



Central Coast Agriculture Highlights



SANTA BARBARA COUNTY

JULY 2007

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Light Brown Apple Moth Detected in California

Hugh Smith

On March 22, 2007, the U.S. Department of Agriculture confirmed that a new invasive pest has arrived in California. The light brown apple moth first appeared in Alameda County, and has since been detected in Contra Costa, Marin, Monterey, Napa, Santa Clara, Santa Cruz, San Francisco and San Mateo Counties. The larva of the moth attacks a broad range of crops, including pome and stone fruits, grapes, strawberries, some horticultural crops, cut flowers, ornamentals and nursery stock.

The moth, whose scientific name is *Epiphyas postvittana*, belongs to the family Tortricidae, which contains many leaf-tying and leaf-rolling caterpillars. The damage caused by the larva (caterpillar) of the light brown apple moth is typical of this group. The larva tends to feed on the underside of leaves inside a protective silken web, often near the mid-rib or a large vein. Larger larvae web and fold leaves together in order to feed and to produce a site for pupation. Buds, shoots and fruit are also attacked. Larvae will feed on the surface of fruit, or enter it through the calyx. When larvae tie a leaf to fruit as a pupation site, the webbing

and folding can cause cosmetic damage to the fruit, and allow the entry of pathogens.

The light brown apple moth is thought to originate from Australia, and is established in New Zealand, the British Isles, and Hawaii. Since the pest is not established in the continental US, the

California Department of Food and Agriculture (CDFA) has imposed internal quarantines, and the USDA has issued a Federal Domestic Quarantine Order to regulate the



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interstate movement of light brown apple moth host articles from the counties where it has been detected. In addition to fruits, vegetables, nursery stock, cut flowers, trees and bushes, regulated articles include green waste, hay, straw, and fodder. Material must be inspected and certified as free of the pest before leaving quarantined areas. Currently eight states (Arizona, Colorado, Florida, Georgia, Missouri, Nevada, Oregon, and Wisconsin) require pre-shipment notification from California shippers sending regulated material from infested areas.

Thousands of traps have been deployed across the state to monitor the

spread of light brown apple moth. The traps contain a pheromone lure to attract males and are coated with adhesive inside. The pheromone is a synthetic version of the chemicals female moths produce so that males can find them and mate. Up-to-date trap counts by county can be seen at http://www.cdfa.ca.gov/phpps/pdep/lbam_main.htm "Latest Situation Report." This website also provides links to phytosanitary advisories and other useful information regarding the light brown apple moth, including photographs to aid with identification.

The moths are about 10 mm long, with a wingspan of 16-25 mm. The color of the wings can be variable, ranging from yellowish to light or dark brown. Females tend to be larger than males, and the wings of females tend to be uniform in color. Male wings have a dark section at the rear and a lighter section toward the head. The moth eggs are flat, and females lay them in an overlapping pattern in clusters of 20 to 50 on the upper side of the leaf. Larvae are small and yellowish-green with a brown head. The pupa (chrysalis) turns from green to brown as it hardens. In Australia, the moth usually produces three generations each year.

The light brown apple moth has not yet been detected in Santa Barbara County. The Cdfa has de-

ployed about 500 traps across the county. These are checked every two weeks for the presence of the moth. The light brown apple moth has had limited impact on agriculture in Santa Barbara County so far. Some local nursery growers have shipped material into infested areas, which then had to be returned for various reasons. This and any other material coming out of an infested area must have a certificate of quar-



Light Brown Apple Moth pupa ©Copyright HortNet

antine compliance certifying that it is free of light brown apple moth.

Growers in infested areas of California are being asked to respond to the detection of light brown apple moth in their operations with applications of broad spectrum insecticides such as chlorpyrifos. An area-wide eradication program in Napa is focusing on the use of the microbial insecticide *Bacillus thuringiensis*, which kills larvae.

Bacillus thuringiensis and mating disruption have been used in other parts of the world to manage the pest. Mating disruption involves saturating an area with sex pheromone so that males cannot find females. The egg, larval and pupal stages of the light brown apple moth are attacked by parasitic wasps and flies in other parts of the world. We don't currently know how helpful the beneficial insects present in California will be in suppressing this new pest.

It is very difficult for the non-specialist to distinguish light brown apple moth and larvae from other insects in the same family (Tortricidae). In some cases it is necessary for a specialist to dissect the genitalia of the moth in order to confirm the species. (A screening key illustrated with high resolution photographs is available at <http://www.tortricidae.com/lbamscreening.asp>)

If you think you may have light brown apple moth on your ranch, in your nursery, or in your home garden, please call the Cdfa hotline (805) 688-6375.

Other sources:

<http://ip30.eti.uva.nl/bis/tortricidae.php>
http://www.aphis.usda.gov/plant_health/plant_pest_info/lba_moth/index.shtml



Adult male (left) and female (right) Light Brown Apple Moths ©Copyright HortNet



Light Brown Apple Moth leafroll damage ©Copyright HortNet



Light Brown Apple Moth fruit damage ©Copyright HortNet

A Review of Clubroot in Crucifers

Franklin Laemmlen

Clubroot is one of the oldest plant diseases recognized by man. It was recorded as a problem in 13th century Europe. Even with this long history and much research, clubroot remains a significant cause of crop loss worldwide. Clubroot is caused by *Plasmodiophora brassicae*. This organism was considered to be a fungus. However, recent research has found that it is closely related to ciliate protozoans because of its reproductive structures and lack of definite cell walls. The clubroot pathogen is now assigned to its own phylum, the Plasmodiophoromycota. It must have a living host in order to grow and reproduce. However, the thick-walled resting spores of clubroot can survive in infested soils for at least 20 years.

Susceptible crops include cabbage, Chinese cabbage, Brussel sprouts, turnips, kale, cauliflower, collards, broccoli, radishes, rape, kohlrabi, and some mustards. Mustard family weeds are often an important carryover host while fields are rotated out of cruciferous crops.

When host crops or weeds are grown in an infested piece of soil, the spores of *Plasmodiophora* are stimulated to produce swimming zoospores, which infect the roots of the host through wounds or root hairs. Infected cells are stimulated to enlarge and multiply, thus the roots become swollen and distorted. Infected cells are also thin-walled and easily damaged, thus are susceptible to insect attack and invasion by secondary decay fungus or bacteria. Infected plants have reduced growth, may be pale green and often wilt during the day, but usually recover at night. Reduced size or unmarketable produce is the result.



Clubroot on broccoli infected at early seedling stage.

Control of clubroot requires attention to five factors. (1) Sanitation: Care should be taken not to move soil or diseased plant material from contaminated to disease-free areas. *Plasmodiophora* is easily moved on tools, equipment tires, and shoes. Fieldmen, who visit several sites per day and walk muddy fields, can be very efficient vectors of clubroot. (2) Clean transplants: Clubroot is not known to be seedborne. Thus, with attention to sanitation, disease-free seedlings can be produced. Field-grown transplants need to be grown on disease-free, fumigated soils. (3) Rotation: Growing non-cruciferous crops and good weed control can help reduce the incidence of clubroot. However, since *Plasmodiophora* spores are long-lived in soil, the effects of rotation are often minimal. (4) Soil pH control: Research has shown that *Plasmodiophora* does not

develop where crucifers are grown in soils with a pH at 7.3 or higher. Adding hydrated lime is the most common method of raising the pH. The following table indicates approximately how much lime must be added to suppress clubroot on various pH soils.

Table 1. Hydrated lime rates at different soil pH levels.

pH of soil	Hydrated lime needed (lbs/A)
5.0	5000
5.5	4000
6.0	3000
6.5	2000
7.0	1500
7.2	1500
8.0	None

(5) Chemical control: In addition to lime, the use of PCNB (Terraclor) has been found to help suppress clubroot. Several PCNB products are labeled for use on several crucifer crops. Check the product label for crops and rates of chemical to use per acre.



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Update on Lychee and Longan Field Trials & Plantings in Southern California

Mark Gaskell and Ben Faber

In 1998, we initiated field trials with lychee (*Litchi chinensis*) and longan (*Dimocarpus longan*) to evaluate them as alternative new commercial orchard crops for central and southern California. Growing US and world demand and stable high prices for these crops make them desirable as potential new crops for California. Lychee, and to a lesser extent longan, have been attempted and grown on a small scale in different parts of southern California for more than 100 years, but they have never developed as successful commercial crops. They are challenging crops to grow, and despite the fact that they are produced domestically and in regions worldwide, yield and production consistency continue today as problems in all growing areas. Currently lychees are produced in Florida and Hawaii, and the fruit is imported from Israel, Mexico, and China. There are also additional commercial plantings in Thailand, Australia, Spain, and India.

Initially, the field trials were established at selected sites of San Luis Obispo and Santa Barbara Counties using Brewster and Mauritius lychees and Kohala longans. These were the only lychee and longan cultivars available at that time from California nurseries. In 2000 and 2001, we were able to expand the number of planted sites and the number of cultivars with grant funding from the California Department of Food and Agriculture. Later funding from a USDA Specialty Crops grant program enabled us to import additional lychee and longan cultivars from Hawaii and Australia. The plants imported from Australia were required to pass through a 2-year plant quarantine program, but by 2005 we

were able to plant out the following cultivars at different sites from San Luis Obispo County to San Diego, including Santa Barbara, Ventura, Los Angeles, Riverside and San Diego Counties.

Lychee Cultivars	Longan Cultivars
Brewster	Kohala
Mauritius	Biew Kiew
Bengal	Diamond River
Emperor	Haew
Hak Ip	Illiau
Kwai Mai Red	E Wai
Kwai Mai Pink	Tigers Eye
Wai Chee	Sri Chompoo
Souey Tung	
Kaimana	
Sah Keng	
Fay Zee Siu	
Salathiel	

Lychee Status

Lychees in California appear generally to be adapted to avocado production areas with some restrictions (Figure 1). Lychees tolerate about the same amount of cold as avocados, but in some areas lychees may survive and grow but may require more heat units for normal fruit set and ripening.

It is still early to say which lychee cultivars are most productive and best adapted in California. Brewster appears to be as vigorous as any of the cultivars, but the Brewster trees are also some of the oldest thus far in trial plantings. There appear to be differences also among trees within a cultivar in their flowering and fruiting

vigor, but the trees are still young, and those differences may just be due to plant size. In reports from China, where lychees are native and long an important traditional crop, selected trees are used for propagation, and farmers often take cuttings of productive trees from farm to farm. Our experience with lychees in California is still so recent and limited that it is difficult to make clear conclusions.

Even the larger lychee trees are thus far very inconsistent for flowering and fruit set. We have observed overall relatively poor and inconsistent flowering on all of the cultivars at all sites. There are frequent reports in the science literature of poor and inconsistent flowering and fruit set by lychee in most growing areas around the world. In California, we also see instances where we have vigorous flowering and fruit set, but a high excision or fruit abortion rate prevents profitable harvest. The causes may vary from site to site since there are many factors that can potentially limit lychee flowering and fruit set.

We have noted that some trees of some cultivars are particularly productive and more consistent from year to year. The cultivars of lychee and longan are all a result of vegetative propagation, and it is not unreasonable that they may not be completely uniform genetically. There is the possibility that over time there has been inadvertent selection by nurseries for plants that propagate readily rather than more productive plants. In areas of China and other countries where lychee and longan are extensively grown, emphasis is on the most productive trees for propagation. Commercial

nurseries on the other hand often emphasize the more vigorous vegetative trees for propagation, and this may affect the flowering and fruit by those trees.

Experience from Hawaii over the 20-25 years that they have attempted lychee fruit production indicates:

1. They needed to develop their own cultivar - in this case, Kaimana - that produced best in Hawaiian conditions.
2. They are still limited in some areas because of lack of chill hours, and
3. Consistent fruit production even by Kaimana requires a regime of specific cultural practices to promote consistent fruit production.

Dr. Francis Zee, of the USDA Clonal Germplasm Lab at the Pacific Basin Agricultural Center in Hilo, HI, reviewed some of the critical cultural practices for lychee production in Hawaii at the annual meeting of the Hawaiian Tropical Fruit Growers in October 2006. Francis emphasized the need to synchronize vegetative “flushing” growth to condition the tree for flowering. This conditioning comes from pruning, controlling nutrients, and a period of water stress by restricted irrigation. Francis stated that only a “mature” leaf flush is receptive to the cold induction necessary for flowering. It is also important to severely restrict soil nitrogen to restrict excessive vegetative flushing during the winter cold induction period. He emphasized using foliar nutrient application to keep leaves healthy but limit overall nutrient uptake.

Francis knows California and feels that similar cultural practices should work also in California. He feels our cooler winter night temperatures should improve lychee production once the other conditions are also satisfied. It is important to remember that lychees are native to an area in China that is

characterized by warm, humid summers and cold, dry winters. These are markedly different from those in California, where our dry summers and wet winters confound flowering and fruit production. We need to isolate the critical factors for lychee fruiting and manipulate cultural prac-



Figure 1. Five-year old Ventura County lychee orchard.

tices to provide those conditions.

Dr. Zee’s recommendations for lychee management are the following:

- Selecting the best variety for the climate is an important first step.
- Only mature shoots respond to cold induction. Flower induction occurs during cool, dry weather on buds from mature leaf flushes with low nitrogen content. The order of importance is: Low temp > N > water stress.
- Shoots need to be a healthy size for good flowering and fruiting - about 8-10 inches long with a minimum girth of 3/8 in. Smaller shoots are not productive.
- Low nitrogen is important for flowering. High potassium is beneficial.
- Using foliar fertilizer avoids the problem of residual N in soil that may be released at the wrong time.

The idea is to induce a synchronized vegetative flush after harvest, which will mature in time for cold induction and result in terminal shoots with optimal characteristics

for flower and fruit production. This is achieved through pruning along with nutrient and water management.

The specific recommendations for Hawaii are:

1. Prune all shoots 8-12 inches from the tip at harvest.
2. Apply foliar fertilizer immediately after pruning. (See the recommended composition below.)
3. Let leaves mature. They need to mature in time for cold weather.
4. Withhold fertilizer until young fruit is pea size, then apply a high K fertilizer, such as Banana Super (10.5 - 40). This can be applied to the soil.
5. Maintain even moisture through fruit sizing.

The recommended foliar fertilizer in 100 gallons of water is the following:

- 3 lbs 20-20-20 plus micros
- 1 quart soluble B, Ca solution
- 1/2 quart liquid iron

Apply this mix thoroughly to the tree canopy, approximately 3 gallons per tree.

Lychees overall are slow growing and more difficult to establish compared to longan (and many other subtropical fruits). Six to eight years are required for lychees to reach the first production. Thus far, most lychees are propagated by air-layers (marcots) in California, and this creates special root architecture with a primarily weak, fibrous root system concentrated at the surface. Lychee plants should be pruned aggressively to keep the height below about 12 ft. (4m) to facilitate harvest.

Trials are currently underway to evaluate these cultural practices on lychee flowering and fruit set in California.

Longan Status

Longans overall are easier to establish, more vigorous, and more resilient than lychees. Longans flower more vigorously and consistently than lychees but still suffer from problems with fruit retention. They

Some of the alternate bearing characteristics are likely tied to their longer fruiting cycle in cool California coastal conditions. The fruit matures relatively late, and there is limited time for pruning and synchronizing the flush.

Longans have produced commercial quantities and quality of fruit on

multiple sites, but thus far the fruiting has been in alternate years. Much of the field trial work needed with longans is related to how to manipulate cultural practices to improve flowering and especially fruit retention. It would also be valuable to determine if there are pruning or other cultural practices to advance

flowering following harvest late in the year. This would allow time for the plant to flower and fruit again the following season. There are fruit retention spray materials and other hormonal materials that are being evaluated with longans, and these may offer some promise also.

Whole Foods Market Local Producer Loan Program



Whole Foods Market has begun a new initiative that will make \$10 million available each year for low-interest (5 to 9 percent) loans to small, local agricultural producers. To qualify, producers must meet

Whole Foods Market's quality standards and animal compassion standards, and have a viable business plan and adequate cash flow to service debt. Additional information, as well as an application, can be found at this

link: <http://www.wholefoodsmarket.com/products/locallygrown/lplp/index.html>

Anaplasmosis Management

Wayne Jensen

The following article is from Dr. John Maas, Extension Veterinarian, School of Veterinary Medicine at the University of California, Davis, CA. Many of you are familiar with this disease, and this article should bring you up-to-date. Those of you who are new to the Central Coast and not familiar with this disease or haven't experienced losses, will certainly benefit from Dr. Maas's knowledge.

Last year's (2006) mild and moist winter resulted in an increase in the number of anaplasmosis outbreaks being reported in California. The populations of ticks that carry this disease have increased. These facts, coupled with the very dry conditions

we are going to experience this year, should make this another bad year for anaplasmosis. An additional piece of bad news is that the killed anaplasmosis vaccine is at least temporarily unavailable for producers in California. Therefore, this month's column will review this cattle disease, and what you and your veterinarian can do to prevent losses.

What is anaplasmosis? It is a disease of cattle caused by an organism called *Anaplasma marginale*.

This organism is a rickettsia - halfway between the viruses and the bacteria. It cannot grow without living cells (like a virus) but is susceptible to tetracyclines (like the bacteria). The disease, anaplasmosis, is caused when the infected cattle react to the agent and remove their



own infected red blood cells. This reaction causes a severe anemia and often death.

Which cattle are susceptible to infection with *A. marginale*?

All cattle are susceptible to infection by *A. marginale*. Also, deer, elk, and other wild ruminants are susceptible to becoming infected and can act as natural reservoirs of the agent. Cattle of any age can become infected; however, young cattle do not become ill, as will be explained later.

How do cattle become infected with the anaplasmosis agent?

A number of ruminants such as cattle, deer, and elk can be carriers of the anaplasmosis agent. These species can carry the agent all or most of their lives and serve as a reservoir for infection of other animals. The transfer of the agent from a carrier animal to a susceptible animal can occur by a number of routes. One of the most common ways is via ticks. In California, we have a number of ticks that transmit the anaplasmosis agent and are extremely effective at passing the agent to new, susceptible hosts. Additionally, transmission of a small amount of blood from a carrier animal to a susceptible animal can transmit anaplasmosis. So insects, such as horse flies, are capable of transmission. An even larger culprit in this type of transmission is man. Ear-tagging instruments, tattoo tools, needles, ear implant tools, castrating instruments, dehorning instruments, etc., can all easily transmit the agent. So we can also be important in the spread of this disease.

What happens when a susceptible animal becomes infected?

If the animal is a calf under the age of 12 months, virtually nothing is noticed. The calf undergoes an incubation period of about 45 to 90 days, has a very mild illness, which is rarely noticed, and becomes a carrier for life. Cattle that become infected between 1 and 2 years of age become ill after the incubation period,

with severity increasing with age. Cattle over 2 years of age become very ill, and approximately 50% die unless treated. The older the animal and the better shape they are in, the sicker they get! Usually, once the cattle become infected, and if they survive, they stay infected for life. They are “immune carriers” - they do not get sick, but act as a reservoir for other susceptible animals. Therefore, being an infected carrier protects the animal from becoming sick if re-infected by ticks or other means.

What determines if a herd will have problems with anaplasmosis?

The location of the herd is important in determining whether or not problems will occur. The cattle and deer that might be reservoirs and the ticks that naturally transmit the disease are the primary factors. For example, with herds raised in the Central Valley of California on permanent pasture, with no ticks, no deer, and carrier cattle, there is essentially no risk of anaplasmosis. These cattle are free of the disease, have no immunity (unless vaccinated), and are totally susceptible to infection and disease. If these cattle are introduced to oak foothill pastures, especially during a bad tick year, they will become infected, get sick, and 50% will die if not treated. When cattle are raised in the coastal foothills, Sierra foothills, and many mountain areas of California, they become infected early in life, have no clinical disease when infected (because they are young), and are “immune carriers.” If new, susceptible cattle come into these areas, they are at risk. If these carrier cattle go to the valley pastures, they may act as sources of infection, especially via blood transfer (dehorning instruments, ear taggers, horse fly transmissions, etc.). Many cattle herds are between these two extremes, and it is common for a percentage of the adult animals to become infected and

sick every year. These are herds that need to be vaccinated routinely to prevent losses. It is common for bulls that come from anaplasmosis-free areas to be very susceptible when introduced into areas where anaplasmosis is common. Remember, when bulls become infected and are successfully treated (do not die), they are often sterile for many months.

What can you do to prevent anaplasmosis in my herd?

This depends on the risk of anaplasmosis in your operation. For those “valley” herds, the only real risk is introduction of carrier cattle and transfer of blood (horse flies, dehorning instruments, castration instruments, etc.) from the new cattle to your native, susceptible animals. For foothill or mountain herds, you have to be sure incoming cattle (cows, heifers or bulls) are from anaplasmosis areas or have been vaccinated. For herds intermediate in risk, you will want to review your vaccination program with your veterinarian.

What vaccines are available?

In California we have had two vaccine options for the past several years. The first is a live vaccine available from Poultry Health Laboratories and is called Anavac®. It is safe and effective when given to young cattle (4 to 11 months of age). The cattle become infected with the vaccine strain of *Anaplasma* and are “immune carriers.” This method of preventing disease is basically a controlled infection. If this vaccine (Anavac®) is given to older cattle, they will become sick and could die, just as with the natural disease. Vaccination of mature bulls with Anavac® can cause death loss or infertility. A killed vaccine has also been available in California from the California Woolgrowers Association (next door to CCA in Sacramento). When cattle are vaccinated with this killed product (2 doses are needed initially), they develop enough

immunity to prevent illness when they become infected. This vaccine does not prevent against infection by the anaplasma organism. When the vaccinated cattle are infected by the *Anaplasma marginale* organism under field conditions, they go through a normal incubation period of about 45-90 days, have a slight drop in their red blood cell count, and remain normal in appearance. These vaccinated cattle do not become ill, but they do carry the field strain *Anaplasma* organism after they become infected. Most infected cattle then carry the organism for their entire life. They are "immune carriers." That is to say, they are "immune" to becoming sick from the agent, but are carriers of the agent. If you were to take a small amount of blood from one of these "immune carriers" and put it into a susceptible cow, that cow would become infected and sick. These two vaccines are very important. If you purchase bulls or heifers for replacements this fall, be sure these cattle are protected. If the cattle were vaccinated with the live vaccine (Anavac®) as calves and not fed tetracyclines in the feedlot, they will be immune car-

riers and safe from getting sick. If they were fed tetracyclines (a common procedure for bulls being grown in a feedlot), they will lose their immunity after 1-2 years if they do not become re-infected and therefore could become susceptible again. If the cattle are over a year of age, be sure they were vaccinated with two doses of the killed investigational vaccine. They should be protected against becoming ill when naturally infected on your ranch.

Where can I get these vaccines?

The live vaccine, Anavac®, is available through Poultry Health Laboratories, Davis, California. It must be shipped on dry ice or in liquid nitrogen. Their number is (530) 753-5881. The killed vaccine is available through California Woolgrowers Association at (916) 444-8122. This vaccine can be shipped via normal refrigeration.

What if I can't obtain the killed vaccine this year, can I substitute the live vaccine?

No! The live vaccine will sicken or kill cattle older than 1 year of age. The live vaccine can be used safely and effectively in cattle 11 months of age and younger, however.

As you can see from this brief discussion, anaplasmosis is a very complicated disease, and the need to vaccinate will vary from herd to herd. Particularly important is the protection of susceptible cattle coming into an "anaplasmosis area." Make sure when you buy bulls or replacement heifers that they are protected. Either they are raised in anaplasmosis areas, or they have been vaccinated and are protected. This is doubly important for bulls because if they get sick and don't die, they can be sterile. Much greater care will be necessary this year when buying bulls and/or replacements. Spend some time with your veterinarian to prevent this disease from affecting your herd. We won't make any small mistakes when dealing with anaplasmosis in California.

Currently, there is no killed anaplasmosis vaccine available in California. The live vaccine should not be given to cattle over 12 months of age. Vaccinating a two-year old bull with the live vaccine will result in death of the animal on day 39 or 40 post-vaccination.

California Farm Services Agency Announces Agricultural Disaster Program Information

Wayne Jensen

Agricultural producers, who suffered losses as a result of natural disasters this year in Santa Barbara and Ventura Counties, will be able to receive assistance from the USDA. Anyone interested can access their website where they will post information as soon as it becomes available - www.fsa.usda.gov - or contact Brenda Farias at her office at 920 E. Stowell Road, Santa Maria, or call her at (805) 928-9269.

Sign-up for the ag disaster programs will most likely occur later this

fall. It takes time for the Farm Service Agency to write the regulations aid to develop the necessary software programs. We are asking producers to be patient and read their FSA county office newsletters for program sign-up information.

A few program specifics include: Crop Disaster Program

All crops are eligible. However, producers must have purchased crop insurance or coverage under the agency's Non-insured Assistance Program in order to qualify. Eligible



losses are those that exceeded 35 percent and occurred in 2005, 2006 or 2007 (2007 crops must have been planted before Feb 28, 2007) as a result of a natural disaster. The producer will choose one year for benefits. Quality loss assistance will be available for some crops as well.

Emergency Conservation Program:

Nationwide, \$16 million have been made available for the cleanup and restoration of farm and agricultural production lands.

Livestock Programs:

Producers choose for each livestock program one of three years for which they would receive benefits. Most California counties are eligible. The only counties ineligible for 3 years are: Del Norte, Siskiyou, Modoc, and Lassen. For a complete list of eligible counties by year, visit www.fsa.usda.gov and select California from the state office menu at the top of the page. Another choice is to visit the FSA County Office.

The Livestock Compensation Program provides benefits for pro-

ducers in designated disaster counties for their added costs of procuring livestock feed in 2005, 2006 or 2007 (up to Feb 28, 2007). Eligible livestock are dairy cattle, beef cattle, beefalo, equine, poultry, elk, reindeer, sheep, goats, swine, deer, and catfish.

The Livestock Indemnity Program makes payment available to producers that have incurred more than normal livestock losses between Jan 1, 2005 and Feb 26, 2007, due to a disaster. A producer will select the losses in one year for benefits.

Dairy Programs

The Dairy Assistance Program compensates producers for reduced milk production due to a natural disaster in a declared disaster county. Nationwide, \$16 million are available. A full listing of the disaster counties is available online at www.fsa.usda.gov

Milk Income Loss Contract Program

This program extends the MILC program for one additional month through Sept 30, 2007.

Farm Water Quality Planning Short Courses

UC Cooperative Extension, in partnership with USDA Natural Resources Conservation Service (NRCS), is offering a series of Farm Water Quality Planning Short Courses to assist growers in addressing nonpoint source pollutants in surface waterbodies and groundwater. The program covers 15 hours and includes a Template Farm Plan, CE hours for PCA, PA, CE hours for CCE & IA, and a certificate of completion for Regional Board water quality education hours. For assistance with ag waiver paperwork, contact the Regional Board Ag Waiver Lead, Alison Jones at (805) 542-4646. Or contact the Ag Watershed Coalition Coordinator, Kay Mercer at (805) 208-8039.

Each 15-hour course is divided into three 5-hour sessions and lunch. Registration fee is \$85, which includes materials and lunch. There are also single sessions available for \$30 each including materials and lunch.

For more information about the Farm Water Quality Planning pro-

gram contact **Julie Fallon** at (805) 788-2321 or visit <http://fwqp.ucanr.org>

The following are upcoming courses in this area:



Vineyards	Solvang	August 1,2,3 (8:30 a.m. - 2:30 p.m.)
Orchards	San Luis Obispo	July 23, 30, 31 (8:30 a.m.—2:30 p.m.)
	Goleta	Aug 8, 9, 10 (Aug 8, 2– 7:30 p.m. Aug 9-10, 8:30 a.m. - 2:30 p.m.)
Vegetables	Santa Maria	August 14, 21, 28 (8:30 a.m. - 2:30 p.m.)

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Central Coast Agriculture Highlights July 2007



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