Biomass Feedstock Innovation Programme (Phase 2):

Department of Energy Security and Net Zero's Net Zero Innovation Portfolio

OMENZ
Optimising Miscanthus Establishment for Net Zero

Project OMENZ – **O**ptimising **M**iscanthus **E**stablishment through improved mechanization and data capture to meet **N**et **Z**ero Targets (TER-303)

Alex McCash 7-11-24

UK Agri-Tech Centre

LIVERPOOL JOHN MOORES UNIVERSITY

Energene Seeds Ltd

TJSS LTD

UNIVERSITY OF LINCOLN

Cranfield University

Department for Energy Security & Net Zero

Project OMENZ Focus on BFIP

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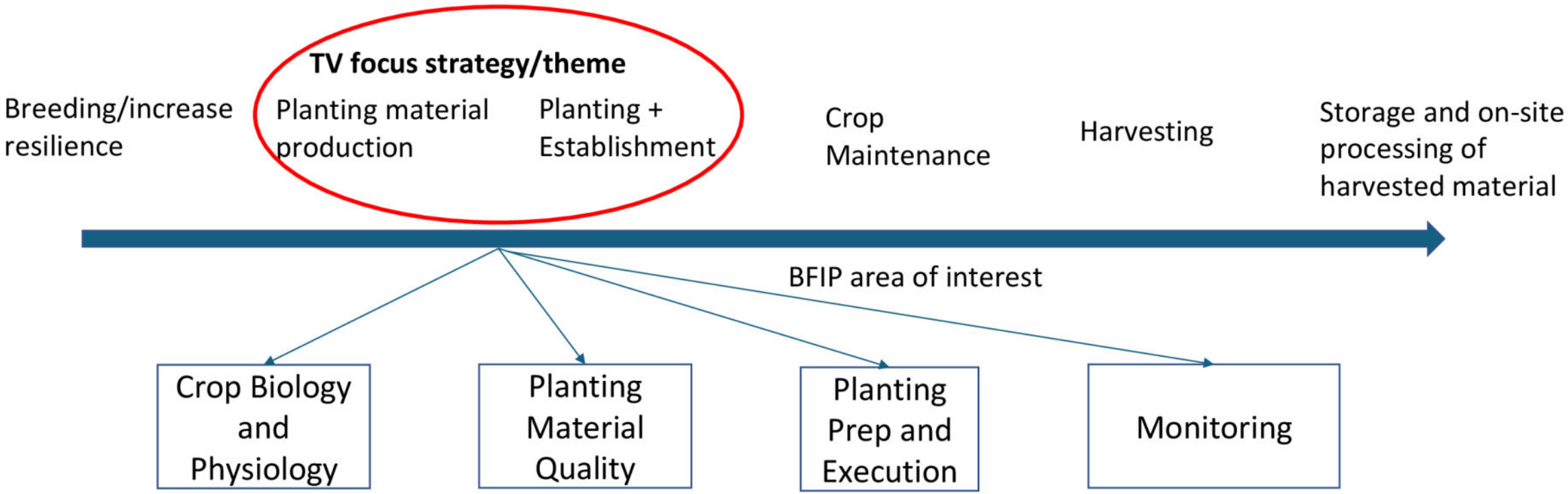
- Terravesta focus in BFIP: Crop Establishment



Project OMENZ – Phase 2

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WP 1 Understanding Miscanthus Emergence, Establishment and Development (LJMU)

- Identified quick wins to be trialled based on plant physiology

WP 5 Project Management (UKATC)

Project Goal: Increase planting rate and establishment success

WP 3 Optimising Miscanthus Planting and Establishment (UoL)

- Determine planting optimal soil planting condition
- Land prep techniques
- Test and validate new equipment
- Planting of trial field

WP 2 Optimising Production of Planting Material (TV)

- Identify faster and easier QC
- Innovation in QC process

WP 4 Establishment Monitoring for Upscaling Production(CU)

- Continue improvement of identified monitoring equipment and software

Project objectives

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Improve their operational efficiencies allowing Terravesta to plant more hectarage in a year
To improve crop establishment, which should lead to increased yields over the life of the crop.
WP1: Aims to expand our knowledge on the performance of our new hybrids, in order to optimise variety selection for a given environment thereby leading to better crop performance.
WP2: The project aims to deliver a high quality rhizome to a repeatable specification with a high establishment success rate.
WP3: Aims to understand how the soil type impacts crop establishment, and use that learning to optimise our planting procedures through better use of different tillage methods to improve crop performance.
WP4: Aims to monitor crops, not only to provide a measurement of the success of the project but also to ensure that when crops are rolled out at scale, the quality is not lost.

Seed Harvest and Production:

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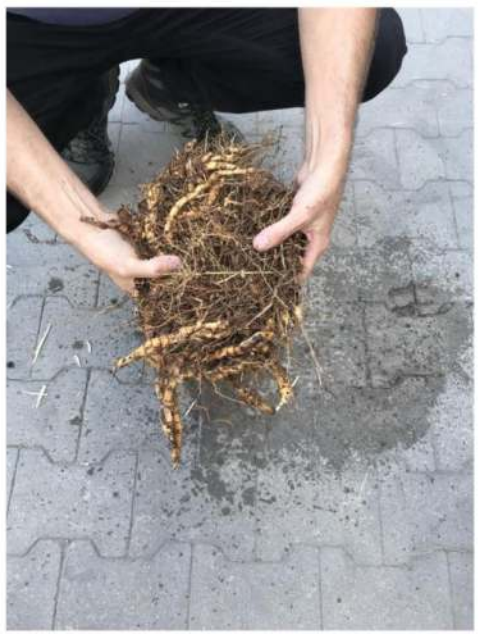
- Timing is crucial for both quality and quantity
- Close monitoring of weather conditions

Simplicity in Solutions:

- Simple mechanical rhizome separator prototype shown to be effective
- Familiar to the nursery staff
- Innovations must resonate with people



Understanding Miscanthus Physiology:

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- Significant learning on *Miscanthus* physiology and its successful establishment.
- Understanding the critical factors affecting rhizome establishment, even in non-ideal environments, is vital.
- Additionally, identifying key aspects of quality control in rhizome production and the supply chain is essential.

Monitoring Rhizome Transport and Storage:

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- The importance of monitoring rhizome transport and storage
- New handling protocol

Previous un-monitored rhizome varies in quality

Improvement seen with the new protocol

Environmental Influences on Development:

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- Environmental factor significance on *Miscanthus* development assessed
- Heavier soils can hinder early seedling and rhizome development initially, but this development tends to catch up over time
- Additionally, heavier soils have potential benefits for water retention, leading to more stable production in the long run

Rhizome Counter Effectiveness:

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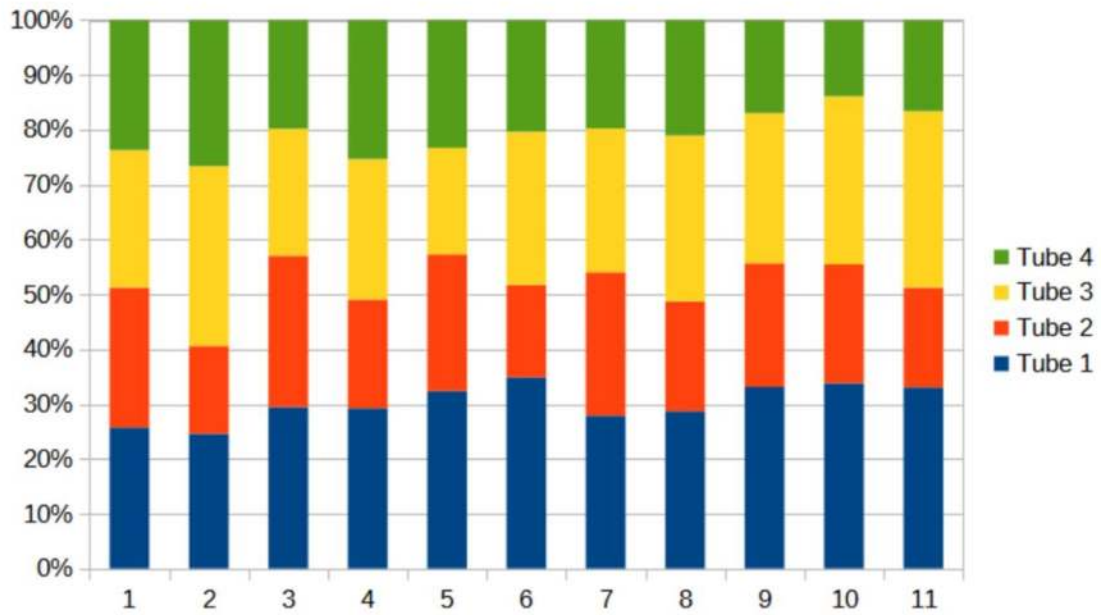
- The rhizome counter has proven useful for estimating planting coverage



Ratio monitoring of each tube of each pass

Overlaying result to the map

Improvements in Image AI Counter:

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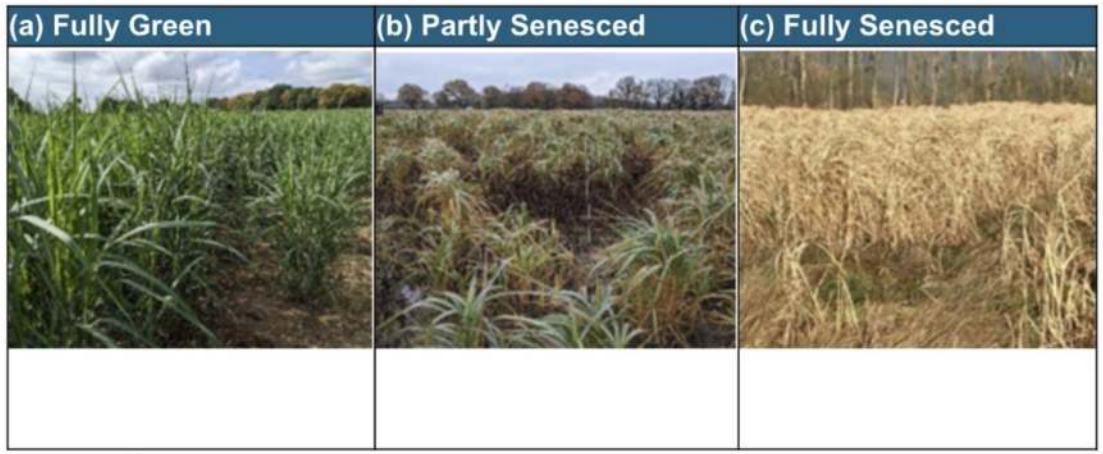
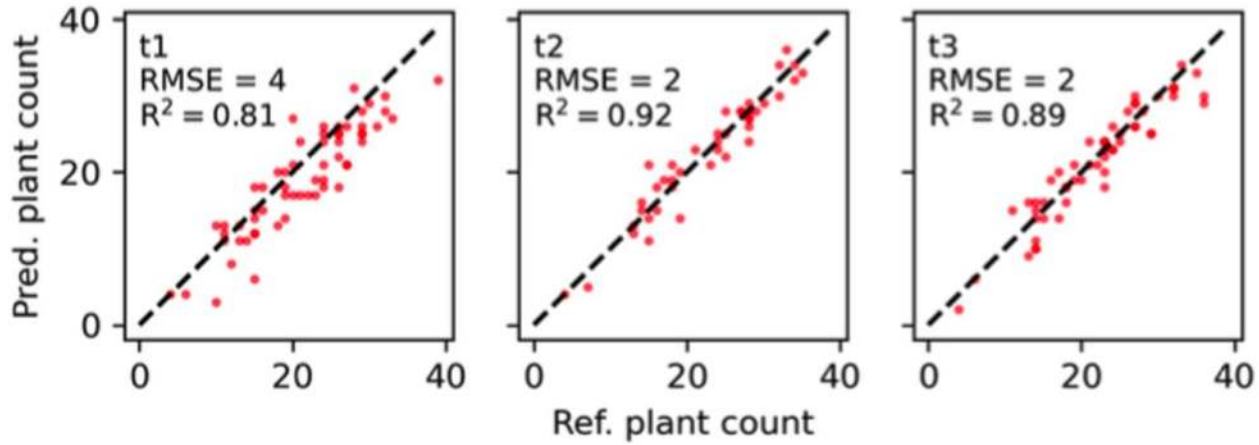
- The image AI counter has seen significant enhancements during this project.





Cost Considerations and Future Development:

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- Additional costs associated with deploying these innovations must be considered.
- Some innovations require further development and investment.
- Nevertheless, the project has advanced technology in the right direction to increase biomass production.

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Thank you

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