MEMORANDUM

Subject: **PP# 3F4231 - Imidacloprid (Admire®) on the fruiting vegetables and brassica (cole) leafy vegetables crop groups, lettuce, grapes, and grape processed commodities, tomato processed commodities, meat, milk, poultry, and eggs.** Review of the Petitioner's November 16, 1994, Amendment. (MRID # 434630-01)[CBTS #s 14745 and 14746]{DP Barcodes D209743 and D209739}

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01/10/1995

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and

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Thru: Richard A. Loranger, Ph.D.
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Background

Miles, Inc., Agricultural Division, submitted this amendment consisting of a cover letter dated November 16, 1994, signed by J.S. Thornton and a supplementary Section D (new residue analytical method validation data). This amendment was submitted in response to deficiencies outlined and summarized in our June 22, 1994, review by F.D. Griffith, Jr. The deficiencies are listed and repeated in the body of this review as they appeared in the June 22, 1994, review followed by the petitioner's responses, then CBTS comments. Our conclusions and recommendation follow.

EXECUTIVE SUMMARY OF RESIDUE CHEMISTRY DEFICIENCIES

- Revised label for rotational crop restrictions

- New tomato processing study and revised tolerances for tomato processed

commodities with adequate method validation data

CONCLUSIONS

1. CBTS Conclusions on **Directions for Use**

a. CBTS reiterates that the petitioner will need to revise the rotational crop restrictions. CBTS reiterates that detectable residues were noted at 11 months, thus the label needs to be modified to have only a 12 month plant back interval for all crops that do not have tolerances and registered uses. Since detectable residues at the MDL (minimum detection limit) were noted in turnip roots at 11 months, an 8 month plant back interval is not supportable and needs to be removed from the label. CBTS considers the 30 days plant back interval for grain only without allowing the grower the use of the forage, vines, or straw to be impractical. It is not practical to restrict growers to using only part of their crop. We feel this would be extremely difficult to enforce, thus should be removed from the label. Deficiency 1a remains unresolved and continues outstanding.

b. If the petitioner wishes to have shorter than 12 month plant back intervals for grains, seeds, and/or root crops, then he may generate the necessary rotational crop magnitude of the residue data to support rotational crop tolerances. At this time the lowest level validated for a rotational crop tolerance using Bayer method 00200 would be 0.05 ppm.

c. For rotational crops the petitioner proposes that treated areas may be replanted with any crop for which there are registered uses and established tolerances. This is acceptable to CBTS.

2. CBTS Conclusions on **Residue Analytical Methods**

a. The petitioner has provided adequate method validation data from the representative commodities tomatoes and peppers to show that the enforcement method is suitable to enforce the proposed fruiting vegetables crop group imidacloprid tolerance of 1 ppm. Deficiency 3a is partially resolved with the necessary validation data still needed for processed tomato commodities.

b. The petitioner has provided adequate method validation data from whole grapes, and the grape processed commodities wet grape pomace and raisin waste, to show that the enforcement method is suitable to enforce the proposed grape imidacloprid tolerance of 1 ppm, and FAT tolerances on grape pomace at 5 ppm and on raisin waste at 15 ppm. Deficiency 3b is resolved.

c. The petitioner has provided adequate method validation data from the

representative commodities lettuce, broccoli, and cabbage to show that the enforcement method is suitable to enforce the proposed Brassica leafy vegetables crop group imidacloprid tolerance of 3.5 ppm. Deficiency 3c is resolved.

d. The petitioner has provided adequate method validation data from hops to show that the enforcement method is suitable to enforce a probable imidacloprid tolerance of 6 ppm. Deficiency 3d is resolved.

3. CBTS Conclusions on **Magnitude of the Residue - Processed Food/ Feed**

a. CBTS reiterates that the tomato variety used is not a standard processing tomato variety, thus the concentration and/or decline factors reported on a fresh market tomato may not reflect the concentration/decline factors from a processing variety tomato. CBTS cannot determine the appropriate imidacloprid tomato food and feed additive tolerances from the study results. While CBTS will not discard the results of this imidacloprid tomato processing study the petitioner will need to conduct a new imidacloprid tomato processing study using a processing variety tomato treated at an exaggerated rate to ensure there are sufficient residues for processing. CBTS reiterates that the results of the present study will become supplementary and the results of the new study will be given considerable weight in determining the appropriate imidacloprid tomato FAT. Deficiency 4a is not resolved and continues outstanding.

b. In the new imidacloprid tomato processing study the petitioner needs to generate tomato paste as one of the tomato processing commodities and to analyze the tomato paste for total imidacloprid residues. Adequate method validation are necessary. Deficiency 4b is not resolved and continues outstanding.

c. The petitioner has previously conducted a tomato processing study using a fresh market variety tomato bearing detectable residues following an exaggerated 7.24X imidacloprid application rate. Using a fresh market type tomato total imidacloprid residues concentrated 1.89X in puree, 1.57X in wet pomace, and 5X in dry pomace. While FATs are required CBTS reiterates that judgement is deferred on the proposed 2 ppm tolerance on puree and on wet pomace, and 6 ppm tolerance on dried pomace until the petitioner completes a new imidacloprid processing study using a processed variety tomato bearing detectable residues and processed into juice, puree, **paste**, and wet and dried pomace. Deficiency 4c is not resolved and continues outstanding.

RECOMMENDATION

CBTS reiterates that we cannot recommend, at this time, for the requested tolerances for combined residues of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety, expressed as imidacloprid in the fruiting vegetables crop group at 1 ppm, Brassica (cole) leafy vegetables crop group at 3.5 ppm, leaf and head lettuce at 3.5 ppm, grapes at 1 ppm, 0.1 ppm in milk, 0.02 ppm in eggs, 0.05 ppm in meat, fat, and meat by-products of poultry, and in meat, fast, and meat by-products of cattle, goats, hogs, horses, and sheep at

0.3 ppm; food additive tolerance in tomato puree at 2 ppm; feed additive tolerances in wet tomato pomace at 2 ppm, dried tomato pomace at 6 ppm, wet grape pomace at 2.5 ppm, dried grape pomace at 5 ppm, and on raisin waste at 15 ppm for the reasons cited above in our Executive Summary and further described in the conclusions above.

For further consideration of this petition the petitioner should be advised to resolve the deficiencies described in our Executive Summary and detailed in the conclusions.

DETAILED CONSIDERATIONS

DIRECTIONS FOR USE/LABELING

Deficiencies

1a. CBTS reiterates that the petitioner will need to revise the rotational crop restrictions. CBTS reiterates that detectable residues were noted at 11 months, thus the label needs to be modified to have only a 12 month plant back interval for all crops that do not have tolerances and registered uses. Since detectable residues at the MDL (minimum detection limit) were noted in turnip roots at 11 months, an 8 month plant back interval is not supportable and needs to be removed from the label. CBTS considers the 30 days plant back interval for grain only without allowing the grower the use of the forage, vines, or straw to be impractical. It is not practical to restrict growers to using only part of their crop. We feel this would be extremely difficult to enforce, thus should be removed from the label. Deficiency 1a remains unresolved and continues outstanding.

1b. If the petitioner wishes to have shorter than 12 month plant back intervals for grains, seeds, and/or root crops, then he may generate the necessary rotational crop magnitude of the residue data to support rotational crop tolerances. At this time the lowest level validated for a rotational crop tolerance using Bayer method 00200 would be 0.05 ppm.

1c. For rotational crops the petitioner proposes that treated areas may be replanted with any crop for which there are registered uses and established tolerances. This is acceptable to CBTS.

Petitioner' response

The petitioner did not submit a new label with the suggested revised directions for use for rotational crops.

CBTS comments

Since the petitioner did not respond CBTS reiterates the deficiencies on directions for/labeling as stated above.

RESIDUE ANALYTICAL METHOD

Deficiencies

3a. To adequately validate Bayer method 00200 to enforce the proposed fruiting vegetables crop group tolerance at 1 ppm we agree the mixture should be composed of the parent at 80% or 0.8 ppm, the guanidine at 0.1 ppm or 10%, and the hydroxy metabolite at 0.1 ppm or 10%. Triplicate recoveries from both tomatoes and peppers to validate the method for enforcement is acceptable. For the processed tomato commodities CBTS suggests use of the same mixture and ratios, but the fortification levels in tomato juice, puree, **paste**, wet and dried pomace will depend on the proposed FAT's. The use of one additional control or blank sample in the recovery set is acceptable to CBTS. Additional method validation data from the individual fortifications of the parent and metabolites at the proposed tolerance levels are no longer necessary.

3b. To adequately validate Bayer method 00200 to enforce the proposed grape tolerance at 1 ppm, wet and dried grape pomace at 5 ppm, and raisin waste at 15 ppm we agree that the mixture should be composed of the parent at 70%, the guanidine, olefin, and hydroxy metabolites each at 10%. Triplicate recoveries on grapes at 1 which is composed of 0.7 ppm parent and 0.1 each of the guanidine, olefin, and hydroxy metabolites is acceptable enforcement method validation. Triplicate recoveries on wet grape pomace at 5 ppm total which is composed of 3.5 ppm parent and 0.5 ppm each of the guanidine, olefin, and hydroxy metabolites is acceptable method validation for enforcement of the proposed tolerance. Adequate recoveries of the mixture from wet grape pomace will suffice for both wet and dried grape pomace. Triplicate recoveries on raisin waste at a total of 15 ppm composed of 10.5 ppm parent and 1.5 ppm each of guanidine, olefin, and hydroxy metabolites is acceptable method validation for enforcement of the proposed tolerance level. The use of one additional control or blank sample in each recovery set is acceptable. Additional method validation data from individual fortifications of the parent and metabolites at the proposed grape and processed grape commodities tolerance levels are no longer necessary.

3c. To adequately validate Bayer method 00200 to enforce the proposed Brassica (cole) leafy vegetable crop group tolerance at 3.5 ppm, and on head and leaf lettuce at 3.5 ppm we agree that the mixture should be composed of the parent at 60%, the guanidine metabolite at **20%**, and 10% each of the hydroxy and 6-CNA metabolites. triplicate recoveries on broccoli, cabbage, and lettuce at 3.5 ppm composed of 2.1 ppm parent, 0.7 ppm of the guanidine, and 0.35 ppm each of the hydroxy and 6-CNA metabolites is acceptable method validation for enforcement of the proposed crop group tolerance and individual tolerance on lettuce. Adequate recoveries of the mixture from broccoli and cabbage at the proposed crop group tolerance level are sufficient for cauliflower. Use of one additional control or blank sample in each recovery set is acceptable. Additional method validation data from individual fortifications of the parent and metabolites at the proposed Brassica (cole)leafy vegetables crop group tolerance level, and head and leaf lettuce tolerance level are no longer necessary.

3d. While hops are not a commodity in any of our present imidacloprid petitions under active review, the petitioner has proposed a protocol to validate Bayer method 00200 to enforce a soon to be proposed hops tolerance at 6 ppm. We suggest that the mixture be composed of the parent at 50%, the guanidine metabolite at 20%, and the olefin, hydroxy, and 6-CNA metabolites each at 10%. Triplicate recoveries from hops at a total of 6 ppm composed of 3 ppm parent, 1.2 ppm guanidine, and 0.6 ppm each of the olefin, hydroxy, and 6-CNA metabolites should be adequate method validation for the enforcement of a proposed tolerance on hops, **provided the residue data support a combined imidacloprid tolerance on hops at 6 ppm.** The use of one additional control or blank sample in each recovery set is acceptable. Additional method validation data from individual fortifications of the parent and metabolites at the proposed 6 ppm tolerance level on hops will not be necessary.

Petitioner's response (MRID # 434630-01)

The petitioner submitted the additional method validation data following the protocol in a document titled "Additional Validation Data to Support Imidacloprid Analytical Method 102624-R1 [Tomato, Sweet Pepper, Grapes (Whole, Wet Pomace, Raisin Waste), Broccoli, Cabbage, Lettuce, and Hops]" by P. Noland and D. Chickering of ABC Laboratories and dated October 20, 1994. The Miles report number is 105781-1.

CBTS comments

The petitioner validated Bayer method 00200, the common moiety procedure without major modifications as shown by ABC Labs method description. The method has been previously reviewed both in this petition and in PP# 3F4169, and has completed a successful tolerance method validation (TMV) in EPA laboratories [see memoranda in PP# 3F4169 from ACB].

Control grape samples were fortified in triplicate at 1 ppm with a mixed standard consisting of 0.7 ppm parent imidacloprid, and 0.1 ppm each of the olefin, guanidine, and hydroxy metabolites. Recoveries ranged from 92% to 97%, averaging 94.7% $\pm$ 2.5%. Control wet grape samples were fortified in triplicate at 5 ppm with a mixed standard consisting of 3.5 ppm parent imidacloprid, and 0.5 ppm each of the guanidine, olefin, and hydroxy metabolites. Recoveries ranged from 87% to 93%, averaging 89.3% $\pm$ 3.2%. These recoveries of the mixture from wet grape pomace will suffice to validate the method for both wet and dried grape pomace. Control raisin waste samples were fortified in triplicate at 15 ppm with a mixed standard consisting of 10.5 ppm parent imidacloprid, and 1.5 ppm each of the guanidine, olefin, and hydroxy metabolites. Recoveries ranged from 82% to 89%, averaging 85% $\pm$ 3.6%. CBTS notes that the highest fortification level; ie, 15 ppm, generated the lowest overall recoveries. We hasten to point out that all recovery data reported are acceptable as none of the recoveries were less than 80%. The petitioner has supplied supporting chromatographic and raw counting data to independently confirm the results. The petitioner has provided adequate method validation data from whole grapes, and the grape processed commodities wet grape pomace and raisin waste, to show that the enforcement method is suitable to enforce the proposed grape imida-
cloprid tolerance of 1 ppm, and FAT tolerances on grape pomace at 5 ppm and on raisin

waste at 15 ppm. Deficiency 3b is resolved.

Control tomato and sweet pepper samples were fortified in triplicate at 1 ppm with a mixed standard consisting of 0.8 ppm parent imidacloprid and 0.1 ppm each of the guanidine and hydroxy metabolites. Fortifications were made just prior to adding the extracting solvent. Recoveries from tomatoes ranged from 102% to 105% (X = 103.7% ± 1.5%). Recoveries from sweet peppers ranged from 105% to 112 % (X = 107.7% ± 3.8%). The petitioner has supplied supporting chromatographic and raw counting data to independently confirm the results. The petitioner has provided adequate method validation data from the representative commodities tomatoes and peppers to show that the enforcement method is suitable to enforce the proposed fruiting vegetables crop group imidacloprid tolerance of 1 ppm. Deficiency 3a is partially resolved with the necessary validation data still needed for processed tomato commodities.

Control cabbage, broccoli, and lettuce sample were fortified in triplicate at 3.5 ppm with a mixed standard consisting of 2.1 ppm parent imidacloprid, 0.7 ppm of the guanidine metabolite, and 0.35 ppm each of the hydroxy and 6-CNA metabolites. Fortifications were made just prior to the addition of the extracting solvent. Recoveries from broccoli ranged from 101% to 109%, averaging 105.7% ± 4.1%. Recoveries from cabbage ranged from 98% to 112%, averaging 104.3% ± 7.1%. Recoveries from lettuce ranged from 96% to 103%, averaging 100.3% ± 3.8%. The recovery data from these representative commodities are adequate to enforce a tolerance on cauliflower for which no additional recovery data were generated. The petitioner has supplied supporting chromatographic and raw counting data to independently confirm the results. The petitioner has provided adequate method validation data from the representative commodities lettuce, broccoli, and cabbage to show that the enforcement method is suitable to enforce the proposed Brassica leafy vegetables crop group imidaclo-prid tolerance of 3.5 ppm. Deficiency 3c is resolved.

Control hops samples were fortified in triplicate with a mixed standard consisting of 3 ppm parent imidacloprid, 1.2 ppm guanidine, and 0.6 ppm each of the hydroxy, olefin, and 6-CNA metabolites. Fortifications were made just prior to the addition of the extracting solvent. Recoveries from hops ranged from 87% to 102%, averaging 96.7% ± 8.3%. While the spread in recovery values was larger in hops than in other commodities CBTS does not consider it to be a problem. The petitioner has supplied supporting chromatographic and raw counting data to independently confirm the results. The petitioner has provided adequate method validation data from hops to show that the enforcement method is suitable to enforce a probable imidacloprid tolerance of 6 ppm. Deficiency 3d is resolved.

MAGNITUDE OF THE RESIDUE - PROCESSED FOOD/FEED

Deficiencies

4a. CBTS reiterates that the tomato variety used is not a standard processing tomato variety, thus the concentration and/or decline factors reported on a fresh market tomato may not reflect the concentration/decline factors from a processing variety tomato. CBTS cannot determine the appropriate imidacloprid tomato food and feed additive tolerances from the study results. While CBTS will not discard the results of this imidacloprid tomato processing study the petitioner will need to conduct

a new imidacloprid tomato processing study using a processing variety tomato treated at an exaggerated rate to ensure there are sufficient residues for processing. CBTS reiterates that the results of the present study will become supplementary and the results of the new study will be given considerable weight in determining the appropriate imidacloprid tomato FAT. Deficiency 9a is not resolved and continues outstanding.

4b. In the new imidacloprid tomato processing study the petitioner needs to generate tomato paste as one of the tomato processing commodities and to analyze the tomato paste for total imidacloprid residues. Deficiency 9b is not resolved and continues outstanding.

4c. The petitioner has previously conducted a tomato processing study using a fresh market variety tomato bearing detectable residues following an exaggerated 7.24X imidacloprid application rate. Using a fresh market type tomato total imidacloprid residues concentrated 1.89X in puree, 1.57X in wet pomace, and 5X in dry pomace. While FATs are required CBTS reiterates that judgement is deferred on the proposed 2 ppm tolerance on puree and on wet pomace, and 6 ppm tolerance on dried pomace until the petitioner completes a new imidacloprid processing study using a processed variety tomato bearing detectable residues and processed into juice, puree, **paste**, and wet and dried pomace. Deficiency 9c is not resolved and continues outstanding.

Petitioner's response

The petitioner did not formally respond in this letter. CBTS is aware of the progress being made in completing the new imidacloprid tomato processing study.

CBTS comments

Since the petitioner has not yet completed and reported the new tomato processing study CBTS reiterates the deficiencies above. They remain unresolved and continue outstanding.

cc:R.F.,Circu.,Reviewer (FDG),PP#3F4231.
7509C:CBTS:Reviewer(FDG):CM#2:Rm804Q:305-5826:FDG:12/30/94:edit:fdg:1/10/95.
RDI:SecHd:RSQuick:1/9/95:ActBrSrSci:MTFlood:1/9/95.