

Contra Costa County Agriculture and Weights & Measures Newsletter



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This is a part of a series of quarterly newsletters designed to inform growers in Contra Costa County about issues important to the Agricultural community. We welcome your questions and comments about any topics in this newsletter as well as suggestions for future newsletters. Contact us at:

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Asian Citrus Psyllid

Asian Citrus Psyllid (ACP) is a serious pest of citrus not only because it feeds heavily on citrus leaves and stems but also because it can transmit the disease huonglongbing (HLB). HLB, (also called citrus greening), is the most devastating disease of citrus in the world. Symptoms include yellow shoots, leaf mottling, small upright leaves, and lopsided fruit with a bitter flavor. Infected trees decline in health, produce inedible, green fruit, and eventually die. There is no cure for the disease and infected trees must be removed and destroyed to prevent further spread of HLB.

California has a \$1.88 billion citrus industry which ranks first in the U.S. in terms of value. If ACP begins to transmit the disease HLB, the entire industry could be at risk. Establishment of ACP and HLB would cause economic losses

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The Asian Citrus Psyllid is a serious pest of citrus because it can transmit the disease huanglongbing (HLB) when feeding.



Huanglongbing (HLB) disease causes mottling and yellowing of citrus leaves.

from direct damage to citrus plants and from quarantine restrictions designed to prevent the spread of ACP to other states and countries. HLB infected psyllids have already caused devastation in Asia, India, parts of the Middle East, and South and Central America. The once flourishing citrus industry in India is slowly being wiped out by dieback primarily caused by HLB.

ACP was first found in the United States in Palm Beach County, Florida, in June 1998. It was first detected in California in San Diego County in August 2008, and has since been found in Imperial, Orange, Los Angeles, Riverside, Santa Barbara, Ventura, and San Bernardino counties. Control measures and quarantines are underway in those counties. Currently, Florida, Georgia, South Carolina, Louisiana, and Mexico have detected both ACP and HLB. Over 300,000 acres of citrus have been removed in Florida due to HLB. California, Texas, Mississippi, Alabama, and Hawaii have detected ACP but not HLB. Although HLB has not yet been detected in California, that could change at any time.

ACP adults are 3 to 4 mm (about 1/8 inch) long with a brown mottled body and wings. The ends of the wings are broad and have a dark brown band around the outer edge. The insect is covered with a whitish waxy secretion, making it appear dusty. Nymphs are generally yellowish orange

in color, with large filaments around the body. The nymphs move slowly, are difficult to see, and cannot fly. Most visible are the waxy, white excretion filaments they produce. The tiny (0.3 mm) eggs are long and almond-shaped. Fresh eggs are pale in color, but then turn yellow and finally orange at the time of hatching.

Eggs are laid on the tips of growing shoots on and between unfurling leaves. Females lay 300 to 800 eggs during their lifetime. Nymphs pass through five instars. The total life cycle requires from 15 to 47 days, depending on environmental factors such as temperature and season. The adults may live for more than a month. Populations are typically low in the winter or during dry periods. There are nine to 10 generations a year, with up to 16 observed under observation in field cages.

ACP feeds mainly on *Citrus spp.*, at least two species of *Murraya*, and several other members of the citrus family. Direct injury caused by ACP results from the withdrawal of large amounts of sap from the plant as they feed and produce copious amounts of honeydew. The honeydew coats the leaves of the tree, encouraging sooty mold to grow. However, the most serious damage caused by ACP is due to its ability to

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Trees infected with huanglongbing produce lopsided fruit with a bitter flavor.



Counties send their yellow sticky traps to CDFA to be examined under high magnification to detect Asian Citrus Psyllid.

effectively vector the bacterium *Candidatus Liberibacter asiaticus* that causes HLB.

If ACP is not present, HLB cannot spread. Although ACP is most easily spread by infested nursery stock, there are many other ways it can be moved into new areas. Fruit, flowers, cut foliage, budwood, green waste, and equipment used to grow, harvest, or transport host material may also contain its life stages. As a result, the movement of these materials out of quarantined areas has been regulated. Citrus fruit that has been commercially processed within the quarantine area may be shipped out under permit because commercial processing eliminates the risk of any live life stages.

The California Department of Food and Agriculture, U.S. Department of Agriculture, and County Agricultural Commissioners are trapping, surveying, carefully inspecting citrus trees, and sweep-netting to help detect ACP. Any infested properties that are found are treated with ground applications of pesticides.

As a part of the detection survey, yellow sticky traps are placed at the rate of 5 traps per square mile in urban residential areas and 15 traps per square mile in and near commercial citrus orchards. Since ACP is so small, it is hard to detect it without magnification. As a result, all traps are submitted to a state trapping supervisor for closer inspection at a designated ACP screening facility.

Pesticide Notification

When pesticides have been applied to a field, it is important to make sure no one gets sick from exposure to them. That's why California has developed a notification system to ensure that persons who might go into a treated field during the pesticide application or during the restricted entry interval afterwards are informed that it is not safe to enter until the danger has passed.

The property operator's employees are generally most at risk of becoming exposed to any pesticides used on his/her property. However, any other persons who go into the field during the application or restricted entry interval could also be exposed. It is the property operators' responsibility to give notice to their own employees (fieldworkers, pesticide handlers, irrigators, etc.) prior to the application and the restricted entry interval that follows. Property operators are also responsible to give notice to anyone else the operator knows will be likely to enter, such as farm labor contractors, irrigation district ditch tenders, construction crews, utility workers, etc.

When making a pesticide notification, it is important to provide full information about the application to anyone who might be at risk of

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Anyone the grower knows is likely to enter a field during a pesticide application or a restricted entry interval must be notified.



Operators do not need to give notice if the field has been posted unless both oral notification and posting are required by the label.

exposure. Also, all notifications must be given well enough ahead of the application to allow workers to get the information and take any necessary action. Operators should remember to allow extra time for managers and supervisors to notify their crews in the case of farm labor contractors, irrigation districts, etc.

Notification can be given orally or in writing and must be given in a manner the person can understand. If necessary, interpreters must be provided. Operators are not required to give notice to employees if the employees will not enter the field or walk within 1/4 mile of it during the application or restricted entry interval. They also do not need to give notice if the field has pesticide posting (unless the label requires both posting and oral notification). If there is a change in the date of the scheduled application, all the information must be provided again in a new, corrected notice.

When a property operator hires a pest control business to apply a pesticide, then the business must give prior notice to the operator. This notice must be given in enough time before the application for the operator to make all his/her own notifications. The notification to the operator by the business must include: the date of the scheduled application; the location of the field; the pesticide name, EPA#, and active ingredient; spray adjuvant name and California

registration # (if any); restricted entry interval; whether posting is required; and any safety precautions required by the label.

The operator then must give notice to his/her own employees, contractors, and any other persons likely to enter the treated field during the application. The notification must include: the location of the field, the date of the scheduled application, and instructions not to enter the field until the operator has authorized it. Employers, such as farm labor contractors, will then use the information provided by the operator to notify their own employees.

Once the pesticide application has been completed, another set of notifications must be made to employees, contractors, and any other persons likely to enter the treated field during the restricted entry interval. Notifications given after the application has been completed are intended to let people know exactly how long they have to stay out of the treated field. This type of notification is very similar to the notification given prior to the application. It includes much of the same information, is given in a manner the person can understand, and is provided well before the person might enter the treated field.

Notification of a completed application is first given by the pest control business to the

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Pest control businesses must give operators notice before each pesticide application and also after each has been completed.



Farm labor contractors need to be notified before their crews enter treated fields.

property operator. This notification to the operator must include: the location of the field; the date and hour the application was completed; the pesticide name, EPA#, and active ingredient; spray adjuvant name and California registration # (if any); and the restricted entry and preharvest intervals (unless the operator has a written recommendation from a licensed pest control advisor). Although the business can provide this notification orally, the operator must keep a written record of the information the pest control business has provided.

The operator then must give notice to his/her own employees, contractors, and any other persons likely to enter the treated field during the restricted entry interval. The notification must include: the location of the field, the time during which entry is restricted, and instructions not to enter the field until the restricted entry interval has expired. Employers, such as farm labor contractors, will then use this information to notify their own employees.

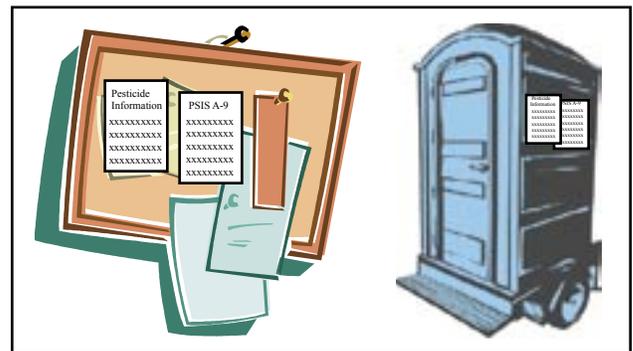
As is true for the notification given before the application, this notice can also be provided orally or in writing and must be given in a manner the person can understand. Operators are not required to give notice to employees if employees will not enter the field or walk within 1/4 mile of it during the restricted entry interval or if the field has pesticide posting (unless the label requires both posting and oral notification).

Fieldworker Pesticide Information

When fieldworkers work in a treated field, employers are required to display certain written information before the fieldworkers enter it. A treated field is one that has been treated with a pesticide or has had a restricted entry interval within the last 30 days. Display means that employees must be able to easily see and read the information without having to ask anyone. The documents can be kept in a binder or filing cabinet as long as the employees know where they are and that they have the right to see them.

There are three types of written information that must be provided for fieldworkers; application specific information, the Pesticide Safety Information Series (PSIS) A-9 which discusses hazard communication, and emergency medical care information. The first two types must be displayed at a central location where employees start their workday or at the work site if there is no central location. Emergency medical information must be displayed at the work site.

Application specific information must include: the location of the field; the date and hour the application was completed; the pesticide name, EPA#, and active ingredient; spray adjuvant name (if any) and California registration #; and the restricted entry interval. If a property operator uses a farm labor contractor to work in a treated field, he/she must provide the written application specific information for the contractor.



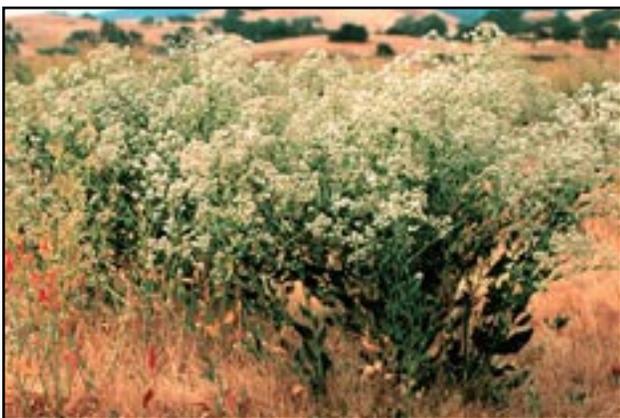
Application information and the PSIS A-9 must be displayed at a central location or at the work site if there is no central location.

Perennial Pepperweed

Perennial pepperweed (*Lepidium latifolium*) is an invasive exotic weed that infests thousands of acres across the western United States. It originally came from southeastern Europe and Asia and may have entered the U.S. before the 1940's in contaminated crop seed. Both the California Department of Food and Agriculture and the California Invasive Plant Council list perennial pepperweed as a noxious weed of greatest ecological concern.

Perennial pepperweed is an extremely aggressive weed in pastures, cropland, roadsides, rangeland, irrigation ditches, and wetlands. It is tolerant of water with a high salt content and can also invade brackish marshes. It forms dense thickets that crowd out native plant and animal species. The dead stems are slow to decay and will accumulate to form a thick, semi-woody thatch. Deer, livestock, and other grazing animals avoid eating perennial pepperweed if other forage is available.

Perennial pepperweed is a long-lived member of the mustard family. The seeds germinate and new shoots emerge from established plants in late winter and early spring. At first, the shoots form low rosettes, then the stems elongate and flower in late spring through summer. Mature plants are three to five feet tall with small, white flowers in



Perennial pepperweed is a serious problem in some parts of Contra Costa County.



Clockwise from upper left: rosette, stem leaves, flower cluster, dormant thatch.

dense clusters. After seed production, the shoots die back and the plant goes dormant.

Perennial pepperweed colonies expand by both root sprouts and seed production. Its roots may grow as deep as ten feet and can creep out several feet from the parent plant per year. Even root sections as small as one inch long contain buds that are capable of sprouting a new plant. Perennial pepperweed produces large quantities of seed with a high germination rate although the seeds don't appear to remain viable in the soil for long periods. It is often transported into new areas through infested hay and by earth-moving equipment contaminated with root fragments.

Once established, perennial pepperweed is persistent and hard to control, often taking several years of intensive management to reduce infestations. There are no biocontrol agents available and mechanical removal is not effective because even very small root sections left in place can sprout new plants. Goats and other livestock used to control perennial pepperweed in infested areas should be removed before the plants produce seed. Studies have shown that passage through the animal's gut increases seed germination rates.



Perennial pepperweed reproduces by seed and by its extensive root system.



An effective control strategy is to combine mowing with the use of herbicides. Mowing stimulates new growth and breaks up thatch, allowing the spray to penetrate. After mowing, it is best to apply herbicides when the resprouted plants have reached the flower bud stage. Applications at earlier growth stages are far less successful. For any control program, it is critical to kill the root system in order to prevent resprouting.

Several herbicides are available to control perennial pepperweed. The most effective one is chlorsulfuron (Telar®) which has soil residual action and provides up to several years of over 90% control. Imazapyr and imazethapyr have soil residual action and provide season-long suppression. Glyphosate and 2,4-D may also be used although multiple applications throughout the season might be needed to control resprouting. For most herbicides, applications will usually need to be repeated for several years to treat new seedlings and resprouting shoots.

The northern part of Contra Costa County from Richmond to Knightsen is infested with perennial pepperweed. In other areas, small isolated populations and infestations along right-of-ways are treated to help control further spread.

Contra Costa County Yesterdays

Contra Costa County is one of the two original homes for a California native plant that was to become very important to agriculture. The Northern California Black Walnut, *Juglans hindsii*, is a tall tree with nuts that were a favored food for Native American tribes. It was believed to have originated along the west side of Mt. Diablo and in the lower Sacramento region. The city of Walnut Creek got its name from the native walnuts found growing there.

During the mid 19th century, *Juglans hindsii* was often planted by early settlers throughout Northern California for its shade, nuts, and high quality wood. When it was found to be tolerant of saline and saturated soils, it was also used extensively as a rootstock for English walnuts.



courtesy Shadelands Historical Society

A local walnut orchard in 1920.

Luther Burbank, an early agricultural pioneer, made *Juglans hindsii* famous worldwide when he introduced the Paradox hybrid rootstock in 1893. Paradox is a cross between *Juglans hindsii* and English walnuts. It gets its name from its paradoxical vigor, growing to maturity in 15 years instead of the usual 50 to 60 required for English walnuts. The Paradox rootstock gives grafted English walnuts resistance to many diseases and pests.

Today, most commercial English walnut orchards are still planted using either *Juglans hindsii* or Paradox hybrid rootstocks.



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