Precision Breeding

Opportunities and challenges for UK farmers

British On-Farm Innovation Network

- Launched in September 2020
- Represents farmers who carry out on-farm trials
- Particular emphasis on pre-commercial tech
- Current membership c3,700 >800 of whom are farmers

Farmer-led research

- For the farmer with a curious mind
- A spray miss is never a mistake, it’s a learning opportunity
- The role of science
- Push the boundaries, co-create the tools of 4AR
- A culture of sharing
- Payment for on-farm trials

~~Four~~ Five Defra-funded projects

BOFIN

SLIMMERS

Total value: £14,277,466

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IPROBITY

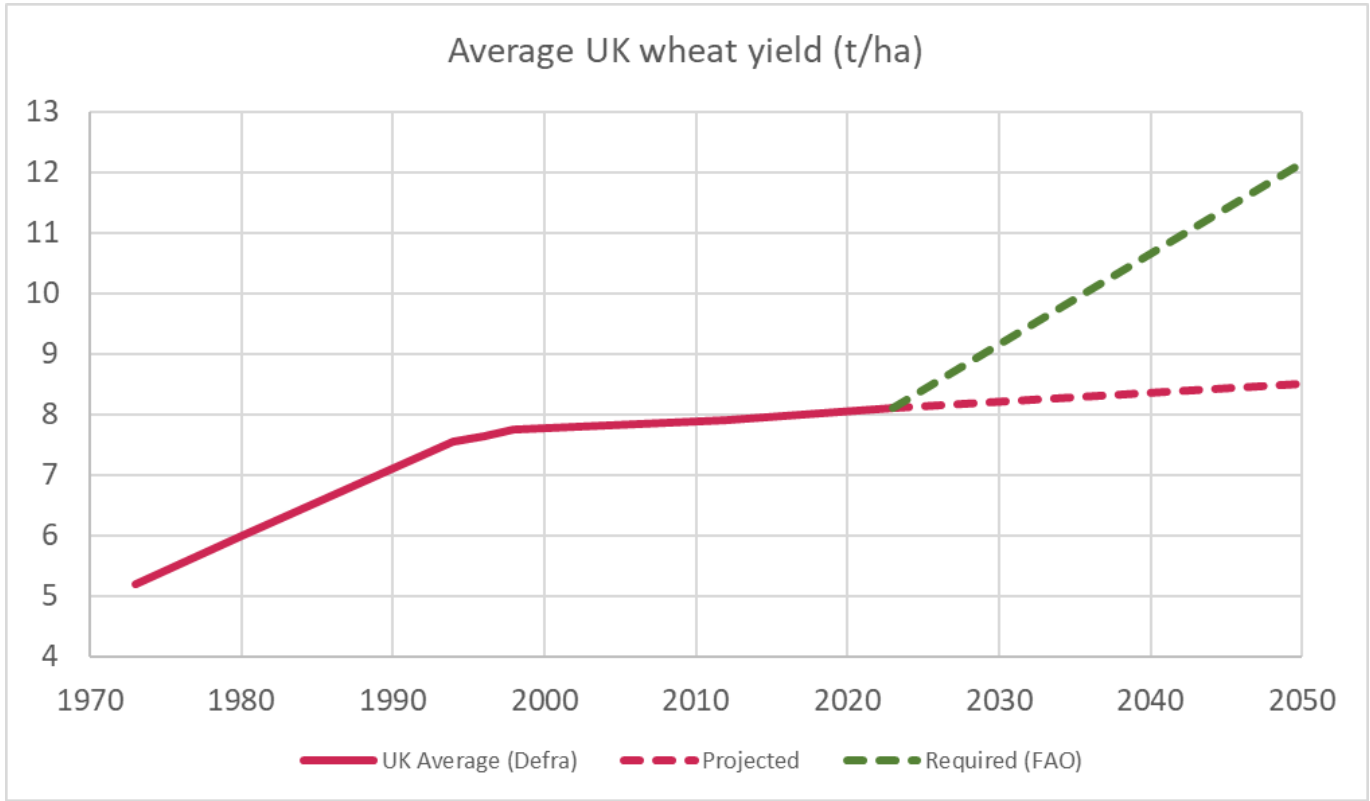
A Platform to Rate Organisms Bred for Improved Traits and Yield

PROBITY

BOFIN ROTHAMSTED RESEARCH UK Agri-Tech Centre John Innes Centre The University of Nottingham Prifysgol Aberystwyth University Dyson farming Elsoms The Seed Specialists firstmilk The Regenerative Co-op Newby Partnerships Ltd Growing your Vision cpw Research and Development UKRI Innovate UK

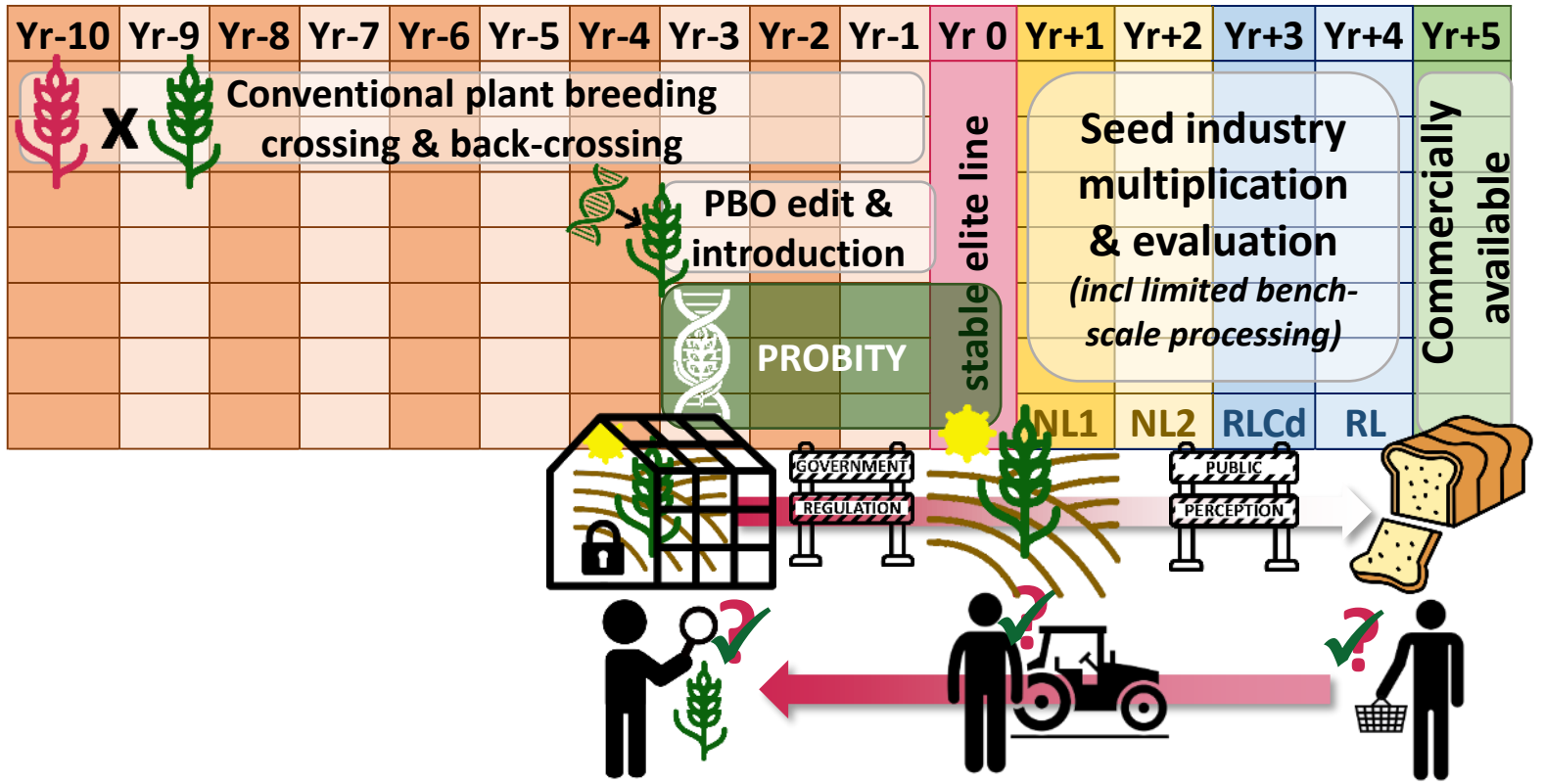
The Productivity challenge

- Increase in UK agricultural productivity over next 25 years must equal previous 50.
- But wheat yields have plateaued



The plant-breeding challenge

- Precision Bred Organisms offer significant opportunities for novel traits and to cut time to develop new lines.
- But barriers remain, causing uncertainty in supply chain, which prevents required investment.
- PROBITY tests traits in a pre-commercial background -> Confidence

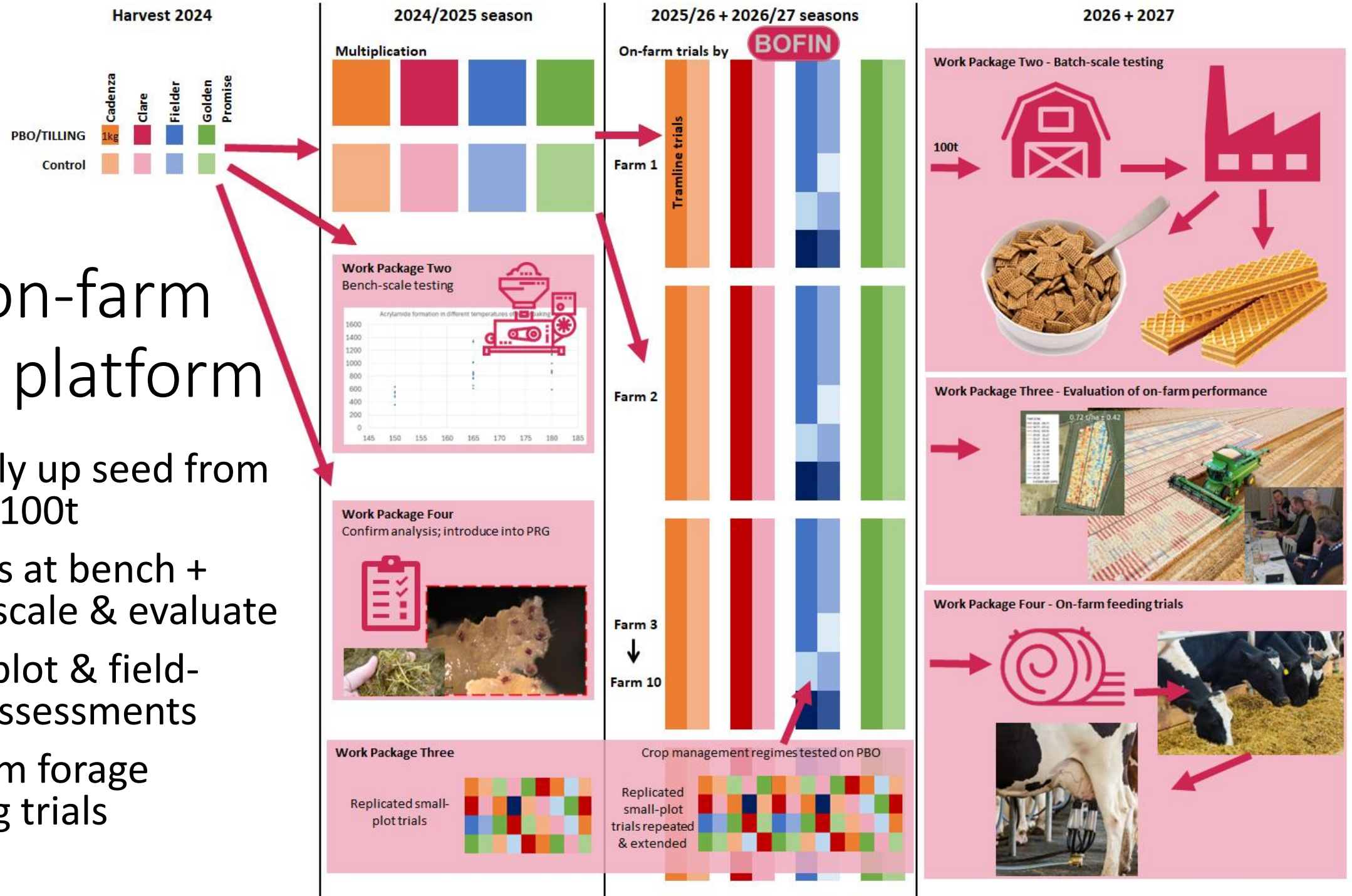


PROBITY Approach

- Take 1kg of seed & multiply to 100t batch for processing in <3 yrs.
- Field trials monitored by farmers working closely with scientists and field agronomy experts.
- Produce processed into iconic British brands or fed to livestock by end users.
- In parallel, edit 3 leading wheat varieties and 1 ryegrass with the new traits.
- Start of a pipeline of tested novel traits.
- Deliver a farmer-led platform to test novel traits as a service.

The on-farm trials platform

- Multiply up seed from 1kg to 100t
- Process at bench + batch-scale & evaluate
- Small-plot & field-scale assessments
- On-farm forage feeding trials



How farmers are involved

Join the Sequence Circle

PROBITY Pioneer
25 farmers growing c1ha of PBO wheat or barley 2026, 27

PROBITY Pathfinder
Thought-leaders with credible networks to drive discussion

#PROBITY Pledge
Find out about PBOs & join the discussion

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The Sequence Circle

Sequence

Sequence Circle

Forums | What's new | Resources | FarmTV | Farm Compare | Calendar | Members

Notice: By taking part in this forum, you consent to your data, such as posts and reactions, being analysed by the research team. For more information o
Participant Information Sheet and full consent form, which are available in Forum Resources. Please use an anonymous username and do not post any pers
you have any questions, please contact skye@bofin.org.uk

Forums › Knowledge in Farming › The Sequence Circle ›

Take the #PROBITYPledge

skye @ bofin · Friday at 1:36 PM

Ignore thread

Friday at 1:36 PM

BOFIN

skye @ bofin
Member

#PROBITY pledge

What is the #PROBITYPledge?
The #PROBITYPledge is your commitment to engage in open, informed discussions about precision breeding in agriculture. By taking the pledge, you commit to spending a minimum of one hour to join a community of farmers, scientists, and food processors to learn about this technology, ask questions and share your views.

How to Participate
- Take the #PROBITYPledge by signing up below and share your commitment on social media
- Visit The Sequence Circle (log-in required) to connect with others and join the discussion
- Access our resources to learn more about precision breeding

Your Voice Matters
By taking part you can help ensure that the implementation of these technologies aligns with the needs and values of British farmers. Take the #PROBITYPledge and be part of shaping a sustainable, innovative future for British agriculture.

Find out more at www.bofin.org.uk/probitypledge.

Take the #PROBITY Pledge & Join the Sequence Circle

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How to Participate:
- Take the #PROBITYPledge by clicking here and share your commitment on social media.
- Explore the other threads here, on The Sequence Circle, and join the discussion by creating your own thread or commenting on existing ones.
- Access our resources to learn more about precision breeding by clicking here.

Why Take the Pledge?
Precision breeding technologies offer exciting possibilities for British agriculture: Crops that are more resistant to pests, diseases, and climate change; reduced reliance on

Dyson

nilk Co-op

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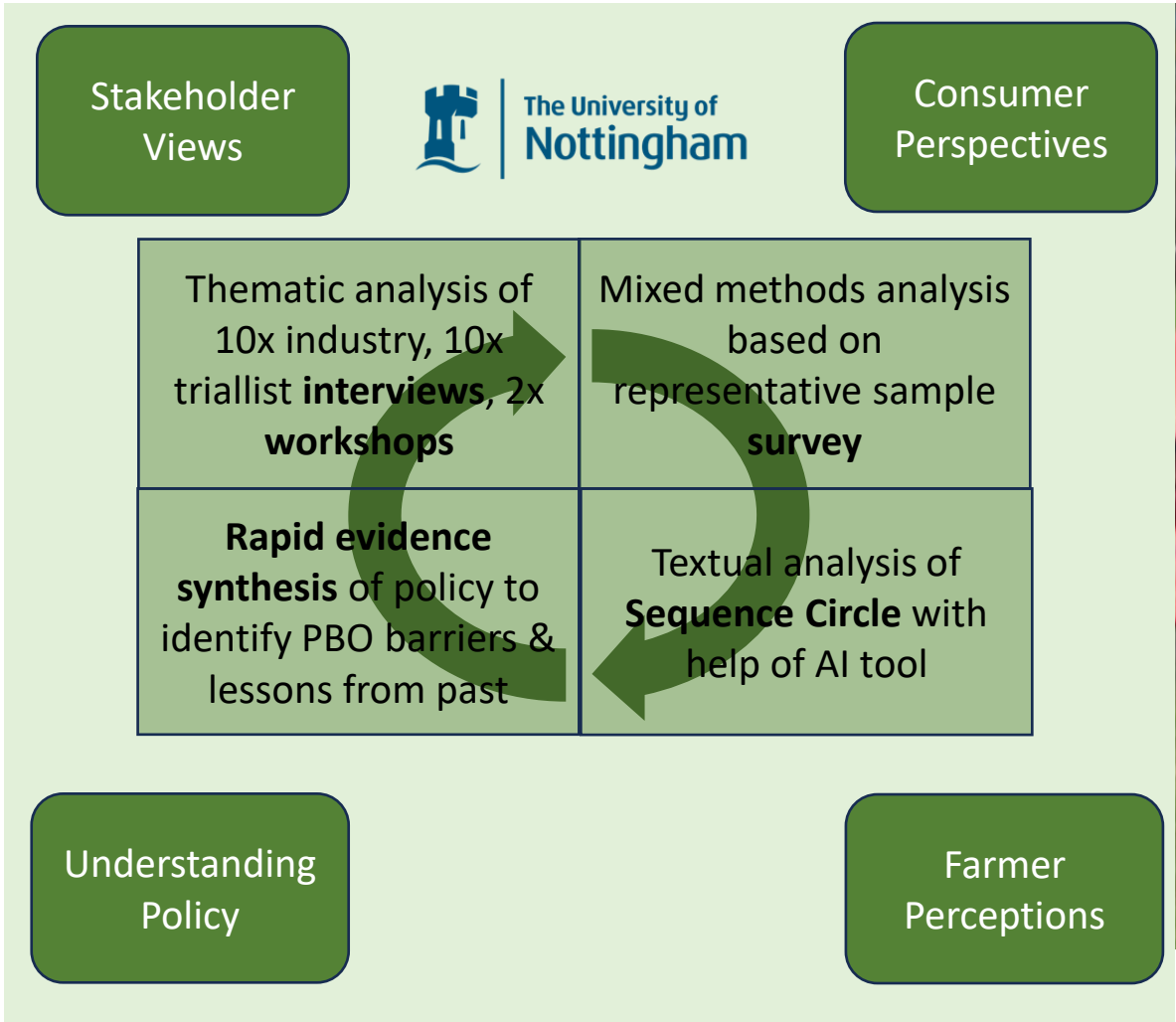
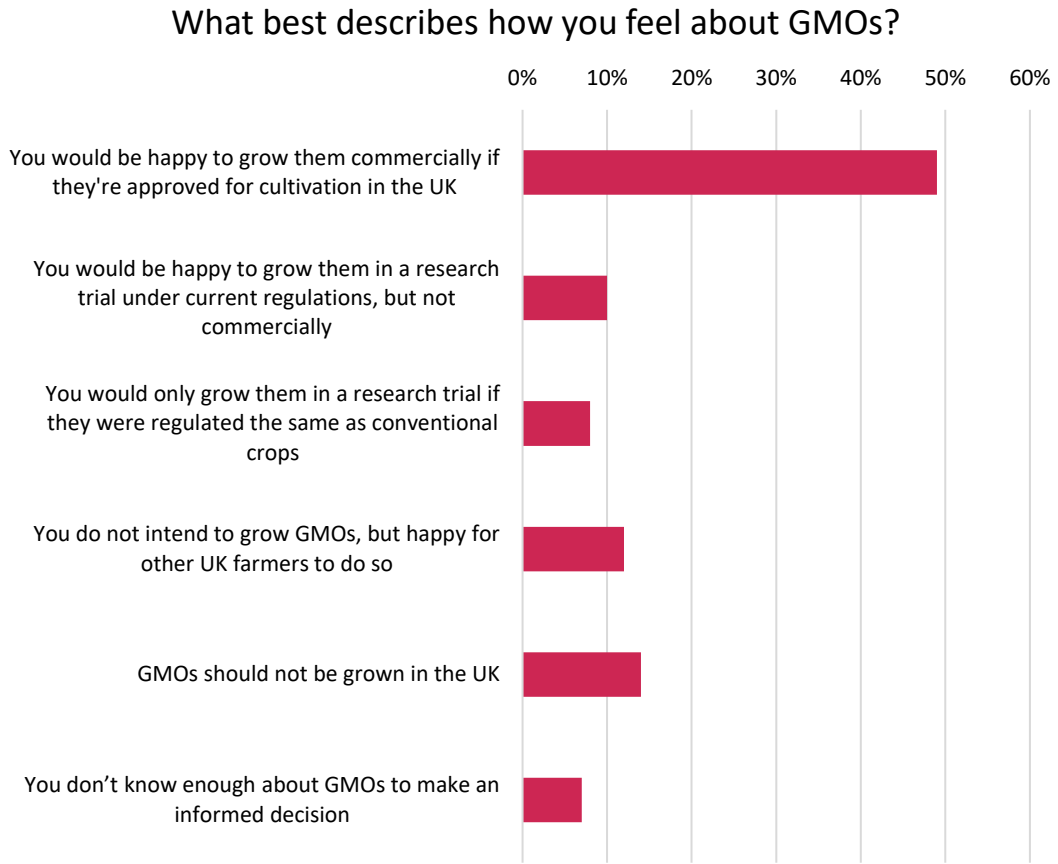
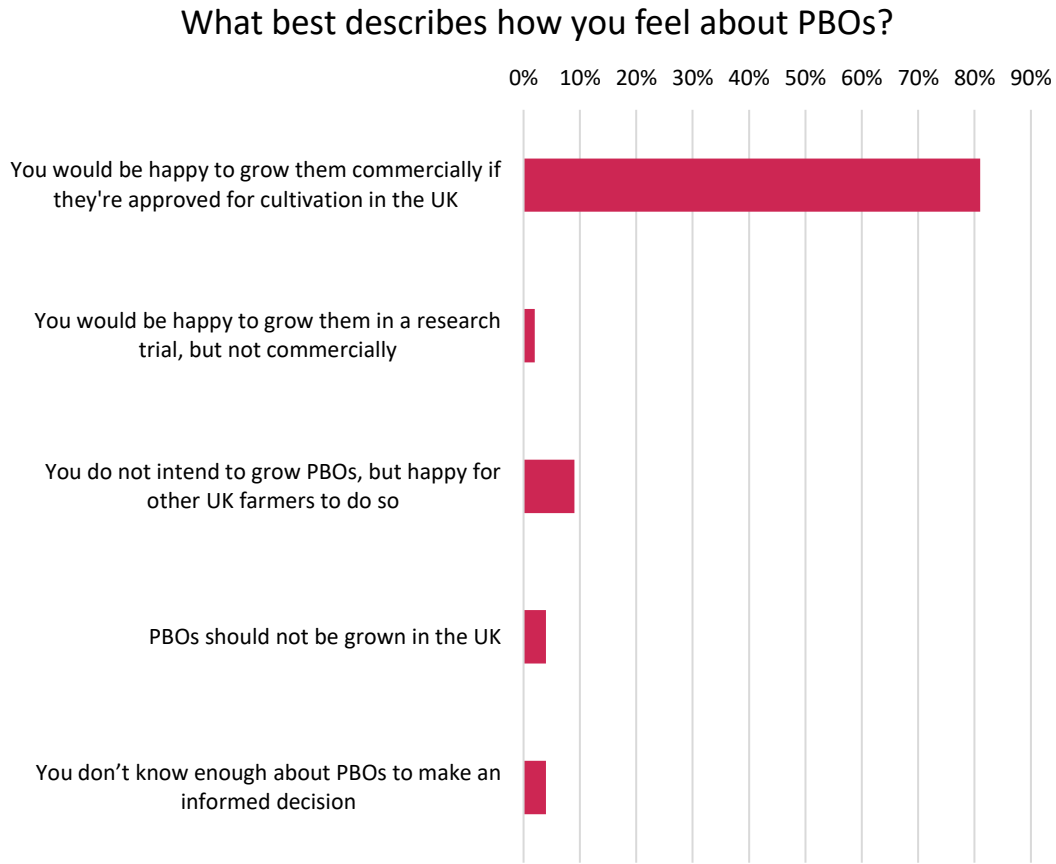
Precision Breeding – the challenges

- Stakeholder acceptance
- The legislation
- Transgene-free material



Previous survey: GMOs vs PBOs





Source: BOFIN member survey Feb 2023; n=85; 81% farmers

PBOs: Views from the farm

- ✓ PBOs are ‘common sense’ and ‘science’
- ✓ Natural progression in farming
- ✓ Allows quicker and better progress to be made
- ✓ If government backs and incentivises PBOs it encourages farmers to adopt the new technology
- ✓ Offer lots of potential to improve farming and business sustainability but the research should be thorough and transparent before rolling out

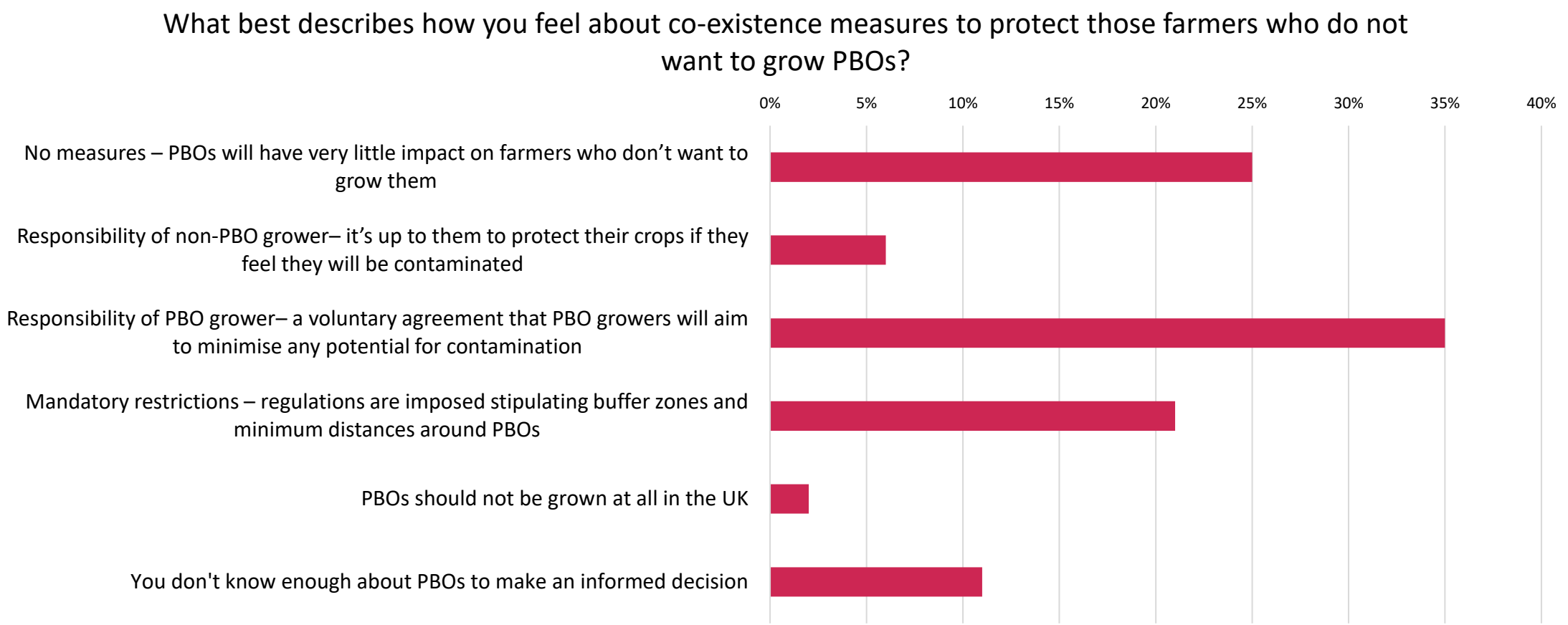
Opportunities

Concerns

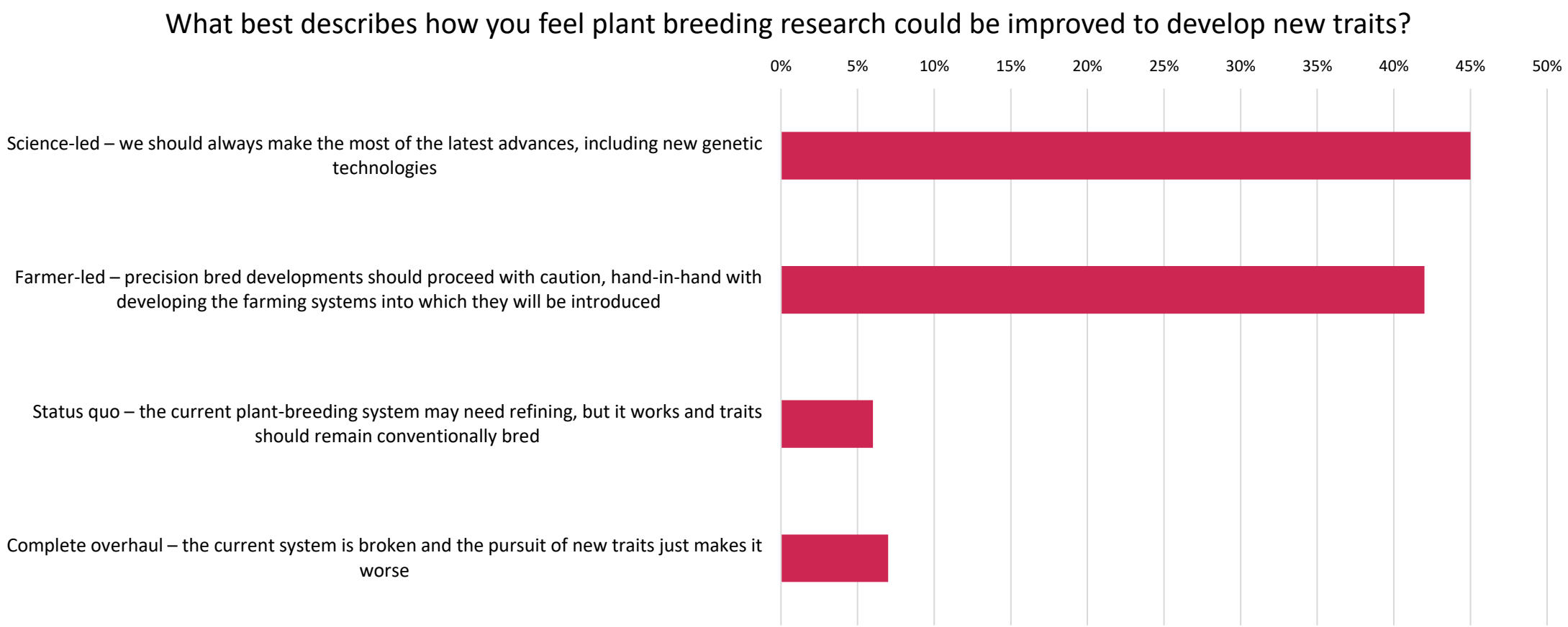
- ✘ Legislative issues with pre-commercial trials
- ✘ Business security
- ✘ Joined up approach needed to prevent resistance and biodiversity issues
- ✘ Tenancy agreements/restrictions could prevent trialling and uptake
- ✘ Public perception of these technologies may delay uptake – imperative to get the story right
- ✘ Physical setting up of trials (fencing etc) may be a challenge

Source: BOFIN survey and follow up calls, Feb 2023

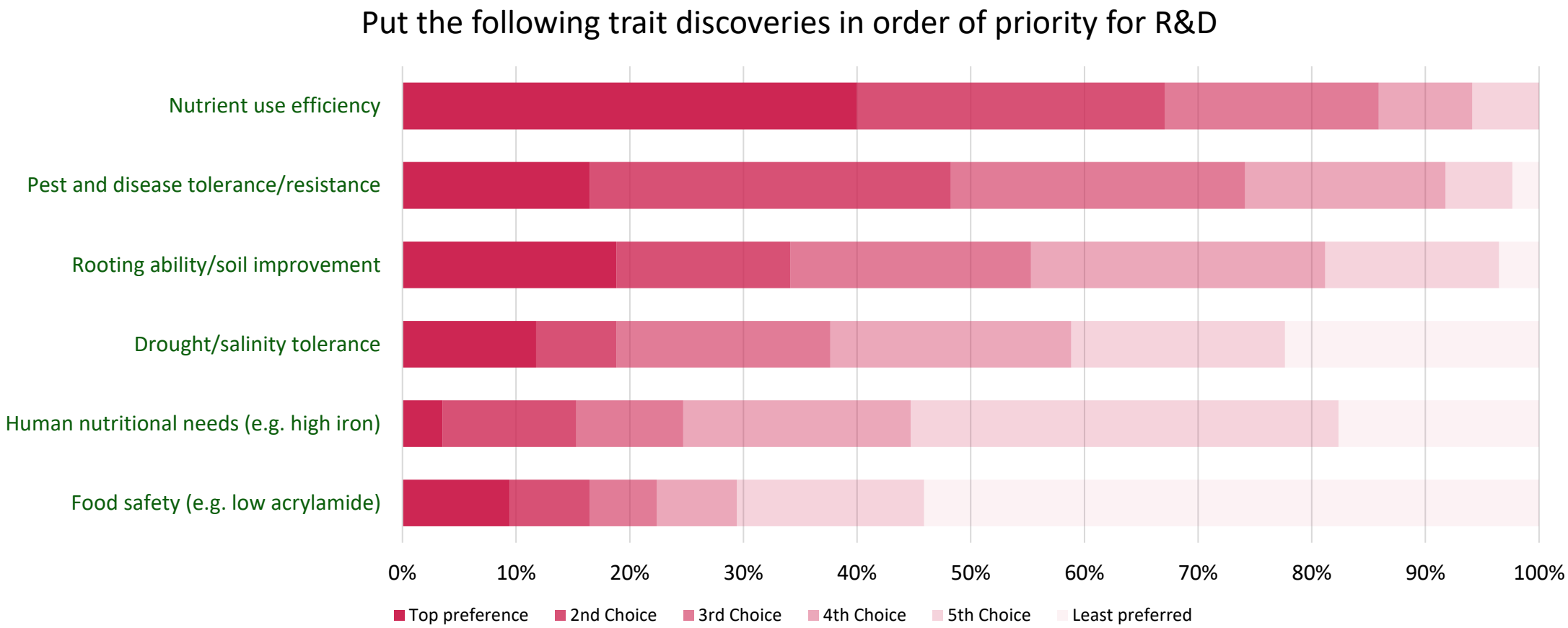
Co-existence measures



The role of plant-breeding



Trait discovery



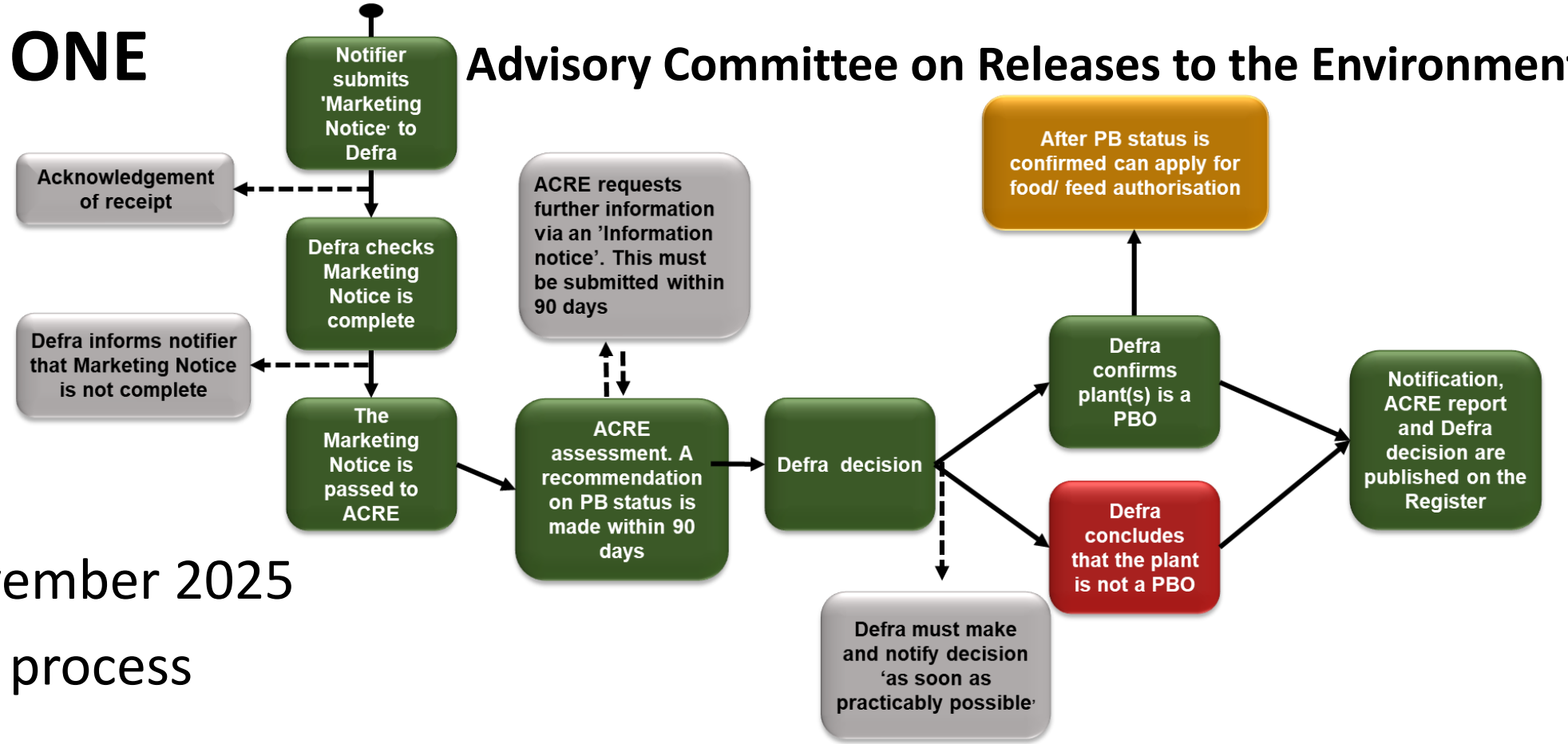
HOWEVER, despite priority order many, many farmers believed all are important

Precision Breeding – the challenges

- Stakeholder acceptance
- The legislation
- Transgene-free material

Genetic Technology (Precision Breeding) Act 2023 – the approval process

STAGE ONE



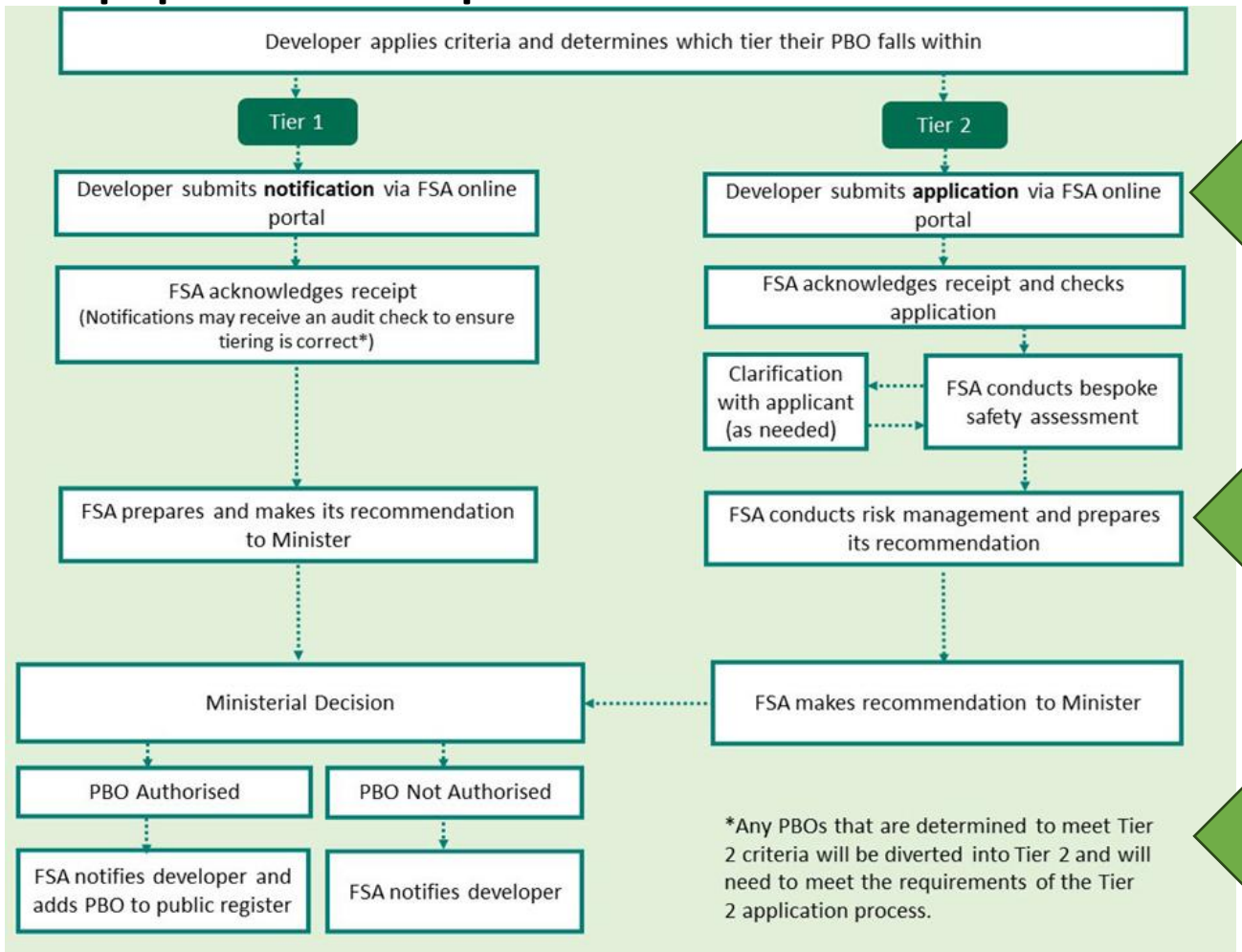
- 13 November 2025
- 90-day process

Genetic Technology (Precision Breeding) Act 2023 – the approval process

STAGE TWO

Food Standards Agency

- Not yet open
- Open-ended



Applicant led triage

Two regulatory routes ("Tiers").

Ministerial decision making

Precision Breeding – the challenges

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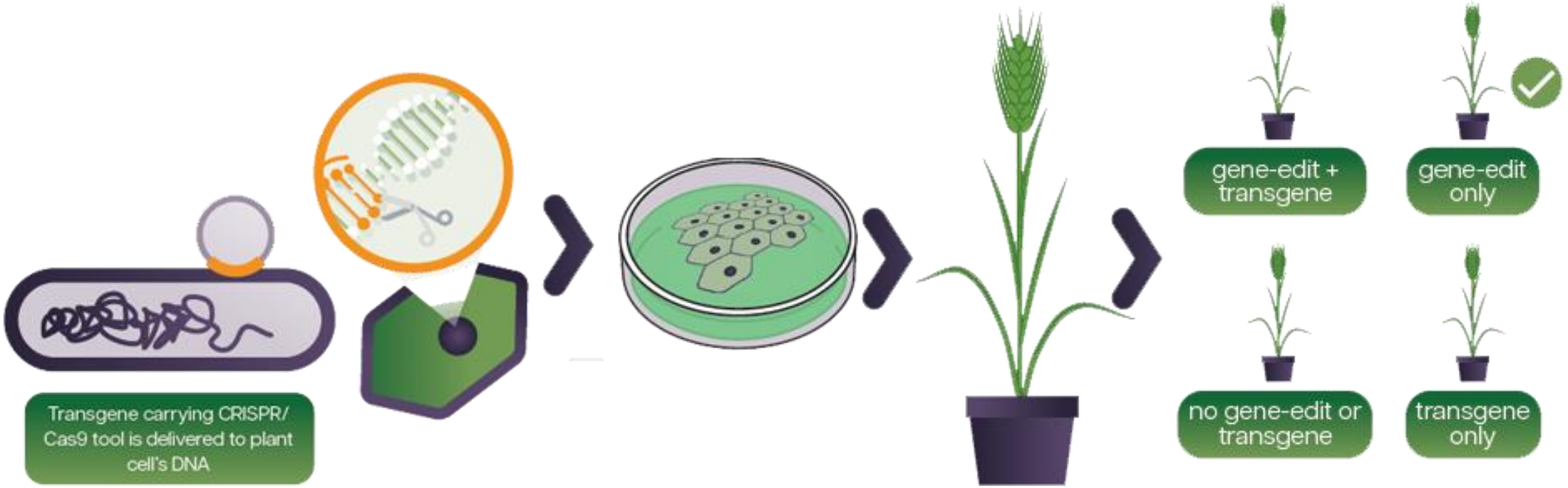
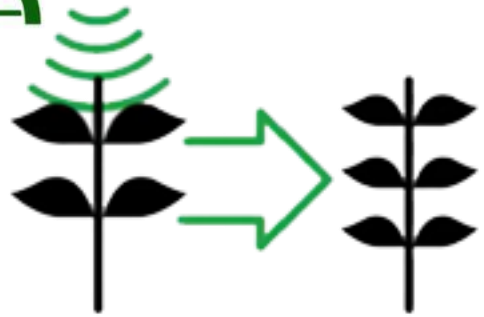
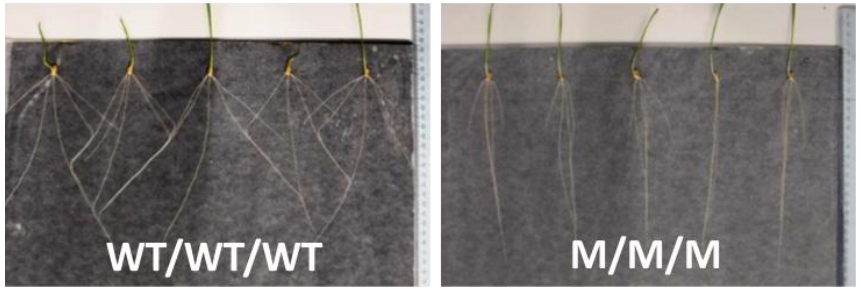
CRISPR and the transgene



The 2025/26 TILLING trial



CADENZA *egt1* (6ABD)



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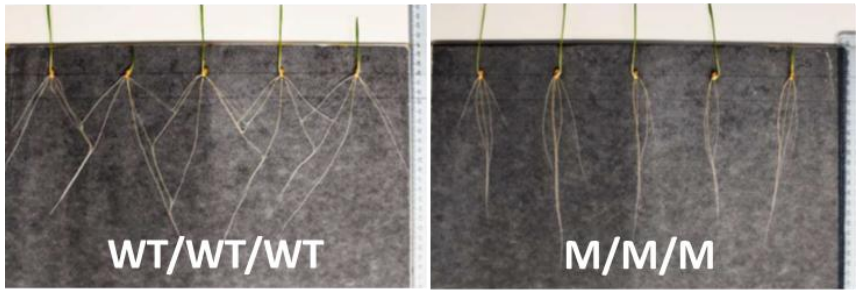
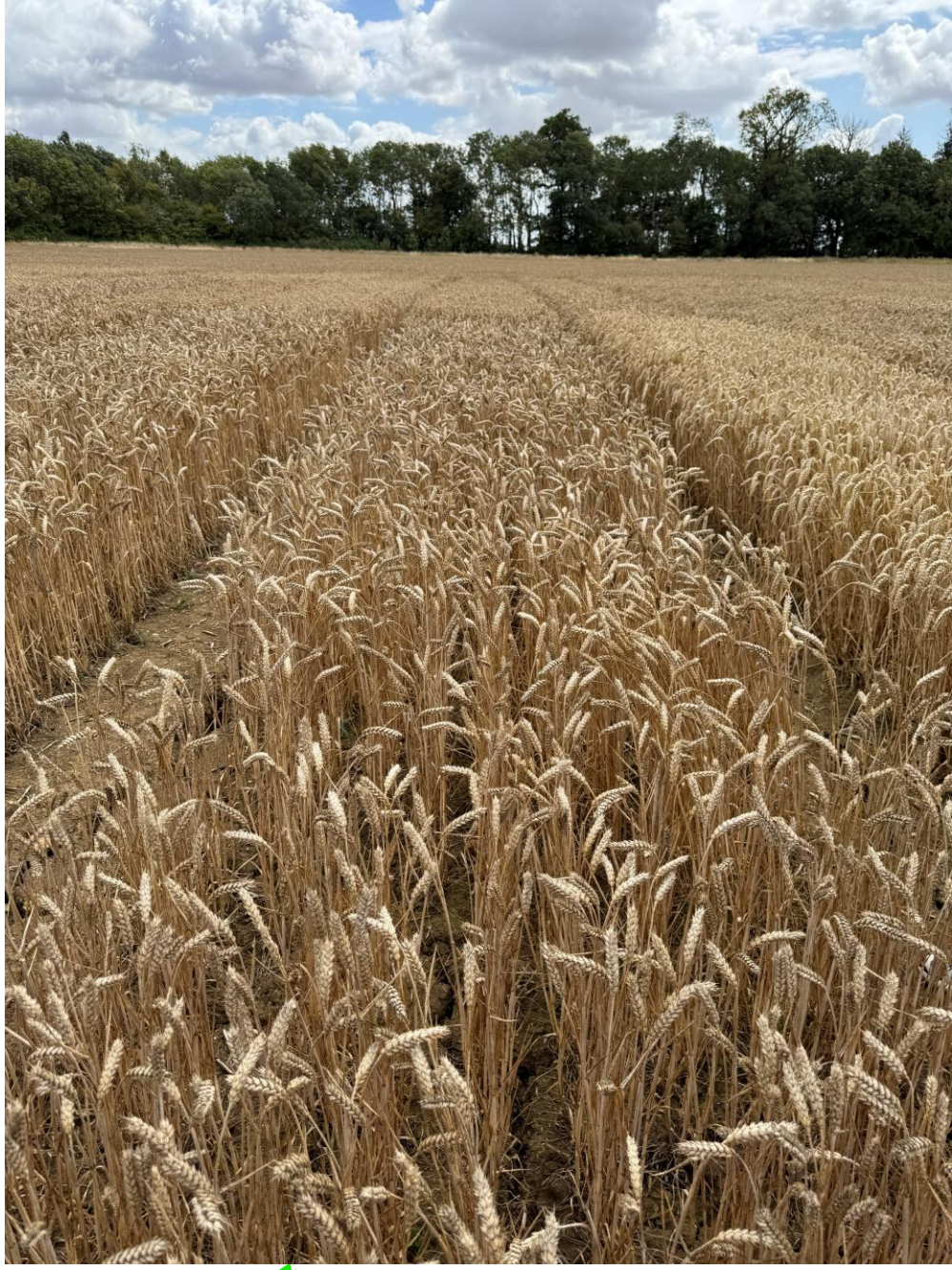
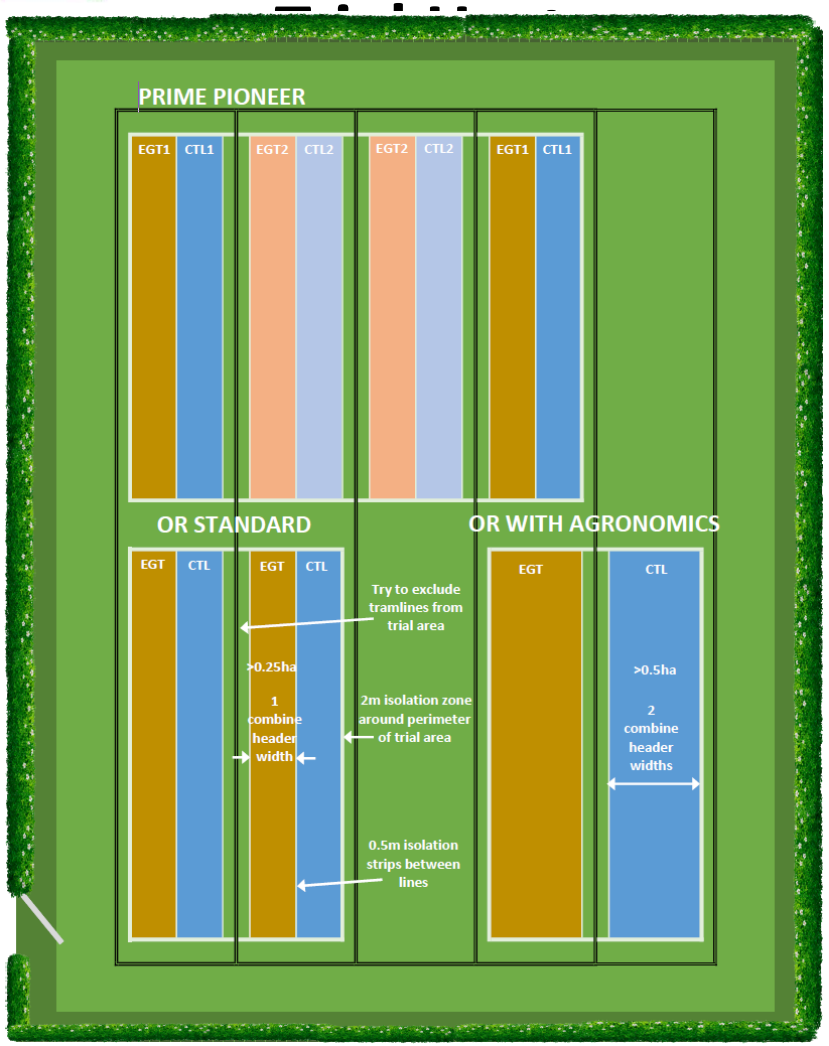




PROBITY Pioneers – three roles



Trial Monitor

Data recording and operation

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es information

ives discussion

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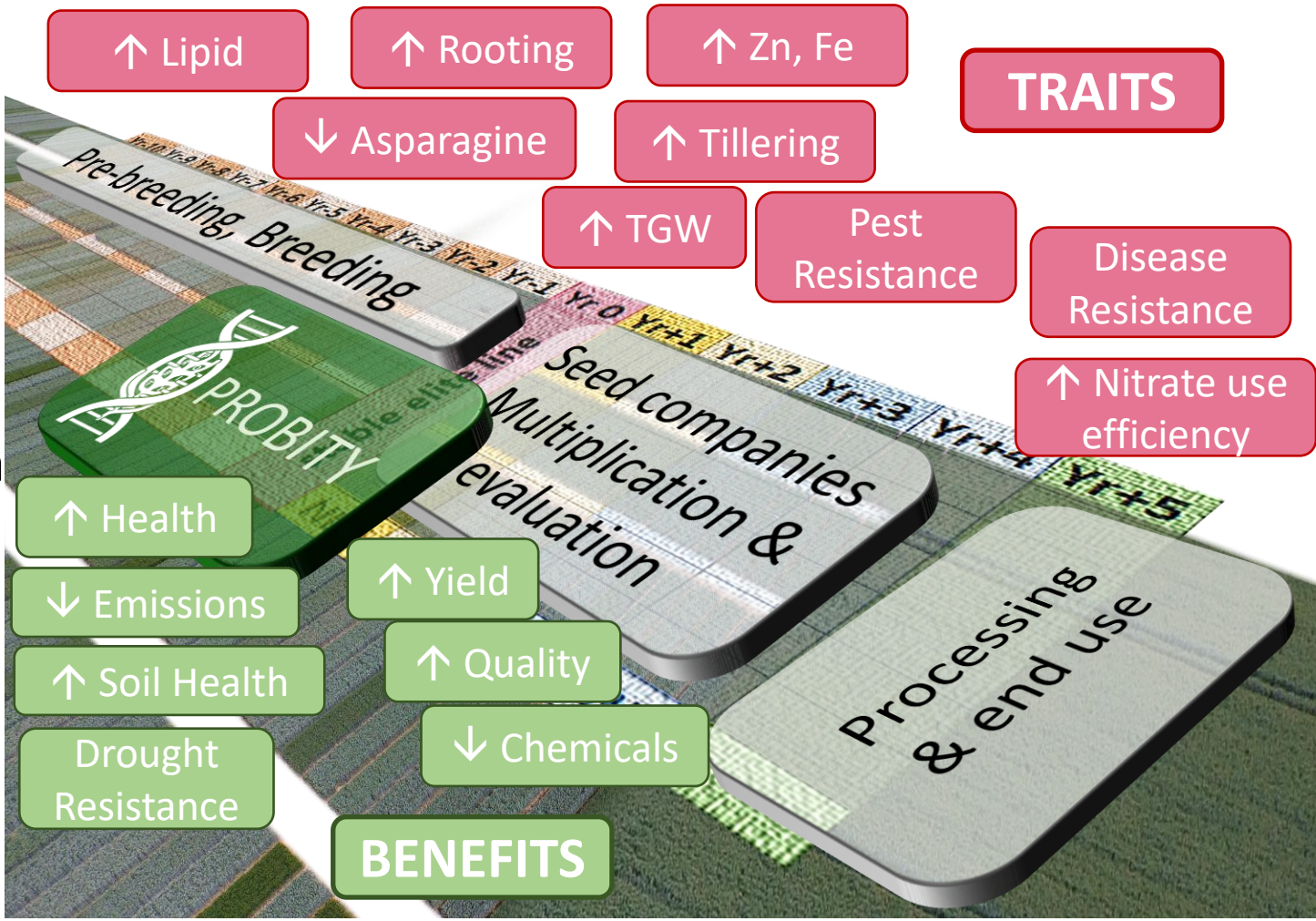
A pipeline of new traits

Primary purpose of PROBITY is to test novel **traits** in **non-commercial** lines.

Why?

1. Clarify benefit of a trait before commercial introduction
2. Stimulate farmer interest in traits with end-user benefits
3. Refine application/understanding of traits destined for export markets
4. Springboard to Europe for imported traits from US, Asia, Australasia



Thank you

Join the Sequence Circle

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