

**The Squash Bee Bargain:
Plant the Crop and They Will Come**
Vegetable Growers News

Of all the vegetable crops, cucurbits like squash are the most dependent on bees for pollination. That has meant increasing costs to rent honeybee hives – up to \$150 per colony in some cases.

“If you don’t have bees, you don’t have squash, gourds, melons, watermelons, pumpkins or seeded cucumbers,” says Dr. James Cane of the USDA-ARS bee lab in Utah.

The good news for growers’ budgets: “There are native American bees that can do the job,” Cane says, “And they are free. Using them can save a grower more than \$100 per acre.”

As New World cucurbits developed, two genuses of native bees developed along with them, becoming pollination specialists for squash and pumpkins.

One squash bee, *Peponapis pruinosa*, ranges from southern Georgia to Quebec and west to the California desert (but is missing north and west of Boise, Idaho). Where squash and gourds are grown for multiple years in succession, it is the primary pollinator.

As cucurbits are flowering, the females dig individual nests a foot to two feet deep within the rows of plants to produce one generation each year. Growers can see bee numbers increase within a few years to produce up to one bee for every three flowers during peak bloom.

Where they are numerous, squash bees will pollinate all available flowers, making honeybee rental unnecessary.

Cane cites the example of a western Colorado grower who produces 400 acres of Kubota squash annually relying solely on squash bees for pollination.

Hudson Reese, a Virginia grower, echoes the same message: “I think we get a better and maybe an earlier pollination because we have the native bees. In some cases on our crops we could get by with the native bees alone – especially on squash and pumpkins.”

The key issues for encouraging squash bee populations are crop rotation, tillage, and pesticide application.

“For commercial growers, we know that if you have 50 acres of squash, you will see nests,” Cane explains. “You can rotate crops over a 150-acre area to control pests, and your bees will follow your pumpkins and squash.

“But if you break the cycle [by not planting squash one year], you have to start all over to re-establish your bees.”

Ordinary cultivation does not present a problem, but he warns that deep tillage or ripping should be avoided, since it destroys the bees’ nests.

Farmers can use a spraying program to control insects by targeting when they spray. Squash bees fly earlier in the morning before honey bees are out. By spraying only late in the day (ideally near dusk), growers can avoid injury to the bees, which will be in their nests by then.

Since squash blossoms last only one day, bees out foraging the next morning won’t visit spent flowers where they could encounter pesticide residues.

Peponapis isn’t the only native bee of importance in cucurbit production. Bumblebees and a variety of other solitary bees will work cantaloupe, honeydew melons, and watermelons, and *Melissodes* bees can be dominant pollinators in some regions, according to Cane.

“It really doesn’t take a lot of effort,” says Reese, who promotes native bees as part of a wider interest in preserving habitat for many species. “The main thing it takes is a change of attitude to give up just a little bit for wildlife.”

As ongoing losses of honeybee colonies have created concerns about pollinator availability and rental costs, more efforts are being made to encourage native bee populations.

The widespread threats to bee populations prompted Congress to make native bee preservation a priority in the 2008 farm bill, leading the U.S. Department of Agriculture to establish multiple programs to encourage bee habitat. One example is the matching grants and technical assistance available through the Environmental Quality Incentives Program (EQIP).

Encouraging native pollinators is also now a ranking criteria that can mean higher payments per acre for new Conservation Reserve Program contracts. As a result, farmers established 41,000 acres of new pollinator habitat this year, according to the Xerces Society.

Growers looking for information about encouraging native bee habitats can contact the Natural Resources Conservation Service or find on-line information at the Native Pollinators in Agriculture Work Group (www.agpollinators.org), the Xerces Society (www.xerces.org/Pollinator), or in USDA publications at (www.nrcs.usda.gov/technical/ECS/database/technotes.html)

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