RF
7-22-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 22 1988

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP8E3645. Iprodione on Peaches, Nectarines and Plums. Evaluation of Analytical Methods and Residue Data. RCB No. 3946. MRID 406372-00, 406372-01.

FROM: R. W. Cook, Chemist
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and

Toxicology Branch
Hazard Evaluation Division (TS-769C)

THRU: Robert S. Quick, Section Head
Tolerance Petition Review Section I
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C)

The petitioner, Dr. W. L. Biehn, Associate Coordinator and Dr. R. H. Kupelian, National Director, Interregional Research Project No. 4 (IR-4), State Agricultural Experiment Station, Rutgers University, New Brunswick, NJ 08903, on behalf of the IR-4 Project and the Agricultural Experiment Station of California propose to amend 40 CFR 180.399 to allow the use of iprodione as a postharvest dip or spray treatment on peaches, nectarines, and plums, with no change in the established tolerance of 20 ppm on peaches, nectarines, and plums. Tolerances for iprodione on peaches, nectarines, and plums from preharvest treatment were established in the consideration of PP2F2596, which see.

Conclusions

1. The proposed use is for postharvest treatment of peaches, nectarines, and plums. The use information on the label indicates that treatment is to be at the rate of 1 lb ai/100 gal. The use directions should be

expanded to more clearly describe how the peaches, nectarines, and plums are to be treated; i.e., the type of equipment to be used, the dipping time, the number of pounds of fruit to be treated with 100 gallons.

2. The nature of the residue in plants is adequately understood. The residue of concern is iprodione, its isomer and its metabolite.

3. Adequate enforcement methods are available in PAM II.

4. We can draw no conclusion with regard to the residue data until the following questions are answered:

   a. More complete information concerning field sampling practices.

   b. There is no residue data showing iprodione from application as a spray without fruit wax. We believe that such residue data are needed.

   c. The petitioner should revise the use directions to limit the number of applications to 5 foliar applications per season plus one post harvest application.

   d. Further, the petitioner should remove the instruction to limit the PHI to 0 day or 1 day prior to harvest based upon whether the fruit will be treated with a postharvest application of Rovral^{R}. This restriction is impractical since the postharvest treatment may or may not be under grower control.

5. There is no reasonable expectation of residues of iprodione, its isomer or its metabolite in or on meat, milk, poultry, or eggs from the postharvest use proposed herein.

6. Mexican tolerances have not been established for iprodione residues on peaches, nectarines, and plums. Codex limits for iprodione <u>per se</u> on peaches and plums (including prunes) are 10 mg/kgs. Canadian limits are for the same residues (i.e., iprodione, its isomer, and its metabolite) although at a lower numerical limit than proposed herein. Thus, existing Codex and Canadian and U.S. incompatibility in the expression of the tolerance is not changed by the proposed petition action. A Codex sheet is attached to our review.

Recommendation

We recommend against the proposed postharvest treatment of peaches, nectarines, and plums, for the reasons cited in Conclusions 1, 4a, 4b, 4c, and 4d.

Detailed Considerations

Manufacture and Formulation

The manufacturing process and identity of impurities were reviewed by A. Rathman (PP8G2084, 3/2/79), which see. We have previously concluded that no additional residue problems would arise from impurities.

The formulation proposed for use is Rovral^{R} Fungicide, containing 50% of the active ingredient iprodione.

Directions for Use MRID 406372-00

Peaches, nectarines, and plums

Apply Rovral^{R} as an overall spray in sufficient water to obtain thorough coverage of bloom, foliage and/or fruit (20 to 400 gallons per acre by ground equipment and a minimum of 15 gallons per acre by air). Aerial applications are only recommended during bloom period. Apply 0.25 to 0.5 lbs. product per 100 gallons of spray or 1.0 to 2.0 lbs product per acre.

The rates of Rovral^{R} per 100 gallons are based on a standard of 400 gallons per acre dilute spray for mature trees. For less than mature trees, apply the rate per 100 gallons until runoff. If less than 400 gallons of spray solution is applied to mature trees, refer to the rate per acre to insure that the proper amount of material is applied.

Brown Rot Blossom Blight: Apply first at early bloom (approximately 5% bloom). If conditions are favorable for disease development, apply again at full bloom and at petal fall.

Fruit Brown Rot: An application should be made whenever temperatures and moisture conditions favor disease infection in the 5-week period prior to harvest. If these conditions persist or reoccur, a second application should be made. This second application should be made no sooner than 7 days following the first preharvest application.

If Rovral^{R} is to be used also as a postharvest treatment, preharvest applications may only be made up to and including 1 day before harvest. If Rovral^{R} is not to be used as a post harvest treatment, preharvest applications may be made up to and including the day of harvest. Do not apply more than 2.0 lb of Rovral^{R} per

acre per application. Do not make more than six applications of Rovral^{R} per season.

For postharvest disease control, apply Rovral^{R} once to the fruit as a spray without rinsing. Rovral^{R} may be incorporated into the wax spray. Use 2 lb Rovral^{R} per 100 gallons (1200 ppm active). Rovral^{R} may be tank mixed with DCNA products registered for use on peaches, nectarines, and plums. Do not graze animals in treated orchards. Do not feed cover crops grown in treated orchards to livestock.

The proposed use is for postharvest treatment of peaches, nectarines, and plums. The only use information on the label is that treatment is to be at the rate of 1 lb ai/100 gal. The use directions should be expanded to more clearly describe how the peaches, nectarines, and plums are to be treated; i.e., the type of equipment to be used, the dipping time, the number of pounds of fruit to be treated with 100 gallons.

We further note the label on Rovral^{R} clearly limits the number of applications to 5 per season. The petitioner should revise the use directions to limit the number of applications to 5 foliar applications per season plus one post harvest application. Further, the petitioner should remove the instruction to limit the PHI to 0 day or 1 day prior to harvest, since this restriction is based upon the impractical fore-knowledge whether the fruit will be treated with a postharvest application of Rovral^{R}. This restriction is impractical since the postharvest treatment may or may not be under the control of the grower.

Note: Tolerances are established at 20 ppm under 40 CFR 180.200 for residues of 2,6-dichloro-4-nitroaniline in peaches and nectarines, and 15 ppm in plums from pre- and postharvest applications.

Nature of the Residue

Plants

No new metabolism data are submitted on the metabolism of iprodione. The metabolism of iprodione in peach trees was considered in PP2F2596 (see R.B. Perfetti review of 5/13/82). In summary, the metabolism of iprodione in peach trees was similar to the metabolism in strawberries and wheat. Greater than 90% of the radiolabeled residue in peaches was identified as iprodione, its isomer and its metabolite. It was concluded that the metabolism of iprodione in stone fruit was adequately understood.

Since the petition of concern here adds a postharvest application to peaches, nectarines, and plums, it is apparent that the metabolism of iprodione in plants will not be affected. Thus, for the purposes of the use proposed herein, the nature of the

residue is adequately understood; the residue of concern consists of iprodione, its isomer and its metabolite.

Animals

There are no livestock feed items associated with the production of peaches, nectarines, and plums and therefore the metabolism of iprodione in animals is not of concern herein.

Analytical Method MRID 406372-01

The analytical method for iprodione on peaches, nectarines, and plums is titled: Analyses for Iprodione, RP32490, RP30228. There are no other names, dates, titles, study number, report number, or other unique identifier for the method. The petitioner used the same method for peaches, nectarines, and plums.

Iprodione, RP32490, RP30228 are extracted from plant substrate with acetone. After filtration and removal of the solvent by rotary evaporation, analysis is by HPLC using Kratos 757 photodetector at 227 nanometers on a Waters C-18 Sep-Pak^R eluted with 40% acetonitrile in water for RP32490, and 60% acetonitrile in water for iprodione and RP30228. The limit of detection is reported to be 0.025 ppm for each compound.

Untreated peaches, nectarines, and plums showed no detectable amounts (<0.025 ppm) of iprodione, RP 30228 and RP 32490. Recovery of iprodione, RP 30228, and RP 32490 in peaches was 100%, 75%, and 95%, respectively, at 0.4 ppm fortification level. Recovery of iprodione, RP 32490, and RP 30228 in nectarines was 80 - 90%, 100 - 107%, and 60 - 65% at 0.2 and 0.4 ppm fortification levels, respectively. Recovery of iprodione, RP 32490, and RP 30228 in plums was 70%, 90%, and 77%, respectively at 0.4 ppm fortification level.

There are methods available in PAM II for the analysis of iprodione in several substrates. A successful trial of the PAM II method was conducted on kiwifruit in conjunction with PP3F2810 (R. Perfetti, 3/21/83).

We conclude that adequate methods are available for enforcement purposes.

Magnitude of the Residue MRID 406372-01

Three field trials have been conducted, one each on peaches, nectarines, and plums. We have noted above that the petitioner has not provided any information on residue levels in dried prunes.

The field trial was conducted in Parlier, CA, by J. M. Ogawa, Dept of Plant Pathology, University of California at Davis. Four to six trees, replicated 4 times, were treated at 1 lb. a.i./A with

a Bean Hand Gun at 350 psi at rate of 400 gallons per acre. Treatment dates were 2/25, 3/10, 4/1, 6/24, and 7/20/87, and harvest samples were collected on 7/21/87 and 7/22/87. The varieties were Fay Elberta peaches, Le Grand nectarines, and Casselman plums. The harvest or sampling technique is not described (i.e., whether mechanical or hand picked, whether samples were obtained from the outer spray zone or from underside low hanging branches).

The postharvest treatment was described as follows:

> "The treater is small (3' x 12') but it has features identical to a larger commercial treater used in stone fruit packing houses. Fruit are dumped onto a conveyor belt which takes it into rotating brushes with overhead nozzles spraying chlorinated water (50-70 ppm), rinsed with fresh water, partially dried on sponge rollers, sprayed with a mixture of fungicide in wax by a overhead nozzle, sponge rolled to remove excess, then packed into boxes. Residue samples are taken after the fungicide in wax has dried on the fruit."

There is no residue data showing iprodione from application as a spray without fruit wax. We believe that such residue data are needed.

PEACHES

Recovery of iprodione, RP 30228, and RP 32490 was 100%, 75%, and 95%, respectively, at 0.4 ppm fortification level. Storage recovery samples showed recovery of iprodione, RP 30228, and RP 32490 at 96%, 94%, and 125%, respectively, at storage fortification levels of 0.5 ppm. Untreated peaches showed no detectable amounts (<0.025 ppm) of iprodione, RP 30228 and RP 32490. All values were corrected for recovery.

Peaches receiving five foliar applications of 1 lb ai/A showed 0.61 to 1.5 ppm iprodione and no detectable amounts (<0.025 ppm) of RP 30228 or RP 32490 (<0.03 ppm). Peaches receiving five foliar applications at 1 lb ai/A and one spray at 0.5 ai/100 gal (600 ppm) showed 0.16 to 0.43 ppm iprodione. No detectable residue (<0.025 ppm) of RP 32490 or RP 30228 was found. Peaches receiving five foliar applications at 1 lb ai/A and one spray at 1 lb ai/100 gal (1200 ppm) showed 0.35 to 0.66 ppm iprodione and 0.04 ppm of RP 30228. No detectable residue of RP 32490 (<0.025 ppm) was reported.

NECTARINES

Recovery of iprodione, RP 32490, and RP 30228 was 80 - 90%, 100 - 107%, and 60 - 65%, respectively, at 0.2 and 0.4 ppm fortification levels, respectively. Storage recovery samples showed recovery of iprodione, RP 34290, and RP 30228 88%, 128%,

and 70%, respectively, at storage fortification levels of 0.5 ppm. Untreated nectarines showed no detectable amounts (<0.025 ppm) of iprodione, RP 30228 and RP 32490. All values were corrected for recovery.

Nectarines receiving five foliar applications of 1 lb ai/A showed 1.1 to 1.3 ppm iprodione and no detectable amounts (<0.025 ppm) of RP 30228 or RP 32490 (<0.03 ppm). Nectarines receiving five foliar applications at 1 lb ai/A and one spray at 0.5 ai/100 gal (600 ppm) showed 0.20 to 0.37 ppm iprodione. No detectable residue (<0.025 ppm) of RP 32490 or RP 30228 was found. Nectarines receiving five foliar applications at 1 lb ai/A and one spray at 1 lb ai/100 gal (1200 ppm) showed 0.21 to 0.30 ppm iprodione. No detectable residue of RP 32490 or RP 30228 (<0.025 ppm) was reported.

PLUMS

Recovery of iprodione, RP 32490, and RP 30228 was 70%, 90%, and 77%, respectively at 0.4 ppm fortification level. Storage recovery samples showed iprodione, RP 32490, and RP 30228 of 74%, 104%, and 82%, respectively, at storage fortification levels of 0.5 ppm. Untreated plums showed no detectable amounts (<0.025 ppm) of iprodione, RP 30228 and RP 32490. All values were corrected for recovery. No residue data are available for dried prunes.

Plums receiving five foliar applications of 1 lb ai/A showed 0.2 to 0.23 ppm iprodione and no detectable amounts (<0.025 ppm) of RP 30228 or RP 32490 (<0.03 ppm). Plums receiving five foliar applications at 1 lb ai/A and one spray at 0.5 ai/100 gal (600 ppm) showed 0.07 to 0.09 ppm iprodione. Residues of RP 32490 were 0.03 ppm and no detectable residue (<0.025 ppm) of RP 30228 were found. Plums receiving five foliar applications at 1 lb ai/A and one spray at 1 lb ai/100 gal (1200 ppm) showed 0.09 to 0.24 ppm iprodione and 0.04 ppm of RP 32490. No detectable residue of RP 30228 (<0.025 ppm) was reported.

Previously submitted residue data (from PP2F2596, 5/13/82, R. B. Perfetti) for peaches showed 3.7 to 16 ppm iprodione and 0.1 to 0.3 ppm of RP 30228 from 2 to 7 ground applications (at 1 lb a.i./A) and a 1 day PHI. Aerial application data (submitted in PP8G2087) showed up to 16.6 ppm iprodione and 0.7 ppm RP 30228 from up to 7 application and a zero day preharvest interval. Based upon this data, it was recommended that the tolerance be established at 20 ppm from 5 applications of 1 lb. a.i./A. and a zero day interval between last application and harvest. Additional residue data submitted in PP3F2810 for plums showed 0.17 ppm iprodione at 0 day PHI after 4 to 6 applications of 1 lb. a.i./A. Residue data for prunes (dried plums) were submitted and allowed the conclusion that food additive tolerances were not required for prunes.

The petitioner contends that the currently submitted residue data more accurately reflect expected residues since earlier trials were conducted on small plot trials, while the current data are based upon larger plots, that is, 4 to 6 trees/plot, replicated 4 times. We note that the petitioner (IR-4) has more than frequently argued the other side of the coin, claiming small plot trials with limited number of samples are adequate for the establishment of national tolerances.

Magnitude of the Residue in Animals

Since there are no pertinent animal feed items derived from peaches, nectarines, and plums, we are not concerned with the possibility of residues in meat, milk, poultry, or eggs.

Other Considerations

Reduction of Residues

The petitioner contends that residues of iprodione are unlikely to exceed the proposed tolerance, and therefore methods for removing the residues are unnecessary.

International Tolerances

An International Residue Limit Status sheet is attached. The residue for Codex purposes consists of iprodione per se; on peaches and plums (including prunes) the Codex limit is 10 mg/kg. There are no Mexican limits for iprodione on peaches, nectarines, and plums. The Canadian limit of 5 ppm on peaches is for residues of iprodione, its isomer, and its metabolite.

In consideration of the current tolerance incompatibility between Codex and Canadian and U.S. tolerances, the proposed action (i.e., postharvest treatment without changing U.S. tolerance) would not change the current incompatibility.

Attachment: IRLS Sheet

cc: RF, PP8E3619, RWCook, PMSD (ISB), circ (7)
TS769:RCB:HED:RWCook:7/15/88:rwc:7/17/88:Rm810H:557-7324
RDI:Section Head:RSQuick:7/21/88:RDSchmitt:7/21/88

J. Jones 7/18/88

INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL Iprodione

CODEX NO. 111

CODEX STATUS:

☐ No Codex Proposal Step 6 or above

Residue(if Step 8): Iprodione

Crop(s)	Limit (mg/kg)
peaches	10
plums (including prunes)	10

PROPOSED U.S. TOLERANCES:

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RCB Reviewer R. W Cook

Residue: Iprodione, its isomer and its metabolite 180.399

Crop(s)	Limit (mg/kg)
Peaches	20
Nectarines	20
Plums	20

CANADIAN LIMITS:

☐ No Canadian limit

Residue: iprodione including metabolites 3-isopropyl-N-(3,5-dichlorophenyl)-2,4-dioxoimidazolidine-1-carboxamide and 3-(3,5-dichlorophenyl)-2,4-dioxoimidazolidine-1-carboxamide.

Crop(s)	Limit (mg/kg)
peaches	5

MEXICAN LIMITS:

☑ No Mexican limit

Residue: _____

Crop(s)	Limit (mg/kg)

(9)

NOTES:

* Add post harvest treatment

Form revised 1986