



Forrest Cook

News & Notes of the UCSC Farm & Garden

Issue 135, Fall 2012

Center for Agroecology
& Sustainable Food Systems

Choosing & Using Cover Crops in the Home Garden & Orchard

– Orin Martin

“Where no kind of manure is to be had, I think cultivation of lupines¹ will be found the readiest and best substitute. If they are sown around the middle of September in poor soil, and then ploughed in, the following spring, they will answer as well as the best manure.”

- *Columella, 1st century Rome*

Cover crops (often used as “green manures”; see below) and their positive, restorative effects on the soil come down to us through agricultural antiquity. Additionally, their ability to stimulate the growth of subsequent or “follow” crops is well documented via Chinese manuscripts from 3,000 years ago. Greek and Roman cultures also featured liberal reference to cover crops in both technical treatises as well as poetry. The Roman poet Virgil’s classic *Georgics* (Earth Works) is an epic poem of agriculture and culture laced with frequent and quite specific reference to the use of cover crops / green manures and compost.

Cover crops, compost, and cultivation techniques (plowing and digging) are the three fundamental drivers of any sustainable / organic growing system, from a postage stamp-sized backyard to sections² of wheat in Kansas.

So first, to define terms:

Cover Crop: Any plant cover used to protect, and of course, cover, the surface of the soil and to prevent erosion. This includes the effects of foliage to shield the soil from the “explosive” impact of rain hitting an exposed soil, as well as the binding and holding power of roots to prevent erosion. While there are many domesticated cover crops (principally, but not exclusively, legumes and annual grasses), weeds are also an effective cover crop. Bare soil is anathema (Greek for “an accursed thing”) to good soil stewardship, and not often found in natural systems.

Green Manure: A cover crop that is chopped up and turned into the soil. Chopping the cover crop into small pieces increases the surface area of the incorporated biomass, which translates to faster decomposition by soil microbes. Green manuring has two main benefits:

1. When incorporated at the succulent stage (pre flowering) the crop decomposes quickly and acts primarily as a fertilizer for the “follow crop,” usually spring and summer vegetables.³
2. When incorporated at a more mature stage (half to full bloom) with a higher carbon content, it adds to the organic matter content of the soil. In this instance nutrients are stored in the reservoir of humus and released slowly over a number of years.

While this is not a strictly delineated process, both approaches provide a food source for soil organisms, a fertilizer, and a way to build organic matter in the soil. You tend to use the first approach on established soils to fertilize crops, and the second on developing soils to build organic matter and improve structure, i.e., to build the “body” of the soil.

Trap or Catch Crop: Cover crops can effectively trap or catch nutrients and prevent them from leaching downward in the soil profile. For example: Broadleaf mustards and canola tend to take up nitrogen, calcium, and phosphorous, and concentrate them in their leaves, thus preventing leaching during the rainy season. Legumes are effective in this regard as well.

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¹Lupines are a nitrogen-fixing legume (member of the pea/bean family) used extensively throughout antiquity as well as presently in Europe. This is akin to our modern use of bell beans and vetches.

²A section = 640 acres

³The field operation of 5.8 acres of vegetable crops at the UCSC Farm has used fall-sown, spring ploughed-down cover crops as its sole fertilizer for the better part of the last decade. Note, this is after establishing a foothold of fertility for 35 years with both cover crops and compost—my joke about fertility systems being: Fertility systems are a lot like political systems (democracy being the preferred system), that is, the broader the constituency, the greater the end product.

Thus, cover crops/green manures offer numerous benefits; they can—

- Improve the physical properties of a soil, particularly the enhancement of aggregation and development of a “crumb-like” structure.
- Increase soil’s organic matter content, which feeds soil microbes and stores nutrients in a non-leachable form and releases them slowly over time.
- Protect the soil surface and prevent erosion.
- Improve water infiltration and retention as well as drainage.
- Provide a “feedstock” for soil organisms.
- Break up hard pans and reduce compaction via the “bio-drill” effect of the deep tap roots of legumes, mustard, chicory, daikon radish, etc., and—in the top foot of soil—via the fibrous roots of annual grasses.
- Cycle nutrients.
- Provide habitat and food (in the form of pollen and nectar) for beneficial insects, i.e., provision the “3 P’s”: pollinators, predators, and parasitoids
- Offer a rest or “fallow” period for soil, with little or no disturbance for 5–7 months (fall through spring). This allows for an increase in earthworm populations, among other benefits.
- Reduce or eliminate the need for purchased fertilizer.
- Increase nitrogen levels in the soil. Through the use of legume species (vetches, bell beans, clovers, etc.) atmospheric nitrogen can be “fixed” and left in the soil to fertilize subsequent crops (see sidebar, below).

Nitrogen Fixation

Through a biological and chemical process now called facultative-parasitic, but formerly referred to by the more poetic term symbiosis, soil bacteria in the genus Rhizobium (root zone) associate with the roots of legumes and “fix” atmospheric nitrogen that can be retained in the soil after the cover crop is plowed in. This is in addition to the contribution of nitrogen from the foliage of the legume.

The rhizobial bacteria are attracted to the legume roots by chemical secretions and gain entry into the roots via an infection thread, a tunnel-like ingrowth of the root hair. The infection thread keeps migrating farther inward into the root hair and is filled with multiplying bacteria. Eventually it enters the main part of the root, ruptures, and spews bacteria into root cells. These cells enlarge and form a visible, pink-colored nodule where the rhizobial bacteria “fix” or “grab” nitrogen from air in the soil and convert it into a form (ammonium) that plants can use. In return, the legume provides the bacteria with carbohydrates, protein, and oxygen. When the cover crop is killed the nodules remain in the soil and release their nitrogen, which is then available for uptake by crops (or weeds—a cautionary note).



Abby Huetter

Alan Chadwick Garden manager Orin Martin chops down a stand of bell beans and vetch cover crop.

A simple method to calculate the nitrogen contribution of a legume cover crop is alternately referred to as the Rule of 4 or Rule of 16:

- Cut and weigh (wet weight) the fresh cover crop from 16 square feet (4 feet x 4 feet)
- Multiply the weight in pounds by the appropriate factor to estimate the pounds of nitrogen per acre contributed by the cover crop—

Factors: Vetch = 16

Bell beans = 10

Clovers = 13

So if the wet weight = 10 pounds and the cover crop legume is bell beans, multiply $10 \times 10 = 100$ lbs / acre of nitrogen. Most vegetable crops require between 100–200 pounds of nitrogen / acre (an acre = 43,560 square feet).

Timing

On the Central Coast, cover crops are best seeded in late September – mid November and plowed into the soil late February – early April. Note that on a garden scale, incorporating cover crops into the soil is often slow and laborious, and it may take 3–5 weeks for the cover crop to break down to the degree that crops can be seeded or transplanted.

An alternative method is to skim off the cover crops at the base of the plants and combine them with a carbon source (straw, and/or leaves and manure) to make compost, and to subsequently reapply the compost to the soil. In the interim, a previously made compost can be applied to the skimmed area where the cover crops were removed at a rate of $\frac{1}{2}$ –1 pound of compost per square foot to fertilize crops.

It is important to retain the roots and nitrogen-filled nodules in the soil (see sidebar). Take only the vegetative portion of the cover crop for compost construction. When agitated by the skimming action of the spade or machete, the nodules will slough off into the soil in 3–7 days and then as you dig the soil the roots can be picked out. This is a gardener’s dividend from the coevolution of grazing

Home Farmers Return 40 Years On

by Don Burgett

In mid-August a very special group of people re-united for a weekend in Santa Cruz. Twenty-four "Home Farmers," some with family members in tow, came together to celebrate the 40th anniversary of their time together on the UCSC Farm.

The Home Farmers are the pioneers of the Farm. From December 1971 to late 1973 they dug the first beds and built some of its iconic structures, including the Equipment Barn, the Lath House and the Cook House, which was later expanded

into the Louise Cain Gate House. They lived in sleeping platforms on the old oak above the bike path uphill from the Farm and in tipis in the adjacent meadow, surrounded by simple wood fences to keep the cattle out.

A few had been students or worked with Alan Chadwick in the Garden Project before setting spades to soil in the meadows of lower campus, but most were community volunteers seeking a home for an agricultural community, thus their group name. University leaders welcomed them to help establish the Farm that Chadwick and some of his apprentices were considering developing.

The Home Farmers' sweat and love for this land created the Farm that is so dear to so many of us now. They also created lasting bonds, and 17 people went on to farm together in Arkansas after their time here. They gathered here at 20 years in 1991, and for many this year's reunion was their first time back since then.

We look forward to having the Home Farmers share their stories with you in future *News & Notes* issues. For now, here is a taste from their wonderful evening in the Farm Center with this year's apprentices on August 18th:

Linda Waller, on receiving a \$700 check from the chancellor to buy draft horses to work the new fields in 1972: "*There was great discussion at that time about whether we should have a team of horses, and I had a background with horses. By some miracle, and I suppose it was because Dean McHenry must have had some background with driving teams, he was willing to support us buying a team. I went around the area looking for a team and found Pete and Molly up in Pescadero at John Arata's farm. Pete was a tall Percheron roan, and he was a real good fellow. Molly was this absolutely gorgeous Belgian, but she was a little easy to freak out about*

things. ... I do have some absolutely marvelous memories of having a hand plow, the reins looped across my back, and Pete and Molly and just the sound of the chains and their feet going through the cover crop. The sound of the soil turning over, and a flock of birds behind me landing to pick up the worms and the insects that I was turning over. It was just quiet except for the sound of the chains. I had many hours of that that I'll never forget. ... It's wonderful to see the Farm looking as beautiful as it is today."

Oran Hesterman, sharing at

the dinner as we all did around the room: "*I really learned how to garden and grow food, and I've been doing that ever since. But more importantly than the people, it was really the place here. I say it really inoculated me and headed me into an entire career in food and agriculture.*"

Les Snyder, in a note after the reunion: "*I was particularly struck by the enormity of the difference the farm has made in passing 1,500 people through it and out into the world. ... I also wanted to thank the apprentices for preparing that awesome feast for us. Shades of old cook house days! I found myself bonding with them immediately like family being part of the same lineage that we began 40 years ago.*"



Jenny Wilson

Alan Whitridge (left) and Ayn Perry with a photo of herself from the Home Farmer days. At top: Cleaning the seed drill at the UCSC Farm, 1973 (photo by Leonard Herzstein).

New Grant to Support Beginning Farmers on the Central Coast

A grant from the USDA's Beginning Farmer and Rancher Development Program (BFRDP) to the Center for Agroecology & Sustainable Food Systems (CASFS) will support a range of activities aimed at improving educational opportunities for beginning farmers both on California's Central Coast and nationwide.

In announcing the 3-year, \$665,000 grant at a press conference held at the UCSC Farm this spring, Congressman Sam Farr noted that the grant "recognizes the innovation in organic farming at UC Santa Cruz and the Central Coast."

CASFS Executive Director Daniel Press said the grant from the USDA's National Institute for Food and Agriculture will support CASFS in its effort to expand its pioneering Apprenticeship program to train more beginning farmers with an emphasis on increasing access for apprentices with limited financial resources.

"We are tremendously grateful for the support and trust this USDA grant represents," Press said. "With it, CASFS demonstrates how Americans can recruit and train a new generation of farmers for the 21st century. Through programs like ours, these new farmers will be more diverse—ethnically and economically—than before. They will also learn and use some of the most sustainable and innovative agricultural practices on Earth."

Three other sustainable agriculture organizations on the Central Coast are collaborating on the project: the Ecological Farming Association (EFA), the Community Alliance with Family Farmers (CAFF), and the California Certified Organic Farmers (CCOF).

The four partners will work with other collaborators and beginning farmers—defined as being in the first 10 years of the business—to develop a Beginning Farmer Network in the counties of Santa Cruz, San Mateo, Santa Clara, Monterey, and San Benito.

The network will coordinate existing programs and develop new opportunities for the Central Coast's beginning farmers to receive ongoing marketing and production training through workshops, field days, conferences, and both direct and online mentoring and technical assistance.

The funds will also support the CASFS Apprenticeship and Advanced Apprenticeship trainings, scholarships for the beginning and advanced programs, and a revision and expansion of farmer training manuals that CASFS has developed. CASFS will revise its widely used production and marketing manuals, making them available nationwide online for free and at-cost in print.

For more information on the BFRDP grant, see <http://news.ucsc.edu/2012/08/casfs-usda-grant.html>.

Thanks to Our Harvest Festival Supporters

Many generous businesses contributed to this year's successful Harvest Festival, which attracted a large, enthusiastic crowd for a sun-drenched day on the UCSC Farm.

Our thanks go to Driscoll's Berries, Tradin Organics, New Leaf Community Markets, Veritable Vegetable, Jacobs Farm/Del Cabo, and McEvoy Ranch for their financial support. Other businesses provided generous product and gift certificate donations, including Companion Bakeshop and Farmer Freed's Culinary Salts. Jim Rider of Rider and Sons once again donated a bin of organic apples for making apple juice. People Power provided free valet bike parking for the event. We're grateful to all of them for their support. Many thanks also to all the student and community volunteers who pitched in to help make this annual campus and community gathering a success.

The Harvest Festival is sponsored by the Center for Agroecology & Sustainable Food Systems, UCSC's Food Systems Working Group, and the Friends of the UCSC Farm & Garden, with support from UCSC's Measure 43, the Sustainable Food, Health and Wellness Initiative.



Shauna Casey

Apprenticeship Mixer at the Annual Ecological Farming Conference

*Thursday, January 24, 5:30 pm - 7 pm
Asilomar Conference Center, Pacific Grove*

If you plan to attend the annual Ecological Farming Conference in Pacific Grove next year, be sure to join us at the CASFS Farm & Garden Apprenticeship mixer on Thursday evening from 5:30–7 pm (check your program for the location of the mixer).

Come hear the latest news from the Apprenticeship program—including news about the new Beginning Farmer and Rancher Development Program grant (see story at left). Meet Daniel Press, the new director of the Center for Agroecology & Sustainable Food Systems (CASFS), and catch up with your fellow Apprenticeship alumni, staff and friends. Learn more about the EcoFarm Conference at www.eco-farm.org/programs/efc/ecofarm_2013/

About the Friends of the UCSC Farm & Garden

by Daniel Paduano, Friends' Board President

As the more than 1,600 visitors to the recent Harvest Festival can attest, the 25-acre UC Santa Cruz Farm is a wonderful place to visit. For more than 45 years, the UCSC Farm and Alan Chadwick Garden have welcomed visitors, students, and researchers from near and far interested in learning about and developing sustainable, organic agriculture practices.

For those of you who recently joined the Friends of the UCSC Farm & Garden, or who might not be aware of all we do, I want to offer some background on our activities.

We are a non-profit organization, sanctioned by UCSC to raise funds on behalf of the UCSC Center for Agroecology & Sustainable Food Systems (CASFS), which manages the activities that take place at the UCSC Farm & Garden. The Friends' Board of Directors is responsible for allocating these resources.

The majority of our budget goes to supporting scholarships, instruction, and logistics for the Apprenticeship in Ecological Horticulture held annually at the Farm & Garden. The Apprenticeship is a 6-month immersion in organic farming and gardening. Each year, 40 Apprentices from across the U.S. and abroad must assimilate classroom lectures and hands-on practice to become proficient in propagating, irrigating, harvesting, and marketing a wide variety of annual and perennial crops, while employing organic soil fertility and pest and disease management strategies. Those of you who visit the twice-weekly Market Cart or are members of the UCSC Farm's Community Supported Agriculture (CSA) program enjoy the fruits of their learning and labor.

Your support helps spread sustainable farming far beyond the confines of the UCSC campus. More than 1,500 students have graduated from the Apprenticeship program to date, and many are now leaders in their fields (pun intended) around the globe. You may know some of these graduates as the founders and growers of many Santa Cruz-area farms, including Fogline Farm, Freewheelin' Farm, Blue Heron Farm, Dirty Girl Produce, Abounding Harvest Mountain Farm, Everett Family Farm, Live Earth Farm, Fat Cabbage Farm, Fifth Crow Farm, Blue House Farm, Jacobs Farm/Del Cabo, Camp Joy Gardens, Ocean Street Farm, Two Dog Farm, Santa Cruz Farm, and Pie Ranch.

The second largest outlay in our budget is to provide community outreach to you, our members. We do this primarily through our evolving menu of classes, workshops, and events. As a Board, we are constantly looking to expand our offerings. If you have suggestions for workshops or other activities you'd like to see, please contact me (daniel@aboundingharvest.com).

Finally, the Board of Directors spends a considerable amount of time and energy advocating on behalf of and

fundraising for upkeep and improvement to the physical plant of the UCSC Farm & Gardens.

Next month you'll receive the annual renewal paperwork for your Friends' membership.* In recent years CASFS has faced unprecedented budget cuts due to California's fiscal crisis, and although CASFS continues to raise funds through grants and other activities to help "backfill" these losses, many unmet infrastructure maintenance needs remain at the UCSC Farm and Alan Chadwick Garden.

In light of these economic challenges, I urge you to consider joining me in giving at the Life Membership level (\$1,000 and up). If you'd like to renew your support sooner, see the CASFS website (<http://casfs.ucsc.edu/about/support-casfs>) and look for the **Support the Friends of the Farm & Garden** information, where you can access UCSC's secure online giving site.

I look forward to your continued support of the CASFS leadership in the important work of developing new organic farmers and gardeners and its pioneering research on sustainable, organic agricultural practices.

*Note that we only send out one renewal request annually. If you've recently joined the Friends of the Farm & Garden, feel free to renew by the date that will be noted on your mailing label in the upcoming mailing.

Second Annual Farm-to-Fork Dinner Sells Out

Late-summer sunshine bathed rows of corn, pumpkins, salad greens, and strawberries as 125 guests enjoyed September's Farm-to-Fork Benefit Dinner at the UC Santa Cruz Farm.

Farm-to-Fork is the brainchild of 2011 Apprenticeship graduate Matthew Raiford, currently executive chef at Little St. Simons Island resort just off the Georgia coast and farmer/owner of Gilliard Farms. For the second annual event, Raiford returned to Santa Cruz to team with Apprenticeship grad Amy Padilla and her catering partner Heidi Schlecht of Feel Good Foods to create a five-course meal featuring food produced by the apprentices and local Apprenticeship alumni.

Chancellor Blumenthal kicked off the evening with a message about the importance of the Apprenticeship, the campus farm and Alan Chadwick Garden, and the mission of sustainable agriculture. He also introduced Daniel Press, UCSC professor of environmental studies, as the new executive director of CASFS.

In a vibrant example of "paying it forward" the 2012 Apprenticeship class volunteered to plan the fundraiser and help prepare and serve the meal. The dinner, silent auction and post-event donations inspired by the evening's speakers raised nearly \$30,000 to support the 2013 class of apprentices who will start the program next spring.

News & Notes

Cover Crops, from page 2

animals and perennial legumes. The animal chews at and agitates the perennial legume, nodules slough off, and nitrogen is released into the soil to regrow the legume.

Materials and Methods

Typically, annual cereals (grasses such as oats, barley, or annual rye) and legumes (vetches, bell, or fava beans) are used in tandem (see prior joke re: broad constituency base).

The grasses are referred to as "nurse crops." That is, they germinate quickly (within 3–5 days) and provide leaf cover for the soil surface and soil-holding action via the roots until the slower-emerging legumes get established (7–10 days). The grasses have a fibrous, shallow root system that "works" the surface soil (to approximately one foot deep) and is amazing in terms of its ameliorating effect on soil structure. Grasses are constantly sloughing off dying roots (on an almost daily basis) and growing new roots, thus increasing the organic matter content of the soil even as they grow. Some of the richest soils of the world, the soil order Mollisols (the root of the word, mollify, is to soften) are the soft, black soils of the U.S. upper Midwest and the steppes of Russia—the "breadbaskets" of the world.

The legumes feature a deep taproot (bio-drill) that breaks up compaction at depth as well as shallower, fibrous root systems. Some of the legumes, notably vetches and bell beans, are amazing biomass producer (6–8 feet of top growth). Legumes also fix nitrogen, as noted above. Nitrogen is the most expensive, mobile, motile, and thus precious of all nutrients. It is needed in greater amounts than any other nutrient.

At plow-down time, the combination of the grass and legume contributes to a balance of carbonaceous material (grasses) and nitrogenous material (legumes), which results in an optimal formula for both organic matter increase and immediate fertilizer effect.

The ideal time to incorporate a cover crop as a green manure is prior to the grasses flowering and when the legume is 25–50% in bloom. Note that legumes make 70–80% of their growth in the last 20–30% of their growth cycle.

The best legumes to use in our area are bell beans and vetches (*genus Vicia*), combined with grasses, including oats, barley, or annual rye. Although fava beans were formerly used, the law of supply and demand, and thus price, make bell beans a better bet: you get five times the number of bell beans to the pound (vs. favas) and bell beans cost five times less than favas (59 cents vs. 2.99/lb).

Soil Preparation and Seeding

Soil preparation can be as simple and easy as skimming the soil surface, irrigating, waiting 3–5 days for dry down, broadcasting or scattering the seeds on the soil surface, and raking them in with quick, short strokes using a bow rake (not a leaf rake), moving in one direction—either to or fro, but not both—to cover the seed. Mulch

with straw or leaves, then water. Stand back, go write the Great American Novel, reappear periodically, and plow down in late February–early April.

On a garden scale, seeding so as to have 8–10 plants/square foot is adequate. This is actually a light scattering of seeds. An admixture (by weight, not volume) of anywhere between 60–90% legume and 10–40% grass should suffice.

When planting cover crops around fruit trees, I prefer to use only bell beans at about 20–30 seeds per square foot. The reason being that vetch is an 8-foot vine and recognizes the tree as a trellis and wreaks all kinds of mayhem as it intertwines and shades flowers and leaves in the spring. The grasses are also often hard to eradicate in handworked systems.

I have used the bell beans as a green manure under trees and simply chopped them on the surface in the spring and mulched them over with 3–4 inches of wood-chips as the sole source of fertilizer input for our established (2–3 year old) trees for 25 years, to great benefit. In the first two years after planting I also apply 2–3 shovels of compost and 1/3–1 pound of an organic granular fertilizer in addition to the green manure crop. Local organic apple grower extraordinaire Jim Rider uses a similar system on 80 acres.

Seed Sources

General Feed and Seed
1900 Commercial Way, Santa Cruz
476-5344, www.generalfeedandseed.com

ProBuild Garden Center
235 River Street, Santa Cruz
423-0223, www.probuild.com

Mountain Feed and Farm Supply
9550 Highway 9, Ben Lomond
336-8876, www.mountainfeed.com

Peaceful Valley Farm Supply (shipping)
530.272-4769, www.groworganic.com

References

Building Soils for Better Crops (3rd edition), by Fred Magdoff and Harold Van Es. Published by SARE/USDA. Available by mail (\$20.95) or free online: www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition

Managing Cover Crops Profitably (3rd edition), Sustainable Agriculture Network, Handbook Series #3. Available by mail (\$19.95) or free online: www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition

The Soul of Soil: A Soil-Building Guide for Master Gardeners and Farmers (4th edition), by Grace Gershuny and Joe Smilie. Chelsea Green Publishing, 1999

Unit 1.6: Selecting and Growing Cover Crops. In Teaching Organic Farming and Gardening: Resources for Instructors, edited by A. Miles and M. Brown. Available free online: <http://casfs.ucsc.edu/education/instructional-resources/downloadable-pdf-files>

The Roots of Padrón Peppers

Before joining the 2012 Apprenticeship class, Elaine Walker worked as an English teacher through the Spanish Ministry of Education in La Coruña in the region of Galicia, Spain. "On my breaks from school and at the end of my stay in Galicia I worked on an organic farm in the region near a town called Muros. Padrón is another town located in the region of Galicia," says Emily. Here she writes about the "back story" of a pepper that has become popular in our local farmers' markets.

The pepper that we call "padrón" goes by several names in Spain: Pimientos de Padrón (Castellano Spanish) or pimiento de Herbón (those who believe they are from Herbón and not Padrón) or pementos de Padrón (in Galego, the local dialect spoken by those who live in Galicia).

Some are hot and some are not : "Os pimentos de Padrón, uns pican e outros non." But Galegos say that the ones that are grown later in the season (August and September) are spicier than the ones grown earlier (June/July).

About 15,000 kilograms (33,000 pounds) are grown in Padrón each year—mostly in the valley of Herbón—between June and September. There is a festival every year called the Festa do Pemento de Padrón in Herbón held on the first Saturday in August. The festival happens in the carballeira of Herbón (Franciscan convent), acknowledging the Franciscan monks who brought and cultivated the pepper from the Mexican state of Tabasco in the 16th century.

The pepper likes the cooler, oceanic climate of Galicia (although it does get hot in the summer—but always has cool nights, similar to Santa Cruz). Galicia is also known for its acidic soil; I'm not sure how this affects peppers but thought it was interesting to note.

Galegos, who are known for and are very proud of their cuisine, are shocked to hear that pimentos de padrón are grown and eaten anywhere outside of Galicia. For Spanish consumption they are now grown in Mallorca, Murcia and Morocco to satisfy the year-round demand. They are in season May–October.

Modesto, a teacher I worked with last year, said to me: "... los habitantes de Herbón viven muy enfadados por lo de los pimientos. Todo el mundo habla de los pimientos de Padrón, pero, en realidad no son de Padrón, sino de Herbón. Es una aldea pequeñita, dentro del ayuntamiento de Padrón, y al lado del río Ulla, que separa las provincias de Coruña y Pontevedra. Así que cuando vuelvas a explicarles a tus amigos algo sobre los pimientos, por favor, ten un pequeño reconocimiento a Herbón. Aunque nunca lo sabrán, les haría felices."

Translated, "You shold know that Herbón citizens are still angry about Padron peppers. Everyone talks of the Padron pepper, but really they're not from Padrón but rather from Herbón. Herbón is a small town in the

county of Padron next to the river Ulla, which separates Coruna province and Pontevedra province. So when you come back and talk to your friends about peppers please give a little acknowledgment to Herbón. Although they [the citizens of Herbón] will never know it will still make them happy."

They say the first U.S. customer for padrons was a Catalán chef in Miami Beach who started serving them at his restaurant. They're quick and easy to prepare: both the skin and the stem are kept on (the stem is called the rabito, rabo, or pedúnculo in Spanish). They are fried in olive oil until they are blistered and softened by not totally brown. In Galicia, they are then sprinkled with coarse sea salt and served with toothpicks and really good bread and a cold cheap Galician beer called Estrella.

If you haven't tried growing padrons (or herbons), consider adding them to your garden next spring, or look for them at your local farmers' market.



Keep Up with Farm & Garden News!

Keep up with the latest news from CASFS/UCSC Farm & Garden by becoming a Facebook friend. Type Center for Agroecology and Sustainable Food Systems into your Facebook search engine and "Like" our page. And check out the CASFS website for updates, information and resources: <http://casfs.ucsc.edu>.

Another great way to stay current with what's happening at the Farm & Garden is through the *Field Notes* newsletter. *Field Notes* goes out to our Community Supported Agriculture (CSA) members each week from June through October, featuring Farm news and recipes. You can access current and past issues of *Field Notes* on the CASFS website:

<http://casfs.ucsc.edu/community-outreach/produce-sales/community-supported-agriculture>

Also online are back issue of the *News & Notes* newsletter. Along with other CASFS publications, you can find them at:

<http://casfs.ucsc.edu/publications>

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Winning Recipe from the Harvest Festival Apple Pie Contest

The annual Apple Pie Baking Contest at this year's Fall Harvest Festival saw our youngest winner ever, with 7-year-old Kaenan Hardy taking top honors over 17 other entries, including his mom's (she finished 4th). In second place was Lisa Bono; third, Haley Bott; fourth, Teyara Hardy; and fifth, John Selberg. The award for Best Presentation went to Kathy Vetterli, and Han Zhan took the Most Creative prize.

Here's Kaenan's winning recipe –

Crust:

2 cups flour
1/2 pound butter, salted
1/4 cup ice water

Filling:

11 apples, mixed varieties
2/3 cup sugar (turbinado, mixed fine)
1 tablespoon lemon juice
1/2 teaspoon lemon zest
pinch salt
2 tablespoons flour
1 teaspoon cinnamon
dash nutmeg
1 teaspoon vanilla
1 teaspoon sugar for sprinkling
1 egg
1 tablespoon butter for crumbling

By hand, press together well chilled butter with the flour, then add ice water in divided portions until you can fold and gently form the dough into a disc. Chill one half hour. Roll into rectangle then fold into thirds, turn, repeat 2 more times. Form 2 discs, then wrap and chill overnight sealed in plastic.

Roll out the discs from fridge between 2 pieces of parchment paper. Preheat oven to 500° and place a baking sheet on bottom shelf of oven on top of baking stone.

Cut and peel apples on peeler and quarter. Pour lemon juice and zest over. Add vanilla and mix. In a separate bowl, mix together the flour, salt, cinnamon, nutmeg and sugar, then pour over apples.

Mix egg and add a splash of water. Wash a very thin layer over the inside bottom of the pie crust. Pour in apple mixture with juices and mound a bit in the middle. Cut and crumble the butter and place pieces around over the apples.

Make lattice top. Also top with yolk mixture and finally sprinkle with remaining sugar.

Place on bottom rack of oven on baking sheet. Turn heat down to 425°. Bake for 25 minutes until crust is nicely browned. Turn oven down to 375° and continue baking for another 35 minutes. Remove from oven and cool on a wire rack for several hours.

