Biochar: A Soil Amendment. Effects on Beans and Other Vegetables

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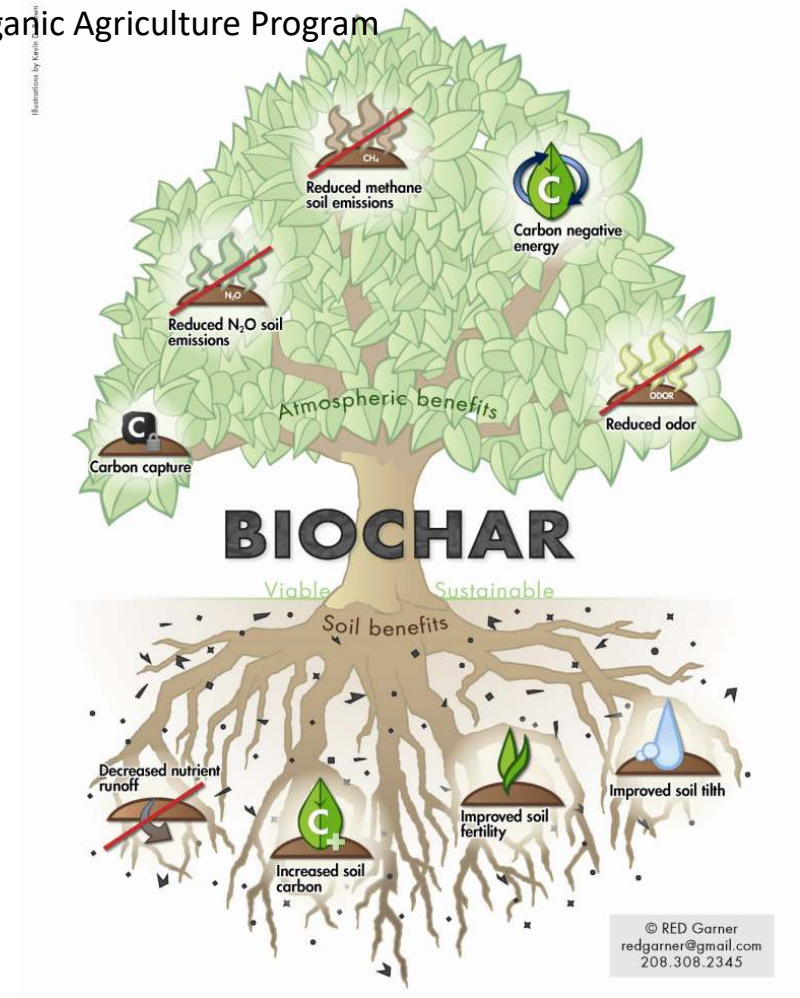


Reported to improve soil quality, nutrient balance, nutrient availability, soil water holding capacity & soil health, especially in low fertility, acidic & heavy clay soils.

Biochar application rates trial

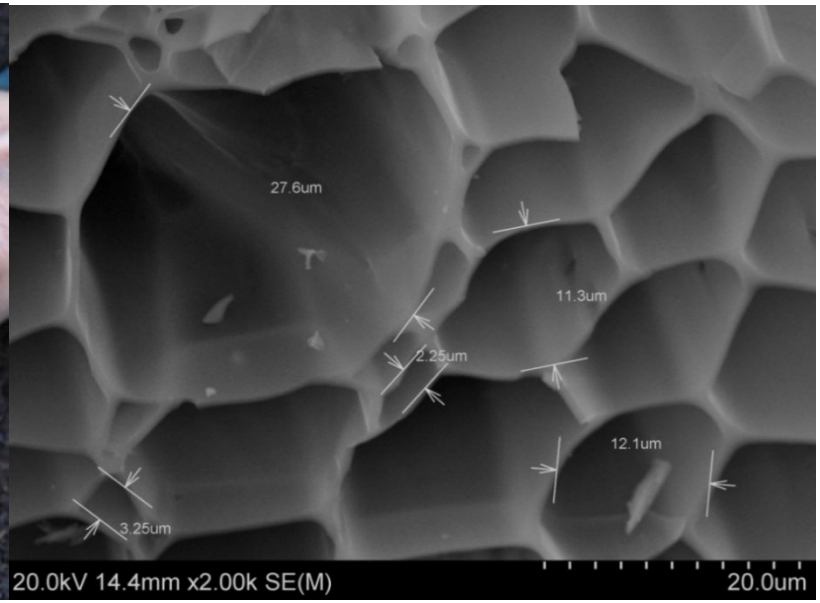
The objectives of this study were to evaluate the short- and long-term effect of one biochar application (at various rates) on:

1) Growth and yield of various vegetable crops.
2) Nutrient management and soil organic matter
3) Changes in soil health and soil physical properties.

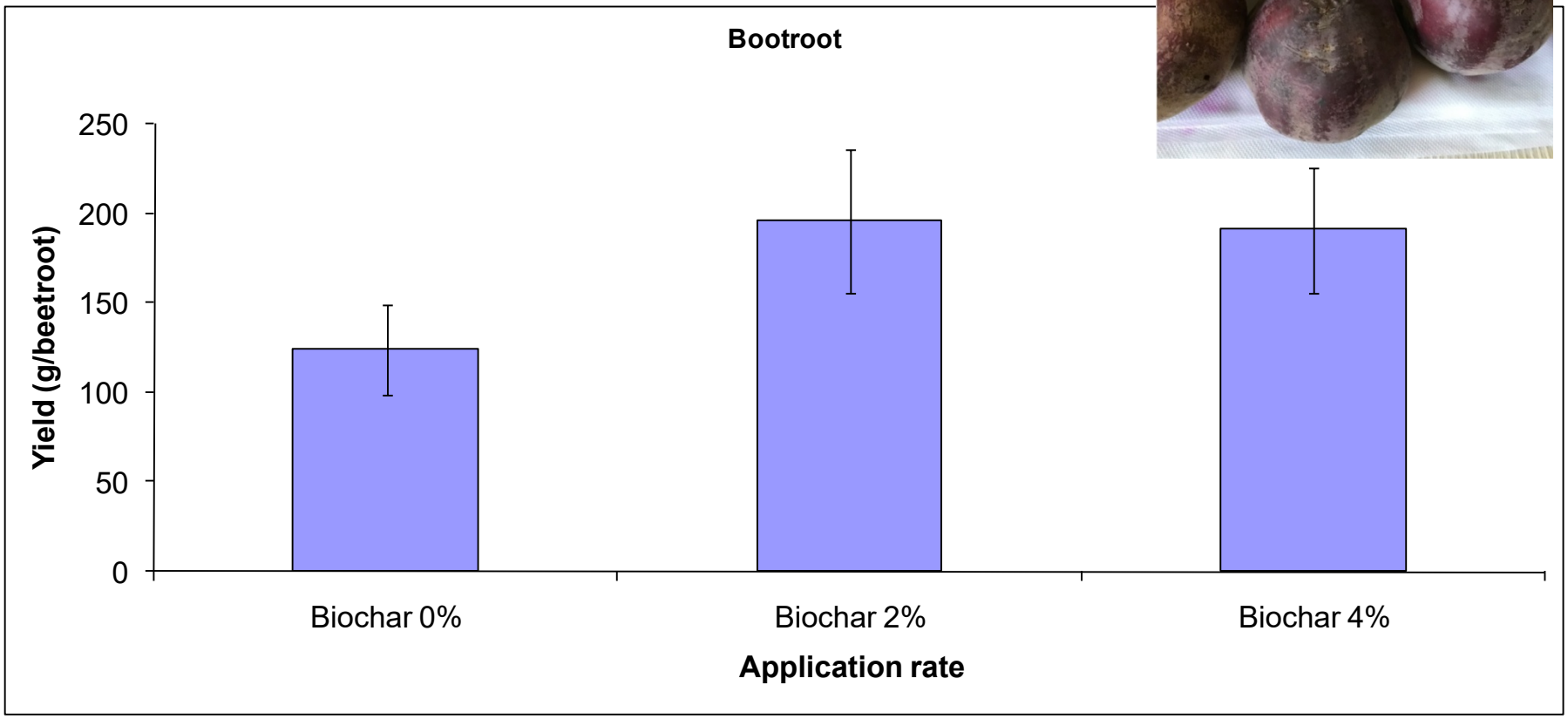
Biochar: Made from organic materials (e.g., corncob, manure, scrapped wood) burned in the absence of or low oxygen.

Properties vary with:

- Feedstock (e.g., manure vs. wood) – Ash content, $CaCO_3$ equivalent
- Highest treatment temperature (e.g., 400 °C vs. 700 °C) – Surface functional groups & pore size.

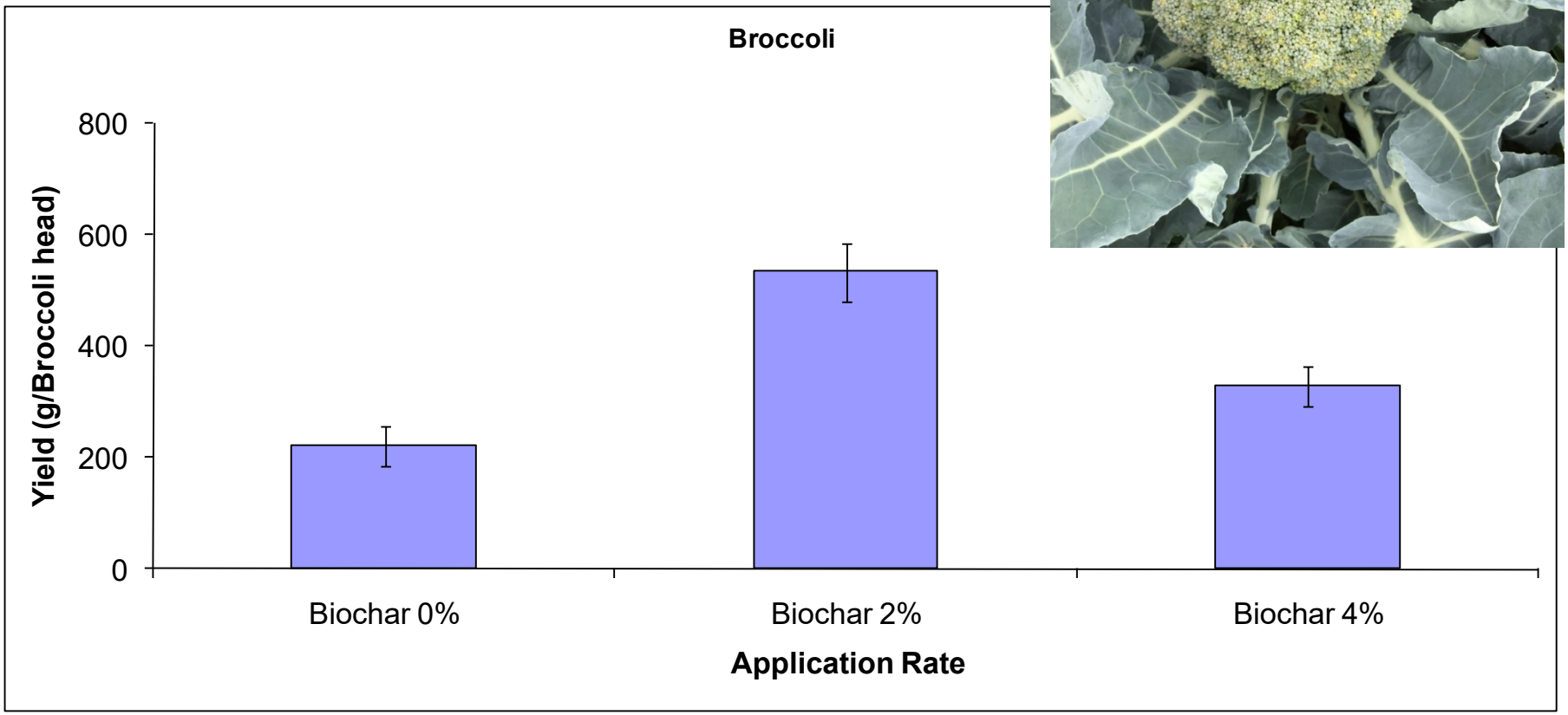


Beetroot Yield:



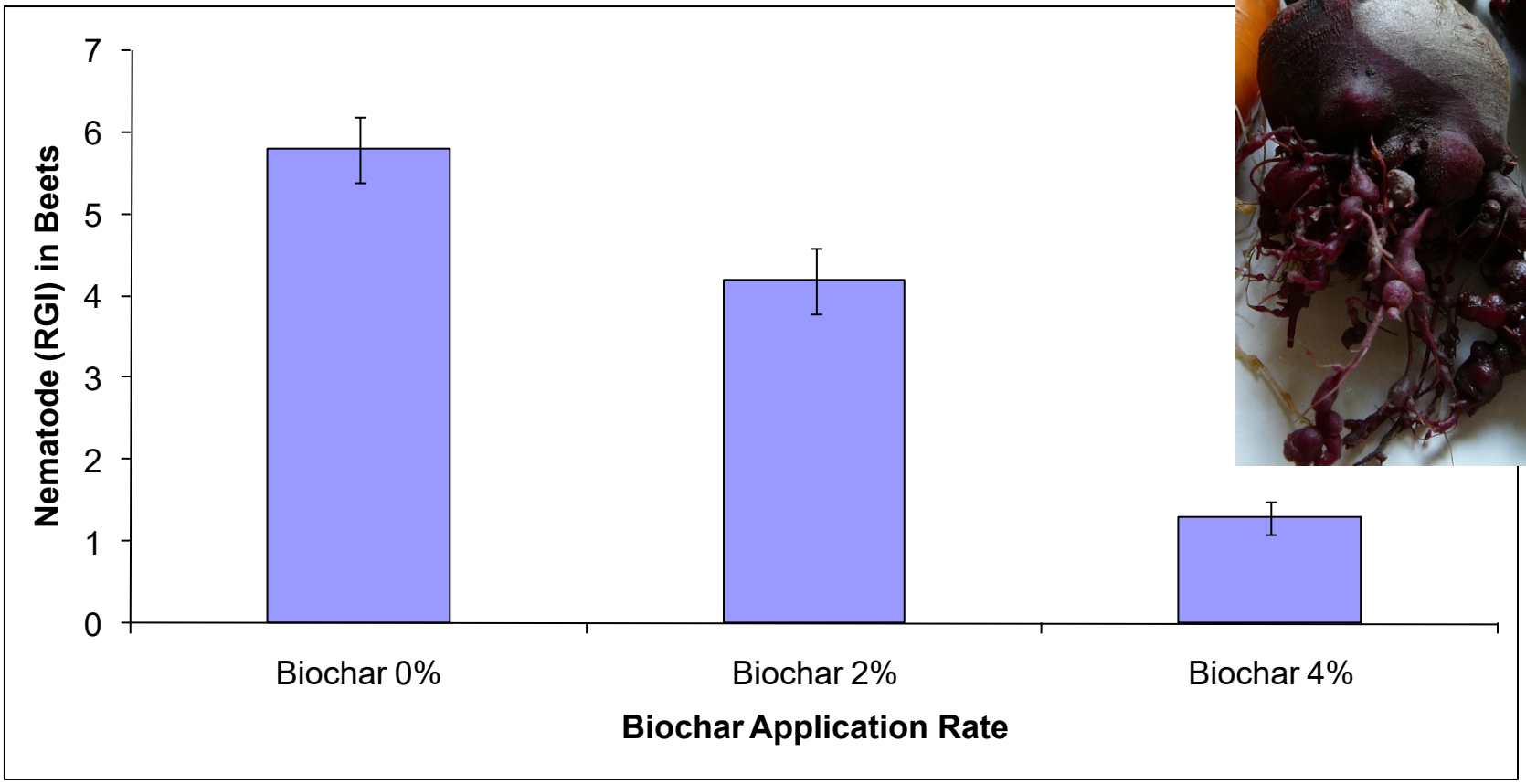
There was no significant difference between 2 & 4% biochar rates on beets yield. However, both rates were significantly higher than control.

Broccoli Yield:



Broccoli yield under 2% biochar was significantly higher than 0 & 4% application rates.

Biochar application & root-knot nematode:



Biochar effect on root-knot nematode in beetroots.
Samples taken from Poamoho Research Station.

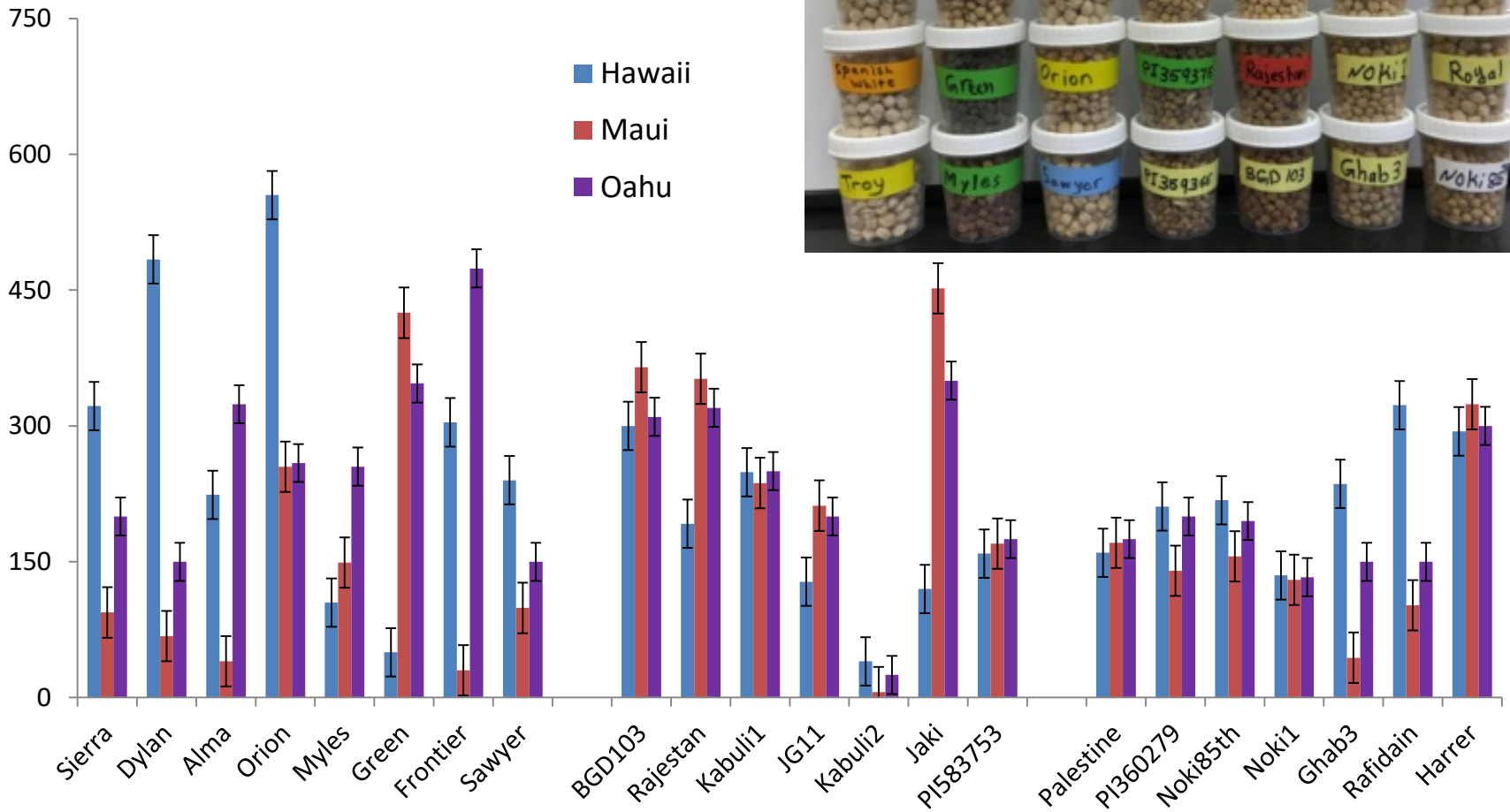
Bean crops and varieties trials

The objectives of this study were to evaluate the suitability of various legume crops and varieties to Hawaii's micro-climates through:

1) Evaluating different legume crops and varieties for yield in Hawaii.
2) Evaluating different locations for better selection of crops and varieties between locations.
3) Selecting in legume crops and varieties for market preference ands value-added products.

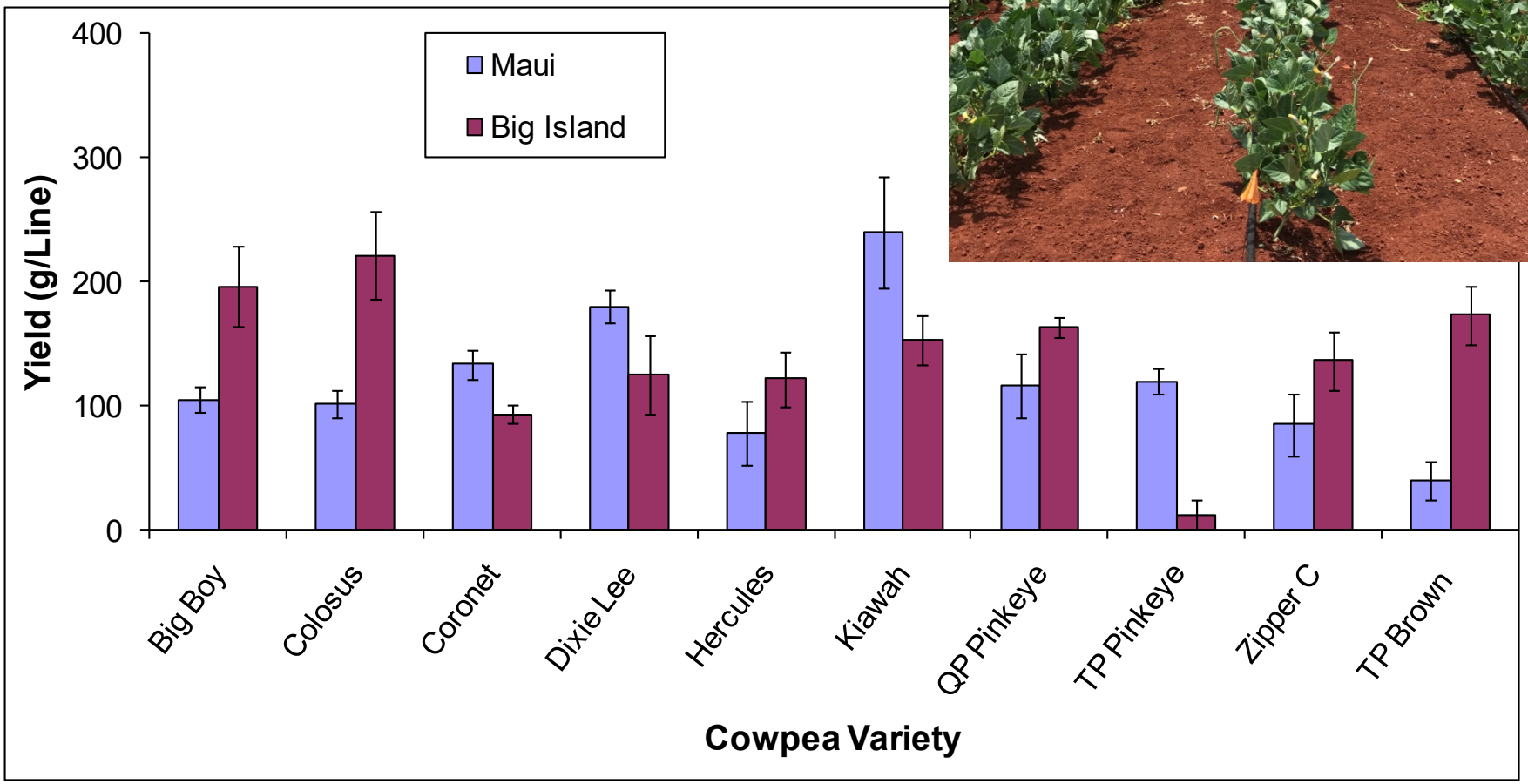
Crops and varieties for Central Oahu Growers: Chickpea Frontier, Orion, and Royal varieties), Cowpea (black eye peas), and Pinto bean.

Chickpea Yield:



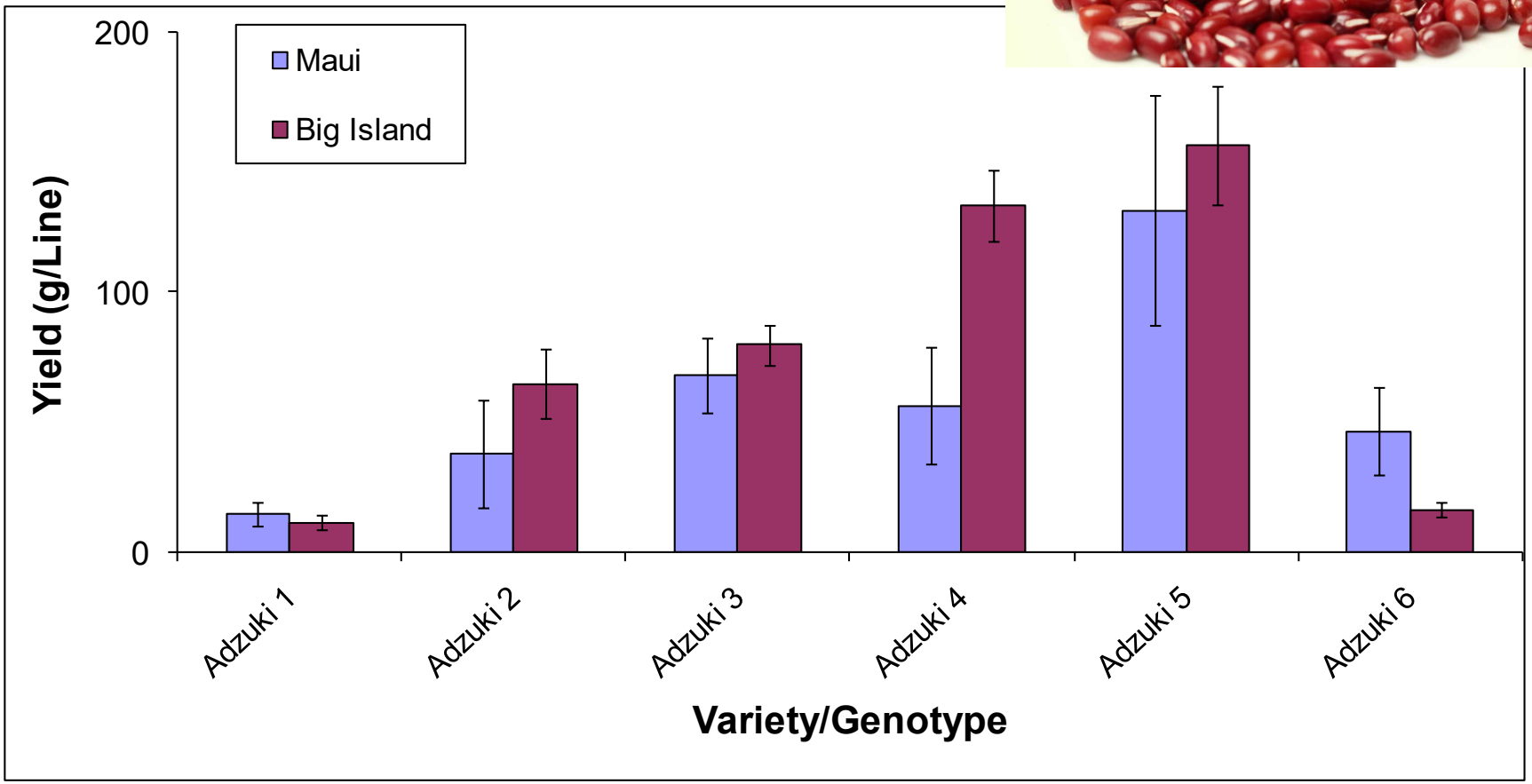
Average yield of 22 chickpea genotypes (3 locations).

Cowpea Yield:



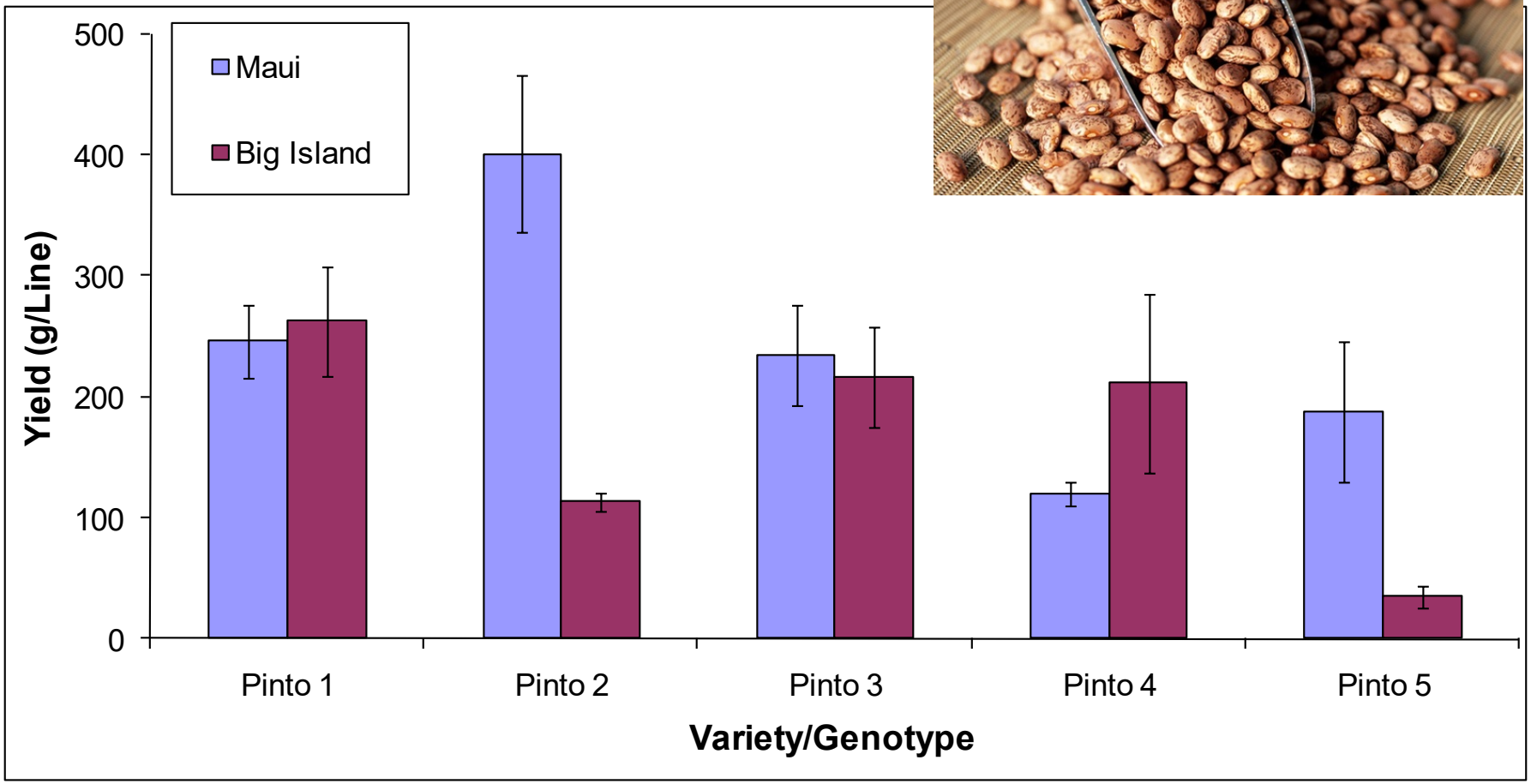
Average yield of 10 cowpea varieties (2 locations).

Adzuki Bean Yield:



Average yield of 6 Adzuki bean varieties (2 locations).
Adzuki 1, 2 and 6: Japanese Varieties. Adzuki 3, 4, and 5: Chinese Varieties.

Pinto Bean Yield:



Average yield of 5 Pinto bean varieties (2 locations).
The least variability between locations was found in Pinto bean varieties.

New Beans and varieties to be tested