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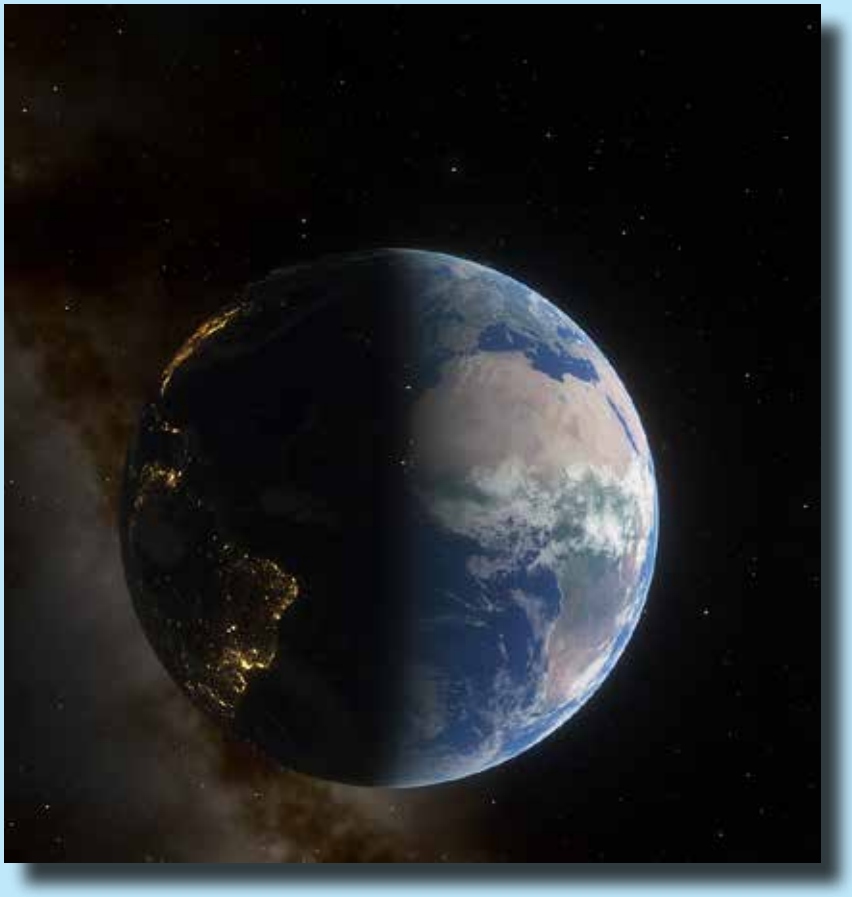
Santa Fe Extension Master Gardeners Newsletter

Autumnal Equinox Heralds Importance of Seasonal Change

Fall 2021 arrives on Wednesday, September 22

By Peggy Rudberg



Earth daylight distribution on the September Equinox
(Northern Autumn; Southern Spring) as seen on w:SpaceEngine

From earliest times human societies have noted both the spring and fall equinoxes. The Mayans built a pyramid at Chichén Itzá with shadows creating writhing snakes at the equinox, and Neolithic people in “Britain” positioned gigantic stones at Stonehenge to form an astronomical calendar. Ancestral Puebloans arranged stone slabs at the Sun Dagger of Chaco Canyon to direct a sliver of sunlight onto carved spirals marking equinoxes and solstices.

Ceremonies and celebrations were held at equinoxes and were believed to acknowledge the importance of changing seasons as our hunter-gatherer ancestors gradually shifted to farming and herding. From irrigating and tending wild plants to domesticating and propagating them, knowledge of recurring weather patterns helped determine when to plant and harvest. Small animals were captured and penned, resulting in greater food security that encouraged communities with a less nomadic lifestyle.

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COOPERATIVE EXTENSION SERVICE • Santa Fe County Extension Office
College of Agricultural, Consumer & Environmental Sciences
3229 Rodeo Road • Santa Fe, NM 87507 • Phone: 505.471.4711 • Fax: 505.471.6076 • aces.nmsu.edu

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Thus, astronomical observations clarifying the cycles of the seasons aided mankind's transition to an agricultural society.

Seasons are caused by Earth's axial tilt. Earth's axis is an imaginary line running north-south through its center of mass. If the Earth's axis ran vertically from the North Pole to the South Pole the hours of daylight and darkness would stay the same and seasonal changes would disappear. But the axis that the Earth rotates around is not vertical in relation to the sun. It is hypothesized that 4.5 billion years ago, a giant impact knocked proto-Earth a bit askew off its north-south axis, simultaneously hurling debris into space and creating the moon. In modern times Earth's axial tilt has been vacillating up and down between 22.1 and 24.5 degrees about every 41,000 years. Gravitational forces from celestial bodies in our solar system cause this wobble. Today our axial tilt is 23.4 degrees and decreasing.

Earth rotates counterclockwise around its axis every 24 hours at over 1,000 miles per hour at the equator's surface. This creates day and night. Because of the axial tilt sunlight strikes the Earth at different angles, depending on Earth's location as it circles the sun in its orbital plane. In winter the Northern Hemisphere leans away from the sun causing its rays to fall on the surface at a shallower angle and for shorter amounts of time. In summer the opposite occurs, with the Northern Hemisphere leaning toward the sun, gathering more direct rays for longer times.

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In This Issue

Editor: Kathy Haq
Art Director: Jannine Cabossel

Contact us at:
news.sfemg@gmail.com

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As the Earth orbits the sun between summer and winter, it reaches a midway point where sunlight falls equally on both hemispheres. We call this midpoint an equinox, from the Latin *aequus* (equal) and *nox* (night), because night and day are about equal in length around the world. In the Northern Hemisphere where close to 90 percent of humanity resides, we are approaching the fall or autumnal equinox. In Quito, Ecuador, which is on the equator, they will have 12 hours and 6 minutes of daylight. Their days change by only a few minutes throughout the year.

In Santa Fe the equinox will occur on September 22, and we will experience 12 hours and eight minutes of sunlight. In Anchorage, Alaska, the fall equinox will result in 12 hours and 13 minutes of daylight. The time difference is due to astronomical or atmospheric refraction, which is more pronounced at higher latitudes farther from the equator. As light rays approach Earth they enter a denser atmosphere that causes the rays to bend and follow the curvature of the Earth's surface. Because of refraction, the sun's rays are visible for several minutes before the sun actually rises and after it sets.

You, too, can participate in this astronomical event by noting where the sun rises and sets on the horizon from your house because these points are approximately at due east and due west on the equinoxes.

Photo courtesy of Wikihelp7586, CC BY-SA 4.0, via Wikimedia

Resources:

https://www.timeanddate.com/astronomy/refraction.html
https://www.weather.gov/dvn/Climate_Astronomical_Seasons

"Ever since I took up gardening as a teenager and attempted to grow cannabis, I have been fascinated by our attraction to [plants that alter human consciousness] as well as by the equally powerful taboos and fraught feelings with which we surround them. I've come to appreciate that when we take these plants into our bodies and let them change our minds, we are engaging with nature in one of the most profound ways possible."

— Author Michael Pollan in "This is Your Mind on Plants" (2021)

A Message from SFEMG Board President Wendy Wilson

“Gardens start with a dream and build into a passion.”
— George Oxford Miller

Buzzwords often lose their power with overuse and misuse. In the last year “sustainability” has become associated with online learning, Zoom meetings and stay-at-home orders as well as water use, native plants, and gardening practices and pollinator habitat. It is an important word and an important concept.

We want sustainability. We want our water use to be sustainable. We want our gardens to be sustainable. We want our food systems to be sustainable. We want to sustain ourselves and the natural world around us. It is important to approach the things we do, and want, with the goal of sustainability.

I approach you, most humbly, with a plea for sustainability. Our Master Gardener organization is emerging from a most difficult 18 months with energized and new projects, a record number of graduating interns, exciting and abundant continuing education opportunities, new forays into media and branding, and re-emerging chances to conduct public education and outreach to the Santa Fe community. However, the calls for people to fill board positions have been met with silence. We cannot be a sustainable organization without a vibrant and motivated volunteer board.

Why would you want to serve on the SFEMG board? Many of us joined SFEMG because we are gardeners who love to garden, and we want to help others learn about gardening. Just as importantly, membership provides us with a chance to know and socialize with like-minded people. We enjoy getting to know people from different backgrounds, with different gardening knowledge, with passions for seed saving, rose gardening, native plants, historical garden restoration, pollinator habitats, educating future gardeners and so much more. Belonging to a board that facilitates these activities is fulfilling. We get to know each other, the project leaders and projects, the members and interns in a deeper and wonderful way. We know that the information, projects and people we are representing are important to the Santa Fe community. Serving as president has been one of the most joyous experiences of my life.

Job descriptions of all the board positions will be posted on the SFEMG “members only” website this month. Christine Hauschel and the succession planning committee will be seeking nominees for vacant board positions. There are many board opportunities available, and your participation will help sustain SFEMG and good gardening in Santa Fe.

The SFEMG needs you and wants you. Please consider taking a leadership role this coming year.

Wendy

SFEMG Looking for a Few Good Leaders

Are you a Master Gardener or graduating intern with a passion for the gardens of Santa Fe County? Are you a good communicator? Well-organized? Do you want to make a difference in your community? Well, here's your chance! Nominations are now being sought for individuals to lead the SFEMG in 2022.

Board members are responsible for the day-to-day oversight of all SFEMG activities, including the management of projects and volunteers, ensuring that the work of the organization is aligned with NMSU's mission as a land-grant university, coordinating educational programming and outreach, and communicating with members and partner organizations in a timely fashion. Act now!

Descriptions of the following positions will be posted to the members-only section of the SFEMG website this month. If you have questions or are interested in pursuing a leadership role, please contact Christine Hauschel at chauschel@ yahoo.com.

- President
- Vice-president
- Secretary
- Education
- Internship Coordinator
- Marketing
- Board Members at Large (2)

Nominations are due by September 15. Candidate profiles will be shared on the members-only section of the website by October 15. Elections will take place on November 6 at the annual membership meeting. The new board members will be announced soon thereafter in an email to all members and posted on the members-only section of the website.

Requirements for Volunteering: A Reminder

Earlier this year the SFEMG board of directors adjusted the number of volunteer hours required for Master Gardener certification to reflect the fact that the coronavirus has limited opportunities to engage in outreach and public education. The requirements are:

- **14 hours of Continuing Education (CE) for Master Gardeners / 4 for interns**
- **2 hours of Outreach and Public Education (formerly PE)**
- **14 hours of Program & Project Support (formerly Operational Support or OS)**

Volunteer hours should be recorded on the New Mexico State University portal accessed via the SFEMG members-only web page. This year's hours should be posted by Nov. 30 to count toward 2022 certification, and it's recommended that volunteers post their hours on an ongoing basis. Because the new system does not allow individuals to review total hours logged, Santa Fe County Extension Agriculture Agent Tom Dominguez is working with NMSU staff to provide personalized progress reports to SFEMG Master Gardeners and interns via email. The SFEMG board is looking at other ways to improve the reporting system as well.

Webinars

NOTE: You can access previously-aired New Mexico State University "Ready, Set, GROW!" webinars here and those offered by the Xerces Society on the organization's YouTube channel. 1 CE phc

Sept. 12-17
2021 International Master Gardener Conference (virtual)
1 CE phc

Oct. 19
2021 Natural Areas Conference
The Xerces Society is cohosting the 2021 Natural Areas Conference held by the Natural Areas Association. This year's one-day virtual event, *Life from the Ashes*: *Exploring the Impact of Prescribed & Natural Fire on Insects and Other Invertebrates*, will explore the positive and negative impacts of prescribed and natural fire related to insects and other invertebrates in landscapes across North America. The symposium will provide research and practical insights to inform natural areas professionals as they manage landscapes with fire.
1 CE phc

Backyard Bugs

Western Poplar Clearwing (*Paranthrene robiniae*)

Western Poplar Clearwing (20 mm) observed July 11, 2021, in Santa Fe
Photo courtesy of Michael Rahn

by Kaitlin Haase

Southwest Pollinator Conservation Specialist, Xerces Society

My neighbor looked on in horror as I used my bare hands to scoop up what appeared to be a wasp in his flower bed. No need to fear stings from this backyard bug, which is actually a clearwing moth in the family Sesiidae. Many moths in this family have evolved to mimic stinging wasps with black and yellow banding on the abdomen and clear thin wings, allowing them to avoid predators as they fly during the day gathering nectar from flowers. The larvae (caterpillars) of the clearwing moth family Sesiidae are borers, where adult females lay their eggs on a host plant and the caterpillar bores into the plant to feed on plant tissue inside a branch or stem. The Western Poplar Clearwing caterpillar specializes on poplar, willow and ornamental birch, where they will bore into the trunk and larger branches and feed for two years before pupating into an adult moth. Females lay eggs individually on host trees and prefer trees that are weak or already damaged by bark beetles. Ranging from Kansas to the Pacific coast, north to Alaska and south to Baja California, these moths can be found throughout western North America wherever poplars, cottonwoods, aspens, willows and birches grow.

Missouri Master Pollinator Steward publication with paragraph on Sesiidae
Sesiidae adults nectar at flowers
Paranthrene robiniae BugGuide profile
Paranthrene robiniae Bugwood profile

We are here to help!

If you have a gardening question, Santa Fe Extension Master Gardeners are available to help. Go to sfemg.org. and pose your question. Someone will do research and get back to you.

Rocky Mountain Penstemon
(*Penstemon strictus*)

Story and photos by Colleen Pelles Madrid

As temperatures warm up, summer brings with it many species of Penstemon sending up their flower spikes for the bees and other pollinators to visit. Of the nine species of Penstemon in my garden one of the first to flower is Rocky Mountain Penstemon.

Rocky Mountain Penstemon is a perennial member of the Plantain family (Plantaginaceae). It is an evergreen native forb with fibrous roots. While most Penstemons prefer dry, light, well-drained alkaline soil this species will tolerate damper conditions and denser soils. It requires low water and full sun to part shade. Rocky Mountain Penstemon is native to New Mexico, Arizona, Utah, Colorado, Wyoming and parts of Nevada, and is associated with open shrublands, woodland and forests from 6,000 to 10,500 feet elevation.

The name Penstemon is from the Greek *pente*, five, and *stemon*, stamen, calling attention to the sterile fifth stamen (staminode). There is confusion over who named the genus. John Mitchell (1711-1768), an American physician and botanist, is credited with publishing the first scientific description though the paper is unclear as to whether he was describing the genus or species. George Bentham (1800-1884), an English botanist, is credited with the species name, *strictus*, meaning “erect,” which refers to the growth habit or stems. Originally thought to be a member of the Figwort family (Scrophulariaceae), this plant has been shown through DNA testing to be in the Plantain family.

Rocky Mountain penstemon’s woody caudex anchors a basal clump of narrow, dark green leaves from which stems emerge to a height of 1-3 feet. The opposite leaves become smaller as the travel up the stem, giving way to terminal spikes consisting of several flower clusters that contain 2-4 blue to purple blossoms in May and June. The corolla’s two upper petals extend like a canopy over the three longer, deeply lobed lower petals that bend slightly downward. The four fertile stamens have curved white filaments and hairy purplish anthers; the staminode protrudes from the corolla’s throat causing the flower to resemble an open mouth with the hairy staminode serving as a tongue. Hence the common name of beardtongue.

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Bumblebees and well as other native bees and wasps collect nectar from this plant. Hummingbirds visit Rocky Mountain penstemon occasionally. This species also attracts ladybugs and hover flies.

Landscape Use: This low-maintenance perennial wildflower adds a dramatic splash of color to the late spring and early summer garden. It frequently sneaks into established planned landscapes, though it is not overly aggressive and mingles well with other plants. Because of its fibrous roots is can be used to stabilize soil. It has been found to be a compatible and beneficial plant to grow with several paintbrush species (Castilleja), which require a companion plant to serve as a host for its semi-parasitic needs.

Propagation: Rocky Mountain penstemon is easily established from seed and seedling vigor is usually good. Plant seeds a quarter- to a half-inch deep in the fall or early winter. Keep the soil moist after planting for natural cold stratification to occur. If starting seeds indoors, cold stratify for two to three months at 40 degrees prior to planting. Root division is also possible in early spring, making sure each division has at least one bud.

Plant type: herbaceous perennial
Bloom Time: May-June
Size: 24-30” tall; 36” wide
Sun: full sun, part shade
Soil Types: sandy soil, average soil
Water: low
Elevation: 6,000-10,500 feet

References:

Lady Bird Johnson Wildflower Center: Penstemon strictus
Ogle, D.G., et al., USDA NRCS. Rocky Mountain Penstemon, Penstemon strictus Benth. 2014
NMSU, CR 472 ‘Bandera’ Rocky Mountain Penstemon; November 2009
Wasser, C.H. Ecology and Culture of selected species useful in revegetating disturbed lands in the west. US Fish and Wildlife Service, USDI. 1982
Wikipedia, “Penstemon,” Jan. 2, 2019

New & Noteworthy

Have you recently read a gardening-related article or book, visited a horticultural website or blog, listened to a podcast, or seen a nature show or documentary you think other gardeners would enjoy or find useful? Send a link to the newsletter (news.sfemg@gmail.com) and we'll try to include the information in the next issue. ***Note that some of these sources may have paywalls***.

"Master Gardeners: Was there a fourth sister?" by Laurie McGrath, shared with permission from *HOME/Santa Fe New Mexican* (August 2021)

"Curious Questions: What is a weed?" by Martin Fone, *Country Life* (Aug. 14, 2021)

"Praying Mantis: Fierce and Fascinating Garden Bugs" by David Mizejewski, *Birds & Blooms* (Aug. 12, 2021)

"The man who spent a year spotting all 59 of Britain's native butterflies" by Robin Page, *Country Life* (Aug. 8, 2021)

"49-Million-Year-Old 'Beautiful Beetle' Named After Sir David F. Attenborough" by David Bressan, *Forbes* (Aug. 7, 2021)

"6 Fascinating Swallowtail Butterfly Facts" by Sheryl DeVore, *Birds & Blooms* (Aug. 6, 2021)

"Viceroy Butterfly vs. Monarch: How to Tell the Difference" by Jill Staake, *Birds & Blooms* (Aug. 5, 2021)

"11 Pictures That Will Change How You See Bugs" by Lori Vanover, *Birds & Blooms* (Aug. 5, 2021)

"The deadliest flower in the insect world is a lifeline to farmers — and the planet" by Jacob Kushner with photographs by Vito Fusco, *National Geographic* (Aug. 4, 2021)

"Monarch Butterfly Migration Is Simply Magical" by Tom Allen, *Birds & Blooms* (Aug. 3, 2021)

"Gardening 101: Japanese Aralia" by Kier Holmes, *Gardenista* (Aug. 3, 2021)

"Data-Driven Climate Action: What Can I Do?" Look for information about regenerative permaculture in Santa Fe County's August 2021 *Sustainability Newsletter*.

"The Darker Side of Tree-Planting Pledges" by Feargus O'Sullivan and Linda Poon, *Bloomberg CityLab* (July 30, 2021)

"What is a Tomatillo — And How Is It Different From a Tomato?" by Corey Williams, *Allrecipes* (July 26, 2021)

"The orchardist rescuing fruit trees in New Mexico" by Esha Chiocchio, *High Country News* (July 20, 2021)

The Garden Journal Radio Show

Every Saturday 10-10:30 a.m.

Tune in to KSFR 101.1 FM on Saturday mornings from 10 to 10:30 to listen to a lively entertaining, and informative gardening show. Show host: Christine Salem

September 4: Slow Food Santa Fe edition

Ray Naranjo, Chef, Indian Pueblo Kitchen, will talk about ancestral and future Native American food cultures with hosts Lissa Johnson and Nina Rosenberg.

September 11: SFEMG edition

Arborist and horticulturist Tracy Neal in conversation with host Christine Salem on what climate change means for trees in the Santa Fe area. Part 2: What we can do to support our trees.

September 18: Food, Farms & Friends edition

Host Carrie Core presents more Soil Stories.

September 25: Home Grown New Mexico edition

Jannine Cabossel, "The Tomato Lady," shares her hard-earned vegetable gardening wisdom and a to-do list for October in a live broadcast from the Santa Fe Farmers' Market. More info at Giant Veggie Gardener.

Schedule subject to change. To listen to previous broadcasts, click here.

September Calendar of Events

We do not know when face-to-face events will be viable again, but please continue to check the SFEMG website and the websites of other organizations to see what's being offered. Note that "phc" stands for "per hour of class time."

Sept. 1
Ready, Set, GROW!: Cover Crops (NMSU) — 1 CE phc

Sept. 11
Reunity Resources Farm Tour (HGNM) — 2 CE

Sept. 15
Ready, Set, GROW!: Growing Fruits (NMSU) — 1 CE phc

Sept. 17
Tips and Tricks from The Handy Bee Manual (OSU) — 1 CE

Sept. 18
How to Save Seeds (SFEMG) — 2 CE

Sept. 19
Community Day at the Santa Fe Botanical Garden (SFBG) — 1 CE phc

Sept. 23
Biological Control in Urban Parks: A Study in Bogotá (Colombia) (XS)

HGNM: Home Grown New Mexico
NMSU: New Mexico State University Cooperative Extension Service
SFBG: Santa Fe Botanical Garden
OSU: The Ohio State University
XS: Xerces Society

See next month's SFEMG Newsletter for more Continuing Education options.

Members Only: For a complete list of Master Gardener projects and to sign up, please visit SignUpGenius, a link to which is in the Members Only section of the SFEMG website. To log volunteer hours worked, visit the NMSU tracking site that you can link to from the same location.

Mission Statement:
Santa Fe Extension Master Gardeners is a nonprofit volunteer organization whose mission is to learn, teach and promote locally sustainable gardening through reliable, current research-based practices.