



2017 Kernza / IWG Meeting Summary

Day 1: Agronomy Research Breakout Session

2nd Annual International Kernza Meeting
University of Minnesota, St. Paul
July 6, 2017

Moderator: Jacob Jungers

Recorder: Charles Frahm

Agronomics (Challenges, Goals, Future Outlook)

- Declining seed yields
 - Through time (stand age)
 - UofM: disturbing 3-4yr stands to stimulate grain production
- Harvesting issues in cornell
 - Utilizing grass seed industry techniques
- Harvest method and timing
 - Swath vs direct combine - still undergoing experiments to determine the best method. Most producers are swathing because direct combine is difficult with variations in size of plants as well as seeds (very small for small grain equipment)
 - Are Ag-engineers getting involved?
 - Regional differences will determine harvest technique
 - (Jake discussed harvest timing experiment to group) – end goals are to optimize seed moisture and plant physiology
 - What is cutting height? – tall enough for enough air to get underneath the stubble.
 - Seed maturation variability
 - Stripper header? Hasn't been experimented with.
 - ***as a group, collect qualitative and quantitative data on seed characteristics right before harvest (moisture, color, texture)

- baseline yield potential using quadrats
 - estimate (qualitative and quantitative stage)
 - % moisture using just the spike
- Fertility
 - Intercropping legumes
 - Organic fertilizer (manure can add weeds to plots)
 - Organic vs synthetic
 - Tiller induction (influenced heavily by fertility), consider fall fertilization?
- Weed control
 - Defoliation vs only grain harvest
 - Share data on weed biomass, species ID, correlations between community composition and suppression
 - Cultivation? Does it stimulate weed growth
 - Establishment issues
 - Organic weed control (cornell is looking at this)
 - Control weeds until mid spring (end of april), the field will look good
 - Seeding rates, intercropping (frost seeded red clover, alfalfa, bursine clover – good weed suppression)
 - Companion crop to help with weed suppression
 - ***Organic weed control needs to be developed further (techniques, timing, potential information for future producers)
 - ***Multi-site study at legumes and wheatgrass intercropping
- Plant Density
 - Wider rows do not maintain yields over time
 - First year- want a lot of plants per unit area, consider cultivation//renovation methods in later years to sustain adequate grain yields.
 - Tiller counts? Fall vs spring//grazing vs control//clipped vs control
- Growth Regulators
 - Palisade looks promising
- Culman Study future plans
 - Multi-site study: could go another season if enough interest (4 years total)
 - Get rid of spring clipping treatment
 - Keep the study without adding new treatments to answer questions we haven't yet: (disease, pathogens, weed biomass/composition)
- Ecosystem Services
 - How to make ag systems more resilient to climate change.
 - Carbon: shallow and deep soil (1 m) data. Needs more investigation because of the depth of Kernza roots

- Transitional period: quantifying the carbon budget
- Soil health properties (important for buffer laws)
- Water health, holding capacity
- Soil carbon (how does it change over time) – sustainability resources
- South Dakota
 - 2-4 yr long term crop rotation to restore soil OM and C to the fields

- Crop Rotation Study
 - Largest challenge is long-term funding
 - Till vs no till (effect on overall soil health)
 - What is the bottom line for Kernza production?

- Equipment
 - Lease program
 - Private contracting for those who don't own the equipment

- Future Outlook
 - ***Meta-data to get overview of yields, and Kernza performance by region, and the experiments being conducted by Universities and other research groups.
 - ***Document our learning process and how it impacts yields
 - Organic vs Conventional markets – where is this going to go? Should growers start transitioning fields to meet organic regulations