

Researcher grows food on old asphalt lot

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Published: June 22, 2012 - 06:19 PM | Updated: June 25, 2012 - 09:27 AM



Joe Kovach (center facing camera), a professor at the Ohio Agricultural Research and Development Center, conducts a tour of the garden that he is growing on an asphalt parking lot, in Wooster. Kovach is experimenting with various methods for growing food on that surface such as beans, basil, peaches, apples, kale raspberries and strawberries to name a few. (Ed Suba Jr./Akron Beacon Journal)

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Wooster twp.: With all the farmland in Wayne County, you'd think Joe Kovach could find a better place to grow food than an old parking lot. But he's out to prove a point: Even a stretch of asphalt can become a garden.

Kovach, a scientist at Ohio State University's Ohio Agricultural Research and Development Center, has been growing fruits and vegetables on an abandoned parking lot to test the best methods on what seems like an inhospitable site. He's also growing the same plants in gardens created from an adjacent lawn so he can compare the parking-lot methods to more conventional conditions.

His purpose is to help urban growers turn abandoned sites into productive land. That requires figuring out the growing methods that

yield the best results and studying the effect of those methods on pest management, he said.

He started planting in the fall of 2010 behind a closed dormitory, and so far he's found no evidence that fruits and vegetables suffer from being grown on asphalt. "So, yeah, you can grow food in a parking lot," said Kovach, an associate professor of entomology whose specialties include urban agriculture.

Parking-lot gardens aren't new, but the growing methods typically involve tearing out the asphalt or growing on raised beds built from wood or plastic and set atop wood chips. Kovach is trying to determine whether there's a better way.

Three methods

His gardens cover about an eighth of an acre of asphalt and about the same amount of lawn. On each site he's growing nine crops using three methods — containers, raised gardens and in-ground beds created in trenches cut in the asphalt. Each method is replicated three times to ensure a fair test.

Some of the plants are sheltered by plastic-covered structures called high tunnels, and some are out in the open.

The container method involves growing plants in large pots or smaller containers hung from wire fencing to make them easy to reach. The raised gardens are fairly traditional raised beds, about 35 inches high, filled with wood chips on the bottom and soil above.

The most promising method, however, appears to be the in-ground beds, which Kovach created by cutting away sections of asphalt and replacing the old paving materials and compacted soil with a soil mixture. The in-ground beds are raised about 8 inches above the parking lot's surface, enough to allow air to reach the plants' roots, he explained.

One reason he likes that method is its ability to keep taller plants within easy reach. Dwarf fruit trees grown in the in-ground beds can be harvested by someone standing on the ground, he said. When those same trees are grown in the higher raised beds or in big pots, a ladder is needed to pick the fruit.

What's more, in-ground beds are less expensive to create than the other methods. They don't require as much soil mixture as the raised beds, Kovach said, and they don't involve the expense of buying containers.

The high tunnels also appear to improve results. For example, apples grown under the tunnels are more mature than those grown outside. And while the peach trees outside the tunnels lost their fruit in the frosts that hit early this spring, the peaches in the tunnels survived. Those peaches are more abundant on the asphalt than on the lawn, he said. That's an indication that heat radiating from the asphalt provided additional warmth.

The asphalt doesn't seem to heat the plants too much, however. Kovach said nearby trees shade the space and cool it with their transpiration, a process that's akin to sweating. The water that's provided to the plants also moderates the temperature, he said. The test site might be close to more trees than a typical urban site, he said, but most cities have enough trees and other sources of shade to cool an asphalt lot sufficiently.

Kovach said the asphalt itself isn't harmful to food crops, because it's a petroleum-based product, and plants don't absorb petroleum. Any toxins that might have been in the asphalt have washed away over time, he said.

He said providing enough water to the plants has been a challenge, but he's addressing that with a drip irrigation system and supplemental hand-watering as needed, with the help of two assistants.

Probably a bigger issue for him has been the asphalt's hard surface, he said. Walking on it for hours at a time is harder on the knees than walking on the grass paths between the beds on the lawn.

Of course, the parking lot doesn't need to be mowed, he added with a smile.

Crop diversity

Kovach created the gardens using a polyculture system, a method of mixing crops to produce a stable ecosystem. That helps plants resist pests and bounce back better when problems arise, he said.

He chose an array of nine crops — apples, peaches, blueberries, raspberries, tomatoes, green beans, kale, basil and strawberries — to provide genetic diversity as well as diversity in plant size, he said.

They were also chosen so fruiting, flowering and harvesting would be spread out over time, a method that prevents a flush of a single type of pest at one time and makes pests easier to control.

Kovach covers his beds with landscape cloth, which keeps weeding

down, moderates the soil temperature and keeps disease spores from splashing up onto fruits. Netting protects berries from the birds. Fencing keeps out deer and smaller wildlife, with the exception of some wily rabbits that found a way in recently through an opening in the gate before he blocked the gap with Plexiglass.

As with most gardens, though, not every aspect is ideal. Starting his fruit trees and shrubs from small plants would have been best, he said, but instead he transplanted established plants because he's nearing retirement and didn't have the time to wait for young plants to grow to maturity. "So I introduced the most stress [on the plants] I could," he said with a laugh.

It's not yet clear what effect parking-lot growing has on pests, Kovach said. It could be that the rising heat from the asphalt creates updrafts that act as a barrier against insects and diseases, he said. Or it's possible that the rising heat creates a sea breeze, pulling in cooler air and, with it, pests.

Data collected during the study will help clarify that, he said. Still, he said he's not seeing a big difference in pest problems between the parking-lot gardens and those on unpaved ground.

Neither does he see any significant difference in economics or maintenance time. Tasks like pruning, watering and picking are the same in both areas, he said.

Kovach doesn't believe the results would be different on other hard surfaces, such as concrete.

"If you give me good soil, heat, light, water," he said, "I can grow anything."

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