

LESSONS ABOUT ANCIENT WHEAT FROM STUDIES OF KAMUT BRAND KHORASAN

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1. What are ancient wheat & modern wheat and how do they differ?
2. Why did modern wheat replace ancient wheat?
3. What is the matter with modern wheat?
4. What are our choices?
5. What we have learn from our research on Kamut brand ancient wheat



Home base - Quinn Farm & Ranch: In Quinn family since 1920 – now 4000 acres (600 acres pasture) – dry land – 12-14 inches of rain – sandy loam – elevation 3000 ft. - frost free May 15 –Sep 15 – organic since 1986 – cash crops – winter wheat, Kamut brand Khorasan wheat, peas, feed and hull-less barley & high oleic safflower oil for food and fuel – soil building crops – peas, sweet clover, lentils & alfalfa – experimenting with dry land vegetables, a small orchard and using waste oil for fuel





Let's start with a few basic questions –
(answers: an organic wheat farmer's point of view)

What is ancient wheat?

A mixture of closely related wheat varieties from the wild
combined to form a stable, diverse land race

Why did it last so long and spread so far?

Adapted through natural selection to create a stable
population, high in nutrition, easy to store and
transport - know as the staff of life

What is modern wheat?

Genetically different – in a substantial way

Where does it come from?

Man made crosses of existing varieties

Why do we have Modern Wheat?

cheap food policy – two goals for breeders

1. Increase yields – hence supply

- wheat now short & resistant

2. Decrease manufacturing cost

- increase loaf volume

- increase bran hardness

What happened to ancient wheat?

replaced with modern wheat and mostly disappeared

If ancient grain was so good having so many advantages, why would it disappear?

1. Farmers wanted higher yields – demanded new grain
2. Bakers & millers want high performance – refused old grain
3. Higher yields demanded higher inputs (chemicals) which demanded higher yields to pay chemical bills
4. Higher yields – higher surpluses – lower prices – profits reduced
5. More chemicals needed for monoculture wheat
6. Who pays chemical bills – USDA - US – all who pay taxes
7. Change of perception - Wheat is now a commodity rather than a food –
8. Food scientist: Don't worry – Be happy – we can fix anything

So what is the problem – we have more food, pay less for it and it is declared by our government and others to be the safest in the world?

1. In food - safety has nothing to do with nutrition
2. Then 20% spent on food-10% on health care—now
3. More chronic illness is seen today – living longer but sicker – better fed but not better nourished
4. Modern wheat – for some causes inflammation – root of many diseases
5. Modern wheat - has little anti-oxidant protection – not as much help as ancient wheat to reduce cancer
6. Modern wheat – for some is hard to digest & causes weight gain
7. Unintended consequences of cheap food – high cost of illness

So what do we do?
Do we have to stop eating wheat all together?
Are there no alternatives?

1. Depends on your situation –
2. Celiac disease? No wheat - no gluten
3. Sensitivities/pain? No modern wheat - try eating only ancient and heirloom wheat
4. No problems? Keep vigilant – try some ancient & heirloom wheat for fun, flavor and diversity

What is the availability of ancient and heirloom wheat?

Look on line or in health food stores & farmer's markets and you will find:

1. Ancient wheat - ein korn, emmer, spelt and khorasan (Kamut brand)
2. Several heirloom wheat varieties (should be at least 60-80 years old)

So what can you tell us about Kamut?

1. Kamut is trademark
2. A trademark is not a patent on the seed – trademarks can be owned and are used to market and make guarantees – original seeds are a gift from the Creator of us all who made this world as well as the air we breath (to claim ownership of these original seeds is like claiming ownership of air)
3. The Kamut trademark guarantees you are getting:
100% pure ancient grain - organically grown - high in protein and minerals and free of disease and contamination

Are you sure Kamut khorasan wheat is
any different than modern wheat?

1. Yes...
2. 1988 first pasta – first discovery
3. 1990 International Food Allergy Association study
4. Health benefits reported to us by our customers
and athletes

Can I have the same benefit from eating any ancient or heirloom wheat?

I think there is very high probability ...but

1. Let's do the research to verify
2. Watch out for modern spelt (crossed with modern wheat) – look for heirloom varieties

In the mean time lets:

1. Demand breeding programs that concentrate on nutrition
2. Don't fret about paying more for low yielding ancient grain – savings in health care will make up that that investment many times

WHY can most people having trouble eating modern wheat eat ancient wheat?

Original premise – something has been changed, added or deleted from the original that is now causing trouble answer is not so simple but probably is all three

1. It is not just an absence or presence of gluten, AA or protein
2. It is not just make up of starch, sugars, mineral or vitamins
3. It is not just a matter of a difference in the GI
4. It is not just a matter of how the grain is digested physically
5. We finally had success studying antioxidants – as a result we now have a 4 phase research program producing results

So what are the results of your 4 phase research program?

Phase 1 - 2008 – 2009 – the in-vitro phase

Biochemical characteristics of modern and ancient wheat were compared – focusing on concentration of poly phenol and Se

Results: strong antioxidants were found in higher concentrations in ancient wheat compared to modern wheat (2 papers published)

Phase 2 - 2009 – 2010 – the in-vivo phase

Rat feeding studies compared effect of eating bread and pasta made from ancient and modern wheat

Results: higher antioxidant capacity was found with ancient grains and anti-inflammatory properties discovered – 2 papers published & one submitted

Phase 3 – 2011- 2012 – studies of healthy humans

A diet of modern and ancient wheat diet was compared in a double blind crossover study for healthy human subjects

Results: Same results as rat study – increase in anti-oxidant capacity and decrease in factors relating to the development of inflammation– 1 paper published – 3 being written

Unpublished results of additional research:

1. increase in the % of lean body mass in those on a diet of ancient wheat compared to modern wheat has been
2. an absence of digestive problems and other minor discomforts sometimes experience with eating modern wheat has been observed when ancient grain is eaten

Phase 4 – 2012 – 2014 – studies of humans with a variety of diseases

2012 – a study comparing effects of a diet including either modern or ancient wheat on people with irritable bowel syndrome was done and data is now being analyze

- a second study of those suffering from sever wheat sensitivities not yet published show ability to tolerate ancient wheat after a withdrawal period from modern wheat

2013 – a study comparing effects of a diet including either modern or ancient wheat on people in the beginning stages of heart disease with be done

2014 – a study comparing the effects of a diet including either modern or ancient wheat on diabetes which be done

Stay turned for further
results - Thank you
and keep going with
ancient wheat – it is
worth the effort

MONTANA FLOUR & GRAINS

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Preconference to Annual Winter Meeting
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A VISION FOR THE FUTURE OF MARKETING

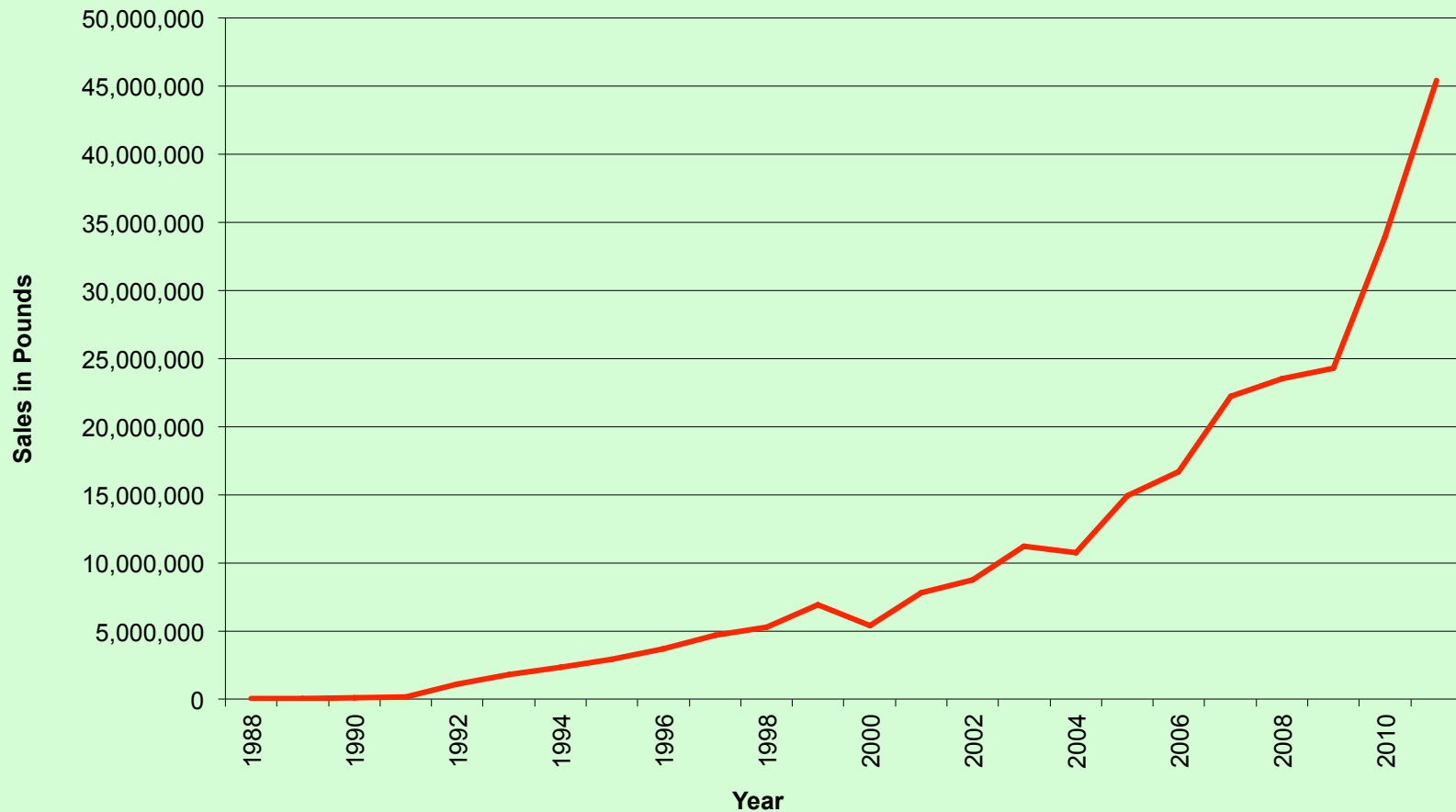
FOR ANCIENT AND HERITAGE GRAINS

- There is a sea of opportunity – along with a few sharks
- Wait out the gluten free, wheat free tsunami
- Position ourselves as an “alternative to modern wheat” – be “The wheat you can eat”
- Let’s create a heritage wheat council of growers, manufactures, brokers and eaters to promote heritage and ancient wheat and study their nutritional properties and health benefits
- Identify markers in modern wheat which are linked to problems which cause people trouble and make sure none of these markers show in new varieties of heirloom wheat
- Create a grading system to rate the desirability of heritage wheat based on nutrition and health benefits and the absence of problem related markers
- Lead a change in the focus of grain breeding programs from one of high yields to one of high nutrition and health benefits
- Foster a market where food price and value are tied to nutrient density and health benefits (high protein does not automatically mean good nutrition)

MARKET POTENTIAL OF KAMUT KHORASAN WHEAT

- Currently booming – experiencing 40% annual growth in Europe (75% of our market)
- US market on the verge of a big boost with nationwide distribution of frozen dinners from Michael Angelo's

KAMUT® Brand Khorasan Wheat sales 1988 - 2011

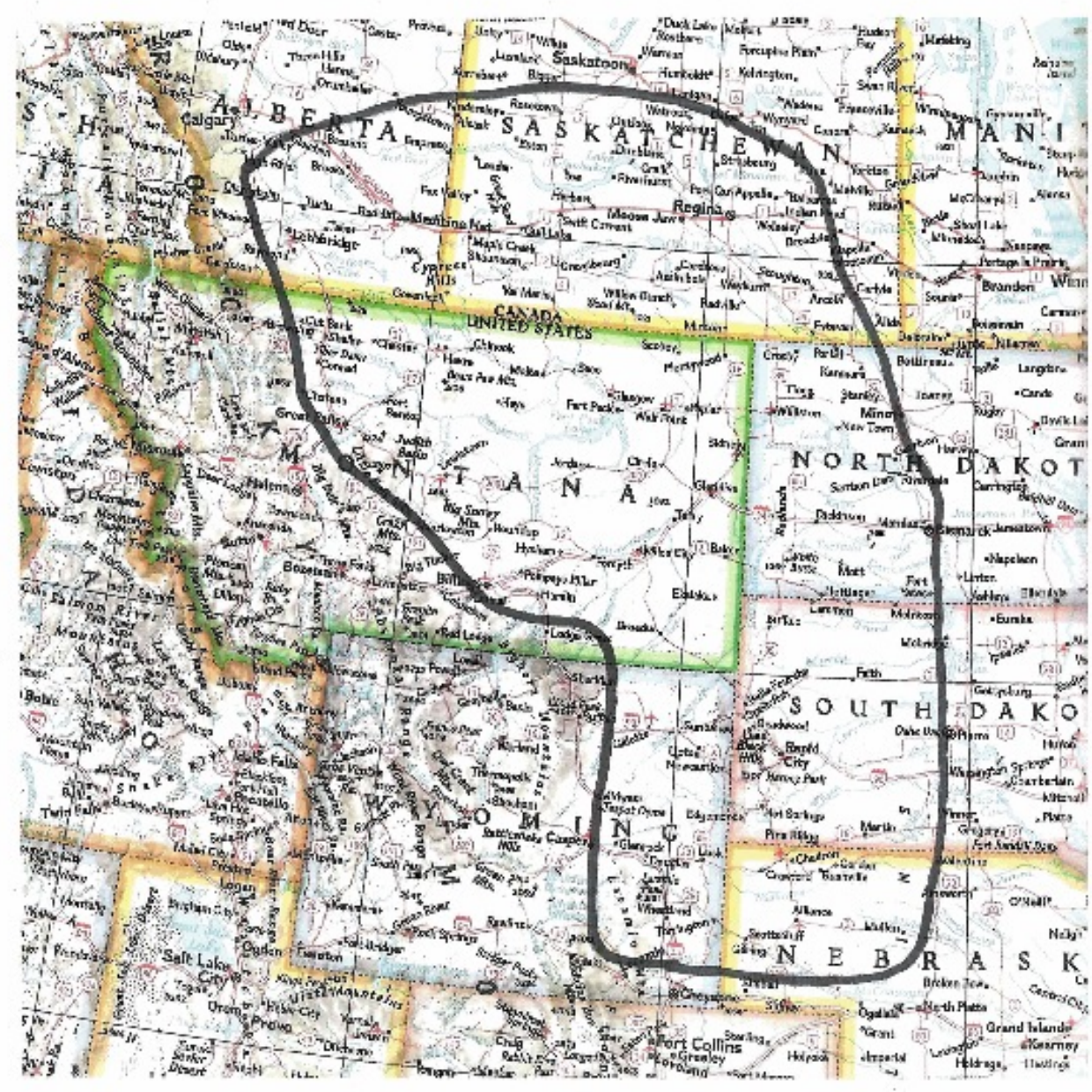


KAMUT WHEAT PRODUCER GUIDELINES

- No more than 25% of the farm's crop acres should be contracted for Kamut brand wheat production (in order to encourage good rotations – the key to success in organic systems)
- Works best when planted following a green manure plow down from the previous year
- 50 acre minimum contract
- Should be grown in the region know for high potential of success (see next slide)
- grows best where durum grows best

Best Growing region in North America for Kamut brand khorasan wheat

2012 – 230 organic famers under contract for nearly 80,000 acres



PRICING OUTLOOK FOR 2013 – OUR NUMBER ONE GOAL: EVERYONE WINS

- Seed delivered to the farm each year at no cost for cleaning or delivery
- Seed is replaced by grower after harvest with the first load of grain delivered to Montana Flour & Grains on a bushel for bushel exchange (it is not our goal to make money on the seed)
- The price set is the price at the farm gate - for 2013, it we have a base price of \$17/bu with a final price, which may be more, to be set in the middle of summer before harvest. (General guideline: if the price of chemical wheat is \$10 or less we double it for Kamut with a floor of \$8/bu)
- No discounts – No premiums – all grain is sold to our different markets (bread, pasta, cereal and snack) at the same price
- All grain is taken at contract price unless it grades as feed as determined by the Montana State Seed Testing Lab(MSSTL) , and then it must be sold as feed
- Payments are made 25 days after delivery on grain delivered minus dockage as per MSSTL

AGRONOMIC OBSERVATIONS AND ADVANTAGES

- Protein is normally 2% higher than other wheat growing side by side in the same field
- Resists sprout damage – heads hang completely upside down as grain matures and sheds rain well
- Resists frost damage in the fall – has very heavy chaff
- Grain is very hard but very brittle – slow down your combine cylinders to avoid cracking
- Has a lower yield potential than modern durum

Yield comparison to durum

Above average rainfall 75 – 80%

Average rainfall - 85 - 90%

Below average rainfall 100 – 150%

- Suggested seeding rate for areas seeding durum at 90 -100 #/acre – 120 to 150 #/acre (plant on the heavy side if you expect a wet year)

**THANK YOU
FOR INVITING ME**