Home Nixtamalization of Corn

Homemade Masa

Scott & Eleanor Hucker
Great Lakes Staple Seeds

Our SARE Project in Brief

- Predictive yields for small-scale staple crop production **(<12 acres)** in North Central States using common homestead equipment and minimal inputs.

- Crops of interest: amaranth, barley, beans, buckwheat, **maize**, millet, milo, oats, potatoes, rye, sunflower, triticale, & wheat.

- A shift away from "casual gardening" – more growers intentionally mindful of **caloric and nutritional benefits**; Food security – personal / community.
    - Our **"Sizing Your Plot to Meet Your Food Needs"** page is the second most accessed page on our site after our homepage.

- Use our **small-scale experience** to generate **agronomic data** more aligned to the **cultivars and methods of pre-1950s** industrial cultivation that do not rely on modern chemicals and accounts for **modern shifts in weather patterns.**

- **Inform best-practice methods** to enable small-scale farmers to successfully incorporate staple crops into their sustainable, ecologically responsible production rotation.

Zea mays

Teosinte   Corn

Domesticated in Mesoamerica about 9,000 years ago from teosinte

CORN AND CORN PLANTS

Single ear variety · Prolific variety · Sweet corn · Popcorn

A good husk protects corn against weevils

From top to bottom, Rice Popcorn, Sweet, Dent and Flint corn.

1-Pearl Popcorn. 2,3,4 Sweet corn. 5 and 6, Yellow and White Cuzco corn from Peru. Remainder common corn belt varieties of corn.

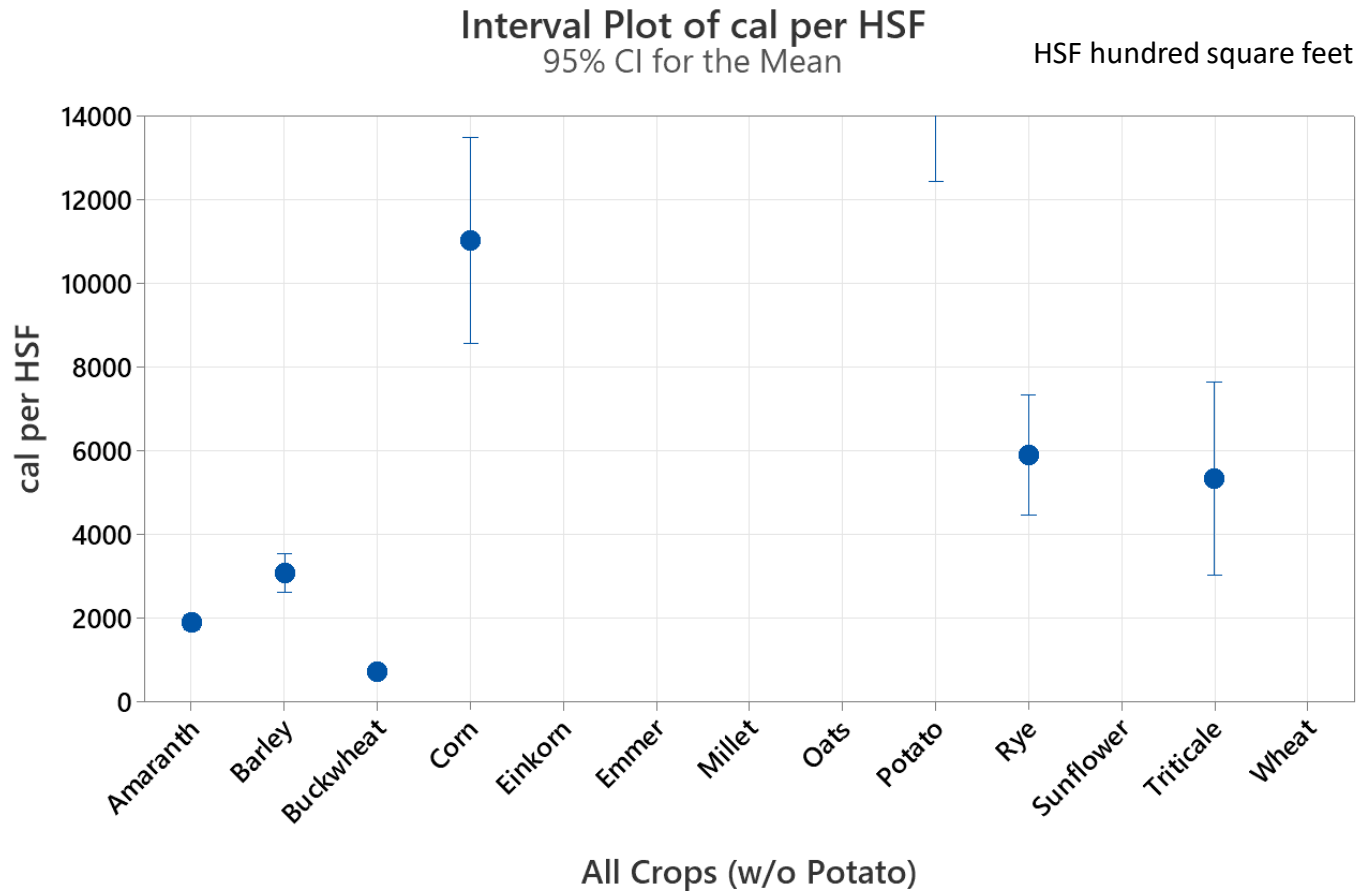OFFICE OF AGRICULTURAL INSTRUCTION IN COOPERATION WITH THE BUREAU OF PLANT INDUSTRY UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C.

GOVERNMENT PRINTING OFFICE

Classified based on kernels

Sweet

Dent

Flint

Flour

Popcorn

Corn for Calories

Interval Plot of cal per HSF
95% CI for the Mean

HSF hundred square feet
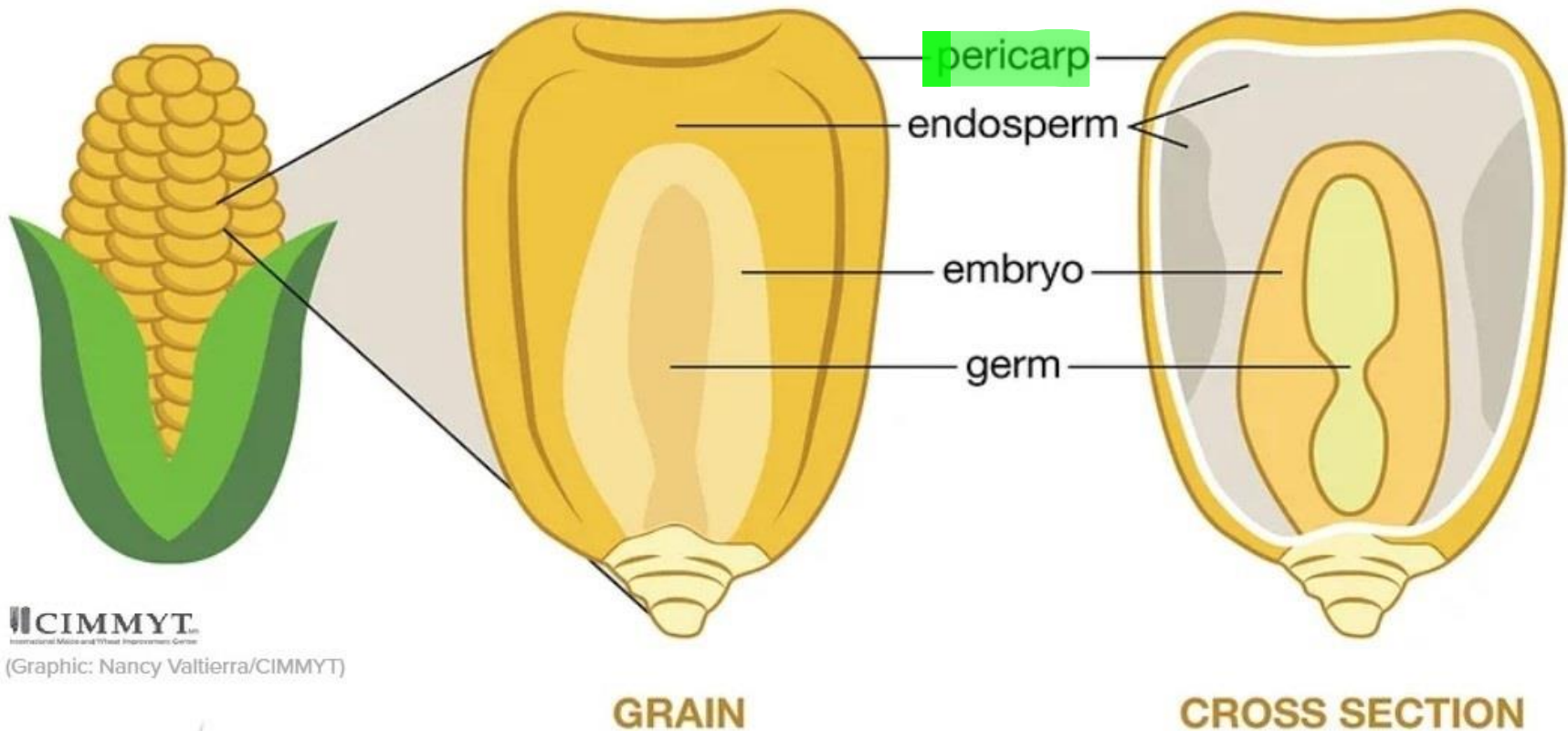

Individual standard deviations are used to calculate the intervals.

Preliminary grant findings indicate corn is king for calories.
(Potatoes are another great source of calories.)

How to maximize the nutritional value of those calories?

CIMMYT.
International Maize and Wheat Improvement Center
(Graphic: Nancy Valtierra/CIMMYT)

pericarp
endosperm
embryo
germ

GRAIN

CROSS SECTION

Nixtamalization uses **heat** and an **alkaline solution**

Pericarp becomes gelatinous and is easily rubbed off

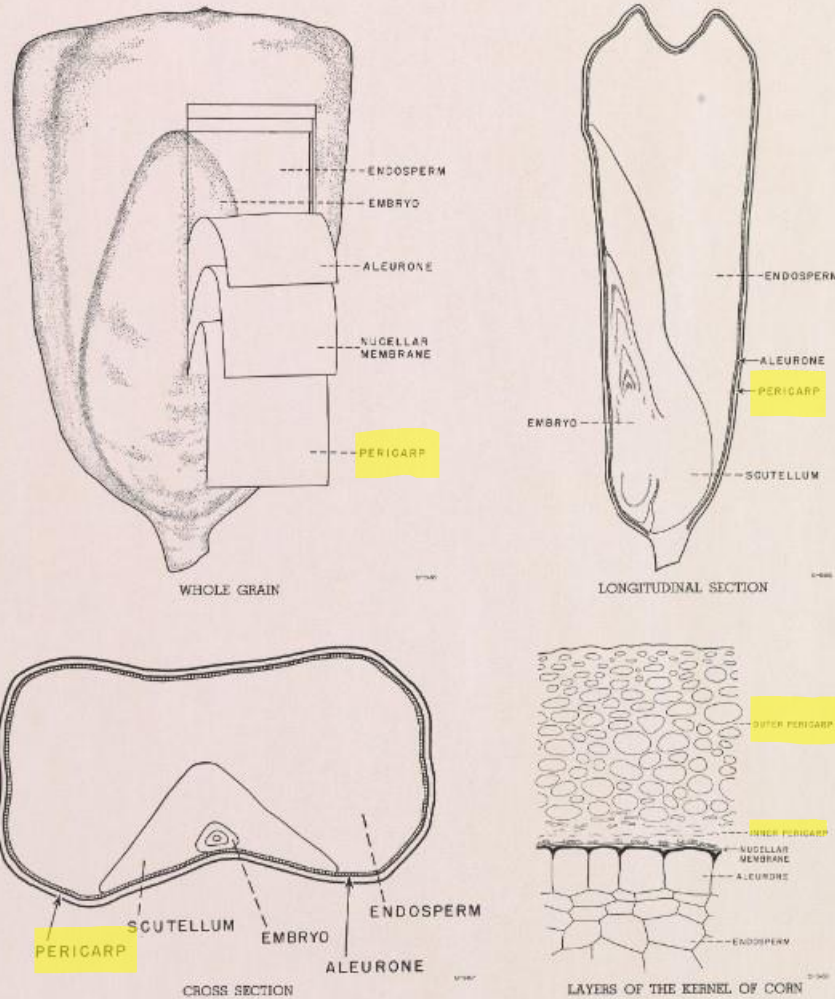Whole kernels = **Posole** / **Hominy** Ground kernels = **Masa**

Nixtamalization – the History

- As early as 4500 years ago, archeological evidence – wood ash, burnt shells, natural limestone, simple grinding utensils (metate.)
- Crucial for the development of Mesoamerican cultures (Aztec, Mayan.)
- Enhanced nutritional and culinary attributes compared to raw corn.
- Reduces risk of nutrient-deficiency diseases (Pellagra, Kwashiokar.)
- Mexico and Latin America.

STRUCTURE OF CORN KERNEL

Benefits

- Improved access to essential micronutrients such as tryptophan and niacin; increased bioavailability of protein.
- Enhanced flavor and aroma.
- More easily ground.
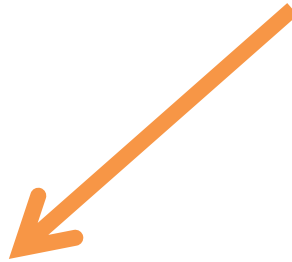- Reduction of unintentional aflatoxins.

Starting with
Floriani Red Flint corn

Staple polenta corn in Trentino's Valsugana Valley; introduced by William Rubel

Nixtamal

Kernels after heating in lime solution and left to soak overnight

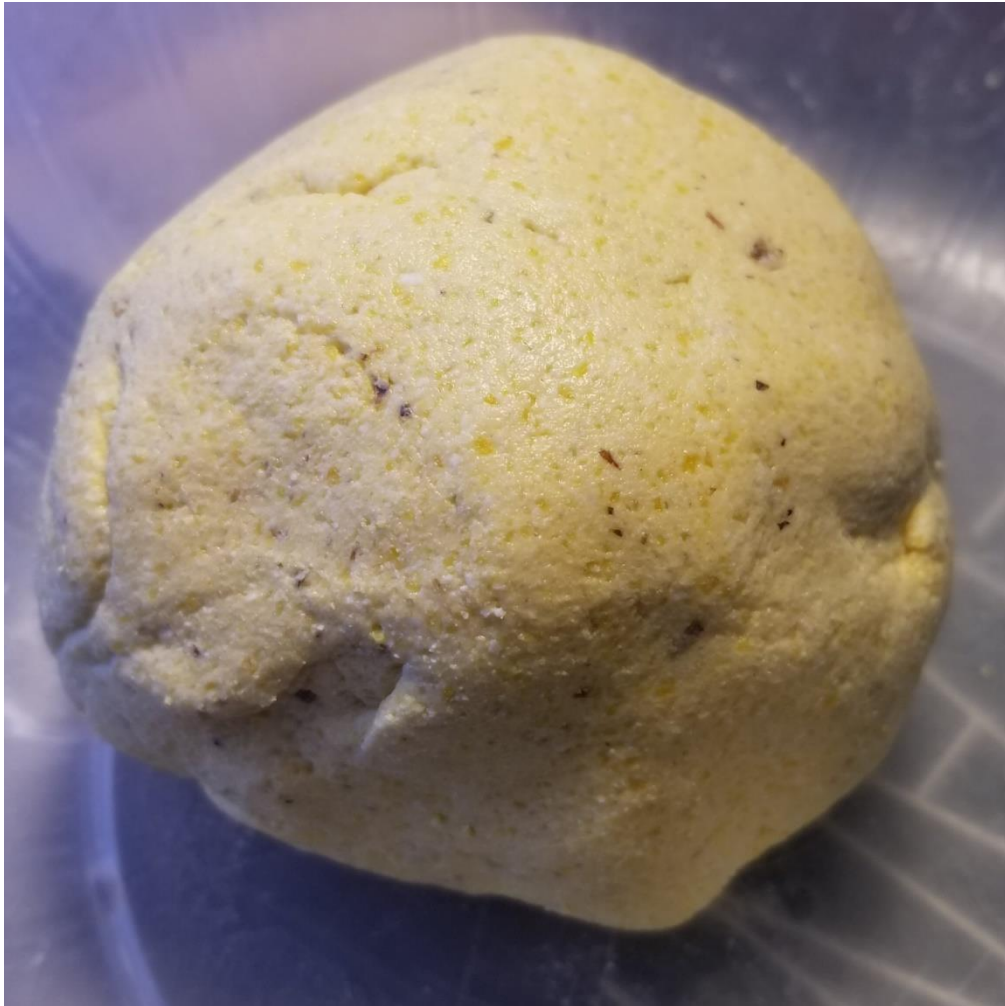Soaked kernels, rinsed multiple times; pericarps rubbed off

Nixtamal in the hopper ready for grinding

Wet auger grinding

Fresh, aromatic **masa**!
Tortillas, tamales;
Dried for flour – **masa harina**

Add enough water to the masa to form a slightly sticky dough

Nixtamalization at Home – Making Masa for Tortillas

1.5 quarts water to 1 pound corn kernels to 2 TB pickling lime* (1/2 cup wood ash)
Yields approximately 8-12 tortillas depending on size
Food mill capable of wet grinding
Tortilla press

1. Rinse the corn kernels, removing any debris.
2. Dissolve the lime in the water in a large, non-reactive pot.
3. Add the corn, discarding any floating kernels.
4. Bring mix to a boil; reduce to low heat and cook uncovered for 15 minutes.
5. Remove from heat, allow to cool uncovered for 4 hours at room temperature or overnight in the refrigerator. The pericarp layer becomes gelatinous.
6. Rinse soaked kernels in cool water, rubbing them to remove the pericarp layer. Rinse thoroughly – until water runs clear; Nixtamal.
7. Use nixtamal whole as fresh posole or grind it with a food mill capable of wet grinding to make masa.
8. To use masa, add enough water to make a slightly sticky dough.
9. Refrigerate any unused masa, using it within 3 days.

*Use caution: pickling lime is hydrated lime that may cause irritation or burns to wet skin. Avoid contact with eyes – flush thoroughly and call physician

Questions?

Let's Do It!

Eleanor & Scott Hucker
Great Lakes Staple Seeds
seeds@greatlakesstapleseeds.com

Project information

SARE PROJECT NUMBER FNC23-1378

Predictive yields for small-scale staple crop production in North Central States using common homestead equipment and minimal inputs