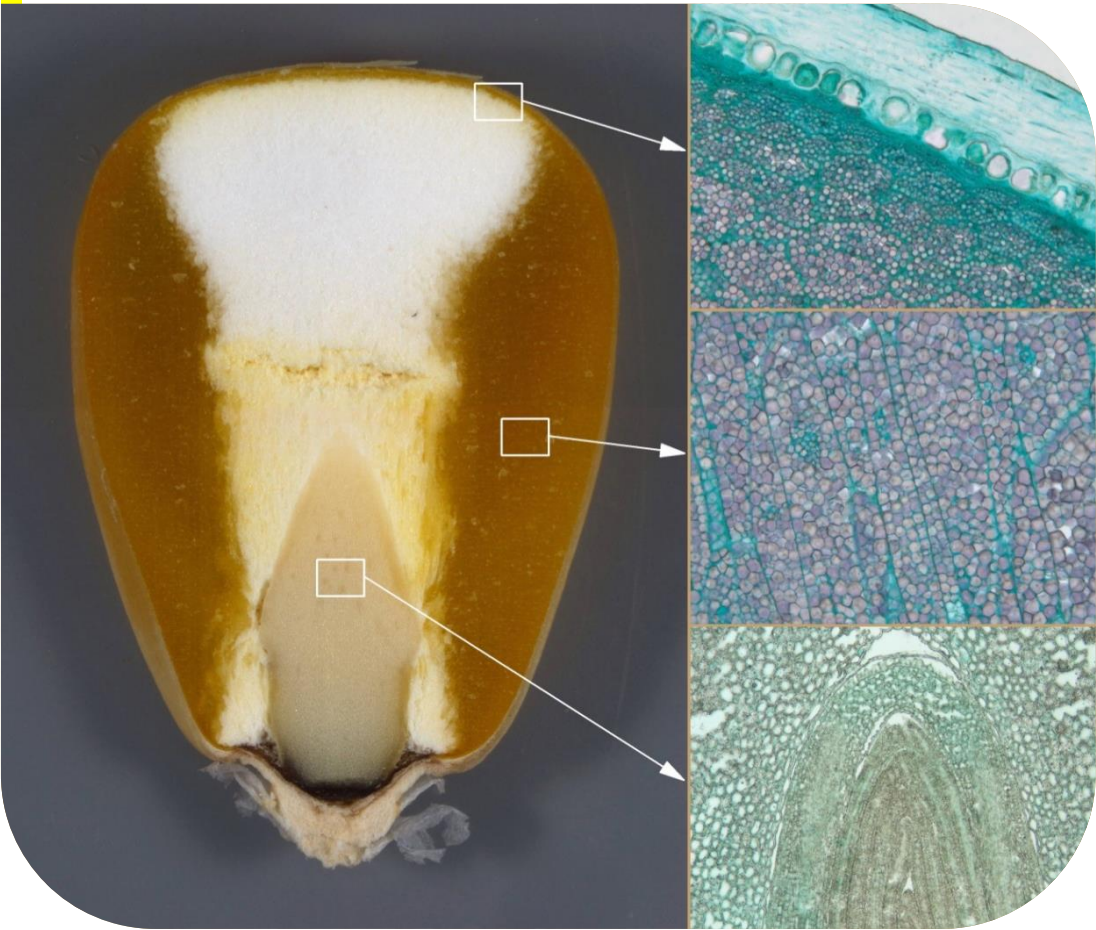




Understanding Corn and it`s Processing Options

Tino Boehm
Sales Manager Specialty Milling North America

Fractions of Maize kernel

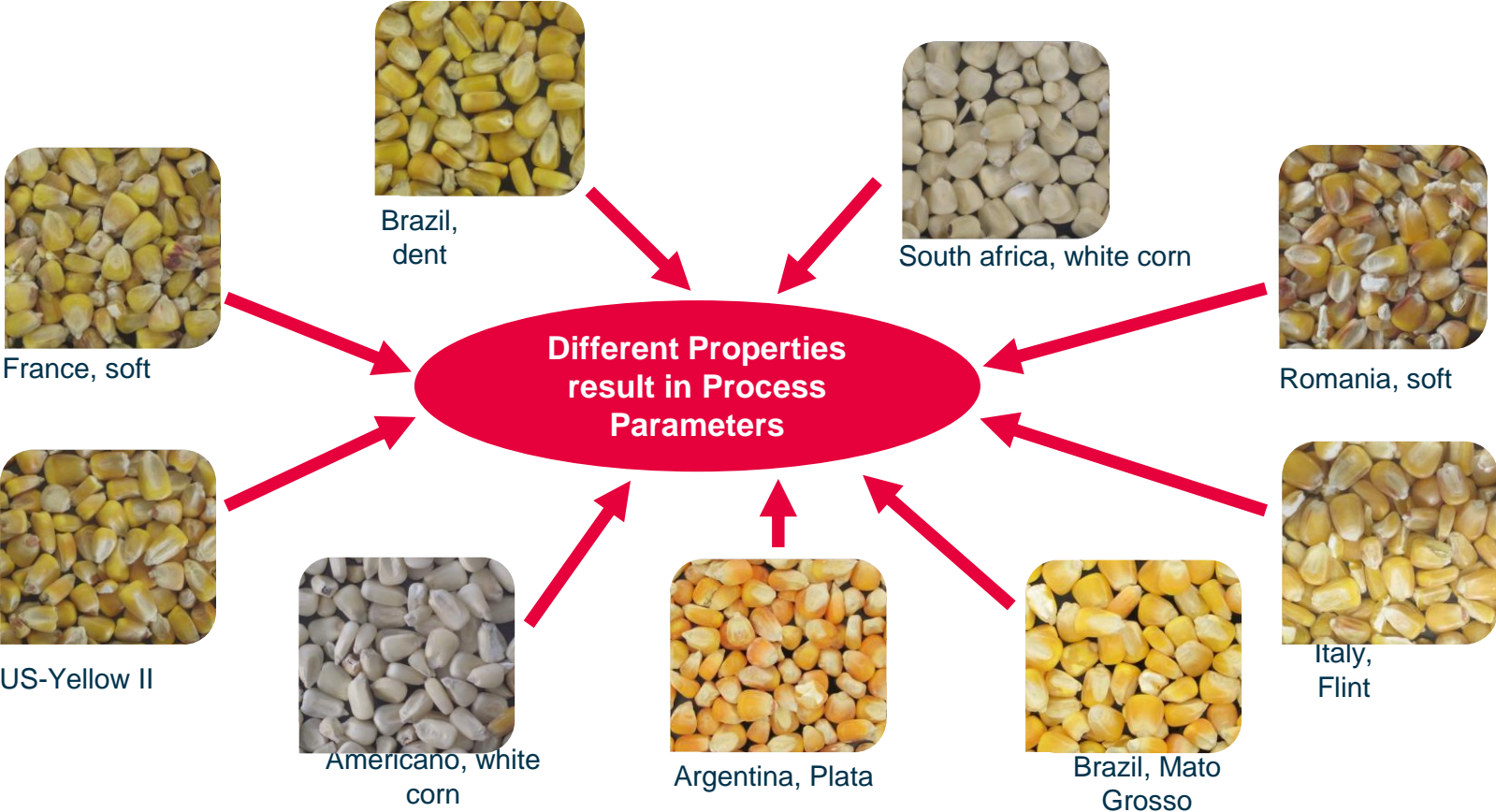


<u>Amount</u>	<u>Fat</u>
Pericarp / Testa	
6.0%	0.9%
Aleurone	
7.0%	7.0%
Hard Endosperm	
51.0%	0.24%
Soft Endosperm	
23.0%	0.24%
Germ	
11.5%	35.8%
Tip Cap	
1.5%	1.5%

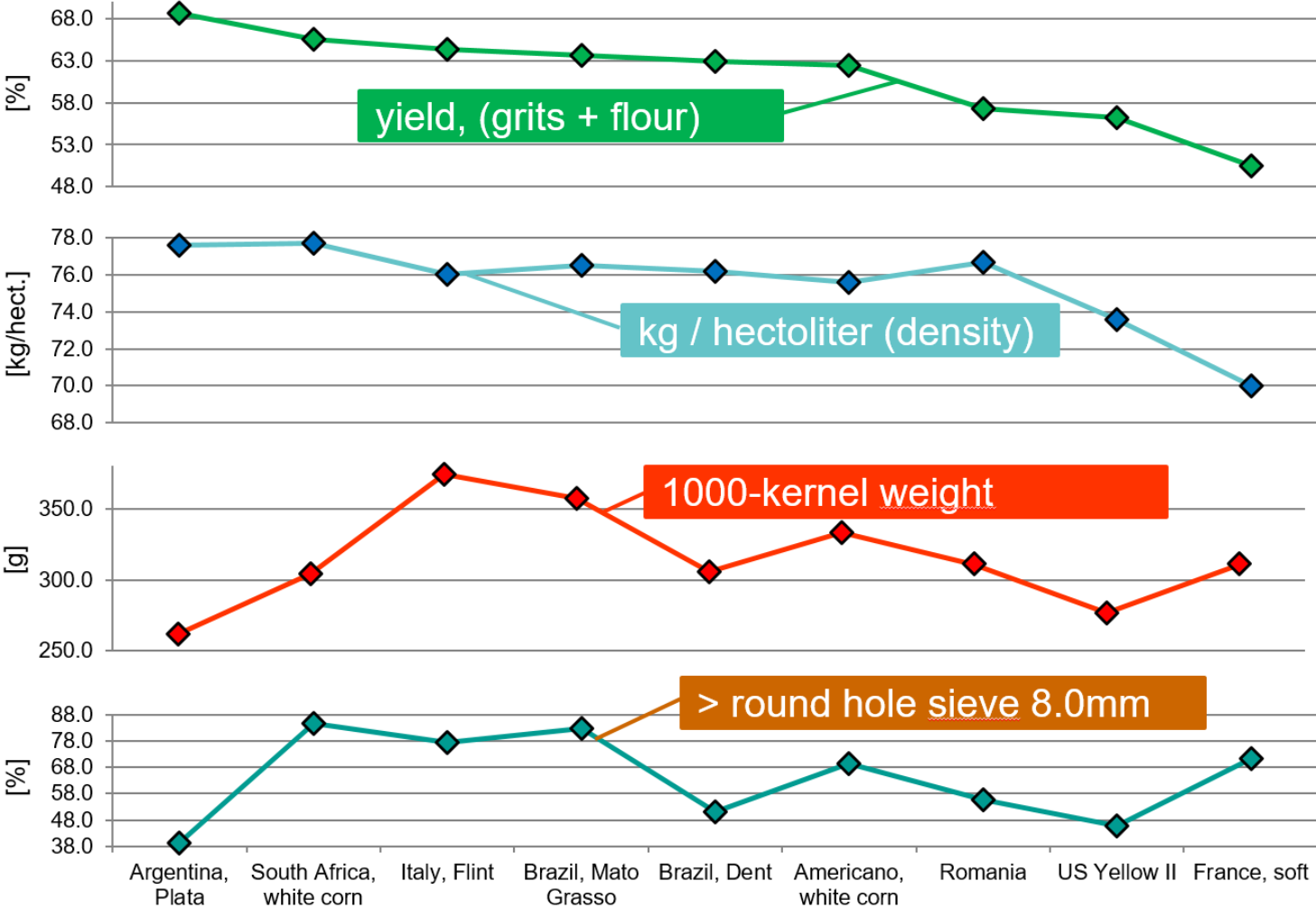


(Information: Hopkins, Smith + East)

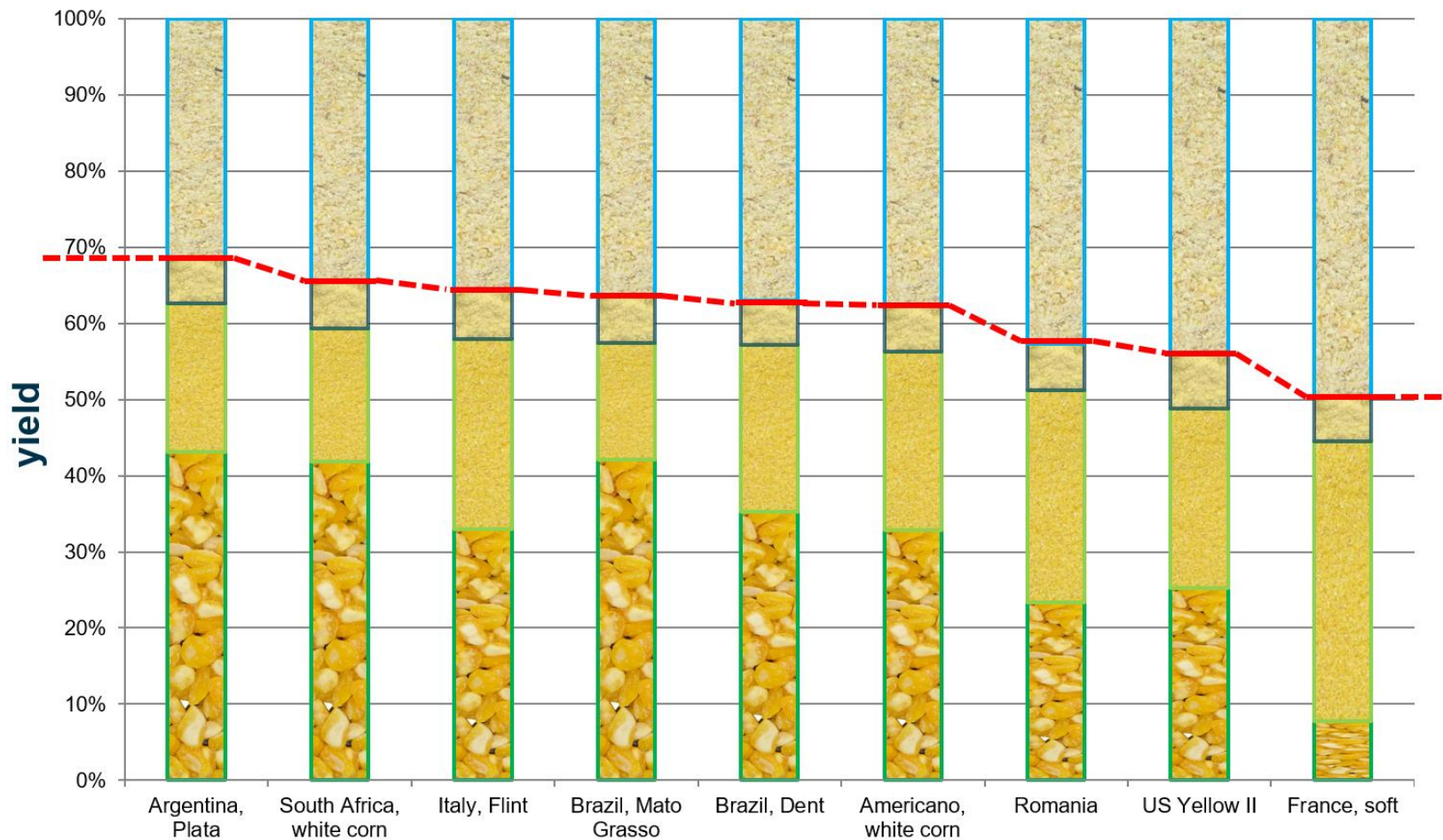
Different Corn from Countries



Whole kernel analyzes



Whole kernel analyzes



Heat damaged maize.



Main products from the maize degermination.



Flake grits
5600 - 4000 μm
Fat 0.6 - 0.8 %



Brewer's grits
1200 - 300 μm
Fat < 1.0 %



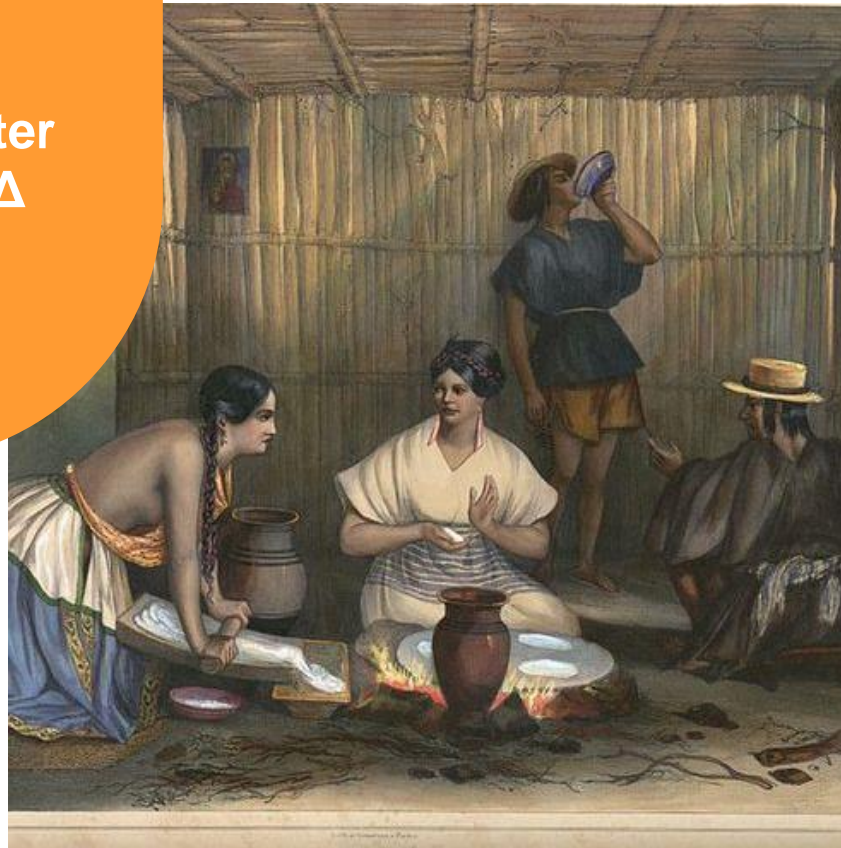
Snack grits
< 800 μ
Fat 0.6 – 1.0 %



Cornmeal
< 400 μ
Fat 1.0 - 2.5 %

Aztec process of cooking corn with ashes

Corn + Water
+ Lime + Δ
+ Time



Nixtamalization Process

- ❑ Process of cooking corn in alkaline solution, also known as Nixtamalization.
- ❑ Masa is a staple food in Mexico and Central America.



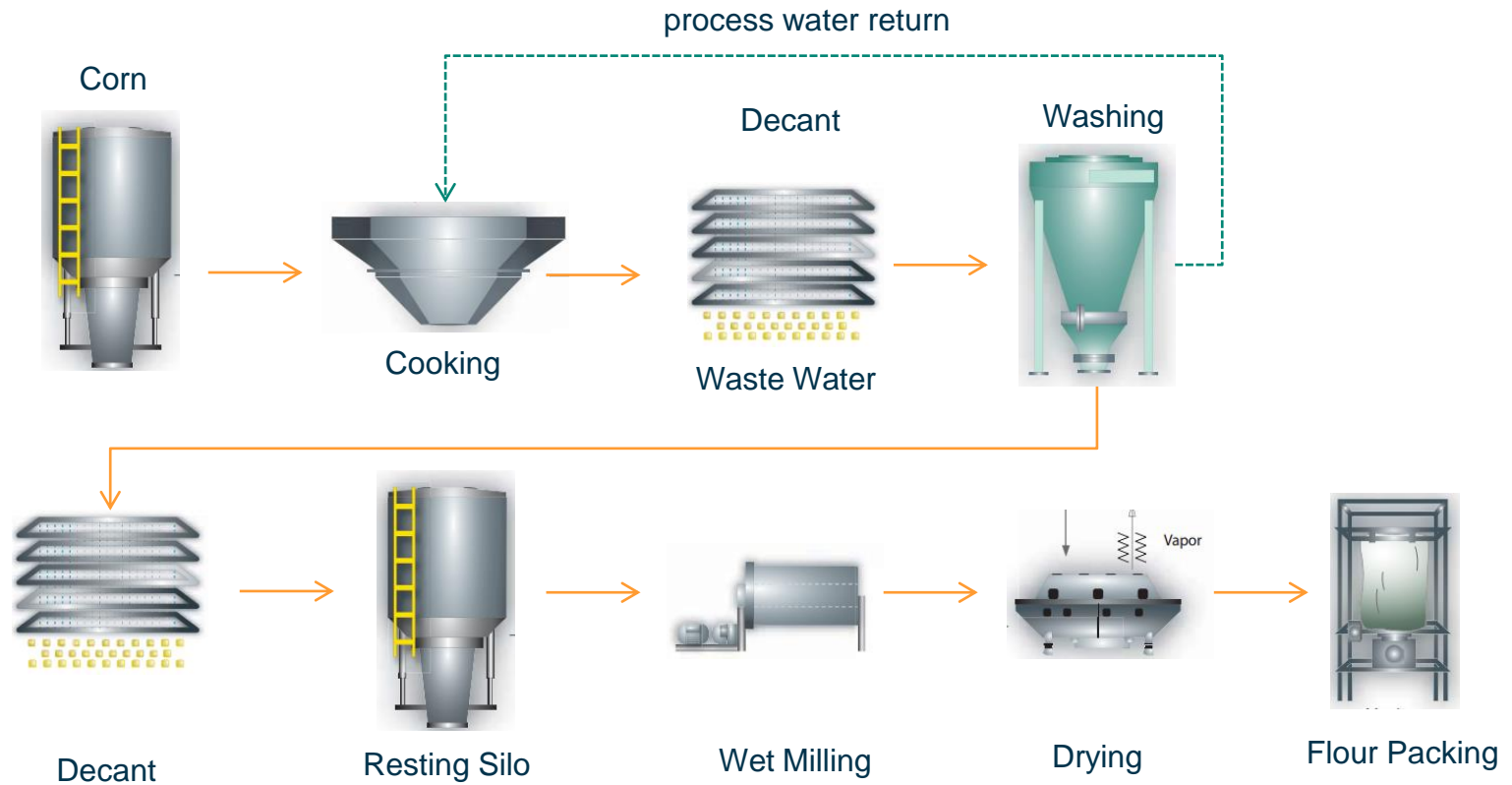
Corn
+ Alkaline
Solution
Δ

Manual
Grinding

Formation of
Tortillas

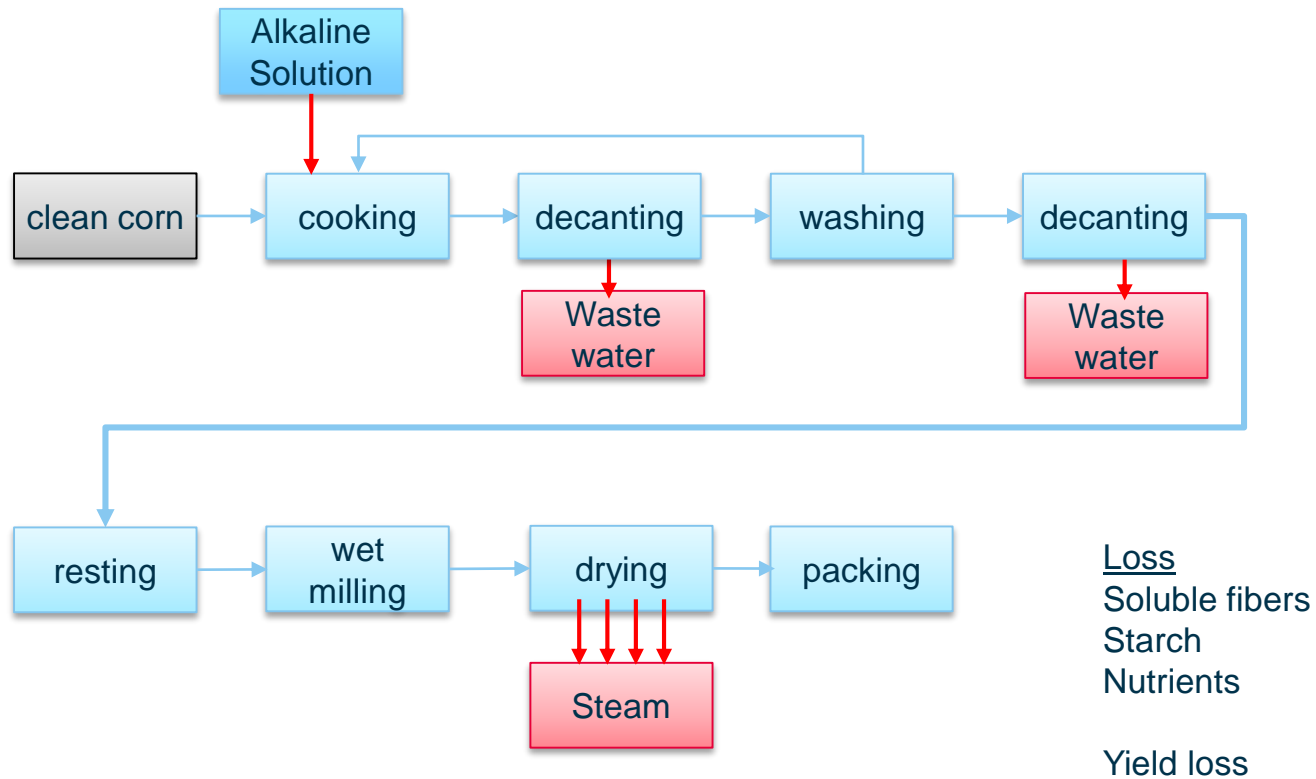


Traditional Process



Source: MASECA's process

Traditional Process



For internal use only

Derivate Products from Corn Masa

□ The product this process is known as corn Masa or Nixtamal and it is used for making a variety of snacks and foods.



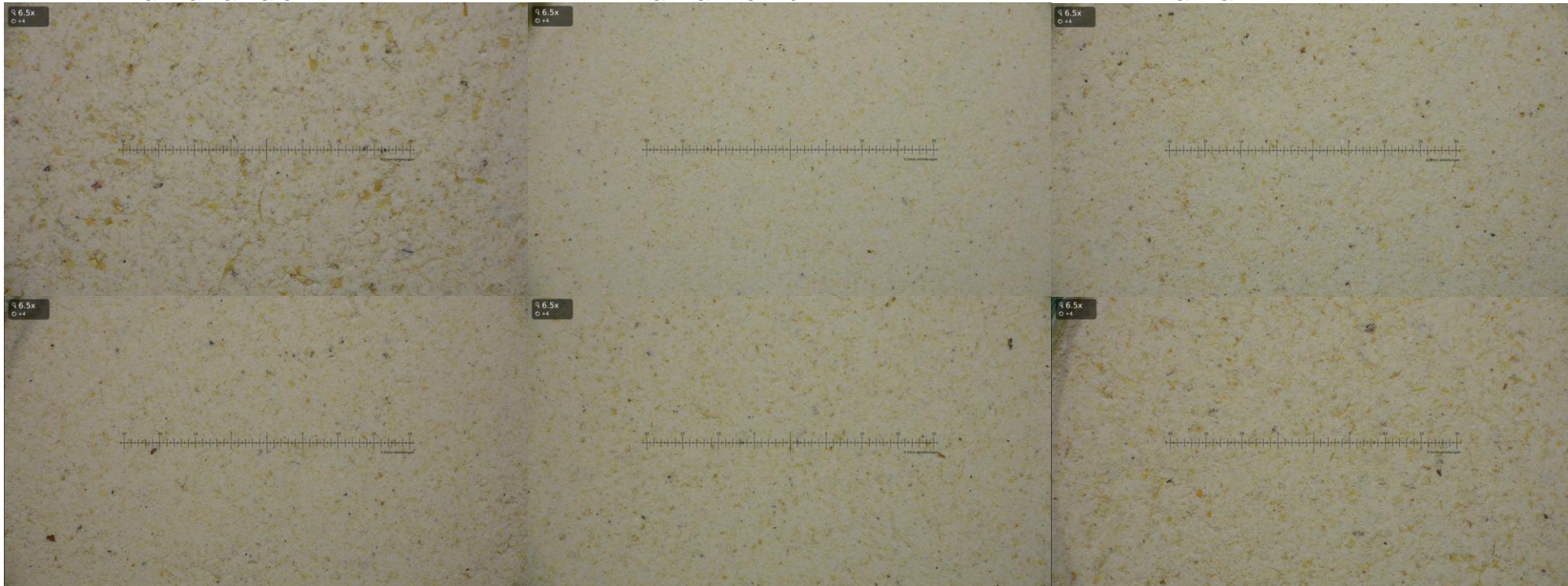
Nixtamalization



Harina Tamale

Harina Premium

Harina 4 B



Harina Clasica

Harina Amarilla

Harina Taco Shell

Problems with Corn Masa Process



Waste water

- ❑ 1.5 tons of waste water per ton of flour
- ❑ Loss of maize through waste
- ❑ Loss of energy
- ❑ Waste treatment plant required

Market potential

Tortilla markets have flourished over the past five years, making it the fastest growing segment within the baking industry.

8.4 m tons

of tortilla are consumed in Mexico each year



280 bn tortillas consumed yearly in the US.

over **13 m tons**



Global tortilla chips consumption **exceeds 1.3 m tons** per year

BUHLER

The process

PRIME MASA NIXTAMAL

Innovations for a better world.

BUHLER

Prime Masa Nixtamal

Waste water free



**91% less
water**
same rheological
properties of the
traditional masa

What is produced?

Product : Corn Masa Flour

Quality

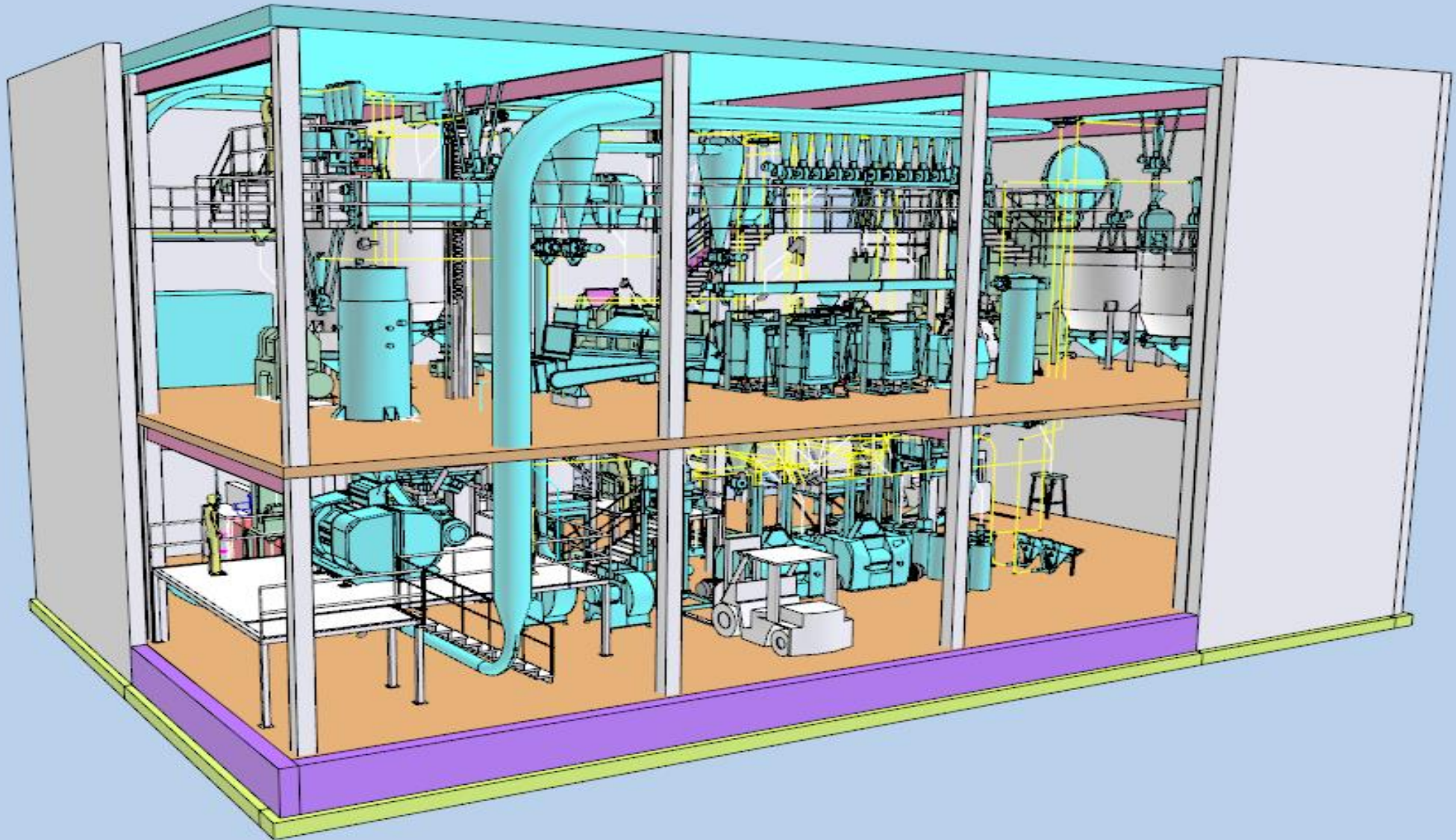
- ✓ Gelatinized Corn Flour 50-60%
- ✓ Granulation 90% under 300µm.
- ✓ Moisture ~12%
- ✓ Strong Lime Stone Taste.



Food Application Center Minneapolis



State of the Art Product Test Center



www.buhlergroup.com

Understanding Corn/ Maize

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