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RECORD NO.

SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

APR 13 1988

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PETITION OR EXP. NO.

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RD ACTION CODE/TYPE OF REVIEW 510

TYPE PRODUCT(S) : I, D, H, F, N, R, S Synthetic Pyrethroid

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. D. Stubbs (28)

PRODUCT NAME(S) ASANA (Esfenvalerate)

COMPANY NAME Puerto Rico

SUBMISSION PURPOSE Proposed Sec 18 for use on pineapples in Puerto Rico

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.

Pesticide Name: E/S Fenvalerate (ASANA)

100.0 Submission Purpose and Label Information

100.1 Section 18 Application

The Puerto Rico Department of Agriculture has proposed that a specific exemption be granted for the use of ASANA (esfenvalerate), (S)-cyano (3-phenoxyphenyl) methyl-(S)-4-chloro-alpha-(i-methylethyl) benzeneacetate on pineapples in Puerto Rico for the control of Batrachedra comosae.

100.2 Application Rate/Methods/Directions

Quantity of the Pesticide Expected to be Applied:

The recommended application of ASANA to control Batrachedra comosae on pineapples will be from 0.025 to 0.05 lb a.i. per acre as a foliar spray, using sufficient water to obtain uniform coverage. The total amount of product to be applied during the 1987/88 season should not exceed 1000 lbs a.i..

Method of Application:

Pesticide is to be applied by ground equipment as a dilute foliar spray.

Duration of Application:

The first application will be made at the beginning of flowering, with a second application 10 days later. Two additional applications, each at a 10 day interval may be necessary if flowering is variable and or extended. A preharvest interval of 60 days and a maximum residue limit of 0.05 ppm are proposed.

100.2 Proposed Nature, Scope, and Frequency of Emergency

Batrachedra comosae larvae are a serious pineapple pest. The larvae pierce the fruit (Gummosis), and reduce the quality and the commercial value of the fruit. Red Spanish is the dominant commercial pineapple variety grown in Puerto Rico (other varieties include, PR 167, Smooth Cayenne, PR Bullhead and Mariota). Red Spanish is the most susceptible variety to Gummosis. This variety accounts for more than 90% of the pineapple acreage and is preferred for export because of it's medium size, firmness and shape.

The Batrachedra comosae are reported to attack pineapple fields every year. Experiments conducted on Puerto Rican pineapples have produced yields in which only 13% of the

2

crop had fruit gum spot in the 0 to 1 index range as compared to 57% of the fruit in the untreated areas.

100.3 Target Organism

Female Batrachedra comosae moths are the target organism because they oviposite only in blossming pineapples. The larvae pierce the fruit which damages the fruit, making it less attractive to the consumer.

100.4 Geographical Distribution

Puerto Rico

100.5 Acreage

In 1987, 3,200 acres of pineapples were harvested. The pineapple acreage for 1989 is expected to be 6,500 acres.

100.6 Precautionary labeling

This pestiicide is toxic to wildlife and extremely toxic to fish. Use with care when applying in areas adjacent to any body of water. Do not apply directly to water. Do not, apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes. Apply this product only as specified on this label.

101.0 Formulation Information

ASANA 19 EC, EPA Registration No. 352-502

Active Ingredient:

(S)-cyano (3-phenoxyphenyl) methyl-
(S)-4-chloro-alpha-(1-methylethyl)
beneneacetate.....24%
Inert Ingredients.....76%

This product contains 1.91bs. of ASANA per gallon.

101.0 Hazard Assessment

Discussion

Puerto Rico's Department of Agriculture is requesting an emergency exemption for the use of ASANA on pineapples. ASANA is currently registered for use on a number of crops such as field corn, melons, peppers, potatoes, tomatoes, fruits, and nuts, squash, cucumber, eggplant, beans, sweet corn, cotton, soybeans, and

3

peanuts. The registered rates of application range from 0.0125 to 0.05 lb/ai/A.

ASANA is to be applied to a maximum of 6,500 acres of pineapples in Puerto Rico at a rate of 0.025 to 0.05 lb/ai/A, four applications per season. This application rate is within currently registered rates.

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Fenvalerate is a pyrethroid insecticide that has four optical isomers (two asymmetric carbons), the most potent being the 2S-XS isomer. In the development of ASANA, Shell Oil Company changed the formulation of fenvalerate from the racemic mixture to the single SS isomer claiming that there was no difference in fate or toxicity of the two formulations.

Studies have shown that the SS isomer degraded at approximately a similar rate as the mixture (half-life in aerobic soil was about 75 days, while, degradation of the SS isomer in the racemic mixture produced a half-life of 95 days).

ASANA and fenvalerate appear to be of similar toxicity to aquatic organisms and possibly avian species. Results from an ASANA acute bluegill toxicity study (LC_{50} = 0.26 mg/l) were similar to a fenvalerate bluegill study (LC_{50} = 0.70 mg/l). One can further assume that ASANA toxicity is comparable to fenvalerate toxicity for Daphnia (LC_{50} = 1.6 ppb), rainbow trout (LC_{50} = 6.2ppb), and fathead minnow (MATC for fry survival and egg production was between 0.09 and 0.21 ppb, respectively). Following these assumptions, ASANA, like fenvalerate is probably nontoxic to birds (fenvalerate, bobwhite quail LC_{50} = 20,000 ppm).

Although, there is practically no acute fenvalerate/ASANA toxicity to birds, there is the strong possibility of hazard to aquatic organisms. Application rates appear low (i.e. 0.025 to 0.05 lb/ai/A), but, the effects of crop runoff, repeat application, and persistence may impact aquatic systems in streams and lakes adjacent to pineapple fields. To evaluate this potential hazard, an estimated environmental concentration (EEC) has been calculated as follows:

1) One Application
2) Assume 1% runoff from field;
3) Assume 40 acre drainage with 8 acre runoff into a pond; and
4) Assume a maximum application of 0.05 lb/ai/A.

Therefore: 0.05 lb/ai/A x 0.01 = 0005 lbs/ai/A loading

0.0005 x 8 = 0.0040 lb/ai/A reaches the water.

Estimated EEC at three water depths are as follows:

6" = 2.94 ppb
3' = 0.49 ppb
6' = 0.24 ppb

The effect level for fathead minnow fry survival and adult egg production (fenvalerate) was found to be 0.9 and 0.21 ppb, respectively. A comparison of the EEC values with toxic effect levels indicates that a potential for chronic hazard can occur if these fish life stages are exposed to ASANA levels of 0.24 to 2.94 ppb. In addition to chronic toxicity problems, acute toxicity to fish can be expected (EEC's exceed the bluegill LC_{50} of 0.42 ppb). These chronic and acute considerations suggest that one application of ASANA can significantly impact an exposed aquatic ecosystem and that multiple application combined with persistence, can cause a greater threat.

This pineapple use of ASANA does not appear to present an increased risk of toxicity to avian species. The pesticide previously used on pineapple fields in Puerto Rico, Malthion, presents a comparable degree of hazard to birds as does ASANA. Both pesticides are practically nontoxic to birds (Fenvalerate LC_{50}>5000ppm bobwhite quail; Malathion LC_{50}=3497ppm bobwhite quail).

102.0 Endangered Species Considerations

Discussions with biologist (Felix Lopez) of the Fish and Wildlife Service of Puerto Rico, suggest that the the yellow-shouldered black bird (Agelaius xanthomas) may be indirectly impacted by the use of ASANA. This bird is an omnivore that feeds heavily on arthropods and frequents the pineapple fields. The use of ASANA could result in a decrease in this birds food supply.

102.0 Adequacy of Toxicity Data

Data were not submitted with this review. There appears to be sufficient fish and wildlife studies in EEB's fenvalerate file to evaluate the proposed ASANA Section 18. ASANA is a single SS isomer of fenvalerate (fenvalerate is composed of racemic mixture of four isomers). Most of the data received to date indicate that there is probably no significant difference in the fate or toxicity of the single isomer and the racemic mixture. EEB agreed (5/6/86) to Shell's

5

substitution of ASANA for fenvalerate in any future testing.

103.0 Conclusions

ASANA is highly toxic to aquatic but, not avian species. However, because of acute and chronic toxicity to aquatic organisms and the estimated exposure (refer to EEC calculations) the use of ASANA on pineapples may present a significant increase in hazard to aquatic ecological systems adjacent to the sprayed fields.

A direct impact to endangered species does not seem likely, however, possible habitat destruction may result from the use of ASANA on pineapples.

The EEB can not concur on this Section 18 use of ASANA for pineapples in Puerto Rico, because, of the potential for impact to aquatic life in areas adjacent to pineapple fields and the possibility of hazard to an endangered species

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REPORT OF TELEPHONE CALL OR VISITOR				NOTE: Complete this form. Write "NA" where not applicable.
	INCOMING CALL		VISITOR	DATE 3/14/88
	OUTGOING CALL		CONGRESSIONAL	TIME OF CALL

NAME AND ADDRESS OF CALLER OR VISITOR

Felix Lopez
USFW
Box 491
Boqueron, Puerto Rico 00622

PHONE NO. (Include Area Code or IDS No.)
8-809-851-7297

REGISTRATION, ID NO. OR FILE SYMBOL

DATE OF LATEST SUBMISSION

BRIEF SUMMARY OF CONVERSATION

Puerto Rico Department of Agriculture has proposed that a specific exemption be granted for the use of ASANA on pineapples in Puerto Rico for the control of Batrachedra comosae. EEB confered with Felix Lopez (USFW) on the possibility of impact to endangered species.

ACTION TAKEN OR RECOMMENDED

Felix Lopez, USFWS biologist, suggested that the yellow-shouldered black bird (Agelaius xanthomas) may be indirectly impacted by the use of ASANA. The Fish and Wildlife Service of Puerto Rico requested information on the pesticide and will submit a Section 7 consultation.

RECORDED BY (Name)
Miachel Rexrode EEB/HED

REFERRED TO (Name)