

GROWING PAINS



Newsletter for the MiraCosta Horticulture Club of Oceanside

February 2019

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Announcements

We are back to holding club meetings on the first Saturday of the month. February's meeting will be on Saturday, Feb 2nd. Meeting starts at 12:30 p.m., and will be held at MiraCosta College, 1 Barnard Dr., Oceanside, CA 92056

Workshop: Teresa Leader-Anderson of Pure Water Oceanside will discuss how purified, recycled water is a local source of high-quality water that is clean, safe, drought-proof and environmentally sound.

Program: "Soft Succulents" Jeff Moore is owner of Solana Succulents. His presentation will follow the flow of his newest book, "Soft Succulents" with many photos of the plants in question. He will have signed books as well as a selection of succulents for sale.

President's Message for February 2019 Newsletter by Tandy Pfost

THIS AND THAT IN CURRENT HORTICULTURE NEWS

Natural habits, bee diversity key to better apple production

By Krishna Ramanujan, January 17, 2019
The study was funded by the USDA and the [Atkinson Center for a Sustainable Future](#).
The full article appeared in the January 18 Science Journal and also appeared in the Cornell Chronicle.

This study revealed that "apple orchards surrounded by agricultural lands are visited by a less diverse collection of bee species than orchards surrounded by natural habitats." The study showed that apple production suffers when fewer, more closely related bees pollinate an orchard. But production improves when orchards are surrounded by natural habitats, because a broader selection of bee species is drawn to apple blossoms.

Ten years of data was examined from 27 New York apple orchards. Taken into consideration were the types of surrounding landscapes, the measured apple production, and survey of the bees visiting the orchard. They diagramed native bee species to better understand the patterns of each.

The different species behaviors are all about how and when they pollinate flowers. Some approach from the top, others from the side, and they each may feed at different times of the day with varied frequencies. These factors affect how completely an apple flower is pollinated.

"Organs in apple flowers must receive a certain number of pollen grains in order to develop a full complement of seeds. When seeds do well, the tissue that supports those seeds, the fleshy part of the fruit, is also more fully developed. If only half of the seeds mature fully, then the fruit is misshapen," which in turn affects weight and salability, Grab said. (Does this sound like your misshapen cucumbers? Same thing.)

Cornell helps cider industry press its popularity
By Erin Flynn, December 13, 2018

This article appeared in the Cornell Journal

Over the past decade, the hard cider market in the US has expanded more than ten times in size, with sales surpassing \$1.3 billion in 2017.

Researchers from Cornell AgriTech are offering educational opportunities to cider producers in New York state and around the country. Until now, there has been a dearth of information available to hard cider entrepreneurs. This hampers their ability to make the most of their raw materials. AgriTech is partnering with the Cider Institute of North America.

For example, the production course at Cornell AgriTech offers technical assistance on microbiological and chemical strategies to create consumer-friendly products. Additionally, guidance was provided on selection, application and management of production processes and technologies, to help producers improve quality through detailed sensory evaluation and quality control methods.

Announcements

Board elections will be held at the April meeting when the nominating committee will present a President, VP Membership, Secretary, Treasurer. Carol Fehner VP Publications and Ed Fitzgerald VP Programs have volunteered to remain. Here is your opportunity to run things.

The Psychology of Gardening

Marty Nemko

Good reasons why gardening is so popular.

Deciding to garden is to choose respite from our ever more transactional, practical priorities. Sure, gardening has a practical side—for example, harvesting some tomatoes or zinnias but few people garden primarily for the harvest. It's to take a little time to breathe.

Too, gardening allows realistic fantasies: six-foot corn stalks, living rose bouquets or a yard that will make the neighbors "Ooh and Ahh!" Such fantasies grow with each stroll through a nursery, each turn of a plant or seed catalog's page, and even as you drive through neighborhoods, whose plants and garden design you can try to recreate. How wonderful that you can buy seeds for pennies a piece, each of which has the potential to make a fantasy come true.

A core cause of stress in our lives is lack of control. Most of us have more control over our garden than over our work-life or even home life. As the fathers in *The Fantasticks* sing, "Plant a radish, get a radish, never any doubt. That's why I love vegetables you know what they're about...But if your issue doesn't kiss you, then I wish you luck. For once you've planted children, you're absolutely stuck!"

Of course, fantasy doesn't always become reality, even if we've done everything right--Weather can negate all. Learning to cope with flora might not help us deal with fauna failure but it can't hurt. Just maybe those frequent plant failures might help us develop a habit of deciding if we can learn from the failure and then quickly moving on to try again, perhaps with a different kind of "plant" or a different approach to the same type.

For some gardeners, harvest *is* what it's all about—the reward for all that planning and effort. But for many others, it can be a mere cherry atop the sundae. After all, they say life is in the journey.

But gardening's most profound if over-acknowledged psychological effect is its incessant reminder of life's cycle of birth, renewal, and death, usually in a shorter cycle than we experience with humans. In April, the marigold is but a seed, in July it radiates in living color, and in fall, it dies.

Yet marigolds leave seed to sleep in winter that may be reborn the next spring. Other plants don't leave a legacy.

Plants don't have a choice—they're genetically preordained. But perhaps gardening's final lesson for us is that we do have a choice. When we return to the earth, do we leave a legacy? And if so, what kind?

Fungi

Brian Douglas

You may not be aware of it, but wherever you are you are surrounded by fungi.

Imagine a multitude of webs of extremely thin threads, weaving through soil and organic matter such as wood or plant leaves. Or filaments wrapping around plant roots, or threading around and through living plant cells.

Some webs form in wet habitats, in or around dead or living material - like decomposing leaves in streams, or inside seaweeds. Some webs interact with animals, harmlessly, or beneficially, or sometimes causing disease. These webs ("mycelium") are the bodies of fungi.

Fungi are nearly everywhere, and they comprise a sizable proportion of life and biomass on this planet. Fungi are neither plants or animals. They comprise an estimated 2.2-3.8 million or more species placed in their own taxonomic group: Kingdom Fungi. Their web-like bodies are made of chitin - a very tough molecule also found in the exoskeletons of lobsters and insects.

Many fungi feed by dissolving and threading their way through dead matter, breaking it down much faster than other organisms can. Others grow on bare soil, rock, or tree bark, capturing and growing around photosynthetic algae or cyanobacteria to become lichens.

The adaptability of fungi allows them to live almost anywhere, from glaciers to the sea bed, tropical rainforests to urban hedgerows, within cow digestive systems, or in compost. Closer to home, fungi live in your washing machine, are on your skin, and can attack your toenails.

Fungi produce spore-bearing bodies such as mushrooms when conditions are right, to escape and spread to new places. But they form more than just mushrooms and molds – some form earthstars, puffballs, crusts, brackets, cup or coral-like structures, or tiny and strange microscopic structures. Their spores are transported by wind, water, or by animals, so they can find new places to grow and begin their lifecycles anew.

Each strangely beautiful spore-bearing form has evolved over thousands to millions of years to suit the needs of that species. Many fungi are recyclers and nutrient up-cyclers, decomposing dead material and then being eaten in turn by many other organisms, especially insects. Some ants even farm them! They are essential links in the food webs of life.

Other fungi form relationships with most trees and plants, wrapping roots or threading around and through living plant cells, and acting as extra-fine fungal "roots" (mycorrhizas). They help plants access nutrients and water in exchange for sugars from the host plant.

Some fungi live harmlessly inside plants, waiting for their hosts to die so they can be first to eat the dead plant tissue. Sometimes, fungi spend their whole life with a host plant, being passed down in seeds and growing plant cells, and can help their plant fight off animals and diseases. Other fungi make a living by stealing nutrients from living plants, or by killing them to feast on their remains.

Fungal diseases can be a major problem for agriculture or forestry crops, but they also help keep plant communities diverse and in balance in natural ecosystems. Some fungi cause diseases in animals: controlling the minds of ants and insects; attacking the skin of frogs or bats; or infecting humans.

And fungi are very good at producing complicated chemicals – some of which have become very important medicines for humans

But the fungal kingdom remains a mysterious group of organisms.

And if you look out for them, you'll see signs of fungi wherever you are.

Fun Mushroom Facts

Mushrooms are comprised of 85-95 % water.

Mushrooms have their own immune system.

Mushrooms are more closely related in DNA to humans than to plants.

Like human skin, mushrooms can produce vitamin D by being exposed to sunlight. In fact, exposing a freshly cut shiitake mushroom, gills up, to the sun for eight hours can increase its vitamin D content by as much as 4,600 times!

There are approximately 70 miles of mycelium (the root of the mushroom) in one square inch of colonized organic matter, such as a decomposing tree trunk.

The Honey Mushroom (*Armillaria ostoyae*) is the world's largest known organism. This massive organism covers 2,384 acres (nearly four square miles) of soil in Oregon's Blue Mountains. The fungus is estimated to be 2,400 years old but could be as ancient as 8,650 years.

Psathyrella aquatica is a gilled mushroom that lives completely under water.

There are more amino acids in mushrooms than in corn, peanuts, or soybeans.

Mycelium can use toxic substances such as oil and *e coli* bacteria as a food source.

The *Mycena* family of fungus contains more than 70 species of mushrooms that glow in the dark. These mushrooms produce light by a chemical reaction called bioluminescence. In the past, people illuminated their way through the woods using these glowing pieces of fungus-colonized wood.

In the Amazon Rainforest, mushrooms release spores high into the air, creating the surface for water to condense, thus triggering rain. A feedback loop is created as the rain promotes more fungal growth.

Over 80 percent of all terrestrial plants have a mycorrhizal relationship with a fungal species. The roots of the plants have a symbiotic relationship with the underground mycelium. Mycelium nourishes the plant's roots, and in turn, the plant transfers nutrients to the mycelium.

Fungi use antibiotics to fend off other microorganisms that compete with them for food.

The antibiotic penicillin was derived from the fungal species *Penicillium*.

The Five Most Expensive Mushrooms in the World Nat Berman

In the world of mushrooms, there are growers and gatherers around the globe, and the most expensive edible mushrooms are considered true delicacies. These are the most difficult to harvest wild and cultivate. Until recently, some were considered impossible to cultivate so private gatherers continue to collect the rarest mushroom types on a small scale.

***Yartsa Gunbu* – \$2,000 an Ounce**

Growing from the bodies of ghost moth caterpillars, this parasitic fungus infects the caterpillar bodies with tiny spores which are air-borne. Once inside the caterpillars, the fungus eats its host alive. In the early spring, the fungus emerges from the dead caterpillar and pokes right through its head to reach

the top of the soil. It is considered a symbol of status to afford to eat this mushroom.

***European White Truffle* – \$3,600 per pound**
What makes truffles so very expensive is that they are difficult to harvest so there are less of them to go around. They are so scarce that a black market for them has emerged. There are truffle thieves and those who steal the extraordinary truffle-sniffing dogs. It takes time to find the wild truffles and plenty of expertise, as they grow underground. The truffle hunters find them at the base of oak trees. Reports of truffles being stolen from restaurants are paired with news that thieves have sold them and the truffle dogs on the black market. Without a doubt, European white truffles are mushroom royalty.

***Matsutake* – \$1,000 to \$2,000 per pound**

For many Japanese, matsutake is a delicacy which is treasured for its fruity, spicy aroma. In recent years, the red pine trees which provide the Matsutake shelter have been killed in increasing numbers by an insect. There are less trees, so there are less mushrooms underneath them. Unfortunately, methods for cultivating these mushrooms have not been developed yet, and this makes the Matsutake an endangered species.

***Morels* – \$254 per pound (dried) or \$90 fresh**

The problem with Morels is that they appear in their own season. In the United States they are found from late March through May. The mushrooms have a distinctive ruffled head. They're difficult to find because they are surrounded by trees and camouflaged by the leaves and debris typical of the forest floor. Their price tag is high because they are a seasonal delicacy with locations often kept hidden by seasoned Morel hunters.

***Chanterelles* – \$224 per pound**

The beautiful golden Chanterelle is prized by gourmards for its spicy flavor. The Chanterelles come in white, yellow and orange varieties, the golden color is a favorite. These mushrooms are expensive because they need specific growing conditions. A heavy rainfall followed by several days of heat and humidity are what help them grow best. They crop up in clusters around the end of spring and completely disappear when autumn arrives. They must be completely cooked, as they can make people ill when eaten raw.



Happy Valentine's
Day 