



Student Collaborative Organic Plant Breeding Education

The Zinnia Project

The Student Collaborative Organic Plant Breeding (SCOPE) program has developed a program for the genetic improvement of zinnia flowers for organic production here in California. The goal of the zinnia breeding program is to develop zinnia varieties with novel colors, unique color and petal shape combinations, and improved agronomic traits to benefit organic growers, and fill gaps in the current cut flower market. Because of their localized production, zinnias offer a unique way for farmers to diversify their farm and provide additional income through cut flowers, all while building resiliency and supporting pollinator habitat. The program also has trained graduate and undergraduate student in novel breeding techniques and ornamental production systems.



Goals of the Zinnia Program

- Novel colors
- Darker and lighter colors (Pastel)
- Bicolor flowers
- Unique color and petal shape combinations
- Improved stem length
- Improved flower size
- Improved vase life
- Powdery Mildew resistance

Traits were selected based on feedback from small-scale growers and florists in California, Washington, and Oregon.

To achieve the goals of the program and improve several traits as once, the breeding program has been dividing into four breeding groups:

- Pastel Intermediate
- Improved Queen Lime
- Bicolor Cactus
- Smaller Benary's Giant

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Progress So Far

The zinnia program is on its fourth field season, and is in the stage of advanced selection. We have observed the following results:

- New and unique colors previously unseen in the germplasm.
- New color and flower shape combinations
- Increase in mean stem length from comparable varieties
- Discrete classes of flower sizes for greater floral diversity

The SCOPE project is funded by the Organic Research and Extension Initiative of the USDA National Institute of Food and Agriculture (Grant #2020-51300-32275).



Get Involved

The SCOPE project is currently seeking collaborations with growers and seed producers for on-farm trials. We are also looking to expand to new crops that are integral to the California organic seed industry. To become part of the SCOPE network of on-farm trials, or propose a collaboration for a new crop, contact: lcroser@ucdavis.edu

For more information on the projects, visit: plantbreeding.ucdavis.edu/scope-project

