

# Regulations Governing Papaya Ringspot Virus Control

Myron O. Isherwood, Jr.  
Plant Pest Control Branch  
Hawaii Department of Agriculture

## Introduction

Several significant events affecting Hawaii's papaya industry and its battle with the papaya ringspot virus (PRV) have taken place since last year's HPIA conference. These events include the implementation of intensive roguing in lower Puna of papaya plants suspected to be or infected with PRV by the Hawaii Department of Agriculture (HDOA) under the 180-day emergency proclamation; the expiration of the emergency proclamation in mid-December, 1992; the HDOA's rule-making proposing and governor's approval in September, 1993 of Chapter 4-69A, Hawaii Administrative Rules (HAR), Pests for Control or Eradication, designating PRV a plant pest for control or eradication (see following appendix); the first distributions by the University of Hawaii's (UH) Plant Pathology Department of cross-protected papaya seedlings to growers on Oahu; and the Board of Agriculture's approval of the UH's proposal to conduct experiments near Panaewa to determine the effectiveness of cross-protecting the 'Kapoho' solo papaya variety against PRV.

## Current Regulations Affecting Papaya and PRV Controls

**Plant Quarantine.** Some of you may not be aware that the Plant Quarantine Branch of the HDOA plays a very important role in protecting agriculture from the entry into the state and/or the inter-island movement of agricultural pests within Hawaii by enforcing Chapter 150-A, Plant and Non-Domestic Animal Quarantine, Hawaii Revised Statutes (HRS). The provisions of the law are further expanded by administrative rules, and in the case of Chapter 150-A and papayas, Chapter 4-71, HAR, Non-Domestic Animal and Microorganism Import Rules, and Chapter 4-72, HAR, Plant Intrastate Rules.

PRV (Mild Strain) was listed on the Restricted List of Microorganisms (Part A), Chapter 4-71, HAR, which allowed for research by universities and government agencies. Listing of PRV (Mild Strain) in the Restricted List, Part A required the Board of Agriculture to establish and approve conditions for PRV (Mild Strain) for limited field

testing in the state. In response to a request from the University of Hawaii to field test the mild strain on the islands of Oahu and Hawaii, the Board established and approved conditions recommended by PQB staff at its meeting of January 20, 1993.

To allow commercial use of PRV (Mild Strain), the PQB initiated an amendment to its rules Chapter 4-71, HAR, to move PRV (Mild Strain) of the Restricted Microorganism List to Part B: For Private and Commercial Use. This amendment was approved by Governor Waihee and became effective on September 13, 1993. The amendment sets forth the Board's authority to establish more specific permit conditions relating to, but not limited to time, place, location, use, and special precautions. Under this revision, the Board is authorized to establish specific sites where PRV (Mild Strain) can or cannot be used. Another significant change provides for permit cancellation for violation of permit conditions.

The Plant Intrastate Rules require that all plant and propagative plant parts be inspected prior to being transported within the islands of the state. The transportation of papaya plants and plant parts except seed and fruit are prohibited from an infested area to a restricted area for PRV.

**Plant Pest Control.** Much of the authority for actions taken by the Plant Pest Control Branch (PPC) to control or eradicate plant pests are found in Chapter 141, HRS. This authority is expanded upon in Chapter 4-69A, HAR, which was approved by Governor Waihee and became effective on September 4, 1993.

What does this new authority provide to the HDOA in its efforts to control or eradicate PRV from your fields? It provides a number of options, depending on the intensity of infection, location, impact on affected farmers and the industry. Section 141-3, HRS, Designation of pests, control or eradication of pests, emergency power, states that "(a) The department of agriculture shall establish by rule, the criteria and procedures for the designation of pests for control or eradication. (b) The department of agriculture shall, so far as reasonably practicable, assist, free of cost to individuals, in the eradication of . . . diseases . . .

injurious to vegetation of value . . ." and "(c) Nothing withstanding subsection (a), if the department finds an incipient infestation of a pest that is injurious or deleterious or that is likely to become injurious or deleterious to the agricultural . . . industries of the State without immediate action, it may proceed without prior notice or upon a minimum of forty-eight hours notice and hearing adopt an emergency rule for the eradication of the pest to be effective for a period of not longer than one hundred eighty days without renewal."

Section 141-3.5, HRS, Control or eradication programs, states that "(a) The department of agriculture shall develop and implement a detailed control or eradication program for any pest designated in section 141-3, using the best available technology in a manner consistent with federal and state law. (b) For any pest designated by emergency rule as provided in section 141-3, the department shall implement an emergency program using the best available technology in a manner consistent with state and federal law."

Section 141-3.6, HRS, Entry of private property to control or eradicate any pests, reads "(a) The department of agriculture shall give at least five days notice to the landowner and the occupier of any private property of its intention to enter the property for the control or eradication of a pest. Written notice sent to the landowner's last known address by certified mail, postage prepaid, return receipt requested, shall be deemed sufficient notice. The notice shall set forth all pertinent information on the pest control program and the procedures and methods to be used for control or eradication. (b) After notice as required by subsection (a), any member of the department or any agent authorized by the department may enter at reasonable times any private property other than dwelling places to maintain a pest control or eradication program, being liable only for damage caused by acts beyond the scope of the person's authority, or the person's negligence, gross negligence, or intentional misconduct. If

entry is refused, the department member or agent may apply to the district court in the circuit in which the property is located for a warrant to enter on the premises to effectuate the purposes of this chapter. The district court may issue a warrant directing a police officer of the circuit to assist the department member or agent in gaining entry onto the premises during regular working hours or at other reasonable times."

Section 141-7 General penalty, Part (b) states "When any landowner or land occupier fails to cooperate with the department in its pest control or eradication programs, the department may proceed with its program at the expense of the landowner or land occupier. Any person who violates this chapter or any rule adopted by the department pursuant to section 141-3 shall be fined not less than \$100 nor more than \$500 for the first offense, and not less than \$1,000 not more than \$5,000 for each offense thereafter."

Chapter 4-69A, HAR, Pests for Control or Eradication, was approved by Governor Waihee following public hearings on all major islands. As required by Chapter 141-3.5 (a) HRS, PRV is designated in Chapter 4-69A as a pest for control or eradication. Testimonies received during the public hearings overwhelmingly supported designating PRV a pest and having the HDOA continue its intensive roguing program in lower Puna.

As many of you recall, the 30-foot roguing carried out under the emergency rule was a compromise reached after considering inputs from the university, industry, growers, and the HDOA. We plan to meet with grower association officers and packing house representatives in the near future to review the current PRV situation in lower Puna and to develop the next course of action, now that the rules Chapter 4-69A is in effect. We hope that the participants will come to an agreement on collective actions to be taken by industry, growers, and the HDOA, which will result in Hawaii continuing to have a strong, viable, papaya industry.

TITLE 4 DEPARTMENT OF AGRICULTURE  
SUBTITLE 6 DIVISION OF PLANT INDUSTRY  
CHAPTER 69A  
PESTS FOR CONTROL OR ERADICATION

- §4-69A-1 Scope of rules
- §4-69A-2 Definitions
- §4-69A-3 Criteria to designate pests for control or eradication
- §4-69A-4 Procedure for the designations of pests for control or eradication
- §4-69A-5 Control or eradication of noxious weeds; entry of private property

Historical Note: Prior rules relating to pest control were adopted under §141-2, Hawaii Revised Statutes, as chapter 69, Hawaii Administrative Rules, and were repealed on the effective date of this chapter. (Eff. 7/13/81, R SEP 04 1993 )

§4-69A-1 Scope of rules. These rules shall govern the criteria and procedures for designation of pests for control or eradication programs on public or private property other than dwellings in the State. (Eff. SEP 04 1993 ) (Auth: HRS §141-3) (Imp: HRS §141-3)

§4-69A-2 Definitions. As used in this chapter: "Agricultural industry" means agricultural, horticultural, aquacultural, or livestock industry.

"Board" means the board of agriculture.

"Head" means the head of the division of plant industry.

"Livestock" means farm animals kept for use or profit and includes but is not limited to horses, mules, cattle, sheep, goats, swine, and poultry.

"Noxious weeds" means those plant species determined to be or likely to become injurious, harmful, or deleterious to the agricultural industry, forest and recreational areas, and conservation districts of the State and which are designated and listed as noxious weeds in chapter 4-68.

"Other pests" means any invertebrate pest harmful to the agricultural industry or vegetation of value.

"Vegetation of value" means vegetation such as desirable trees, plants, and shrubs.  
(Eff. ~~SEP 04 1993~~ ) (Auth: HRS §141-3) (Imp: HRS §141-3)

§4-69A-3 Criteria to designate pests for control or eradication. (a) Each insect, mite, other pest or plant disease designated by the department as a pest for control or eradication programs shall meet one or more of the following criteria:

- (1) There is a record of economic damage in the scientific literature documenting the designated pest's potential for injury to the agricultural industries or vegetation of value in the State.
- (2) The designated pest is causing or is about to cause economic loss by damage to a crop or agricultural commodity, by adversely affecting marketability, causing a loss in yield, or the like.
- (3) The designated pest transmits plant diseases which cause economic loss to a crop or agricultural commodity, by adversely affecting marketability, causing a loss in yield, or the like.
- (4) The designated pest is injurious or deleterious to livestock by virtue of being venomous, parasitic, or a carrier or reservoir of diseases.

(b) All noxious weeds designated pursuant to chapter 4-68 are pests for control or eradication within the meaning of this chapter.

(Eff. ~~SEP 04 1993~~ ) (Auth: HRS §141-3) (Imp: HRS §141-3)

§4-69A-4 Procedure for the designation of pests for control or eradication. (a) The head shall direct a continuous program of study and evaluation of insects, mites, other pests, or plant diseases for potential designation as pests.

(b) Study and evaluation of an insect, mite, other pest or plant disease for designation as a pest may be initiated by the head or, upon request, by other government agencies or private organizations.

(c) When sufficient data have been accumulated on an insect, mite, other pest, or plant disease to warrant designation, the head may submit to the board a request for designation as a pest for control or eradication.

(d) The insect, mite, other pest, or plant disease shall meet the criteria for designation as a pest, as provided in section 4-69A-3.

(e) An insect, mite, other pest, or plant disease shall be designated as a pest for control or eradication by the department following approval of the designation by the board, pursuant to chapter 91.

(f) The list of insects, mites, other pests, or plant diseases designated as pests, adopted by the board on May 27, 1993, and located at the end of this chapter, is made a part of this section.

(g) When the head determines that an insect, mite, other pest, or plant disease officially designated as a pest no longer meets the criteria for designation as a pest, the head may submit to the board a request to rescind the official designation for the pest. The request shall include a report with reasons to justify rescission of the designation.

(h) For rescission as submitted as outlined in subsection (g) above, the official designation of an insect, mite, other pest, or plant disease as a pest shall be rescinded following approval by the board, pursuant to chapter 91.

(Eff. SEP 04 1993 ) (Auth: HRS §141-3)  
(Imp: HRS §141-3)

§4-69A-5 Control or Eradication of noxious weeds; entry of private property. To the extent there may be any conflict between this chapter and chapter 4-68, control and eradication programs for noxious weeds shall be governed by section 152-6, Hawaii Revised Statutes, and chapter 4-68. However, if after following the procedures provided therein, entry to private property other than dwelling places for control or eradication of noxious weed infestations is refused, any member of the department or any agent authorized by the department may gain entry in the same manner as provided in section 141-3.6, Hawaii Revised Statutes, for maintenance of any pest control or eradication program."

(Eff. SEP 04 1993 ) (Auth: HRS §141-3) (Imp: HRS §141-3, §141-3.6, §152-6)

List of Insects, Mites, Other Pests, and Plant Diseases  
Designated as Pests  
for Control or Eradication Purposes by the  
Hawaii Department of Agriculture

May 27, 1993

INSECTS

<u>Scientific Name</u>	<u>Common Name</u>
<u>Adoretus sinicus</u>	Chinese rose beetle
<u>Aleurocanthus woglumi</u>	citrus blackfly
<u>Anastrepha spp.</u>	an exotic fruit fly species
<u>Anoplolepis longipes</u>	longlegged ant.
<u>Aphis gossypii</u>	cotton/melon aphid
<u>Apis mellifera</u>	honey bee
<u>Aspidiella hartii</u>	turmeric scale
<u>Bactrocera correctus</u>	guava fruit fly
<u>Bactrocera cucurbitae</u>	melon fly
<u>Bactrocera dorsalis</u>	oriental fruit fly
<u>Bactrocera latifrons</u>	solanaceous fruit fly
<u>Bactrocera tryoni</u>	Queensland fruit fly
<u>Bemisia tabaci</u>	sweetpotato whitefly
<u>Ceratitidis capitata</u>	Mediterranean fruit fly
<u>Cosmopolites sordidus</u>	banana root borer
<u>Coccus viridis</u>	green scale
<u>Cryptophlebia illepida</u>	koa seedworm
<u>Cryptophlebia ombrodelta</u>	litchi fruit moth

May 27, 1993

§4-69A-4(f)

<u>Delia radicum</u>	cabbage maggot
<u>Diatraea saccharalis</u>	sugarcane borer
<u>Dysmicoccus alazon</u>	a mealybug
<u>Dysmicoccus brevipes</u>	pineapple mealybug
<u>Elasmopalpus lignosellus</u>	lesser cornstalk borer
<u>Frankliniella occidentalis</u>	western flower thrips
<u>Heteropsylla cubana</u>	leucaena psyllid
<u>Hypothenemus hampei</u>	coffee berry borer
<u>Hypothenemus obscurus</u>	tropical nut borer
<u>Keiferia lycopersicella</u>	tomato pinworm
<u>Liriomyza spp.</u>	agromyzid leafminers
<u>Metamasius callizona</u>	bromeliad weevil
<u>Monolepta australis</u>	redshouldered leaf beetle
<u>Myndus crudus</u>	American palm cixiid
<u>Myzus persicae</u>	green peach aphid
<u>Nezara viridula</u>	southern green stink bug
<u>Oryctes rhinoceros</u>	coconut rhinoceros beetle
<u>Ostrinia nubilalis</u>	European corn borer
<u>Pentalonia nigronervosa</u>	banana aphid
<u>Pheidole megacephala</u>	bigheaded ant
<u>Phoracantha semipunctata</u>	eucalyptus longhorned beetle
<u>Plutella xylostella</u>	diamondback moth

<u>Pogonomyrmex</u> spp.	harvester ants
<u>Popillia japonica</u>	Japanese beetle
<u>Pseudonirvana rufofascia</u>	two-spotted leafhopper
<u>Sipha flava</u>	yellow sugarcane aphid
<u>Solenopsis invicta</u>	red imported fire ant
<u>Thrips palmi</u>	melon thrips
<u>Toxotrypana curvicauda</u>	papaya fruit fly
<u>Trialeurodes vaporariorum</u>	greenhouse whitefly
<u>Vespula pensylvanica</u>	western yellowjacket
<u>Xylosandrus compactus</u>	black twig borer

**MITES**

<u>Acarapis woodi</u>	honey bee tracheal mite
<u>Polyphagotarsonemus latus</u>	broad mite
<u>Tetranychus cinnabarinus</u>	carmine spider mite
<u>Varroa jacobsoni</u>	varroa mite

**OTHER PESTS**

<u>Scientific Name</u>	<u>Common Name</u>
<u>Coenobita clypeatus</u>	land hermit crab
<u>Corbicula fluminea</u>	freshwater clam
<u>Dreissena polymorpha</u>	zebra mussel
<u>Helix aspersa</u>	brown garden snail
<u>Megalobulimus oblongus</u>	giant South American snail



May 27, 1993

§4-69A-4(f)

Pomacea canaliculata

apple snail

Theba pisana

white garden snail

#### PLANT DISEASES

<u>Common Name</u>	<u>Causal Organism</u>
Bacterial wilt of heliconia	<u>Pseudomonas solanacearum</u> (banana, Strain D)
Banana bunchy top disease	Banana bunchy top virus
Black Sigatoka of banana	<u>Mycosphaerella fijiensis</u> var. <u>difformis</u>
Cadang cadang disease of coconuts	A viroid
Citrus canker or bacterial canker of citrus	<u>Xanthomonas campestris</u> p.v. <u>citri</u>
Coffee berry disease	<u>Colletotrichum coffeanum</u>
Coffee rust	<u>Hemileia vastatrix</u>
Downy mildew(s) of corn	<u>Peronosclerospora maydis</u> <u>Peronosclerospora philippinensis</u> <u>Peronosclerospora sacchari</u> <u>Peronosclerospora sorghi</u> <u>Sclerophthora macrospora</u> <u>Sclerophthora rayssiae</u> var. <u>zeae</u> <u>Sclerospora graminicola</u>

Fusarium wilt of banana (Panama disease)	<u>Fusarium oxysporum</u> f.sp. <u>cubense</u>
Koa disease	<u>Fusarium oxysporum</u> f.sp. <u>koae</u>
Lethal yellowing of coconuts	A mycoplasma-like organism
Maize chlorotic mottle disease	Maize chlorotic mottle virus
Moko disease of banana	<u>Pseudomonas solanacearum</u> Race 2 (banana, Strain B)
Orchid rust diseases	<u>Coleosporium bletiae</u> <u>Sphenospora kevorkianii</u> <u>Sphenospora mera</u> <u>Sphenospora saphena</u> <u>Uredo behnickiana</u> <u>Uredo nigropuncta</u>
Papaya ringspot virus	A virus