

New book explores why the discovery of sex in plants took so long

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'Flora Unveiled: The Discovery and Denial of Sex in Plants' offers a deep history of perceptions about plant gender and sexuality, from the Paleolithic to the 19th

century. The book presents compelling evidence of a longstanding gender bias in the perception of plants as female, preventing the discovery of two sexes in plants until the late 17th century and causing the new "sexual theory" to remain controversial for another 150 years. Credit: Oxford University Press

Sexual reproduction in animals has been recognized since ancient times and used in the breeding of domesticated animals for more than 10,000 years. Humans have depended on domesticated crops for more than 10,000 years as well, but for most of that time there was no intentional breeding of crop plants because people didn't think plants had sex.

Why did it take so long to discover the existence of two sexes in [plants](#)? For more than 20 years, this question has preoccupied botanist Lincoln Taiz, a professor emeritus of molecular, cell, and developmental biology at UC Santa Cruz, and his wife Lee Taiz, who worked in his lab as a research biologist.

Their new book, 'Flora Unveiled: The Discovery and Denial of Sex in Plants' (Oxford University Press, 2017), offers a deep history of perceptions about plant gender and sexuality, from the Paleolithic to the 19th century. The book presents compelling evidence of a longstanding gender bias in the perception of plants as female, preventing the discovery of two sexes in plants until the late 17th century and causing the new "sexual theory" to remain controversial for another 150 years.

The authors trace the origins of this [gender bias](#) to women's roles as gatherers, crop domesticators, and the first farmers. In ancient myths and religions, female deities were strongly identified with flowers, trees, and agricultural abundance. During the Middle Ages and Renaissance, this tradition was assimilated into Christianity in the person of Mary, who was associated with lilies and other flowers.

"The association of lilies with the Virgin Mary was so strong, it was very hard for people to accept the existence of male structures in the lily flower," said Lincoln Taiz, who for many years taught a popular course at UCSC called "The Secret Sex Lives of Plants."

The English physician Nehemiah Grew first proposed a sexual theory of plant reproduction in 1684, and the ensuing debate eventually caught the attention of British satirists. "Once the wags got ahold of it, their almost pornographic descriptions of what goes on in flowers outraged pious people and polarized the debate even further," said Lincoln Taiz.

It took the careful observations and insights of German botanist Wilhelm Hofmeister, published in 1851, to resolve the controversy by showing that [sexual reproduction](#) is a universal feature of plant life cycles, from mosses and ferns to flowering plants.

The clues were there all along. The practice of artificially pollinating date palms began in the Bronze Age, yet the sexual role of pollen went unrecognized for millennia. The story told in *Flora Unveiled* is a remarkable example of how strongly cultural biases can influence our perceptions, impede scientific advances, and delay the acceptance of new discoveries.

"That something as basic as sex in plants could have remained hidden for so long, and then opposed when it finally was described, shows just how powerful cultural biases can be," said Lincoln Taiz.

Lee Taiz noted that cultural biases influence some of the most important issues facing our society today, from race relations to climate change. "It's important for people to recognize the dynamic between culture and perception that converges in our beliefs," she said. "Our world would be a happier place if more people were aware of how much our belief systems depend on cultural influences."

Provided by University of California - Santa Cruz

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