

Flight of the bumble (and honey) bee

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Insects such as honeybees and bumble bees are predictable in the way they move among flowers, typically moving directly from one flower to an adjacent cluster of flowers in the same row of plants. The bees' flight paths have a direct affect on their ability to hunt for pollen and generate "gene flow", fertilization and seed production that results when pollen moves from one plant to another. The study of gene flow has experienced more attention in part due to the recent introduction of genetically modified organisms (GMOs) into the environment.

Scientists, plant breeders, and growers seek to understand flight patterns of [honeybees](#), bumble bees, and other insect "pollinators" as a way to increase production and healthy produce. Although several studies have focused on pollen movement among cucurbits, the plant family that

includes cucumbers, gourds, melons, or pumpkins, little research has looked at pollinator flight patterns and, until recently, none has determined [pollen flow](#) in watermelon plantings.

New research published in the February 2009 issue of *HortScience* by research scientists S. Alan Walters of Southern Illinois University and Jonathan R. Schultheis of North Carolina State University studied [pollinator movements](#) down and across rows in watermelon [*Citrullus lanatus* (Thunb.)] by tracking pollen flow. The direction of honeybees was tracked under field conditions during 2001 and 2002 at the Southern Illinois University Horticultural Research Center in Carbondale.

According to Walters, the study indicated that the evaluation of pollen flow showed a definite pattern of bee movement and gene migration in watermelon. "Although we detected pollinator movement that was strongly directional in both directions (east and west) down the row from the central block of donor plants, results also indicate that significant movement also occurred across rows in both directions (north and south) from the donor plot", he remarked.

Because watermelon vines grow in multiple directions, including across rows, bees can easily move across rows if the next closest flower is in that direction instead of down the row. Most pollen is deposited on the nearest neighboring flower from where pollen was collected.

Walters summarized the study stating, "Although significant amounts of linear pollinator movements occur down rows of watermelon plants, pollinator movements (in watermelon) are not as simple as just maintaining a linear direction straight down the row, but are related to the short flight distances that most likely occur to the closest neighboring flower from the one that was previously visited."

[More information:](#) The complete study and abstract are available on the

ASHS HortScience electronic journal web site:
[hortsci.ashspublications.org/c ... ent/abstract/44/1/49](https://hortsci.ashspublications.org/content/abstract/44/1/49)

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