



Bringing the Farm Inside

The **locavore** movement is alive and well in Connecticut as residents continue to crave food that is grown close to home. This demand may be one reason for the **increase in farms** in our state. And, a lot is happening on the farm these days, so much so, that the farm itself may not include acres of land, soil and sunlight.

Farmers are growing vegetables in non-traditional ways, planting crops indoors in water rather than soil. Industrial buildings once used for warehouses or manufacturing in urban areas like Bridgeport and Meriden, and greenhouses in other parts of the state, are being used instead of acres of land. Two methods that are sprouting up in CT are hydroponics — using water and nutrient solutions, and aquaponics — using fish to produce nutrients for the plants. In aquaponics, the fish are periodically harvested and can be eaten. Both methods, when practiced indoors, use lighting in place of sunlight as well as mechanical devices such as pumps and blowers.



Trifecta Ecosystems' Farm Manager Jill Shea observes roots to determine plant health.

Fast growing vegetables that have shallow roots, such as lettuces, spinach, kale, and herbs do quite well grown this way. Typically, from seed to harvest takes about 4–5 weeks, with a series of transplanting. Tomatoes, peppers and cucumbers are also being produced at or planned for some CT sites.

Indoor farming allows salad greens and other crops to be grown all year long regardless of weather conditions. This is a major benefit since crops can often be lost by an early frost or a very wet spring; damaging heat waves, droughts and severe flooding are expected to be more frequent as a result of climate change. Diseases and pests are less of an issue so fewer, if any, pesticides are needed; there is no soil run-off and water can be re-used. Often, more can be planted indoors than outdoors per acre and **vertical farming**, where plants are stacked in layers one above the other, is an option. Hydroponic and aquaponic operations can be certified organic under USDA regulation.

One downside is the high amount of energy needed to grow the plants. LED lighting can reduce the amount of electricity used and reduce costs; the lack of diesel fuel from not using tractors or long transportation miles is another offset. Funding may be available from **EnergizeCT**, **CT Dept of Economic & Community Development**, **USDA's Rural Energy for America Program** (REAP) as well as technical assistance from the **CT Farm Energy Program**.

It's hard to know exactly how many indoor farms are operating in CT but **according to IBIS World** there are 2,808 hydroponic farms in the US and the trend is "growing."

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Trifecta Ecosystems' 3,500 sq. ft. indoor aquaponics farm in Meriden. Harvesting lettuce for WeeklyHarvest

Trifecta, an aquaponics farm in Meriden whose mission is to create the *City that Feeds Itself*, is one of CT's indoor farms. No pesticides or herbicides are applied; ladybugs and praying manti help to prevent pest outbreaks. A closed loop system is used so no water or waste is discharged; it all goes back into the system. They've set up a CSA program, WeeklyHarvest, supplying fresh greens, herbs, and other produce to the local community; developed a K-12 curriculum on sustainable farming; and provided small aquaponics systems to over 17 schools for hands-on learning.

MetroCrops is an urban high density indoor farm (UHDI) located in Bridgeport whose greens are grown from organic seeds and no pesticides or herbicides are used. They sell to restaurants and at the New Canaan Farmer's market.

Maple Lane Farms in Preston is selling their hydroponic produce to Stop and Shop stores and other retailers. **Two Guys from Woodbridge** mentions on their website that hydroponically grown vegetables can have higher vitamin content. Other farms in CT include **Connecticut Hydroponic Farm** in East Hartford, **H2O Farm** in Guilford, **Bigelow Brook Aquaponics Farm** in Eastford, **Four Season Farm** planned for the Suffield area, and a possible future indoor farm in Hartford.

More Buzz on Bees



Bees are essential to our food supply and pollinate about 2/3 of the fruits and vegetables we eat. **Previously** we reported on the dwindling population of bees and new research has been done at Connecticut nurseries with interesting results.

Neonicotinoid insecticides (particularly imidacloprid, thiamethoxam, and clothianidin) have been banned in Europe because they are suspected to harm both wild bees and honey bees. However in the US, they are allowed for many agricultural uses including control of insects at ornamental plant nurseries. Because neonicotinoids can persist in woody plant tissues and in potting soil for years, and can travel into the pollen and nectar of flowers where bees may be exposed, a **study was done by the CT Agricultural Experiment Station** to determine the amount of these pesticides in the plant pollen at three commercial nurseries.

Three honey bee colonies were placed at each nursery in locations where they would not be directly sprayed. Pollen traps (devices to collect pollen from the legs of worker bees as they return from foraging) were installed in all the hives, then collected and analyzed for a range of pesticides.

In general, neonicotinoids were found at relatively low concentrations at two of the nurseries but some samples at the third nursery had exceptionally high levels. The higher sample had more *Spiraea* pollen. According to the nursery manager, one treatment with acephate and two with thiamethoxam were made to *Spiraea*. Information was shared with these nurseries so they can modify their pest management practices for this plant. *Spiraea* is one of the most popular garden plants with flowers that vary in color from white to pink, purple and red tones. One of the 80 different *Spiraea* species is known as bridal-wreath.

Overall, most of the samples were below levels the US EPA considers to have effects on honey bee colonies. Other bees, such as bumble bees and mason bees, which are also important pollinators, may be more sensitive; these bees do not live in large social colonies as honey bees do, which may buffer the effects of occasional spikes of pesticide contamination.

Find out what you can do to **protect bees** and other **pollinators**. Celebrate **National Pollinator Week**, June 18–24.

Transit Is Driving Change for CT Communities

Transit-oriented development (TOD) — the terminology may be new, but the concept is not. The basic idea is to create neighborhoods and a town center that include transit, housing, and shopping, where residents can walk from home to the grocery store and also hop a bus or train to work. Studies say this lifestyle is most appealing to young people who find owning a car to be a burden and to baby boomers looking to escape an oversized house far from amenities.

TOD has been talked about in Connecticut for the past few decades but is really taking off now thanks to *CT Fastrack* and the new *CT Rail* Hartford line (New Haven to Springfield)! These transit options are changing the landscape bringing new opportunities everywhere in CT — from urban communities like Meriden and Danbury, suburbs like **East Windsor and West Hartford** and even smaller towns like Bethel.



Meriden Green showing flood control project and surrounding development

Development that takes advantage of access to transit lessens environmental impact by reducing traffic, air pollution and energy use as a result of driving less. Principles of sustainability and resilience, such as walkable/bikeable streets and green infrastructure that captures and filters stormwater and addresses frequent flooding are also being addressed.

Meriden is a great example of a downtown focusing new development around transit. The new **CT Rail** Hartford line will stop at this station beginning summer of 2018. The area surrounding the train station presented challenges including regular flooding of the aging housing stock and distressed public housing located in the 100 year floodplain, plus clean-up of toxic chemical contamination.

Meriden 2020 addressed these issues and gave rise to a renovated train station that looks out over newly-built mixed-use housing, retail shops and the park-like Meriden Green. The Meriden Green is part of the overall Harbor Brook Flood Control and Linear Trail Project that will remove over 150 properties from the 100-year floodplain. This area doubles as a reservoir for flood control of the nearby Harbor Brook, making downtown Meriden resilient to future flooding and severe storm events. The Meriden Green, now a pleasant, landscaped multi-functional gathering place that includes an amphitheater, was created from a cleaned-up former brownfield site. Harbor Brook, once buried, was “day-lighted” providing an additional natural amenity to residents and visitors.

As a result of improvements to road design in the Meriden TOD district, safer travel is assured to pedestrians, bicyclists, the disabled, and vehicles. Commuters and travelers can easily access the trains, taxis, and nearby housing and amenities. A



Newly renovated Meriden Station

multi-use trail will also help people connect to the station, the Meriden Green, local housing and planned retail. Once rail service begins, over 100,000 jobs will be accessible to Meriden residents within a 40 minute transit commute, according to **market studies**, a key feature of a TOD.

The **Transit-Oriented Development Toolkit for CT** is one of **several resources** for communities to grow complete streets, mixed income housing, green infrastructure, energy efficiency and climate resilience. Other communities pursuing TOD include: Berlin, Bethel, Branford, Clinton, Hartford, Madison, New Britain, New Haven, Norwalk, Old Saybrook, Stratford, Wallingford, Waterbury, Westport, Winchester, Windsor, Windsor Locks, and the Southeastern Connecticut Council of Governments.

Ask Eartha

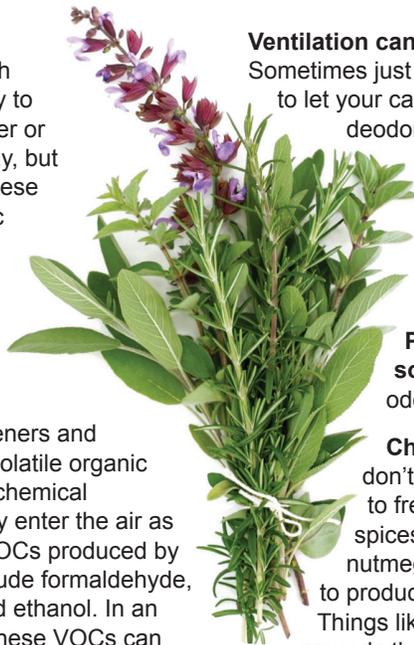
I like using air fresheners to keep my house and car smelling nice, but I've heard some negative things about them lately. What exactly is all the fuss about air fresheners?

Avery S., Montville

We all like our homes and cars to smell fresh and clean. It's so easy to put out an air freshener or candle and call it a day, but the sweet scents in these products are synthetic chemicals that mask odors, and contribute to indoor air pollution with possible health effects resulting from regular use.

Commercial air fresheners and candles can contain volatile organic compounds (VOCs), chemical compounds that easily enter the air as a gas. Some of the VOCs produced by scented products include formaldehyde, benzene, acetate, and ethanol. In an indoor environment, these VOCs can become more concentrated, which can cause adverse health effects. In the short-term, sensitive people may experience eye irritation, headaches, nausea, and trouble breathing. In the long-term, regular exposure may damage the lungs, liver, and kidneys, cause cancer or disrupt hormones.

So does this mean you're doomed to a future of foul smells? Hardly. There are many ways that you can get your house or car smelling nice without exposing yourself and others to unnecessary health risks.



Ventilation can work wonders.

Sometimes just leaving a window open to let your car or home air out is all the deodorizing power you'll need.

Take out the trash, change the cat litter and look for other sources of odor in your home that you can eliminate.

Put out a box of baking soda, it safely absorbs odors.

Check your pantry! You don't need to break the bank to freshen the air. Fragrant spices like cinnamon and nutmeg can be boiled in water to produce a delightful smell. Things like orange peels and coffee grounds that would otherwise be discarded can also be boiled to leave your house smelling nice.

Consider trying essential oils. Sprinkle a few drops in a diffuser or on a cloth because they are very concentrated. Essential oils like lavender are aromatic compounds found in a variety of plants that sometimes have healthy properties and don't typically carry the health risks that artificial chemical scents do. However you may be sensitive to certain oils, so use carefully.



It's time to say farewell!

Due to changes in staffing and funding this is the last issue of the *P2 View*. Thanks to all of our readers for providing your feedback and making this publication a success. Our first issue "hit the stands" in the fall of 2000 and Eartha's been sharing her advice since 2004. You will still be able to access past issues at www.ct.gov/deep/p2view. We hope you'll continue to receive information on current environmental issues by **subscribing to DEEP's *Your Environmental Connection* or one of our other publications.**

Eartha

Check out these [tips for improving CT's summer air quality](#) find out what you can do in your car, yard, and house to help.



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Contact Connie Mendolia at connie.mendolia@ct.gov with any questions. Past issues available at www.ct.gov/deep/p2view.

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