Topic: Wheat Breeding (Plant Breeding)

Relevance to GFF

Plant breeding is the science of changing the traits of plants in order to produce desired characteristics and has been practiced for thousands of years. In fact, international development agencies believe that breeding new crops is important for ensuring food security by developing new varieties that are higher-yielding, resistant to pests and diseases, drought-resistant or regionally adapted to different environments and growing conditions.*

Unfortunately, the wheat breeding issue can be linked back to misconceptions about GMO wheat as consumers are easily confused over the two issues and assume that wheat breeding equals GMO wheat.

**Source: Breeding Field Crops. 1995. Sleper and Poehlman. Page 3.*

Issue at Hand: Wheat Breeding (Plant Breeding)

Wheat provides 20 percent of the protein consumed by 4.5 billion people around the globe, and the number of people is expected to increase from nearly 7 billion to more than 9 billion by 2050. Conventional breeding of wheat has yielded a plant that is easier to grow and thrives in different environments. It should be noted, though, that there is no wheat in today's food system that was grown from seeds that included genes from unrelated species.

The main issue is to ensure that consumers understand there is a different between wheat breeding and GMO wheat. Modern plant breeding is leaning slightly more toward the GMO space, which inevitably means that consumers assume all "breeding" is GMO-based.

For future agriculture to thrive there are changes that must be made in accordance with emerging global issues. These issues are arable land, harsh cropping conditions and food security, which involves being able to provide the world population with food containing sufficient nutrients. These crops need to be able to mature in several environments, allowing for worldwide access, and this involves problems such as drought tolerance. These global demands are achievable through the process of plant breeding, as it offers the ability to select specific genes, allowing the crop to perform at a level that yields the desired results.*

**Source: Davis, D.R., Epp, M.D., and Riordan, H.D. 2004. Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999. Journal of the American College of Nutrition 23(6):669-682.*

Why GFF Should Be Concerned

The terms "wheat breeding" and "GMO wheat" are being used interchangeably. In fact, today's wheat varieties have been developed through conventional breeding over the last 150 years. There is no wheat

in today's food system that was grown from seeds that include genes from unrelated species. Additionally, we are up against a perception that traditional wheat breeding practices have fundamentally and structurally changed protein in wheat. Given that GFF has messaged on this issue in the past in regard to *Wheat Belly*, we need to ensure our messaging stays up-to-date and relevant as new studies and reports become available.

We are also closely monitoring two pending studies that could be of benefit to GFF messaging: a Canadian study from the University of Saskatchewan by Dr. Ravindra Chibbar and an American study from Oklahoma State University's Brett Carver.

Unfortunately, an issue like wheat breeding has the potential to tap into consumer fears, like the pink slime issue. Concerns like this could come through not only from online food activists but also from mass channels like television personalities like Dr. Oz or a credible news reporter like Michael Moss from the *New York Times*.

Articles of Interest

Researchers Unveil Genetic Blueprint for Wheat
Western Producer, 7/25/14
An international team of scientists have unveiled a genetic blueprint of wheat in an accomplishment that may help guide the breeding of varieties of the vitally important food crop that are more productive and more hardy.

Humanity Now Has a Cheat Sheet for Breeding the Perfect Wheat
The Verge, 7/17/14
The genetics of bread wheat have been under investigation for years, but now a group of researchers from the University of Minnesota is publishing a draft of the crop's genome, which they say will provide the tools necessary to start planting better wheat.

Trait by Trait, Plant Scientists Try to Weed Out Bad Seeds through Marker-Assisted Breeding
The Washington Post, 4/16/14
This article profiles marker-assisted breeding efforts in which crop scientists identify the most promising seedlings for further breeding based on their DNA. While this method is more invasive than traditional crop selection (based on visuals), this is a far cry from the intensive process of GMO development.

A Chef's Perspective on Wheat: It's Time to Bring Sexy Back
Huffington Post, 2/6/14
A nice piece addressing the middle ground between GMO and wheat breeding, with nods to Norman Borlaug and Dr. Stephen Jones of Washington State University, who's one of the nation's leading authorities on wheat cultivation. Not a great piece for the commercial baker but really great for wheat as a whole.

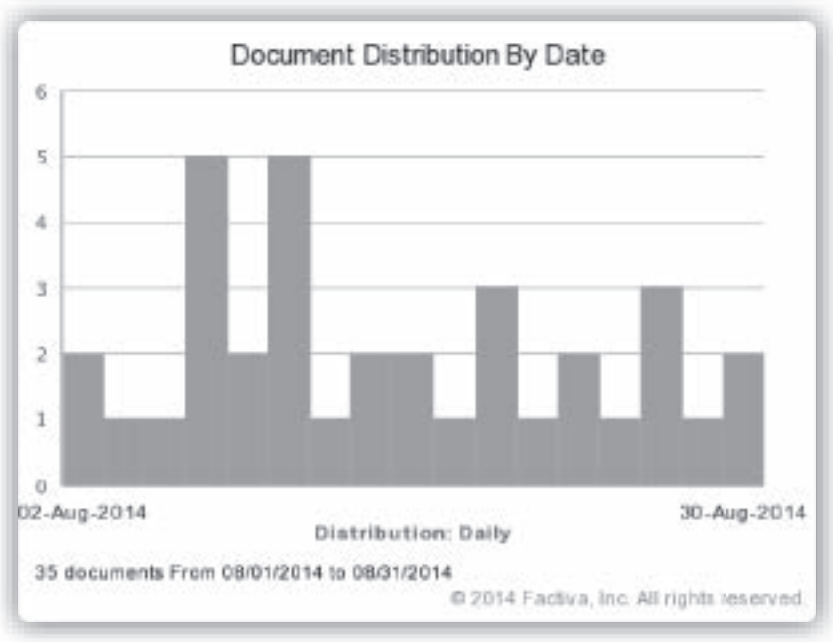
‘Superwheat’ Could Boost Yields by 30%
Farmers Weekly, 5/14/13
An update on the UK’s wheat-breeding efforts. Predictions are that this new wheat strain could be in use (and in the international market) by 2019.

Topic: Wheat Breeding (Plant Breeding)

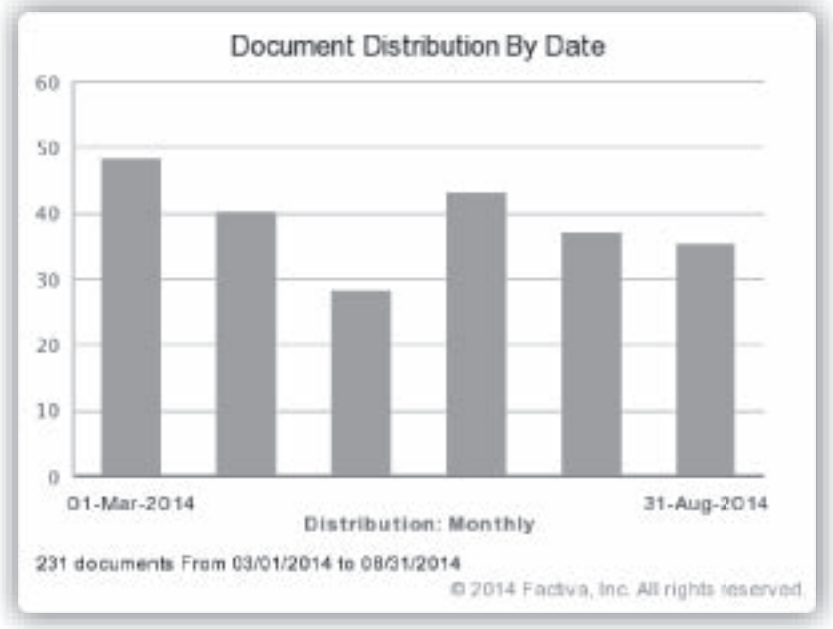
Media Charts

The 2014 fiscal year revealed varying levels of coverage on wheat breeding, regularly focusing around studies and research in relation to breeding and modification. The spikes in the summer 2014 were due to an announcement that scientists working on a project organized by the International Wheat Genome Sequencing Consortium had successfully mapped the genome of wheat.

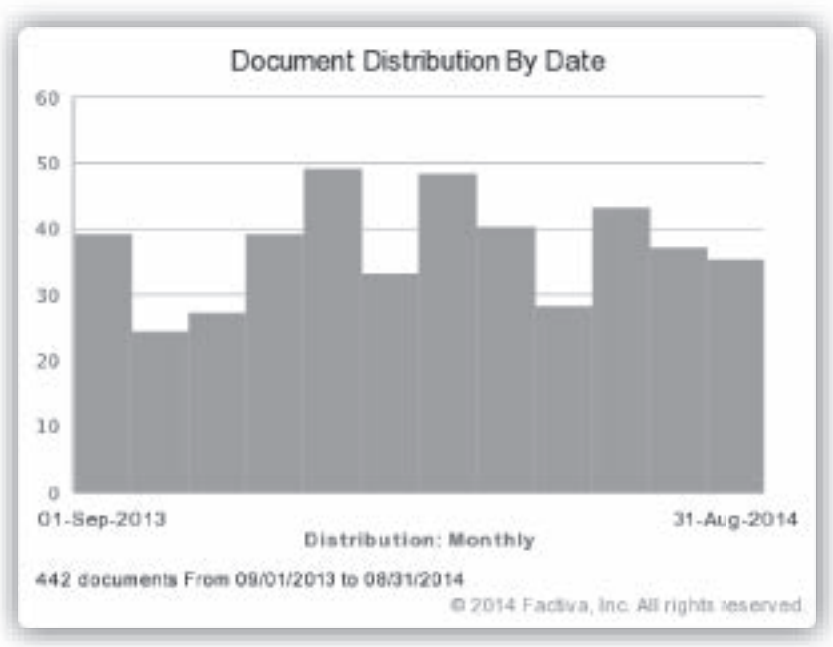
Wheat Breeding Mentions (Past Month)



Wheat Breeding Mentions (Past 6 Months)



Wheat Breeding Mentions (Past Year)



Topic: Wheat Breeding (Plant Breeding)

GFF Holding Statement: Wheat Breeding (Plant Breeding)

GFF supports agricultural methods that address global food security and environmental issues. Wheat breeding will continue to be an issue on which GFF monitors with the industry at large (especially the wheat farmer community). GFF engages with the industry on educational efforts to help dispel myths about wheat breeding and clarify the differences between conventional breeding and GMO wheat as it relates to *Wheat Belly* and other nutrition related topics.

Questions and Answers

What is plant breeding?

Plant breeding is the science of changing the traits of plants in order to produce desired characteristics and has been practiced for thousands of years. In fact, international development agencies believe that breeding new crops is important for ensuring food security; this is done by developing new varieties that are higher-yielding, resistant to pests and diseases, drought-resistant or regionally adapted to different environments and growing conditions.

Why is wheat breeding an issue for GFF?

Unfortunately, the wheat breeding issue can be linked back to misconceptions about GMO wheat as consumers are easily confused over the two issues and (incorrectly) assume that wheat breeding is the same as GMO wheat.

Why is plant breeding important to the grains industry?

For future agriculture to thrive, there are changes that must be made in accordance with emerging global issues. These issues are arable land, harsh cropping conditions and food security, which involves being able to provide the world population with food containing sufficient nutrients. These crops need to be able to mature in several environments (to allow for worldwide access) and this involves problems such as drought tolerance. These global demands are achievable through the process of plant breeding, as it offers the ability to select specific genes, allowing the crop to perform at a level that yields the desired results.

Should GFF be concerned about consumer perception of wheat breeding?

The terms “wheat breeding” and “GMO wheat” are being used interchangeably by influencers and consumers alike, presenting an education opportunity for GFF. In fact, today’s wheat varieties have been developed through conventional breeding over the last 150 years. There is no wheat in today’s food system that was grown from seeds that include genes from unrelated species.

Additionally, GFF is up against a perception that traditional wheat breeding practices have fundamentally and structurally changed protein in wheat. While GFF does not educate on wheat breeding, we will monitor new information on this topic as it relates to nutrition and health outcomes.

Wheat/Plant Breeding
Wheat breeding and GMO wheat are being used interchangeably. In fact, today's wheat varieties have been developed through conventional breeding over the last 150 years. There is no wheat in today's food system that was grown from seeds that include genes from unrelated species. Additionally, we are up against a perception that traditional wheat breeding practices have fundamentally and structurally changed protein in wheat. Given that GFF has messaged on this issue in the past in regard to *Wheat Belly*, we need to ensure our messaging stays up-to-date and relevant as new studies and reports become available.

Do we have a public position that can be used?

YES

- Positive issue platform
  - Variety
  - Nutrition
  - Health
  - Process
  - Choice
  - Insights
  - Origin

NO

- Holding statement
  - Refer to external experts

RESOURCES

GFF Partners:
NAWG
U.S. Wheat Associates
WFC
Wheat Improvement Alliance
ABA
AACCI

GFF Scientific Advisory Board:
Julie Miller Jones PhD, LN, CNS
St. Catherine University

Third-Party Experts:
Stephen Baenziger, PhD
University of NE:
Brett Carver, PhD
OK State University
Erick De Wolf, PhD
Kansas State University

Additional Resources:
APHIS/USDA
Center for Food Integrity/
IFIC
HGI

- Document & monitor

GRAIN FOODS FOUNDATION