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germains seed technology
We Maximise Nature's Potential®

Trial process for evaluating seed treatments

Testing new products in the UK

Germains is committed to delivering innovative seed technologies to the UK's Sugar Beet Industry. An integral part of what we do is testing our new treatments in UK fields to demonstrate the benefit of our seed enhancement products to the UK industry.

In partnership with Armstrong Fisher and BBRO, we conduct field trials each year on a range trial sites throughout the UK. Harvested beet from each site is taken to the Tarehouse at Wissington Factory to obtain yield results. The data is then sent to NIAB for analysis and NIAB calculate the average yield results.

Field trials allow us to test our seed treatments and to build up a robust data set over a number of years with varying climatic conditions. We use a minimum of three years' worth of data in order to ensure validity and account for external influences (such as weather, pest pressure etc…). This data verifies whether or not the treatment is beneficial for the grower.

Trial Methods

There are two main types of trial that Germains commissions with external contractors in the UK; each has a specific purpose.

- **Small plots trials** – gather robust data to prove benefits
- **Replicated strip trials** – prove benefits at field scale

Each type of trial has its place in the development of a new product, but we should be aware of the limitations of each type to trial, to ensure we use the correct type of design for the question in hand. The most frequent question asked; does the new treatment(s) perform better than the current commercial product in UK fields?

This question raises another question; perform better how? Improve emergence speed, better final establishment, or more vigorous early plant growth?

Ultimately our main objective with any seed treatment is to help improve yield.

Small plot trials

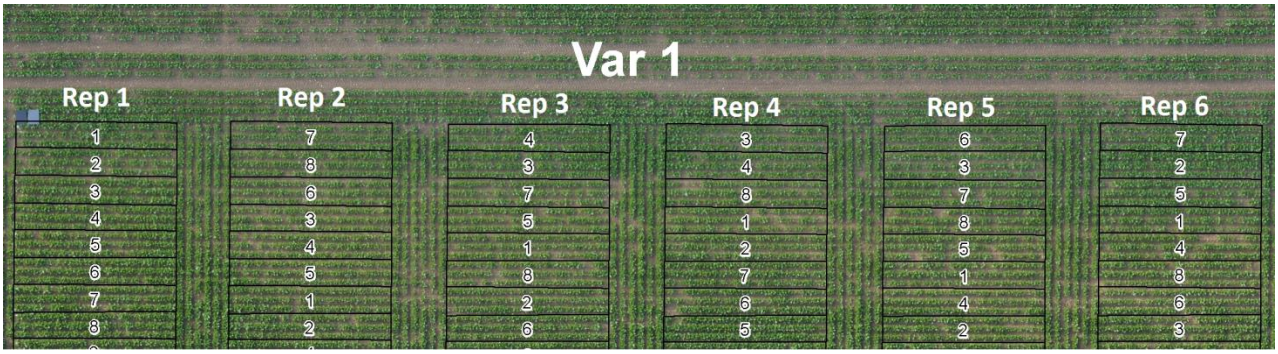
Small plot trials are carried out in farmers' fields in the UK, rather than on a research station, so the trials represent the same agronomy as the rest of the UK crop. As with any biological trial, we need to identify if the variations between treatment results are due to the treatments or just because of variability of the growing conditions. Small plot trials include a number of replicate plots of each treatment. Treatment replications are randomised and each trial is blocked by variety to try to account for field variability when evaluating the trial data.

Picture 1: Example of a field site with small plot trials.

In order to develop products that work on all sugar beet varieties and over a range of different growing conditions; it is necessary to test every seed treatment on several varieties for multiple seasons and at various field locations.

Germains standard methods for small plot trials in the UK include:

- Replications - 6
- Plot size – 3 rows 7-10m long



Picture 2: Aerial image of 1 block of a field trial with 8 treatments and 6 reps

Small plot trials are the most robust way of gathering information about the performance of the seed treatments. All of the data gathered statistically evaluated so that we may determine the efficacy of the seed treatment on each variety trialled.

Key focus of data gathered:

- Emergence speed
- Final establishment
- Plant size
- Crop cover
- Yield

One disadvantage is that variable fields can sometimes give extreme variations of data between the reps. So understanding the conditions the plants are exposed to in each field is important for our researchers to consider when interpreting the data and conclusion of the trial results and ultimately determining whether or not the seed treatment should be introduced to the market.

Data from the small plots trials is independently analysed by NIAB, both by specific year and across years, to assess the effects of each treatment.

Replicated strip trials

Replicated strip trials are conducted by the BBRO. These trials include multiple strips of each treatment that are planted side by side and randomised within each rep.

The standard methods for replicated strip trials in the UK include:

- Replications - 6
- Plot size – 6 rows 150-300m long
- Each plot is harvested and weighed
- Samples are taken for analysis at the tare house, where adjusted yield is calculated.

The benefit of this type of trial is that field variability is evened out by the large number of plants per treatment, whilst mimicking a commercial production environment. The downside is that it uses large areas and only a small number of sites where only a few treatments and varieties per year can be taken to yield and evaluated.

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Trial Comparison | Pros vs Cons

	Pros	Cons
Small plots trials	Multiple varieties. Multiple treatments. Robust data that can be analysed.	Variability between reps.
Replicated strip trials	Large sample size evens out field variability. Close to commercial, but with stats data.	Due to size and expense only a few trials can be evaluated.

For more information or to participate in a field trial please contact Germains Commercial Development Manager, Tessa Seymour M: +44 (0) 7889 593 146 or via email tseymour@germains.com.