



Plant Science Press

UNIVERSITY of CALIFORNIA COOPERATIVE EXTENSION

Humboldt County



June, 2009

From the Farm Advisor

Deborah Giraud, *Farm and Community Development Advisor*

I hope you all have a great summer season. We are mailing our Year in Review with the accomplishments of the last year. So, in the space I will just give the good news of a new State Food and Ag Code. Jan. 1, 2009 the State Food & Ag Code as well as the Health Code will be amended to allow :

- Farmers to sell any processed farm product that is made from local ingredients (AKA Value-Added products) at their roadside stands along with their fresh produce.
- The processed products have to be prepared and packaged in a commercial kitchen/approved facility.
- They can offer tastings and samples as long as there is a toilet with hand washing facilities available (field porta-potties with wash units are suitable)
- They can also sell up to 50 sq. ft. of prepackaged products not of local origin - like water, drinks, etc.
- The processed products have to be stored in a vermin proof area/container when the stand is closed.
- chefs may now legally buy direct from farmers and farmers markets for their restaurants
- charitable organizations/individuals may now buy direct from farmers and resell the product for their charitable purpose. [For example - one could buy wholesale local produce from a farm and resell it at cost to inner city folks in need of fresh produce; or a CSA type group could buy direct from farms and "resell" & redistribute the produce to members]



Designs for Homemade Lures for Wasp Traps

From Pete, a vineyard owner in NJ: We have made traps from used soda bottles. The 1 liter size seems to work best. We hang them from the endposts, with traps as frequently as every other post. We have captured thousands of wasps per acre with these. We hang the bottles from their necks with the cap off so the wasps can enter. This works OK, but the wasps seem to be able to exit again a bit too easily. Still, we catch many of them. Last year, we cut holes in the shoulder of the bottle, by making an "x" with a knife and pushing in the flaps. For lures, I make up a combination of fruit juices from concentrate. Orange juice and grape juice together seem to work pretty well, but they do ferment right away. The wasps don't seem to care too much, and they keep coming despite the weird soup that forms. I'm considering adding a good shot of sorbate this year to keep the juice fresh longer.

Here is another homemade trap. Take a narrow plank of wood and nail a piece of salmon to it, or tie it on in a net somehow. Fill

a wide plastic basin with water to about ¾ full. Add a layer of oil on the top. Vegetable oil should be fine. Lay the board upside down on the basin. The meat or salmon should have about 2 inches between it and the water/oil. As the wasps fly around the board and under it to get at the salmon, they get their wings caught in the oil layer and cannot fly out. We bait commercial yellow jacket traps (yellow tube style with a bait compartment at the bottom), with several ounces of salmon scraps (fins, bones, skin et al.) We do this very early in the morning, just about sunrise. We then hang the traps at the end posts near where we have blackberries. It seems they transition from ripe blackberries to grapes fairly easy.

Do wasps have redeeming features? Yes, they are scavengers that eat up the dead animals in the forest. They are part of the natural composting scene. Wish they'd stick to the forest!

Understanding Water Units

Bill Peacock, UCCE Farm Advisor

Good water management requires an understanding of **when** to irrigate, **how much** water to apply, and how to uniformly apply the water over the field. The first step to becoming an efficient water manager is to understand units of water measurement.

One Acre-Foot = 325,851 gallons

One Acre-Inch = 27,154 gallons

These are volume measurements, the volume of water that covers an acre of land one foot or one inch deep:

Units of Measurement

One acre	= an area of land that is
43560 ft ²	
One cubic foot (ft ³)	= 7.48 gallons
One acre-foot	= 43560 ft ² x 1 foot water
depth	= a volume that is 43560 ft ³
One acre-foot	= 43560 ft ³ x 7.48 gallons/
ft ³	= 325,851 gallons
One acre-inch	= 43560 ft ² x .0833 ft (1
inch)	a volume that is 3630
ft ³	
One acre-inch	= 3630ft ³ x 7.48
gallons/ft ³	= 27,154 gallons

The amount of water applied to a field is usually reported in acre-inches of water, and the rate of E.T. (evapotranspiration) for crops is usually given in acre-inches per day. However, pump discharge is usually given in gallons per minute, and herein lies some confusion when calculating pumping time for an irrigation.

Thinking in terms of gallons rather than acre-inches makes it easy to determine how long to run your pump to apply a given irrigation amount. A four inch irrigation is about 110,000 gallons per acre (4 inches x 27,154 gallons/inch = 108,616 gallons); a six inch irrigation is about 160,000 gallons per acre.

Example: Assume you are going to irrigate a 50 acre field and apply 110,000 gallons per acre (4 inch irrigation), and your pump discharges 750 gallons per minute. How long will you have to run the pump? **The answer is 5.1 days.**

Calculated as follows:

50 acres x 110,000 gallons per acre = 5,500,000 gallons

5,500,000 gallons/750 gallons per minute pumping discharge = 7333 minutes pumping time

7333 minutes/60 minutes per hour

= 122 hours; 122 hours/24 hour per day

= 5.1 days

Keeping a record of how much water is applied each irrigation is the key to maximizing production and irrigation efficiency. By keeping records, the irrigator often discovers that too little water is applied during hot summer months when water infiltration rates are low and crop water use is high; or it may be discovered that too much water is applied to shallow hard pan soils creating a water logged soil; or, that too much water is applied to well drained soils increasing energy and water costs.

A water meter is the most direct way of tracking irrigation amounts. However, irrigation amounts can also be determined by noting pumping time per irrigation along with pump discharge rate.

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Understanding Water Units (continued)

Another Example: You have 50 acres of drip irrigated vineyard with 454 vines per acre. The average E.T. for this vineyard during the month of July is 0.2 acre-inches per day. How many gallons of water must be applied daily to the vineyard to keep up with E.T.? How many gallons does an individual vine use each day? **The answers are 271,500 gallons per day for the 50 acre vineyard, and 12 gallons per day for an individual vine.**

Calculated as follows:

Vineyard E.T. (gals/acre/day) = 0.2 inches/day x
27,154 gals/inch
= 5430 gallons per day acre per
day; 5430 gals per acre x 50 acres
= 271,500 gallons per day for the
entire 50 acres

Vine E.T. (gals/vine/day) = 5430 gals per acre/454
vines per acre
= 12 gallons per vine per day

With a water meter, drip irrigations are scheduled so that the 271,500 gallons of water required daily by the 50 acre vineyard are metered out accurately. Without a water meter, the irrigator must know the average flow of the drippers. For example, if every grapevine has two drippers and the average dripper flow is ½ gallon per hour; then, the drip system needs to run 12 hours each day to apply the required 12 gallons per vine – which is equal to 5430 gallons per acre, which is equal to 271,500 gallons for 50 acres.

Final Example: The evapotranspiration rate of a deciduous orchard during July averages 0.22 acre-inches per day. What is the E.T. of this orchard in gallons per minute per acre? You irrigate with a low volume irrigation system which has an application efficiency of 80%; what would be the minimum size pump discharge for one acre to meet the orchard's E.T. requirement, allowing for the system inefficiency? **The answers are 4.1 and 5.1 gallons per minute, respectively.**

Calculated as follows:

- 1) E.T. = 0.22 inches per day x 27,154
gallons per inch
= 5974 gallons per acre per day
- 2) E.T. = 5974 gallons per day/24 hours
per day
= 249 gallons per acre per hour
- 3) E.T. = 249 gallons per hour/60 minutes
per hour
= **4.1 gallons per minute per
acre**
- 4) Pump requirement = 4.1 gallons per minute/.8
= **5.2 gallons per minute per
acre**

To keep up with the E.T. of **one acre** during July, a pump discharging 5.2 GPM would have to run 24 hours a day (assuming the irrigation system has an application efficiency of 80%).

Note: To allow for down time and more flexibility, most irrigators would like to have a **minimum pump capacity of 10 GPM per acre**. Therefore, a 50 acre farm would require a pumping capacity of 500 GPM, etc.

More Units of Water Measurement

FLOW: Gallons Per Minute (GPM)

452.5 GPM = one acre-foot in 12 hours
452.5 GPM = one acre-inch per hour

452.5 GPM = one cubic foot (7.48 gal) per second

694.4 GPM = 1,000,000 gallons per day

HEAD:

1 Pound Per Square Inch (psi) = 2.31 ft. head of
water

1 Foot of Water = 0.43 psi

1 Atmosphere (at sea level) = 14.7 psi

WEIGHT:

1 U.S. Gallon Water = 8.34 pounds

1 Cubic Foot of Water = 62.4 pounds

1 Acre-Foot of Water = 2,719,226 pounds

Fungus Gnats or are they Shore Flies?

Fungus gnat larvae feed on roots and can cause severe damage, they can also spread pathogens. They have seasonal periods during the year when they occur in high numbers in greenhouses and on house plants. *Bradysia coprophila* and *B. impatiens* are small whitish-clear larvae, with shiny black head capsules, that are found in the top 1/2 inch of soil. Their guts can be visible on the transparent larvae. They eat soil fungi, decaying organic matter and young roots and root hairs. Root systems can be destroyed, particularly in cuttings. And they can spread pythium and phytophthora. Symptoms of plants: stunted, wilted and yellow. The adults are 1/8"

long, have clear, delicate wings, long legs, and long, segmented antennae. They are poor flyers, especially when we compare them to shore flies.

Shore flies, *Scatella stagnalis*, are also very common in greenhouses. The adult fly body is more robust than fungus gnats. They have short antennae, and darker wings with clear spots on the wings. The clear spots can be seen when the fly is resting on the plant, and are the most distinguishing mark on the adult. They feed on algae and are found on the soil surface, even on standing water. They do not appear to damage plants directly.

Organic Insecticides Available

Registered insecticides that are OMRI listed can be useful to combat some of the difficult to control insects such as codling moth, whitefly, and aphids. The fact that these organic products are registered in California assures consumers that they are effective, as California requires efficacy trials, as well as safety trials, before registration is given. It is not true of other states where only safety trials are needed.

Neem is the active ingredient in Neemix4.5, which is useful against whitefly, aphids, leafminer, armyworms, leafhoppers and loopers. Trilogy is a fungicide/miticide/insecticide used for foliar control of fungal diseases and pest. SoilGard12G is a microbial

fungicide, it is a naturally occurring soil fungus which is antagonistic to plant pathogenic fungus as *Pythium* and *Rhizoctonia*, which cause damping off. CYD-X is an insecticidal virus used to combat codling moth on apples, pears, plum, prune and walnuts. For best storage, it is kept in a fridge or freezer. The small larvae is the targeted life stage. It only infects codling moth larvae. Long in the development stages, it is finally available commercially, although Humboldt County residents might have to travel to dealerships in other counties to obtain these products.

Honey Bee Website



Honey bees health and survival and matters relating to pollination are of great concern to many growers – not just in our growing region, but all over the United States. Scientists are continuing to look for answers for Colony Collapse Disorder (CCD), but honey bees also have many known problems. Dr. James Young of Oregon State University's Insect Identification Clinic has established a web-site to provide information on honey bee pests and pathogens: http://www.science.oregonstate.edu/bpp/insect_clinic/bees.htm



Resources

Featured Website:

<http://homeorchard.ucdavis.edu>

This website is designed to provide:

- An organized and user friendly format for accessing UC fact sheets and other UC publications relating to fruits and nuts grown in the backyard.
- Information for backyard gardeners and consumers about UC research, contacts, courses, publications, news, and events related to backyard and consumer fruit and nut crop issues.
- Worthwhile links to organizations and industries which complement UC to provide a complete resource for backyard gardeners.

Featured Publication:

**Lawn and Residential Landscape
Pest Control—A Guide for
Maintenance Gardeners**

By Susan Cohen, Mary Lou Flint, Nila Hines

This book was written to help maintenance gardeners who mow lawns and maintain yards use pesticides safely and study for the Department of Pesticide Regulation's (DPR) new maintenance gardener pest control tests. Home gardeners and others who want to control pests in their landscapes can also benefit from the information contained in this book.

Contains 250 photographs, 104 drawings, and 22 tables help you understand the ideas presented in the book. This is Volume 8 in the Pesticide Application Compendium. Recommended study guide for the California Department of Pesticide Regulation's Maintenance Gardener exam in the Q category.

Cost: \$20.00

<http://anrcatalog.ucdavis.edu/Items/3510.aspx>

California Apples Find Their Niche

By Alexander J. Ott, Executive Director, California Apple Commission

California has found its niche in the apple world. Through trials and tribulations, lessons have taught California apple producers to do well with what they have. As a result, California apples have discovered a good market and a great balance for its supply and demand. However, with any industry the challenges and opportunities continue.

Over twenty-five years ago, California had 40,000 acres of apples and produced 10 million fresh cartons. Currently, California produces three to four million cartons of fresh apples on just over 20,000 acres. Despite this reduction, California remains the fifth largest producer and the second largest exporter of U.S. apples.

Throughout California's short apple history, tough lessons were learned. For example, during the peak of California's apple production, Fuji apple was one of the top varieties produced. In fact, California shipped over

two-million boxes to Taiwan at the peak of its production. As of last year, total Fuji crop production in California was 300,000 cartons with only 30,000 boxes exported to Taiwan.

The reason – California apple producers planted too many Fuji in the wrong place in California (weather was too warm and we did not have the technology at the time to color a red apple). Compare this to the gala apple which increased grafting and plantings to earlier seasonal varieties that proved to do well in the state. In fact this year's gala crop marks the second year in a row that gala apples increased in statewide production.

Meanwhile, California has focused on the varieties that work well in the state's climate. Today, California grows four main varieties; gala, granny, Fuji and pinks.

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California Apples Find Their Niche (continued)

Of these four major apple varieties, three-fourths of the total states apple production comprised of gala and granny smith varieties. California has a small four to five month marketing window, due to the Chilean and Washington State apple season.

In an effort to still have opportunities to produce and compete in the market place, California does not store apples like other apple producing states and adopted a philosophy of "pick, pack and ship" all fresh apples. The philosophy worked and California increased its export markets and market access.

Statistics show nearly 35 to 40 percent of the California apple crop remains in California while 30 to 35 percent ships to other states. The remainder 25 to 30 percent exports to other countries, and makes for a diverse apple market.

California's top markets include Canada, Mexico, Malaysia, Singapore, United Kingdom, Central America and Taiwan. These export markets, with the exception of Taiwan, have increased California shipments due to the narrow focus of varieties. For example, Mexico received over 80,000 boxes of California gala shipments for the 2008 year, to date. This totaled nearly ten percent of the total California gala crop.

Last year, California shipped only 18,000 boxes of gala and for the prior 2006-2007 season; zero cases of galas shipped to Mexico. The result, gala shipments increased to Mexico for the last three years and our southern neighbor continues becoming a greater partner in California's export market and it is anticipated that California growers will export over 100,000 cartons this season.

Consequently, challenges still remain. Invasive pests coupled with foreign market barriers, high energy costs and concerns over apple supply of labor and water continued to top the challenges for California apple producers. The latest came last year, when Light Brown Apple Moth (LBAM) was discovered in the bay area. Since the first find numerous other counties have found the moth, and made several southern, central valley and northern apple producers nervous.

However, impacts of invasive pest problems go beyond the grower and have a dramatic effect on labor, the environment and the community. Imagine a quarantine pest being found in the largest apple producing regions will devastate the apple crop. Farmers may be faced with increased problems of exporting their fruit to other states let alone other countries. Additional sprays, traps and the potential of removing trees (depending on the pest) would be mandated in order to meet state, federal or other country mandates.

The loss of green Space and increased spraying or other expensive protocols will be needed in order to meet export rules, putting environmental pressures on both conventional and organic growers. Farm worker, transportation, port and other related agricultural jobs will be lost due to the decrease of fruit exports based on the introduction of a foreign pest or disease. Without an apple industry, these essential jobs to produce a California apple crop would be forever lost.

In an effort to combat foreign pests, growers are taking proactive steps, including additional trapping, education of residents and working with state and federal officials to increase inspections of imports. As California becomes more engaged in the global shipment of fresh fruits and vegetables, agriculture will continue to face pest pressures from other countries. From the California apple industry perspective, it is vital that we have a prevention program which will decrease the treatment protocols on the tail end.

The California apple industry is experiencing an upswing. However, it has been through several educational trials that lessons have been learned. As the next decade approaches, the California apple industry is excited of its prospects. The industry will continue to do well with what it has and will continue to focus on commonsense approaches to produce high quality fruit for a niche market.

To learn more about California apples, visit the California Apple Commission at www.calapple.org

This Won't Hurt A Bit!

From the FD/GWSS Board Bulletin – Fall 2008

Imagine a shot that would prevent grapevines from getting Pierce's disease (PD). While the concept may seem far-fetched, one scientist in Florida has shown very positive results that could lead to just that – a PD shot for vines.

For the past 20 years, Donald L. Hopkins, Ph.D., a professor of plant pathology with the Mid-Florida Research & Education Center in Florida, has been working with benign strains of *Xylela fastidiosa* (*Xf*), the bacterium that causes PD in grapevines and leaf scorch in almonds, as a control method and getting some very positive results.

"We began to conduct greenhouse tests on biocontrol with benign strains of *Xf* around 1990," said Dr. Hopkins. "We did our first vineyard test at the University of Florida research vineyard in Leesburg in the spring of 1992 using an American hybrid grape, Himrod. Next, we did a large-scale test in the University of Florida vineyard in a new planting of Cabernet Sauvignon/Freedom in the spring of 1997. Then we put our first test plots in at a Florida commercial vineyard in 2004."

In much the same way that children are given smallpox vaccinations to ward off the onset of the disease later in life, Dr. Hopkins discovered a strain of *Xf* that does not produce symptoms in infected grapevines and wards off Pierce's disease in the vines. The difference between the vaccination for humans and the shot for vines is that the vine does not have an immune system like humans. What actually happens is that the benign *Xf* invades and infects the vine, but it is a strain that doesn't produce any symptoms. With the benign strain occupying the plant, the vine becomes resistant to PD. The result is a vine that is symptomless and continues to produce grapes.

Many of the plants native to California are symptomless when infected with the same strain of *Xf* that kills grapevines. The Pierce's Disease/Glassy-Winged Sharpshooter Board has been funding research efforts to impart that same trait to winegrape vines. Dr. Hopkins' efforts effectively get the same results – healthy vines that continue to produce grapes in an environment filled with PD – but use a totally different approach.

In the late 1980s, Dr. Hopkins observed that strains of Df would lose virulence in culture; however, some of these strains could still colonize grapevine to a certain degree.

"We also observed that some isolates of *Xf* obtained from hosts other than grapes could colonize grapevines without causing symptoms. Because of other research publications on cross protection for disease control, I decided to evaluate the effect on disease incidence and severity by inoculating grapevines with the benign strains prior to inoculating with pathogenic strains."

Hopkins said that after many greenhouse and vineyard tests, the EB92-1 strain of *Xf* was the most effective strain for biocontrol and the most consistent from test to test.



This spring, field trials using the benign *Xf* strain moved to California thanks to funding from the PD/GWSS Board. A total of 600 vines have been planted so far. The first planting of 200 vines is in an organic vineyard in Temecula. A second planting of 200 vines is in Sonoma and a third in Napa.

Bruce Kirkpatrick, Ph.D. with the Department of Plant Pathology at U.C. Davis, is heading up the California project.

"Half of the vines are inoculated with the benign *Xf* and the other half were left untreated," said Dr. Kirkpatrick.

"The project is planned for five years, unless everything gets infected sooner," said Dr. Kirkpatrick. "Otherwise, I'd say that when well over half of the non-protected vines develop PD, we'll have enough data statistically analyze."

The test plantings consist of six different varieties spread out among the three sites. Each site has one variety known to be very susceptible to PD, while the other varieties are less susceptible.

"We expect to see the first symptoms of PD in vines by next August if the disease pressure is decent," said Dr. Kirkpatrick.

Even if the tests are successful, winegrape growers needn't be in the market for a hypodermic set just yet.

"If these tests are successful, the next step will be performing larger tests with more varieties. Then once the industry decides that this is a control method they want to embrace, there will be more tests to determine the best method for commercially deploying the benign strain in both new and existing vineyards," said Dr. Kirkpatrick.

UC DAVIS LAUNCHES NEW OLIVE OIL CENTER

February Issue of California Fresh Fruit

For more information contact:

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jdflynn@ucdavis.edu

Hoping to do for olives and olive oil what it has done for grapes and wine, the University of California Davis, has launched the first university-based olive research and education center in North America.

Plans for the new UC Davis Olive Center, which is part of the university's Robert Mondavi Institute for Wine and Food Science, were unveiled in San Diego during the international Winter Fancy Food Show, a gathering of 16,000 retailers, restaurateurs and other vendors of specialty foods.

The center has been established with a combined \$75,000 in seed funding from the campus's College of Agricultural and Environmental Sciences and the Office of Research. Startup funds totaling \$25,000 also have been provided by Corto Olive, the Musco Family Olive Co., Bell-Carter Foods, the California Olive Oil Council and the California Olive Ranch.

"The university had the privilege of helping move California wines into the world's highest rankings," said Dan Flynn, executive director of the new center. "Now we look forward to harnessing UC Davis' research expertise to help vault California olives and olive oil into that same league.

Alan Greene, president of the California Olive Oil Council and a vice president of the California Olive Ranch, said: "The olive center will help all olive producers, large and small, tackle the pressing challenges facing our industry. We anticipate that the center will enhance the economic viability of the California olive industry in an extremely competitive international marketplace."

UC Davis, with its faculty of plant and food scientists plus more than 2,000 olive trees in the campus landscape and research orchards, is uniquely positioned to host the new center. Its olive trees comprise what is thought to be the most extensive collection of olive trees in North America.

In 2005, UC Davis began pressing and processing olive oil from its trees, using the proceeds to help cover the cost of maintaining the trees. In 2007, the campus processed 425 gallons, which translated into 6,500 bottles of olive oil. The campus's three olive-oil blends earned silver and bronze awards at the 2007 Los Angeles International Extra Virgin Olive Oil Competition.

Flynn, who manages UC Davis' olive oil production program, said the new center's initial priorities will include

strengthening California's olive oil labeling statutes, conducting research on issues identified by olive-oil and table-olive producers, and identifying better laboratory methods for detecting adulterated olive oil. The center also plans to establish a certified-organic olive orchard and will develop a research taste panel to help improve the quality of olive oils.

Serving as faculty co-directors for the center will be Charles Shoemaker, a professor in the Department of Food Science and Technology, and Vito Polito, a professor in the Department of Plant Sciences.

More than 30 individuals from UC Davis and the UC Cooperative Extension have expressed interest in participating in the center. They represent a variety of disciplines including plant sciences, food science, agriculture economics and agricultural engineering.

The center's program will be devoted to teaching, research and educational activities. As planned, the teaching component will eventually include a general-education class on olive oil; student internships; and short courses on olive growing, and olive oil processing and sensory evaluation.

An olive-oil processing plant will be placed in the new Robert Mondavi Institute for Wine and Food Science complex, which is under construction and scheduled for completion in June 2008. The new Olive Center will include state-of-the-art milling equipment. The Olive Center plans to begin processing olive oil with the equipment in fall 2008.

The olive-oil processing plant will enable the center to examine the impact of different olive varieties, environmental factors and growing practices on olive-oil quality. Researchers affiliated with the center will also explore potential health benefits of olives and olive oil, pest management strategies and mechanical harvesting improvements.

In the area of public outreach, the center will offer short courses on the production and sensory evaluation of olive oil. It also will develop an informational Web site and library. And, the Robert Mondavi Institute will showcase olive trees in its edible organic garden.

The University of California has a long history in olive-related research, teaching and outreach, stretching back to 1898 when UC Berkeley Professor Eugene Hilgard and pioneering California olive producer Frieda Ehmann worked together to develop a canning process for black ripe olives. That tradition continues today through the efforts of UC Davis researchers and UC Cooperative Extension farm advisors.



MEAT CSAs: Projects test how small ranchers can direct market

By Brenda Dawson, Communications Coordinator

At the recent UC Niche Meats Marketing Conference in Modesto, one presentation had ranchers in the room eagerly asking questions. The presenter? An operator of a meat CSA. The first question from a specialty meats producer was, "Exactly what is a CSA?"

While the question may seem behind-the-times to many farmers, the idea of a meat CSA is relatively rare. In fact, researchers believe you could probably count the number of California meat CSAs or meat buying clubs on one hand.

In community supported agriculture (CSA), customers pay for multi-month memberships in exchange for their share of a farm's harvest, usually received as boxes full of fresh fruits and vegetables. This direct marketing structure has increased in popularity as more consumers seek ways to connect with locally produced food. But the challenges inherent in meat processing—including complex regulations and accessibility to certified slaughter and packing facilities—add to the complications a small-scale operator could face in starting up a meat CSA.

To explore the concept, UC Cooperative Extension in Sonoma County has started a pilot project called the Sonoma County Meat Buying Club. Stephanie Larson, livestock advisor in Sonoma County, has been working on the project along with Jacqueline Rotlisberger, coordinator of the club.

"Sonoma County has three CSAs for vegetables, so why can't we do meat?" Larson explained.

An initial survey conducted last summer yielded 300 responses from interested customers. Of those, the club began with 67 members. Currently in its third month of operation, the club has grown to 139 members. Members receive either 7, 15, or 25 lbs. of frozen meat each month in 1-3 lb. packages, depending on their level of membership. Memberships cost \$55- \$175 per month, over a minimum of three months.

"We are trying to make it more user- friendly, something that you would actually buy in a supermarket," Rotlisberger explained.

From an operator's standpoint, one of the prime advantages of a meat buying club is also one of its greatest challenges: The entire carcass of each animal is used, but fairly dividing up who gets a tenderloin and who gets a chuck roast can be tricky. The Sonoma club's sorting process has evolved over time from a loose art of shuffling meat packages to something closer to a science—easier now that their meat inventory has grown, delivery timelines have standardized, and records have been established of each customer's prior pack-ages.

Each month the club divides up meat from about three head of cattle, three pigs, two goats, 25-30 ducks and five lambs, all of which are born and raised within 25 miles of Santa Rosa.

Because there are few multi-species producers, the club sources its meat from multiple local ranchers. Along with their meat, members also receive a newsletter that highlights the various producers and provides recipe ideas from local chefs.

"We're giving them the whole animal, but they're used to buying just certain pieces," Larson explained. "We're finding people have forgotten how to cook—so [we give them] the recipe to go with it."

Larson pointed out that a critical part of the Sonoma Meat Buying Club is its proximity to USDA processing and wrap plants. The club operates in a close partnership with Sonoma Direct, a USDA cut-and-wrap facility. In addition to cutting and wrapping, the company also transports the carcasses from the slaughter facilities, stores the club's frozen meat inventory, and delivers the packaged meat to customer drop-offs. For this pilot project, Sonoma Direct is also the prime financier—paying the producers by hot carcass weight and receiving payment from club members.

As for administrative duties, Rotlisberger estimates that she spends about one week's work per month on membership details like the newsletter and recipe cards, and another two weeks' worth of time sourcing meat, servicing customers, packaging and coordinating delivery.

One of the financial goals of the pilot project is for the club to be able to pay its own administrative overhead. Larson estimates that once such a club is well established, administrative tasks could be completed by a part-time employee.

The Sonoma Meat Buying Club is not UC Cooperative Extension's only foray into a meat CSA. In 2006 PlacerGrown, a collaborative CSA in Placer County, offered meat in addition to its standard harvest boxes and was considered one of the first meat CSAs in California. Though the PlacerGrown CSA is not being operated this year, Roger Ingram, UCCE Placer County farm advisor, is working on another way to market meat directly.

He has met twice with a small group of interested livestock producers to discuss options for a meat buyers club this year.

Instead of the CSA-style membership of the Sonoma club, Ingram favors a model based on the "metropolitan buying clubs" operated by Joel Salatin, the owner of Polyface Farms in Virginia and a subject of the book *Omnivore's Dilemma*. Salatin's farm produces beef, pork and poultry so he is the only supplier to his buying clubs. Instead of multiple-month memberships, club customers submit orders each month, based on available inventory, and delivery sites are determined by a minimum total order (e.g. \$1,000).

(Continued on next page.)

**University of California Cooperative Extension
Humboldt County Agriculture Center
5630 South Broadway
Eureka, California 95503-6999**

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US POSTAGE PAID
EUREKA, CA 95501
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RETURN SERVICE REQUESTED

MEAT CSAs (continued)

Many of the challenges Ingram is currently debating are the details of having multiple producers supply a collaborative buying club. Questions remain regarding pricing, accounting, adding new producers, identifying products, determining quality standards and setting up an appropriate legal entity for financing.

"Right now I have more questions than I have answers," Ingram said.

Producers who are interested in joining or starting a meat buyers club are encouraged to contact Stephanie Larson at (707) 565-2621 or slarson@ucdavis.edu, or Roger Ingram at (530) 889-7385 or rsin-gram@ucdavis.edu.

For more about the Sonoma County Meat Buying Club, visit www.ucanr.org/socombc. To read more about niche meat marketing, visit <http://ceplacer.ucdavis.edu/livestock>.

Tips from the Sonoma Meat Buying Club's experience so far:

- "At some point you're going to have a USDA cut-and-wrap inspector looking over your shoulder," Larson said. "I would sit down with him ahead of time, definitely." Meat CSAs are still unfamiliar to many inspectors.

- "Make sure you have an agreement with your producers that they can sign, a set of standards that they're going to meet for the meat buying club," Rotlisberger said. This will make marketing and label-approval easier. Another tip: If you want your own label, seek approval from USDA as early as possible.

- Computers make club administrative tasks easier. The cuts each customer receives are tracked in a database, and most membership communication is done by e-mail or through their website, www.ucanr.org/socombc.

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