DEPARTMENT OF FOOD AND AGRICULTURE

PROPOSED CHANGES IN THE REGULATIONS

Title 3, California Code of Regulations

Section 3435 subsection (b)

Asian Citrus Psyllid Interior Quarantine

INITIAL STATEMENT OF REASONS/

POLICY STATEMENT OVERVIEW

Description of Public Problem, Administration Requirement, or Other Condition or Circumstance the Regulation is Intended to Address

This regulation is intended to address the obligation of the Department of Food and Agriculture to protect the agricultural industry from the movement and spread of injurious plant pests within California.

Specific Purpose and Factual Basis

The specific purpose of Section 3435 is to provide authority to the State to regulate the movement of hosts and possible carriers of Asian citrus pysllid (ACP), *Diaphorina citri*, from the regulated area.

The factual basis for the determination by the Department that the amendment of this regulation is necessary is as follows:

On September 16, 2005, the United States Department of Agriculture (USDA), Animal and Plant Health Service (APHIS), issued a Federal Order to impose restrictions on the interstate movement of Asian citrus psyllid (ACP), *Diaphorina citri*, host material and citrus greening (CG) host material from quarantined areas in Florida in order to prevent the artificial spread of CG and ACP. APHIS subsequently issued revised Federal Orders on May, 3, 2006, October 30, 2007, November 2, 2007, January 11, 2008, June 5, 2008 and June 24, 2008. On July 14, 2008, APHIS issued its last Federal Order as a result of finding ACP and CG in Louisiana. Under this last Federal Order, 1) the entire State of Florida and Orleans parish, Louisiana are regulated for CG; 2) portions of the States of Texas and Louisiana for ACP; and, 3) the entire States of Florida and Hawaii, entire Territory of Guam, and the Commonwealth of Puerto Rico, for ACP.

CG is also referred to as Huanglongbing (HLB), which is associated with several species of the genus *Candidatus* Liberibacter a phloem-limited, uncultured bacteria. HLB is also referred to as "yellow dragon disease" and "yellow shoot disease." The spread of the CG-associated bacteria is primarily via the insect vectors, the ACP and the African citrus psyllid (*Trioza erytreae*). Once a psyllid acquires the bacterium, it retains it for life. The ACP is of most concern to California citrus growers because it is established in Florida, Louisiana, Texas, Hawaii and Mexico and poses a more immediate threat of introduction from these areas. It also occurs elsewhere, such as Brazil, China, Cuba and the Caribbean. The African citrus psyllid is found in eastern Africa, Saudi Arabia, Yemen, and occasionally in the Canary Islands and Madeira.

The Federal Interim Rule (Federal Register, Vol. 75, No. 116, dated June 17, 2010, Docket No. APHIS-2008-0015, Citrus Greening and Asian Citrus Pysllid; Quarantine and Interstate Movement Regulations) prohibits the interstate movement of nursery stock host material from an ACP regulated area to any other citrus-producing state. Additionally, all host fruit must be cleaned, washed and packed at a packing facility located with the regulated area prior to its being eligible for interstate shipment. The USDA cannot regulate less than an entire state which has an ACP infestation unless the affected state adopts its own regulation pertaining to the intrastate movement requirements which are substantially the same as the federal restrictions pertaining to the interstate movement requirements. Texas has already adopted an ACP quarantine and Louisiana is in the process of adopting a regulation.

Once infected, there is no cure for the CG infected citrus trees, which decline and die within a few years. Additionally, the fruit produced by infected trees is not suitable for either the fresh market or juice processing due to the significant increase in acidity and bitter taste. For these reasons, CG is considered the most devastating of all citrus diseases and is even listed as a "select agent" under federal regulation.

On June 27, 2008, APHIS provided notification that ACP was confirmed in Tijuana, Mexico. The ACPs were first collected from a residential property located approximately two miles from Mexico's border with California. In response to the detections in Tijuana, Mexico, on July 14, 2008, the Department developed draft "ACP Detection, Delimitation, and Treatment Guidelines." These guidelines are based in part on the USDA New Pest Response Guidelines for Citrus Greening Disease (Floyd and Krass 2008) and the Department's Glassy-Winged Sharpshooter

Statewide Survey & Delimitation Protocols as of 2002 [Revised March 2008] (CDFA 2008). Additional information came from Grafton-Cardwell et al. (2006).

These guidelines include detection protocols that are designed to enhance the statewide protocols for urban, rural residential, cropland, and nursery survey with intensified survey protocols being proposed in those counties bordering Mexico (San Diego, Imperial). The Department proposes to immediately conduct intensified survey activities in San Diego County within a five mile band north of the California Mexico border. The immediate survey plans have two major components, an Urban and Rural Residential Detection Survey and a Nursery Detection Survey.

The Urban and Rural Residential Detection Survey use yellow panel traps at a density of five traps per square miles, serviced weekly and the traps will be replaced and relocated every six weeks to another host at least 500 feet away (if other hosts are available). Additionally, visual surveys and the use of sweep nets will be conducted once at each trapping site when the trap is placed or relocated at that site. Finally, twenty sites per square mile will be visually inspected and sweep-netted each month. These sites will be rotated each month if hosts are available at alternate sites.

The Nursery Detection Survey use yellow panel traps at a density of five traps per acre, traps will be placed in or near hosts and in and around holding areas designated for incoming shipments. The traps will be serviced weekly, will not be rotated and will be replaced every six weeks or sooner if needed. A monthly visual survey will also be conducted.

The Department uses Geographic Information Systems (GIS) mapping programs to plot locations of all the detections of ACP. As a result, based upon the criteria contained in the USDA regulatory protocol, the Department determined that there are new infestations of ACP requiring the expansion of the quarantine area.

On December 14, 2010 (PDR #1443890), an adult ACP was detected in the La Conchita area of Ventura County. It was confirmed as ACP on December 17, 2010. This detection meets the State's and federal regulatory protocol for expanding the quarantine area in this area which includes portions of Santa Barbara County and all of Ventura County.

On December 17, 2010 (PDR #1443911), an adult ACP was detected in the Redlands area of San Bernardino County. It was confirmed as ACP on December 22, 2010. This detection meets the State's and federal regulatory protocol for expanding the quarantine area in this area which includes portions of San Bernardino and Riverside counties.

The amendment of subsection 3435(b) expanded the quarantine area for ACP by approximately 3,625 square miles; including approximately 312 square miles of Santa Barbara; approximately 1,834 square miles of Ventura County; approximately 700 square miles of San Bernardino County; and, approximately 1,779 square miles of Riverside County. This was the smallest area to be placed under quarantine which was jointly agreed to be the USDA, the Department and the affected county agricultural commissioners. The entire counties of Imperial, Los Angeles and Orange; and, portions of Riverside, San Bernardino and San Diego are already under quarantine for ACP. The total proposed quarantine area would then become approximately 20,562 square miles. The effect of the amendment of this regulation is to provide authority for the State to perform quarantine activities against ACP within this additional area and existing regulated areas.

The ACP adults are small (three to four mm) with mottled brown wings and typically survive one to two months depending upon temperature. The ACP can transmit the CG-associated bacteria from the fourth nymphal instar through the adult stage with a latent period as short as one day or as long as 25 days. The bacterium is thought to replicate in the psyllid.

The ACP completes its life cycle on *Citrus* species and close rutaceous (citrus) relatives. All life stages (eggs, nymphs, and adults) can be found on the new growth or shoot tips. Adult psyllids typically lay their eggs on the tips of growing shoots or in the crevices of unfolded feather-flush leaves. Eggs are almond-shaped and bright yellow-orange. There are five nymphal instar stages. Adults feed on the underside of leaves. Their feeding behavior is characteristic with their bodies lifted at about a 45^{o} angle from the leaf surface. During feeding, large amounts of plant sap are extracted and subsequently excreted as honeydew or waxy tubules. As this insect feeds, it injects a salivary toxin that causes the developing shoots to be malformed; twisted, curled, or laterally notched. In severe cases, the shoot tip will die. In addition, infested leaves may be covered with white waxy deposits from the psyllids and sooty mold that grows on the

large amounts of honeydew excreted by the psyllids. In Florida, the ACP was found before symptoms of CG were observed, and this could certainly occur in California.

ACP is found on four continents and numerous islands. It is widespread in southern China, Southeast Asia, India, Indonesia, and New Guinea. On the African continent, it is limited to Saudi Arabia. In South America, ACP is well established in Brazil and is also found in Paraguay, Venezuela, Bolivia and up through Central America. On the mainland of the United States ACP is well established in Florida and Texas. There are large populations in Hawaii on the islands of Hawaii, Maui and Oahu. In addition, it is known to occur in over 15 states in Mexico and in Cuba.

The probability is high that a private citizen, tourist or immigrant will introduce the CG-associated bacterium into California through the inadvertent movement of plant material including fruit from their homeland or areas visited to their backyard in a residential area. CG-infected trees do not live long and this scenario may be self-eliminating, at least until the psyllid arrives. One possible explanation for the Florida situation is that numerous backyard citrus trees had been infected with CG but in the absence of a vector, it went unnoticed. Once the ACP became established, it moved the CG-associated bacteria from backyards into commercial groves. The movement of both CG-associated bacteria and the ACP appear to have been accelerated through the movement of *Murraya* and citrus plants through retail nurseries and garden centers, especially of the nationwide chain stores.

California is the number one economic citrus state in the nation, with the USDA putting the value of California citrus at $1,131,851,000 (Federal Register Vol. 71No.83; published May 1, 2006; pg 25487). A 2002 report by the Arizona State University School of Business indicates that there is at least $825.6 million of direct economic output and another $1.6 billion when all upstream suppliers and downstream retailers are included. This represents over 25,000 direct and indirect employees. To protect this source of revenue, California must do everything possible to exclude both CG-associated pathogens and ACP from the state.

For 2008 in Florida, the estimated increased production costs for citrus range from $266 to $332 million. There are approximately 600,000 acres of citrus in production in Florida. This translates into increased production costs of $443 to $553 per acre. This estimated is based

upon an eight dollar per tree replacement cost. In California, the estimated cost to replace a tree is from $10 to $20. Using a cost of $15 per tree would push the projected production costs up to $450 to $550 per acre. The estimated citrus acreage in 2008 in California is approximately 290,000 acres. The projected increased citrus production costs in California would be at least $130.5 to $159.5 million.

In 2007, the California Institute for Specialty Crops determined that California citrus growers absorb production inputs and state mandated costs greater than producers anywhere else in the nation or the world. To maintain a competitive opportunity, the California citrus industry has to produce a consistently better piece of fruit in greater volume. If the quality of California citrus deteriorates, the California producer loses export opportunity and domestic shelf space. For every 1,000 acres of orange productivity lost, losses of $1.7 million in output and over $3.4 million in total state economic activity, including $1 million in employment income, would result. Should CG-associated bacteria become established throughout California, not just citrus growers but California's economy as a whole would suffer. Further, Federal, State and County regulatory personnel would have increased duties and program costs should survey and eradication activities be implemented. This would further strain an already-impacted State budget.

It should be noted that citrus acreage in Florida has decreased from approximately 858,000 acres in 2005 when HLB was initially detected, to approximately 600,000 acres in 2008. The lost acreage was due to a combination of HLB, citrus canker, hurricanes and real estate investment. However, whatever losses were due to HLB will be even greater in California because most citrus produced is destined for the fresh market, rather than juice as it is in Florida.

When ACP interceptions occur, insect and/or plant samples are collected and sent to a diagnostic laboratory (either USDA or the Department) for insect identification and and/or analysis for CG-associated bacteria. To date, no plant material has tested positive for CG-associated bacteria.

The California citrus industry has taken a great deal of responsibility in preparing for the introduction and establishment of CG-associated bacteria and psyllid vectors. Funding has been

allocated towards research on easy, early (i.e., pre-clinical) detection methods (i.e., one primer set to detect all strains rather than primer sets specific for each known strain; host systemic responses) and the identification of CG-associated bacterial strains, and vector relationships. In addition, a public relations firm has been hired to determine the most effective and efficient methods to educate the general public and make them feel as though they are part of the solution. Industry leaders (research and marketing boards) are involved in procuring federal funds for national research programs in the areas of host plant resistance, etiological agents and variants of CG, specific native and exotic natural enemies of the insect vectors, and pesticide efficacy and new chemistries.

California citrus industry leaders recognized how Florida was at a loss of ample supplies of CG-free citrus stock when the pathogen was detected in 2005. As a result, plans are underway to expand the screenhouse facility at the UC Lindcove Research and Extension Center that houses the industries pathogen-free budwood source to allow for the protection of additional varieties. Other alternatives are being considered to protect valuable citrus propagation sources, germplasm, and breeding material such as isolated and/or protected locations and tissue culture. For long-term survey and management, the industry may pursue the formation of pest control districts.

In Florida and countries where CG exists, insecticides have been a first line of defense to eliminate the psyllid vector, thereby reducing the spread of the CG-associated pathogens. Applying insecticide sprays at critical flushing periods in order to kill psyllid nymphs may be an effective method of CG control should CG be introduced into California. Since insecticide use registrations vary between crops and urban areas and between fruit trees and ornamentals, any eradication treatment program will need to be tailored to each situation.

A number of registered insecticides, including insect growth regulators and biocontrol agents of unknown efficacy for ACP control, should be evaluated for potential use:

1. Commercial citrus: methomyl, formetanate, malathion, piperonyl butoxide + pyrethrins, pyrethrins, pyriproxyfen and *Beauveria bassiana* (a fungal biocontrol agent).

2. Nursery citrus: bifenthrin, permethrin, acephate, dinotefuran, Imidacloprid + cyfluthrin, azadirachtin, *B*. *bassiana*, pyriproxyfen, pyrethrin + rotenone, Kryocide and dinotefuran.

3. Ornamentals: permethrin and acephate.

The implementation of biological control methods (the use of beneficial organisms to attack pest populations) will be an important component of an integrated pest management program to reduce populations of the ACP. As there are no known psyllids in California citrus, exotic natural enemies from the pest's area of origin may need to be imported into the United States or from Florida under strict quarantine protocols. There may be some generalist predators such as the coccinellid beetles that will come into citrus from other habitats but to what extent these would be effective is not known at this time. Natural enemies obtained from commercial sources or mass reared by government or industry personnel can be periodically released into field situations once the psyllid becomes established.

Populations of ACP in Florida are fed upon by many generalist arthropod predators such as spiders, lacewings, hover flies or syrphids, and minute pirate bugs, and are attacked by a number of parasites. The coccinellids exert the greatest amount of control. Two lady beetles, *Olla v-nigrum*, which is native to California and *Harmonia axyridis* are the most important predators of ACP nymphal stages in Florida. *H. axyridis* was imported from Japan to control the pecan aphid and is established in parts of California. Two tiny parasitic wasps have been imported and released in Florida. *Tamarixia radiata* was imported from Taiwan and Vietnam, and *Diaphorencyrtus aligarhensis* was imported from Taiwan.

The ACP has the capability of causing significant irreparable harm to California's agricultural industry, especially if CG is also introduced. While the Department's compliance with the California Administrative Procedure Act and the California Environmental Quality Act (CEQA) are separate actions, they can be interrelated. Although adoption of specific regulatory authority can be the beginning of a project and therefore covered by CEQA, this regulation, for the reasons already set forth, constitutes a specific act necessary to prevent or mitigate an emergency.

California Environmental Quality Act

"Specific actions necessary to prevent or mitigate an emergency" are exempt from the California Environmental Quality Act (CEQA). Public Resources Code Section 21080(b)(4). "'Emergency' means a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services." Public Resources Code Section 21060.3.

Any quarantine actions undertaken by the Department will be in cooperation and coordination with the USDA and the affected county agricultural commissioners. It was immediately necessary to implement quarantine actions in order to prevent the artificial spread of ACP to the uninfested areas of California. The total regulated area is now approximately 20,562 square miles.

The USDA cannot regulate less than the entire State unless the State has first adopted a quarantine regulation which is substantially the same as the existing federal quarantine requirements. Therefore, it was necessary to amend this regulation as an emergency action to prevent the entire State from being regulated by the USDA for ACP.

Estimated Cost of Savings to Public Agencies or Affected Private Individuals or Entities

The Department of Food and Agriculture has determined that the adoption and subsequent amendments of Section 3435 do not impose a mandate on local agencies or school districts and no reimbursement is required under Section 17561 of the Government Code. Each county commissioner in a regulated county requested the State to implement the regulated areas in their county.

The Department also has determined that no savings or increased costs to any state agency, no reimbursable costs or savings under Part 7 (commencing with Section 17500) of Division 4 of the Government Code to local agencies or school districts, no nondiscretionary costs or savings to local agencies or school districts, and no costs or savings in federal funding to the State will result from the adoption and subsequent amendments of Section 3435.

The cost impact of the changes in the regulations on private persons and businesses are expected to be insignificant.

The Department has determined that the proposed actions will not have a significant adverse economic impact on housing costs or California business, including the ability of California businesses to compete with businesses in other states. The Department's determination that the action will not have a significant statewide adverse economic impact on business was based on the following:

The Department has determined there are approximately 754 nurseries within the regulated area. The cost of compliance for nurseries was calculated using the average per plant pesticide costs for foliar and drench treatments and the average per plant applicator costs. The assumptions included:

1. At any one time, plants will cover two thirds of the acreage in a nursery;
2. The cost of pesticide per ounce was used;
3. The cost of approved foliar pesticide per plant was determined;
4. The cost of approved drench pesticide per plant was determined;
5. The costs of application were determined;
6. Each nursery had an average of one tenth of an acre of host material; and
7. Each nursery sold one tenth of an acre of host material per year (approximately 719 plants/year).

There are many variables that may impact the actual cost for compliance. There are currently six different foliar and three drench labeled products that are registered for use in California and which may be used for treatment to obtain quarantine certification. The product costs will also vary based upon the given volume purchased at any one time. The method of application, foliar or drenching, affects the cost of application, and the type of material used may affect the length of time the plant material is eligible for quarantine certification.

The length of time to treat an acre varies greatly depending on size of the container holding the nursery stock (one gallon container versus 36" box), the size and spacing of the containers, walkways, roadway, etc.

Other factors that may affect the cost of compliance include:

- How long the nursery stock is held at the affected nursery prior to its sale and the need to have replacement stock in the production cycle.
- Pending sales contracts may vary from nursery to nursery and drive the nursery's choice of approved materials to use.
- Labor costs may vary from nursery to nursery.
- Whether the nursery has a qualified pesticide applicator on site or has to hire one varies from nursery to nursery and size of the nursery may be a factor.
- The availability of the necessary treatment equipment and type of equipment may vary from nursery to nursery.
- There is a substantial difference between start-up and ongoing costs.
- A nursery may have two to three crops per year in its production cycle.

Therefore, rather than there being a single prescriptive treatment, there are a number of possible treatment combinations available to ensure that the performance standard, treated in a manner to eliminate live life stages of ACP from nursery stock, is met based upon the biological risk of the nursery stock being exposed to a live life stage of ACP.

To calculate the average cost per citrus tree, the Department used a figure of one citrus tree per four square feet. This results in 7,187 container trees per acre based upon the assumption of an average of two thirds of an acre being occupied by plants in the production nursery.

The cost per ounce for approved registered foliar pesticides ranges from a low of $6.72 to $8.14 per fluid ounce. Based upon the labeled application rates, the foliar costs per plant range from $0.004 to $0.13 per plant. The average cost per plant is $0.01.

The cost per ounce for approved registered drench pesticides ranges from a low of $0.47 to $9.07 per fluid ounce and $0.52 per tablet. Based upon the labeled application rates, the drench costs per plant range from $0.08 to $0.47 per plant. The average cost per plant is $0.23. The application of the pesticide accounts for approximately three quarters of the costs. If the nursery hires an applicator, the applicator costs alone can be $4.37 per plant. If a nursery conducts their own treatments, the costs are approximately $1 per plant.

At the time this notice was prepared the Department has not been able to determine the number of nurseries within the regulated area. However, the total increased production costs per plant range from a low of $1.61 to a high of $4.61 per plant. Based upon these costs and the above assumptions, the average regulated nursery could have a low cost of $1,160 and a high cost of $3,320 per year. It is likely that these increased costs would then be ultimately passed on to the consumer.

There are approximately 11,500 licensed nurseries in the entire State. The majority of these, especially the citrus production nurseries, are located outside the regulated area.

The United States Department of Agriculture's Federal Domestic Quarantine Order for ACP only restricts the interstate movement of host commodities produced in portions of the California counties of Imperial and San Diego. The emergency amendment to Section 3435 was necessary to ensure the State's regulation continued to be substantially the same as the federal order. If the State's regulation is not substantially the same as the federal order, the USDA cannot regulate less than the entire State.

Some of the affected businesses located outside the current regulated area are also interstate shippers. Therefore, this regulatory action was necessary to provide the majority of potentially affected California businesses, which are not located inside the current State regulated area, the continued ability to compete with businesses in other states without unnecessary federal restrictions or prohibitions on California's interstate commerce.

Based on the preceding information, it was determined that the amendment of Section 3435, may have an adverse economic impact on some nursery businesses producing or selling host nursery stock within the regulated area, but it is not expected to be significantly adverse to all nurseries. Additionally, these costs are likely to be passed on to the consumer. For the most part, there are a number of optional ways to comply that are available to the affected businesses so they may select the means with the lowest cost and easiest implementation for them. For the majority of businesses within the regulated area, no additional costs will be incurred.

Assessment

The Department has made an assessment that the repeal of the regulation would not 1) create or eliminate jobs within California; 2) create new business or eliminate existing businesses with California; or 3) affect the expansion of businesses currently doing business with California.

Alternatives Considered

The Department of Food and Agriculture must determine that no alternative considered would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

Information Relied Upon

The Department relied upon the following studies, reports, and documents in the proposed adoption of Section 3435:

"Pest and Damage Record #1443911," dated December 17, 2010, California Department of Food and Agriculture, Plant Health and Pest Prevention Services.

"Pest and Damage Record #1443890," dated December 14, 2010, California Department of Food and Agriculture, Plant Health and Pest Prevention Services.

Email dated December 23, 2010, from nick Condos to Stephen Brown, Wendi Wilkinson, Nawal Sharma, Melinda Mochel and Susan McCarthy.

Letter dated December 23, 2010, from John Snyder to A.G. Kawamura.

Letter dated December 21, 2010, from Henry S. Gonzales to A.G. Kawamura.

Letter dated December 20, 2010, from Cathleen M. Fisher to Nick Condos.

Federal Register, Vol. 75, No. 116, dated June 17, 2010, Docket No. APHIS-2008-0015, Citrus Greening and Asian Citrus Pysllid; Quarantine and Interstate Movement Regulations.

"New Pest Response Guidelines, Citrus Greening Disease," dated June 2, 2008, United States Department of Agriculture, Animal and Plant Health Inspection Service.

"Huanglongbing (HLB) or Citrus Greening and the Vectors of HLB-associated Bacteria: *Diaphorina citri,* the Asian Citrus Psyllid (AC), and *Trioza erytreae,* the African Citrus Psyllid," Draft Action Plan for California, dated June 1, 2008, HLB Task Force 2007.

"Detection of '*Candidatus* Liberibacter asiaticus' in *Diaphorina citri* and Its Importance in the Management of Citrus Huanglongbing in Florida," dated April 2008, Phytopathology, K.L. Manjunath, S.E. Halbert, C. Ramadugu, S. Webb, and R.F. Lee.

"Citrus Industry Update," dated March/April 2008, University of Florida, Institute of Food and Agricultural Sciences.

"Citrus Greening: Questions and Answers," dated March 2007, United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine.

Citrus Acreage, Production and Value, 1997-2006, dated 2007, California Agricultural Resource Directory.

"Citrus Huanglongbing: Understanding the Vector-Pathogen Interaction for Disease Management," dated December 2007, R.H. Briansky and M.E. Rodgers, University of Florida, Institute of Food and Agricultural Sciences.

"Asian Citrus Psyllid," dated 2006, Publication 8205, University of California, Division of Agriculture and Natural Resources.