

Block that pollen

March 1 2016, by Mick Kulikowski



Research at North Carolina State University has identified "pollen blockers" in corn that can prevent organic corn from being pollinated by genetically modified (GM) plants. The findings could aid more rapid and efficient production of organic corn with reduced risk of contamination from genetically engineered traits.

Contamination of organic corn by genetically modified pollen is a major

concern for growers, who stand to lose a large price premium paid for organic corn if their grain is found to be contaminated. The problem is exacerbated by the large acreages of GM corn grown in the United States; organic farmers bear the burden of preventing GM contamination, and often use costly methods to prevent it.

One way of protecting corn is through dominant gametophyte factors (DGFs) – genetic pollen blockers that keep non-target pollen, GM pollen in this case, from producing a kernel on an ear of corn. These factors have obvious applications, but many pollen blockers suffer from drawbacks – including complicated genetics – that have challenged breeding and marketability efforts.

NC State graduate student Zachary Jones, along with his advisor Major Goodman, William Neal Reynolds and Distinguished University Professor of Crop Science, worked to identify pollen blockers that were easier to work with, in hopes that they might find their way into seed planted by [organic farmers](#).

The NC State researchers examined several Mexican corn collections and identified dominant factors in seven accessions that they believe are a starting point for picking out the best DGFs. These factors hold promise to rapidly decrease the research time needed to produce pollen-blocking hybrids for farmers and increase the chance of getting them into the field quickly.

"Pollen blockers have existed and been used for over 50 years in popcorn," Goodman said. "This work demonstrates the value of collaborative international research, as Jesus Sanchez at the University of Guadalajara and Jerry Kermicle from the University of Wisconsin both contributed ideas that made these studies feasible. In the end, we hope that these DGFs will make 'assured organic' possible."

"Enhancing the coexistence of organic and conventional production through cutting-edge scientific discoveries is a key goal of USDA and this research represents a significant step in achieving those goals," said Dr. Mary Peet, director of the Division of Plant Systems – Production at the U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA). "I'm glad that NIFA's Organic Agriculture Research and Extension Initiative was able to fund this project."

Provided by North Carolina State University

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