GROUNDED

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Be a Healthy Happy Gardener . . . *by Barbara Guilland*

Years ago I read a flyer at a Master Gardener Conference that was titled "Weeding for Weight Loss." I laughed about it then, but I ran across it again the other day and thought it would be fun to look into what the thinking was on gardening as exercise these days. I was delighted to see the number of articles in support of it. Gardening not only relieves stress, promotes mental health, boosts bone density, promotes healthy breathing, and strengthens muscles, it can actually help burn calories (maybe lose weight) doing it!

In an article by Laura MacDonald, The Center for Disease Control calls gardening a "moderate cardiovascular exercise" that in 30 to 45 minutes a day spent watering, weeding, planting, hoeing, raking, and digging could burn up to 300 calories. The internet article mentioned some calorie burning activities: For instance,

- Heavy yard work (landscaping, moving rocks, hauling dirt): 400-600 calories/hour
- Raking and bagging leaves: 350-450 calories/hour
- Pulling weeds, planting flowers, pruning , edging: 200-400 calories/hour
- Mowing the lawn: 250-350 calories/hour

All the major muscles of the body are used if you do your own gardening. So, it becomes important to learn to protect the muscles by stretching for a few minutes before and after gardening sessions and to be careful about how you perform all of your gardening chores.

An article by Linda Melone in the AARP Magazine listed some of the most common maneuvers in gardening. I've included photos of my resident gardener demonstrating them.

- Bending – The right way - Focus on tightening your leg muscles (quadriceps and hamstrings as you bend forward. Keep your knees slightly bent.
- Raking – The right way - Use short quick motions and keep the rake close to your body. Switch sides every 2 or 3 minutes.
- Pushing a wheelbarow – The right way uses core muscles, quadriceps, chest, shoulders, and arms. A load should only be as much weight as you can handle easily. First, use your leg muscles, not your back, to lift the barrow. Use your arm muscles to push the load forward.

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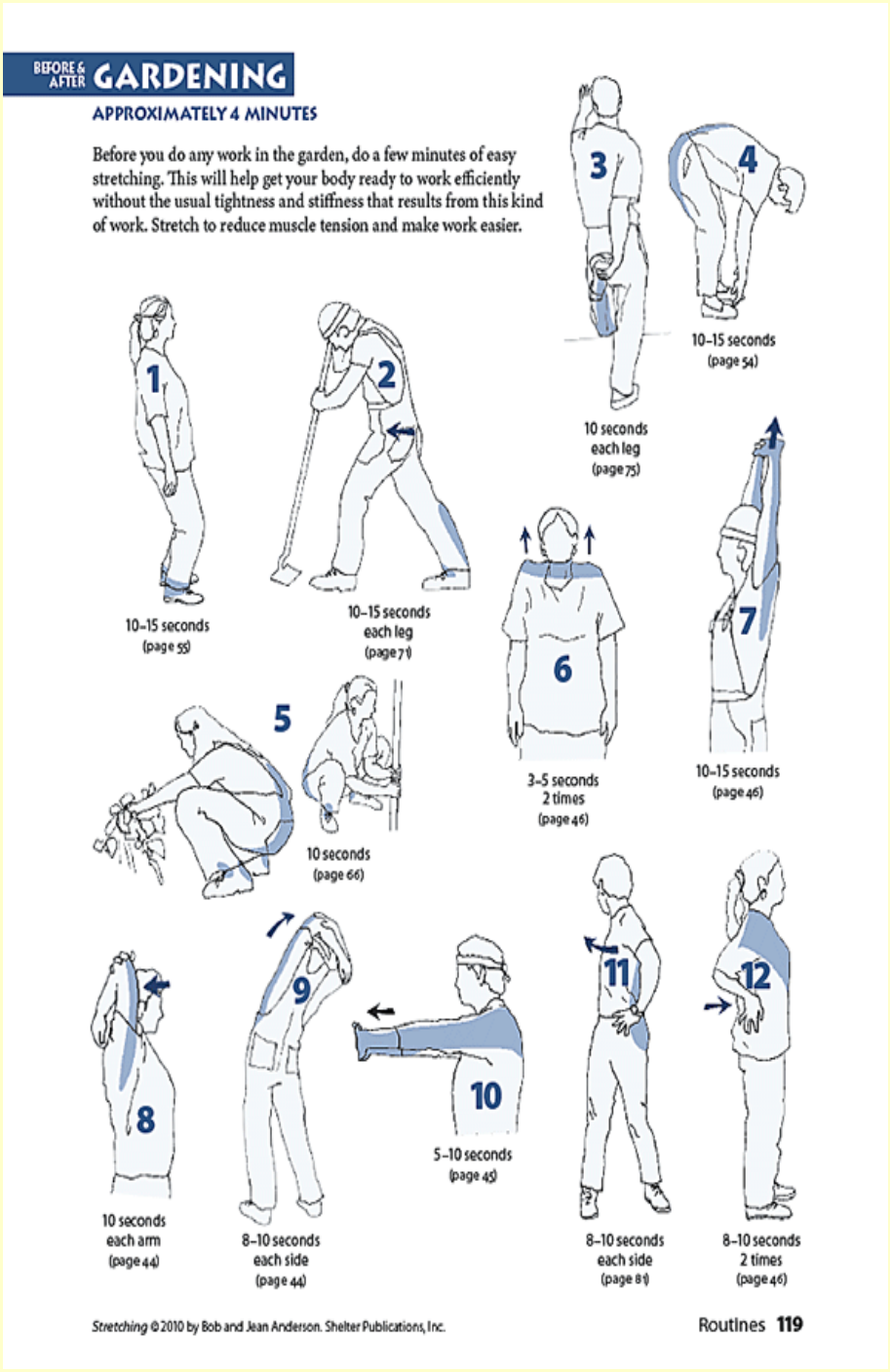
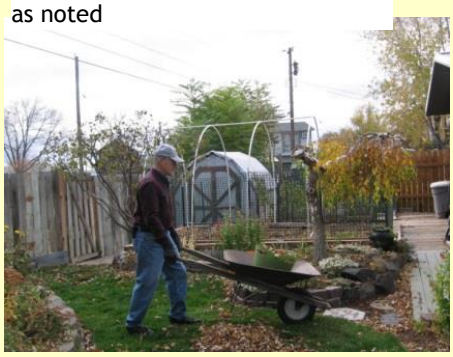


BEFORE & AFTER **GARDENING**

APPROXIMATELY 4 MINUTES

Before you do any work in the garden, do a few minutes of easy stretching. This will help get your body ready to work efficiently without the usual tightness and stiffness that results from this kind of work. Stretch to reduce muscle tension and make work easier.

Raking. All photos in this section taken by Barbara Guilland except as noted



Pushing a wheelbarrow

Squatting

Lifting

- Squatting – Keeping your torso upright, lower yourself until your bottom almost touches the ground. Try to keep your weight on your heels. OR, if you have stiff knees like Charlie and me, use a short bench or cart.
- Lifting – Uses buttocks, hamstrings, chest and quads. When picking up tools or lifting bags of soil, bend your knees and keep your back straight. Avoid bending too far to either side. Use both hands.

An article distributed by the American Cancer Society, *The Benefits of Gardening*, praises gardening as an ideal form of exercise because it involves physical strength, endurance, and flexibility. It can help you retrain muscles and improve coordination and flexibility. Furthermore, it is shown that gardeners eat more of and a wider variety of vegetables than non-gardeners thus taking in more anti-oxidants and phyto-chemicals and improving their general health.

If you want more of a workout from gardening, consider using the old fashioned tools: forget the leaf blower, use a rake. Use manual clippers and trimmers. Work at a steady constant speed. Make it a routine to garden several times a week rather than in one marathon session. Vary the chores so that you're not stressing one set of muscles for a long period of time. Warm up before starting and cool down with some stretches to relieve muscle stress, protect yourself from the sun with hats, sleeves, and gloves, and drink plenty of water when you're hot.

Gardeners know these rules of thumb even though we may violate them on occasion. Being outdoors, breathing fresh air, getting sunshine, tending to beautiful plants or growing food for ourselves is what makes us happy. Now If I could just garden year round . . . I still have to find something else to do that is as much fun in the winter months.

References

Anderson, Bob and Jean, "*Stretching,*" Shelter Productions, Inc. 2010
MacDonald, Laura, *9 Reasons Gardening is the Ultimate Mind-Body Workout*, https:/www.mindbodygreen.com
Melone, Linda, "*Exercise Tips for Gardeners,*" AARP The Magazine, July/August 2010
The American Institute of Cancer Research, "*The Health Benefits of Gardening,*" sparkpeople.com

And the Keepers Are . . . *By Kris Nesse*

Colorful keepers from the Nesse garden All photos in this section taken by Kris Nesse

Yes, frost blankets the garden and snow threatens, but more ripening tomatoes (from boxes in the shop) fill a pan to be roasted for sauce. As the pantry, storage area, and freezers can attest, it's been a great season for all manner of vegetables.

Preferred meaty texture

Before the seed catalogs arrive, it's time to evaluate varieties grown in 2017 and make decisions about whether to grow them again. While a given season's performance may not always eliminate a variety, a really poor showing could cross it off our list. We always critically evaluate tomatoes since we grow quite a few varieties. Lots of factors impact our assessment—appearance, flavor, texture, and productivity. Keep in mind, these ratings are completely dependent on the evaluator. For instance, when it comes to appearance, lots of folks favor round and red but we like variety in both color and shape. This year most varieties suffered growth cracks. I suspect environmental conditions (rainy spring, followed by heat) had something to do with that. Such minor imperfections don't really bother us.

Growth cracks may be unsightly though they do not seem to affect flavor

In addition, we prefer full-flavored fruit with balanced sweet-acid character and meaty texture so these attributes earn a higher score. Unfortunately, busy lives make it tough to count and/or weigh produce, so productivity is not very scientific.

Check out this year's Tomato Report Card:

Variety	Appearance	Flavor	Texture	Productivity	Next year?
Black Beauty	A Really black with crimson interior	B Fruity	C Tough skin	A Very productive	Probably not
Black Krim	B Growth cracks; dark purple-red	A Full flavored; perfect umami taste	A Dense and juicy	B Steady producer with late surge	Yes!
Blue Gold Berry	A Unique purple-yellow cherries	C Up against Sun Gold didn't stand a chance	B Tough skins	A Tons of little fruit	No
Celebrity	A Red and round	C Okay	A Firm and meaty	D Off year for this usually vigorous hybrid	Probably-- friends always request starts
Cherokee Purple	B Lovely mahogany; growth cracks	A We do prefer that smokiness	A Dense and juicy	D Even more of a poor showing than usual	Maybe
Nebraska Wedding	A Lovely round and orange	A Balanced acid-sweet	A Meaty	B Good showing for this vigorous determinate	Yes!!
Paul Robeson	A Brick red; no cracking	A Wondrous full, smoky flavor	A Perfect	D Very poor	Probably
Pink Berkeley Tie-Dye	B Some cracking but nice red with striping	A Sweet-acid and spicy	A Meaty and juicy	A Super productive; early	Yes!
Porterhouse	B Huge, given to cracking	B Very sweet	B Okay	C Monster fruit but not too many	No
Principe Borghese	A Pear-shaped, born in trusses	C Like most sauce tomatoes	B Very meaty	A Prolific	Yes, because it's the best drying type
Silvery Fir Tree	A Beautiful ornamental plant; nice tomatoes	B Sweet	B Juicy	A Earliest and latest producer	Maybe
Sun Gold	B Gorgeous orange cherries; tendency to split	A Fruity, tropical flavor	A Perfect juicy cherry tomato bite	A Early and productive	Yes!
Supersauce	A Big, oval-round	C Sauce tomato taste	B Very meaty; perfect for sauce	D Off year for this one	Probably as it is often requested
Sweet Sue Dwarf	A Smallish, bright yellow; sturdy hobbit-like plant	C Kind of bland	C Mushy	B Productive determinate	No
Valley Girl	A Round, red	C Okay	B Reasonable	D Disappointing for a hybrid	No

So, our must-grow-again list includes Sun Gold cherry and Nebraska Wedding—the golden winners. Pink Berkeley Tie-Dye and Black Krim are definite keepers with Cherokee Purple and Paul Robeson, two other full-flavored dark varieties, as possibilities. Seed catalogs are seductive, so keeping under a dozen varieties is tough! Of course, there are other vegetables we'll keep on the list. Early growers include Tenderheart

Napa cabbage along with the trio of Caraflex, Alcosa, and Super Red cabbage, grown close together for mini-heads. We love Bay Meadow broccoli and Bishop cauliflower.

Deep-pink Dancer eggplant was our favorite for the third year in a row. We'll grow ten hot pepper varieties again and at least four of the sweet peppers. Diva cucumber is still the favorite. Orange Sherbet melon produced probably 250 fruit in a 12' x 4' bed (spilling out and spreading all over), and our own Soap Lake version of Beauregard sweet potato will grow again. Ginger is one of my favorite plants to grow and I will plan on babying a short row of it once more. And there are all the greens and the root vegetables and the herbs to accommodate.

Time to start planning toward Garden 2018!

Keepers—gold Nebraska Wedding clockwise to Black Krim and Pink Berkeley Tie-Dye

Biodegradable Mulch Demonstration Day . . . ***By Mark Amara***

Twenty people attended a biodegradable mulch field day event at Jim Baird's Cloudview Farm, Ephrata, on October 13, 2017. Using a mulch laying machine, four commercially available products were spread (laid) in 135-foot-long rows on May 25, 2017. Mulches used were standard polyethylene black plastic, Weedguard Plus paper mulch (a Sunshine Paper Company product), Organix AG, a polylactic acid and petroleum-based mulch blend, and Bioagri's cornstarch-based mulch. The purpose of the October demonstration was to compare the mulches with one another and to incorporate the biodegradable mulches into the soil, using a variety of cultivation methods, and watching to see if and how long it takes for them to decompose into the soil.

Jeremy Cowan introduced the group to the project, identified mulches, and discussed **the requirements that mulches should have to meet the national organic standard.** Photo credit: Mark Amara

The Cloudview farm was the focal point for the follow-up field demonstration to evaluate mulch performance through the growing season. The mulches were provided to Cloudview as part of a tri-university USDA SCRI (Specialty Crop Research Initiative) 5-year biodegradable mulch research study with the Columbia Basin trial as the lone case study farm for Washington state in 2017. WSU researchers/extension specialists Jeremy Cowan, Jessica Goldberger, Katie Denzman, and Chris Benedict led the Cloudview effort to collect perceptions, observations, and ideas and create a video about how well the mulches do.

The non-biodegradable polyethylene plastic mulch was rolled up and discarded as it is known for its inability to break down. Photo credit: Mark Amara

To qualify as an accepted use in the national organic program the products are required to be 100% biodegradable, break down by 90% or more within 2 years, utilize no prohibited substances (like petroleum-based ingredients), and include no genetically modified components. While the paper mulch meets the national organic standard and completely disintegrates, the other products are not considered fully biodegradable and do not currently meet the National Organic Program standards. Since most products contain petroleum based components, it may not be possible for any product (except paper) to meet the NOP standard unless that standard changes.

The grower, Josh Ewert, talked about his efforts in working with the mulch materials. Mulched crops included melons, squash, and zucchini. For example, laying them out requires the ground to be adequately prepared (too much crop residue can puncture/stress the mulch when it is laid and too little may make the ground more susceptible to wind erosion). The ground must be level for a good uniform stretched unit, and securing the edges is a must to avoid the mulch blowing up or

tearing. On this point, Ewert did not see any apparent differences between the mulches. Each mulch helped with weed control early in the season until a canopy cover was obtained, though a few of them began degrading within about 3 months after installation. Weeds became a particular issue late in the summer as the mulches began tearing further, splitting or ripping.

Tractor rototills mulch into soil after the growing season. Photo credit: Mark Amara

At the October 13, 2017, demonstration day, the plastic drip tape was first pulled up, and the polyethylene mulch was rolled up and discarded. The other rows were mowed to remove vegetal material and then rototilled to about 4-5 inches deep. Scraps and shreds of mulch were still visibly present after the tillage on all but the paper mulch, which seemed to have nearly completely degraded. Plans were to add about 4 tons of composted mint, plant a cover crop (a triticale-vetch mix), and then evaluate mulch degradation in the spring before deciding what crop(s) to plant. Jeremy Cowan noted that the compost and cover crops help accelerate microbial action and will most likely help the mulches break down into microscopic pieces that are no longer observable.

The mulches show promise though their rates of degradation will need to be evaluated to determine if/how they can meet the NOP standards. And cost may be a determining factor since biodegradable mulches are 2-5 times more expensive than plastic mulch. All in all, the case study was an opportunity to test commercially available mulches on real farm situations. Though mulches are being utilized for commercial farm situations, they are also applicable and available for home gardeners.

Seed Saving Basics . . . *by Deana Riley*

October festivals, Halloween parties, corn mazes and seed swaps all mean fall activities abound. If you are like me, you've been browsing the garden looking for seeds to save and trying desperately to decide what the balance point is between seed saving for next year and what to leave behind for the birds this winter. As the growing season ends, so does the Ephrata Seed Library Gardening Series, which began in January 2017 with our first annual seed swap and ended October 14, 2017, with the Homecoming Harvest and Seed Swap. If you haven't been to a seed swap, I'd encourage you to grab any leftover seed you might have and head to one.

Fermenting tomato seed. Photo credit Home Grown Fun

Seed saving isn't difficult. Nearly 90% of seeds are simply harvested directly from the dry seed on the plant. The remaining 10% of seeds on the plant are considered wet seed. The process for drying wet seed requires a process called fermentation to kill bacteria on the seed prior to storage. Yes, seeds can carry "seed transmitted diseases," which can be prevented with a few easy steps.

Wet seed is produced where the seed is located inside the fruit in a gelatinous matter like in tomato, cucumber, or squash. To ensure the seed is disease free, put the seed through a process called "fermentation." At this point consider yourselves as "mad scientists." In this case you will put slimy things into glass jars, add liquid (to double the matter) and stand back (cue for the spooky laughter) while wringing hands in delight as the experiment is monitored. If all goes well, within a few days a thin film of bacteria (aka mold, like what you find on cheese forms; it won't hurt you, but please don't drink it) covers the top of the liquid and it's ready. Simply pour off any floating seeds (they won't germinate) and liquid. Then rinse and dry the seeds on a coffee filter or screen. Once dry, store the seeds properly and be rewarded with free seeds that are resilient and disease free. What a great reward.

Now let's talk about dry seed. **Dry** seed is any seed that isn't in liquid. Roughly 90% of seed falls into this category. Think of dandelions when their flowers turn to seed that gets blown away with the slightest breeze. Other examples are sunflower seeds or corn, flowers, herbs, or legumes (peas or beans).

Several methods can be used for harvesting dry seed, such as placing a bag over the flower (seed head) and gently shaking the plant to allow the seed to fall into the bag. Other seed, like peas and beans, are left on the plant until the pod is fully dry and then threshed (seed is released by breaking the pod). Normally a pod will turn a light tan and be brittle. Threshing the plant stems and pods is required to release the seed inside. To remove the seed from the chaff, use a process called winnowing. This can be messy and fun! Depending on your quantity, hand crush the pods, removing the seeds as you go, or by dancing (OK, maybe stomping) on the mass with soft soled shoes. Don't worry too much about harming the seed during this process. If the seed is truly dry it will require significant pressure to shatter it (test a few pods first). Dry seed rarely harbors seed transmitted disease. If you are concerned your seed may contain a disease, it is best to discard it. However, you can perform a process called "hot-bathing" with the seed or soaking minimally in a bleach solution. Each method has specific procedures and I'd encourage you to do your research.

Threshing

Shelling beans. Cleaning and sizing seed

Photo credits for all pictures: Seed Savers Exchange

Now that you've saved your seed and it's dry, how do you store them? The rule of thumb is the opposite of what you did to germinate them. Most seeds need heat, light and moisture to germinate, so to preserve them, keep them **cool, dark and dry**. Some store their seeds in cool basements, sheds, the garage, etc. Storing your seeds in plastic, paper or glass is all acceptable. However, be sure to prevent winter scavenging rodents from finding them. I like to add a few grains a rice to absorb any moisture (moisture equals swollen rice), but you may also use a strip of glued paper from the edge of an unsealed envelope. Put a piece of the envelope's dry glue edge in the container and check it the next day. If it's still dry to the touch, you're good to go. If it's sticky, remove the seed and continue drying.

One final note, please remember to save seed from open-pollinated or heirloom varieties that have been protected from cross pollination to ensure you have seed that will grow true to type. Now grab that pumpkin you're carving into a jack-o-lantern and save some seed.

Winnowing

Web References

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- J. H. McCormack, Ph.D, *Organic Seed Processing and Storage Guide* (online), 2004-2010, http://www.savingourseeds.org/plblications.html. Excellent information on all aspects of seed processing and saving for all vegetable seed growers.
- O. L. Justice and L. N. Bass, *Principles and Practices of Seed Storage* (online), 4978, Agriculture Handbook No. 506, United States Department of Agriculture, Science and Education Administration, Washington, DC, http://hdl.handle.net/1957/149
- C. Miles, *Small-Scale Thresher* (online), 2005, Washington State University, http://vegetables.wsu.edu/NicheMarket/SmallScaleThresher.html\

Print References

- S. Ashworth, *Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners*, 2002, Seed Savers Exchange, Decorah, IA
- M. Colley and J. Zystro, The Seed Garden, The Art and Practice of Seed Saving, 2015, Seed Savers Exchange, Decorah, IA

Test your knowledge *(from Grounded* NewsletterJune 2017, Vol 6, Number 3*)*

Test your master gardening knowledge by simply reading the *Grounded* newsletter. Each quarter a 20-question quiz is given based on information printed in the previous newsletter (http://extension.wsu.edu/grant-adams/gardening/master_gardeners/) articles. Anyone can complete the quizzes for fun OR Master Gardeners (MGs) may complete and submit their answers to the Program Coordinator and record 1 hour toward continuing education. Answers are available in the next newsletter edition.

1. Edris Herodes was a Master Gardener known for many things including her kale salad?
   a. True
   b. False

2. "Deadheading" is a term used to describe the removal of old blooms:
   a. True
   b. False
3. Deadheading is mainly to encourage new flowering during summer months:
   a. True
   b. False
4. *Campanula rapunculoides* can:
   a. Spread rhizomes and root fragments up to 8 inches deep
   b. Readily reseeds
   c. Can grow in wet/dry soil
   d. All of the above
5. Creeping bellflower is not listed as a noxious weed in some states and provinces and often is referred to as a useful ornamental shrub:
   a. True
   b. False
6. This tree grows readily in poor soils and low moisture, can grow 30-50' high and is still used in some states as a shelterbelt or windbreak:
   a. Sugar Maple
   b. Weeping Elm
   c. Siberian Elm
   d. None of the above
7. A bindweed plant can produce 500 seeds which may remain viable up to 20 years:
   a. True
   b. False
8. Tree of Heaven scientific name is:
   a. Ailanthus altissimus
   b. Prunus tomentosa
   c. Campsis radicans
   d. None of the above
9. When maple trees (*acer*) are under drought stress, they will often shed thousands of winged seeds:
   a. True
   b. False
10. Fall vegetable gardening is possible with the following vegetables:
    a. Carrots, green onion, turnips and Kale
    b. Beets, broccoli, Swiss chard and lettuce
    c. Peas, radishes, spinach and cabbage
    d. All of the above
11. The Plant Hardiness Zone Map (PHMZ) indicates when the first and last frost date is for a specific area. Grant-Adams counties are in which zone?
    a. Zone 5a
    b. Zone 6b
    c. Zone 7b
    d. A combination of Zone 6a/6b and 7a
12. Gardening can provide more benefits than simply the beauty they bring. You can plant more than flowers by inviting your children or grandchildren to the garden with you:
    a. True
    b. False
13. The higher the level of oil in a seed directly relates to its decline in germination?

a. True
b. False

14. Cover crops can help deter erosion, and:
    a. Improve tilth
    b. Maintain or improve soil fertility
    c. Control weeds and build healthier ecosystems
    d. All of the above
15. The Washington Invasive Species Council and a consortium of agencies and universities participate in the August "Tree Check Month". Wood boring insects are of concern and include:
    a. Citrus longhorned beetle (*Anoplophor a chinensis*)
    b. Emerald ash borer (*Agrilus planipennis*)
    c. A and B above
    d. None of the above
16. Nationally, invasive species cost more than $137 billion annually in:
    a. Crop damage
    b. Fisheries reduction
    c. Forest health
    d. All of the above
17. Nanking Cherry (*prunus tomentosa*) is a shrub with berries beloved by birds. The shrub can be pruned into a tree and the berries may also be used in jams, jellies and preserves:
    a. True
    b. False
18. The description for this plant included words like "really scary, zombie-like qualities and back from the dead". It is the:
    a. Trumpet Vine
    b. Virginia Creeper
    c. Bindweed
    d. None of the above
19. *Campsis radicans* is the scientific name for this:
    a. Trumpet Vine
    b. Nanking Cherry
    c. Citrus longhorned beetle
    d. Maple tree
20. Residents should report invasive insects or signs of them by taking photographs and reporting the find immediately to www.invasivespecies.wa.gov/report.html. The WSU Master Gardeners can help identify suspect insects:
    a. True
    b. False

Answers for Newsletter Vol 6, number 2): 1-c, 2-a, 3-a, 4-d, 5-a, 6-d, 7-a, 8-a, 9-b, 10-d, 11-a, 12-d, 13-d, 14-a, 15-d, 16-d, 17-b, 18-d, 19-c, 20-a

Edris' Kale Salad

Sadly, in our last newsletter we reported the passing of our dear friend and fellow master gardener Edris Herodes. She was known for her curiosity, passion for growing things, and desire to serve her community as well as for her kale salad! We reached out to her family who provided the recipe.

Edris' Kale Salad

Clean and finely chop some kale, add some lemon juice, garlic powder, parmesan cheese, a small amount of onion and a little oil.

That's it. Her humor is still with us and her kale salad. Enjoy.

Recommended Reading

- Chalker-Scott, Linda, 2017, *A Gardener's Primer to Mycorrhizae: Understanding How They Work and Learning How to Protect Them* http://extension.wsu.edu/publications/pubs/fs269e/?p-page=1

Washington State University (WSU) articles:

- Granastein, David, Andrew McGuire, and Mark Amara, 2017, *Improving Soil Quality on Irrigated Soils in the Columbia Basin*, WSU Extension, FS252A, http://extension.wsu.edu/publications/pubs/fs252e/. The principles and practices identified in this article can be applied to home gardens.

- McGuire, Andrew, David Granastein, and Mark Amara, 2017, *An Evaluation of Soil Improvement Practices Being Used on Irrigated Soils in the Columbia Basin*. WSU Extension, TB141 https://research.libraries.wsu.edu/xmlui/handle/2376/7298, Though the emphasis is on large-scale agricultural operations, the practices contained therein apply similarly to small-scale home gardens.

Additional recently released publications available through WSU:

- https://pubs.wsu.edu/
- http://cahnrs.wsu.edu/communications/getting-published/bookstore-update/
- Cottonwood leaf beetle: Insect Pest Management in Hybrid Poplars series https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15990&SeriesCode=&CategoryID=&Keyword=fs278
- Lady Beetles: Should We Buy Them For Our Gardens? (Home Garden Series) https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15991&SeriesCode=&CategoryID=&Keyword=fs268e
- Speckled green fruitworm: Insect Pest Management in Hybrid Poplars series https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15992&SeriesCode=&CategoryID=&Keyword=fs270e
- Potential Contaminants in Residential Rain Barrel Water (Home Garden Series) https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15993&SeriesCode=&CategoryID=&Keyword=FS280
- Poplar satin moth: Insect Pest Management in Hybrid Poplars series https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15994&SeriesCode=&CategoryID=&Keyword=fs277
- Poplar/willow borer: Insect Pest Management in Hybrid Poplars series https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15995&SeriesCode=&CategoryID=&Keyword=fs267e
- Forest and western tent caterpillars: Insect Pest Management in Hybrid Poplars series https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15997&SeriesCode=&CategoryID=&Keyword=FS276

Save the Dates:

- Saturday, January 27, 2018. National Seed Swap Day, Ephrata Public Library, Noon- 3 pm.
- Saturday, April 21, 2018. Fourth Annual Columbia Basin Eco-Gardening Symposium, co-organized by the Grant-Adams Master Gardeners and the Grant County Conservation District, Columbia Basin Technical Skills Center, Moses Lake, 9- 1 pm. Details are forthcoming in our March newsletter.