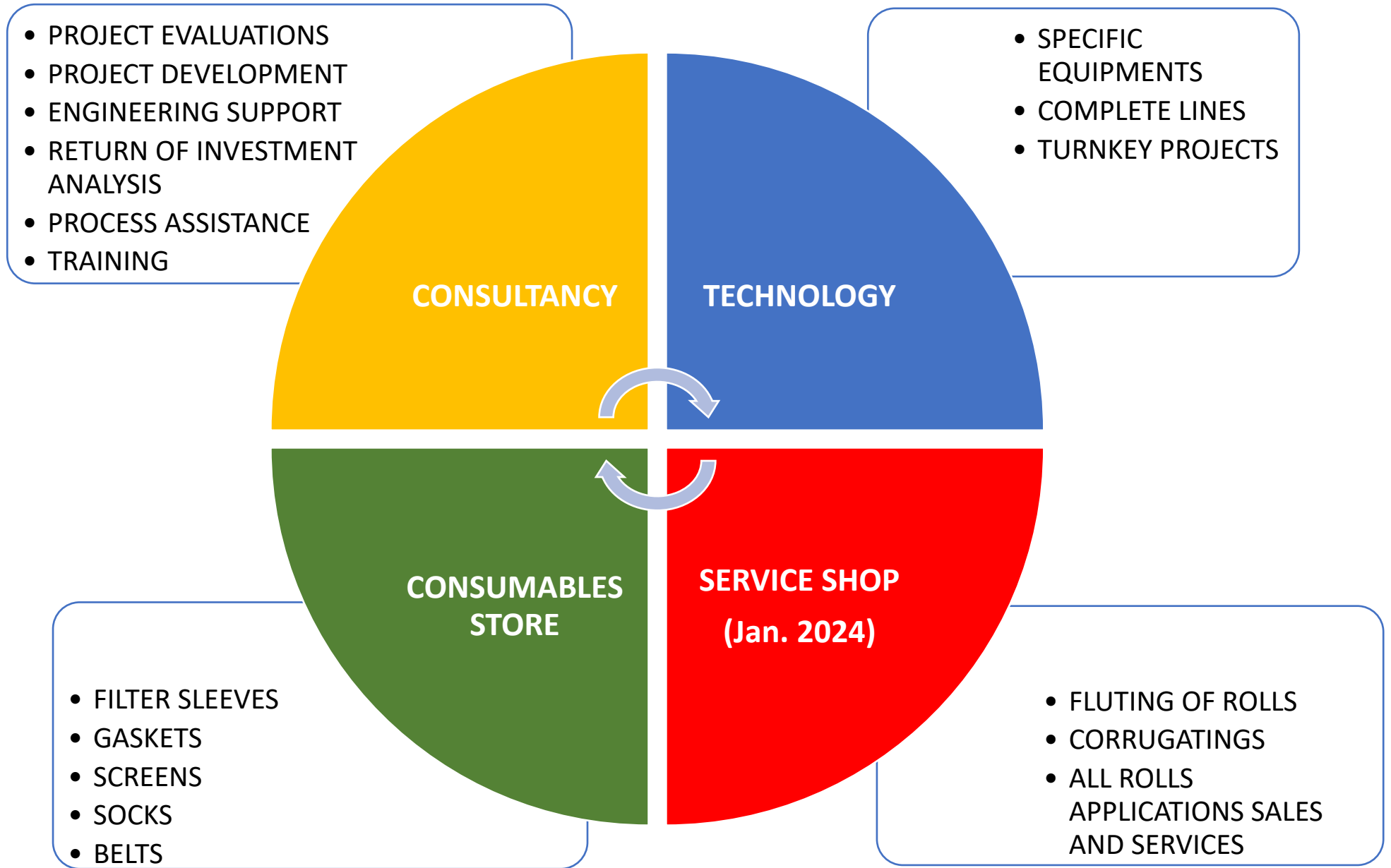


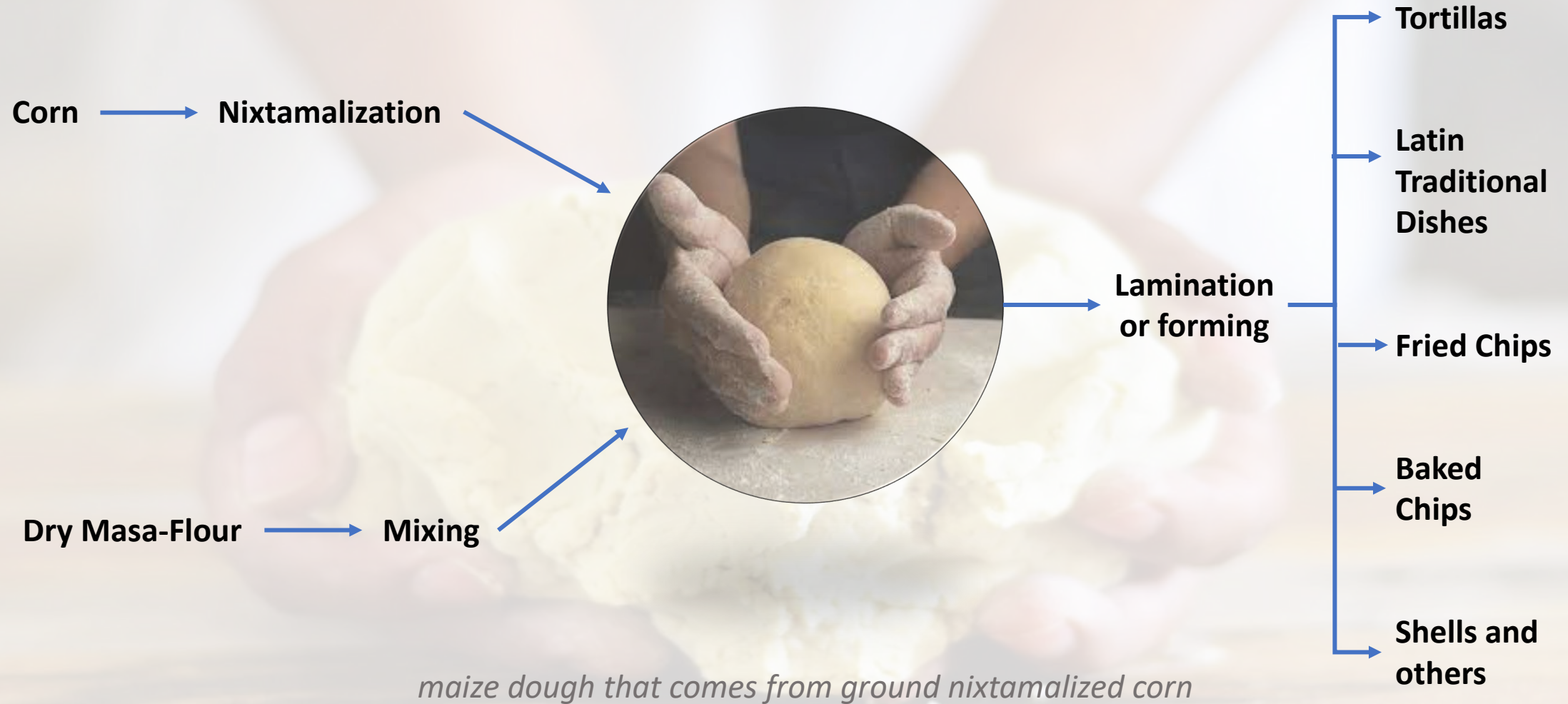


Nixtamalization

...a ***Sustainable*** Solution



What is “masa”?

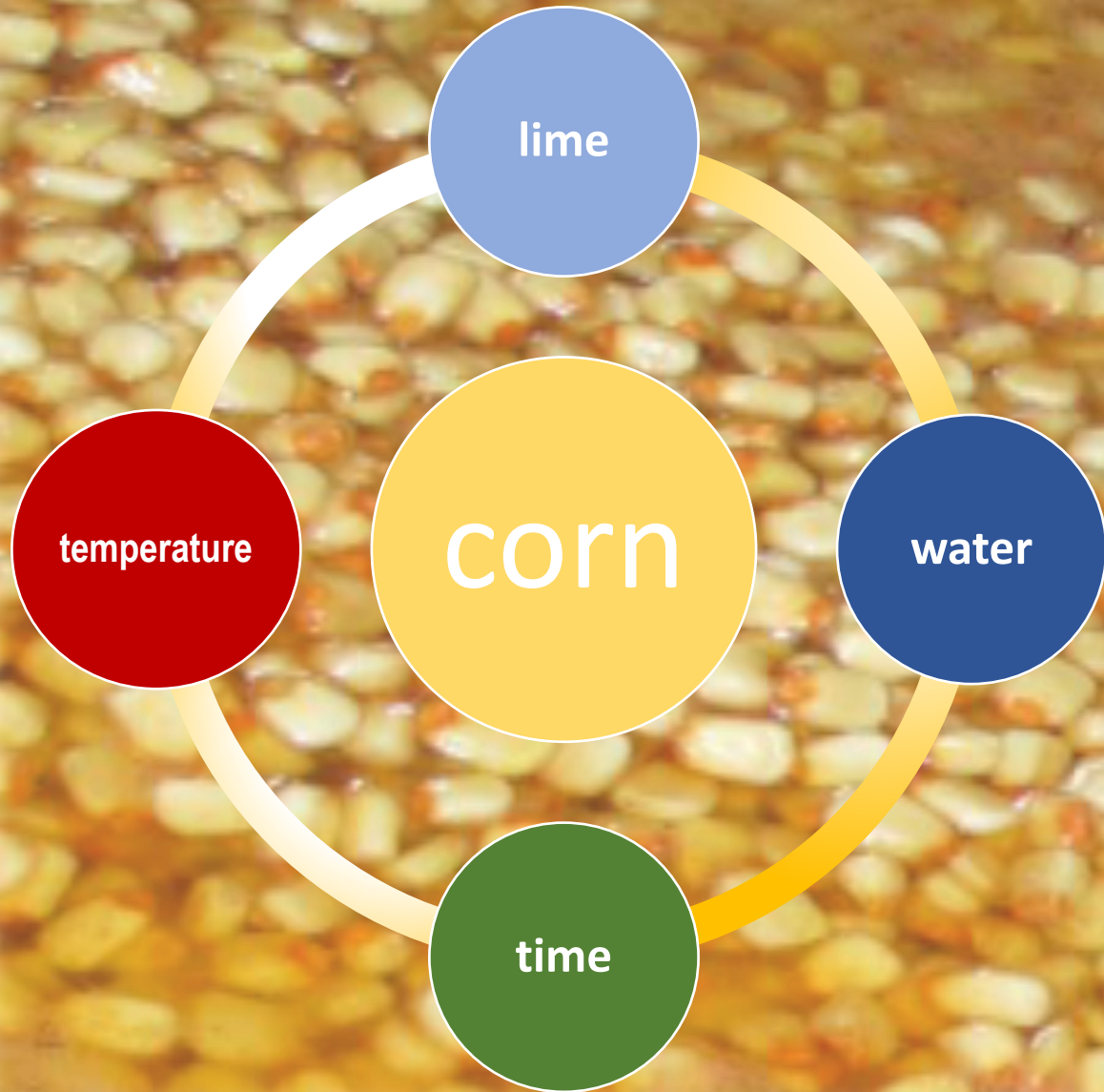


FUNDAMENTAL CONCEPT



Is an **alkaline thermal** process, to transform the **corn** grain into **masa-dough** to make **tortillas** and other products

Nixtamalization Factors and Characteristics



- 🔑 *Nutritional value is increased*
- 🔑 *Creates Flavor and Aroma*
- 🔑 *Mycotoxins are reduced*
- 🔑 *Alkalinity helps the dissolution of hemicellulose*
- 🔑 *Some corn oil is broken down into emulsifying agents*
- 🔑 *Niacin Availability (Essential amino -acid)*
- 🔑 *Insoluble fiber becomes soluble to human consumption*
- 🔑 *Unique binding effect*

APPLICATIONS IDEAS

table tortillas & snacks



bakery, premixes,



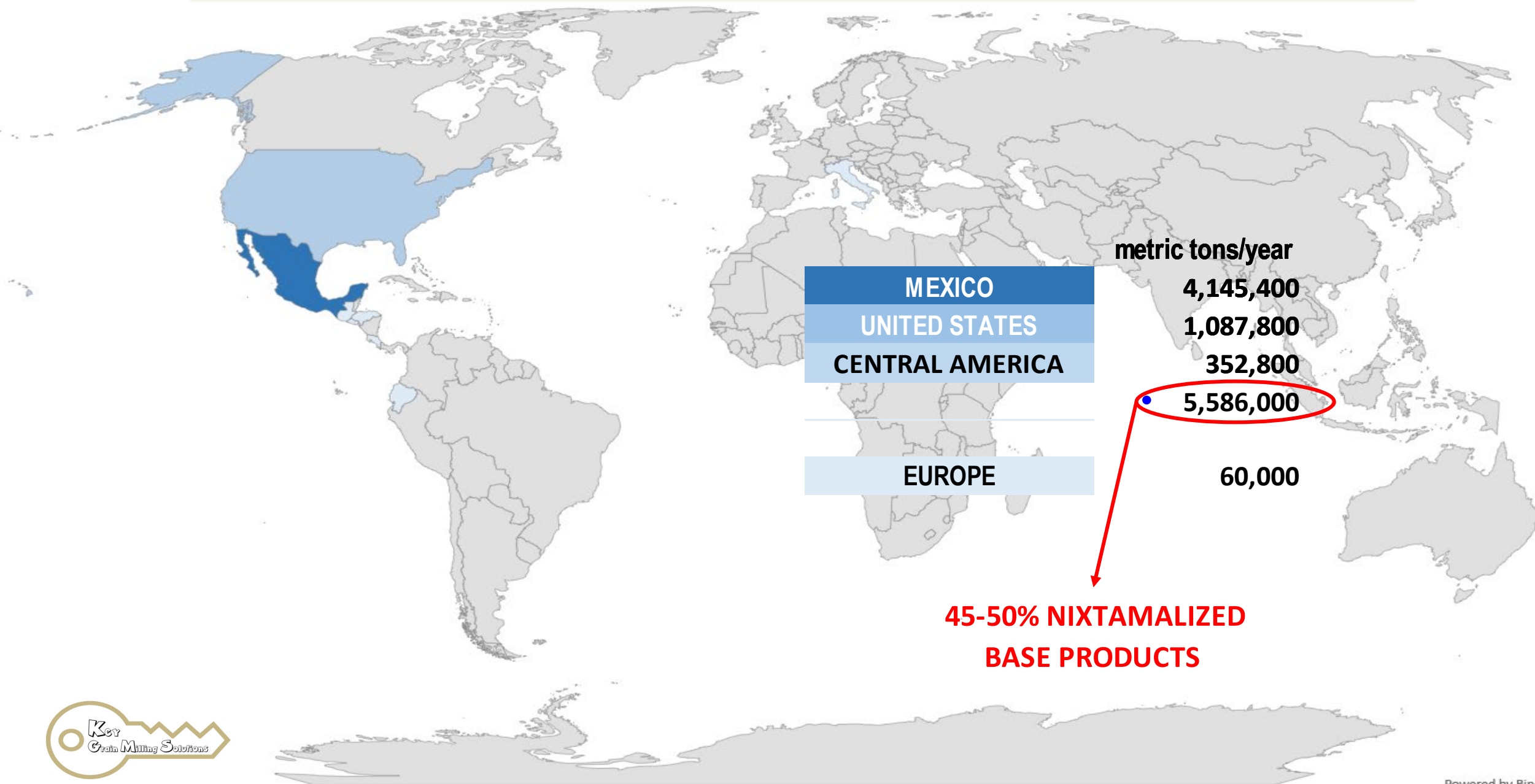
gluten free pasta solutions



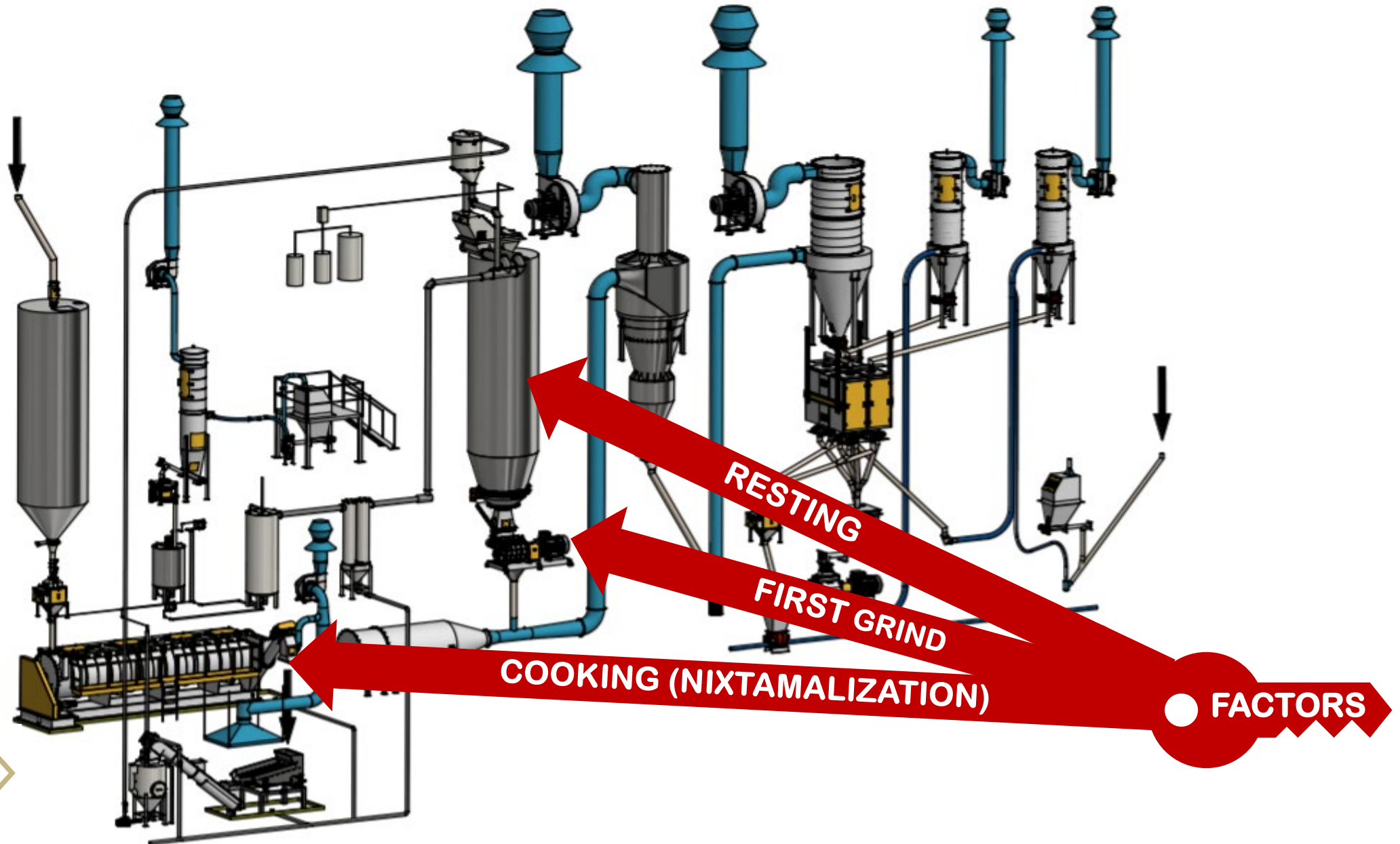
Thickener, filler, batter, dusting applications



World's Footprint of Nixtamalized Corn Flour Installed Capacity



Nixtamalized flour industrial process



TRANSFORMATION YIELD



PRE-COOKED FLOUR PROCESS (CORNMEAL OR AREPA)



**75% YIELD
FROM
CLEAN CORN**



**170% YIELD
TO
FINISH GOODS**



NIXTAMALIZED PROCESS



**93% YIELD
FROM
CLEAN CORN**



**180% YIELD
TO
FINISH GOODS**



Advantages



Challenges

- Highest crop produced in the world
- Highest transformation yield process in the milling industry
- Highest nutritional profile of flours or corn-based products
- Fastest trending growth around the Globe
- You can achieve:



- Water Usage Intensive
- Wastewater Affluent (60% of usage)



Advantages



- Highest crop produced in the world
- Highest transformation yield process in the milling industry
- Highest nutritional profile of flours or corn-based products
- Fastest trending growth around the Globe
- You can achieve:



Challenges

- ~~Water Usage Intensive~~
- ~~Wastewater Affluent (60% of usage)~~






**Traditional
Nixtamalization
7 – 10 lts. H₂O/ 1 kg
Corn**

**Industrial
Nixtamalization
1.5 – 2 lts.
H₂O/ 1 kg Corn**



The image shows a row of industrial machines used for nixtamalization, likely in a corn processing facility. The machines are made of stainless steel and have a series of black adjustment knobs on top. The background is slightly blurred, showing more of the facility and some yellow safety signs.

**Sustainable
Nixtamalization
0.2 – 0.25 lts.
H₂O/ 1 kg Corn**

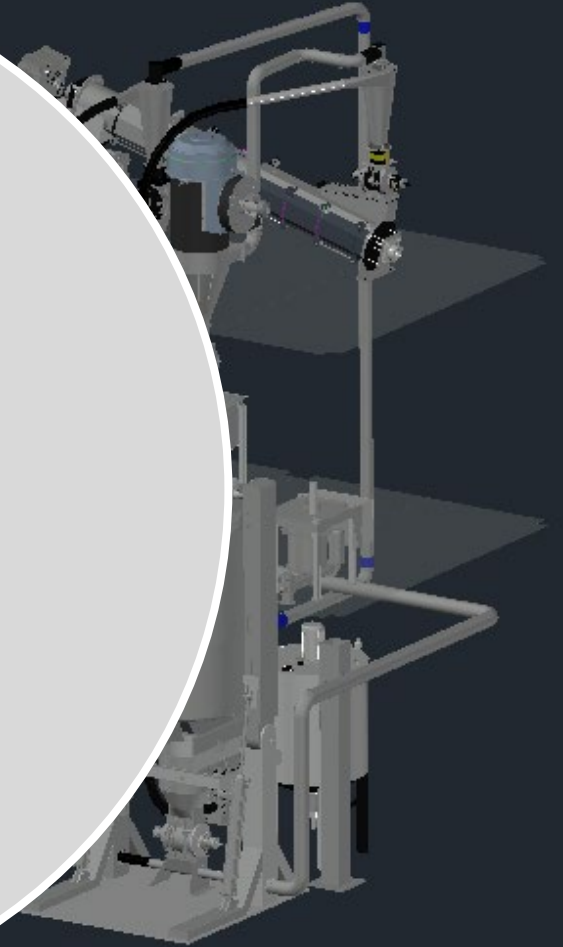
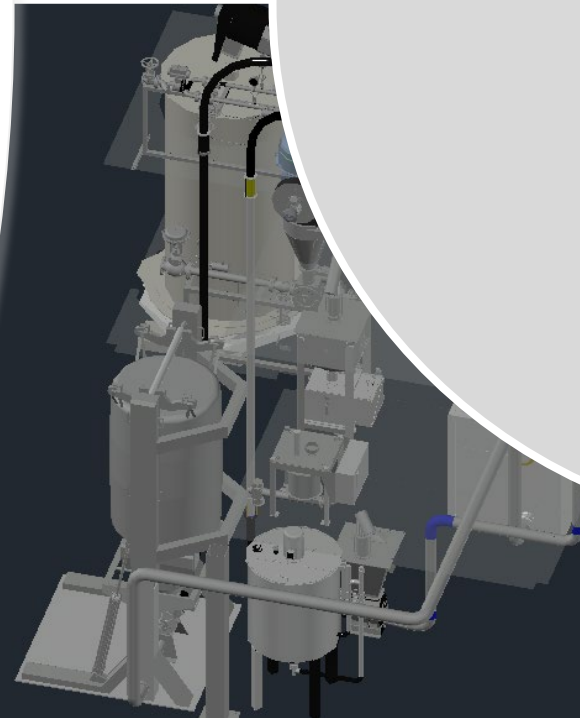
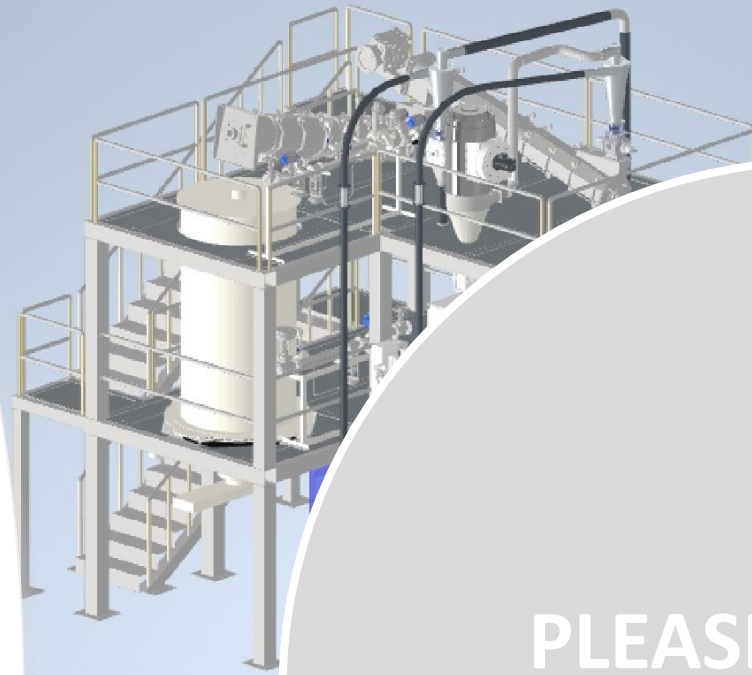
CURRENT DEVELOPMENTS



HIGHLIGHTS

- ✦ CUSTOM DESIGN FOR DIFFERENT CAPACITIES
- ✦ AREA SPACE CONVENIENT
- ✦ TOTALLY ENCLOSED
- ✦ ALL STAINLESS-STEEL 316 & 304 CONSTRUCTION
- ✦ EASY TO ACCESS FOR CLEANING, INSPECTION AND MAINTENANCE
- ✦ AUTOMIZED WITH CHANGEABLE RECIPES AND PARAMETERS ADJUSTMENT
- ✦ DOSIFICATION CONTROLS OF CORN, LIME AND WATER
- ✦ AUTOMATED TEMPERATURE CONTROL
- ✦ SAFETY COMPONENTS THROUGHOUT THE ENTIRE LINE

PLEASE CONTACT
PRESENTER



CORN PROFILES TO NIXTAMALIZE



WHOLE CORN



POLISHED



DEGERMINATED

TRANSFORMATION YIELD REDUCTION
NUTRITIONAL PROPERTIES ARE LOST

What do we Want?
What do we expect?
What do we need?

- ✓ **Reduce the water usage in our process**
- ✓ **Eliminate the wastewater stream**
- ✓ **Decrease energy consumption**
- ✓ **Improve quality**
- ✓ **Stabilize the processes**





KEY GRAIN MILLING SOLUTIONS

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