6% TRR free) and N-[1-carboxy-2-(5-trifluoromethyl-2-pyridylthio)ethyl]malonic acid (5.1% TRR free) were also identified. In addition, 2-[4-(3-hydroxy-5-trifluoromethyl-2-pyridyloxy)phenoxy]propionic acid was identified at very low levels (<1% TRR conjugated).

The registrant stated that a portion of the unidentified aqueous-soluble residues, 6.8% TRR, was due to 5-trifluoromethyl-2-pyridone; however, no explanation was provided for this statement. If this 6.8% TRR is in addition to the 9.6% TRR identified in the original extracts, 5-trifluoromethyl-2-pyridone would account for 16.4% TRR (0.104 ppm) in celery leaves.

HED notes that this study is classified as unacceptable since the application rate used in the study does not reflect the maximum seasonal application rate. Although fluazifop-P-butyl is not registered for use on celery, the maximum seasonal application rates are in the range of 0.75 lb ai/A for vegetables to 1.125 lb ai/A for stone fruit. Thus if this study is to be representative of leafy vegetables, a higher application rate should have been used.

Grape: In the grape study, a mixture of [phenyl- ^{14}C]fluazifop-P-butyl and [pyridyl- ^{14}C]fluazifop-P-butyl was applied as three basal spray applications to a single grape vine. The first application was made at the early bunch formation stage at 0.60 lb ai/A; the second application was made 42 days later at 0.15 lb ai/A; and the third application was made 29 days after the second application at 0.68 lb ai/A. The total application rate was 1.42 lb ai/A (1.3x the maximum seasonal rate to orchard crops). Immature grapes were harvested 21 and 30 days following the first application and 3 and 18 days following the second application, and mature grapes were harvested 14 and 30 days following the third application. TRR were <0.01 ppm in immature and mature grapes harvested from all sampling intervals. The maximum TRR (0.009 ppm) were observed in mature grapes harvested 30 days following the last of the three basal applications. No characterization/identification of residues was conducted.

A separate subsample of mature grapes harvested 14 days following the third basal application, with a TRR of 0.007 ppm, was processed into juice and pulp to determine the distribution of radioactivity. Radioactivity in juice and pulp were 0.006 and 0.013 ppm, respectively. The registrant concluded that residues do not concentrate in juice but may concentrate (2x) in pulp.

Sugar beet: In the sugar beet study, [phenyl- ^{14}C]fluazifop-butyl and [pyridyl- ^{14}C]fluazifop-butyl were each applied as a single direct application to the foliage of sugar beet plants at the six-leaf stage and to the surrounding soil at ~2.6 lb ai/A (3.5x the maximum seasonal rate for root and tuber vegetables). Mature sugar beet roots were harvested ~90 days following treatment; sugar beet tops were not collected for analysis. TRR were 0.049 and 0.096 ppm in phenyl and pyridyl label sugar beet roots, respectively. Sugar beet roots were initially surface washed with water and ACN, which removed ~3% TRR from the phenyl label roots and ~25% TRR from the pyridyl label roots; however, radioactivity in the surface washes was not characterized/identified. Fluazifop (18.4% TRR free, 2.9% TRR conjugated and 3.4% TRR bound) and the metabolite 2-(4-hydroxyphenoxy) propionic acid (7.3% TRR conjugated) were tentatively identified in **phenyl label roots**. Fluazifop (9.2% TRR free, ~4% TRR conjugated, and 0.7% TRR bound) and the metabolite 5-trifluoromethyl-2-pyridone (6.3% TRR free, 18.2% TRR conjugated, and 2.7% TRR bound) were tentatively identified in **pyridyl label roots**. Acid and base hydrolyses confirmed that conjugated 5-trifluoromethyl-2-pyridone is a metabolite of fluazifop-butyl in sugar beet root and not a degradate of fluazifop resulting from hydrolysis. Additional analyses confirmed the incorporation of radioactivity into sucrose, accounting for

~4% TRR.

860.1300 Nature of the Residue - Livestock

The qualitative nature of the residue in livestock is not understood. New metabolism studies for ruminants and poultry must be submitted.

ICI Americas, Inc., now known as Syngenta Crop Protection, Inc., submitted metabolism studies with dairy cattle and laying hens. These studies have been reviewed by HED and determined to be inadequate to satisfy data requirements because the dosing levels were too low to allow elucidation of the nature of the residue in livestock.

In the dairy cattle study, one cow was dosed with a mixture of [phenyl-¹⁴C]fluazifop-butyl and [pyridyl-¹⁴C]fluazifop-butyl at 2.49 ppm in the diet (0.55x the maximum theoretical dietary burden to dairy cattle; see Table 5). The cow was dosed twice per day for 7 consecutive days. TRR were 0.012-0.048 ppm in milk, 0.002-0.005 ppm in fat, 0.039 ppm in kidney, 0.024 ppm in liver, and 0.001 ppm in muscle. The majority (81.2%) of the administered dose was excreted, mostly in the urine (at least 78.1%). Fluazifop (free and conjugated) was identified as the major component in all cow tissues, at 36.9% TRR (<0.001 ppm) in muscle, 31.8% TRR (<0.002 ppm) in fat, 61.0% TRR (0.024 ppm) in kidney, and 61.7% TRR (0.014 ppm) in liver. The majority of the radioactivity in milk was lipophilic in nature and was converted to fluazifop upon base hydrolysis (67.7% TRR, 0.030 ppm); TLC analysis of the major extract prior to base hydrolysis indicated that the major residue in milk was a triglyceride ester(s) of fluazifop. The metabolite 2-(4-hydroxyphenoxy)-5-trifluoromethyl pyridine was the only other metabolite identified, at 11.8% TRR (0.005 ppm) in kidney and 10.3% TRR (0.002 ppm) in liver.

In the poultry study, test substances of [phenyl-¹⁴C]fluazifop-butyl and [pyridyl-¹⁴C]fluazifop-butyl were each administered to a single laying hen at an average of 2.6 ppm (phenyl label) or 2.2 ppm (pyridyl label) in the diet (2.6x and 2.2x, respectively, the maximum theoretical dietary burden to poultry; see Table 5). The hens were dosed once a day for 14 consecutive days. TRR were <0.001-0.021 ppm in egg yolk, 0.002-0.008 ppm in egg albumen, 0.040-0.045 ppm in fat (peritoneal and subcutaneous), 0.027 ppm in liver, and 0.004-0.005 ppm in muscle (breast and leg) from the hen dosed with [phenyl-¹⁴C]fluazifop-butyl, and were <0.001-0.021 ppm in egg yolk, 0.001-0.003 ppm in egg albumen, 0.029-0.039 ppm in fat (peritoneal and subcutaneous), 0.077 ppm in liver, and 0.008-0.011 ppm in muscle (breast and leg) from the hen dosed with [pyridyl-¹⁴C]fluazifop-butyl. Radioactivity was highest in fat and liver, and lowest in muscle and egg albumen. The majority of the administered dose (97-98%) was found to have been excreted.

For the **phenyl label** hen, fluazifop was identified as the major component in all matrices, at 51.3% TRR (<0.003 ppm) in muscle, 69.7% TRR (0.019 ppm) in liver, and 85.1% TRR (<0.003 ppm) in egg albumen. The majority of the radioactivity in egg yolk and fat was lipophilic in nature. In egg yolk, the majority of the radioactivity in the lipophilic fraction was

found to co-chromatograph with the isomeric dipalmityl triglyceride esters of fluazifop. In egg yolk and fat, a large portion of the lipophilic fraction was converted to fluazifop following base hydrolysis, accounting for ~47.3% TRR (0.009 ppm) in egg yolk and 70.8% TRR (0.030 ppm) in fat. Free fluazifop was also identified in egg yolk at ~12.4% TRR (0.002 ppm).

For the **pyridyl label** hen, fluazifop was identified as the major component in all matrices, at 68.0% TRR (0.007 ppm) in muscle and 65.9% TRR (0.051 ppm) in liver. The majority of the radioactivity in egg and fat was lipophilic in nature; a large portion was found to co-chromatograph with the isomeric dipalmityl triglyceride esters of fluazifop. In addition, the majority of this radioactivity was converted to fluazifop following base hydrolysis, accounting for 40.5% TRR (0.007 ppm) in whole egg and 65.3% TRR (0.022 ppm) in fat. Free fluazifop was also identified in whole egg at 15.3% TRR (0.003 ppm).

860.1340 Residue Analytical Methods

Enforcement methods: For enforcement of tolerances for fluazifop-P-butyl residues of concern, PAM Vol. II lists two methods, Method I for animal tissues and milk and Method II for oily and non-oily crops. The stated detection limits are 0.02-0.05 ppm for crops, 0.01 ppm for milk, and 0.02 ppm for animal tissues. In Method I, samples (except fat) are extracted with acetonitrile/acetone/hexane, which separates residues of fluazifop and fluazifop-butyl (found in the acetonitrile/acetone layer) from residues of fluazifop lipophilic conjugates (found in the hexane layer). Fluazifop and fluazifop-butyl are determined in milk by HPLC/UV; in tissue samples, fluazifop-butyl is converted to fluazifop via hydrolysis, and then fluazifop residues are methylated using diazomethane, and determined by GC/MS. Fluazifop lipophilic conjugates (for both milk and tissue samples) are cleaned up by Florisil chromatography, hydrolyzed to fluazifop, and determined by HPLC/UV. For fat, samples are extracted with chloroform/methanol at reflux (2 hours) and residues of fluazifop, fluazifop-butyl, and lipophilic conjugates are hydrolyzed to fluazifop, methylated, and determined by GC/MS.

For Method II, residues of fluazifop-butyl, fluazifop, and any ester or acid conjugates are extracted from crop samples using acetonitrile and hydrochloric acid. Residues are then hydrolyzed to fluazifop and cleaned up using a coagulation procedure, solvent partitioning, and silica column chromatography for determination by HPLC/UV. Residues may be confirmed by GC/MS, following methylation with diazomethane.

Neither of the enforcement methods distinguish the optical isomers of fluazifop-butyl or fluazifop.

No radiovalidation data are available for the enforcement methods; radiovalidation studies should be conducted in conjunction with the required plant and animal metabolism studies. In addition, the registrant must submit a regulatory method for poultry eggs.

Data collection methods: A GC/MS method (RR 91-014B) and an HPLC/UV method

(modification of ICI Method #62) were used for the determination of total fluazifop residues in asparagus. These methods are similar to PAM Vol. II Method II.

Five methods for the determination of total fluazifop residues in plant commodities were addressed in the 2/26/91 Phase 4 Review. All methods involve acid or base extraction/hydrolysis of the crop sample, with residue determination by HPLC or ¹⁹F-NMR. Residues may be confirmed using GC/MS after derivatization with diazomethane. None of the methods distinguish the optical isomers of fluazifop-butyl or fluazifop.

860.1360 Multiresidue Methods

The FDA PESTDATA database dated 11/01 (PAM Volume I, Appendix I) indicates that fluazifop-butyl is completely recovered using Multiresidue Methods Sections 302 (Luke Method; Protocol D) and 303 (Mills, Onley, and Gaither Method; Protocol E, nonfatty food); recovery using Section 304 (Mills Method; Protocol F, fatty food) is variable.

860.1380 Storage Stability

The reregistration requirements for storage stability data are not fulfilled. The 2/26/91 Phase 4 Review concluded that additional storage stability data were needed for the following commodities: asparagus, carrot, coffee, cotton meal, cotton hulls, cotton refined oil, soybean meal, soybean hulls, soybean refined oil, stone fruit, prunes, sweet potato, poultry tissues, and eggs. We note that crop field trial data for asparagus, carrot, cotton seed, cotton gin byproducts, and dry bulb onion, and a processing study for coffee are required; storage stability data to support those studies will be required unless samples are analyzed within one month of collection, or adequate supporting storage stability data are already available.

The Phase 4 Review stated that storage stability data are available for field-weathered residues in samples of sugar beets, strawberries, rapeseed oil, green beans, cauliflower, soybeans, celery, tomatoes, and peanuts, as well as for fortified residues in onions. Samples were stored frozen at -20 °C and analyzed for residues of fluazifop at intervals ranging 3-28 months. Storage stability data for metabolite 5-trifluoromethyl-2-pyridone in onion, peanuts, apples, lettuce, and soybeans are also available. These data have not been reviewed; the Phase 4 Review concluded that the data were acceptable for review.

The 2/26/91 Phase 4 Review stated that total fluazifop residues were stable in milk and kidney samples from the feeding study during 3 months (kidney) or 6 months (milk) of storage at -22 °C.

Samples of asparagus from the crop field trials used for tolerance reassessment were stored frozen for up to 7 months prior to analysis. Information concerning storage intervals for other crops will be addressed on Phase 5 Review of the submitted field trial data.

860.1400 Water, Fish, and Irrigated Crops

Fluazifop-P-butyl is presently not registered for direct use on water and aquatic food and feed crops; therefore, no residue chemistry data are required under these guideline topics.

860.1460 Food Handling

Fluazifop-P-butyl is presently not registered for use in food-handling establishments; therefore, no residue chemistry data are required under this guideline topic.

860.1480 Meat, Milk, Poultry, and Eggs

Pending determination of the adequacy of the available livestock feeding studies during Phase 5 review, the reregistration requirements for magnitude of the residue in meat, milk, poultry, and eggs are satisfied.

Currently, there are no registered direct animal treatments of fluazifop-P-butyl to livestock. However, fluazifop-P-butyl is registered for use on the following crops with animal feedstuffs: carrot, cotton, and soybean. The tentative maximum theoretical dietary burdens of fluazifop-P-butyl to livestock are presented in Table 5. We note that these calculations are tentative because plant and animal metabolism studies remain outstanding, and several crop field trial studies have not undergone Phase 5 review. It should also be noted that there are currently label restrictions against the grazing or harvesting of soybean forage and hay; these restrictions are appropriate, according to Table 1 of 860.1000.

| Table 5. Calculation of maximum dietary burdens of fluazifop-P-butyl to livestock. | | | | |
|---|---------------------------|---------------------|---------------------------|---|
| Feedstuff | % Dry Matter ¹ | % Diet ¹ | Estimated Tolerance (ppm) | Dietary Contribution (ppm) ² |
| Beef and Dairy Cattle | | | | |
| Carrot, culls | 12 | 25 | 2.00 | 4.167 |
| Soybean, meal | 92 | 15 | 2.00 | 0.326 |
| TOTAL BURDEN | | 40 ³ | | 4.49 |
| Poultry | | | | |
| Soybean, seed | -- | 20 | 1.00 | 0.200 |
| Soybean, meal | -- | 40 | 2.00 | 0.800 |
| TOTAL BURDEN | | 60 ³ | | 1.00 |

| Table 5. Calculation of maximum dietary burdens of fluazifop-P-butyl to livestock. | | | | |
|---|---------------------------|---------------------|---------------------------|---|
| Feedstuff | % Dry Matter ¹ | % Diet ¹ | Estimated Tolerance (ppm) | Dietary Contribution (ppm) ² |
| Swine | | | | |
| Carrot, culls | -- | 10 | 2.00 | 0.200 |
| Soybean, meal | -- | 25 | 2.00 | 0.500 |
| TOTAL BURDEN | | 35 ³ | | 0.70 |

¹ Table 1 (OPPTS Guideline 860.1000).

² Contribution = ([tolerance /% DM] X % diet) for beef and dairy cattle; Contribution = (tolerance X % diet) for poultry and swine.

³ The remainder of the diet will be composed of feedstuffs derived from crops that do not have fluazifop-P-butyl uses.

A summary of the available cattle feeding study was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, four cows were dosed with fluazifop-butyl for 28 days at 0.2, 0.8, 3.0, and 12.0 ppm in the diet. It was noted that results for residues in muscle were not presented; it was not clear whether the data were simply not included in the summary document or muscle samples were not analyzed. The registrant should note that residue data for cattle muscle tissue are required to support fluazifop-P-butyl reregistration.

A summary of the available poultry feeding study was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. Three groups of chickens were dosed with fluazifop-butyl for 28 days at 0.5, 2.5, and 12.5 ppm in the diet. It was noted that results were presented for combined fat and muscle tissues, instead of separate analyses of these tissues. In addition, storage stability data for poultry commodities must be submitted.

860.1500 Crop Field Trials

The reregistration requirements for magnitude of the residue in plants are not fulfilled for asparagus, carrot, cotton seed, cotton gin byproducts, and dry bulb onion. Pending determination of the adequacy of the available crop field trial data during Phase 5 review, reregistration requirements are fulfilled for coffee bean, endive, macadamia nut, pecan, rhubarb, soybean seed and aspirated grain fractions, stone fruit group, sweet potato, and tabasco pepper. When the required data for dry bulb onion have been submitted, they may be translated to support fluazifop-P-butyl use on garlic.

The 2/26/91 Phase 4 Review stated that the registrant would not be supporting use on spinach, and there are currently no registered uses of fluazifop-P-butyl on spinach. Therefore, the established tolerance for residues in/on spinach will be revoked.

A summary of the available data as well as outstanding data requirements for each crop is presented below.

Root and Tuber Vegetable Group (Group 1)

Carrot: Currently, fluazifop-P-butyl is registered for use on carrot at a maximum seasonal rate of 0.75 lb ai/A with a 45-day PHI. A summary of carrot crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review but that additional crop field trials would be needed. In the study, carrots were harvested 19-52 days following the last of two or three applications of various EC formulations at 0.25-1.0 lb ai/A/application, for total application rates of 0.75-2.0 lb ai/A (1x-2.7x the maximum seasonal rate). A total of 46 trials were conducted in AR, CA, FL, NY, TX, and WI (only one trial was conducted in CA). The Phase 4 Review concluded that additional crop field trial data from CA and WA must be submitted. It was noted that storage stability data were required to support the study.

Sweet potato: Currently, fluazifop-P-butyl is registered for use on sweet potato at a maximum seasonal rate of 0.75 lb ai/A with a 55-day PHI. A summary of sweet potato crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was minimally adequate for review. In the study, sweet potatoes were harvested up to 117 days following the last of one or two applications of various EC formulations at 0.25-1.0 lb ai/A. A total of 14 trials were conducted in CA, LA, and NC; however, it was noted that in six of the trials, the PHIs (83-117 days) greatly exceeded the established PHI (55 days). Residues in roots were ≤ 0.5 ppm.

Bulb Vegetable Group (Group 3)

Garlic: Currently, fluazifop-P-butyl is registered for use on garlic at a maximum seasonal rate of 0.75 lb ai/A with a 45-day PHI. No crop field trial data for garlic are available; however, 40 CFR §180.1(h) specifies that a tolerance for dry bulb onion also applies to garlic. Therefore, data to support the established tolerance for fluazifop-P-butyl residues in/on dry bulb onions may be translated to support use on garlic.

Onion, bulb: Currently, fluazifop-P-butyl is registered for use on dry bulb onion at a maximum seasonal rate of 0.75 lb ai/A with a 45-day PHI. A summary of onion crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review but that additional crop field trials would be needed. In the study, bulb onions were treated with the 1, 2, or 4 lb/gal EC formulation as two applications at total rates of 0.375-1.0 lb ai/A/application, for total rates of 0.75-2.0 lb ai/A (1x-2.7x the maximum seasonal rate). A total of 39 trials were conducted in CA (15), CO (6), FL (3), GA (2), NY (3), TX (10), and WA (1); however, it was noted that in four of the trials (one each in NY, TX, WA, and WI), the PHIs

greatly exceeded the established PHI. The maximum residue observed was 0.48 ppm, from a CA trial conducted at 2.7x. The Phase 4 Review concluded that additional crop field trial data from ID and MI must be submitted.

Leafy Vegetable Group (except Brassica) (Group 4)

Endive: Currently, fluazifop-P-butyl is registered for use on endive at a maximum seasonal rate of 0.75 lb ai/A with a 28-day PHI. A summary of endive crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, endive was harvested 28-30 days following the last of two applications of the 1 lb/gal EC formulation at 0.375 lb ai/A/application or 0.75 lb ai/A/application, for total application rates of 0.75 lb ai/A (1x the maximum seasonal rate) or 1.5 lb ai/A (2x). Tests were conducted in FL and OH. In addition, tests were conducted in AR in which endive was harvested 30 days following a single application of the 1 lb/gal EC formulation at 0.375 or 0.75 lb ai/A (0.5x or 1x). Residues were ≤ 0.1 ppm in all samples except samples from OH, which bore residues of 0.331-0.833 ppm.

Rhubarb: Currently, fluazifop-P-butyl is registered for use on rhubarb grown in MD and NJ at a maximum seasonal rate of 0.56 lb ai/A with a 14-day PHI. A summary of rhubarb crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, rhubarb plots in MD were treated three times at 0.4 lb ai/A/application, for a total application rate of 1.2 lb ai/A (2.1x the maximum seasonal rate), or three times at 0.8 lb ai/A/application, for a total application rate of 2.4 lb ai/A (4.3x the maximum seasonal rate). The Phase 4 Review noted that two samples from the higher rate study bore residues above the tolerance.

Spinach: The 2/26/91 Phase 4 Review stated that the registrant would not be supporting use on spinach, and there are currently no registered uses of fluazifop-P-butyl on spinach. Therefore, the established tolerance for residues in/on spinach will be revoked.

Legume Vegetable Group (Group 6)

Soybean, seed and aspirated grain fractions: Currently, fluazifop-P-butyl is registered for use on soybeans at a maximum seasonal rate of 0.5 lb ai/A with a 90-day PHI; the last application is to be made prior to bloom. A summary of soybean crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. The study included the results of 43 trials conducted in 11 states and 9 trials conducted in ON, Canada. One or two applications were made postemergence to soybeans at total seasonal rates of 0.5-1.75 lb ai/A (1x-3.5x the maximum seasonal rate according to the BEAD table).

Neither the crop field trial submission nor the processing study appeared to include any data for soybean aspirated grain fractions. Because fluazifop-P-butyl applications are to be made to soybeans prior to seed head formation, data for aspirated grain fractions will not be required.

Foliage of Legume Vegetable Group (Group 7)

Soybean, forage and hay: Currently, product labels bear a restriction against the grazing or harvesting of treated soybean forage or hay. Therefore, crop field trial data for soybean forage and hay are not required.

Fruiting Vegetable Group (Group 8)

Pepper, chili: The results from this trial show that the maximum fluazifop residues for whole chili peppers at a pre-harvest interval (PHI) of 45 days and a total application rate of 0.75 lb ai/A is 0.50 ppm. At a PHI of 45 days and a total application rate of 1.25 lb ai/A, the results show that the maximum fluazifop residues for whole chili peppers is 0.97 ppm; however, analysis of two fortified control samples used to determine the validity of the analytical method resulted in an average recovery of only 66.5 percent. Residue decline samples were not collected. HED notes that the storage stability data reported a decline in the residues over time; therefore, another storage stability study needs to be conducted to determine the true length of stable frozen storage for fluazifop-butyl residues.

Pepper, cubanelle: The results from this trial has shown that residues of fluazifop-butyl were not detected at or above 0.1 ppm in any of the field trial treatments. The results reflect the use of fluazifop-p-butyl at a PHI of 45 days and at total application rates of 0.25 and 0.50 lb ai/A. With these use patterns, residues of fluazifop are not expected to exceed 0.1 ppm. Two fortified control samples used to determine the validity of the analytical method resulted in an average recovery of only 59 percent. Residue decline samples were not collected. HED notes that the storage stability data reported a decline in the residues over time; therefore, another storage stability study needs to be conducted to determine the true length of stable frozen storage for fluazifop-butyl residues.

Pepper, jalapeno: At total application rates of 0.75 and 1.50 lb ai/A and a PHI of 45 days, the results from this field trial show that the maximum residues of fluazifop (corrected for storage stability) in/on jalapeno peppers 0.38 and 0.77 ppm, respectively. Residue decline samples were not collected. HED notes that the storage stability data reported a decline in the residues over time; therefore, another storage stability study needs to be conducted to determine the true length of stable frozen storage for fluazifop-butyl residues.

Pepper, tabasco: Currently, fluazifop-P-butyl is registered for use on tabasco peppers grown in LA at a maximum seasonal rate of 0.75 lb ai/A with a 45-day PHI. A summary of tabasco pepper crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, tabasco pepper plots in LA were harvested 45 days following two applications at 0.375 lb ai/A/application, for a total application rate of

0.75 lb ai/A (1x the maximum seasonal rate), or two applications at 0.750 lb ai/A/application, for a total application rate of 1.5 lb ai/A (2x the maximum seasonal rate).

Stone Fruit Group (Group 12)

A crop group tolerance has been established for the stone fruit group. The representative commodities of this crop group are cherry, peach, and plum. Summaries of crop field trial studies for these crops were evaluated in the 2/26/91 Phase 4 Review. The studies were deemed acceptable for review but it was noted that supporting storage stability data were required.

Cherry: Currently, fluazifop-P-butyl is registered for use on cherries at a maximum seasonal rate of 1.125 lb ai/A with a 14-day PHI. In the crop field trials, cherries were harvested 14-15 days following the last of three applications of the 1 lb/gal EC formulation to orchard berms and walkways at 0.375 lb ai/A/application, for a total application rate of 1.125 lb ai/A (1x the maximum seasonal rate). Tests were conducted in CA, MI, NY, UT, and WA. Total fluazifop residues were <0.03 ppm in/on all samples.

Peach: Currently, fluazifop-P-butyl is registered for use on peaches at a maximum seasonal rate of 1.125 lb ai/A with a 14-day PHI. In the crop field trials, peaches were harvested 9-14 days following the last of three applications of the 1 lb/gal EC formulation at 0.375 lb ai/A/application, for a total application rate of 1.125 lb ai/A (1x the maximum seasonal rate). Tests were conducted in CA, MI, and WA. Residues were below the detection limit (<0.03 ppm) in/on all samples.

Plum: Currently, fluazifop-P-butyl is registered for use on plums at a maximum seasonal rate of 1.125 lb ai/A with a 14-day PHI. In the crop field trials, plums were harvested 14-15 days following the last of three applications of the 1 lb/gal EC formulation to the berms of plum orchards at 0.375 lb ai/A/application, for a total application rate of 1.125 lb ai/A (1x the maximum seasonal rate). At one site, applications were made at 1.88 lb ai/A/application, for a total application rate of 5.64 lb ai/A. Tests were conducted in CA, MI, OR, and WA using ground equipment. Residues were below the detection limit (<0.02 ppm) in/on all samples.

Tree Nut Group (Group 14)

Macadamia nut: Currently, fluazifop-P-butyl is registered for use on macadamia nuts at a maximum seasonal rate of 0.75 lb ai/A with a 1-day PHI. A summary of macadamia nut crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. At the time of the Phase 4 Review, use on macadamia nuts had been proposed but not registered. In the study, macadamia nuts were harvested 1 and 15 days following the last of three applications of an EC formulation to orchard floor at 0.25 lb ai/A/application, for a total application rate of 0.75 lb ai/A (1x the maximum seasonal rate), or 1.0 lb ai/A/application, for a total application rate of 3.0 lb ai/A (4x). Tests were conducted in HI. Some plots received three more treatments the following season, with PHIs of 1 and 14 days. Residues were <0.10 ppm.

Pecan: Currently, fluazifop-P-butyl is registered for use on pecans at a maximum seasonal rate of 1.125 lb ai/A with a 30-day PHI. A summary of pecan crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, pecans were harvested 30-34 days following the last of three applications of the 1 lb/gal EC formulation to the berms and walkways of pecan orchards at 0.375 lb ai/A/application, for a total application rate of 1.125 lb ai/A (1x the maximum seasonal rate). Tests were conducted in LA(1) and TX(2). Residues were <0.03 ppm. It was noted that although the data are limited, fluazifop-P-butyl is not applied directly to pecans and it does not readily translocate. Therefore, the data were deemed acceptable for review.

Miscellaneous Commodities

Asparagus: Currently, fluazifop-P-butyl is registered for use on asparagus grown in all states except AZ. The maximum seasonal rate is 0.75 lb ai/A in all states except CA, where the maximum seasonal rate is 0.375 lb ai/A; a 1-day PHI has been established. A summary of asparagus crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, asparagus was harvested 1 day following the last of two applications of the 1 lb/gal EC at 0.375 lb ai/A/application and 0.75 lb ai/A/application, for total application rates of 0.75 lb ai/A (1x the maximum seasonal rate) and 1.5 lb ai/A (2x). Tests were conducted in MD and WA. Residues were 0.14-2.2 ppm. It was noted that storage stability data were required to support the study.

Crop field trial data from CA and MI have been reviewed by HED. Total fluazifop residues were 0.3-2.7 ppm in/on asparagus grown in CA and harvested one day following two applications of a 1.0 lb/gal EC formulation at 0.188 lb ai/A/application for a total application rate of 0.376 lb ai/A (1x the maximum seasonal rate in CA). Total fluazifop residues were 1.3-2.2 ppm in/on asparagus grown in MI and harvested one day following two applications, with a 6-day retreatment interval, at 0.375 lb ai/A/application for a total application rate of 0.75 lb ai/A (1x the maximum seasonal rate in MI).

Additional crop field trial data from MD and WA for fluazifop-p-butyl, expressed as total fluazifop, on asparagus. Fluazifop residues in/on asparagus ranged from 1) 0.23 to 0.26 ppm at a total application rate of 0.375 lb ai/A and a PHI of 1 day; 2) 0.30 to 1.45 ppm at a total application rate of 0.75 lb ai/A and PHI of 1 to 8 days, and 3) 1.41 to 3.61 ppm at total application rate of 1.5 lb ai/A and a PHI of 1 day. Ten control samples were analyzed in the Washington field study only, with all recovery values reported below the sensitivity of 0.1 ppm. HED notes that storage stability samples fortified and analyzed as part of the MD and WA studies reported a decline in the residues over time.

Fluazifop-P-butyl is registered for postharvest applications to asparagus plants at a total of 0.75 lb ai/A; these applications are to be made at least 7 months prior to the next asparagus harvest and may be made in addition to preharvest applications to the same plants. No data are available to support this use; crop field trial data to support this use must be submitted.

Alternatively, product labels may be amended to delete this use. Additional field trial studies need to be conducted in Regions 5 (1 trial), 11 (1 trial), and 10 (2 trials) along with additional storage stability data to determine the true length of stable frozen storage for fluazifop residues.

Coffee, bean: Currently, fluazifop-P-butyl is registered for use on coffee grown in HI and PR at a maximum seasonal rate of 0.75 lb ai/A with a 1-day PHI. A summary of coffee crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, coffee cherries were harvested 1 day and 14-15 days following the last of three applications at 0.25 lb ai/A/application and 1.0 lb ai/A/application, for total application rates of 0.75 lb ai/A (1x the maximum seasonal rate) and 3.0 lb ai/A (4x). Tests were conducted at two sites in HI. Combined residues of fluazifop-butyl and regulated metabolites were <0.1 ppm. It was noted that storage stability data were required to support the study.

Cotton seed and cotton gin byproducts: Currently, fluazifop-P-butyl is registered for use on cotton at a maximum seasonal rate of 0.75 lb ai/A with a 90-day PHI. A summary of cotton crop field trials was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was adequate for review but that additional crop field trials were required. In the study, cotton seed was harvested 90-≥99 days following the last of one to three applications of 2 lb/gal or 4 lb/gal EC formulation at total rates of 0.75, 1.0, or 2.0 lb ai/A. A total of 43 trials were conducted in 9 states. It was concluded that additional crop field trial data from CA were required. Residues were below the 0.1-ppm tolerance in all samples except one sample which was harvested 70 days posttreatment (less than the established PHI).

No data are available for cotton gin byproducts. Data must be submitted depicting fluazifop-P-butyl residues of concern in/on cotton gin byproducts, which include burrs, leaves, stem, lint, immature seeds and sand (dirt) obtained from ginning cotton.

Nonfood Uses

Cabbage, Chinese cabbage, kale, spinach, Swiss chard, and table beet: Fluazifop-P-butyl is registered for use in WA on cabbage, Chinese cabbage, kale, spinach, Swiss chard, and table beet grown for seed (EPA SLN No. WA950029). The Agency has previously concluded that uses on these crops grown for seed in WA may be considered nonfood uses (DP Barcode D212168, 2/14/95, B. Schneider and R. Loranger).

Ginseng, olive, small fruits: Fluazifop-P-butyl is registered for use on nonbearing ginseng, olive, and small fruits. Provided that product labels specify that the crop may not be harvested for food/feed uses within one year of treatment, these uses may be considered nonfood uses.

Peanut: Fluazifop-P-butyl is registered for use on nursery stock Florigrade perennial peanuts.

Product labels bear a restriction against grazing or harvesting treated peanuts within one year of treatment. The HED has determined that the registered use may be considered a nonfood use (DP Barcode D189287, 5/6/93, B. Schneider). However, the following label amendment is required to be consistent with proper nomenclature and to avoid confusion: product labels which contain use directions for Florigraze perennial peanuts must be amended to refer to this crop as “‘Florigraze’ rhizoma peanuts” or “‘Florigraze’ perennial (rhizoma) peanuts.”

860.1520 Processed Food and Feed

The reregistration requirements for magnitude of the residue in processed food/feed are tentatively satisfied for cotton, plum and soybean, pending evaluation of the available data during Phase 5 review and submission of adequate supporting storage stability data. The reregistration requirements for magnitude of the residue in processed food/feed are not satisfied for coffee.

No processing data are available for coffee. Data demonstrating fluazifop-P-butyl residues of concern in the processed commodities of coffee (roasted bean and instant coffee) are required. Alternatively, the registrant may demonstrate that fluazifop-P-butyl residues of concern are below the limit of quantitation in coffee beans following treatment at 4.5x the maximum seasonal rate (the maximum theoretical concentration factor for coffee is 4.5x).

A summary of a cotton processing study was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, cotton seed bearing detectable residues (0.41 ppm) was processed into soapstock, refined oil, crude oil, meal, cake, and hulls. Significant concentration of residues was only found for crude oil (1.6x). It was noted that storage stability data are required to support the study.

A summary of a plum processing study was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, plums were treated at 1x and 10x the maximum seasonal rate; no detectable residues of fluazifop-butyl (<0.02 ppm) were observed in prunes from either treatment rate. It was noted that storage stability data are required to support the study.

A summary of a soybean processing study was evaluated in the 2/26/91 Phase 4 Review; it was concluded that the study was acceptable for review. In the study, soybeans bearing field-weathered residues of fluazifop-butyl were processed into hulls, crude oil, refined oil, meal, and soapstock. It was noted that storage stability data are required to support the study.

860.1650 Submittal of Analytical Reference Standards

As of 01/21/04, an analytical reference standard for fluazifop-P-butyl is available at the EPA National Pesticide Standards Repository. An expired analytical reference standard is available

for the resolved isomer of fluzifop (expired 2/03). An updated certificate of analysis or a new lot of standard must be submitted by the registrant.

860.1850 Confined Accumulation in Rotational Crops

The reregistration requirements for confined accumulation in rotational crops are not satisfied. The qualitative nature of the residue in rotational crops is not understood. New confined rotational crop studies must be submitted. The confined rotational crop study has been determined to be inadequate to satisfy data requirements.

Currently, the following plantback interval exists on the product labels for EPA Reg. Nos. 100-994, 100-1003, 100-1059, 100-1069, and 100-1070: a 60-day plantback interval for rotational crops such as corn, sorghum, and cereals. The following plantback intervals exist on the product labels for EPA Reg. Nos. 100-1071 and 100-1116 (MAIs with sodium salt of fomesafen): a 4-month plantback interval for small grains such as wheat, barley, and rye; a 10-month plantback interval for beans, peas, corn, cotton, peanuts, and rice; and an 18-month plantback interval for alfalfa, seed corn, sunflowers, sugar beets, sorghum, or any other crop.

In the current confined rotational crop study, ¹⁴C-Phenyl labeled fluzifop-butyl (Ia) and ¹⁴C-pyridyl labeled fluzifop-butyl (Ib) were applied at 250g/ha to a sandy loam soil and incorporated into the top 5 cm. Lettuce, wheat and sugar beet seeds were sown 30, 121, and 351 days after incorporation of Ia and 29 and 119 days after incorporation of Ib. Crops were grown to maturity and analyzed for total radioactivity content by combustion analysis.

Radioactive residues (expressed as fluzifop-butyl equivalents) were <0.01 ppm in all crops grown to maturity in ¹⁴C-Phenyl labeled fluzifop-butyl treated soil. Radioactive residues (expressed as fluzifop-butyl equivalents) were also <0.01 ppm in lettuce, wheat grain and sugar beet root in ¹⁴C-pyridyl labeled fluzifop-butyl treated soil at (0.33 x Rate) and hence no rotational crop tolerances may be needed; however, in wheat straw and sugar beet foliage residues were 0.10 ppm and 0.03 ppm respectively.

No decision was made on rotational crops due to no information being available on identification of metabolites.

860.1900 Field Accumulation in Rotational Crops

Currently, the following plantback interval exists on the product labels for EPA Reg. Nos. 100-994, 100-1003, 100-1059, 100-1069, and 100-1070: a 60-day plantback interval for rotational crops such as corn, sorghum, and cereals. The following plantback intervals exist on the product labels for EPA Reg. Nos. 100-1071 and 100-1116 (MAIs with sodium salt of fomesafen): a 4-month plantback interval for small grains such as wheat, barley, and rye; a 10-month plantback interval for beans, peas, corn, cotton, peanuts, and rice; and an 18-month plantback interval for alfalfa, seed corn, sunflowers, sugar beets, sorghum, or any other crop. These labels also include

a restriction against the grazing of rotated small grain crops or the harvesting for livestock forage or straw.

The current plantback intervals will be reassessed when new data is received and reviewed. However, the restriction on the product labels for EPA Reg. Nos. 100-1071 and 100-1116 which prohibits the grazing of rotated small grain crops and the harvesting of these crops for livestock forage and straw is impractical and should be removed. Field accumulation data may be required pending confined accumulation data results.

| Table 6. Residue Chemistry Science Assessment for Reregistration of Fluazifop-P-butyl (PC Code 122809). | | | |
|--|-----------------------------------|-------------------------|---|
| GLN Data Requirements | Current Tolerances (ppm) [40 CFR] | Additional Data Needed? | MRID Nos. ¹ |
| 860.1200: Directions for Use | N/A = Not Applicable | Yes ² | See Table 4 and Appendix 1 |
| 860.1300: Nature of the Residue - Plants | N/A | Yes ³ | 00137763 ⁴ 00152494 ⁵ 40361102 ⁶ 40693102 ⁷ 41994701-41994703 ⁸ 92067036 92067037 92067038 92068018 92068019 |
| 860.1300: Nature of the Residue - Livestock | N/A | Yes ⁹ | 00093842 ¹⁰ 00093844 ¹¹ 92067039 92067040 |
| 860.1340: Residue Analytical Method | | | |
| - Plant Commodities | N/A | Yes ¹² | 92068020 92068041 92068043 |
| - Animal Commodities | N/A | Yes ¹³ | 92068021 92068040 |
| 860.1360: Multi-Residue Method | NA | No | 41041501 ¹⁴ |
| 860.1380: Storage Stability Data | | | |
| - Plant Commodities | N/A | Yes ¹⁵ | 92067041 92068022 |
| - Animal Commodities | N/A | Yes ¹⁶ | 92067042 |
| 860.1400: Magnitude of the Residue - Water, Fish, and Irrigated Crops | N/A | N/A | |
| 860.1460: Magnitude of the Residue - Food Handling | N/A | N/A | |
| 860.1480: Magnitude of the Residue - Meat, Milk, Poultry, Eggs | | | |
| - Milk and the Fat, Meat, and Meat Byproducts of Cattle, Goats, Hogs, Horses, and Sheep | 0.05 [§180.411(a)(1)] | No ¹⁷ | 92067043 |
| - Eggs and the Fat, Meat, and Meat Byproducts of Poultry | 0.05 [§180.411(a)(1)] | No ¹⁷ | 92067044 |
| 860.1500: Crop Field Trials | | | |
| Root and Tuber Vegetable Group (Group 1) | | | |
| - Carrot | 2.0, roots | Yes ¹⁸ | 92068024 92068035 |

Table 6. Residue Chemistry Science Assessment for Reregistration of Fluzifop-P-butyl (PC Code 122809).

| GLN Data Requirements | Current Tolerances (ppm) [40 CFR] | Additional Data Needed? | MRID Nos. ¹ |
|--|---|-------------------------|---|
| - Potato, sweet | 0.5, roots [§180.411(a)(2)] | No ¹⁷ | 92068036 |
| Bulb Vegetable Group (Group 3) | | | |
| - Garlic | 0.5 [onion (bulb)] [§180.411(a)(2)] | No ¹⁹ | |
| - Onion, bulb | 0.5 [§180.411(a)(2)] | Yes ²⁰ | 92068028 92068029 |
| Leafy Vegetable Group (except Brassica) (Group 4) | | | |
| - Endive | 6.0 [§180.411(a)(2)] | No ¹⁷ | 92068027 |
| - Rhubarb | 0.5 [§180.411(c)(2)] | No ¹⁷ | 92068032 |
| - Spinach | 6.0 [§180.411(a)(2)] | No ²¹ | |
| Legume Vegetable Group (Group 6) | | | |
| - Soybean, seed and aspirated grain fractions | 1.0, seed [§180.411(a)(1)] | No ^{17, 22} | 92068033 |
| Foliage of Legume Vegetable Group (Group 7) | | | |
| - Soybean, forage and hay | None established | No ²³ | |
| Fruiting Vegetable Group (Group 8) | | | |
| - Pepper, tabasco | 1.0, tabasco pepper [§180.411(c)(1)] | No ¹⁷ | 92068031 |
| Stone Fruit Group (Group 12) | | | |
| | 0.05 [§180.411(a)(2)] | | |
| - Cherry | | No ¹⁷ | 92068038 |
| - Peach | | No ¹⁷ | 92068039 |
| - Plum | | No ¹⁷ | 92068034 |
| Tree Nut Group (Group 14) | | | |
| - Macadamia nut | 0.1 [§180.411(a)(2)] | No ¹⁷ | 92068037 |
| - Pecan | 0.05 [§180.411(a)(2)] | No ¹⁷ | 92068030 |
| Miscellaneous Commodities | | | |
| - Asparagus | 3.0 [§180.411(c)(2)] | Yes ²⁴ | 40335101 ²⁵ 41108001 ²⁶ 42464702 ²⁷ 92068023 |

Table 6. Residue Chemistry Science Assessment for Reregistration of Fluzifop-P-butyl (PC Code 122809).

| GLN Data Requirements | Current Tolerances (ppm) [40 CFR] | Additional Data Needed? | MRID Nos. ¹ |
|---|---|-------------------------|------------------------|
| - Coffee, bean | 0.1 [§180.411(c)(2)] | No ¹⁷ | 92068025 |
| - Cotton, seed and gin byproducts | 0.1, undelinted seed [§180.411(a)(1)] | Yes ²⁸ | 92068026 |
| - Nonfood uses | None established | No ²⁹ | |
| 860.1520: Processed Food/Feed | | | |
| - Coffee | None established | Yes ³⁰ | |
| - Cotton | 0.2, oil [§180.411(a)(1)] | No ¹⁷ | 92067045 |
| - Plum | None established | No ¹⁷ | 92068034 |
| - Soybean | 2.0, meal and refined oil [§180.411(a)(1)] | No ¹⁷ | 92067046 |
| 860.1650: Submittal of Analytical Reference Standards | N/A | Yes ³¹ | |
| 860.1850: Confined Accumulation in Rotational Crops | N/A | Yes | 00093850 |
| 860.1900: Field Accumulation in Rotational Crops | N/A | TBD | 00093851 |

1. **Bolded** references were discussed in the Fluazifop Butyl (R)/Fluazifop Butyl (RS) Phase 4 Review, dated 2/26/91. All other references were reviewed as noted.
2. The registrant must submit translated copies of labels for all foreign uses of fluazifop-P-butyl on coffee destined for import into the U.S. In addition, the following label amendments are required: All product labels which contain use directions for Florigraze perennial peanuts must be amended to refer to this crop as “‘Florigraze’ rhizoma peanuts” or “‘Florigraze’ perennial (rhizoma) peanuts.”

According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product includes uses on nonbearing ginseng, olive, and/or small fruits. All labels which include these uses must be modified to specify that the crop may not be harvested for food/feed use within one year of treatment.

According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product lists a maximum seasonal rate of 0.75 lb ai/A for soybean. The affected label(s) must be modified to specify a maximum seasonal application rate of 0.5 lb ai/A to soybeans, to be consistent with the basic producer's labels.

According to the BEAD use pattern table (Appendix 1), at least one fluazifop-P-butyl product lists a 14-day PHI for pecans. The affected label(s) must be modified to specify a 30-day PHI for pecans, to be consistent with the basic producer's labels.

The rotational crop restriction on the product labels for EPA Reg. Nos. 100-1071 and 100-1116 which prohibits the grazing of rotated small grain crops and the harvesting of these crops for livestock forage and straw is impractical and must be removed.

3. Two new plant metabolism studies, conducted with a leafy vegetable (such as endive or celery) and a root/tuber crop (such as carrot or sweet potato), must be submitted.
4. DER for MRID 00137763; 10/13/04; S. Kinard.
5. DER for MRID 00152494; 10/13/04; S. Kinard.
6. DER for MRID 40361102; 10/13/04; S. Kinard.
7. DER for MRID 40693102; 10/13/04; S. Kinard.
8. DP Barcode D168355, 10/16/91, J. Smith.
9. New livestock (poultry and ruminant) metabolism studies must be submitted.
10. DER for MRID 00093842; 10/13/04; S. Kinard.
11. DER for MRID 00093844; 10/13/04; S. Kinard.
12. Radiovalidation data, using samples from the required plant metabolism studies, must be submitted for the enforcement method for plant commodities.
13. Radiovalidation data, using samples from the required animal metabolism studies, must be submitted for the enforcement method for animal commodities. In addition, the registrant must submit a regulatory method for poultry eggs.
14. Forwarded to FDA for a complete review.

15. Additional storage stability data must be submitted for the following commodities: asparagus, carrot, coffee, cotton meal, cotton hulls, cotton refined oil, soybean meal, soybean hulls, soybean refined oil, stone fruit, prunes, and sweet potato. We note that crop field trial data for asparagus, carrot, cotton seed, cotton gin byproducts, and dry bulb onion, and a processing study for coffee are required; storage stability data to support those studies will be required unless samples are analyzed within one month of collection or adequate supporting storage stability data are already available.
16. Storage stability data must be submitted for poultry tissues and eggs.
17. No additional data are required, pending determination of the adequacy of the available data during Phase 5 review.
18. Based on the conclusions of the 2/26/91 Phase 4 Review, additional crop field trial data for carrot are needed from CA and WA.
19. The available and requested data for dry bulb onions may be translated to support use of fluazifop-P-butyl on garlic.
20. Based on the conclusions of the 2/26/91 Phase 4 Review, additional crop field trial data for onion are needed from ID and MI.
21. There are currently no registered uses on spinach. Therefore, the established tolerance will be revoked.
22. Based on the current use pattern of fluazifop-P-butyl on soybeans, data for soybean aspirated grain fractions are not required.
23. Current product labels bear a restriction against the grazing or harvesting of soybean forage and hay. Therefore, crop field trial data for soybean forage and hay are not required.
24. Fluazifop-P-butyl is registered for postharvest applications to asparagus plants at a total of 0.75 lb ai/A; these applications are to be made at least 7 months prior to the next asparagus harvest and may be made in addition to preharvest applications to the same plants. No data are available to support this use; crop field trial data to support this use must be submitted. Alternatively, product labels may be amended to delete this use.

No additional data are required to support preharvest use of fluazifop-P-butyl on asparagus, pending determination of the adequacy of the available crop field trial data during Phase 5 review.
25. DER for MRID 40335101; 10/13/04; S. Kinard
26. CB No. 5752, 10/4/89, S. Funk.
27. DP Barcode D215784, 8/30/95, M. Rodriguez.
28. A full set of crop field trial data for cotton gin byproducts must be submitted (a total of six trials; three representing use of picker equipment and three representing use of stripper equipment). In addition, based on the conclusions of the 2/26/91 Phase 4 Review, additional crop field trials for cotton seed grown in CA must be submitted.
29. Fluazifop-P-butyl is registered for use in WA on cabbage, Chinese cabbage, kale, spinach, Swiss chard, and table beet grown for seed (EPA SLN No. WA950029). The Agency has previously concluded that uses on these crops grown for seed in WA may be considered nonfood uses (DP Barcode D212168, 2/14/95, B. Schneider and R. Loranger). Fluazifop-P-butyl is also registered for use on nonbearing ginseng, olive, and

small fruits. Provided that product labels specify that the crop may not be harvested for food/feed uses within one year of treatment, these uses may be considered nonfood uses.

Fluazifop-P-butyl is registered for use on nursery stock Florigrade perennial peanuts. Product labels bear a restriction against grazing or harvesting treated peanuts within one year of treatment. HED has determined that the registered use may be considered a nonfood use (DP Barcode D189287, 5/6/93, B. Schneider). However, label amendments are required to be consistent with proper nomenclature and to avoid confusion; see 860.1200 Directions for Use.

30. Data demonstrating fluazifop-P-butyl residues of concern in the processed commodities of coffee (roasted bean and instant coffee) are required. Alternatively, the registrant may demonstrate that fluazifop-P-butyl residues of concern are below the limit of quantitation in coffee beans following treatment at 4.5x the maximum seasonal rate (the maximum theoretical concentration factor for coffee is 4.5x).
31. The available reference standard for the resolved isomer of fluazifop has expired (2/03). An updated certificate of analysis or a new lot of standard must be submitted by the registrant.

TOLERANCE REASSESSMENT SUMMARY

Tolerance Reassessments for Fluazifop-P-butyl

The tolerances listed in 40 CFR §180.411(a)(1) are expressed in terms of fluazifop [(#)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy propanoic acid], both free and conjugated, and fluazifop-butyl [(#)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy propanoate], expressed as fluazifop.

The tolerances listed in 40 CFR §180.411(a)(2) are expressed in terms of the resolved isomer of fluazifop [(R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid], both free and conjugated, and fluazifop-P-butyl [butyl(R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate], expressed as fluazifop.

The tolerances with regional registrations listed in 40 CFR §180.411(c)(1) are expressed in terms of fluazifop [(#)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy propanoic acid], both free and conjugated, and fluazifop-butyl [(#)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy propanoate], expressed as fluazifop.

The tolerances with regional registrations listed in 40 CFR §180.411(c)(2) are expressed in terms of the resolved isomer of fluazifop [(R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid], both free and conjugated, and fluazifop-P-butyl [butyl(R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate], expressed as fluazifop.

There is a typographical error in the tolerance expressions for fluazifop-butyl under §180.411(a)(1) and §180.411(c)(1). In both cases, the “(#)” in the name for both fluazifop and fluazifop-butyl should be replaced with “(RS)”.

Because the resolved isomer of fluazifop butyl is the only registered active ingredient, the tolerance expressions, which are currently expressed in terms of mixture of isomers for some commodities and in terms of the resolved isomer for other commodities, should be consolidated as follows. All tolerances currently listed under §180.411(a)(1) and (2) should be combined under §180.411(a), and the tolerance expression for §180.411(a) should be stated as:

“Tolerances are established for residues of the herbicide fluazifop-P-butyl, butyl(R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate, and the free and conjugated forms of the resolved isomer of fluazifop, (R)-2-[4-[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid, expressed as fluazifop, in or on the following commodities: ”

Similarly, all tolerances currently listed under §180.411(c)(1) and (c)(2) should be combined under §180.411(c), and the tolerance expression should be stated as:

“Tolerances with regional registration are established for residues of the herbicide fluzifop-P-butyl, butyl(R)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate, and the free and conjugated forms of the resolved isomer of fluzifop, (R)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid, expressed as fluzifop, in or on the following commodities: ”

Tolerances Listed Under 40 CFR §180.411(a)(1):

Adequate residue data are not available to reassess the established tolerance for cotton, undelinted seed. Additional crop field trial data are required.

Pending completion of Phase 5 review, adequate residue data have been submitted to reassess the established tolerances for the following commodities, **as defined**: cattle, fat; cattle, meat; cattle, meat byproducts; goat, fat; goat, meat; goat, meat byproducts; hog, fat; hog, meat; hog, meat byproducts; horse, fat; horse, meat; horse, meat byproducts; milk; sheep, fat; sheep, meat; sheep, meat byproducts; and soybean. Pending completion of Phase 5 review and submission of supporting storage stability data, adequate residue data have been submitted to reassess the established tolerances for the following commodities, **as defined**: cotton, oil; egg; poultry, fat; poultry, meat; poultry, meat byproducts; soybean, meal; and soybean, refined oil.

The appropriate levels for these tolerances will be determined when Phase 5 review of the available crop field trial, processing, and livestock feeding study data has been completed. Based on the summaries of these data discussed in the 2/26/91 Phase 4 Review, it is unlikely that any of these tolerances will need to be increased.

Tolerances Listed Under 40 CFR §180.411(a)(2):

Adequate residue data are not available to reassess the established tolerances for carrots and onion (bulb). Additional crop field trial data are required; in addition, storage stability data for carrots are required.

Pending completion of Phase 5 review, adequate residue data have been submitted to reassess the established tolerances for the following commodities: endive, macadamia nut, and pecans. Pending completion of Phase 5 review and submission of supporting storage stability data, adequate residue data have been submitted to reassess the established tolerances for the stone fruit group and sweet potato.

The appropriate levels for these tolerances will be determined when Phase 5 review of the available crop field trial and processing study data has been completed. Based on the summaries of these data discussed in the 2/26/91 Phase 4 Review, it is unlikely that any of these tolerances will need to be increased.

The established tolerance for spinach should be revoked. There are currently no registered uses

of fluazifop-P-butyl on spinach.

Tolerances To Be Proposed Under 40 CFR §180.411(a):

A tolerance must be proposed for cotton gin byproducts; adequate crop field trial data must be submitted before the appropriate tolerance level may be determined.

Tolerances Listed Under 40 CFR §180.411(c)(1):

Pending completion of Phase 5 review, adequate residue data have been submitted to reassess the established tolerance for tabasco pepper. The appropriate level for this tolerance will be determined when Phase 5 review of the available crop field trial data has been completed. Based on the summary of these data discussed in the 2/26/91 Phase 4 Review, it is unlikely that the tolerance will need to be increased.

Tolerances Listed Under 40 CFR §180.411(c)(2):

Adequate residue data are not available to reassess the established tolerance for asparagus. Additional crop field trial data and storage stability data are required. In addition, a coffee processing study remains outstanding; tolerances for coffee processed commodities may be required.

Pending completion of Phase 5 review, adequate residue data have been submitted to reassess the established tolerance for rhubarb. Pending completion of Phase 5 review and submission of supporting storage stability data, adequate residue data have been submitted to reassess the established tolerance for coffee bean. The appropriate levels for these tolerances will be determined when Phase 5 review of the available crop field trial data has been completed. Based on the summaries of these data discussed in the 2/26/91 Phase 4 Review, it is unlikely that any of these tolerances will need to be increased.

Proposed Tolerances:

Syngenta Crop Protection (as ICI Americas, Inc.) proposed, in PP#4F3147/FAP#4H5542, the establishment of tolerances for combined residues of fluazifop-butyl and fluazifop, both free and conjugated, in/on peanuts (0.5 ppm), peanut hulls (0.5 ppm), peanut meal (1.0 ppm), and peanut soapstock (2.0 ppm). This petition is currently in reject status.

A summary of fluazifop-P-butyl tolerance reassessments is presented in Table 7.

| Table 7. Tolerance Reassessment Summary for Fluazifop-P-butyl. | | | | |
|---|-------------------------|-------------------------|------------------------------|--|
| Commodity | Current Tolerance (ppm) | Range of Residues (ppm) | Tolerance Reassessment (ppm) | Comment/[Correct Commodity Definition] |
| Tolerances Listed Under 40 CFR §180.411(a)(1): | | | | |
| Cattle, fat | 0.05 | -- | TBD ¹ | |
| Cattle, meat | 0.05 | -- | TBD ¹ | |
| Cattle, meat byproducts | 0.05 | -- | TBD ¹ | |
| Cotton, undelinted seed | 0.1 | -- | TBD ² | |
| Cotton, oil | 0.2 | -- | TBD ³ | |
| Egg | 0.05 | -- | TBD ³ | |
| Goat, fat | 0.05 | -- | TBD ¹ | |
| Goat, meat | 0.05 | -- | TBD ¹ | |
| Goat, meat byproducts | 0.05 | -- | TBD ¹ | |
| Hog, fat | 0.05 | -- | TBD ¹ | |
| Hog, meat | 0.05 | -- | TBD ¹ | |
| Hog, meat byproducts | 0.05 | -- | TBD ¹ | |
| Horse, fat | 0.05 | -- | TBD ¹ | |
| Horse, meat | 0.05 | -- | TBD ¹ | |
| Horse, meat byproducts | 0.05 | -- | TBD ¹ | |
| Milk | 0.05 | -- | TBD ¹ | |
| Poultry, fat | 0.05 | -- | TBD ³ | |
| Poultry, meat | 0.05 | -- | TBD ³ | |
| Poultry, meat byproducts | 0.05 | -- | TBD ³ | |
| Sheep, fat | 0.05 | -- | TBD ¹ | |
| Sheep, meat | 0.05 | -- | TBD ¹ | |
| Sheep, meat byproducts | 0.05 | -- | TBD ¹ | |
| Soybean | 1.0 | -- | TBD ¹ | |
| Soybean, meal | 2.0 | -- | TBD ³ | |
| Soybean, refined oil | 2.0 | -- | TBD ³ | |
| Tolerances Listed Under 40 CFR §180.411(a)(2): | | | | |
| Carrots, roots | 2.0 | -- | TBD ⁴ | |
| Endive | 6.0 | -- | TBD ¹ | |
| Fruit, stone | 0.05 | <0.03 | TBD ³ | <i>Fruit, stone, group 12</i> |
| Nut, macadamia | 0.1 | <0.1 | TBD ¹ | |
| Onion (bulb) | 0.5 | -- | TBD ² | <i>Onion, dry bulb</i> |
| Pecans | 0.05 | <0.03 | TBD ¹ | <i>Pecan</i> |
| Spinach | 6.0 | -- | Revoke | There are currently no registered uses on spinach. |
| Sweet potato, roots | 0.5 | ≤0.5 | TBD ³ | |

| Table 7. Tolerance Reassessment Summary for Fluazifop-P-butyl. | | | | |
|---|-------------------------|-------------------------|------------------------------|--|
| Commodity | Current Tolerance (ppm) | Range of Residues (ppm) | Tolerance Reassessment (ppm) | Comment/[Correct Commodity Definition] |
| Tolerances to Be Proposed under 40 CFR 180.411(a): | | | | |
| Cotton, gin byproducts | -- | -- | TBD ⁵ | |
| Tolerances Listed Under 40 CFR §180.411(c)(1): | | | | |
| Pepper, tabasco | 1.0 | -- | TBD ¹ | |
| Tolerances Listed under 40 CFR 180.411(c)(2): | | | | |
| Asparagus | 3.0 | 0.14-2.7 | TBD ⁴ | |
| Coffee, bean | 0.1 | <0.1 | TBD ³ | |
| Rhubarb | 0.5 | <0.5 | TBD ¹ | |

¹ To be determined when Phase 5 review of available data has been completed.

² To be determined when additional crop field trial data have been submitted and Phase 5 review of available data has been completed.

³ To be determined when storage stability data have been submitted and Phase 5 review of available data has been completed.

⁴ To be determined when additional crop field trial and storage stability data have been submitted and Phase 5 review of available data has been completed.

⁵ To be determined when crop field trial data have been submitted.

Codex/International Harmonization

No Codex MRLs have been established for residues of fluazifop-P-butyl or fluazifop-butyl; therefore, issues of compatibility do not exist.

The following Canadian MRLs have been established for residues of fluazifop-butyl, calculated as the acid:

| | |
|--|----------|
| soybeans, strawberries | 1 ppm |
| mustard | 0.3 ppm |
| flax, solin | 0.2 ppm |
| eggs, meat, meat by-products and fat of cattle, goats, hogs, horses, poultry and sheep | 0.05 ppm |
| milk | 0.01 ppm |

No Mexican MRLs have been established for residues of fluazifop-P-butyl.

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Agency Memoranda Citations

| Date | DP Barcode | CB No. | From | To | MRID Nos. | Subject |
|-------------|-------------------|---------------|------------------------------|-------------------------------------|----------------------|--|
| 6/8/84 | -- | -- | L. Cheng | R. Mountfont and Toxicology Branch | Accession No. 252851 | 10182-IA. PP005™ Herbicide (Fluazifop-P-Butyl) on Cotton and Soybeans. |
| 5/4/89 | -- | 4454-4456 | M. Flood | L. Schnaubelt and Toxicology Branch | 40831300-40831309 | PP#4F3147/FAP#4H5542. Fluazifop in/on Peanuts. EPA Reg. No. 10182-104. Submission of 9/16/88. Response to DEB review of 2/27/85. |
| 10/4/89 | -- | 5752 | S. Funk | J. Miller | 41108001 | Fluazifop-P-butyl on Asparagus. Expansion of Use (EPA Reg. No. 10182-104) to All States Except California and Arizona. |
| 2/26/91 | -- | 7257 & 7265 | S. Funk | -- | -- | Phase 4 Reviews for PC Codes 122805 and 122809; Fluazifop Butyl (R); Fluazifop Butyl (RS) |
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| 2/14/95 | D212168 | 15111 | B. Schneider and R. Loranger | S. Johnson | None | Evaluation of Washington State Department of Agriculture Request for Nonfood/Nonfeed Status for Small-Seeded Vegetable Seed Crops. |
| 3/16/95 | D212593 | 15181 | Amended Registration Team | J. Miller/D. Morgan | None | ID # 010182-00367 Fusilade DX Herbicide: Fluazifop-P-butyl in/on Asparagus; Amendment Dated January 25, 1995; Proposal of use in the State of Idaho. |

| Date | DP Barcode | CB No. | From | To | MRID Nos. | Subject |
|-------------|-------------------|---------------|--------------|-------------------------|------------------|--|
| 8/30/95 | D215784 | 15678 | M. Rodriguez | J. Miller/ D. Morgan | 42464702 | ID #010182-00367 Fusilade 2 EC: Fluazifop-P-butyl in/on Asparagus. Amendment Dated May 4, 1995; Proposal for Use in the State of California. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 00093842 | 860.1300 DER for MRID 00093842: Cow Metabolism Study. |
| 10/13/04 | D298938X | N/A | S. Kinard | N/A | 00093844 | 860.1300 DER for MRID 00093844: Hen Metabolism Study. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 00137763 | 860.1300 DER for MRID 00137763: Sugar Beet Metabolism Study. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 00152494 | 860.1300 DER for MRID 00152494: Carrot Metabolism Study. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40361102 | 860.1300 DER for MRID 40361102: Grape Metabolism Study. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40693102 | 860.1300 DER for MRID 40693102: Celery Metabolism Study. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40224901 | 860.1500 DER for MRID 40224901: Magnitude of Residue on Cubanelle Pepper. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40225001 | 860.1500 DER for MRID 40225001: Magnitude of Residue on Chili Pepper. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40335101 | 860.1500 DER for MRID 40335101: Magnitude of Residue on Asparagus. |
| 10/13/04 | D298938 | N/A | S. Kinard | N/A | 40448901 | 860.1500 DER for MRID 40448901: Magnitude of Residue on Jalapeno Peppers. |
| 3/17/04 | D298939 | N/A | S. Kinard | Y. Donovan | N/A | TXR 0052680 Fluazifop-P-butyl. Report of the Metabolism Assessment Review Committee |

APPENDIX 1

**Food/Food Use Pattern Table for Fluazifop-P-butyl
Generated by BEAD/OPP**

TABLE A2. FOOD/FEED USE PATTERNS SUMMARY FOR Fluazifop-P-butyl (CASE 2285)

Current As Of: 05/30/03

Printed On: 07/09/03

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| AGRICULTURAL FALLOW/IDLELAND | | | | | | |
| Not on label Broadcast/Spot treatment Aircraft/Ground/Sprayer | .5 lb A .1875 lb/25 gal | NS | NS NS | NS | NS | |
| AGRICULTURAL/FARM STRUCTURES/BUILDINGS AND EQUIPMENT | 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 by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| When needed Broadcast/Spot treatment Aircraft/Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS 3/1 yr | AN | 12 h | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| APRICOT | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | AN | 12 h | |

| SITE NAME | LIMITATIONS | | | | | |
|---|---|--------------------------|---------------------|-------|-------|---|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| ASPARAGUS | 1 day(s) preharvest interval. 210 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This pesticide is toxic to aquatic invertebrates. This product is toxic to fish. Geographic allowable: CA | | | | | |
| Nonbearing Directed spray Sprayer | .5 lb A | NS | NS NS | NS | NS | |
| Postemergence Bait application/Band treatment/Broadcast/Chemigation/Spot treatment/Spray Aircraft/Ground/Irrigation/Sprayer/Sprinkler irrigation | .375 lb A .01172 lb/1 gal | .75 lb/cc | NS NS | 14 | 12 h | 1 day(s) preharvest interval. Geographic allowable: CA MD NJ OR WA Geographic disallowable: AZ CA |
| Postharvest Band treatment/Broadcast/Spot treatment/Spray Aircraft/Ground | .375 lb A .01172 lb/1 gal | .75 lb/cc 1.125 lb/yr | NS 2/1 yr | 14 | 12 h | 210 day(s) preharvest interval. Geographic allowable: DE NC NY VA |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| CABBAGE | 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 by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not feed treated screenings or hay to livestock. Do not graze or harvest for forage or hay. Grown for seed only. This pesticide is toxic to aquatic invertebrates. Geographic allowable: WA | | | | | |
| Foliar Band treatment/Broadcast Aircraft/Ground | .25 lb A | .5 lb/cc | NS NS | NS | NS | |
| CABBAGE, CHINESE | 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 by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not feed treated screenings or hay to livestock. Do not graze or harvest for forage or hay. Grown for seed only. This pesticide is toxic to aquatic invertebrates. Geographic allowable: WA | | | | | |
| Foliar Band treatment/Broadcast Aircraft/Ground | .25 lb A | .5 lb/cc | NS NS | NS | NS | |

TABLE A2. FOOD/FEED USE PATTERNS SUMMARY FOR Fluazifop-P-butyl (CASE 2285)

Current As Of: 05/30/03

Printed On: 07/09/03

| SITE NAME | LIMITATIONS | | | | | |
|---|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| CARROT (INCLUDING TOPS) | 45 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Band sprayer/Ground/Sprayer/Sprinkler irrigation | .375 lb A 1.5 lb/1 gal | .75 lb/cc | NS 2/1 yr | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| CHERRY | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | AN | 12 h | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| COFFEE | 1 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This pesticide is toxic to aquatic invertebrates. This product is toxic to fish. Geographic allowable: HI PR | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .25 lb A .01188 lb/1 gal | .75 lb/cc | NS 3/1 yr | AN | 12 h | |
| COTTON | 90 day(s) preharvest interval. Do not graze or harvest for forage or hay. | | | | | |
| Postemergence Band treatment/Spot treatment/Spray Aircraft/Ground/Sprayer | .5 lb A .1875 lb/25 gal | NS | NS NS | NS | NS | |
| COTTON (UNSPECIFIED) | 90 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze or harvest for forage or hay. Rotational/plant back crop restriction. This pesticide is toxic to aquatic invertebrates. This product is toxic to fish. Geographic allowable: LA | | | | | |

TABLE A2. FOOD/FEED USE PATTERNS SUMMARY FOR Fluazifop-P-butyl (CASE 2285)

Current As Of: 05/30/03

Printed On: 07/09/03

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|---|
| | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | | | | | | |
| At planting Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment/Spray Aircraft/Band sprayer/Ground | .375 lb A (L) | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR FL GA LA MO MS NC NM OK SC TN TX VA |
| Foliar Band treatment/Broadcast Aircraft/Ground | .375 lb A | .75 lb/cc | NS NS | NS | NS | Do not apply when wind velocity is 10 mph or greater. |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer/Sprinkler irrigation | .375 lb A .01188 lb/1 gal | .75 lb/cc | NS NS | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| Postharvest Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment/Spray Aircraft/Band sprayer/Ground | .375 lb A (L) | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR FL GA LA MO MS NC NM OK SC TN TX VA |
| Prebloom Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment/Spray Aircraft/Band sprayer/Ground | .375 lb A (L) | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR FL GA LA MO MS NC NM OK SC TN TX VA |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|---|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Preplant Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment/Spray Aircraft/Band sprayer/Ground | .375 lb A (L) | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR FL GA LA MO MS NC NM OK SC TN TX VA |
| ENDIVE (ESCAROLE) | 28 day(s) preharvest interval. 55 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer | .375 lb A .01172 lb/1 gal | .75 lb/cc | NS NS | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |

| SITE NAME | LIMITATIONS | | | | | |
|---|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| GARLIC | 45 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Foliar Band treatment Band sprayer | .375 lb A | .75 lb/cc | NS 2/1 yr | 28 | NS | Geographic allowable: AZ CA CO HI NM NV OK TX UT |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Band sprayer/Ground/Sprayer/Sprinkler irrigation | .375 lb A 1.5 lb/1 gal | .75 lb/cc | NS 2/1 yr | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| GINSENG (MEDICINAL) | 365 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. Geographic disallowable: CA | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Nonbearing Directed spray Ground/Sprayer | .375 lb A | NS | NS 3/1 yr | AN | 12 h | |
| Postemergence Directed spray Ground | .375 lb A | 1.125 lb/cc | NS 3/1 yr | AN | 12 h | |
| Posttransplant Directed spray Sprayer | .375 lb A | NS | NS 3/1 yr | AN | NS | |
| Pretransplant Directed spray Sprayer | .375 lb A | NS | NS 3/1 yr | AN | NS | |
| KALE | 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 by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not feed treated screenings or hay to livestock. Do not graze or harvest for forage or hay. Grown for seed only. This pesticide is toxic to aquatic invertebrates. Geographic allowable: WA | | | | | |
| Foliar Band treatment/Broadcast Aircraft/Ground | .25 lb A | .5 lb/cc | NS NS | NS | NS | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| MACADAMIA NUT (BUSHNUT) | 1 day(s) preharvest interval. 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 by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not feed or graze animals on cover crops in treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | .75 lb/cc | NS NS | AN | 12 h | |
| NECTARINE | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | AN | 12 h | |
| OLIVE | | | | | | |
| Nonbearing Directed spray Sprayer | .5 lb A | NS | NS NS | NS | NS | |

| SITE NAME | LIMITATIONS | | | | | |
|---|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| ONION | 45 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Band sprayer/Ground/Sprayer/Sprinkler irrigation | .375 lb A 1.5 lb/1 gal | .75 lb/cc | NS 2/1 yr | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| PEACH | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | AN | 12 h | |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| PEANUTS | 365 day(s) pregrazing interval. 365 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not enter treated areas without protective clothing until sprays have dried. Do not graze for one year after treatment. Rotational/plant back crop restriction. This product is toxic to fish. Geographic disallowable: CA | | | | | |
| Nonbearing nurserystock Directed spray Ground/Sprayer | .375 lb A | 1.125 lb/cc | NS 3/1 yr | AN | 12 h | |
| PECAN | 14 day(s) preharvest interval. 30 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Postemergence Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| PEPPER | 45 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Rotational/plant back crop restriction. This product is toxic to fish. Geographic allowable: LA | | | | | |
| Postemergence Band treatment/Broadcast Aircraft/Band sprayer/Ground | .25 lb A | .75 lb/cc | NS NS | NS | NS | |
| PEPPER (TABASCO) | 45 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. Geographic allowable: LA | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Postemergence Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer | .375 lb A .01172 lb/1 gal | .75 lb/cc | NS 3/1 yr | 28 | 12 h | |
| PLUM | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Spot treatment Ground/Sprayer | .375 lb A .01172 lb/1 gal | 1.125 lb/cc | NS NS | AN | 12 h | |
| PRUNE | 14 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze livestock in treated areas. Do not graze treated areas. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| SOYBEANS (UNSPECIFIED) | 90 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not apply when wind velocity is 15 mph or greater. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Do not graze or harvest for forage or hay. Do not graze treated areas or harvest for forage or hay. Groundwater restriction. Rotational/plant back crop restriction. This pesticide is toxic to aquatic invertebrates. This product is toxic to fish. Geographic allowable: LA | | | | | |
| At planting Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground | .21875 lb A .01172 lb/1 gal | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR CT DE FL GA IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NY OH OK OR PA RI SC SD TN TX VA VT WA WI WV WY |
| Foliar Band treatment/Broadcast Aircraft/Ground | .375 lb A | .75 lb/cc | NS NS | NS | NS | Do not apply when wind velocity is 10 mph or greater. |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Postemergence Band treatment/Broadcast/Low volume spray (concentrate)/Soil band treatment/Spot treatment/Spray Aircraft/Band sprayer/Ground/Low pressure ground sprayer/Sprayer | (L) .375 lb A 1.5 lb/1 gal | .5 lb/cc | NS 2/1 yr | 14 | 24 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| Postharvest Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground | .21875 lb A .01172 lb/1 gal | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR CT DE FL GA IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NY OH OK OR PA RI SC SD TN TX VA VT WA WI WV WY |
| Prebloom through foliar Band treatment/Broadcast/Chemigation/Spot treatment Aircraft/Ground/Sprayer/Sprinkler irrigation | .375 lb A .01188 lb/1 gal | .5 lb/cc | NS NS | AN | 12 h | |
| Prebloom Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground | .21875 lb A .01172 lb/1 gal | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR CT DE FL GA IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NY OH OK OR PA RI SC SD TN TX VA VT WA WI WV WY |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Preplant Band treatment/Broadcast/Low volume spray (concentrate)/Spot treatment Aircraft/Ground | .21875 lb A .01172 lb/1 gal | .375 lb/cc | NS 2/1 yr | 14 | 24 h | Do not apply when wind velocity is 15 mph or greater. Geographic allowable: AL AR CT DE FL GA IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NY OH OK OR PA RI SC SD TN TX VA VT WA WI WV WY |
| SOYBEANS, EDIBLE | | | | | | |
| Postemergence Band treatment/Spray Aircraft/Ground | .25 lb A | NS | NS NS | NS | NS | |
| Prebloom Spot treatment Sprayer | .1875 lb/25 gal | NS | NS NS | NS | NS | |
| SWEET POTATO | 55 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|--|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer/Sprinkler irrigation | .375 lb A .01188 lb/1 gal | .75 lb/cc | NS NS | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |
| YAM | 55 day(s) preharvest interval. 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 apply through any type of irrigation system. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. Do not contaminate water, food, or feed by storage or disposal. Do not enter treated areas without protective clothing until sprays have dried. Rotational/plant back crop restriction. This product is toxic to fish. | | | | | |
| Postemergence Band treatment/Broadcast/Chemigation/Low volume spray (concentrate)/Spot treatment Aircraft/Ground/Sprayer/Sprinkler irrigation | .375 lb A .01188 lb/1 gal | .75 lb/cc | NS NS | 14 | 12 h | Geographic allowable: AK AL AR AZ CA CO CT DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY |

TABLE A2. FOOD/FEED USE PATTERNS SUMMARY FOR Fluazifop-P-butyl (CASE 2285)

Current As Of: 05/30/03

Printed On: 07/09/03

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------------|----------------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/ cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |
| PRODUCT NUMBERS CONTAINED IN THIS REPORT 000100-00994, 000100-01003, 000100-01059, 000100-01069, 000100-01070, 000100-01071, 000100-01116, CA97002300, LA95000200, LA95001300, PR97000400, WA95002900 | | | | | | |
| HOMEOWNER PRODUCTS CONTAINED IN THIS REPORT None | | | | | | |

| SITE NAME | LIMITATIONS | | | | | |
|--|---|--------------------|---------------------|-------|-------|--|
| Application Timing (for any Reg.# at any rate) Application Type (for any Reg.# at any rate) Application Equipment (for any Reg.# at any rate) | Max. Single Appl. Rate to a Single Site | Max. Seasonal Rate | Max. # Apps/cc & yr | M R I | R E I | PHI/PGI/PSI Use Limitations (May not apply to all Reg. #s) |

HEADER ABBREVIATIONS

Site Name - The site name refers to the entity (crop, building, surface or article) where a pesticide is applied and/or which is being protected.

Limitations - Precautionary statements related to the use of the product(s).

Application Timing - The timing of pesticide application and is the primary application sort (not aggregated).

Application Type - The type of pesticide application (aggregated).

Application Equipment - The equipment used to apply pesticide (aggregated).

Max. Single Appl. Rate to a Single Site - Maximum Dose for a single application to a single site. System calculated.

Max Seasonal Rate - The maximum amount of pesticide that can be applied to a site in one growing season (/cc) and during the span of one year (/yr).

Max. # Apps/cc & yr - Maximum Number of Applications per crop cycle and per year.

M R I - Minimum Retreatment Interval (days) (at any rate). The minimum interval between pesticide application (days).

R E I - ReEntry Interval - The minimum amount of time that must elapse before workers can reenter a treated area.

PHI/PGI/PSI Use Limitations (May not apply to all Reg.#s) - Preharvest/Pregrazing/Preslaughter Interval use limitations pertinent to the application.

Current As Of: - The label data for the listed products in this report is current of this date.

ABBREVIATIONS

AN - As needed

NA - Not Applicable

NS - Not Specified (on label)

(L) - The dosage information provided is from the label in terms of product (e.g., ounces, gallons, or pounds of the product) because there was insufficient information (e.g., missing density, area, or active ingredient percentages) to provide converted dosage information. This report provides active ingredient percentage in the product for the reported chemical for all unconverted label dosage information if this information is available. This active ingredient percentage information is displayed next to the form code abbreviations (e.g., 80% WP).

APPLICATION RATE

cwt : Hundred Weight

nnE-xx : nn times (10 power -xx), for instance, "1.234E-04" is equivalent to ".0001234"

End of Report

For questions and comments please contact the OPP Usage and Label Use Team through e-mail.