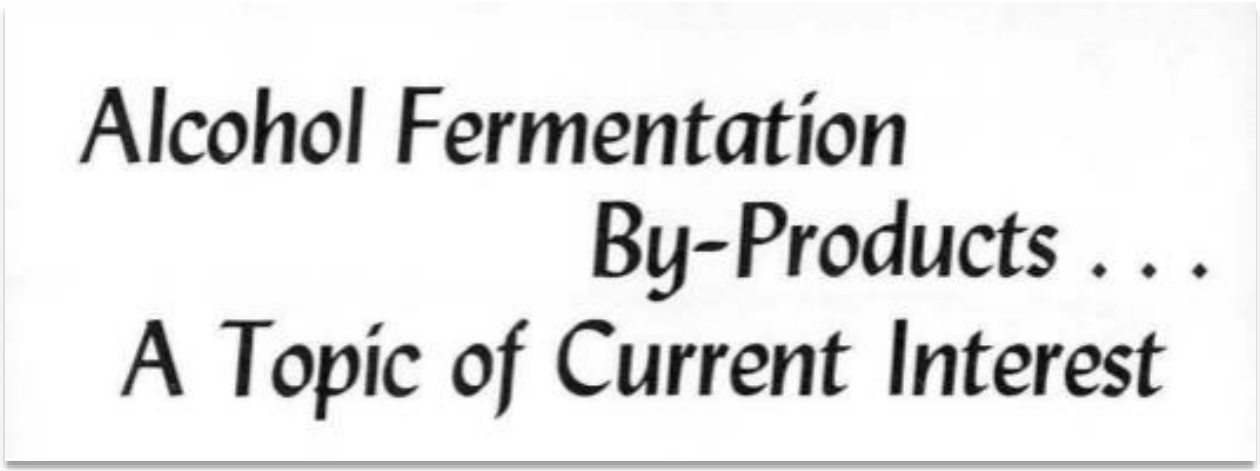
Update on DDGS and Co-Products

FELC 2023

Distillers Grains Technology Council (DGTC)

- We are a non-profit organization which serves the fuel ethanol and beverage alcohol industry. The organization started in the 1940s to help the beverage distillery industry develop uses for their non-fermentable waste materials.



DGTC Topics

- Change and Opportunity: Executive Director Search
- Regulatory Updates
- Sustainability Perspectives
- Lab Methods and Next Steps
- Symposium: 2023 Resources and 2024 Dates


DISTILLERS GRAINS TECHNOLOGY COUNCIL
Established 1945
We Are Seeking...
EXECUTIVE DIRECTOR
distillersgrains.org

Regulatory: Ingredients

- Table on the DGTC website summarizes and educates on the diversification of our industry.
  - distillersgrains.org/distillers-grains/
- The DGTC continues to update this and work with regulators domestically and the US Grains Council to educate globally.

Distillers & Biorefinery Products - February 2021

Dried Distillers Grain Products

Industry Name	Common Analysis (As Fed) %Protein	%Fat	% Crude Fiber	Current AAFCO Definition	General Description
DDGS	23-36	3-9	<14	27.6, 27.8	Distillers grains with condensed distillers solubles with a portion of oil removed. Can be in dry or wet form (dry form common analysis displayed).
Full Fat DDGS	21-34	8-12	<14	27.6, 27.8	Distillers grains with condensed distillers solubles. No oil has been removed. Can be in dry or wet form (dry form common analysis displayed).
Deoiled DDGS	26-36	<3	<14	27.9	Solvent extracted DDGS.
DDGS with Bran	23-36	3-16	<14	27.6, 27.8, 48.2	DDGS mixed with bran separated by plant prior to fermentation. Can be in dry or wet form (dry form common analysis displayed).
DDGS Mechanically Separated	24-48	3-8	<14	27.5, 27.4	Post distillation residual whole stillage resulting from the mechanical separation of fiber and protein. Contains condensed distillers solubles.
DDG	24-35	4-8	<14	27.5	Distillers grain. May have a portion of oil removed. Does not contain condensed distillers solubles.
HiPro DDG	36-48	4-6	<12	27.5	Distillers grain. Portion of fiber and oil removed which concentrates protein. Does not contain condensed distillers solubles.

Other Distillers Products

Industry Name	Common Analysis (As Fed) %Protein	%Fat	% Crude Fiber	Current AAFCO Definition	General Description
Syrup (CDS)	5-25	3-23	0-4	27.7	Condensed thin stillage.
Distillers Yeast	40-55	0-8	0-6	96.5	Inactive *Saccharomyces cerevisiae* yeast removed from the process stream after fermentation either before or after distillation.
	%Total Fatty Acids	%Unsaponifiable Matter	%Insoluble Impurities		
Distillers Oil	>85	<2.5	<1	33.10	Oil removed by centrifugation from the condensed distillers solubles stream or by solvent extraction of DDGS.

High Fiber Distillers Products

Industry Name	Common Analysis (As Fed) %Protein	%Fat	% Crude Fiber	Current AAFCO Definition	General Description
Bran/Fiber with Syrup	18-28	4-9	15-20	48.2, 27.7	Bran separated by plant prior to fermentation mixed with condensed distillers solubles. Can be in dry or wet form (dry form common analysis displayed).
Fermented Fiber Mechanically Separated	<24	2-7	10-20	27.5, 27.4	Post distillation mechanical separation of the whole stillage resulting in a concentration of fiber. Does not contain distilllers solubles unless listed.

Fermented Protein Products

Industry Name	Common Analysis (As Fed) %Protein	%Fat	% Crude Fiber	Current AAFCO Definition	General Description
Fermented Protein	48+	3-8	<8	27.5	Portions of fiber and oil removed by concentrating residual grain and yeast proteins by methods commonly used in distilling industry. Contains concentrated spent yeast products. Does not contain condensed distillers solubles unless listed.
Fermented Protein Mechanically Separated	48+	1-5	<8	27.5	Post distillation separation of protein from the whole stillage, utilizing only mechanical separation. Will contain spent yeast products, no non-mechanical methods utilized post distillation. Does not contain distillers solubles unless listed.

This table is meant for informational purposes only and does not convey any regulatory or specification requirements. The information listed is not all inclusive and is current as of date displayed in title and will be updated as industry innovation continues. The Distillers Grain Technology Council does not endorse any specific product or brands of feed products.

2/11/2021

Regulatory: Mycotoxin

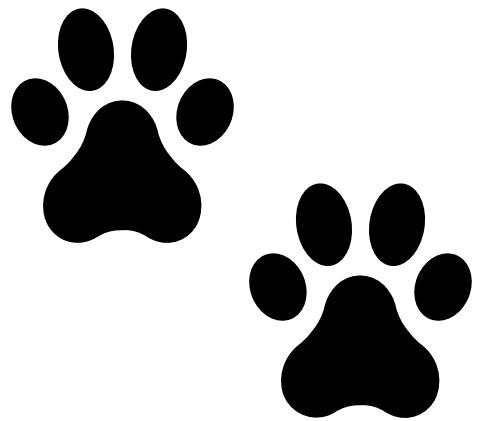
- FDA is “recalibrating” its mycotoxin compliance expectations and enforcement is ramping up.
  - cGMPs:
    - Evaluate Raw Materials & Ingredients (507.25(b)(2))
    - Maintain appropriate storage conditions (507.25(c)(1))
- FDA is working to validate its multi-analyte mycotoxin testing method for animal food matrices.

Remember not all moldy feeds contain mycotoxins and not all non-moldy apearing feeds are mycotoxin free. Diagnosing mycotoxin problems is a bit like catching ghosts, but we must be very careful to watch for increased health problems in cattle that may indicate problems.

-DGTC Correspondence from 2000

Sustainability: Co-product Perspective

- The IRA is on the Fuel Ethanol industry's mind!
- What about co-products and the supply chains' "Carbon Pawprint"
  - The animal food market (aquaculture, pet, livestock) are beginning to inquire more about sustainability and lowering their supply chain emissions associated with feed.
    - Plant-based protein (example: corn fermented protein) increased demand in order to replace ingredients like fishmeal in aquaculture.
  - May see increased requests for Life Cycle Analysis (LCA)
  - ASTM has a webinar this week (Oct 11/12) over LCA Standards



Check out Dr. Marty Matlock's DGTC presentation on LCAs: https://distillersgrains.org/symposium/

Sustainability: Co-product Perspective

- Co-products are a problem? The DGTC has worked with Beverage Distillers for a long time to identify opportunities for co-products.
- A number of projects ongoing in the Distillery Industry: whole stillage and thin stillage are being used as feedstock for renewable energy
  - Check out the DGTC Symposium slides and see what technology they're deploying.
  - Our members, Jack Daniels and Beam Suntory, have a number of great projects!

2023 Symposium Speaker Presentations

Tuesday Morning

Overview of Production, Trade and Logistics of Grain and Distillers' Products in the Context of Russia's Military Invasion of Ukraine
Antonina Broyaka, Visiting Professor KSU from Ukraine

AFIA Initiatives, New Developments IFeeder, Safe Feed/Safe Food, etc.
Constance Cullman, AFIA President

Activities Pertaining to Feed and Feed Ingredient Manufacturing and Distribution, Among Other Things, Addressing Food and Feed Safety Issues
David Fairfield, NGFA

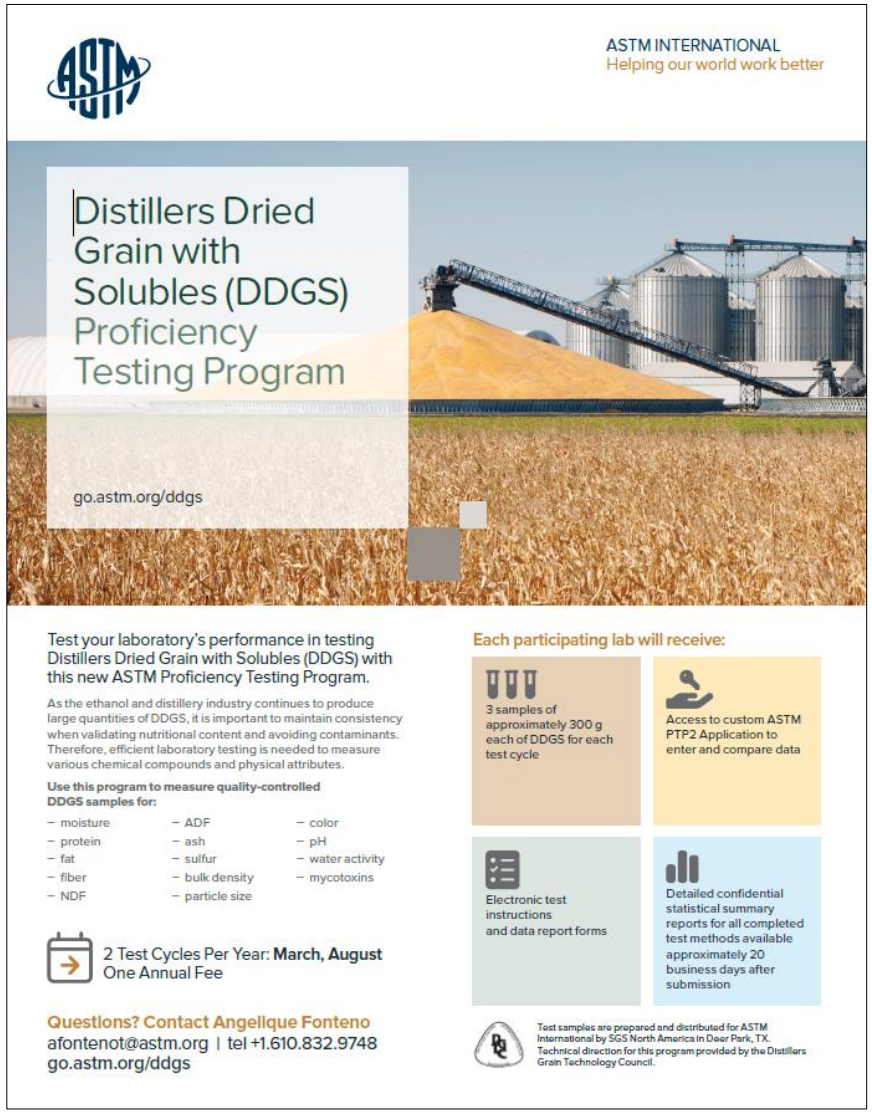
Distillers Spirits Technology Alignment - Digestors - Renewable Natural Gases Versus Animal Feed - It's Not Either Or
John Rivers, 3 Rivers Energy Partners

Changing Marketing Dynamics - Impact on Distillers' Products, Sustainability, Carbon Scores, International Implications and Deliverables
Guy H. Allen, Kansas State University

www.distillersgrains.org/symposium/

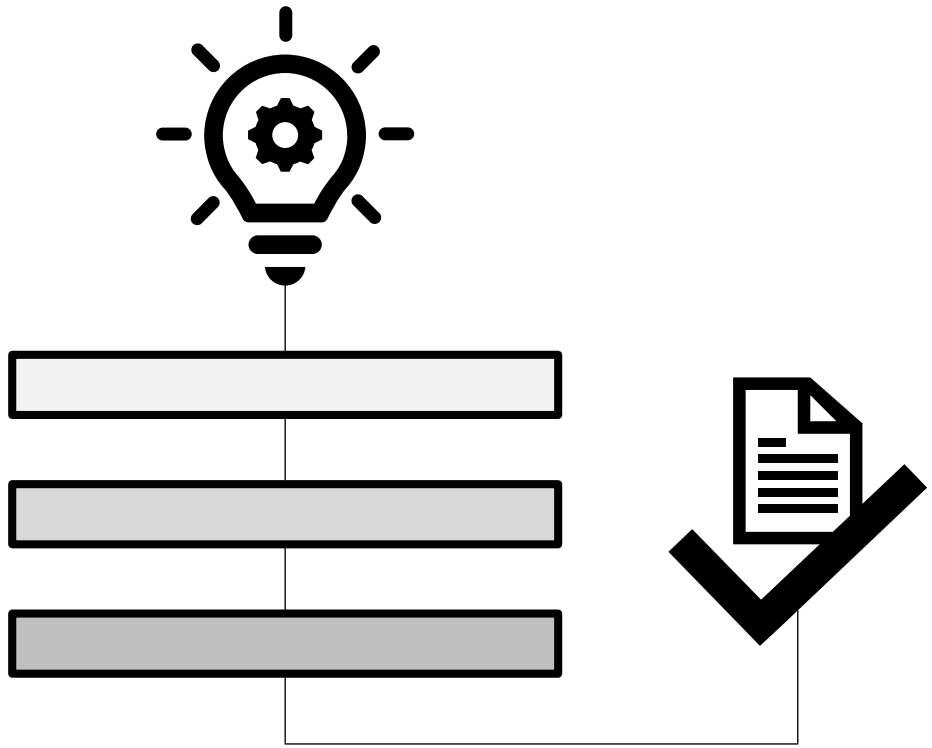
Lab Methods and Next Steps

- A lot of activity with ASTM on the Lab Proficiency Program and creation of Sub-Committee to help labs and industry continuously improve!
  - Chris and John will share more!



Lab Methods and Next Steps

- Action items for this to be successful:
  - Lab Method and Best Practices: Alignment across the industry
  - Proficiency Program Improvement
  - Industry and Affiliate Organization Buy-In
  - Ongoing Education



DGTC Symposium: Des Moines 2023

Doug McKalip
Chief Agriculture Negotiator, US Trade Representative

Thomas D. Heinold
Chief Operations Division Rock Island District, US Army Corps of Engineers

Guy H. Allen
Kansas State University

David Fairfield
National Grain and Feed Association

Constance Cullman
President, American Feed Industry Association

Marty Matlock
Executive Director, University of Arkansas Resilience Center

Antonina Broyaka
Dept of Ag Economics KSU

Shannon Jordre
Consumer Safety Officer FDA

Kevin Smith
Company Distilling

Valerie Preston
Lallemand

John Rivers
3 Rivers Energy Partners

Diane Young
Foundation Analytical Labs

Chris McCullough
ASTM

Ryan Higgins
OmniTRAX

Donna Willis
Jack Daniels Distillery

Dan King
Minnesota Department of Agriculture, AAFCO Investigator & Section Editor Distillers Products

Mike Locascio
Soluble Organic Solutions

Cary Sifferath
Vice-President, US Grains Council

Speaker Presentations: www.distillersgrains.org/symposium/

Thank you!

Discover more with us at the 2024 DGTC Symposium, St. Louis, November 11 – 13, 2024!

Interested in being more involved with the DGTC?

- More Information:
  - DGTC Website: https://distillersgrains.org/
- Interested in the Executive Director Position, Contact:
  - Michelle Harper, DGTC Team Member
    - michelle@distillersgrains.org