

Environment

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EARTH TALK

Since nitrogen oxide compounds are components of smog and are common water pollutants, does nitrogen-enriched gasoline create additional pollution?
— Rick Oestrike, Poughkeepsie

It might seem like adding nitrogen to gasoline is all the rage among oil companies today, but the idea has been around for years. The U.S. Environmental Protection Agency requires automotive fuels sold in the United States contain detergents to help scrub away pollution before it goes out a vehicle's tailpipe. Some manufacturers have found adding nitrogen to the detergent helps keep an engine cleaner by reducing the carbon buildup in the gas tank that can in turn "gunk" up the engine and lower performance.

The nitrogen itself also has a direct cleaning effect, breaking down carbon deposits that can harden on an engine's moving parts. "If too much collects, this gunk can negatively affect engine performance, causing your car to burn more oil, overheat and burn gasoline less efficiently," reports John Fuller on the How Stuff Works Web site. Valves inside an engine are designed to let in a specific amount of air and fuel, he adds; when that process is slowed by carbon build-up, a car won't perform up to its potential.

But while nitrogen-enriched gasoline may provide a slight bump in engine performance, some worry about adding to cars' already substantial pollution load, especially nitrogen oxide (NOx), which contributes to smog, acid rain and other environmental problems. André L. Boehman, a Penn State University engineering and fuel science professor, says that the addition of more nitrogen to the fuel mix "generally will increase NOx emissions." Boehman would like to see more research done so we can know for sure if and how much additional NOx pollution is caused by the use of nitrogen-enriched gasoline.

For its part, Shell Oil, which last spring launched its own form of nitrogen-enriched gasoline now for sale at all of its U.S. filling stations (it is mixed into all three grades of gasoline the company sells), denies the additional nitrogen has any substantive impact on pollution levels. "Most nitrogen in vehicular NOx emissions does not come from gasoline," the company told The New York Times. "The nitrogen is primarily from the incoming air that mixes with gasoline inside an engine. NOx is produced when the nitrogen from the air reacts with oxygen under high engine temperature and pressure conditions."

Boehman concedes the detergent additive may have such beneficial effects on engine operation, fuel system performance and other related features of engine system operation that they outweigh the adverse effect of increased NOx emissions. "For instance, if improved detergency helps to increase fuel efficiency so that you burn less fuel, you may slightly increase the NOx emissions



A honeybee perches on a purple cone flower. Choosing the right plants is important for nurturing honeybees. Below, bees gather on a frame to make honey. One will produce one-twelfth a teaspoon of honey in its lifetime.

Hello, honeybees

A healthy balance of the right plants attracts these pollinators to perform the final task of their lives: foraging

Grai St. Clair Rice
For the Poughkeepsie Journal

Under a protecting quilt of snow, we can envision the roots of our land, our communities and our souls quietly growing in anticipation of spring. The seed and plant catalogues have arrived in the mail, and we nurture our winter-selves in the warmth of our homes with visions of summer's abundance.

In the winter cluster of their colonies, honeybees vibrate their wing muscles to create warmth using energy from last year's blossoms now turned into stored honey. The bees revolve protectively around their queen, waiting for the spring brood cycle to begin.

In the realm of environmental health, honeybees and other important pollinators can no longer be taken for granted. Their contributions — and our dependence on them — have been established by evolution, yet our modern environment and practices have swayed this balance into crisis. With a little education, each of us can take some responsibility for the health of pollinators.

Take this quiet winter time to envision a landscape inviting to honeybees, with a range of healthy forage through the seasons and an awareness of healthy lawn care. Think about your area as a whole, including trees and bushes that can easily provide a volume of forage preferred by honeybees, and design for large masses of plantings. Think pollen, as well as nectar, because bees feed pollen to their young.

Honeybees are single-source foragers, meaning they will only go to one kind of blossom during a foraging trip, or even during the course of a day. They won't go from an apple blossom to a dandelion. This makes honeybees the most productive pollinators, since going between flowers of the same kind transfers the pollen, causing the flowers to become fruit.

When planning a garden for honeybees, remember they are unlikely

to visit a small patch of 10 flowers, since this may not supply the volume of nectar for their single-source trips. Also, because honeybees have a shorter proboscis, or strawlike tongue, than other pollinators, including the longer-tongued butterflies and bumblebees, certain types and styles of flowers don't work as nectar sources for honeybees.

What you don't put in your yard is as important what you do. It is important to become informed about the ill-effects of pesticide and fungicide even in the home. People are often unaware of the hazards in common products and practices that can affect people, as well as pollinators.

Michael Schacker's book "A Spring Without Bees" (now available in paperback) is a good place to gain knowledge of some of the issues and concerns that threaten our food supply because they kill bees, with a focus on the neuro-toxin strain of pesticides in widespread use.

Honeybees are the most efficient pollinators for agricultural practices. They are also the most vulnerable, for some of the same reasons. Unlike solitary bees, yellow jackets or bumblebees, honeybees live in colonies that overwinter as dependent communities. Their cohesive social structure generates a productive volume of foraging bees, capable of volume pollinating.

The standard hive boxes are the most common accommodations for these social insects, allowing them to be moved for strategic pollination purposes into massive orchards and mono-crop farm acreage that utilize detrimental pesticides and fungicides. These management practices contributed to the colony collapse disorder experienced primarily by migratory beekeepers.

While honeybees may be the main instrument of pollination, they register shockingly low on commercial agriculture's economic value scale, despite rising pollination costs. Large agribusiness practices will be difficult to change, but a return to the model of smaller family

farms or community-supported agriculture projects, as well as a rethinking of our own practices, is a good path forward.

Throughout the year, honeybees work tirelessly to maintain their colonies with tasks ranging from brood bearing and comb building, to the final job of their short lives — foraging. A honeybee will produce only one-twelfth a teaspoon of honey in its lifetime, with 2 million to 5 million flowers visited to make a pound of honey.

If a colony has not stored sufficient honey and built up a healthy population of bees, the colony will die. Last year's bee season was problematic for honeybee colonies' survival throughout our region. Weather and dwindling forage led to a nationwide dearth of honey stored in hives for their survival.

Understanding the contribution honeybees make to our vegetable and flower gardens and turning that appreciation into practice is something we can do as individuals and municipalities. Encouraging a more natural habitat in our yards and along our roadways will go a long way to healing the imbalance. Private and public landscaping expenditures can keep an eye toward providing a healthy balance of forage sources. Choosing trees, ground covers, hedges and flowering plants with the honeybee in mind.

Keeping bees does not require much space or time, but it does require good forage. Nurturing honeybees by respecting their instincts and spirits is a life-altering experience. It is a way to share in the beauty and fruitfulness of evolution and learn from honeybees' industrious colonies. It changes how we participate in nature and how we think about community. You might even get to share in their gift of honey.

Plant and watch and wonder at our amazing honeybee and our beautiful planet.

Grai St. Clair Rice is co-founder of HoneybeeLives.

WHAT'S ABUZZ

CLASS COMING UP

What: Introductory Lecture on Honeybees and Organic Beekeeping. This is an opportunity to learn about the beauty of honeybee society and the politics of pesticides, with a broad overview of beekeeping. It is ideal for a general public, as well as those considering beekeeping.

When: 6–8:30 p.m., Tuesday.

Where: Sustainable Living Resource Center in Rosendale.

Cost: \$25. Registration required.

Contact: honeybeelives@yahoo.com or call 845-255-6113.

Web: www.honeybeelives.org

WORKSHOPS

HoneybeeLives is teaching two-day workshops for Organic Beekeeping in Rosendale on three weekends this winter. The two-day workshops can be taken as individual sessions or together.

FIRST DAY

What: "Introduction to Organic Beekeeping: Planning a New Hive for Spring." Learn the basic requirements and responsibilities for first-time beekeepers. Understand the

mechanics of a hive, the tools involved, elements of site selection and an understanding of a naturalist approach to the needs of bees.

When: 10 a.m. to 6 p.m. Jan. 30. Class repeats Feb. 6 and March 6.

Cost: \$95 for individual class or \$175 for this class plus second day of the workshop. Registration required.

Contact: Call 845-255-6113 or e-mail HoneybeeLives@Yahoo.com

Web: www.honeybeelives.org

SECOND DAY

What: "Understanding and Caring For Your Honeybees." Topics will include: hive congruency and design to benefit the colony, including top-bar hives; honeybee health and disease management the natural way; seasonal concerns and methods and the value of respecting the lives and needs of your bees.

When: 10 a.m. to 6 p.m. Jan 31. Class repeats Feb. 7 and March 7.

Cost: \$95 for individual class or \$175 for this class plus first day of the workshop. Registration required.

Contact: Call 845-255-6113 or e-mail HoneybeeLives@Yahoo.com

Web: www.honeybeelives.org

RESOURCES

Here are two good sources for plant choices:

■ HoneybeeLives has a specific Honeybee Plant List for the Northeast available to download from the Web site: www.HoneybeeLives.org

■ The Pollinator Partnership has impressive regional guides for all pollinators that can be downloaded using environmental region or ZIP code: www.pollinator.org

BEEKEEPING GROUPS

Our region has four beekeeping associations:

■ Ulster County Beekeepers' Association meets in Rosendale www.Ulsterbees.org

■ Beekeepers' Association of North Dutchess meets in Tivoli (organized by Anarchy Apiaries).

■ Catskill Mountain Beekeepers meets in Cairo, www.Catskillbees.org

■ Southeastern Beekeepers Club meets in Middletown: www.sebcbees.com

