

## TōsT: A Cornell Killer Wasp

The next time you go to a supermarket to buy corn, whether you timidly peek under the husks of an ear or ostentatiously rip them off, think wasps.

The European corn borer, a serious pest of sweet corn, can turn a plump-looking ear of corn into an unappetizing mess. Sure, pesticides exist to prevent such damage, but who wants pesticides in their corn? So that you do not have to choose between a glamorous-looking ear of corn with a scary history and a healthier, unprepossessing one, Cornell's Department of Entomology has developed

an alternative method of pest management to help prevent this kind of corn damage—wasps.

If you think of wasps as striped-bodied buzzing insects that you became painfully familiar with at some point in your life, prepare to be surprised: there are many species of wasps that do not sting. Indeed, they are beneficial.

For Michael Hoffmann, Entomology, wasps are a subject of passion and unending curiosity that even many years of research cannot quench. One particular group of wasps that fascinates Hoffmann is the parasitic wasp *Trichogramma ostrinae*. Like something out of a good horror movie, the female wasp lands on the corn borer's unsuspecting egg, pierces it with one precise strike, and quickly injects her own egg inside, while the developing embryo of the corn borer is still alive. The wasp egg hatches, and as the wasp larva grows, it eats the developing corn borer—and the pest is destroyed. The wasp larva then pupates inside the corn borer's egg, and upon

becoming an adult, the diminutive, one-half millimeter wasp cuts a hole in the eggshell and flies out. Over the course of its lifetime (about three weeks), the female *Trichogramma* lays its eggs in up to 50 corn borer eggs—lots of worm control from one wasp!

Hoffmann and his staff, Jeffrey Gardner and Sylvie A. Pitcher, researched the effectiveness, ecology, and rearing methods for *Trichogramma ostriniae*. They were looking for a parasitic

more corn borers. This all-natural method is a great way to save on labor costs compared with the use of sprays.

With the help of the Cornell Center for Technology, Enterprise, and Commercialization (CCTEC), the technology was registered in the United States Patent and Trademark Office under the trademark TōsT. CCTEC seeks a commercial entity interested in the mass production of this new “green” technology.

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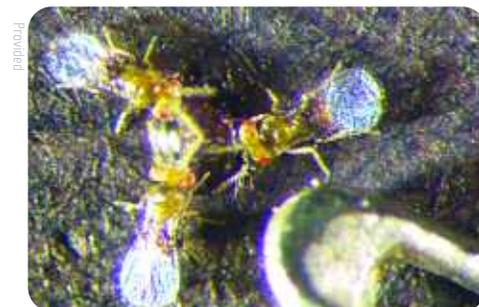
wasp that could help manage the European corn borer and found this particular species to be most effective. During the 15 years of their research, they optimized mass rearing of the wasps and developed methods of field release that have increased the wasp’s effectiveness. They worked with a number of *Trichogramma* species, and found that *Trichogramma ostriniae*, dubbed TōsT, performs very well when released in commercial sweet corn. It also performs well against corn borers in peppers. Native to northeast China, TōsT does not overwinter in New York fields, thus a continuous rearing program and seasonal releases are required to help control corn borers each year.

In the mass-production section of their laboratory, the researchers rear TōsT on the eggs of a flour moth. They collect TōsT eggs with a little brush, glue them to the inside of small envelopes, and ship the envelopes to farmers. Each envelope has a loop used to hang it on a plant in the field. One envelope is placed for every acre of sweet corn. Once the envelopes are in the field, adult wasps emerge from the parasitized flour moth eggs and fly off to conquer the corn borer. The process is repeated again and again during the season—wasps hatch and go in search of corn borer eggs in which to insert their own eggs. About 30,000 wasps per acre are let out to prey at any given time. Each cycle kills

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 A close-up photograph of a single, small, white, oval-shaped corn borer egg attached to a green leaf. The leaf's veins are visible in the background.
 

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