

# Shaking Up the Breadbasket: The Dietitian's Guide to Increasing Biodiversity with Ancient Grains

February 17, 2022

# About Oldways

- Nutrition nonprofit founded in 1990
- **Mission:** To inspire people to embrace the healthy and sustainable joys of the old ways of cooking and eating
- **Best Known for** Creating the Whole Grains Council and Whole Grain Stamp, Culinary Travel, Creating the Mediterranean Diet Pyramid



# Housekeeping

- Attendees will receive an email within ONE WEEK with **CPEU certificate, slides, and recording**
- Visit **[oldwayspt.org/CPEU](https://oldwayspt.org/CPEU)** to register for upcoming webinars or view recordings of previous webinars
- Please submit any questions using the CHAT function in Zoom
- Thank you to the Specialty Soya and Grains Alliance for sponsoring this session!

Next Webinar: 3/3 at 1PM ET



Webinar

**The Latest in Plant-Based Omega-3 ALA Research and Nutrition Education Approaches to Meet Generational Needs**

March 3 • 1:00 PM E.T.

**OLDWAYS**

# Our Speakers



**Shane Frederick**  
Manager of Strategic Programs  
Specialty Soya and Grains Alliance



**Laurie Scanlin**  
Principal Scientist  
Ardent Mills



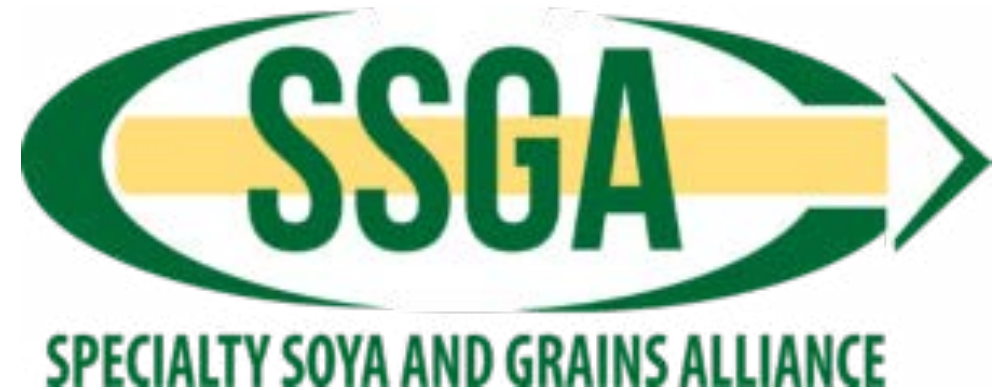
**Neil Doty**  
Business Development Manager  
Northern Crops Institute





# Specialty Soya and Grains Alliance

- SSGA is a national association of companies focused on production, processing and shipping of U.S. Identity Preserved field crops and their related products worldwide. Its mission is to provide resources that communicate the quality, diversity and availability of their products and support allied companies throughout the value chain, including, but not limited to, agronomy, data, finance, insurance, logistics and transportation.

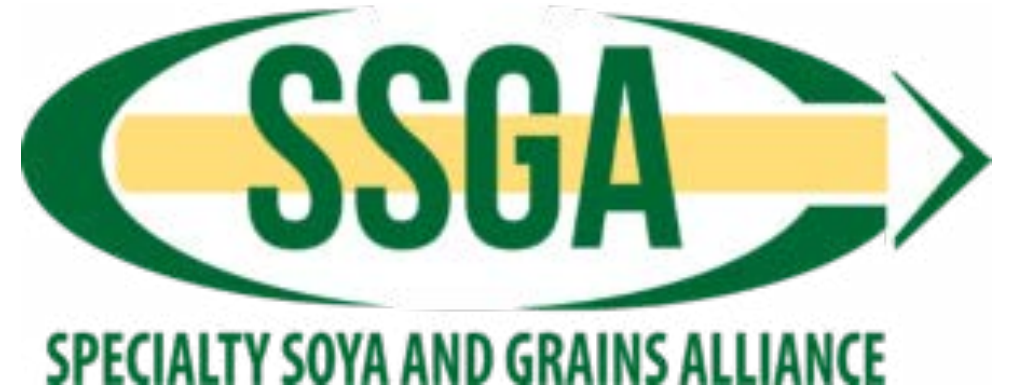


[soyagrainsalliance.org](http://soyagrainsalliance.org)



# Specialty Grains

- SSGA processor members supply a wide range of specialty grains and ingredients for food uses, including colored and waxy corns, cereal grains such as specialized wheat, durum, barley, rye, oats, buckwheat, sorghum, millet and ancient grains and small grains.



[soyagrainsalliance.org/specialty-grains](http://soyagrainsalliance.org/specialty-grains)



# U.S. Identity Preserved

- Developed by SSGA with funding from USDA FAS Agricultural Promotion grant, as well as state commodity associations. Launched in December 2021. First companies have begun process to get qualified and start using the mark.



[usidentitypreserved.org](https://usidentitypreserved.org)



# What is U.S. Identity Preserved?

- An identity preserved grain has identifiable characteristics maintained through every step of production and transportation to the end-user, based on a specific, written, verifiable IP system or plan.
- IP grains and oilseeds are segregated and can be defined by variety, type, modification, region of origin or growing practice, assuring the product meets the buyer's needs.



[usidentitypreserved.org](http://usidentitypreserved.org)





# What is U.S. Identity Preserved?

- IP offers variety protection, characteristic protection, sustainability, intellectual property transmission. This comes direct from the field or through a process achieved in refinement.
- U.S. Identity Preserved stands for quality – quality that's assured through the great care taken by U.S. processors, farmers and others at every step of the IP process.



[usidentitypreserved.org](http://usidentitypreserved.org)



# U.S. Identity Preserved Assurance plan

- Companies who join the program and use the mark agree to an eight-step assurance plan that ensures the integrity of their product from seed to end-user.
  1. Program audit
  2. Grower activities
  3. Field inspection during planting
  4. Source of the seed
  5. Field verification during growing/harvest
  6. Crop segregation activities
  7. Chain of custody
  8. Labeling – product information



[usidentitypreserved.org](http://usidentitypreserved.org)



# 'The Pillars of Premium'



## ORDER WITH CERTAINTY

U.S. Identity Preserved oilseeds and grains are modern, trusted crops. Grown with great care by U.S. farmers, they deliver the specific varieties and traits that food manufacturers need for their high-quality products.



## VERIFIABLE

U.S. Identity Preserved products are traceable from their fields of origin throughout the process of production, processing, packaging and distribution, providing the knowledge and assurance customers need.



## SEAMLESS FOOD SAFETY

U.S. Identity Preserved processors follow strict protocols and have safety measures in place to ensure the quality, consistency and security of their products throughout the value chain.



# Our pitch: 'Fork to Farm' traceability

- You've heard "Farm to Fork," but we like to go the other way – "Fork to Farm." That's because traceability is at the core of the U.S. Identity Preserved process.
- IP ingredients are traceable – documented through the value chain of distribution, packaging, processing, farm production – all the way back to seeds bred for varieties carefully selected for specific applications.



- With growing consumer and growing consumer and retail demand for increased understanding of how and from where food is produced, traceability has never been more important. Traceability allows for feedback throughout the entire process.



# More than a mark – it's a movement!



'IP allies' mark

First bags bearing the mark being shipped





# ANCIENT GRAINS AND BIODIVERSITY

Laurie Scanlin, PhD, Principal Scientist, Ardent Mills  
Oldways Webinar February 17, 2022

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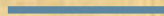
# Overview



**Introduction**



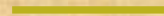
**Consumer Trends**



**Applications**



**Actionable Ideas**





# Why is Biodiversity So Important?

Because it contributes to...

## Healthy Environments



 Cleaner air and water


 Nature-based solutions to climate change

 Resilience to storms and flooding

## Healthy Humans




 Food security and nutrition

 Natural medicine & pharmaceuticals

 Mental health support

## Healthy Economies



 Resistance to shocks (e.g. disease)

 Recreation and tourism

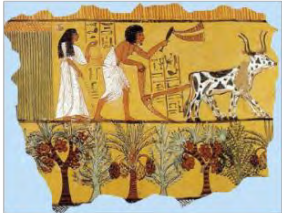
 Livelihoods and job creation

Source: (Berrisford, 2021) Graphic: Abby Litchfield

\*Examples are not exhaustive



# Ancient Grains



**Ancient Times**

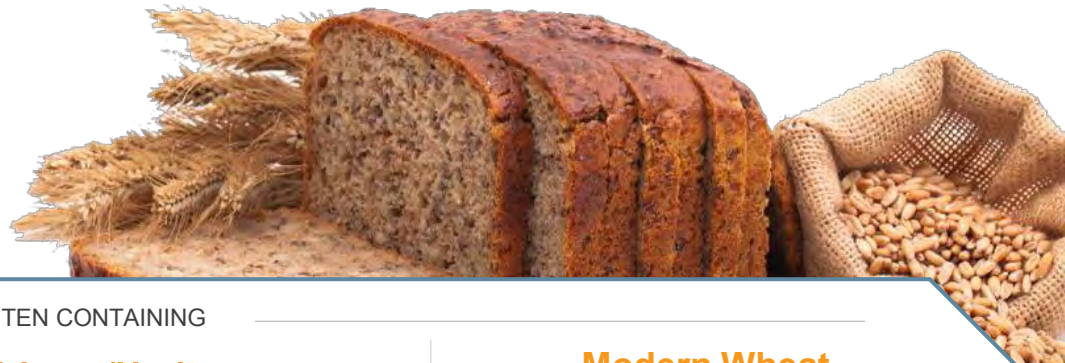


**A perception: generally considered less changed by modern breeding practices**



**Now**

# Wheat History



GLUTEN CONTAINING

## Ancient Wheats

Einkorn, Emmer, Spelt  
Khorasan

Gluten-containing wheats cultivated and consumed by ancient civilizations.

## Heirloom/Heritage Wheat Varieties

White Sonora, Turkey Red, Red Fife, Marquis

Wheat varieties grown before the “Green Revolution”.

**1850s-1950s**

## Modern Wheat Varieties

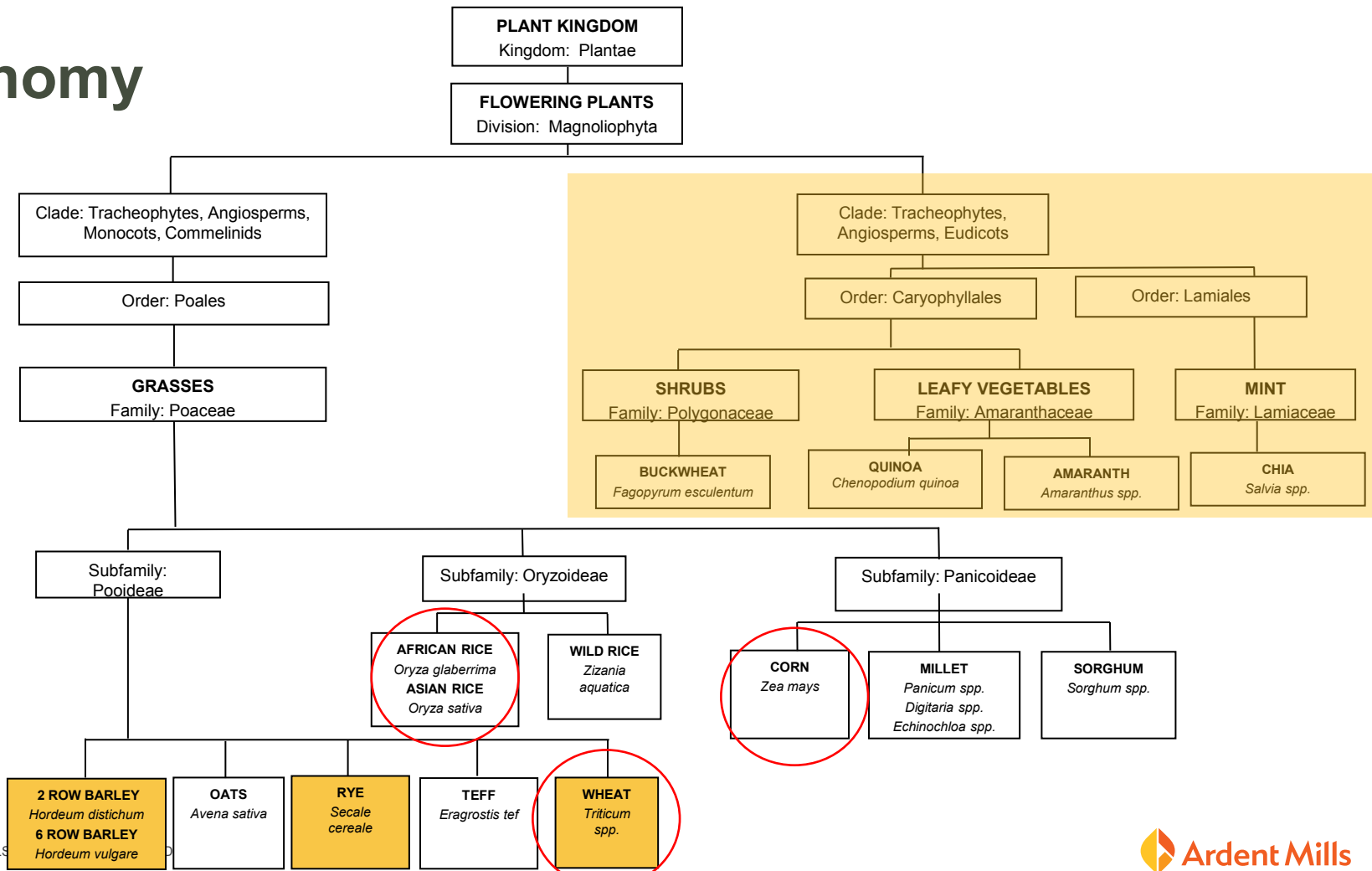
Over 200 varieties, ~20 grown commercially

Wheat varieties grown starting during the “Green Revolution”  
May contain semi-dwarfing genes in their pedigree.

Produced by breeding programs at Universities or private companies.

**1950s-present**

# Taxonomy



# Consumer Trends

Empowered like never before.



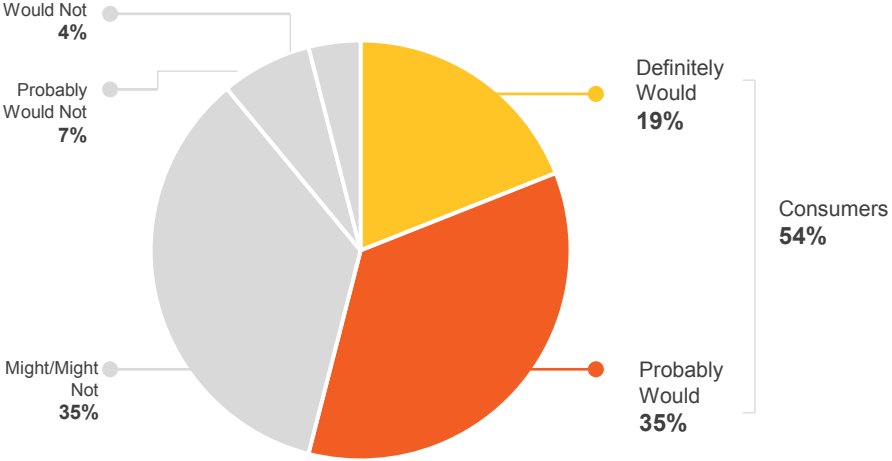
Where, what and why they eat is on their terms





# Consumer interest in heirloom and ancient wheats is high, driven by an 'enlightened' consumer

## Purchase Intent for Retail Products Including Heirloom & Ancient Wheats



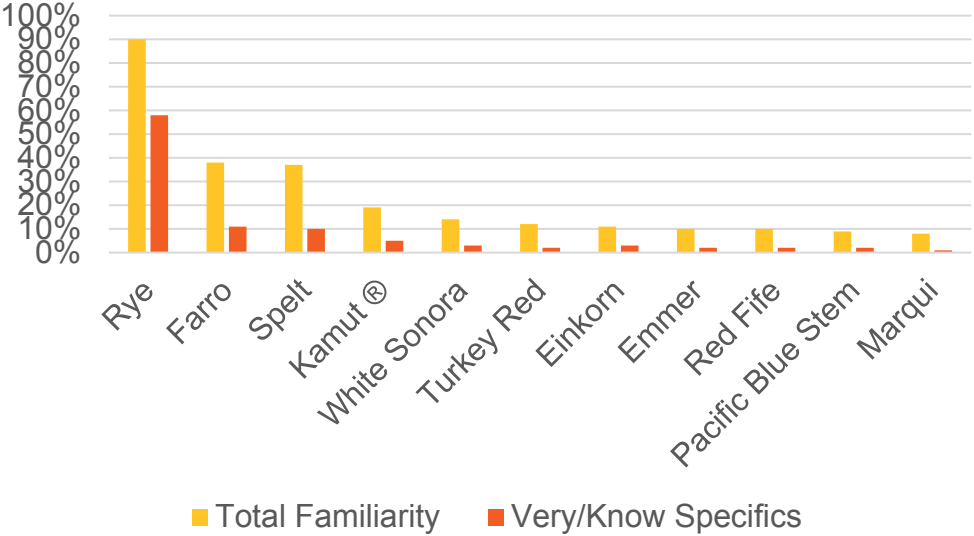
Source: Ardent Mills Proprietary Research  
\*Survey completed only with acculturated/English fluent consumers  
\*\*Target Consumers report overall positive purchase intent for products with the Wheats

## Enlightened / Purposeful Eaters



# Farro and spelt are familiar with ‘enlightened consumers’

## CONSUMER Familiarity



**Did You Know??**

**Farro** is an Italian word that **encompasses three varieties of wheats: einkorn, spelt and emmer**

**Farro** in the **culinary** sense of the word usually refers to any of these three **grains** cooked as the **whole wheat berry**.

Source: Ardent Mills custom consumer study, February 2021

# Ingredient Spotlight – Einkorn (farro piccolo)

**Classification:** Cereal Grain; Family: Poaceae;  
Subfamily: Pooideae; Genus Species: Triticum monococcum.

**History:** Originated in Fertile Crescent (Turkey, Syria, Iraq). Grown in Turkey, Europe, and US (Washington, Montana, Idaho, North Dakota).

**Growth Habit:** Matures later than spring wheat with lower yields (except under poor conditions).

**Features:** Hulled, pale red, flattened kernel (smaller than emmer and spelt).

**Uses:** Dehulled whole grain berries and flour. Artisan breads, biscuits, rustic pizza, flat breads, pilafs.

**Nutrition:** Contains Gluten. Some studies show higher protein, minerals, and lutein than common wheat.



# Ingredient Spotlight – Spelt (farro grande)

**Classification:** Cereal Grain; Family: Poaceae;  
Subfamily: Pooideae; Genus Species: Triticum aestivum ssp. spelta.

**History:** Originated in Asia or Europe. Grown in Central Europe and popular in Germany, Austria, Poland. Grown in Ohio, Michigan, Pennsylvania, New York.

**Growth Habit:** High suitability for low-input organic farming.

**Features:** Hulled, red kernel (larger than einkorn and emmer).

**Uses:** Dehulled whole grain berries, flakes, flour. Artisan breads, pretzels, pasta, cereals, muesli, pilafs, brewing.

**Nutrition:** Contains Gluten. Some studies show high protein and minerals and lower phytic acid than common wheat.





# Gluten Free Ancient Grains



Flavors & Textures



Whole Grain



Gluten Free



Plant-based



Topping and Inclusions | Gluten free mixes, breads, cookies, cakes, bars and snacks | Tortillas | Flatbreads | Pasta | Extruded snacks | Batters | Breadings

# Gluten Free Ancient Grain Nutrition

100g  
NUTRITIONALS:  
raw whole seed  
(g)



Per 100 g	Brown rice (MG)	Amaranth	Buckwheat	Chickpea	Millet	Quinoa	Sorghum	Teff
<b>Fiber</b>	3.4 g	6.7 g	10.0 g	12.2 g	8.5 g	7.0 g	6.7g	8.0 g
<b>Protein</b>	7.5 g	13.6 g	13.2 g	20.5 g	11.0 g	14.1 g	10.6 g	13.3 g

\* Note: plant protein is less digestible, less bioavailable & has special Nutrition Facts label calculations vs animal proteins.

Approx. Fiber	
Chickpea	12%
Buckwheat	10%
Millet, Teff	8+%
Amaranth, Millet, Sorghum	7%

Approx. Protein	
Chickpea	20%
Amaranth, Quinoa	14%
Buckwheat, Teff	13%
Millet, Sorghum	11%

Source: Ardent Mills and U.S. Department of Agriculture, Agricultural Research Service. 2018. USDA National Nutrient Database for Standard Reference, Release 28. Nutrient Data Laboratory.

# Ingredient Spotlight - Quinoa

**Classification:** Pseudocereal Grain; Family: Amaranthaceae,  
Subfamily: Chenopodiodeae; Genus Species: Chenopodium quinoa.

**History:** Originated in Andes, cultivated by the Incans. Grows in Bolivia, Peru, Canada and US (Colorado).

**Growth Habit:** Grows at high altitudes, cool, dry climates and is drought tolerant.

**Features:** Small, slightly flattened seeds, can be white, yellow, red, purple or black. Bitter hull needs to be removed.

**Uses:** Cooks 1:2 water in 15 min. Versatile - soups, side dishes, baked goods.

**Nutrition:** Gluten Free. Good source of fiber, thiamin, riboflavin, iron and excellent source of folate.





# Ingredient Spotlight - Quinoa

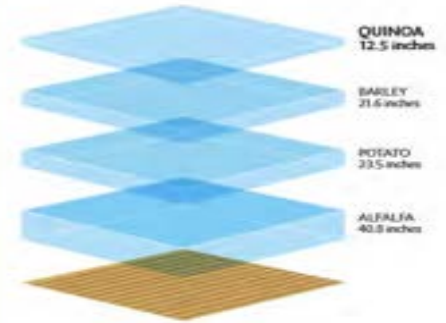


## SUPPORT SUSTAINABLE GROWING PRACTICES FOR FARMERS

Quinoa is a profitable crop rotation option and also promotes soil biodiversity and water conservation.

Partner with The Annex by Ardent Mills to incorporate Colorado Quinoa into your food products and menus, help preserve the Rio Grande Aquifer System and share the story of sustainability with your customers.

### Average Amount of Water Needed Per Growing Season Per Acre



For every **1,000** acres of quinoa planted, **366 million** gallons of water are saved — the equivalent of **555** Olympic-sized swimming pools.\*

\* Water requirements, which are taken from [fao.org](http://fao.org) and [wisc.edu](http://wisc.edu), are based on the assumption that the crop rotation where quinoas would be inserted into is two-thirds potato and one-third barley and alfalfa.



# Land Stewards



“ We’re excited to partner with Ardent Mills. We work really hard on this farm to produce a quality product because when it comes down to it **our name is on that product.**”

– Ron Rabou, Rabou Farms



“ We’re proud to be part of the Ardent Mills Ultragrain Growing Program. Together we’re growing **grains for the future.**”

– Danell Kalcevic, Kalcevic Farms



“ It’s really exciting that Ardent Mills is looking into adding **ancient grains** into their markets and opening up market opportunities for growers in North Idaho.”

– Matt Horlacher



## Actionable Ideas:

- Culinary exploration, product and recipe development
- Education/promotion
- Regulatory updates
- Affordable, small-scale processing
- Advances in sustainable breeding programs

Laurie.Scanlin@Ardentmills.com

# Ancient Grains Product Development

Northern Crops Institute





# NCI Cereal Innovators

January 12<sup>th</sup>, 2022



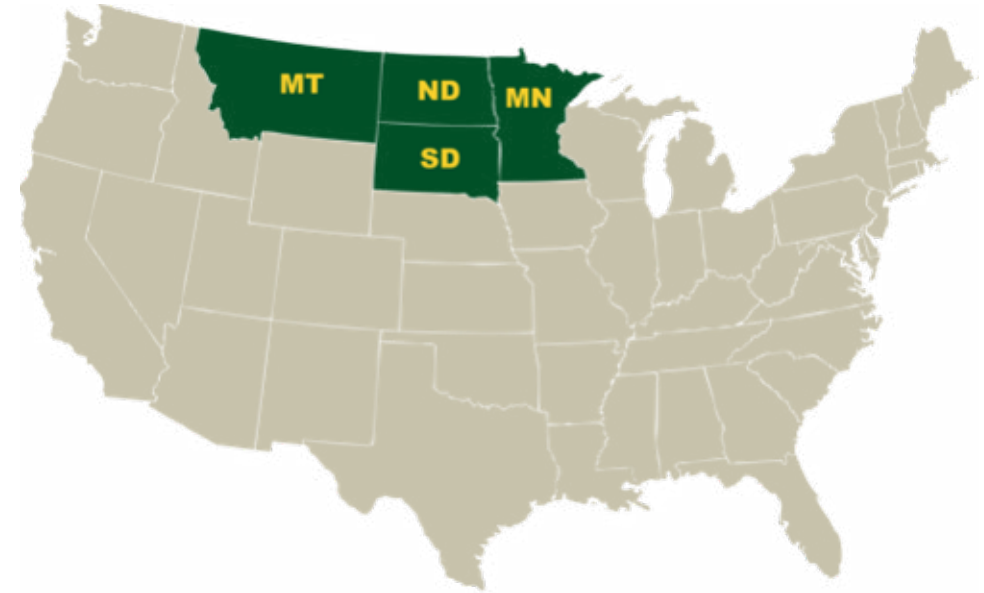


# NORTHERN CROPS INSTITUTE



## WHO WE ARE:

Four state collaboration (Minnesota, Montana, North Dakota, South Dakota) based at North Dakota State University in Fargo, ND. Governed by Northern Crops Council.



## We Provide:

- Technical Services
- Courses and Training





# NCI'S MISSION:

To support regional agriculture and value added processing by conducting educational and technical programs that expand and maintain domestic and international markets for northern grown crops.

# Ancient Grains – Regeneration Sustainability

- Farming techniques that sequester carbon
- Practices that remove carbon from the atmosphere and put it back into the soil
- Reduced tillage/no till
- Cover crops
- Crop rotations
- Perennial crops on marginal lands
- Integrated livestock management
- Incorporate organic waste and compost



[rainplatform.org](http://rainplatform.org)





# Technical Services



## Baked Goods

Pan Breads, Tortillas, Flat Breads, Pizza Crusts,  
Other Bakery Products

## Extrusion

Puff Products, Snack Foods, Breakfast Cereals,  
Plant-Based Texturized Protein

## Soy

Soy milk, Tofu, Okara, Other Soy Products





# Technical Services



## Oil Seed

Extraction, Refinement, Cold Pressing, Protein Isolation,  
Cooking Quality



## Pasta

52 Long & Short Good Shapes, Dry & Fresh Pasta, Lab or Pilot Scale,  
Specialty Pasta



## Milling

Grains, Pulse, & Oilseed Milling; Pilot Scale Mill;  
Bench & Small Test Mills; Dry Ingredient Mixing & Blending



# Food Trends for 2022 and Beyond

- Plant-based Foods
  - Barley-based Foods Growth (3.1% CAGR)
- Plant-based Meat Alternatives
- New Beverages
- Foods with Simple Ingredients/Clean Labels
- Ancient Grains
- Foods that Prevent Disease
- Foods that Improve Gut Health
- Foods That Improve the Environment
- Sugar Reduction
- Healthy Eating at Home





# Ancient Grains as Whole Grains

- Whole Grain has Three Original Parts – Bran, Germ, Endosperm
- 62% of Millennials Said a Perfect Dish Would Have Whole Grains – Eat, Just, Inc.
- More Than Half of Survey Respondents are Trying to Eat Whole Grains – IFIC
- Nearly 80% of Consumers Perceive Whole Grains as Healthful – Highest Rating – IFIC
- Whole grains increased 19 grams to 25.8 grams/serving in the U.S. from 2007 to 2020 – Oldways
- Oldways Whole Grains Council Stamp on Over 13,000 Food Products - Oldways



eatthis.com



foodbusinessnews.com



Wholegrainscouncil.org



# Traditional Processing and Packaging

- Grain >>> Flour >>> Ingredient Blend >>> Packaged Product



wheatmontana.com

Ancient Grain



Purityfoods.com

Flour



indiamart.com

Blend Ingredients



onelovelylife.com

Package



# Baked Goods Trends

- Home Baking
- Old World Recipes
- Ancient Grains – Emmer, Einkorn, Spelt, Khorasan, Teff
- New Flavors, Textures, Colors – Fun and Adventure – Purposeful Indulgence - Exploration
- Added Functional and Nutritional Features for Wellbeing
- Whole Grain Examples – Pizza Cones, Croissant Waffle, Brioche, Challah
- Mintel – 72% of US consumers enjoy products from their childhood – Nostalgia
- Microbiome – Basis of Wellness



diyjoy.com



Pmq.com





# Ancient Grains Pasta



foodtown.com



snukfoods.com



heb.com



catellipasta.com



# Ancient Grains Meal Bowls

- Whole ancient grains—such as brown rice, barley, millet, oats, quinoa, and wheat berries—serve as the hearty centerpiece in these nourishing recipes
- Grains are easy to batch-cook: Make a big pot of grains to use in several different recipes throughout the week
- Provides Balance Nutrition and Complete Proteins with Grains and Legumes
- Infinite Combinations of Ingredients
- Easy to Store and Transport



Ancientharvest.com



foodbusinessnews.com



# Ancient Grain Snacks

- 56% of surveyed consumers are snacking more since the start of the pandemic
- 35% of Consumers Snack More Now than One Year Ago – Acosta
- Snacking With a Purpose
  - Nutrition
  - Indulgence
  - Social Connection
  - Inspiration – Booster



oldschoolsnacks.com



foodbusinessnews.com



nosh.com





# New Beverages

- Plant-based beverages grew 6% in the U.S. in 2021 to reach \$3.24 billion in sales, according to the Plant Based Foods Association.
- Health Focus International's survey in 2019 showed 37% of respondents said they drink plant-based beverages at once per week or more.
- Roasted coffee substitutes production in the U.S. stood at \$170M in 2018. The total output value increased at an average annual rate of +3.9% from 2013 to 2018



Rejuvenated Barley, Pea Protein, Coconut, Sunflower.





# Ancient Grains of the Great Plains Handbook is now available!!





# THANK YOU

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