Art of Gardening in Muscatine County

Saturday, March 9, 2019

7:30 – 8:15 a.m. Registration (coffee provided)
8:30 – 8:45 a.m. Welcome and Announcements
8 a.m. – 3 p.m. Business Professionals of America Bake Sale
(MCC Student Organization)
Upcoming Meeting & Event Highlights
Coordinated by Jane Hodge, Master Gardener

MG Spotlights —
1. Donations Gardens — Terri Hanson
2. Zoo Garden — Maryrose Peterschmidt

Winter Webinar — Managing Vegetable Pests — March 5; 6-7pm at Muscatine Extension Office

Art of Gardening — Muscatine — March 9 ART OF GARDENING at Muscatine Community College. Earn 5 educational hours for 2019! (see pages 3-5)

Fruit Tree Pruning Demo — March 27; 5:30-7:00pm at Muscatine Arboretum (see page 6)

Community Growing Season Kickoff — March 30; 9-11am at Environmental Learning Center (see page 7)

Bug University — April 9; 1pm – 4pm at Muscatine Environmental Learning Center, Muscatine, IA — Donald Lewis, professor and extension entomologist with ISU will provide insight into insect identification, beneficial insect diversity, and how to deal with the bad bugs.

MG General Meeting — April 9; 6:30pm at Muscatine Extension Office — “Plants that Changed History” by Rachel Horner Brackett (see page 19)

Gardening School — April 11-12 at Iowa Arboretum, Madrid, Iowa (see page 8)

Annual Plant Sale — May 11; 8:00am-12N at Environmental Learning Center (see page 13)

International Master Gardener Conference — June 17-21 — Valley Forge, PA

HOME GARDEN TOURS: Please let us know if you are willing to show us your garden. BRING... a friend!

June 11, Tuesday - General meeting and potluck - Jane Hodge - 6:00pm
June 13, Thursday - Laura McGinnis - 4:00 - 6:30pm
July 9, Tuesday - Muscatine County Fairgrounds - Bill Koellner and Gretchen Nollman - 6:00pm
July 13, Saturday - Heather Harroun - Heather is hosting this event for several groups, including MGs and the Cedar Valley Iris and Daylily Society, plus more. Her gardens are open for tours around 11:00am and will end sometime after the potluck at 6:00. Come any time...
September 10, Tuesday - 6pm at Ed Moreno’s home; garden tour plus watershed protection and water quality presentation by Matt McAndrew

GREENHOUSE TOURS: Please wear your MG name tag. Each session will have a 1/2 hour of education and they will offer a 10% discount. Thanks, Ed Moreno, for organizing these events!
April 18, Thursday - Kellor and Kellor
April 25, Thursday - Hilltop Greenhouses - Maria McCully’s topic will be Herbs.
May 9, Thursday - Iowa City Landscaping
Well, we’re down to the wire! This year we needed to be on the downside of MCC’s spring break closure instead of the upside which would have given us more time for the stupid weather to straighten out! Weather is something Master Gardeners work around all the time, but it doesn’t make us have to like it!

I assured Cindy Kress that it doesn’t take anyone 5-6 weeks to return registration material as she was worried that we didn’t get them soon enough. I believe two to three weeks is plenty for someone to reply and that now we need to get the word out on facebook, etc. to catch those last-minute procrastinators. Registrations are coming in and March 1 is the deadline although we will add any coming in over the weekend.

I’m counting on you all to share some of your time helping us as hosts, helping with vendors, table decorations, registration, clean-up, etc. We didn’t have a sign-up sheet but I know those of you who always are ready to do what needs done and we do appreciate it. E-mails will go out to you as we progress through the next few days. My e-mail is at the bottom if you want to specifically help with something and haven’t already communicated to me.

We’ve got Guy and A Grill again this year, who never disappoints us with his great food, many wonderful presenters and an array of vendors. Hopefully, although doubtful, our Art of Gardening will be the stepping stone to great weather! As usual I would like to attend all of the sessions as they each have so much knowledge to share but “toss the coin”!

Kudos to all of our Committee and their hard work and continued “can do” attitude! They’re invaluable in every way. When you work with such great people, no one looses sleep!

Registration starts earlier this year (7:30) so perhaps I can make it to opening remarks without being late! We’ve allowed a little more time between sessions so we don’t feel so rushed, and we continue to have Stump The Experts as participants seem to really enjoy having specific questions answered. We won’t have the Little Theatre again this year and although we work around some cold/hot rooms, and perhaps

(continued next page, AOG)
other “less than ideal” conditions, Muscatine Community College is an excellent place to have our event and Cindy is great to work with. I can’t think of any other facility that would be as ideal as Strahan Hall.

Any suggestions, comments, or advice – are always taken but not always followed – so what’s new! That’s suppose to be funny but you can’t hear me laugh, can you? Suggestions do help us refine and improve any areas we possibly can so let us know if you think of anything.

Again, we appreciate your attendance, support and look forward to seeing you on March 9 – 7:30 a.m. (unless you’re helping and then you can come anytime after 6:15 a.m.)!

Susan Cradick – cradicks45@yahoo.com

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**2019 Art of Gardening Offerings**

(Choose one from each session)

**Session 1  9:00-9:50 am**

- New Annuals/Perennials for 2019-Maria McCalley
- Xeriscaping-Peggy Burrows
- Landowner Conservation Options and Strategies-Ron Knopik
- Blueberries, Strawberries, Raspberries, Oh My!-Deb Walser
- Donation Gardening-Improving Food Security-Krista Reginnetter
- Fur, Scales and Animal Tales-Hannah Howard
- Proven Cultivars for the Home Vegetable Garden-Paul Rost

**Session 2  10:10-11:00 am**

- Dealing with Bad Soil: Making Planting Beds Thrive-Todd Wiebenga
- Vines, Verticles and Variants-Debbie Main
- Extending the Season: Winter Gardening/Cold Frames-Rachel Horner Brackett
- Pruning: How, Why, When-Charles Rickey
- Gardening with Conifers-Gary Wittenbaugh
- Peonies-Zora Ronan
- Planting for Bio Swailes-Peggy Burrows

*(continued next page, AOG Program)*
Select Lunch Group 1 or Group 2 and the corresponding Stump the Experts:

**Group 1** - Lunch from 11:20-12:10 with Stump the Experts following at 12:20-1:10

**Group 2** - Stump the Experts 11:20-12:10 with lunch following at 12:20-1:10

2019 Art of Gardening Offerings (continued)

(Choose one from each session)

**Session 3**  1:30-2:20 pm

- Sq. Ft. Gardens/Raised Bed Gardening- Deb Walser
- Plants that have Changed History- Rachel Horner Brackett
- Care for Fruit and Nuts Trees(Heartnuts, Pawpaw, etc.)- Tom Wahl/Kathy Dice
- Climate Change and Your Garden- Ray Wolf
- Gardens of Israel & India- Paul Rost
- Gourd Jewelry- Rhonda LeMar-James
- Know-Maintenance Gardening- Pruning Shrubs and Young Trees – Chuck Porto

**Session 4**  2:40-3:30 pm

- Let Me Entertain You- Debbie Main
- Gardening with Native Flowers and Trees- Hannah Howard
- Planting Landscape Trees: Promoting Diversity- Mark Vitosh
- Trough Gardening- Gary Wittenbaugh
- Tomato Tech- Patrick O’Malley
- Nourishing Gardens & Plant Based Cooking Demo- Nancy Dew
- Favorite Gardens- Zora Ronan
FRUIT TREE PRUNING & TRAINING WORKSHOP

MARCH 27, 2019 AT 5:30-7 PM
Held at the Muscatine Arboretum, Muscatine, IA
Meet at shed off of Harmony Court - Go down Houser to Harmony Lane then south on Harmony Court to the shed
Join us for a lesson on how to prune and train fruit trees with ISU Extension and Outreach Field Specialist Patrick O’Malley.
Pruning and training techniques to maximize fruit production will be demonstrated on the apple trees growing at the arboretum.
No pre-registration required. Funding provided by Muscatine County Master Gardeners and Muscatine Arboretum.

Questions
Contact:
Muscatine County ISU Extension and Outreach
563-263-5701 or KristaR@iastate.edu

IOWA STATE UNIVERSITY
Extension and Outreach
Growing Season Kick-Off

March 30, 2019  9—11 AM
Environmental Learning Center, Discovery Park

Join Muscatine Community Garden Association and Muscatine County Master Gardeners in celebrating the start of the growing season!

9:00—Welcome and Organizational Booths, light breakfast
9:20—Tips for Growing Healthy Tomatoes – Mary Danner, Muscatine County Master Gardener
10:10—Sustainable Soils – Lynn Pruitt, Muscatine County Master Gardener,
10:40 — Wrap up and Organizational Booths

Organizational Booths: Muscatine Community Garden Association, Muscatine County Master Gardeners, The Nature Conservancy, Muscatine Arboretum. Find out more about the organization and volunteer opportunities!

Questions? Call Krista at 563-263-5701 or Kristar@iastate.edu

Muscatine Community Garden Association

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National Garden Clubs, Inc., GARDENING SCHOOL, Course 1—Series 13
Sponsored by Federated Garden Clubs of Iowa
IOWA ARBORETUM, 1875 PEACH AVENUE, MADRID, IOWA
Located in the rural area between Madrid and Boone, IA
Open to the public

APRIL 11, 2019 (Thursday)
8:00-8:20 A.M. Coffee and Registration
8:20-8:30 Introductions, announcements and questions
8:30 – 11:00 *BASIC BOTANY 2.5 hr
Aaron Steil, Assistant Director
Reiman Gardens, Iowa State University

11:00-11:15 BREAK

11:15 AM–12:45 P.M. *TECHNIQUES FOR GROWING OUTDOOR FLOWERS 1.5 hr
Yvonne McCormick, Extension Horticulturist
ISU Extension and Outreach Region 7

12:45-1:15 LUNCH (Please bring sack lunch. Refrigerator & microwave available)
1:15 – 3:15 *SOILS 2.0
Lee Burrs, PhD, Professor of Agronomy, Soil Scientist,
Agronomy Dept., Iowa State University

3:15-3:30 BREAK

3:30 –4:30 BUTTERFLIES OF IOWA 1.0
Anita Westphal, Butterfly Wing Assistant
Reiman Gardens, Iowa State University

APRIL 12, 2019 (Friday)
8:15-8:30 A.M. Coffee and Registration
8:30 – 11:45 PLANT PROPAGATION 1.5 hr
Jessie Liebenguth, Landscape Horticulturist
Reiman Gardens, Iowa State University

BREAK

PLANT PROPAGATION WORKSHOP 1.5 hr
Jessie Liebenguth, Landscape Horticulturist
Reiman Gardens, Iowa State University

11:45 AM-12:15 PM LUNCH (Please bring sack lunch if testing)
12:15 -3:15 EXAM

*TESTED TOPIC, ALL OPEN BOOK TESTS

RECOMMENDED READING: The National Gardener magazine. Order on-line or by phone: 1-800550-6007

Master Gardeners may be awarded 1 hour CEU for each 1 hour class time.

FGCI Registration – Gardening Study School Course I, Session 13, April 11-12, 2019. Iowa Arboretum, 1875 Peach Avenue, Madrid IA, in the Hughes Education Center. Coffee and tea provided.

REGISTRATIONS ACCEPTED UNTIL NOON, April 8, 2019. NO REFUNDS AFTER April 8.
WALK-INS ALWAYS WELCOME, BUT HANDOUTS NOT AVAILABLE.
NAME (only 1 person per form) ________________
ADDRESS ___________________________________

Your FGCI Garden Club __________________________ Master Gardener (Y/N) ________________
TELEPHONE _______________ E-MAIL ADDRESS __________________________

Unless checked, we will use your e-mail to contact you with National Garden Clubs information, including future Gardening Study Schools. _____ Class $55 _____ Class + test $60 _____Refresher $60 _____ (Refresher available only for Gardening Study Consultants.)MAKE CHECKS PAYABLE TO;
Gardening School & mail to AdaMae Lewis, 122 N. Russell Avenue, Ames IA 50010.
adamaelewis@gmail.com Phone 515-232-0608 and leave a message.
Hello Master Gardeners! Maybe if we all collectively THINK SPRING mother nature will turn a kind eye and give us a break!??! That may not work, but I am excited to Think Spring at Art of Gardening on March 9. Hopefully you all are registered by now – but if not here is the link to sign up online: https://www.eicc.edu/future-students/events/art-of-gardening.aspx. If you are interested you can check out the three Art of Gardening Muscatine Access Channel 9 TV episodes we created to preview the event: https://www.youtube.com/channel/UCqR2n7c80OiPuY0Yqcnuy7g/videos. Thank you to Hannah Howard, Nichole Sorgenfrey, and Rachel Horner Brackett for being guests!

Exciting New: Muscatine County Master Gardeners were awarded a Master Gardener Growing Together Mini Grant for the fourth year running!! These funds will allow us to continue the great work in donation gardening, increasing access of low income Iowan’s to fresh fruits and vegetables. Congratulations and thank you to Lynn & Emma Mae Pruitt, Bonnie Reeb, Terri Hanson, Bill Koellner, and Dave Cooney for their work on this project! I am sure any of the above named Master Gardeners would welcome help this growing season. The Muscatine Island Research Farm will again have a donation garden, but it is no longer a demonstration trial garden, so only harvesting and delivery is needed (no more counting beans!). If you are interested in getting involved in any of these projects please let me know (KristaR@iastate.edu, 563-263-5701).

Our last Winter Webcast will be on Tuesday, March 5, 6-7 at the Extension Office. Join us to learn about managing vegetable pests! Dan Fillius will provide organic, weed-free vegetable growing tips to reduce pests and attract beneficial insects. This is a great way to get your Continuing Education Hours in!

Also, save the date – Muscatine County Master Gardeners are teaming up with the Muscatine Garden Association on a Growing Season Kick-Off, Saturday, March 30, 9-11 am at the Environmental Learning Center at Discover Park. We will have two short presentations – one on tomatoes and another on soil/composting. It will also be an opportunity to learn more about other gardening/conservation organizations in the community.

Another upcoming event in the works is a Fruit Tree Pruning workshop, March 27, 5:30-7 pm at the Muscatine Arboretum. This event is being co-sponsored by the Muscatine County Master Gardeners and Muscatine Arboretum.

So much to look forward to!! See you all at Art of Gardening!

Krista
General Meeting Notes
Muscatine Master Gardeners—Feb 19, 2019
Muscatine Community College, 7:00 PM
By Rachel Horner Brackett

1. Welcome and call meeting to order

2. Attendance taken via sign-in sheet

3. Treasurer’s Report and Payment of Bills
   Current Balance: $5,136.46

4. Review and Approve Minutes of Last General Meeting (12/12/18)

5. Upcoming events: More information on specific times for tours will be forthcoming
   • Winter Webinar series—February 9, February 26, March 5
   • Art of Gardening—March 9
   • April General Meeting – April 9
   • Nursery Tours and education programs
     • Kellor & Kellor (Muscatine), April 18
     • Hilltop (Illinois City), April 25
     • Iowa City Landscaping (Iowa City), May 9
   • Plant Sale—May 11
     • Heather Harroun will serve as Chair for the Plant Sale
   • Growing Season Kick-Off at the Muscatine Discovery Center—March 30, 9:00-11:00 AM
   • Home garden tours
     • Laura McGinnis, June 13, 4:00-6:30 PM
     • Bill/Gretchen (Muscatine Co. Fair-grounds Tour), July 9

6. Old Business
   • Heather Harroun, July 13
   • Ed Moreno, September 10
   • If anyone is interested in hosting a home garden tour this summer, please contact Jane Hodge. We would love to add you to the list!
   • Muscatine County Fair Bucket Brigade—Judging is July 16
     • 2019 Theme: Color choices are open, but the arrangement must include at least two HERBS

(Continued next page, MINUTES)
7. New Business

- The t-shirt orders were placed on 2/20. There will be an announcement when the shirts are available.
- Spotlight on Master Gardeners
  - Moving forward most of the “sign up” sheets we used in the past will be eliminated. **If a project has specific dates and times allotted, then a sign-up sheet will still be used and will be available at the general meetings.** What we are eliminating are the sheets that were open-ended invitations to participate.
  - From now on, the “Spotlights” will present our various projects to the entire group at each general meeting. If you are interested in participating in a particular project, please speak with the presenter! You are also always welcome to contact a board member if you are interested in participating in a certain project—we can connect you with the right person. This is a change in how we’ve operated in the past, so thank you for your patience as we iron out the details!
  - If you have a project and would like to recruit volunteers, please contact a board member and we will add you to the meeting agenda! You will have five minutes at the general meeting to discuss what kinds of activities are done and what is expected of participants.

- Susan Cradick presented the first Spotlight on the MG booth at the Muscatine Farmer’s Market
  - The Farmer’s Market booth takes place on Saturday mornings from 7:30-11:30 AM in downtown Muscatine
  - There is a cart containing pamphlets, fliers, and the banner for the Master Gardener tent. We have a folding table and tent to provide some shelter. These materials are usually picked up from the Extension office the day before. Susan can help you set up the tent, if needed. Just ask! J
  - You are encouraged, but not required, to have something like a recipe, “mystery plant,” seasonal food sample, etc. Recipes can be found on the Iowa State Spend Smart/Eat Smart website.
  - Members discussed having a veteran farmer’s market volunteer work with a new farmer’s market volunteer, in order to teach them the process.
  - **We will have a sign-up sheet at the April 9th meeting to start filling up the volunteer time slots for the Farmer’s Market season.** Veterans- think about encouraging a newer member to come with you! If you’ve never worked the farmer’s market, think about signing up! It is an easy and fun way to earn 4 volunteer hours.

*(Continued next page, MINUTES)*
• It is also a less physically demanding way to earn your volunteer hours, which is something to consider.

• New ISU Extension Office building fund—Board’s donation
  • The MG Board unanimously voted to donate $2,000 to the fund for a new Muscatine Extension office. Krista Reginetter presented a thank-you letter from the Extension office. We will all look forward to meeting in this new space next year!

• The Zoo Garden group is also looking at options for a long-term plan to maintain the space. Please contact Maryrose if you are interested in volunteering with the Zoo Garden.

8. Final Announcements
• Congratulations to Charles Rickey and Bill Koellner for being acknowledged for Outstanding Lifetime Achievement as Master Gardeners.
• Don’t forget to log your hours!

Meeting Adjourned at 8:00 PM

Winter Webinar: Limited Space Gardening

Master Gardeners and their guests enjoyed a webcast presentation by Ed Lyon, director of Reiman Gardens on Limited Space Gardening, February 19 at Muscatine Community College. Lots of great ideas were presented for those of us who have only a small space available for gardening.
Muscatine Joint Plant Sale
By Heather Harroun Master Gardener

Time to start planning for the Spring Plant Sale taking place on May 11th!!

If you are starting seeds at home, consider planting extra of whatever you are starting to bring to the sale. Start thinking now of what perennials you can divide. It might be easier and make a more saleable plant if they are dug early in the season and potted up - no last-minute digging and shocked plants. I have plenty of pots available in many sizes. From 3.5” to 2 gallons. Please call, text or e-mail me if you want pots.

If you would like to help with the sale, please let me know. Details about the sale will be provided in the April newsletter and at the April general meeting.

Thanks,
Heather Harroun
Plant Sale Chairperson
309-372-4414

Dubuque County Spring Gardening Seminar

Dubuque County Master Gardeners Hosting a Spring Gardening Seminar. Join the Dubuque County Master Gardeners as they “Spring into Gardening” at their annual Spring Seminar. This educational event will be held 7:30 am to 12 pm Saturday, April 6 at the NICC Town Clock Business Center. Attendees can choose from a variety of sessions including ground covers, dwarf conifers, bees, seed tapes, mini hostas, ornamental grasses, 2019 new perennials, cider making, and vermicomposting. Cost is $20.
Did you know that the man who developed 300 derivative products from peanuts—among them milk, flour, ink, dyes, plastics, wood stains, soap, linoleum, medicinal oils, and cosmetics—and 118 derivative products from sweet potatoes, including flour, vinegar, molasses, ink, a synthetic rubber, and postage stamp glue—started life as a slave in Missouri and ultimately studied at what became Iowa State University? Did you know that same man was visited by Presidents Calvin Coolidge and Franklin D. Roosevelt, and his friends included Henry Ford and Mohandas K. Gandhi? And, did you know this same man turned down opportunities to work with Thomas A. Edison for a huge salary and to advise Joseph Stalin and other world leaders on issues relating to agricultural production? Well, if you knew all those facts you are pretty well acquainted with the life and works of George Washington Carver!

Carver's Early Life -- George was born on Moses Carver’s farm/plantation near Diamond, Missouri either in January or June 1864. As an infant, George and his mother Mary were kidnapped by slave robbers and taken to Arkansas and eventually to Kentucky during the Civil War. Moses Carver was later able to retrieve George for a ransom but his mother had disappeared. Even though the boy was frail and sickly, Moses and his wife were able to nurse George back to health but he was never very strong physically.

At a young age, Carver took a keen interest in plants and experimented with natural pesticides, fungicides and soil conditioners. His adopted mother Susan Carver taught him how to cook, mend, embroider, do laundry and garden, as well as how to concoct simple herbal medicines. He became known as the “the plant doctor” to local farmers due to his ability to discern how to improve the health of their gardens, fields and orchards.

When slavery was abolished in 1865 George stayed on with the Carvers until age 10 or 12 when he left in search of an education in Neosho, Missouri. Then he moved west with friends and eventually received his high school education in Minneapolis, Kansas but was denied admittance to Highland College in Kansas because of his race. In response, Carver homesteaded a claim, where he conducted biological experiments and compiled a geological collection.

Carver’s Iowa Connection -- Carver then wandered to Winterset, Iowa from which he was able to enroll in Simpson College in nearby Indianola. At Simpson he studied piano and art taking a special interest in the artistry of botanical samples. Next on the college circuit was Iowa State Agricultural College (later Iowa State University) where he received both BS and MS degrees in Botany (Agricultural Science) in 1894 and 1896, respectively. He was the first African-American man to receive a BS degree from the college. His research included fungal infections on soybean plants as well as other plant diseases.

Agricultural Initiatives from Tuskegee Institute -- Following graduation from Ames, George Carver received and accepted an offer from the black educator Booker T. Washington to direct his newly organized Department of (continued next page — CARVER)
Agriculture at Tuskegee Normal and Industrial Institute (now Tuskegee University) in Tuskegee, Alabama. (George Carver added “Washington” to his name in honor of Booker T. Washington). Carver’s primary objective at Tuskegee was to improve the lives of the black itinerant farmers through education rather than politics. Carver didn’t always see eye to eye with Booker T. Washington but the two respected each other.

Carver quickly realized that farming in the South was becoming stymied by depleted soil fertility and soil erosion because the same crop – cotton – was planted year after year. His experiments and plant management techniques showed farmers the advantages of crop diversity and rotation. He introduced peanuts and soybeans which, as members of the legume family, restored nitrogen to the soil and at the same time supplied much needed protein for the Southern diet. He also experimented with sweet potatoes and found the local soils quite amenable to them. However, the local market soon became over-saturated particularly with peanuts and sweet potatoes. Carver’s next challenge was to expand the market for these burgeoning commodities.

Besides the obvious edible use of sweet potatoes, Carver was able to convert them into other food items including flour and vinegar; and into non-edible products including stains, dyes, paints and writing ink. Several of the 118 alternative derivates of sweet potatoes remained as curiosities and never were commercially produced.

Then there were peanuts and their derivates. Carver developed some 300 alternative uses for peanuts including milk, Worcestershire sauce, punches, cooking oils and salad oil, paper, cosmetics, soaps and wood stains. He also experimented with peanut-based medicines, but someone else developed peanut butter.

**Carver’s Crop Rotation Success** – In addition to Carver’s success in the laboratory, he was busy helping poor farmers (typically sharecroppers who were former slaves) economize and at the same time improve the environment. Examples include feeding hogs acorns instead of commercial feed, and using swamp muck instead of commercial fertilizers to enrich their croplands.

Carver’s vision for planting peanuts, soybeans and sweet potatoes was not to supersede the role of cotton in the South but to provide crop rotation alternatives along with cotton. Since growing cotton continuously depleted the soil of nutrients, Carver reasoned that plants like peanuts, soybeans and sweet potatoes which added nitrogen to the soil, would replenish the nutrients if planted in rotation. Crop rotation was also instrumental in saving cotton crops from the devastating boll weevil. This discovery greatly improved yields and helped make the soil sustainable. Cotton and peanuts became the top two cash crops from Southern farms by 1940.

(Continued from previous page — CARVER)
Indicator Plants

By Gretchen Nollman, Master Gardener Intern; and Bill Koellner, Lifetime Master Gardener

Indicator plants are plants that are used in multiple ways by farmers and gardeners. In the spring, various plants are used to determine when a gardener should perform other garden tasks, such as application of preemergence fertilizers, trimming trees and shrubs. Another use of indicator plant is to improve plant’s health.

Indicator plants are sometimes called the “canary in the coalmine”. Then, what is an indicator plant? These brave plants are uniquely there to help protect other plants. They can indicate when it is time to treat for pests and disease. They will help point out soil and water deficiencies and act as plant watering indicators. Indicator plants are the most useful as pointers to certain diseases and pest problems. Pest and disease indicating plants are useful to the gardener as the first sign of an issue that requires immediate attention.

Plants are acutely tuned into and affected by their environment. As such, they are excellent at pointing out any changes in soil, temperature, moisture and highlighting pest and disease problems. The lack of water is noticed in the flower bed by noticing the nodding heads of a flower that is susceptible to drought conditions. An example of water needs is easily viewed by the ajuga, impatiens and coleus as they are excellent plant watering indicators. They are susceptible to water loss and will exhibit obvious signs such as wilting and browning of leaf tips. This will tell you the area is dry, and you need to water. These plant watering indicators are just one-way plants can be guides for overall care. Because of the connection to environmental influences, you can use other plants as more than a water indicator for plants. Some plants can be used to detect early evidence of insects or disease. For instance, petunias are used in greenhouses to detect the presence of insects that suck the life from plants. These sucking insects are the reason for potentially destructive diseases, necrotic spot and tomato spotted wilt viruses. These insects are very attracted to these two plants. The gardener can use indicator plants as a water indicator for plants can also pinpoint excess moisture in the area. Indicator plants must be common, easy to grow, hardy, and have a set bloom time.

Plant indicators can be helpful to determine the type of soil; thus it can be decided which crops should be planted in a particular soil and which soil should be left for pasture or other purposes. Plant indicators are also used to determine optimum use of land resources for lawns, gardens and cropland.

The occurrence, character and behavior of a plant are indicators of the combined effect of all factors prevailing in a location of the plants. Since a plant acts as a measure of environmental conditions, it is referred to as biological indicator. Plants which indicate some very specific conditions of environment are called plant indicators.

The relationship between plants and all ecological factors can be used as an indicator of environment. In a plant community some plants are dominant and found in abundance. These plants are important indicators because they bear full impact of habitat. Plant communities are better indicators than individual plants. Individual plants are used to determine the types of soil and other conditions of the environment. Sometimes these also indicate past or future conditions of the environment.

The knowledge of plant indicators can be helpful to determine local soil, thus it can be decided which crops should be cultivated in a

(Cont’d next page, INDICATORS)
particular soil and which soil should be left for pasture, and agricultural crops. Many plants also indicate the presence of minerals.

A plant may show wide limits of tolerance for certain. A plant may be indicator of wide limits of tolerance for heat but of narrow limits of tolerance for water. Different types of plant indicators have different roles in different aspects.

Many plant indicators decide whether soil is suitable for agriculture. The growth of a crop plant is seen under different environmental conditions and if growth is satisfactory in a certain field.

Growth of the short grasses indicates that water is less in the soil. A natural growth of tall and short grasses indicates that soil is fertile and is also suitable for agriculture.

Many plants in pastures and lawns are over grazed or involved with heavy traffic which result in modification of those grasslands or lawns. It has been seen that grasses are reduced in growth and overtaken by weeds due to overuse, poor nutrients and soil conditions. Some of these plants are more vigorous and undisturbed, thus remain viable and become distinct from rest of the plants.

Many plants indicate whether the soil is acidic or basic. For example, Rhododendron, and Sphagnum indicate acidic soils. Many forest trees such as pines are calcium loving. Some mosses grow on lime stones.

The use of vegetation as biological indicator of environmental pollution has a long history. Knowledge of specific resistance to pollutant is of practical significance when plants grow in industrial or thickly populated areas. Species differ in sensitivity to pollutants. Plants are more sensitive to pollutants than human.

Therefore, plants can be used for indicators of environmental pollution. Mosses, lichens and some fungi are much sensitive to rain with sulfur. Many chemicals, fertilizers, pesticides and fossil fuels release toxic substances into the environment that are taken up by the plants from air, water, and soil. Plants growing in water are severely affected by toxic chemicals like cyanide, chlorine, phosphorus and excess nitrogen and heavy-metal compounds from sewage.

Pollution damage can be recognized by the accumulation of toxic material in the plant, by changes in pH, disturbances in water balance, reduced fertility under prolonged exposure.

**These plants are good indicators of soil types** –

- Slightly acid: Daisy, knotgrass and sorrel
- Very acid: Knapweed, and horsetail
- Slate type soil: Russian thistle, plantain, shepherd’s purse
- Hard Plan: wild mustard, chickweed, plantain, stinging nettle
- Dry soil: Mustard, Thistle, spurge, sweet clover, broom
- Sandy soil: broom, goldenrod
- Absence of Lime: foxglove, wild pansy, sorrel, broom

**Weeds are found in these type of soils** –

- Pigweed are signs that the iron-manganese ratio is out of balance. It may indicate there is too much iron or too little manganese. It also indicates a soil that is very high in potassium and manganese and low in phosphorus and calcium.
- Quackgrass is a sign of improper iron-manganese ratio.
- Bitterweed, trumpet vine, broom sedge, stinging nettle, horsetail and wild buckwheat may all indicate a calcium deficiency in the soil.
- Wild buckwheat also signifies low phosphorus and an excess of potassium.
- Burdock indicates low calcium, high potassium soils.
- Curly dock loves compacted soil, low calcium and extremely high magnesium, phosphorus and pot.
- Lambsquarters grows in low phosphorus, high potassium soils.
- Foxtail barley likes low calcium, high magnesium, as well as compacted and poorly drained soil.
- Knapweed grows in soils that are low in calcium, humus and very low phosphorus levels.
Can trees be indicator species of soil moisture conditions? In wet areas you will see large populations of sedges, willows, alders, and red maples. If you see lots of oaks and sugar maple this means drainage is excellent. If you see lots of happy tulip tree and sour gum this indicates that soils are consistently moist.

Other uses of plants as indicators are related to degree days and plant growth. Here are a few uses of plant development to help the gardener in their yard,

- Prune Roses & Fertilize Lawns when yellow Forsythia and Crocus start blooming
- Plant Pansies, Snapdragons, and other hardy annuals after the Aspens and Chokecherries leaf out
- Plant Peas when Daffodils begin to bloom
- Plant Lettuce, Peas, and other cool weather crops when lilacs have leafed out
- Plant Beans and Squash when lilacs are in full bloom
- Plant Cucumbers when lilac flowers have faded
- Plant Tomatoes, Early Corn, and Peppers when Apple Blossoms begin to fall and Flowering Dogwoods are in peak and when Daylilies start to bloom
- Plant Peppers and Eggplants outside when Bearded Iris are in bloom
- Plant Beets, Lettuce, Spinach, and Carrots when Dandelions are blooming
- Plant Potatoes when serviceberry or Juneberries flower

Gardeners are always trying to find out how to correct problems in their gardens or lawns, while most of the time we just need to observe the plants on our property. They will tell us what to do and when to do it.

(Cont’d from previous page, INDICATORS)

- Oxeye daisy prefers to grow in soils that are low phosphorus, high potassium and high magnesium soils.

Here are some frequently asked questions:

How could I tell if a site is too dry? Look for bird’s foot trefoil, crabgrass, quackgrass, rabbit foot clover, pigweed, speedwell, leafy spurge, yarrow, yellow wood sorrel, goose grass, and curly dock.

How can I tell if my property is too wet or has poor drainage? Look for algae on the soil surface, nutsedge, barnyard grass, rushes, smartweed, creeping bent grass, buttercups, chamomile, docks, and plantains.

How can I tell if a site has excessive surface moisture where water sits in a thin lens right at the top? Look for algae, moss, creeping bent grass, and annual bluegrass.

Can I tell by the plants if a site may have a low pH or acid conditions? Look for sheep sorrel. Also look for moss, rabbits foot clover, Coltsfoot, docks, wild strawberry, wild parsnip, wild radish, foxtail and mallow.

How can I tell if soil needs fertilizer? Look for potentilla, common mullein (wooley plant with yellow flowers), moss, and wild carrot.

How can I tell if nitrogen is low? Look for lots of chickweed, and lots of clover species, as well as bird’s foot trefoil, and vetches.

Can I tell if soil is compacted by looking at plant types? You will see lots of prostrate knotweed, goose grass, pineapple weed, annual bluegrass, broadleaf plantain, spurge, moss, chickweed, crabgrass, ground ivy, and pineapple weed.

Are there plants that indicate that the mowing height is too low? Lots of annual bluegrass, chickweeds, moss, creeping bent grass, purslane, crabgrass, dandelions, and ground ivy indicate scalping or low mowing height.

Are there plants that indicate that turf is in too much shade? Moss, mouse ear chickweed, common chickweed, creeping speedwell, violets, and ground ivy can all indicate a shade intolerance problem for turf.
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** Current Emails and Addresses
** As a reminder – keep both the Extension Office
** and Lynn Pruitt current on any changes of e-mail
** addresses, phone numbers, or mailing ad-
** dresses. These need to be current to keep you
** — our members — informed.
**
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April 9 General Meeting
Be sure to get this on your calendar:
“Plants That Have Changed History”

Plants and our symbiotic relationship with them
made humankind what it
is today. Dr. Rachel Horner
Brackett is a professor of
archaeology and anthro-
pology. This talk will look
at prehistoric evidence for
the plants that made a
powerful impact on both the earliest civiliza-
tions and the modern world.

2019 Muscatine County
Master Gardener Board
Board Members
Mary Danner (2019) Chair
Heather Haroun (2020) Vice Chair
Rachel Horner Brackett (2020)* Sec/Treas
Kathy Haltmeyer (2020)
Jane Hodge (2019)
Ron Jensen (2019)*
Ed Moreno (2020)
Maryrose Peterschmidt (2020)
Gretchen Nollman (Intern)

( )Year term expires as of Dec. 31
* Going off Board Dec 31, 2019/2020 but
eligible for re-election

Editorial Comments:
Please remember, this is YOUR newsletter.
Your articles, photographs and other tidbits are
welcome. Send them by the end of each
month to pruitt.lynn@gmail.com or call
563.260.0234

— Lynn Pruitt, Editor —