2024 Strip Trial Quicksheet

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Conducting On-Farm Strip Trials to Achieve Meaningful Results

Trying new things to improve sugar production has always been part of our successful history at SMBSC. Thinking of adding new practices and products to a sugarbeet production plan can be stressful, but with an on-farm test we can build up our confidence. For a true test, strip trials can provide for accurate side-by-side comparison of an experimental treatment. In this quicksheet the steps will be outlined to achieve useable and believable results.

1. **Formulate your question:**
   - We want to ask a question that leads us in the direction that will yield useable results. Here are three strip trial example questions that can be implemented and tested on any sugarbeet farm;
   - **How much does adding a Rhizoctonia fungicide to starter boost my yield and protect from disease?**
   - **Does the additive in my fungicide program significantly benefit the crop?**
   - **Does a reduction in planter down force help my seed placement, germination, and emergence?**
2. **Control Variables:**
   - Within your field, pick the most uniform section to reduce variability in the soil type and topography.
   - Avoid areas that have differences in tillage, uneven fertility, cover crop strips, same variety, etc.
   - Use straight rows only for strips of equal length. If needed, shorten strips equally at harvest to fit on one truck.
3. **Use Replication and Randomization:**
   - Some field variability can not be controlled. Use the longest strips possible and additional replications.
   - Each replication in the trial will reduce the impact of in-field variability on the treatments.
   - Take multiple samples per strip rather than relying on the single load sample taken at the piling site.
4. **Consider Equipment Limitations:**
   - Plan accordingly for different equipment widths, i.e. 12 row harvester, 24 row planter, 72 row sprayer. Know where additional variables can be introduced, such as where your wheel tracks will line up to affect each rep.
   - For foliar treatments or others with less precision, harvest the next swath to avoid mixed treatment strips.
5. **Communication**
   - Make sure that everyone in your operation is aware of the strip trial and its protocol. A lack of communication could compromise the trial. See your protocol and applications all the way through harvest!
6. **Take Detailed Notes**
   - Keeping track of important dates and other observations can be crucial when evaluating the differences in the treatments at the end of the year. Did something happen to the field that impacted one treatment more than the others? (ex. spray drift, disease pressure, hail damage, rained out half-way through plot, etc.)
   - Take pictures of treatment differences throughout the season for later evaluation. Using other technology to monitor crop progress and yield can be beneficial tools when analyzing and sharing results of the trial.
   - Summarize your organized results so it is easy to review for making decisions in the years to come.

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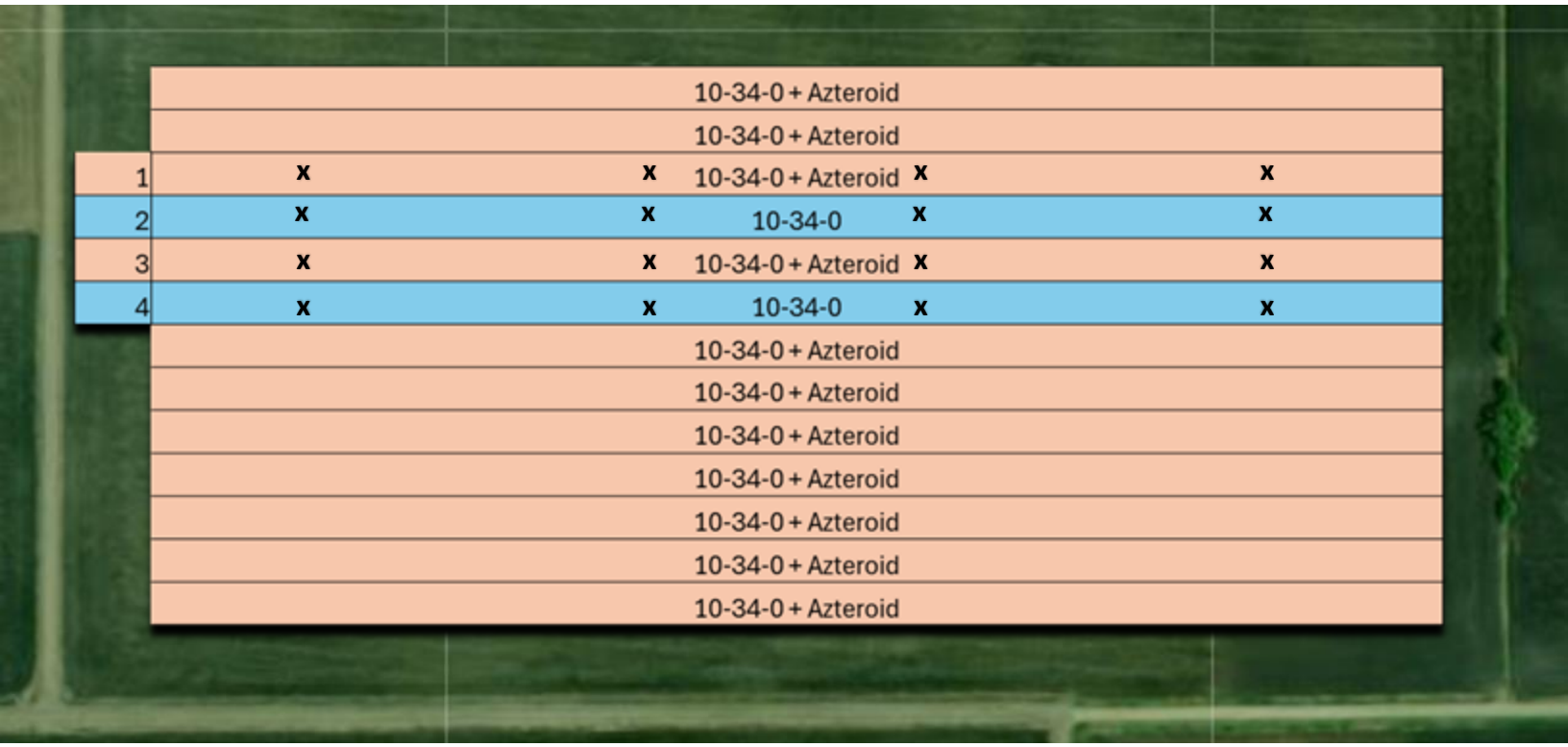
On-Farm Trial Example

The trial example below is an overlay of a strip trial design to answer our first example question;

- How much does adding a Rhizoctonia fungicide to starter boost my yield and protect from disease?

Here, the trial is laid out so that when a refill on starter is required, Azteroid is left out of the tank for one round with a skip in between. Azteroid is then added to the tank at the appropriate labeled rate, agitated, and the rest of the field is planted. In this scenario, two replications are achieved. This may be enough for a grower to get a good look and make decisions based on, but not necessarily enough reps to achieve definitive results.
The strips run the full length of the field and are harvested accordingly. Keep in mind that additional reps may seem difficult at the time of planting, but each rep adds much more confidence in the yield results.



Example sample locations marked X

Analyzing the results of a trial and determining the cause of treatment differences can be complicated. Statistics can help determine whether the numerical differences that you are seeing in the treatments are caused by the treatment or other uncontrolled factors (soil variation, insect or disease pressure, etc.). Statistical significance may or may not prove a product to be worthwhile, but on-farm trials can help decide what is significant to you.

If you have any questions on how to set up an on-farm strip trial or want help with analyzing the results of a trial, feel free to contact Cody Bakker at cody.bakker@smbsc.com or 320-905-5759.

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