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The BeeLine is a quarterly publication of Western Cascade Fruit Society, a non-profit 501(c)3 corporation in the State of Washington.

Tahoma Great Cider Press Giveaway!



In a proud tradition of over 20 years, the Tahoma Chapter of the Western Cascade Fruit Society once again raffled off a Correll cider press on the last day of the Washington State Fair. The lucky winner this year was Jan Hamblen of Marysville, Washington. Jan remembers with fondness the family cider squeezing events she participated in as a child. She is looking forward to continuing that tradition with her children, using her brand new Correll!

Remember the Puyallup Spring Fair April 19 - 22, 2018.

‘WA 2’ / Sunrise Magic

The first apple cultivar released from the WSU apple breeding program is ‘WA 2’. From a ‘Splendour’ x ‘Gala’ cross, its outstanding eating quality, appearance and productivity give it huge potential to be a successful cultivar in Washington State. It is attractive with an orange-red to pinkish-red blush (70-90% of the skin surface) over a yellow background and has large and conspicuous lenticels which usually make it easily distinguishable from other cultivars and add to its overall pleasing appearance. Fruit shape is round and size is medium/large; it is usually larger than ‘Gala’, comparable to ‘Braeburn’ and smaller than ‘Fuji’. The fruit has outstanding texture, being very firm, crisp and juicy and loses very little firmness in storage and on the shelf. ‘WA 2’ ripens in late September and early October and is suited to the fresh market with the potential to be a commercial cultivar both directly off the tree and out of medium and long-term storage.

Tree Characteristics:

- Compact growth habit
- Average productivity
- Annual bearing (if thinned)

Moderate susceptibility to powdery mildew and fire blight

Fruit Characteristics:

- Late September to early October season
- Medium fruit size
- Very attractive



- Bright pinkish red
- Conspicuous lenticels
- Little russet or bitter pit

Eating Quality

- Excellent texture – crisp, juicy and very firm out of storage (low ethylene gene: Md ACS1-2/2)
 - Balanced flavor – sweet with moderate acidity
 - Very high sensory/consumer ratings
- Good quality from North to South

| | Low Sugar | Medium Sugar | High Sugar |
|----------------|---------------|---|------------------------|
| High Acidity | Granny Smith | Braeburn Rubens Jazz | Cripps Pink .55mg/l |
| Medium Acidity | | Golden Delicious Honey Crisp Jonagold Pinova | WA 2 .42mg/l |
| Low Acidity | Red Delicious | Gala | Fuji |
| | 12% | 14.5% | |

WSU tree fruit research & extension center, Wenatchee

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Attention WCFS Members

Want to know instantly what's happening in the organization? Subscribe to the WCFS Forum. It's a benefit of membership. The Forum is private and closed to the public. It keeps us together and on top of what's happening in our chapters. Click on this link and follow the prompts:

<http://lists.ibiblio.org/mailman/listinfo/wcfs>

Judi Stewart, Forum Administrator



Diploids and Triploids and Tetraploids, Oh My!

Theresa Homolac, HOS Editor, Pome News, Fall 2017

A dozen years ago I grafted a Louis Pasteur pear scion onto a quince rootstock. Sadly, my Louis Pasteur has not lived up to the credentials of its namesake, and in a dozen years, although blooming profusely each spring, has produced a total of 5 pears. This year I tagged it for elimination. While researching pear triploid information, I found "Ploidy of USDA World Pear Germplasm Collection Determined by Flow Cytometry" by J. D. Postman and N. Bassil, 2015, <https://www.researchgate.net/publication/283623144>.

This reference contains a table of all non-diploid USDA pear varieties in the genebank. Six of the triploids listed grow on my place, one of them being Pound cultivar located adjacent to the Louis Pasteur. The Pound has always been productive and very large. It is a triploid and needs a diploid pollinizer. Alas, being a triploid, the Pound could not reciprocate, and may explain why my Louis Pasteur has failed so miserably to produce pears.

So what is polyploidy? Polyploidy is the state of having more than two sets of homologous chromosomes. While humans and most animal species are diploid, possessing two copies of each gene (one from each parent), domesticated plants commonly have more. One benefit of polyploidy is increased size, and because bigger is generally considered better when it comes to crop development, many crop species are polyploids.

As with diploids, when polyploids reproduce, their eggs and pollen cells contain a complement of chromosomes. These complements work out evenly in cultivars with an even set. In diploids, the egg gets one set and the pollen cell gets the second. In tetraploids, both the egg and pollen cell get two sets each. In both these cases, because of the even complement of chromosomes, the plant is fertile. But with odd-ploidy cultivars, such as the triploid banana, the result is non-viable sex cells and sterility. This works out okay for our cultivated banana because it's parthenocarpic (can produce fruit without fertilization) and can be propagated by roots or from suckers. Another common parthenocarpic triploid is our seedless watermelon. Its production requires the complex crossing of a normal diploid variety with a manipulated tetraploid one.

Polyploidy also occurs in our pome fruits. Although a few apple varieties (such as Summerred, Liberty, Elstar, and Fiesta) show parthenocarpic tendencies and have both seeded and non-seeded fruit on the same tree, most apple cultivars (as well as most pear cultivars) are non-parthenocarpic and cannot produce fruit without fertilization. In these cases, it is beneficial to know which varieties are triploid and which are diploid because a diploid can pollinize a triploid, but a triploid, because of sterility, cannot return the favor. The best resources I've seen for identifying triploid pears are Postman and Bassil's research paper referenced above; and, *The Book of Pears: The Definitive History and Guide to Over 500 Varieties* by Joan Morgan, Chelsea Green Publishing, Vermont, 2015.

Triploid Apples

by Daniel Wachenheim, HOS Member

In choosing apple cultivars for your yard or orchard it is helpful to understand pollination requirements. Most apples require a pollen source from a different apple cultivar with viable pollen and with overlapping bloom time. In addition to bloom time another important issue to consider is knowing which apple cultivars are triploid. Recognizing whether a variety is triploid can make the difference between a tree that bears a full harvest of apples and one that has none at all.

What do we mean by "Triploid" Apple cultivar?

Most apples have an even number of chromosomes (2N, or diploid), which provide the genetic information and control over all aspects of plant growth and fruit production. When flower cells divide to make pollen (male) or ovules (female), they separate the chromosomes into single numbers (1N), which then become double again when the pollen and ovum cells meet. Some chromosomes make a division error when recombined in the progeny seed, resulting in a 3-chromosome set (2N). This 50% increase in chromosomes is a triploid and can result in more vigor, less disease susceptibility, and larger fruit when compared to diploids. Because of these desirable characteristics, orchardists inadvertently selected for triploid varieties long before the concept of triploid chromosomes was known or understood. For example, the triploid Gravenstein has been around since the 1600s and the triploid Newtown Pippin has been cultivated since the 1700s.

Triploidy may be more common than previously known. In a research study done in the UK at East Malling, 52 of the varieties tested were determined to be either triploid or, in a small number of cases, tetraploid (4n). While triploids are common and often exhibit superior traits, tetraploids aren't as desirable and tend to produce inferior quality apples.

What are Some Properties and Considerations of Triploid Apple Cultivars?

Triploid apple varieties have known benefits, but there is also a cost. Most triploids have sterile, or nearly sterile, pollen and require pollen from a nearby diploid variety for fertilization. Triploids do not contribute pollen. This means, in order to have productivity from a triploid apple, a separate diploid variety needs to be grown within pollination distance, and that second variety will not be pollinated by the triploid in return. A potential outcome is that the triploid produces apples but its pollinator does not. The usual recommendation is to plant two different diploid varieties nearby, so that the diploids pollinize each other as well as the triploid tree.

To complicate matters further, some diploids, such as Granny Smith, are self-fertile and some triploids, such as Winesap, are thought to be partially self-fertile. In these cases, another option is to plant a self-fertile diploid tree within pollinating distance of the triploid. Some self-fertile cultivars to consider are Alkmene, Braeburn, Golden Delicious, Granny Smith, and Queen Cox.

A third option is to plant a multi-graft tree with at least two cultivars for cross pollination. However, because of their increased vigor, triploids on a multigraft may dominate to the detriment of the lower-vigor diploids.

Cont. on page 4

Triploids Cont. from page 3

Triploid cultivars described as vigorous include Baldwin, Bramley, Jonagold, Red Winesap, and Roxbury Russet. With increased vigor, there can be a tendency toward biennial bearing in some triploid varieties. The cultivar Baldwin is well-known for this trait. The Jonagold also displays biennial bearing.

Common Triploid Apple Cultivars:

Arkansas Black, Ashmead's Kernel, Baldwin, Belle de Boskoop, Blenheim Orange, Bramley's Seedling, Fallawater, Gravenstein, Holstein, Jonagold, Karmijn de Sonnaville, King David, Liberty, Mutsu, Newtown Pippin, Ribston Pippin, Roxbury Russet, Stayman, Summer Rambo, Tompkin's King, Winesap, Zabergau Reinette.

Triploid apple cultivars can be beneficial due to increased vigor, excellent flavor characteristics, and possibly disease resistance. Most triploids do not have effective pollen, so can't be pollinators for other cultivars, and they usually do need a diploid variety nearby as a pollinizer. That pollinizer can be a self-fertile diploid or two different diploid cultivars that are not self-fertile. Increased triploid vigor (resulting in decreased rootstock dwarfing effects) needs to also be taken into consideration on multigraft trees.

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Jerald Alvin Shroyer, Nov. 24, 1932—Nov. 9, 2017

Jerald Shroyer was truly a man of the earth, working as a bank manager but devoting his passion to his gardens and orchards. Born in Corvallis, to Doris Hart and Gail Shroyer, Jerry spent his happy childhood at Eddyville and then at the family farm in Philomath, now known as the Gathering Together organic farm. His earliest memory is of walking in the orchard of his grandfather, Silas Hart (who planted many of the farm orchards in the Willamette valley), and having Silas pick and slice an apple for him. Silas taught Jerry at a very young age to graft fruit trees. He married Joline Sandau in 1972 and became stepfather to her three daughters. In 1975 the family moved to acreage outside Canby where Jerry grew produce, berries, figs, persimmons, grapes, and "collected" over 100 different fruit trees. He and Joline joined the Home Orchard Society in 1976, he serving as president of HOS four times. Jerry Shroyer will be missed in the fruit growing world.

Editor, Marilyn Couture

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WCFS Tahoma Booth—Washington State Fair
Think ahead! August 31 - September 23, 2018

Get on Tahoma's List to help out at the Fall 2018
Washington State Fair.

FREE admission & parking are available which is worth about \$30! Please let Bill Horn know if you can help.
Bill Horn, Tahoma Chapter Treasurer, 253-770-0485
* * * * *

PUYALLUP SPRING FAIR – 2018

WE'RE READY... bring 'em on!!

Our Tahoma Chapter is prepared to respond to a question visitors to our active WCFS booth will inevitably ask:

"What is the best apple to grow in Western Washington?"

Knowing that apple lovers have a wide range of expectations when choosing one apple variety over another, we won't be baited into in an argument or a debate; we will answer a question with a question:

"What do YOU want in an apple..."

-a variety immune to scab and resistant to mildew and cedar rust? DAYTON!

-a cultivar that you can eat in August? SUNRISE or WILLIAM'S PRIDE!

-a tart tasting selection? ELSTAR or IDARED!

-a very large apple? BUCKLEY GIANT!

-a quality apple but ugly russet skin as a tradeoff?

HUDSON'S GOLDEN GEM!

-a reliable crop regardless of the pollinating conditions?

AKANE!

-an apple sauce and pie favorite? YELLOW TRANSPARENT or LODI!

-a small size, scab immune and is good storing? LIBERTY!

-a locally developed cultivar? CHEHALIS

-a tasty cider fruiter? SPITZENBERG or QUEEN COX!

-a dark purple to almost black heirloom? ARKANSAS BLACK!

-a snow white, porcelain-like skin and easy to grow? LUBSK QUEEN!

-a late October with keepers until May? Melrose or ENTERPRISE!

-a...

-a...

-a...

There are hundreds of apple choices available to Western Washington apple lovers. Each has some unique qualities. The reason why the "bad" ones are still around is that *somebody* likes them!?! Let's just hope we don't sound like politicians giving 13-different answers to the same question! See you at the Spring Fair. April 19 - 22, 2018 !!

-Chuck Polance,
Tahoma Chapter

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Selecting a Soil Testing Lab

How does anyone choose the right laboratory? Aren't they all the same? Should you send a sample to several different labs and average the results? How do you get the samples to a lab and what is the turnaround time? Some homework needs to be done here.

These are all questions that I hear on almost a daily basis. All labs are not the same. This does not mean that one laboratory is better than another. They all provide a different "menu" of services. It is important to find a lab that provides all of the services that you require. Are you just looking for a soil analysis, or do you also need an irrigation water test or tissue analysis?

Laboratories can also choose from a number of methods or "recipes" to obtain results. Which method would be best for your soil type or crop? "Presentation" of results can also vary greatly from one laboratory to another. It is important that you can read the report and make use of the information it provides. These are all questions that you should consider before choosing a laboratory.

Menu of Services

Packages with various soil parameters are usually available, plus some a la carte choices. This will vary greatly from one laboratory to another. I think we all agree now that there is a lot more to soil than pH. Therefore, look at what is included in the soil package you are requesting.

Important parameters include pH, organic matter, exchange capacity and base saturation. Also important are the major elements calcium, magnesium, potassium, sodium and phosphorus.

Important minor elements include sulfur, boron, iron, manganese, copper, zinc and aluminum. A complete soil analysis including all of these parameters may cost a little more. More information will provide better insight into your fertility situation. An inexpensive analysis may only include pH, phosphorus and potassium.

Methodology

Methodology is the most confusing area when comparing laboratories. There are several different methods for almost every parameter on a soil analysis. Laboratories choose methods that are best suited for the geographical area that they service. Most labs will offer different methods upon request to accommodate most customers; you will have to know what to request first.

Sending the same sample to several labs for comparison will be quite confusing unless you do your homework to determine what methods are used. I have talked with several customers after they have submitted the same sample to different labs without understanding the differences.

They have been very unhappy and disappointed with the outcome. Let's look at a good example of different methods — for example, phosphorus. There are nine phosphorus test methods. All of these methods were run on a specific soil sample and produced results anywhere from 10.5 to 656 ppm. If you know how to interpret the results for each of these tests, you should come up with the same recommendation.

Presentation of Data

What units of measure do you feel comfortable with? Do you prefer graphic results, high and low distinctions or an actual value found?

Soil reports come in all shapes and sizes. Various reports show values as low, adequate, or high. A number of reports show actual values found for each parameter. Reporting styles also vary regarding the reporting of desired levels, sufficiency levels and base saturation percentages.

Units of measure can vary from parts per million, pounds per acre, pounds per 1,000 square feet, or kilograms per hectare.

It's very important that the laboratory is aware of your sampling depth if you will be receiving your results in a pound per acre or pound per 1,000 square feet format. The sampling depth will affect the value reported. It's vital to be aware of units when comparing reports from different laboratories.

Does the soil report offer a recommendation? Where did it come from? Some recommendations are generic computer recommendations that give a ballpark range for optimum levels of nutrients. These may or may not be for a specific geographical area.

Logistics

How do you get your sample to the lab? Most labs will provide a soil sample bag or suggest a suitable alternative. Be sure to acquire the appropriate paperwork from the laboratory to submit with your sample. Packing your samples for shipment is very important. Be sure to pack the samples tightly in a box surrounded by newspapers or other packing material. How long will this process take? To determine your approximate turnaround time, consider the time it takes to get the sample to the lab (two to three days) and perform the analysis (three to four days). Turnaround time varies from one lab to another and also varies by season. Reports are usually emailed or made available on the internet on the same day the testing is completed.

So, the question still looms, which laboratory is best for you? Take the time to do your homework. It'll be worth the investment and you'll receive the value that you expect. Explore laboratory websites, call a lab and ask some questions. Make sure you acquire the appropriate paperwork and instructions from the lab that you choose.

When you have selected a laboratory that meets your needs and you are comfortable, stick with it. Jumping from lab to lab will only discourage you on your quest to improving soil fertility.

By Susan Shaner, *Acres U.S.A.*

Addendum

Simply Soil Testing is located in Burlington, WA. Their complete soil test is \$24. I've seen their test reports which I find are more complete and comprehensive than others. As opposed to last year's fruit, this was a very spotty year. I better have a soil test.

From Judi Stewart, NOFC and OOS

<http://www.simplysoiltesting.com/index.html>

* * * * *

The Magnificent Warren Pear

The pear combines the best features of its Seckel and Comice ancestors. And its origin? Most likely Mississippi, of all places. It's sweet and spicy.

November 25, 2011 | By David Karp | Los Angeles Times

Arguably the most delicious pear variety in the world, praised by the likes of Alice Waters, Martha Stewart Living and Oprah Winfrey, the Warren combines the best features of its ancestors, with the intensely sweet, rich, spicy flavor of Seckel, and the larger size and voluptuous juiciness of Comice. And the mystery of its origins, heretofore never fully unraveled, is almost as delicious as its flavor.

The trail that leads to the Warren starts with fire blight, a bacterial disease that makes growing most pears virtually impossible in areas where warm spring rains are common; a winter chill is also required, which is why very few European pears are cultivated in the southern half of California.

Historically, one of the few pears of quality that was resistant to blight was the Seckel, tiny but superbly flavored, and discovered near Philadelphia around 1760. Were it not for its diminutive size, it would doubtless be the preeminent pear on the market today.

Starting before 1900, pear breeders sought to hybridize the disease resistance of the Seckel into larger-fruited varieties. In 1920, Merton B. Waite, a U.S. Department of Agriculture breeder in Maryland, came up with a seedling of the Seckel called the Giant Seckel that bore much larger fruit, and was still blight-resistant. But it was not quite as flavorful, and it never became widely grown.

Breeders working for the USDA in the mid-20th century crossed the Giant Seckel and the Comice and in 1960 released Magness, which was blight-resistant and unequalled in flavor. It was fairly widely planted at first, but it soon proved to be an erratic producer and mostly disappeared from cultivation in subsequent decades.

A curiously similar variety named the Warren was discovered by a highly respected amateur fruit grower, Thomas O. Warren, in a most unlikely locale, Hattiesburg, Miss., about 1976. In the first published description of his namesake pear, a short article that appeared in Pomona magazine in 1986, Warren wrote that he found the original tree "growing in the backyard of a friend." Its ancestry at first was unknown.

He shared bud wood with fellow enthusiasts in the North American Fruit Explorers organization. Another story, meanwhile, circulated that he had "found it planted in front of a post office and USDA soil conservation service office." However, according to Ram Fishman, a nurseryman and fruit connoisseur who wrote an excellent online essay about Magness and Warren pears, when questioned further about the variety, Warren allowed that he discovered it among "the remains of a test site used by Mississippi State University." Aha!

Some seedlings from the cross from which the Magness was selected were sent to a branch station in Meridian, Miss., that has long since closed, according to Kearneysville, W. Va.-based Richard Bell, the current pear breeder for the USDA. It is likely that this station sent some of the seedlings, or grafted trees, to Mississippi State for testing, and that the experimental orchard had been abandoned by the 1970s. The hot, humid conditions in the Deep South are murder on pear trees, most of which would have succumbed to fire blight, especially if unsprayed. A resistant tree would have been extremely conspicuous; if a pear tree could survive untended in Mississippi, it could make it anywhere.

Warren, who died last year at age 96, may have been concerned in the years just after his discovery that someone at the USDA would be miffed that he had filched their experimental variety, and so devised a story about finding it in a friend's backyard. Today, no one would care about the pedigree of a relatively obscure pear, were it not that it is so supremely delicious and that it is one of the very few varieties that can be grown in blight-prone areas such as the Deep South and parts of California, particularly by home gardeners disinclined to spray.

As word of the prodigy spread, many observers noted that the Warren seemed very similar to the Magness; some maintained that they were identical. But there are slight differences: The Warren is more elongated, can have a richer ground color and red blush, and it is more resistant to fire blight. Also, according to Bell, unpublished analyses of enzymes of the two varieties by scientists at Oregon State University showed that they were very close but differed slightly, results consistent with the theory that they originated from different seeds of the same cross, of the Giant Seckel and the Comice.

Because pear trees take five years or more to come into bearing, growers historically have not been very adventurous in planting new varieties, and so the Warren, with its unofficial provenance, has never made a big splash commercially. Pollination may be tricky with the Warren, but it's got "smooth, grit-free texture and an intense, complex flavor, with hints of guava, pineapple and honey."

Editor's Note:

The Warren pear, ripe to perfection, was a favorite at the OOS tasting table in Sequim, November, 2017.

* * * * *



Apples With Red Flesh By Amy Grant <https://www.gardeningknowhow.com/edible/fruits/apples/apples-with-red-flesh.htm>

You haven't seen them at the grocers, but apple growing devotees have no doubt heard of apples with red flesh. A relative newcomer, red-fleshed apple varieties are still in the process of being finessed. However, there are quite a number of red-fleshed apple trees available to the home fruit grower. Apples with red flesh inside (as well as out) occur naturally in some regions of Central Asia — basically crabapples. These tend to be too bitter tasting for consumption, so breeders decided to cross them with scrumptious, sweet white-fleshed apples to produce commercially viable apples with red flesh inside. The creation of sweet tasting red-fleshed apple trees is not only a novelty to grow, but these red-fleshed fruits may have antioxidant properties as well.

This breeding effort to bring tasty, salable red-fleshed fruit began about 20 years ago and, as mentioned, has yet to make it into the produce aisle. However, in Europe, commercial releases of red-fleshed apple varieties have occurred. As of 2010, a Swiss breeder, Marcus Kobelt, brought the 'Redlove' series of apples to the European market. The actual flesh color of these apples ranges from bright pink (Pink Pearl) to brilliant red (Clifford) to pink tinged (Taunton Cross) and even orange (Apricot Apple).

These red-fleshed varieties also have different colored blooms rather than the white of other apple trees. Depending upon the cultivar, you may have light pink to crimson pink blossoms on your red-fleshed apple tree. Some varieties are sweet while others are on the tarter side, as with other apples.

Varieties include but are not limited to the following: Pink Pearl, Pink Sparkle, Thornberry, Geneva Crab, Giant Russian, Winter Red Flesh, Almata, Mountain Rose, Red Wonder, Hidden Rose, Mott's Pink, Grenadine, Buford Red Flesh, Niederswetzyana, Rubaiyat, Raven, Scarlett Surprise, Arborose, Firecracker.



Poor Fruit Set in Pears in Relation to Boron Tissue Levels

Jim House, Olympic Orchard Society

Poor fruit set is commonly caused by blossom blast defined as the death of blossoms and fruit spurs. Boron deficiency causes blossom blast, and also corky fruit skin with cracking and low seed numbers. *Pseudomonas syringae syringae* causes blossom blast and in severe cases, invasion of the vascular system and even tree death. Cold springs with low pollinator populations and activity can also be blamed for low productivity. In late summer 2017, Olympic Orchard Society supported a pilot study to explore the relationship between poor fruit set in pears and boron in tissue. Species affected were in order of decreasing severity pears, plums, and apples. Tissue sample analysis was recommended by the A&L Laboratory (Modesto, CA) agronomist to determine the levels of the nutrients that reached the plant tissues rather than the levels present in the soil which may not have reached the plant tissues. The tissue analysis included boron and 12 additional nutrient levels. Eight of our members estimated the degree of poor fruit set and then collected leaves from pear trees typifying their orchard.

Sufficient parts per million (ppm) of boron range from 25-70. Four orchards with 0-25% poor fruit set had an average of 16.3 ppm (range 12-20 ppm) boron. Four orchards with 66-100% poor fruit set had an average of 15.5 ppm (range 14-18 ppm) boron.

All of the orchards were low to deficient in boron. There was no relationship between boron levels and poor fruit set.

We did not culture for *Pseudomonas* so we did not evaluate the role of infection with this organism as the cause of blossom blast or poor fruit set. However, *Pseudomonas* is the likely etiology of much of the poor fruit set since clinical signs of infection were noted. The possible protective effect of sufficient boron (resulting in possibly healthier buds and fruit spurs) from infection by *Pseudomonas* infection is unknown. The most certain way to correct Boron deficiency is by a foliar spray using Solubor™ post-harvest. One should not apply boron supplements without a test showing a deficiency and careful application since boron in excess can be very toxic to plants. Apricot trees may be more susceptible to boron toxicity than other fruit tree species. Tissue samples may be submitted to A&L Laboratories; 10220 SW Nimbus Ave; Bldg. K-9; Portland, OR 97223; phone 503-968-9225. The fee is \$36 per tissue test.

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Optimize Preharvest Fungicide Sprays for Managing Postharvest Diseases

July 22, 2017

By **Achour Amiri**, Assistant Professor of Plant Pathology,
WSU-Wenatchee

For most post-harvest diseases of apple and pear, infections are initiated in the orchard at different times during the growing season. As the harvest season is approaching for some early cultivars, it is time to think and plan pre-harvest fungicide sprays to enhance disease management post-harvest.

Major diseases to worry about: Several pathogens can infect fruit pre-harvest. However, there are a few that can result in major losses post-harvest. Gray mold, Bull's eye rot, *Phacidiopycnis* rot, and *Nectria* rot, are those to watch closely and plan sprays for adequately.

What to do: Before thinking of fungicides, use sanitation to lower the risks of these pathogens. The pathogens which cause Bull's eye, *Phacidiopycnis*, and *Nectria* rots all survive on cankers and necrosis and produce inoculum to infect fruit during the growing season. Cut out cankered branches regularly. For *Phacidiopycnis* rot, crab apple pollinizers can be an important source of inoculum known to increase rot incidence in storage rooms. Cut and remove mummified fruits from crab apple trees to lower disease pressure.

Timing and fungicide resistance risks are factors to consider when spraying fungicides: Sprays conducted during the last two weeks before harvest are important but may not always be sufficient to effectively control infections that started earlier during the season. Don't forget about sprays earlier in the summer. However, additional research is being conducted to better understand the epidemiology of major pre-harvest infections in order to spray timely and accordingly.

Topsin-M (FRAC group 1), Pristine (FRAC groups 7+11), and to some extent Ziram (FRAC group M3) have been the most frequently used fungicides in the last decades in Washington orchards and the Pacific Northwest (PNW). Merivon (FRAC group 7+11) is a new fungicide registered in the last two years (Table 1). Topsin-M, Pristine, and Merivon are single-site fungicides, meaning they only target one site on the fungus. Any genetic change in this site will render it unavailable for the fungicide to attack and kill the pathogen.

Ziram and (Captan) target different sites on the fungus, which makes them less prone for fungicide resistance development. However, they need to be applied preventively and higher rates are usually required.

When resistance is absent, Pristine and Merivon have a good efficacy against gray mold, a moderate efficacy against Bull's eye rot, whereas recent research showed that Pristine is not effective against *Phacidiopycnis* rot. Merivon and Pristine are also registered to control powdery mildew in spring and early summer. However, in order to avoid frequent sprays of these three pre-harvest fungicides, it is recommended to use other fungicides from the same and different chemical groups to control powdery mildew.

Topsin-M have a good efficacy against gray mold and bull's eye rot. However, gray mold resistance has been documented in the PNW. Because a sister molecule, thiabendazole (TBZ, Mertect) is widely used post-harvest, the use of Topsin-M pre-harvest is questionable and should be restricted to lots which history of bull's eye rot or in orchards planted to cultivars known to be highly susceptible to this pathogen.

Besides annual rotation of the single-sites Pristine or Merivon with Topsin-M, there is some evidence that incorporating multi-site fungicides can have a positive impact on disease control and on lowering fungicide resistance risks. Early results from studies conducted on Fuji and d 'Anjou indicate that tank-mixing single-site fungicides with Ziram is reducing the incidence of gray mold and other rots mentioned above in a better way than the singles-sites applied alone.

Fungicides registered for pre-harvest applications on apple and pear in the Pacific Northwest— Topsin-M, Pristine, Merivon, Ziram76DF, Captan 50WP, Captec 4L. Note: Always consult label. Efficacy based on trials and known occurrence of resistance. There may be resistance occurrence in the Pacific Northwest region.

Dr. Achour Amiri

Tree Fruit Research and Extension Center

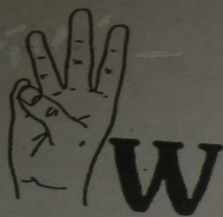
a.amiri@wsu.edu

509-663-8181 ext 268

* * * * *



Natural Coddling Moth Control


W

WESTERN


C

CASCADE


F

FRUIT


S

SOCIETY

Paper Bags and Ties: Use No.2 bleached white paper bags. They can be purchased from:

Merchants Paper
4625 SE 24th Avenue
Portland, Ore.
503-235-2171.

To secure the top of the bag around the stem of the apple, use a plastic-coated wire, which can be purchased in 100-foot rolls from most stores with a well-stocked garden department. One name brand is "Sturdy-Twists." Cover apples June 1st – 21st.

Formulas: Starting in May, cut a 2" diameter hole below the shoulder of an empty 1-gal. milk container. Leave cap on jug. Hang jug in apple tree at eye level.

Four (4) options:

Mix: 1-cup of apple cider vinegar, ½ cup molasses, 1/8 tsp ammonia and 5-cups of water.

1-cut-up banana peel, 1-cup vinegar, a cup sugar and fill jug with water.

1/3 cup of molasses and 1/8 tsp of ammonia.

2-cups apple cider vinegar, 1-tsp yeast, fill jug with water. Cap & shake well. Set aside for 24-hrs with the cap on loosely. Cut 2" hole and hang in tree. Hornets & yellow jackets are also attracted.

Footies: When your apples get dime-size, cover them with those disposable nylon socks you see in shoe stores. 95% effective. Home Orchard Society sells them.

Reprint from Tahoma Tales for Chapter members.
Chuck Polance, Tahoma Chapter

Fragrance of a new pesticide could control SWD

You probably know methyl benzoate when you smell it. The natural compound's wintergreen-spicy, floral-fruity aromas make it a popular ingredient in perfumes, soaps, and shampoos. Snapdragons and petunias emit methyl benzoate to attract bees for pollination. Many insects also produce it as an attractant. But not all insects like this compound.

Chemist Aijun Zhang, with the **Agricultural Research Service Invasive Insect Biocontrol and Behavior Laboratory** in Beltsville, Maryland, has found a new use for methyl benzoate, namely as an environmentally friendly control for agricultural pests like the spotted wing drosophila fly (SWD), an invasive species from Asia.

First found in California in 2008, SWD has quickly spread across the United States and can cause significant damage to fruit crops, especially berries. There are currently few choices for controlling SWD. The possibility of a new bio-based pesticide—especially one based on an inexpensive chemical whose residue lasts a relatively short time in the environment—is exciting.

Originally, Zhang was identifying volatile compounds in apple juice that attracted fruit flies. "Rotted apples and other fruits usually attract flies, including SWD. We had isolated out several compounds which did that," Zhang says. "But we found one compound—No. 19—that strongly repelled SWD, and we later showed that it killed SWD as well."

Compound No. 19 turned out to be methyl benzoate, a compound approved by the **U.S. Food and Drug Administration** for use in foods and cosmetics.

Zhang then tested methyl benzoate against other agricultural pests, including the brown marmorated stink bug (BMSB), diamondback moth, and tobacco hornworm. He found that the compound can kill all stages of these insects—egg, nymph, and adult—though it works better against smaller insects than larger ones.

Zhang focused first on SWD and BMSB because they are fast becoming important agricultural and household pests, even though they are relatively new invasive species. New controls for these pests are urgently needed.

According to Zhang's tests, methyl benzoate is 5 to 20 times more toxic to eggs of BMSB, diamondback moth, and tobacco hornworm than a conventional pyrethroid insecticide, a sulfur and pyrethrin mixture, and some organic products currently on the market.

Next, he is planning to test methyl benzoate's effectiveness against fire ants, gypsy moths, stored-product insect pests, and mosquitoes. All these insects are developing resistance to standard pesticides.

Zhang is also investigating whether low doses of methyl benzoate could control *Varroa* mites, the number-one problem of managed honey bees today, and a patent has been applied for pesticide uses.

Fruit Grower News, July, 2017

Submitted by Jean Williams.

Jean, I'm so glad you found this info. But methyl benzoate (MB) can't come fast enough. Per the patent application, it appears MB could revolutionize agriculture by reducing/eliminating reliance on chemical pesticides now being used on a majority of plant pests.

Unfortunately, SWD is invasive, is in our area and is having an impact on our fruit and that would include tomatoes. SWD was recently found in cherries sold by a local fruit stand in my area so please be aware.

Until MB is available, it's important to read the SWD literature, set traps and lures, examine fruit and spray if necessary. There are many suggestions given for sprays, both chemical and organic. My own personal choice is to rotate two sprays, one with spinosad and one with Beauveria bassiana, which is a fungus that acts as an insect parasite. <http://www.entomology.wisc.edu/mbcn/kyf410.html>

SWD is insidious. I can't emphasize this enough. It's one pest where you must be pro-active. It loves berries. We have wild blackberries all around us.

If you've found this fly, seen larva or infected fruit, or have any information about SWD, please let us know.

Judi Stewart



Coddling moth or apple maggot? Looks like coddling moth because the caterpillars eat protein = seeds. The seed area is eaten. If it was apple maggots then the flesh would have brown tunnels through it and seed area would be ok.

Yours fruitfully

Lori Brakken

WSU Extension Clallam County has a recently created "Apple Tree Pests" brochure for Master Gardeners, Jeanette Stehr-Green. It explains the life cycles of coddling moth and apple maggot.

lhamilton@co.clallam.wa.us

360-565-2679



Pear Ripening information sources:

<http://extension.oregonstate.edu/gardening/node/413>

<https://www.starkbros.com/growing-guide/article/pears-ready-to-harvest>

<http://usapears.org/pear-ripening-and-handling/>

<http://www.wikihow.com/Ripen-Pears>

<https://blog.harryanddavid.com/how-to-ripen-pears/>

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Looking Beyond Soil pH in Berries

Acidic soil pH values, in the range of 4.5 to 5.5, are considered fundamental for blueberry production, but this seems to be insufficient to describe optimum soil environment on its own.

The reason underlying the need for acidic soil pH values is sometimes forgotten: In acidic soils, insoluble, oxidized ferric iron is often converted to soluble, reduced ferrous iron, which plants can absorb more easily. And blueberries require the high levels of iron that in most soil types are more available at low pH values.

In addition to high iron requirements, blueberries respond positively to higher concentrations of manganese in its plant sap than most other crops. Elevated manganese concentration is expressed in stronger reproduction, larger bud sizes, increased number of reproductive buds, and more uniform blossoming. This effect can result in a condensed harvest window, particularly important for machine-harvested blueberries.

More Than Just Acidic Soils

In blueberry production, you want to have the largest number of the biggest, firmest fruit possible on each plant. Inadequate absorption by blueberry plants of calcium, iron, and manganese are limiting factors in reaching that objective. The highest quality fruit is often not produced on the most acidic soils; there are additional factors which need to be considered.

In some soils with high iron concentrations and the most acidic soil pH values, iron and manganese absorption was the poorest of all. On a number of occasions, blocks with comparably high pH values substantially outperformed nearby blocks of the identical soil type/variety/management combination with more acidic pH values.

These blocks outperformed comparison blocks in fruit size and firmness, flavor, sugar content, overall yield, and in measured plant absorption of iron and manganese from the soil. A number of top performing blocks had soil pH ranges from 5.7 to 6.2 — still acidic, but not as acidic as might have been anticipated.

Another factor affects iron and manganese absorption, and possibly to a greater degree even than soil pH. The reduction of iron and manganese is not only pH dependent. Of equal importance is the eH value, sometimes referred to as oxidation/reduction or redox potential. Soil amendments and fertilizers affect eH in much the same manner they can affect pH; however, one of the more substantial contributing factors to soil redox potential is soil water/oxygen ratios.

Wet soils usually have low oxygen levels and are a reducing environment, which translates to converting iron and manganese to the reduced plant-available form, and increased plant absorption. Dry soils with high oxygen content are usually very oxidized environments, and maintain iron and manganese in the oxidized, unavailable form even in the presence of acidic soil pH values.

When soils are excessively saturated for an extended period, root respiration generates various alcohols in the rhizosphere, and these are damaging to the root system.

Soil amendments and fertilizers can also be categorized based on whether they have an oxidizing or reducing effect. Nitrate fertilizers have a very strong oxidizing effect, whereas ammonium fertilizers have a reducing effect. Limestone has a very strong oxidizing effect; gypsum does not.

Look at Plant Structure

When we consider blueberries' native habitat and their nutritional requirements, it becomes clear they are specifically adapted for a reduced soil environment. Blueberries have a relatively shallow root system, which means they are adapted to adequately hydrated soil with a shallow water table.

They are dependent on ammonium (the reduced form of N) as their primary form of nitrogen, and cannot absorb nitrate (the oxidized form of N) well. They also have a high requirement for iron and manganese, which are most available in reduced environments. These characteristics point to blueberries being adapted to soil that is in a reduced state as well as being acidic.

Fruit firmness and fruit size can be directly correlated with calcium levels in the plant sap which, in many cases, is very low in acidic soils — too low to produce the premium crop we are working for. Top performing crops are those where soils are maintained in the reduced state with consistent watering, and soil pH is maintained in a range from 5.2 to 5.8 with regular calcium applications.

Obviously, a solid nutritional system that addresses all of these elements will give the best results. When this foundation is in place, plant absorption of iron, manganese, and calcium correlates directly to fruit quality and yield. *...Growing Produce*, by John Kempf, an expert in the field of biological and regenerative farming. * * * * *

The White House is calling on a new set of special agents to protect us: veterinarians

The White House wants to strengthen America's anti-terrorism defenses. So it's calling on a new set of special agents: veterinarians.

Veterinarians don't come to mind when most people think of national security. But they play a vital role in protecting the U.S. food supply from bioterror attacks. If terrorists engineered plagues to wipe out crops, or weaponized animal-borne diseases like avian flu, they could cause untold human and economic suffering.

A recent Department of Agriculture report warns that America remains vulnerable to such attacks. To prevent them, President Trump just signed a bill giving additional powers and resources to the Department of Homeland Security. Recognizing that "animal, plant and human health are inextricably linked," DHS plans to train more public-health veterinarians and build a \$1 billion lab to research animal-borne diseases. That's a wise move. For decades, veterinarians have worked—often behind the scenes—contain deadly animal-borne diseases. Training more veterinarians would save lives and safeguard the economy. Three-quarters of newly emerging human diseases can be traced back to animals. Veterinarians have an impressive track record of identifying and mitigating these zoonotic diseases. Consider Tracy McNamara—the veterinary pathologist who identified the first case of West Nile Virus in the Western Hemisphere. Back in 1999, several older New Yorkers passed away unexpectedly. Meanwhile, many wild New York City birds died, as well as birds at the Bronx Zoo where Dr. McNamara worked. After analyzing the humans' blood samples, the Centers for Disease Control and Prevention announced the cause of death to be a fairly well-known brain infection called St. Louis encephalitis, which can spread from birds to mosquitos to humans. Case closed. But McNamara thought differently. She noticed that the dying birds didn't show any signs of encephalitis. She started investigating and sampling the dead birds. Testing the samples at revealed that the disease was actually West Nile. Other examples abound. In 2012, University of California veterinary experts in Bolivia discovered that a deadly type of mosquito-borne yellow fever was behind the death of five howler monkeys. They alerted the Bolivian government, which immediately launched a campaign to vaccinate locals and control the mosquitos. Thanks to this quick response, no humans were infected. Right now, in Illinois, veterinarians are studying an outbreak of Seoul virus—a disease transmitted by rats that can severely damage humans' kidneys. Veterinarians don't just protect us against diseases carried by Wildlife. Every time Americans safely chomp down on a cheeseburger, they can thank the veterinarians who monitor food supply systems, track potential threats, and develop safety protocols. A group of Iowa veterinarians, for example, is currently testing ways to monitor how medications metabolize through pigs' bodies to ensure their meat is safe

for human consumption. Another group of experts found that scanning cows' retinas can help identify mad cow disease nearly an entire year before they manifest clinical signs. The Trump administration realizes how crucial veterinarians are in the public sector: In April Dr. Sonny Perdue, the first veterinarian to serve in a Cabinet, was sworn in as secretary of the Department of Agriculture.

Despite the importance and increasing prominence of public health veterinarians, there are not enough of them to meet demand. The Department of Agriculture's Food Safety and Inspection Service has an 11 percent vacancy rate for veterinarians -- even though common food-borne illnesses are becoming more prevalent. Between 2013 and 2016, food safety inspectors recorded a 21 percent increase in STEC, a dangerous Shiga toxin producing form of E. coli bacteria found in contaminated meat. STEC alone causes 3,600 hospitalizations and 30 death annually in the United States. The shortage exists, in part, because most veterinarians pursue careers in small-animal practice. Two-thirds of veterinarians exclusively treat dogs, cats, and other pets. Just seven percent work mostly with livestock. So it's not enough to merely train more veterinarians. Leaders in the field must also encourage aspiring veterinarians to pursue public health roles. Ross University School of Veterinary Medicine in St. Kitts and Nevis, where I teach public health, is doing just that. We're collaborating with Johns Hopkins Bloomberg School of Public Health -- one of the world's premiere public health institutions -- to enhance veterinarians' public health knowledge. As early as this year, Johns Hopkins students will be able to travel to the Caribbean for field projects, while our veterinary students will have the chance to pursue a Master of Public Health at The Bloomberg School. Veterinarians are the behind-the-scenes protectors of America's food supply. But unless veterinary schools steer more graduates into public health roles, our country will become increasingly vulnerable to bioterror attacks and epidemics. *Christa A. Gallagher is an assistant professor of Public Health & Epidemiology at Ross University School of Veterinary Medicine*

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Gathering Editor Marilyn Couture,
with input from membership.
Please contribute your articles for our next
Winter issue!

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Spring February 15;
Summer May 15;
Fall August 30

Email your articles to: couture222@msn.com
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General symptoms of nutrient deficiency in plants.

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|---|--|
| <p>Nitrogen: Plant light green, lower leaves yellow to light brown, stalks short and slender, plants stunted.</p> | <p>Iron: Young leaves are chlorotic, with principal veins typically green; stalks short and slender.</p> |
| <p>Phosphorus: Plants dark green, often developing red and purple pigments; lower leaves sometimes yellow; plants stunted.</p> | <p>Zinc: Leaf spots on older leaves, with spots rapidly enlarging and generally involving the area between the veins; thick leaves; stalks with shortened internodes.</p> |
| <p>Potassium: Spots of dead tissue, usually at the tips and between the veins; marked margins of leaves.</p> | <p>Boron: Young leaves of the terminal bud are light green at the base; the bud eventually dies.</p> |
| <p>Magnesium: Mottled or chlorotic leaves, which typically redden; leaf tips and margins turned or cupped upward.</p> | <p>Copper: Young leaves are permanently wilted, with spotty or marked chlorosis.</p> |
| <p>Calcium: Young leaves of terminal bud hooded; with severe deficiency, dying buds; dying back at the tips and margins of the leaf.</p> | <p>Manganese: Spots of dead tissue scattered over the leaf; smallest veins tend to remain green.</p> |
| <p>Sulfur: In young leaves, veins and tissue between veins are light green.</p> | <p>Extracted from Pub A-123 and the New Mexico State University, ACES website at http://aces.nmsu.edu/pubs/_a/A123/.</p> |

The Problem with Organic Hydroponics

Organic regulations require that your crop rotation plan maintains or improves soil organic matter. Since hydroponics grow plants in a liquid medium, they do not qualify for organic certification.

The Organic Trade Association and the hydroponic lobby, led by the Coalition for Sustainable Organics, are seeking to rewrite organic rules to include hydroponics.

The Coalition for Sustainable Organics worked against the organic industry by supporting the DARK Act to pre-empt states' rights to label GMOs.

By Dr. Joseph Mercola

Hydroponically grown vegetables and berries are increasing in popularity. But is hydroponics a healthy, sustainable — and organic — way to grow food? Section 7 CFR 205.205 of the U.S. Department of Agriculture's (USDA) organic regulations require that your crop rotation plan maintains or improves soil organic matter. Since hydroponics does not involve the use of soil, it does not qualify for organic certification. Despite such clear-cut distinctions in the law, the Organic Trade Association and the hydroponic lobby, led by the Coalition for Sustainable Organics, are pushing to rewrite organic rules to include hydroponics. They're also seeking to reform the National Organic Program (NOP), reduce the influence of the National Organic Standards Board (NOSB) and alter the composition of the NOSB to "improve trade representation."

Can Hydroponics Be Organic?

As mentioned, hydroponics does not qualify for the organic designation for the simple fact that organics must improve soil quality and hydroponics grow plants in a liquid medium without soil. Yet hydroponic operators have been certified organic by USDA accredited certification agencies, and the hydroponics industry wants the organic certification to be open game to the industry at large.

But there's yet another problem. Hydroponics also uses chemicals, which organic producers are barred from using. Worse, commercial hydroponic growers will rarely reveal the fertilizers they use. According to Chapman:

Are Hydroponic Veggies on Par With Organic?

Many consumers, prompted by the media, Silicon Valley and futurists, mistakenly believe that hydroponically grown veggies are on par with organic, or at the very least, that they're better for your health and the environment than conventionally grown vegetables. Alas, while growing food indoors does reduce the need for pesticides, it does not automatically mean hydroponic vegetables are pesticide-free.

As noted in a previous Civil Eats article, organic farming, with its emphasis on improving soil quality, is "a 'plant positive' rather than 'pest negative' philosophy, focused on growing vigorous, healthy plants and animals imbued with all their natural powers of resistance."

Hydroponics Compares to Conventional Produce

As for nutritional value, hydroponics tends to be on par with, and frequently lower than, conventionally grown produce. According to one study, hydroponically grown vegetables had lower levels of carotenoids such as beta-carotene and lutein than conventional vegetables. They might make sense if you were on a mission to Mars, but if you live on earth, this is the last type of food you want to eat. Hydroponics also present unique food safety issues. Since they're grown in a high humidity environment, they can be more susceptible to pathogenic bacteria such as Salmonella. On the upside, hydroponic growers tend to produce higher yields compared to comparable greenhouse operations using soil.

Will NOSB Reverse Stance on Hydroponics?

Seven years ago, the NOSB laid out a clear and compelling case for what organic farming entails, and hydroponics does not fit the bill. We don't need to get rid of hydroponics. It has its place. But to rewrite the rules to offer organic certifications to soilless growing methods is to turn back the clock and push organics back several steps.

Even if such attempts fail, the organic industry is still struggling with weakening standards and loopholes allowing for less than organic growers to achieve organic certification. With the watering down of organics, it seems clear we need to go beyond organic certification — hence the rise of biodynamic farming and stronger grass fed certification.

Last year, biodynamic farming in the U.S. increased by 16 percent, adding nearly 21,800 acres to its fold. Biodynamic farming is both organic and regenerative — and then some. While an organic farmer can section off as little as 10 percent of the farm for the growing of certified organic goods, in order to be certified as a biodynamic farmer, your entire farm must be biodynamic.

Biodynamic certification also requires 10 percent of the land be dedicated to increasing biodiversity, such as forest, wetland or insectary. To evaluate the impact of biodynamic methods on soil quality, Demeter USA, a nonprofit certifier of biodynamic goods, has started collecting topsoil samples from participating farms. Eventually, this will tell us just how quickly soil quality can be improved using biodynamic methods.

Miracle-Gro and Monsanto Are in Favor of Hydroponics

Getting back to the issue of pesticides and chemicals for a moment, it may not be long before hydroponic produce becomes as prone to chemical contamination as conventional produce.

As reported by The Cannabist, Scotts Miracle-Gro — which has a long-standing partnership with Monsanto to market and distribute Roundup — has quietly invested half a billion dollars into a wholly owned subsidiary named the Hawthorne Gardening Co. with the aim of capturing the hydroponic business, starting with marijuana growers.

Its goal, according to Scotts CEO Jim Hagedorn, is "To become the best supplier of hydroponic growing products in the world to both the consumer and professional markets."

Cont. to page 15



Healthy Soils Are Key to Improved Nutrition

Research shows healthy "living" soils make for food with better nutrient content. And by "living," I mean soils that are teeming with microorganisms such as bacteria, fungi, protozoa and microscopic roundworms called nematodes. Far from being scourges to be avoided at all costs, microorganisms are an essential component of life.

We now understand that it is the cooperation between these microorganisms, the soil's biome and the plants' roots, called rhizosphere, that is ultimately responsible for allowing the plant to absorb nutrients from the soil in which it's grown. Insects and weeds also have their place in this circle of life. Insects are nature's garbage collectors. Thanks to their specialized digestive systems, they remove that which is not fit for us to eat, things we cannot digest.

And weeds are nature's way of evolving the soil — it's an intermediate plant that mobilizes nutrients in order to alter the soil, making it more suitable for the next evolutionary level of plants to grow in it. Many don't realize that in a healthy ecosystem, well over 95 percent of the insects are beneficial and don't harm you or the plant.

Once you understand this natural cycle, it allows you to address food quality, weeds, insects and plant disease at its point of origin, without ever resorting to chemical herbicides, pesticides, fungicides, synthetic fertilizers or genetic engineering. As explained by Agri-Dynamics founder Jerry Brunetti, whom I interviewed in 2013, the root ball of the plant is the "gut" or intestinal tract of the plant. It houses microbes just like the human gut does, provided the soil system is healthy.

Soil health then connects to everything up the food chain, from plant and insect health, all the way up to animal- and human health. Health, therefore, truly begins in the soils in which our food is grown. As I said earlier, hydroponics has its place, but the fact that we're even discussing organic certification for hydroponics means we've lost sight of what organics is all about. As noted by Chapman, following the NOSB meeting in April:

"When I first began discussing this flaw in the standards with the Organic Trade Association ... they told me they supported a quick resolution to exclude hydroponics. That was before they realized that one of their biggest clients, Driscoll's, was also the biggest hydro "organic" producer in the world ... But this issue has already been debated on and off in the [NOP] for the last nine years ...

Public opposition to the inclusion of hydro in organic certification is rapidly building. Some people are only now finding out that hydroponic is being allowed on a massive scale in organic certification. Most customers (and many farmers!) still have no idea. At the Denver meeting, there were many people and organizations testifying to keep healthy soil as the basis for organic certification ...

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Vice President - Roger Eichman
Secretary - Rotational
Treasurer - David Self

* * * * *

South Sound officers for 2018

President - Vacant
Vice Pres. - Brian Williams
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Treasurer - Jackie Paquin
At large - Glen Buschmann, Patrice Donovan, Peg Amandes, Francesca Ritson

It is reported that Ian Stone, past President, is battling cancer. We wish Ian well.

* * * * *

Tracking down apples lost to time

This is a recent video from MSN on David Benscoter's search for old apple varieties.

<https://www.msn.com/en-us/money/video/tracking-down-apples-lost-to-time/vi-BBFrINA?srcref=rss>

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Prevent Sun Scald: Paint fruit tree trunks with white latex paint

Painting fruit tree trunks with white latex paint can prevent the bark from splitting and cracking off. Splitting can happen when the tree is exposed to freezing evening temperatures, followed by a daytime thawing. The painted white trunk will help reflect sunlight during the daytime hours and keep the tree warmer at night, according to a University of Missouri Extension website.

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Links

Here is a list of sites on the web that may be of interest to you.

Related Organizations

Backyard Fruit Growers

www.sas.upenn.edu/~dailey/byfg.html

California Rare Fruit Growers

www.crfg.org

East of England Apples and Orchards Project

www.applesandorchards.org.uk

Indiana Nut Growers Association

www.nutgrowers.org

Midwest Fruit Explorers

www.midfex.org

North American Fruit Explorers

www.nafex.org

Northern Nut Growers Association

www.northernnutgrowers.org

Oregon Sustainable Agriculture Land Trust

www.osalt.org

Western Cascade Fruit Society

www.wcfs.org

Western Washington Fruit Research Foundation

www.wwfrf.org

Home Orchard Society

www.homeorchardsociety.org/

Seattle Tree Fruit Society

www.seattletreefruitsociety.com/

Seattle Tree Fruit Society—Apple ID program

www.seattletreefruitsociety.com/appleid.php

Fruit Research

National Clonal Germplasm Repository

www.ars-grin.gov/cor

Tree Fruit Research and Extension Center, Washington State.

www.tfrec.wsu.edu

Northwest Berry and Grape Infonet.

berrygrape.oregonstate.edu

Pedigree: A Genetic Resource Inventory System

www.pgris.com

Oregon Department of Agriculture

www.oda.state.or.us

Government Sites

US Dept. of Agriculture

www.usda.gov

USDA Agricultural Research Service

www.ars.usda.gov

Helpful Sites

Orange Pippin

www.orangepippin.com

Kiyokawa Family Orchards

www.mthoodfruit.com

Red Pig Tools

www.redpigtools.com

Friends of Trees

www.friendsoftrees.org

Cornell Gardening Resources

www.gardening.cornell.edu

http://www.fruit.cornell.edu/tree_fruit/GPGeneral.html

The National Arbor Day Foundation

www.arborday.org

UBC Botanical Garden

www.ubcbotanicalgarden.org

The Reckless Gardener

www.recklessgardener.co.uk

Farm & Garden

www.farm-garden.com

SeeMeGarden.com

www.seemegarden.com

GardenGuides.com

www.gardenguides.com

VitiSearch: Helpful Resources about Grapes

www.vitisearch.com

Avant-Gardening: Creative Organic Gardening

www.avant-gardening.com

The Hardy Plant Society of Oregon

www.hardyplantsociety.org

Ask the Berry Man

www.asktheberryman.com

BackyardGardener.com

www.backyardgardener.com

Tom Brown's website

www.applesearch.org

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