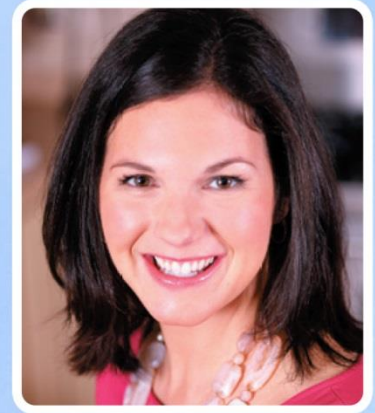


Grain: A Contemporary Look at a Classic Staple

Presented by

**Holley Grainger, MS, RD, and
Jack Li, Managing Director, Datassential**



One-hour, complimentary, continuing education webinar

Disclosures

Holley Grainger, MS, RD reports the following relevant disclosure: She serves as a consultant to Kellogg's Breakfast Council.

Jack Li, Managing Director, Dataessential has no disclosures to report for this program.

Learning Objectives

1. Summarize trends in the consumption of grains.
2. Discuss recent research relating to the health benefits of eating grains.
3. Provide clients with evidence-based recommendations for implementing a variety of grains into a balanced diet.

What's Old is New Again

What's causing a demand for hot “new” grains?



ANCIENT GRAINS



What's Old is New Again

Why do people like ancient grains?

- Plant protein
- Available at breakfast and snacking opportunities
- Cleaner, shorter, simpler ingredient labels
- Supports whole grain and gluten-free claims

(Reference: 1)

Grains, Ancient Grains & Pseudo Grains

Grain:

- Member of the grass family which produces a dry, edible, one-seeded fruit called a kernel, grain or berry
- Examples: Barley, Corn, Oats, Rice, Rye, Sorghum, Millet, and Wheat



(Reference: 2, 3)

Grains, Ancient Grains & Pseudo Grains

Pseudo Grains:

- Non-grasses that produce similar fruits or seeds and can be ground into flour.
- Fall into category as grains because their nutritional profile, preparation, and use are so similar.
- Examples: Amaranth, Quinoa, Buckwheat, Wild Rice, Teff



(Reference: 2, 3)

Grains, Ancient Grains & Pseudo Grains

Ancient Grains:

- Whole grains that are able to trace their roots back to the beginnings of time and are largely unchanged over the last several hundred years
- Examples: Spelt, Kamut, Millet, Sorghum, Teff, Emmer/Farro, Einkorn, Quinoa, Wild Rice, Buckwheat, Amaranth



(Reference: 4, 5, 6)

Today's Consumption

According to the FAO:

The world has over 50,000 edible plants. Just three of them, **rice, maize and wheat**, provide 60% of the world's food energy intake.

(Reference: 7)

What Makes Grains So Popular?

- Easy to cultivate
- Can be stored for long periods of time in their whole form
- Healthy, reliable, and cost effective source of important nutrients
- Families around the world count on them to be part of a balanced, nutritious diet

- **105,000 Years Ago:** Scientist believe the preparation of grains may have begun
- **23,000 Years Ago:** First confirmed use of grains in the human diet based on charred barley and wheat found in Israel

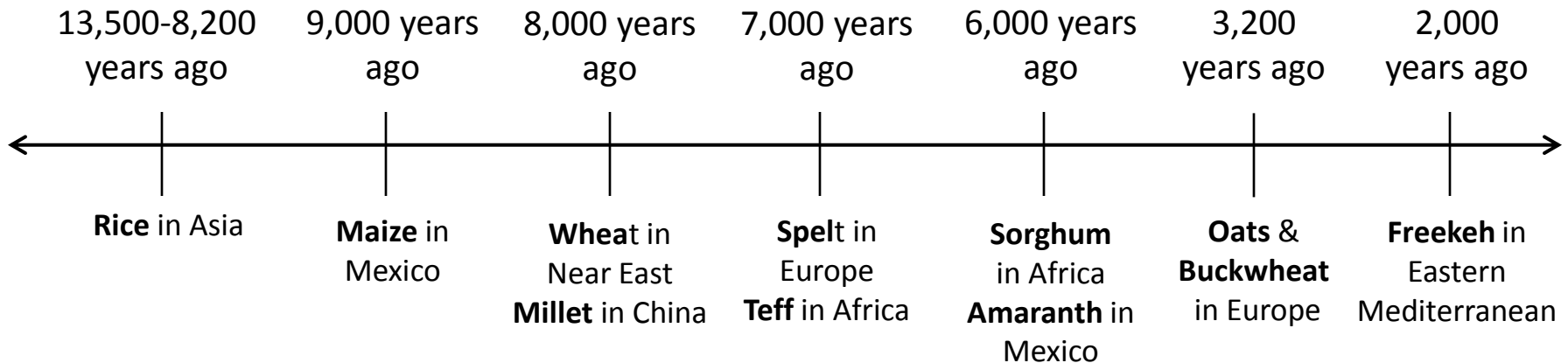
(Reference: 8, 9, 10)

A Quick Look Through History

13

Just How Old IS Your Food/ Ancestry to Trend/ Always Evolving...

Farmers Learned to Domesticate Grains



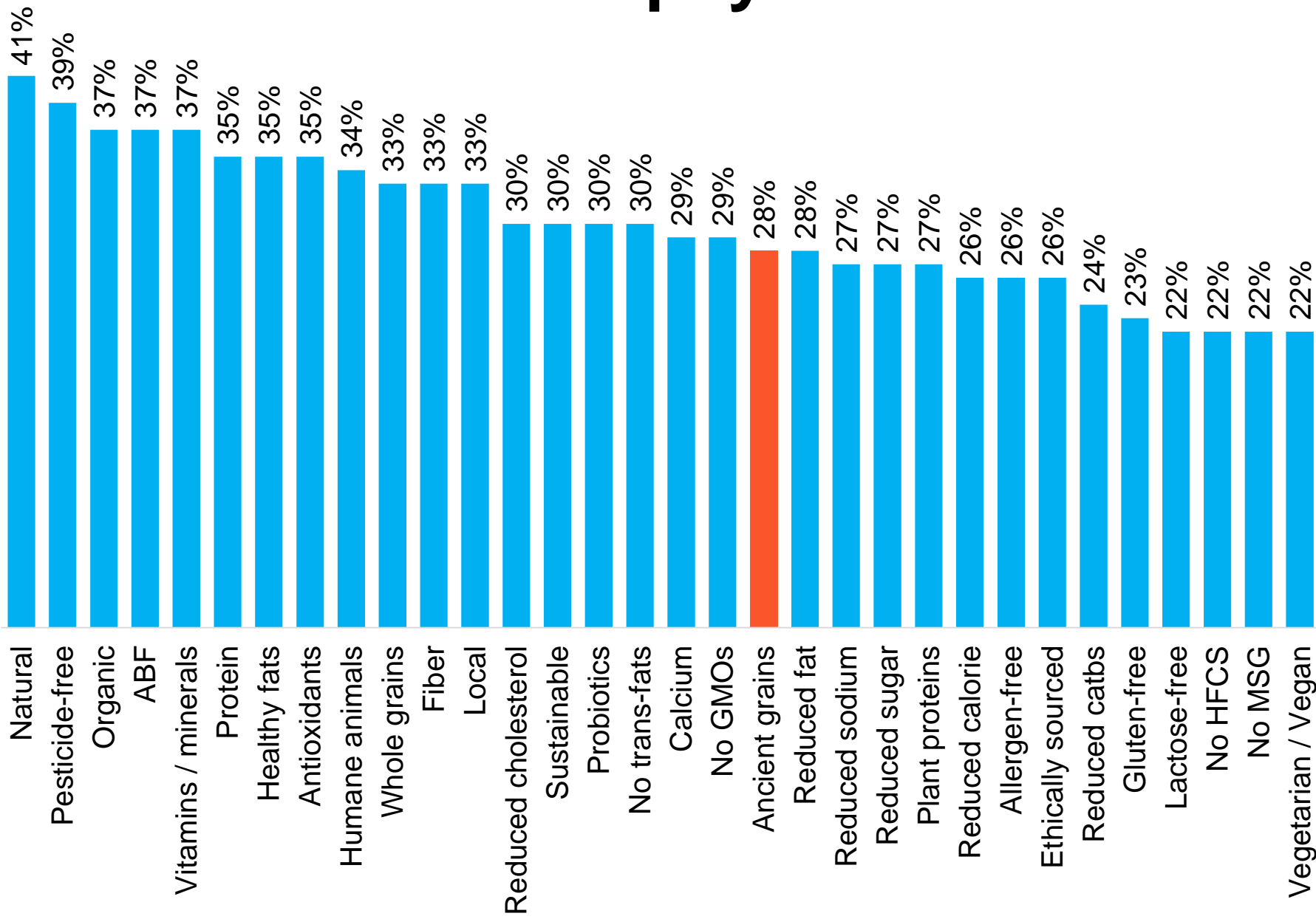
(Reference: 8, 9, 10)



Ancient Grains



% who would pay more for...

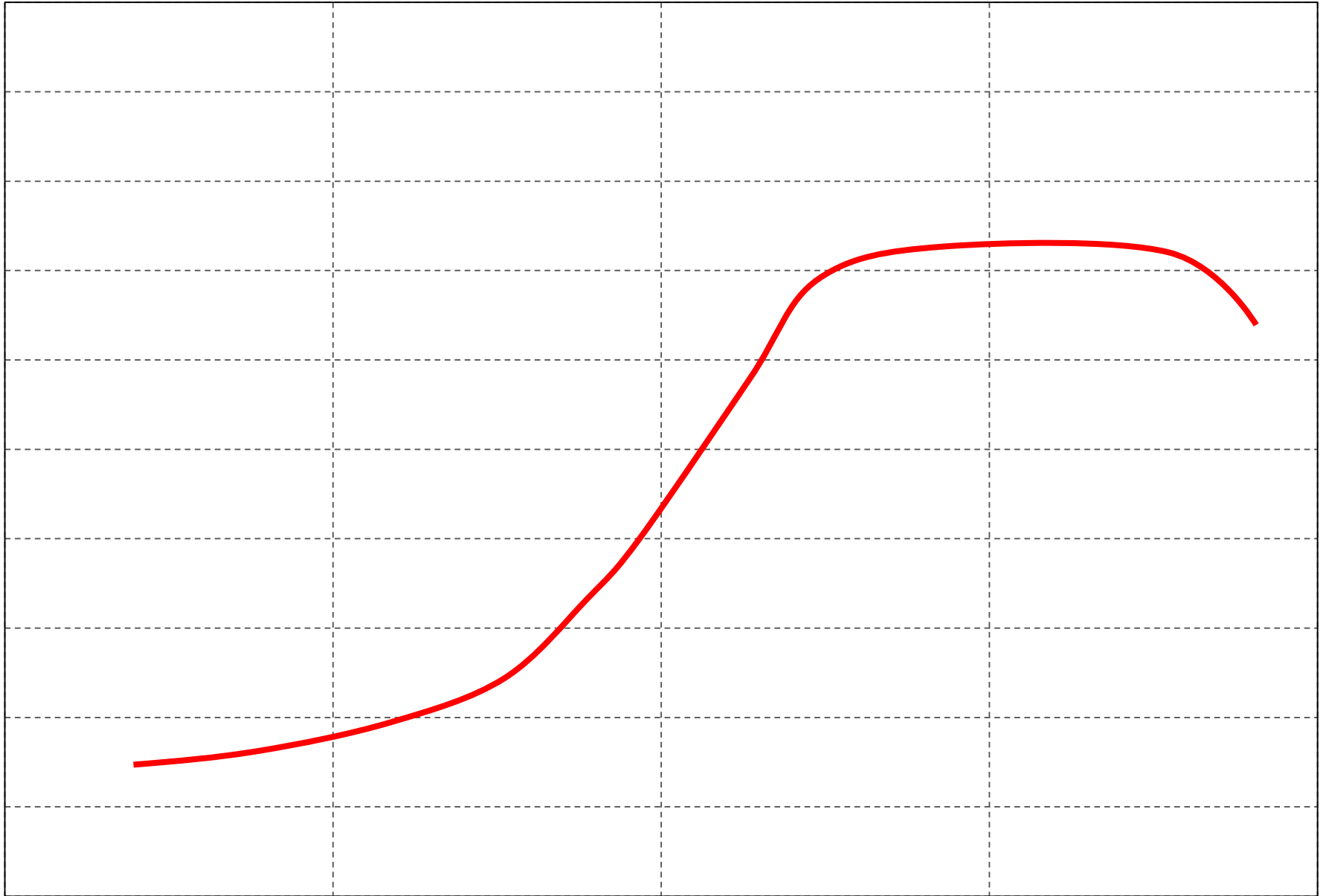


Quinoa

Modern chefs and nutrition experts are realizing why the Incas treasured this particular grain. Quinoa is versatile, cooks quickly, and nutritious. Additionally, it's gluten-free and easily digestible.

Once confined to health food store shelves, it is creeping onto upscale menus and local supermarket aisles.

June 2006



INCEPTION

ADOPTION

PROLIFERATION

UBIQUITY

Inception

FOODSERVICE

Fine Dining

Ethnic independents

RETAIL

Ethnic grocers

Largely absent elsewhere

Adoption

FOODSERVICE

Casual dining independents

Upper-casual

Gastro pubs

Food trucks

Fast-casual

RETAIL

Specialty grocers

Gourmet food retailers

Proliferation

FOODSERVICE

Casual dining chains

QSR chains

Lodging

C&U

RETAIL

Traditional supermarkets

Mass merchandisers

Club stores

Ubiquity

FOODSERVICE

Midscale / family dining

C-stores

K-12

RETAIL

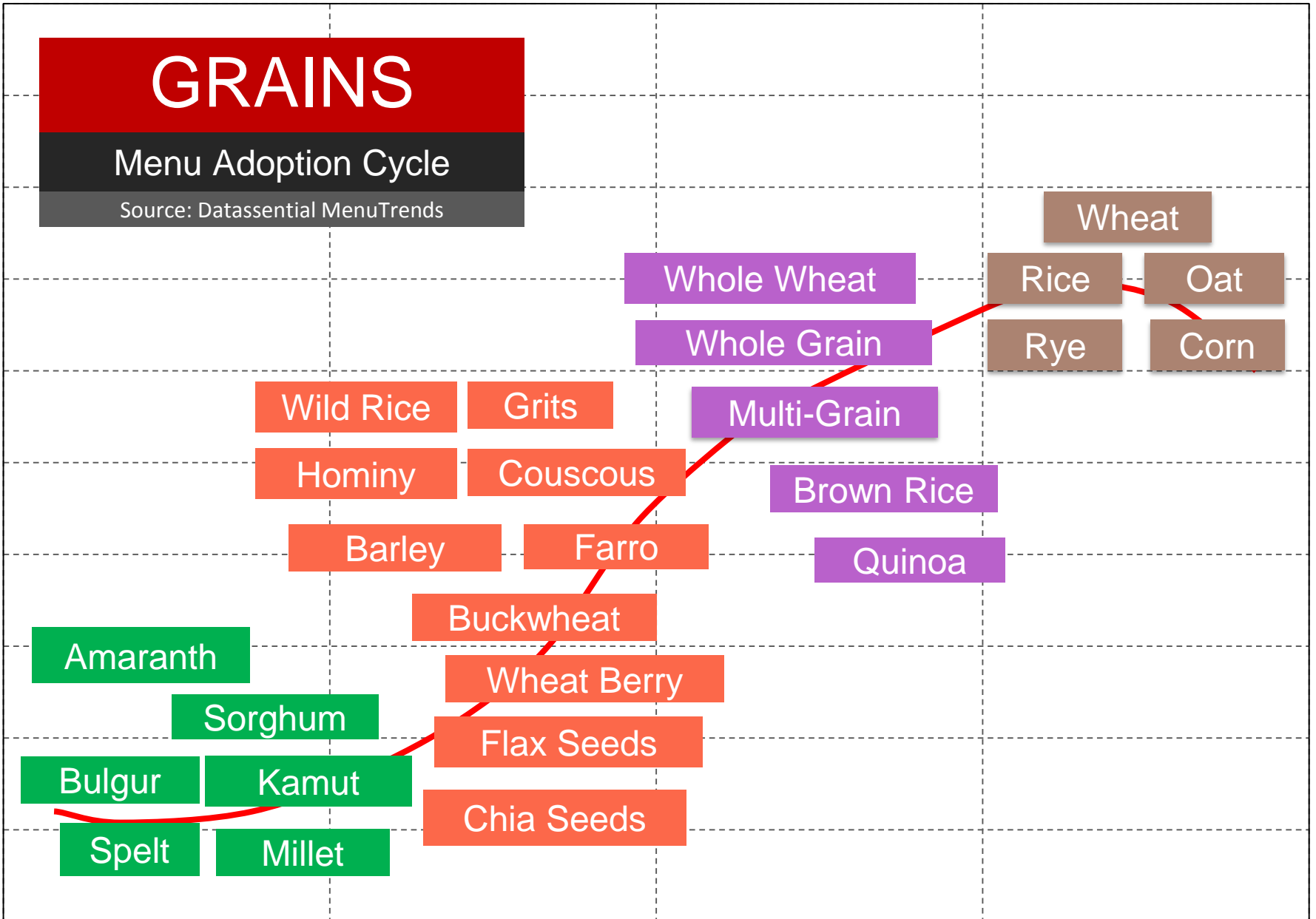
Frozen foods aisle

Drug and dollar stores

GRAINS

Menu Adoption Cycle

Source: Datassential MenuTrends



INCEPTION

ADOPTION

PROLIFERATION

UBIQUITY

FARRO

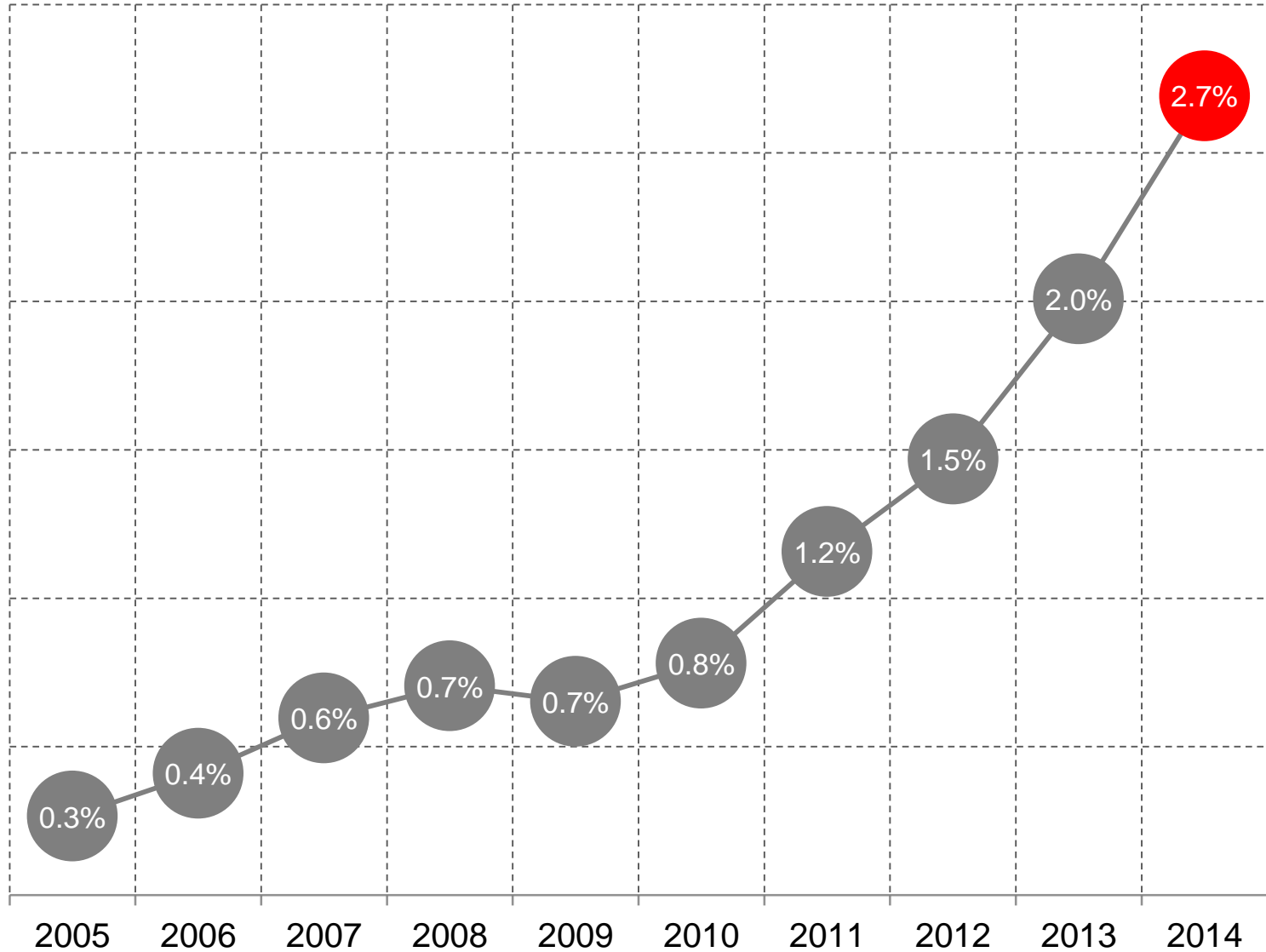


FARRO

Italian grain rich in protein & known for its crunchy texture
Found on 3% of all menus, with growth of over 100% since 2011

Most commonly used to add texture to salad apps and deli salads as well as a side item to a variety of COP protein entrees

Farro



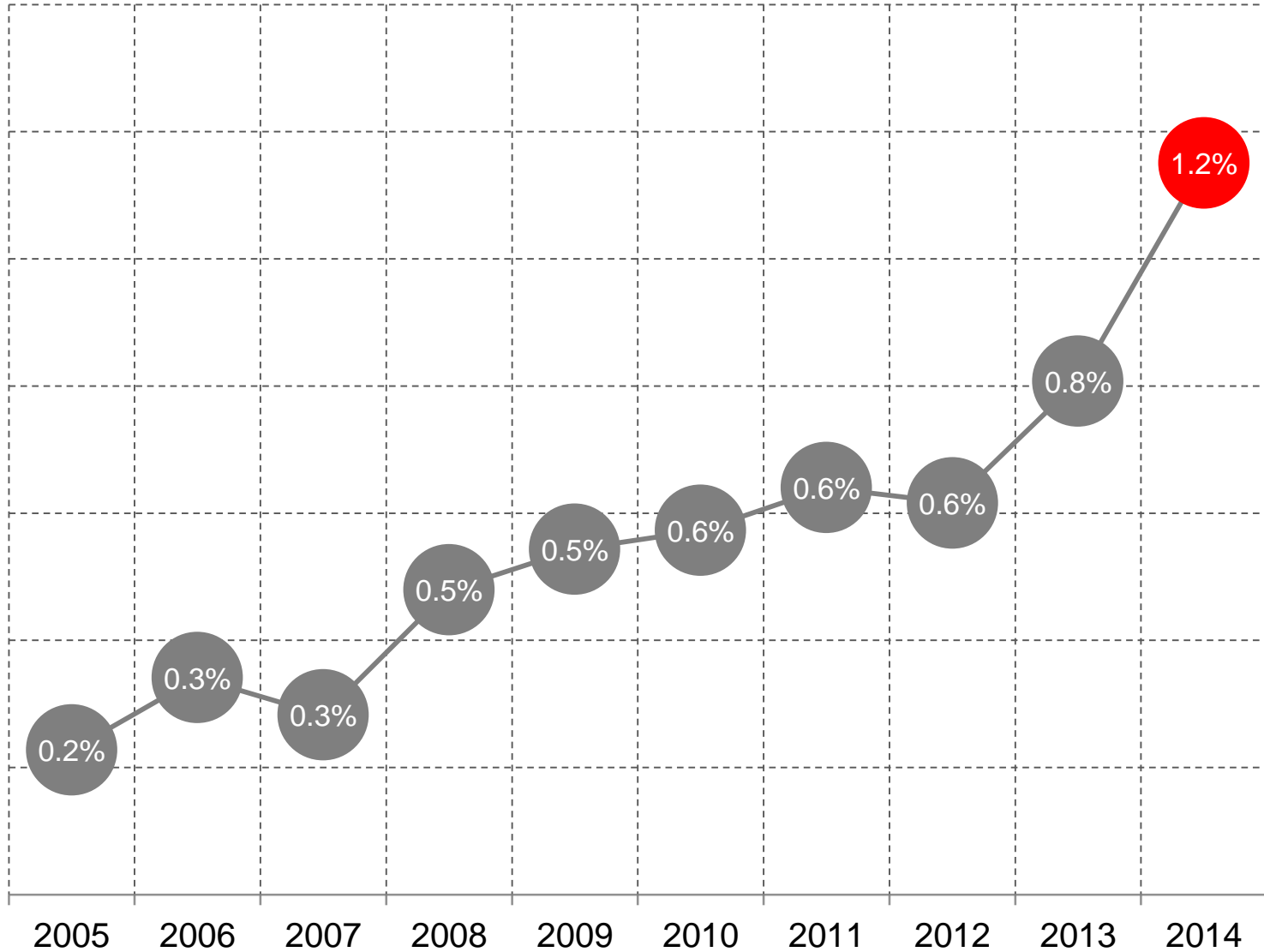
Farro: Applications

Multi Protein Entrees	13%
Appetizer Salad	10%
Fish Main Entrée	10%
Chicken Main Entrée	7%
Deli Salad Appetizer	5%
Salad Entrée	5%
Non-Fried Protein App	3%
Burger	3%
Shellfish Main Entrée	3%
Deli Salad Side	3%
Appetizer Soup / Chili	2%
Rice Side	2%
Pizza	2%
Veggie Main Entrée	2%
Pasta	2%
Other	28%

FLAX



Flax



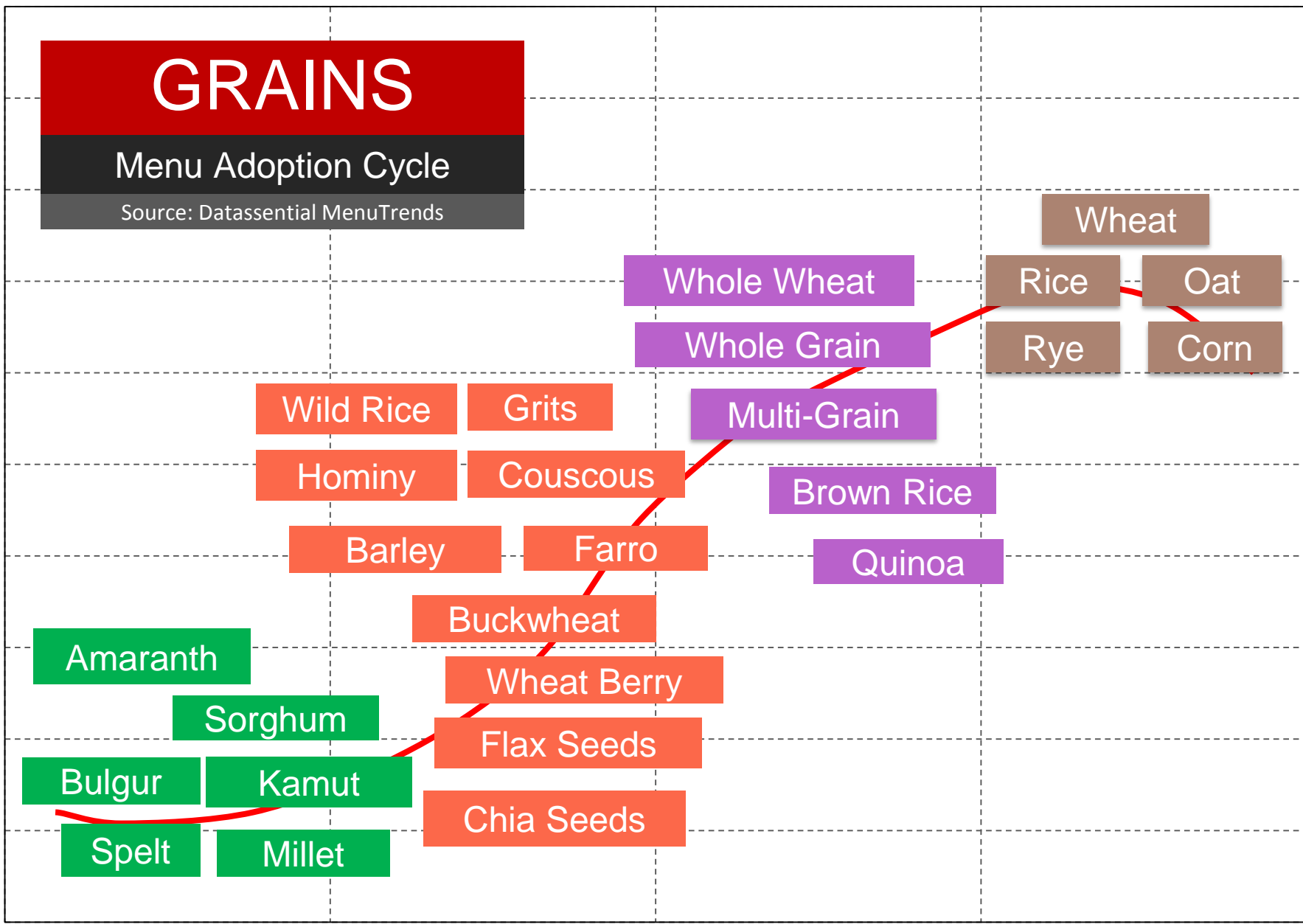
Flax: Applications

Blended Drink	13%
Mexican	10%
Breakfast Starch	7%
Cold Sandwich	7%
Bread Side	7%
Appetizer Salad	5%
Pizza	4%
Salad Entrée	4%
Burger	4%
Appetizer Dip	2%
Combos/ Multi Protein	2%
Deli Salad Appetizer	2%
Non-Fried Protein App	2%
Juice	2%
Cookie	2%
Other	28%

GRAINS

Menu Adoption Cycle

Source: Datassential MenuTrends



INCEPTION

ADOPTION

PROLIFERATION

UBIQUITY

A close-up photograph of a wooden bowl filled with a quinoa salad. The quinoa is cooked and has a yellowish tint. It is mixed with pieces of cooked chicken, diced tomatoes, and fresh green herbs like parsley. The bowl is set on a dark wooden surface. In the top left corner, there is a small black bowl containing more diced tomatoes.

GRAINS: KEY TRENDS

Protein Alternative
(veggie burgers, in salads & soups)

Ethnic Influences
(pilafs, tabouli salad)

Beyond Grain Dishes
(quinoa pizza crust, farro pasta)

Remember

- Consumers may not think of ancient grains as “ancient grains”
- Make it familiar
- Go beyond quinoa with farro and flax
- Consider versatility

Are Ancient Grains Healthier?

- More nutrition than refined grain products
- Lower carbon footprint
- Many are non-GMO and/or organic
- Individual grains offer unique nutrient packages so aim for variety (teff has calcium, barley has fiber, amaranth has vit C)



Grain Nutrition 101

Protein

- Found in the endosperm
 - Build and repair tissue
 - Mix grains with seeds, nuts, beans, dairy, or meat to get the right balance of essential amino acids
 - Complete proteins: Buckwheat and Quinoa
- *Wheat provides 20% of the protein consumed by more than half the world's population**

Grain Nutrition 101

Fiber

- Found in the outer protective layer of the kernel
- Good for digestive health

B Vitamins

- Found throughout the entire grain kernel

Iron

- Found in the endosperm of the grain

Antioxidants and Phytonutrients

- Found in the germ/yolk

Grains and Body Weight

- **Nutrition Evidence Library:** Moderate evidence shows that intake of whole grains and grain fiber is associated with lower body weight.
- **Dietary Guidelines for Americans 2010:** Increase intake of whole grains, vegetables, and fruits: Moderate evidence shows that adults who eat more whole grains, particularly those higher in dietary fiber, have a lower body weight compared to adults who eat fewer whole grains.

(Reference: 11,12)

Grains and Chronic Disease Risk

The American Society for Nutrition:

Eating food rich in cereal fiber or a mixture of whole grains and bran is modestly associated with a reduced risk of obesity, type 2 diabetes, and CVD.



(Reference: 13)

Grains and Chronic Disease Risk

Scientific literature demonstrates that staple grains have health benefits including:

- **Overweight and obesity**
 - Satiety
 - Weight control
- **CVD**
- **GI considerations and risks**
 - Colorectal cancer
 - Constipation
 - Gut microbiota
- **Diabetes**
- **Nutrient Deficiencies (enrichment)**

In Defense of Grains

*Wheat Belly: An
Analysis of Selected
Statements and Basic
Theses from the Book*

By: Julie Miller Jones

Cereal Foods World
July-August 2012, Vol
57, NO. 4

- Obesity
- Weight Loss
- Diabetes
- Mental Health
- Glycemic Index
- Wheat Genetics
- Celiac Disease
- Allergens

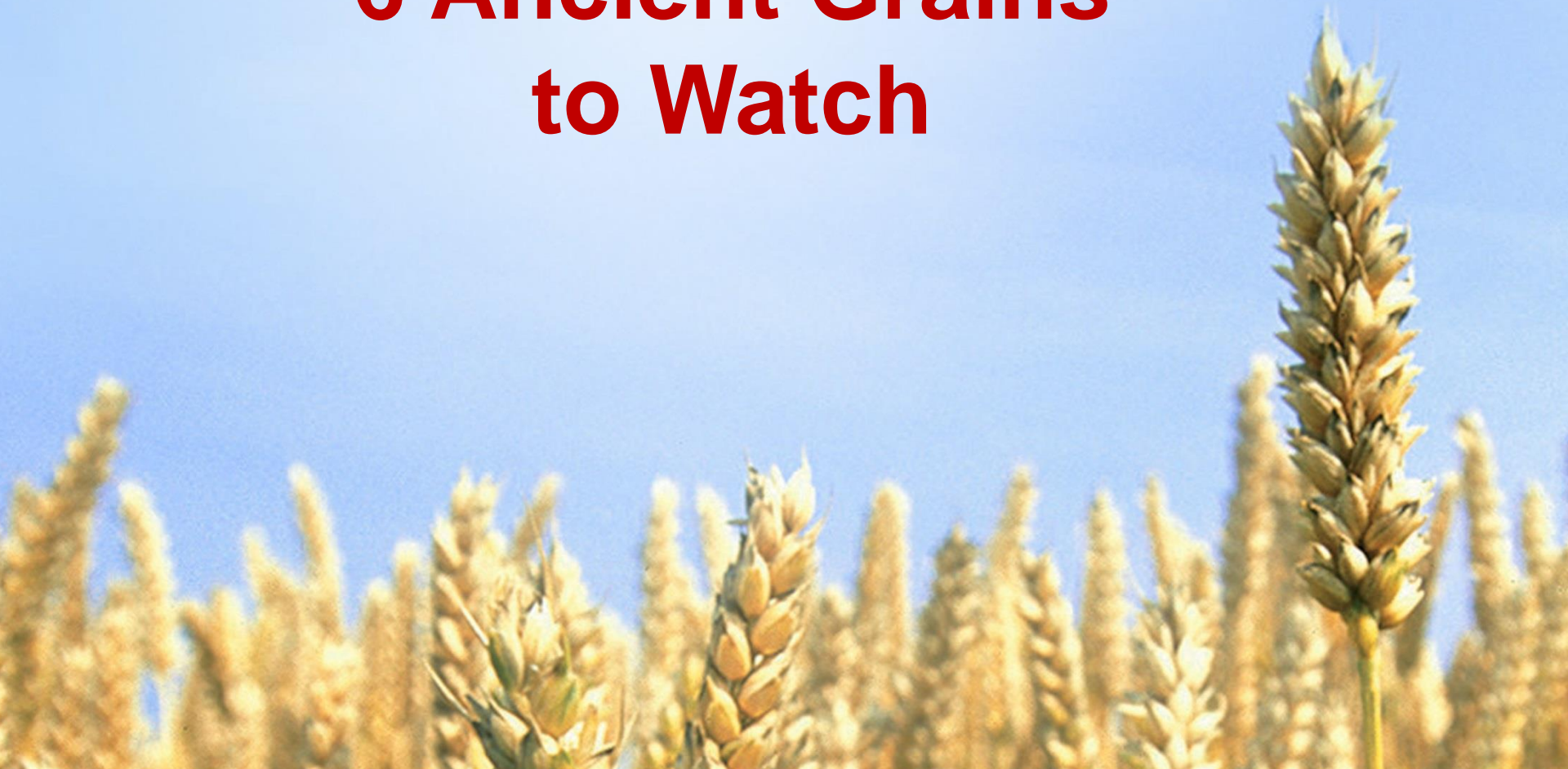
(Reference: 14)

Special Studies for Specific Ancient Grains

Grain	Studies
Kamut	Reduction in IBS symptoms: <i>British Journal of Nutrition</i> Reduced risk of CVD: <i>European Journal of Clinical Nutrition</i>
Amaranth	Cancer-preventing & anti-inflammatory properties: <i>Journal of Agricultural and Food Chemistry</i> Decrease in total cholesterol, LDL, & triglycerides: <i>Lipids in Health and Disease</i>
Millet	Control Blood Sugar: <i>Pathophysiology</i>
Sorghum	Reduce risk of certain cancers and promote cardiovascular health: <i>Phytochemistry</i>
Freekeh	Protect Eyes: <i>Nutrients</i> Prebiotics: <i>Nutrients</i>

(Reference: 15, 16, 17, 18, 19, 20, 21, 31, 32)

On the Rise: 6 Ancient Grains to Watch



Sorghum

Origin	Northeastern Africa 5,000-6000 years ago
What is it?	Draught and heat-tolerant grain that can also be grown in flooded conditions (sustainable); 5 th most popular cereal grain in the world
Nutrition	<ul style="list-style-type: none"> • Gluten-Free: yes • Non-GMO • Macronutrient: 75% complex carbohydrate, 11% protein • Micronutrient: good to excellent source of iron and zinc; rich in B-complex vitamins • Edible hull so retains majority of nutrients
Health Benefit	May improve heart health and lower serum cholesterol (polycosinol); high in antioxidants to help lower risk of cancer, heart disease, diabetes
Texture/Flavor	Light color, neutral in tastes and absorbs the flavors you combine with it, similar look and taste to Israeli couscous, round and chewy, holds up in sauces and stews, can be frozen and reheated
How to Cook	Rinse 1 cup sorghum; place in pot with 3 cups water, boil, cover, reduce heat, and simmer 50-60 minutes
Culinary Application	Cereal grain cooked whole to use in pilaf or porridge, fermented and unfermented flat breads, cooked and served as a whole grain, malted into beverages, popped like corn then sprinkled with seasoning, milled into flour and used in baked goods.

(Reference: 20, 22)



Amaranth

Origin	Mexico, Central America, native crop of Peru but can now even find it in the US like Iowa, Missouri, Nebraska, and Long Island, NY; Domesticated 6,000 years ago
What is it?	gluten-free grain with protein quality considered to be among the highest of all grains.
Nutrition	<ul style="list-style-type: none">• Gluten-free: yes• Pseudo Grain• Macronutrients: 13-14% protein, high quality protein (protein contains lysine-amino acid missing or negligible in other grains); 5% to 9% oil (higher than other grains)• Micronutrients: 3x more calcium, only grain to contain Vitamin C, high in iron, magnesium, phosphorous, and potassium
Health Benefit	May have cancer-preventing, anti-inflammatory properties, may decrease total cholesterol, triglycerides, and LDL significantly
Texture/Flavor	Tiny kernels (looks like brown caviar when cooked), light and nutty to lively and peppery taste, slightly crunchy even when cooked (inside softens while outside stays cooked)
How to Cook	Use at least 6 cups of water for every 1 cup amaranth breakfast: Boil water, add grains and stir, cook 15 minutes stirring occasionally, rinse
Culinary Application	Breakfast porridge; popped like corn, dry cooked grains then sprinkle on salad or in cookies

(Reference: 17, 18, 23)



Teff

Origin	Domesticated in Afridca 7,000-10,000 years ago
What is it?	World's smallest grain (size of a poppy seed); staple grain in Ethiopian cooking; principal source of nutrition for over 2/3 of Ethiopians; able to survive various climate and conditions
Nutrition	<ul style="list-style-type: none"> • Gluten-Free: Yes • Micronutrient: excellent source of vitamin C, leading source of calcium among grains, high magnesium content, high levels of resistant starch • Eaten in whole form (too small to process)
Health Benefit	Blood sugar management, weight control and colon health (resistant starch)
Texture/Flavor	Mild, earthy and nutty, sweet, molasses-like flavor; flour often used in Ethiopian <i>injera</i> (spongy bread)
How to Cook	<p>Poppy seed texture: cook 1 cup teff in 1 cup water for 6-7 minutes then let stand 5 min</p> <p>Creamier texture: cook 1 cup teff in 3 cups water for 20 min</p>
Culinary Application	Cook on stovetop to make porridge, add to stew, use teff flour in baking, sprinkle on vegetables

(Reference: 24, 25)



Millet

Origin	8300BC China
What is it?	Small seeded grains from grass; 6th most important grain; also used as a bean bag filler
Nutrition	<ul style="list-style-type: none"> • Gluten-Free: yes • Micronutrient: good source of B vitamins, high in magnesium
Health Benefit	Help control diabetes and inflammation; high antioxidant activity
Texture/Flavor	Small and yellow in color; mild flavor
How to Cook	<p>Fluffy, sticky or creamy...</p> <ul style="list-style-type: none"> • Fluffy: toast 1 cup millet for 4-6 minutes in a dry pan then add 2 ¼ cups boiling water, simmer 13-18 minutes, then let stand 10 minutes.
Culinary Application	Pilaf or porridge, add to bread, soups, and stews, pop like corn, ground and used as flour (as in Indian roti) or prepared as polenta in lieu of corn meal

(Reference: 16, 19, 26)



Kamut® khorasan wheat

Origin	exact origin unknown Noah on the Ark? King Tut?
What is it?	KAMUT® brand khorasan wheat is an heirloom ancient cereal grain
Nutrition	<ul style="list-style-type: none"> • Gluten-Free: no • Organically grown and Non-GMO • Macronutrient: more protein and lipids than modern wheat • Micronutrient: good source of selenium, more vitamin E, zinc, magnesium than modern wheat
Health Benefit	Reduced risk of cardiovascular disease, reduced symptoms of IBS, increase antioxidant capacity and decrease inflammation, easier to digest than common wheat because enzymes that break down gluten haven't been bred out over time
Texture/Flavor	Rich, buttery tasting, less bitter than modern wheat
How to Cook	Grain: Boil 3 cups water, add 1 cup Kamut and simmer for 90 min. Flake: 2 parts boiling water to 1 part Kamut and cook for 10-20 min Flour: Wheat substitute
Culinary Application	Use as modern wheat—mill into flour or eat grains directly as breads, pastas, etc.; Popped Kamut snacks

(Reference: 15, 27, 28, 29, 30)



Freekeh

Origin	Middle East 2000 years ago (Egypt, Lebanon, Jordan, Syria)
What is it?	Durum wheat that's harvest when green and soft, roasted in the husks then rubbed. The inner wheat that remains is called Freekeh.
Nutrition	<ul style="list-style-type: none"> • Gluten Free: no • Non-GMO verified • Macronutrients: high in protein (12.6%), low in fat, good source of fiber • Micronutrients: Rich in iron, calcium and zinc, acts like a prebiotic, 3x more fiber than brown rice
Health Benefit	Higher in protein and fiber than most grains, lower glycemic index; rich in lutein and zeaxanthin to protect eyes, resistant start, prebiotic effect with large numbers of biofidobacterial and lactobacilli
Texture/Flavor	Firm, slightly chewy grain; earthy, nutty and slightly smoky flavor; cross between brown rice and barley
How to Cook	Toast 1 cup dry cracked Freekeh in a saucepan, add 2 cups water and boil 25 minutes. Turn off the heat, cover and let sit 10 minutes.
Culinary Application	Soup, pilaf, salad, breakfast porridge...(any place that you could use rice, couscous, quinoa, etc.)

(Reference: 31, 32)



Other Hot Grains

Don't forget these grains that come from wheat:

- Spelt (variety of wheat, “big farro”)
- Farro (type of ancient strain of wheat called emmer)
- Grano (wheat berries)
- Rye (type of wheat)



Top Tips for Grain Preparation

- Grains can usually substitute for each other
- Avoid large saucepans
- Make ahead and freeze
- Try popping
- Check the liquid to grain ratio
- Prepare with milk, juice, broth
- Allow to cook in soup



Eat Your Grains

- Top with a poached egg
- Toss with vegetables and cheese
- Add in burgers or use to make veggie burgers
- Enhance flavor with herbs, spices, flavored vinegars & oils
- Swap ancient grains like Freekeh for tabbouleh or Sorghum for paella or risotto.
- Sprout them!

Superfast Cook Time Chart

Boil water or stock—look to your grain's packaging for grain-to-liquid ratios since adding too much water can turn your dish into porridge.

Once the liquid has come to a boil, add the grains and turn the heat to simmer.

After several minutes (see cooking times in chart), the grain should absorb most of the liquid.

Fluff the grain with a fork and serve.

Grain	Cooking Time
Amaranth	20 minutes
Buckwheat	10 minutes
Bulgur	10 to 15 minutes
Millet	25 minutes
Quinoa	10 minutes
Teff	20 minutes

(Reference: 34)

Holley Grainger Nutrition blog: Live Today!

www.holleygrainger.com/wholesome-and-delicious-ancient-grains-recipes

Pinterest Board: Ancient Grains Recipes

www.pinterest.com/holleygrainger/ancient-grains-recipes/



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RDs should list CPE activity type 175 in their professional development portfolio.