

# Project Brief:

## Plant Response Test Interpretation and Comparison:

Investigating performance of the UK Tomato Plant Response Test and German Spring Barley Test on CCS Compost

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### Project Background

The tomato plant response test (PRT) is used in the Compost Certification Scheme (CCS) as a bioassay to screen for phytotoxins in finished composts. The test simultaneously assesses for 'weed seeds and propagules', phytotoxins and is a general compost maturity bioassay.

Within the CCS, an operator whose sampled compost batch has failed the PRT is required to investigate the cause of the failure, apply corrective action to the failed batch of compost, and pass a subsequent PRT test to proceed to market. The presence of weed seeds and propagules, or abnormalities of plant growth (i.e., due to herbicide residue), are some of the possible causes of tomato PRT failure. However, it is harder to identify the cause(s) of PRT failures on germination and top growth. If the cause of failure is not identified, operators may face challenges determining and implementing the appropriate corrective action(s). Assuming corrective action(s) can be applied and further sample from the 'corrected batch' is supplied, an additional 28 days is required before a new PRT result can be reported. Holding of compost batches onsite due to PRT failure can have a dramatic effect on operations.

The spring barley test has been considered as a potential alternative to the tomato plant response test. Advantages of the spring barley test include shorter duration (10-12 days rather than 28 days), comparative simplicity, and relevance to agricultural markets.

### Project Scope

#### Aim

The aim of the project is to assess the performance of the spring barley test on CCS composts to consider including the spring barley test (in future versions of PAS100) as a potential follow-up test to the tomato plant test.

#### Objectives

To fulfil this aim, the project's key objectives are as follows:

1. To understand the cause(s) of tomato PRT failure on germination and top growth, informed by compost sample characterisation analysis (standard and non-standard parameters) and spring barley test performance
2. To determine key parameters (both standard and non-standard under CCS) of the spring barley test that operators could use to aid interpretation of tomato plant response test performance.
3. To develop a dataset of the comparative performance of the tomato plant response and the spring barley tests with a range of relevant compost samples to support decision making in the development of PAS100.

### Methodology:

- Test compost samples from CCS producers using both the tomato plant response and spring barley tests.
- Analyse compost samples for relevant physicochemical parameters to help interpret tomato plant response and spring barley test results. Parameters may include those not currently analysed as standard on the scheme but considered relevant.
- Consider performance of the tomato plant response test and the spring barley test in both controlled growth environment (e.g., growth room or growth cabinet) and temperature-controlled glasshouse.

### Please note:

- The contractor will be required to source and test samples from a range of CCS producers throughout the year, including samples likely to be at relatively high risk of failing the tomato PRT test. REAL will aim to support sampling efforts as needed.
- CCS-approved labs routinely carry out testing of CCS composts including using the tomato plant response test (more information here).

### Project Deliverables:

- A final report on:
  - Assessment of cause(s) of tomato PRT failure on germination/top growth, informed by compost characterisation analysis (standard and non-standard parameters) and spring barley test performance
  - Analysis and interpretation of data on the comparative performance of the tomato plant response and the spring barley tests with a range of relevant compost samples
  - A report section providing guidance for CCS operators, when handling tomato PRT failures, on interpretation of compost sample characterisation test results, practical actions they could take
- Regular meetings with the REAL Project Management Team to provide project updates and agree project milestones.
- A final meeting with the REAL Project Management Team to discuss the project in its entirety, during which the appointed contractor shall present the findings enclosed in the final report.