

Minutes of OREGIN Management Meeting Dec, 2025

Date: Monday 18 December 2025

Time: 13:30–16:30 (approx.)

Venue: University of Hertfordshire (Meeting Room) + Microsoft Teams

Attendance

In person (Meeting Room)

- Ian Bancroft (Chair)
- Yongju Huang
- Helen Riordan
- Peter Bancroft
- Andrea Harper
- Ben Hague
- Pete Berry
- Nigel Padbury
- Chinthani Karandeni-Dewage
- Rodrigo Echevoyén-Nava
- Jon West
- Ian Graham
- Panida Wadsworth
- Bruce Fitt
- Please review and add present members in the room

Online

- Zhesi He
- Thomas Crocker

Apologies

- Graham Teakle
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1. Welcome, Introductions, and Meeting Logistics

The Chair (Ian Bancroft) opened the meeting and confirmed that online participants could hear and interact effectively with the meeting room.

2. Minutes and Action Points from the Previous Meeting

- The minutes from the previous Management Committee meeting had been circulated in advance.
- **No amendments or corrections** were requested.
- The minutes were therefore **formally approved**.

Review of Action Points

- Actions relating to subcontracting and project administration were reviewed.
- All subcontract agreements are now **fully executed**, and all project partners are contractually in place.
- Ongoing actions relating to publications and reporting were noted and will continue.

3. Project Management and Administrative Matters

Update provided by Ian Bancroft (meeting room)

Subcontracts and Contractual Amendments

- Completion of subcontracting for gene editing and associated activities was confirmed.
- A small number of changes are required to the **main Defra contract** to reflect updated arrangements.
- Defra has been informed and is aware that these amendments may also affect gene editing work packages in other GINs.
- Until the amended contract is formally agreed:
 - **No transfer of gene-edited material should take place.**
 - This precaution is administrative rather than scientific in nature.

Personnel and Organisational Changes

- Recent changes in staffing and restructuring at partner organisations were acknowledged.
 - Reassurance has been received that all partners will **continue to meet their OREGIN commitments**.
 - New or repositioned staff members were introduced informally where relevant.
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4. Work Programme Updates

4.1 Provision of Physical Resources to Underpin OSR Breeding

Update by Yongju Huang and Zhesi He

- Seed multiplication of several key resource lines has been completed successfully.
- Physical resources are in good shape to support upcoming experimental phases.
- Some planned contributors were unable to attend, but progress remains on track.

4.2 Provision of Information Resources to Underpin OSR Breeding

Update by Yongju Huang and Zhesi He

- The pathogen isolate collection remains stable; no new isolates were added in the last six months.
- Existing pathogen resources have been actively used to:
 - Support disease screening
 - Underpin funding applications
 - Inform field and laboratory experiments
- MAGIC field trials were used this year to compensate for the absence of dedicated OREGIN field trials.
- Disease assessments were carried out at multiple time points, capturing both leaf and stem symptoms.
- Clear differences were observed between fungicide-treated and untreated sites, reinforcing the value of comparative field designs.

Website and Dissemination

- The OREGIN website continues to be **actively updated**, including:
 - Meeting agendas
 - Data summaries
 - Project documentation
- Two peer-reviewed publications were reported since the last meeting.
- Additional dissemination included conference presentations and invited talks.
- It was agreed that, due to persistent problems accessing files via the University of Hertfordshire website, the OREGIN website will migrate to a UoY platform, with Yongju being granted permissions required to manage the content and assistance provided by Zhesi

 **Embargo Reminder** A newly funded project discussed during the meeting is under **strict Defra embargo**.

- This project **must not** be referenced in:
 - Meeting minutes placed in the public domain
 - Uploaded presentations

- Website content
- Any presentations uploaded following this meeting must have all references to this project removed.

Action: **Ian Bancroft and Zhesi He:** Follow up with Yongju to facilitate transfer of OREGIN website.

5. Mutagenesis Approach to Improving Light Leaf Spot (LLS) Resistance

Update by Ian Bancroft and Peter Bancroft (meeting room)

- Radiation mutagenesis panels previously generated have progressed to progeny stages.
- Seeds from these panels were distributed earlier in the year and are now under evaluation.
- The agreed strategy remains:
 - Identify resistant individuals in field plots
 - Lift and advance promising plants for further testing and seed multiplication
- It was noted that updates expected from Limagrain had not been received.

Action: **Ian Bancroft:** Follow up with Limagrain regarding the status of their mutagenesis material and expected updates.

6. Hybrid Vigour for Improving Pest Tolerance and Rooting

Update by Peter Bancroft and Ben (meeting room)

Above-Ground Traits

- 141 male parent varieties crossed with two CMS parents.
- Successful hybridisation achieved for the majority of crosses.
- Biomass measurements taken at:
 - First true leaf stage
 - Whole aerial biomass stage
- Heterosis calculated relative to mid-parent values.

Molecular Work

- Leaf tissue collected from all experimental plants.
- RNA extraction completed for all samples.
- Quality control underway prior to RNA sequencing.

Below-Ground Traits

- Root phenotyping being conducted using a high-throughput blotting paper and water tank system.
- Metrics measured include:
 - Total root length
 - Root angle
 - Root number
 - Convex hull area
- Experiments are staggered due to capacity constraints.
- Automation of image analysis using machine learning is being explored to accelerate data processing.

Forward Planning

- Project is on schedule to deliver a shortlist of varieties for field trials by **January**.
 - Field trial site allocation to be confirmed at a future meeting.
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7. Glucosinolate-Based Pest Deterrence

Update by Peter Bancroft (meeting room)

- Early screening of existing radiation mutagenesis panels identified mutations in all target genes of the transporter family of interest.
 - F2 populations have been generated through strategic crosses.
 - Genotyping and selection have identified a subset of plants with the desired genetic configuration.
 - These plants are being advanced for seed collection and further validation.
 - Progress is **ahead of schedule**, largely due to early initiation of this work package using a pre-existing mutagenesis panel.
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8. Novel Technologies in Oilseed Rape

8.1 Application of Machine Learning to Variant Detection

Update by Zhesi He (online)

Rationale

- Radiation mutagenesis generates complex variants in a polyploid genome under low sequencing coverage.

- Traditional variant calling approaches risk high false positive rates.
- Objective: maximise detection of true radiation-induced mutations while minimising background noise.

Benchmarking Study

Four variant callers evaluated:

- GATK HaplotypeCaller
- Octopus
- DeepVariant
- Clair3

Workflow

1. Individual sample variant calling
2. Joint genotyping
3. Caller-specific quality filtering
4. Subtraction of control variants

Initial Findings

- High overlap between machine learning-based callers.
- GATK identifies the largest number of unique variants, likely including false positives.
- Results visualised using intersection (UpSet) plots.

Next Steps

- Apply layered filtering based on:
 - Allele frequency
 - Recurrence across samples
 - Predicted functional impact
- Select a subset of high-confidence or unique candidates for experimental validation.
- Scale up only once performance is well understood.

Discussion

- Balance between false positives and false negatives was discussed extensively.
 - Insights from this benchmarking will inform future pipeline decisions across the programme.
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9. Alternative Oilseed Crops

9.1 Climate Modelling to Identify Changing Growing Environments

Update by Thomas Crocker (Met Office, online)

- Analytical capabilities have been expanded to include:
 - **Compound event analysis**
 - **Time-series-based approaches** alongside spatial analyses
 - Example analysis focused on extreme late spring / early summer heat:
 - 42-day window prior to end of June
 - Average daily maximum temperature > 25 °C
 - Simulations meeting this criterion show:
 - Strongly elevated temperatures during late spring
 - **Persistently warmer-than-average conditions** through the rest of the growing season
 - Rainfall analyses (very wet winters) show weaker and more variable signals.
 - Time-series analysis for the East of England shows:
 - A strong upward trend in late spring / early summer temperature extremes
 - Increasing frequency of years with heat stress
 - Much greater uncertainty in rainfall projections
 - Work is shifting towards **soil moisture analysis**, which is more directly relevant to crop water availability than rainfall totals.
 - A report summarising **abiotic and biotic risks** and a **crop calendar** is nearing completion and expected in **early 2026**.
 - Discussions are ongoing with the **Rothamsted Insect Survey** regarding potential collaboration on pest risk, building on previous Met Office work on cabbage stem flea beetle.
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10. Knowledge Exchange, Dissemination, and Social Value

Update by Ian Bancroft and Andrea Harper (meeting room)

- Academic and stakeholder meetings successfully delivered.
- Training activities and Early Career Researcher events ongoing.
- Studentships and placements progressing well.

Dissemination Guidance

- Presentations should only be shared publicly with **explicit permission from presenters**.
- PDFs may be requested where appropriate.

Action: **Panida Wadsworth:** Coordinate permission requests and collation of presentation PDFs where allowed.

11. Reporting to Defra

- The Chair thanked all partners for timely contributions to recent reports.
 - Next call for information expected in **February**, supporting **March reporting**.
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12. Any Other Business

- No additional items were raised.
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13. Date of Next Meeting

- **March 2026**
 - To be held **online via Zoom**
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Summary of Action Points

- **Ian Bancroft and Zhesi He:** Follow up with Yongju to facilitate transfer of OREGIN website.
- **Ian Bancroft:** Follow up with Limagrain regarding mutagenesis panel progress and reporting.
- **Panida Wadsworth:** Request and coordinate permissions for sharing presentation materials.
- **All partners:** Ensure embargoed project content is excluded from public or semi-public outputs.