

Elaine Mills & Elizabeth Collaton, presenters of Climate-Conscious Gardening

Questions on Effects of Climate Change

As a further response to a question on **composting**:

- Some carbon dioxide is released during composting, but it is emitted from the natural process of aerobic decomposition rather than as a result of human activity. Good composting practices that balance the ratio of brown material (carbon) to green material (nitrogen) provide the proper amounts of aeration and moisture to minimize greenhouse gas emissions.
- When food and other organic waste is sent to landfills, no air can pass through, and the anaerobic conditions lead to the emission of significant amounts of very potent methane gas. By reducing this waste, home or municipal composting helps reduce this gas.
- When compost is applied to the soil, it sequesters carbon from the air and stores it safely in the ground.
- Vermicomposting, the use of worms to compost kitchen scraps, can work well for people with limited space. It produces only negligible amounts of greenhouse gases.

For a discussion of the question of **changing ranges of native plants**, please see an article Elaine prepared for the MGNV website in her climate-conscious gardening series, [“Making Wise Plant Choices, Part 4: Are Southern Species Best?”](#)

On the question regarding the potential use of cold stratification for **growing garlic** in a changing climate:

- Garlic grows best in Hardiness Zones 1-5. It needs to experience at least 10 weeks of cold for the formation of healthy bulbs.
- Gardeners in USDA zones 7 through 9 may need to look for gourmet or heirloom cultivars that grow well in warmer weather.
- Softneck garlic is best for warm climates. Gardeners can mimic the natural chilling process (vernalization) that would occur in colder climates by chilling garlic in the refrigerator for a minimum of 1 to 2 months before planting.
- Garlic benefits from a layer of mulch, such as straw, shredded leaves or grass clippings, two to three inches thick for protection from extreme heat and drought.

One participant requested examples to explain the significance of the **lack of synchronization between plants and animals** caused by climate change.

- Phenology is the study of cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life.
- If warm spring temperatures cause leaves to mature before the caterpillar stage of butterflies and moths develops, the larvae will not be able to use these plants for nourishment. (See my presentation on [“Keystone Species of Native Plants”](#) for more information on this.)
- The peak mass of caterpillars in a given region must be timed with the hatching of songbirds since 96% of these birds use caterpillars as food for their young.
- Some native bees have special relationships with specific native plants. If their emergence is not synchronized, the plant may not be pollinated, and the bee may not have necessary nectar for feeding and pollen as nourishment for its young. One good example of this is the specialist bee, *Andrena erigeniaea*, and the wildflower Spring Beauty (*Claytonia virginica*).
- Another issue is posed by invasive plants, such as Japanese Barberry and Multiflora Rose, which may leaf out in natural areas as much as 30 days before native Spicebush and Flowering Dogwood, compromising their growth.
- In addition, knowing the timing of seasonal weather patterns can help with providing habitat for migrating birds, better pest prediction for improved integrated pest management, and selection of crops to avoid economic losses.

Questions on Reducing Carbon Footprint

Regarding the question about **whether reel mowers are effective**:

- Reel mowers can be a good choice for some gardeners. In addition to being environmentally friendly, they have lower maintenance costs than gasoline mowers, are lightweight and safer to use, and are noise-free.
- Some argue that the blade orientation on reel mowers (perpendicular to the ground) results in more of a scissor-cut of turf, leaving it healthier, less torn or ripped, and thus less vulnerable to insects and disease.
- The blades of reel mowers need to be sharpened regularly, and are less effective on tall grass, weeds, and other plants with woody stems.

More on **electric lawnmowers**:

- Electric lawnmowers and other electric lawn tools have improved considerably in the last five years or so, allowing gardeners to dispense with extension cords and enjoy long-life and lightweight, easily rechargeable battery-powered equipment.

- In addition to ditching the gasoline and engine oil, users will also find they don't need to replace spark plugs, rip cords, and filters or to use ear protectors, as these machines are cleaner and quieter than gas-powered alternatives.

Regarding the **lessening of development** to mitigate climate change:

- Concrete is the world's most widely used building material, and its production for sidewalks, buildings, and bridges is responsible for 8% of the carbon dioxide emitted into the atmosphere globally.
- The primary energy source in the production of steel is coal, and the use of this fossil fuel contributes to 6 to 9% of global CO₂ emission.

Questions on Managing Water Wisely

In response to questions about the use of **rain gardens** to manage stormwater:

- As with any garden, proper maintenance of rain gardens ensures success in mitigating the impacts of sudden and sometimes heavy rainfall due to strong storms.
- Once planted, rain gardens should be mulched with two to three inches of shredded hardwood (not bark chips which float away) to help get plants established. Regular mulching will suppress weeds and help plants take root.
- In subsequent years, any erosion around the berm/boundary can be remedied by adding compost or soil, and periodic clearance of dead plant matter can help maintain the desired depth of the raingarden.
- A rain garden dug at a depth of two to three feet is not likely to interfere with the water table.
- For more information on rain gardens and their maintenance, see [Three Rivers Rain Garden Alliance](#).

Questions on Building Soil

Regarding the **control of invasive Japanese stiltgrass**:

- Invasive stiltgrass is an annual, but can reseed itself, so the key to eradication is to prevent seed production. Hand-pulling is recommended before stiltgrass flowers and sets seed later in the summer. Thankfully, the plant has a very shallow root and is easy to remove.
- Seeds from past years may still reside in the soil, sometimes for as long as three years, which will require persistence in eradicating the plant from gardens, lawns, and woodlands.
- Repeat mowing at a low level can also prevent the plant from setting seed.

- If these strategies are impractical due to the environment, gardeners should consult experts for advice on the application of a pre-emergent herbicide next spring. Be aware that application of these products may be prohibited on public lands.
- It is always beneficial to remove stiltgrass because it very quickly crowds out native plants. Conversely, some studies have shown that native plants do bounce back to colonize areas previously overrun by stiltgrass.

Questions on Rethinking Lawn

Regarding the **use of native ground covers** to replace lawn or invasive ground covers and control soil erosion:

- **Allegheny Spurge** (*Pachysandra procumbens*) is native to the southeastern United States and is an alternative to invasive Japanese Pachysandra. It is semi-evergreen in our region, producing tiny, white, fragrant flowers in the spring ahead of bold new green leaves. As a ground cover, it is slow-growing but sturdy and provides shade and protects soil from erosion through spread of rhizomes. It performs well in a variety of soils and pH conditions.
- **'Gro-Low' Fragrant Sumac** (*Rhus aromatica*) is a compact, low-growing, low-maintenance ground cover shrub adaptable to any soil and requiring very little water. Fragrant spring flowers are followed by rich red foliage in the fall. This native plant is rabbit-resistant and attracts bees and butterflies for nectar and birds for its fruit.
- **Golden Ragwort** (*Packera aurea*) boasts yellow flowers in April, attracting bees and butterflies. It achieves a ground cover effect from the spread of its mounding, evergreen basal foliage, about three to five inches in height. It does well in a wide range of soil and light conditions.

Regarding the **use of 'No-Mow' fescue blends** for low-maintenance lawns:

- The 'No-Mow' fescue blend, which consists of six different cool-season fine fescues, is best sown from late August through mid-October. When seeded in the fall, the fescue seedlings experience less competition from weeds, mature faster, and usually form a sod by the end of the following spring.
- Site preparation requires a "clean slate" for the new grass to germinate and grow properly in a yard. All existing vegetation (turfgrass and weeds) must be removed to avoid competition with the seeds for nutrients, moisture, and sunlight.
- There are four options for preparing the site from most to least sustainable:
 - Smothering the lawn with black plastic, old carpet, plywood, or a thick layer of newspaper for a full growing season.
 - Removing the top several inches of grass and soil using a sod-cutter and tilling lightly.
 - Cultivating two to three times at one-week intervals to kill the lawn.



- Applying an herbicide when the lawn is actively growing in fall or spring and tilling the sod under when the grass has turned brown.
- While this process can involve upfront costs and careful preparation, the long-term benefits include infrequent mowing, no need for nitrogen fertilizer, and formation of a dense, drought-resistant sod. Periodic thatching may be required in some areas.

Questions on Making Wise Choices of Plants

Regarding **good sources of native plants**:

- Northern Virginia residents can consult the list of [native-only sellers](#) on the website of Plant NoVA Natives.
- Attendees from other parts of Virginia should check with their local chapter of the [Virginia Native Plant Society](#).
- Attendees from other areas should consult the native plant society in their home state.

Regarding the **preference of landscapers for odd numbers of plants**:

- Even numbers of plants are more easily divided into equal halves, which is more appropriate for very formal, man-made settings.
- When plants are installed in odd numbers (3,5,7), they are viewed as more of a flowing group which appears more natural.

