SORGHUM CHECKOFF℠

Investments in Sorghum: Past, Present and Future

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ABFC2016

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WHY?

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Agronomy

- Sorghum is a known crop many farmers have grown at some point
- There is ample information available on growing sorghum
- Sorghum is an annual, so it will not tie up land
- Sorghum can be rotated
  - Farmers can try sorghum at least once
  - Sorghum can be rotated in system with crops like beets
  - Rotation prevents disease and other pests from causing agronomic and environmental issues






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Seed Industry

- Sorghum has a well-established seed industry founded in the 1950s
- Seed supply issues can be easily addressed
- Any hybrid can be readily produced using existing infrastructure






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Yield, Yield, Yield

- Average sweet sorghum yields are about 28 tons per acre (450 gallons of ethanol and eight tons of bagasse)
- Average biomass sorghum yields are about 11 bone dry tons per acre (1,000 gallons of ethanol)
- Data exist showing sweet yielding 72 tons per acre and biomass yielding 26 bone dry tons per acre
- These only represent the industry's most recent attempts at breeding for sugar and cellulose yield






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Water

- Water-sipping
- Grain sorghum uses one-third less water than other grain crops
- Sorghum silage uses half the water that other silage crops use
- Sweet sorghum uses half the water that other sugar crops use

Water availability is already a huge concern around the world






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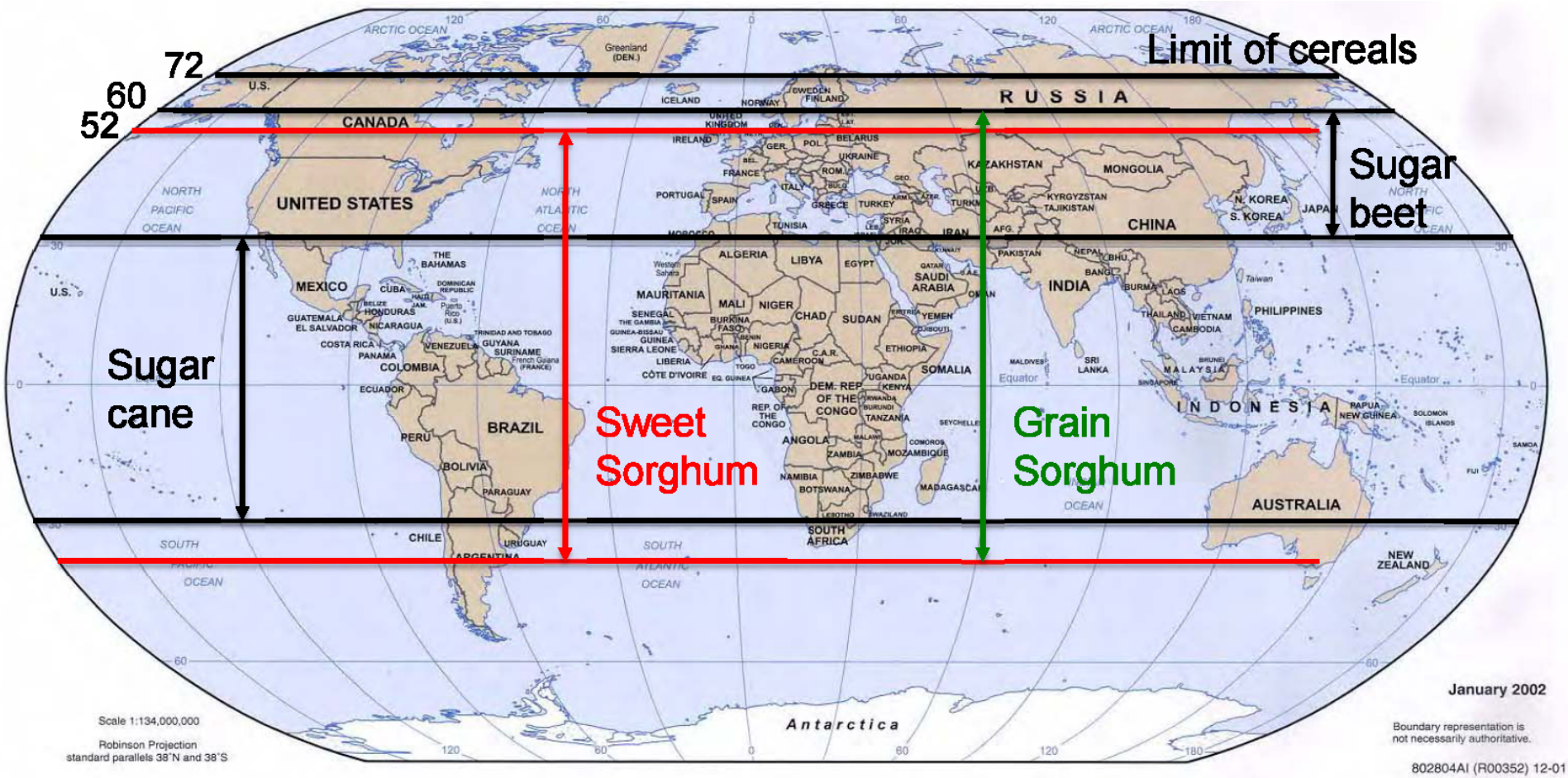

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Geography

- Sorghum can be grown in northern areas
- When used as a secondary feedstock to corn stover or other crops, sorghum's benefit in the north is even better
- Sweet sorghum for syrup is produced as far north as Minnesota and Wisconsin






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Genetics

- Sorghum can produce sugar, starch and cellulose, all in a single species, and possibly all at the same time in a single plant
- One of the most diverse species on Earth

Our breeders can customize

the crop to fit your needs






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Customizability

- Dry stalk for better biomass harvest – or not
- Naturally senescent – or not
- BMR, lower fiber
- Higher fiber
- High sugar
  - High fructose
  - High glucose
  - Higher sucrose
- Heads for greater starch content
- No head






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Two Organizations Advocating for Sorghum

- Primary activities are research and marketing
- Cannot lobby
- Funded by producer checkoff dollars
- Organized in 2008

- Primary activities are policy and regulatory advocacy
- Funded by voluntary membership dues
- Organized in 1955






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WHO AND HOW MUCH?

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Old Investors

- Sorghum Checkoff
- USDA-ARS
- USAID
- Kansas State University
- Texas A&M University
- NexSteppe
- Chromatin Inc.






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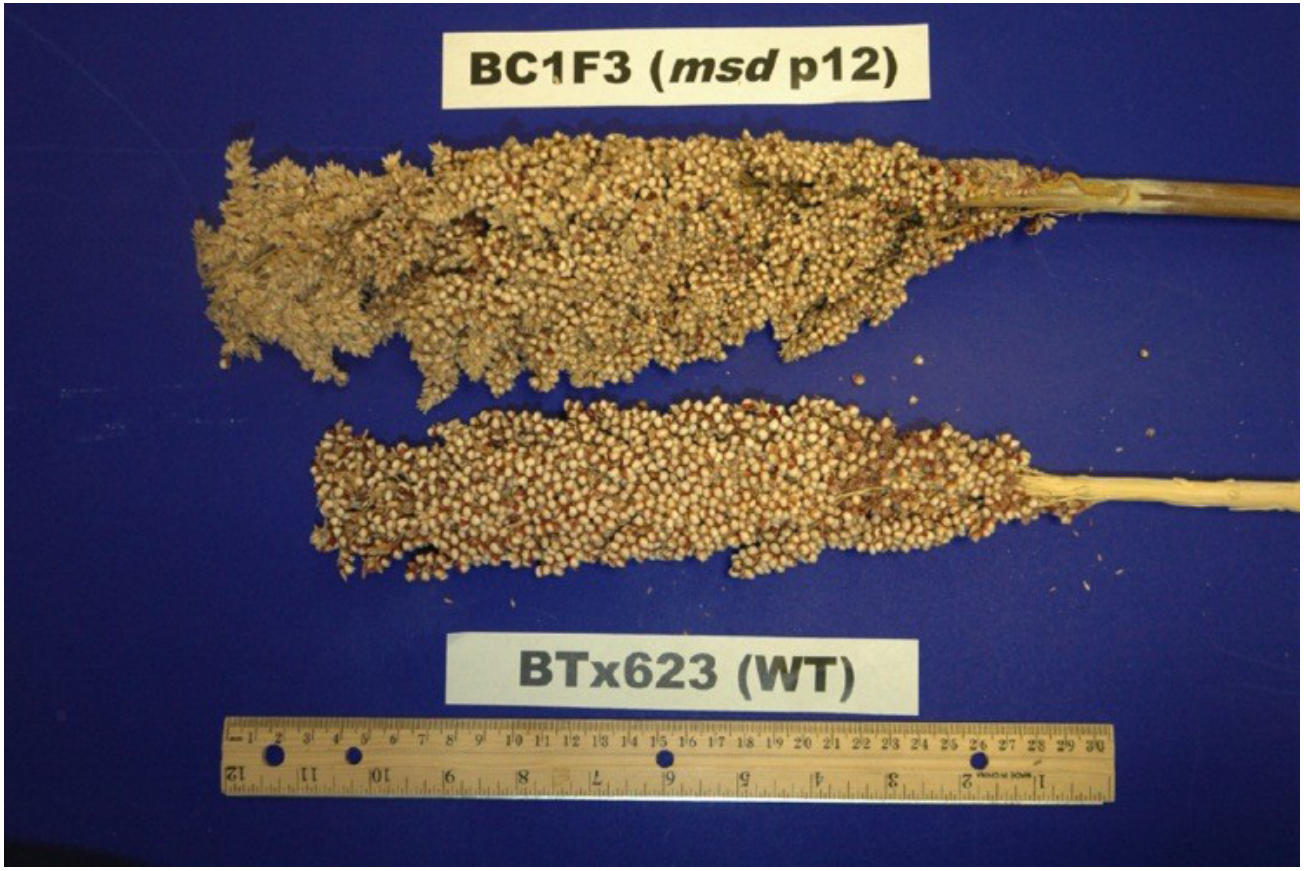

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New Investors

- DOE – to the tune of over $70 million
  - ARPA-E program centered around sorghum, TERRA, has brought many new players to the sorghum table
  - What do these organizations have in common?
    - Donald Danforth Plant Science Center
    - University of Illinois, Urbana Champaign
    - Texas A&M University
    - HudsonAlpha
    - Washington University in St. Louis
    - Kansas State University






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New Investors

- Clemson University
- Carnegie Mellon University
- Blue River Technology Inc.
- Lawrence Berkeley National Laboratory
- Pacific Northwest National Laboratory
- IBM Research
- Chromatin Inc.
- National Robotics Engineering Center
- Cornell University
- Signetron Inc.






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New Investors

They are all invested in sorghum






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QUESTIONS?

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