

# **Evaluating Trials-Looking for the Unexpected and Trying to Quantify Concepts**

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# OR OTHER TITLES

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- ❖ Seeing what you are not looking for
- ❖ Forgetting what you think you know and finding what is important

# THE OBJECTIVE

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- ❖ We have many types of trials
  - + Variety
  - + Biostimulant
  - + Fertilizer
  - + PGR

The intent is to provide ideas and considerations, not a Zen method



# THE CHALLENGES

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- ❖ The challenges in evaluating Agronomic trials and, in particular trials where we are not sure of the effect of our treatments, is looking deeper to see the obvious, and the not so obvious.
  - + Characteristics of a variety being tested
  - + Effect of a plant growth regulator on plant morphology
  - + Changes in growth rate from a fertilizer product
  - + Differences in susceptibility to a pest
  - + Plant growth habit changes due to a biostimulant



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# THE INVERSE CHALLENGE

- ❖ The opposite is true too
  - + We spend plenty of time looking for something specific...





# THE FOREST THROUGH THE TREES

- ❖ We miss what is right behind us



# WHAT IS IT?

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- ❖ So how do we find ways to standardize observations when we don't know what we are looking for?
  - + We want to find plants which are Happy
    - ✗ We could sing Pharrell Williams happy song...
    - ✗ Problem is, plants are shy, and don't sing along...
      - ★ (Maybe you should be more shy too)



# GUIDANCE

- ❖ We need to give guidance to our teams on what and how to look for things...
  - + Telling someone to “go take a look and tell me what you see” is not enough...



# FIRST AND FOREMOST

- ❖ It is my view that this has to be a separate evaluation
  - + It is difficult to be focused on height, or flower counts, etc.. and simultaneously notice that there are more aphids in this plot than the other ones...





# FAMILIARITY BREEDS CONTEMPT

- ❖ It is almost always best to have someone different look at it with fresh eyes
- ❖ At the very least, make your “other picture” evals when that is all you are doing



# WHERE TO START?

- ❖ Having an idea what to look for helps
  - + On transgenic and mutation trials, we are supposed to be looking for anomalies like this Radish plant....





# WHAT TO SEE?

- + With luck, the client will have some ideas on what they expect to see
  - × More roots
  - × Denser cover/more ground cover
  - × Earlier flowers
  - × Shorter and stouter plants



# EVERYWHERE IS DIFFERENT

- ❖ Often we are looking at several different or even thousands of varieties
  - + The grading system has to be rethought...“what is a good variety here?”
    - × Good here may be something different somewhere else
  - \* Maybe?
  - \* Actually, you can count on it.



# YOUR CONDITIONS AFFECT WHAT YOU SEE

- ❖ So, try to come up with what a good result will look like.
  - + A 20 foot tall corn variety which potentially yields 500 bu—Would you find it?
  - + The tendency would be to ignore one that tall
    - ✗ Did you notice that it had 4 ears which tried to produce?
    - ✗ Will you see it if you only fertilized it for 200 bu?

# HAPPINESS IS A BOAT OF LAWYERS SINKING

- ❖ The most difficult task...
- ❖ Is when you are told the product makes plants happier...
  - + Find a way to measure that!!!





# SUGGESTED ARM CODES

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- ❖ Happy
- ❖ Really Happy
- ❖ Ecstatic!!
- ❖ Not so Happy
- ❖ Damned Unhappy
- ❖ Pissed

# WHY WILL THEY PAY?

- ❖ At the end of the day, making a plant happier has to be something which will encourage growers to pay money for that product or trait.
  - + Yield is obvious





# LOWER UNIT COST

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- ❖ It is all about unit cost...
  - + Herbicide Tolerance
  - + Pest Protection
  - + Fertilizer Efficiency
  - + Drought Tolerance
- ❖ Yield is only PART of what makes for Lower Unit Cost

# BETTER QUALITY

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## ❖ Improve Quality

- + This means very different things in different crops
  - × And within the same crop for different uses
  - × Higher protein wheat?
  - × Baking Quality
  - × Bell Peppers which have longer shelf life?
  - × Waxy Corn
  - × Specialty Oils in Canola, Soy, Safflower, etc....



# QUALITY IS ABOUT HIGHER MARGINS

- ❖ Better Quality Needs to bring a higher return
- ❖ And that return needs to be consistently more than the input cost.



# HAPPY!! SO HAPPY!!

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## ❖ The Esoteric Plant health

- + Fewer bugs, Less disease
- + Better stand emergence
- + More ground coverage
- + Bigger root systems
- + More canopy- Cooler canopy -Greener canopy
- + Faster growth rate- Earlier flowering
- + Earlier fruit set- Earlier maturity
- + More leaves, branches, flowers



# HUHHHH??????

❖ Enhances branching???

❖ WTF????





# LONG TERM HEALTH

- ❖ Soil or tilth improvement for longer term gains in productivity.
- ❖ When we are using “Bugs in a Jug”
  - + A longer term positive affect is hoped for





# REALLY COOL STUFF

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- + But just how in the world do we measure it?
- + And do these differences show up when the plant is growing well?
- + Do they need Stress of some sort to bring out the best performance?
  - × Can we dry them down
  - × Modify planting date for cool or heat stress
  - × Do we inoculate diseases
  - × Push the salts into the seed line?

# WE CAN OVER DO IT!

- ❖ Head Lettuce
- ❖ Disk, Rip, Plow, Laser, Fertilize, List, Shape, Plant





# OVER DOING IT

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- ❖ That Fertilizer Part
- ❖ 500 or 600 lbs of 11-52/ac
- ❖ Then another 250 units of N side dressed and in the irrigation water...
- ❖ Lettuce needs 150 lbs of N tops, 100 lbs of P
- ❖ You think your biostimulant will have an effect?

# LOOKING

- ❖ So no matter how much you look, the chances of finding something is next to impossible...





# SO WHAT IS THE MEAT HERE?

- ❖ Not seeing the subtle or missing the obvious
  - + Takes a clear mind
  - + Should be done on unique visits
  - + Try looking from above
    - × Drones, standing on the tool box, tie your Go Pro to a pivot
  - + Walk without purpose
    - × Wander
    - × Get down in the canopy

# MEAT PAGE 2

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- ❖ Lie on the ground!
- ❖ Come at harvest and watch the product
  - + Does it harvest the same?
  - + The color different?
  - + The way it leans?
  - + How quick does it recover?
- ❖ Walk the field a week after harvest...
  - + Any differences?



# MEAT 3

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- ❖ Look at the plant...
- ❖ Look at the weeds around it
- ❖ Look for the pests... more, less
- ❖ Look for the non targets... Does this have more bees, do the rabbits like it?

# CONCLUSION

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- ❖ This type of work is what will feed the world in 30 years
  - + 5 m 200 day Mexican corn
- ❖ Do your best to think outside the box
- ❖ Have two or three different people look
- ❖ The inexperienced may well see things us old farts miss....



# AND IF ALL ELSE FAILS

- ❖ You can sing...
- ❖ It might seem crazy what I'm about to say  
Sunshine she's here, you can take away  
I'm a hot air balloon, I could go to space  
With the air, like I don't care baby by the way
- ❖ Because I'm happy  
Clap along if you feel like a room without a roof  
Because I'm happy  
Clap along if you feel like happiness is the truth  
Because I'm happy  
Clap along if you know what happiness is to you  
Because I'm happy  
Clap along if you feel like that's what you wanna do





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