

Lima and Garbanzo Breeding

Christine Diepenbrock, on behalf of Antonia Palkovic as well; Sept. 29, 2023

UC Davis Department of Plant Sciences



What are we breeding in this program?

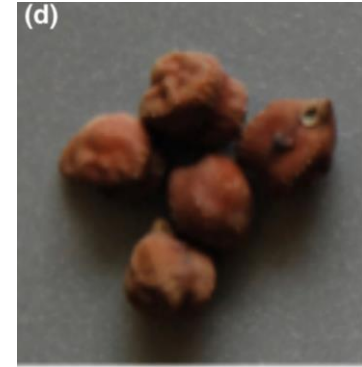
Large-seeded and baby-seeded
lima beans with lygus tolerance



Large-seeded kabuli-type garbanzos



Kabuli



Desi (only shown
for comparison)

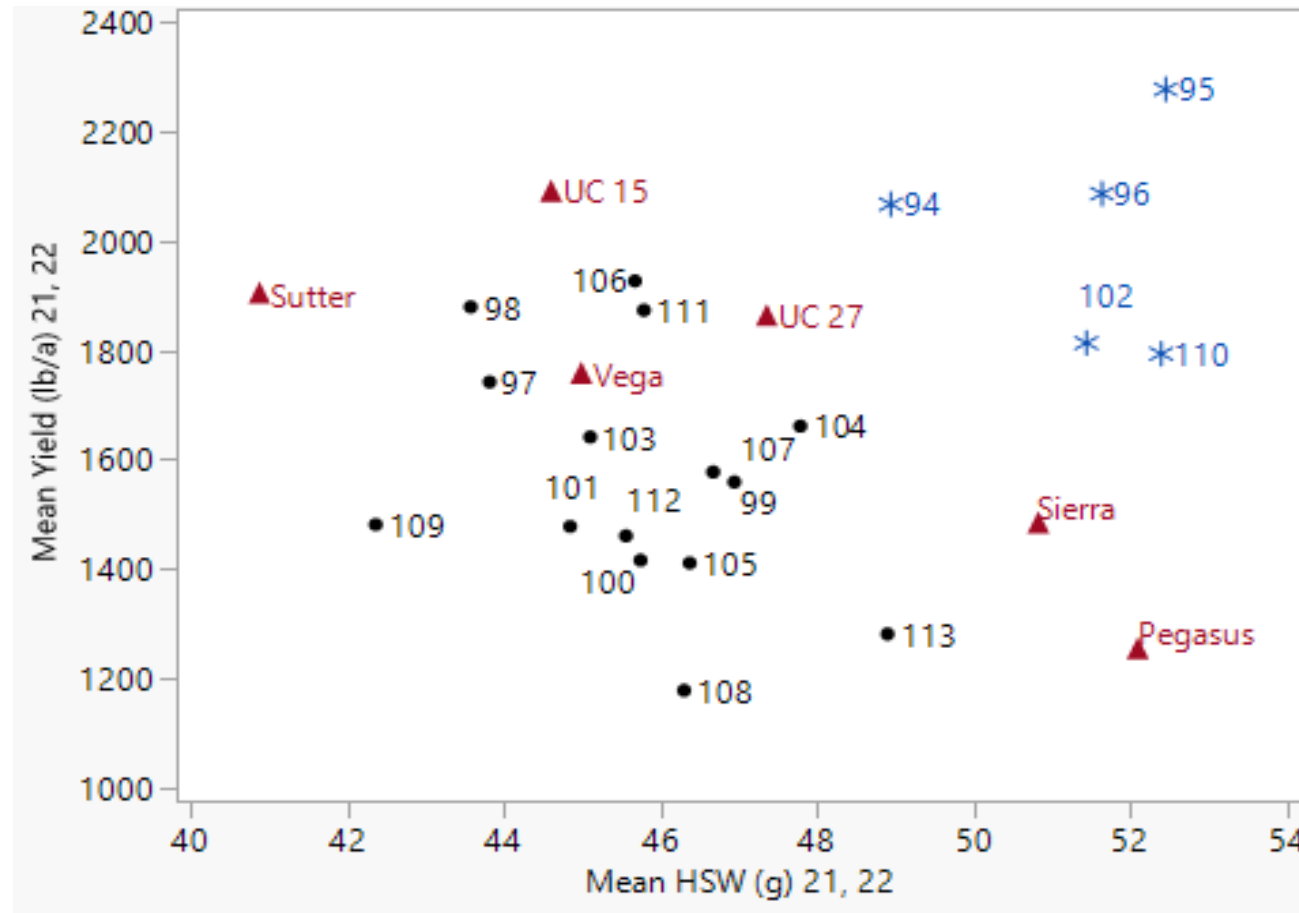
Photos from Varma
Penmetsa and team, 2016

with a focus on regional adaptation,
maximizing yield and seed quality

Garbanzo breeding progress

Lines in blue are prioritized for testing in regional trials

Garbanzo Yield by Hundred Seed Weight Means with 2021 and 2022 Data



Blue entries with asterisks indicate high yielding and large seeded breeding lines.
Red entries with triangles are checks.

Lima breeding progress

- Large-seeded limas
 - Advanced-generation lines (F9+)
 - Mid- and early generation lines: F4 lines, UC 92 backcross populations
 - Checks: UC 92, Dompe 95
- Baby-seeded limas
 - F9+ and F6 lines
 - Checks: Beija Flor, Jackson Wonder



USDA Specialty Crops Research Initiative project in lima bean

Led by Paul Gepts, Prof. Emeritus at UC Davis

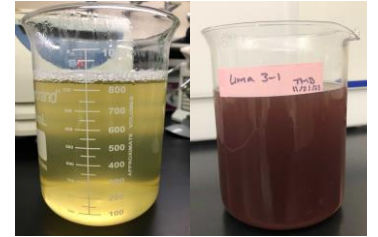
- A four-year project (Year 1 ended Sept. 14) focused on improving lima beans for growers, processors, other ag. and food professionals, and consumers.
- >80% of the USDA collection of lima bean is thought to be daylength-sensitive; i.e., will not flower in California summers. We are aiming to convert those plants to be 'day-neutral' so that they can be used in breeding, and to develop other community resources for lima improvement.
- Comprehensive evaluation of agronomic and seed quality traits, nutritional quality, flavor, etc.

Seed increase at the UC Intermountain Research & Extension Center (Tule Lake, CA) to generate seed for trials in more locations
with thanks to Darrin Culp, Rob Wilson, and team



What are we doing next?

- Small-plot research combine arriving this fall!
- Partnering with food scientists for 'robot stomach' work and potential product development; also testing canning quality
- New crosses in garbanzo to create early-generation material and start a 'recurrent selection' strategy
- Speed breeding in limas to increase the number of cycles per year (and/or produce more seed)



Thank you!

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