

Minutes of the Oilseed Rape Genetic Improvement Network Management Meeting

3rd February 2021
Zoom meeting

Present:

ADAS: Kate Storer (**KS**)

AHDB Dhan Bandari (**DB**)

DEFRA: Helen Riordan (**HR**)

Elsoms: Mark Nightingale (**MN**)

JIC: Rachel Wells (**RW**)

Limagrain: Georgia Mitrousia (**GM**)

NIAB: Tom Wood (**TW**)

RRes: Jon West (**JW**)

UoH: Bruce Fitt (**BF**), Yongju Huang (**YH**)

UoN: Rory Hayden (**RH**), Neil Graham (**NG**)

UoR: John Hammond (**JH**)

UoY: Ian Bancroft (**IB**), Zhesi He (**ZH**), Lenka Havlickova (**LH**)

Apologies: Defra Andrew Cuthbertson (**AC**), UoW Graham Teakle (**GT**)

Organiser: **IB** (UoY), **LH** (UoY), **ZH** (UoY)

Chair: **IB**

Minutes: **LH**

IB opens the meeting, offers the apologies for the missing members. Everyone is happy with previous minutes circulated before the meeting.

Actions from the previous minutes:

AP19: everybody knows about the template (ongoing). **IB** reminding to send any new data to **LH**.

AP30: The germplasm from Spalding not screened as the trial failed, but we **MN** happy to screen from another site if anyone has samples.

AP34: list circulated

AP35: seed list circulated

AP37: **IB** reminded everyone to provide **PB** or **KS** two (not too technical) slides about their research and the ways how it could be relevant for the industry.

Project management and administrative matters

IB: All is going well for the main OREGIN project. Waiting for the contract variation for the Nutritional work. **HR** – waiting for an update from Defra and hopefully will be confirmed before the end of financial year.

IB – there is more risk to things not being done on time from our perspective, than last year (we have been cut back on lab occupancy), but we should still be able to deliver everything to the milestones.

Updates on work programme OREGIN 5

GIN Activity 1 – Stakeholder network

WP1. Maintain & expand interactions between UK stakeholders and academic researchers

WP1.1 Direct interactions between stakeholders and academic project partners. Activity throughout; Milestones 1, 5, 15, 20, 33, 38, 56, 62, 76, 81, 87 &

WP1.2 Facilitated interactions between stakeholders and the wider academic community. Activity throughout; Milestones 3, 9, 17, 27, 36, 49, 59, 69, 78, 86

IB - Thank you **LH, RW, GM** for organising the UKBRC meeting combined with the OREGIN stakeholder's meeting (24 November 2020). We had positive feedback on it. Thank you Mark (**MN**) for stepping in to take over as a chair of stakeholders. Anyone else has any feedback? **RW**: yes very positive from the JIC side.

IB - for the UK BRC it would be nice if **RW** and **LH** could continue as reps for another year unless the community really wants to hold a new election or if reps are desperate stepped down or anything? **RW**: It's a difficult time and I am happy to continue for another year and once we will get to some normality back it would be a good time for someone else to step in. **LH** - agreed with **RW**.

IB - great, any thoughts on the next meeting? **RW** spring meetings will have to be virtual, autumn meetings give more chances to have it in person. **MN** - probably November or December would be the best. Having two meetings in one day looks like a very effective way. **GM** agreed.

IB so a combined meeting in November would be a better option and will fit around the other GINs.

MN - later in the year better.

AP38: **MN, LH, RW** decide on the date for the combined meeting Nov-Dec 2021 (UK BRC and OREGIN stakeholder meeting).

GIN Activity 2 – Genetic tools and resources to address challenges

WP2. Provide physical resources to underpin rapeseed breeding

WP2.1 Maintain and make available for cost-recovered distribution core pathogen sets. Activity throughout; Milestone 13, 31, 54, 74, 91

YJ – (covering WP2.1, 4.1 and 6.1)

Due to the covid restriction we don't have any new isolates.

The existing collection:

Phoma stem canker – *L. maculans* – existing (24 international and 80 UK) plus 8 virulent against *Rlm7*; 2 virulent against *Rlm3* & *Rlm7*. Planning to produce set of isolates with different effector (*Avr*) genes. *L. biglobosa* - existing (6 international and 11 UK) and new (5 from Canada; 10 from the UK) isolates.

Due to the covid we have limited access to the lab so some work was put on hold.

Light leaf spot (*Pyrenopeziza brassicae*) – 124 international isolates, 140 UK isolates and 10 new isolates from different Brassica hosts. Severe problem in the UK, but also observed in the continental Europe. We want to do similar work as with Phoma - to create a set of isolates with different cultivars to check cultivar resistance genes. The challenge is loss of viability of *P. brassicae* isolates after storing in culture.

RW - is there any plan in the future to look at the sequence of the isolates?

IB - not in this phase of OREGIN

YJ - that would be a very good idea - this work hasn't been done in the UK, but in other countries.

TW - we already sequenced the one *P. brassicae* isolate, so there is some basic knowledge in NIAB.

IB - sounds like a good OREGIN spin-off project **IB** asking **HR** is there any opportunity for extending OREGIN or in the plant health area? **HR** not that I am aware of but it's something that could be discussed with my colleagues.

IB - who would be interested in this kind of work? **TW** - we would be interested.

IB - suggest (**TW, YJ, JW**) to talk about it and contact Helen before the end of the Defra financial year (March 31 2021).

WP2.2 Maintain and make available for cost-recovered distribution B. napus DFFS lines. Activity throughout; Milestones 14, 23, 32, 55, 75, 92

No updates, GT wasn't able to join the meeting.

WP2.3 Amplify panel of reference B. napus varieties for trialling. Activity in months 9-44; Milestones 21, 40, 63

RH – all the transplants are now done, growing well in the polytunnel. Slight problem with Phoma, but we are on the top of things.

IB - we may be a bit slower in MAS (checking for low EA background and Hz mutants for target genes) due to the lab restrictions. Not everything will be erucic free.

WP3. Develop novel pre-breeding material for trait assessment

WP3.1 Agree target traits and genes 2 (all) completed

WP3.2 Develop pre-breeding lines from exotic B. napus and spring oilseed rape. Activity in months 3-44; Milestones 6, 24, 41, 45, 64

WP3.3 Develop pre-breeding lines from mutagenized populations. Activity in months 3-44; Milestones 7, 25, 42, 46, 65

LH - we have 16 different mutant lines at the moment, which has been screened for FAE1A8, FAE1C3 and target gene. Some of them are still heterozygous, therefore adequate amounts of seeds* were sent to UoN. UoN sent back leaf tissue for genotyping (in process), which should help to discard out segregant plants.

(*the aim was to achieve growing of 40 homozygous plants for all three genes: FAE1A8, FAE1C3 and target gene).

WP3.4 Develop pre-breeding lines from alien introgression material. Activity in months 3-44; Milestones 8, 26, 43, 47, 66

LH - there was a progress with restorer plants. 5 identified restorer plants with PCR markers were re-sequenced and in three plants we confirmed the missing radish introgression. Material is in the process of stabilizing.

JH - Any phenotypic differences? **LH** - lines are not looking well at the moment, but we are working on stabilising.

WP3.5 Develop pre-breeding F1 hybrids between winter and spring oilseed rape. Activity in months 1-32; Milestones 22, 39

GM - from 105 lines, 82 hybrids produced. Majority didn't emerged (20% what was drilled) so we need to check what is feasible (new crossing?).

IB - yes we need to look for what we have data and what we can do (good data better than half baked attempt).

AP39: Ian and Georgia need to decide about next steps for WP.3.5. IB - any particular time?
GM - better next month.

WP4. Conduct pre-breeding assessment of novel winter oilseed rape lines

WP4.1 Establishment, management and phenotyping of field trials Activity in months 21-57; Milestones 29, 44, 51, 67, 71, 82

YJ – we don't have many new data to show due to covid. All previous 2019/20 experiment data are already on the OREGIN website. In July 2020, we observed differences between different cultivars - in pod shattering, phoma stem canker (susceptible cultivar Kavla). Some cultivars had severe LLS but no canker.

The 2020/2021 OREGIN pathology trial at Withern in Lincs - assessment in coming March (2021) for severity of light leaf spot and phoma leaf spot lesions on leaves.

JW - we can use some of these slides for **PB**

TW - updates on field pathology trials. At the same farm, but different site. 39 lines sown at Aby Grange Farm 5th September 2020. 32 lines grown in previous pathology trials to compare disease resistance profile. Big 25m plots to look at nitrogen response, part without fungicides, insecticides. Phenotypic screens performed: phoma leaf spot - *Leptosphaeria maculans*, *L. biglobosa*. We observed limited CSFB.

Data show a high level of resistance to light leaf spot pathogen - good level of resistance and so far shows consistency with previous year.

Plants will be also scored for yield and oil content. If there is any additional trait you would like to study please contact TW.

JW - It would be good to set the date for March assessment relatively soon. Early to mid-March.

KS - giving OREGIN trials update for ADAS and Elsoms. Looking for rooting - identifying deep rooting varieties with aim to understand the genetic control of rooting. Root length density, vigor vs yield (positive relation), rooting vs yield (positive correlation) assessed 2020. Establishment, vigour scored.

So far 57 UK elite, outclassed and non-UK varieties tested since 2015. Site & season have a very large influence on rooting. No varieties found with consistently better rooting than UK elites.

2021 ADAS trial drilled 27th August 2020 (44 out of 132 plots have been compromised by issue at drilling and this will have an impact on rooting)

Elsoms site drilled 28th August - 4th September. Established well.

Example of KT slides - summary 2 slides - background, objectives and emerging messages.

MN - at Elsoms - the conditions during and after drilling were extremely wet, plants not very happy. Decent populations established. Very low level of CSFB. Weed issues.
We are ready to do NIR for anyone who needs it.

JH giving updates on trials at Reading. We observed variation in grain protein at different N application rates during 2019/20. Maybe we could cross check some oil data at NIR with MN. Some data were not collected due to the covid-19.

Trial design 2020/21 - some SpOSR starts flowering. Plant established very well, at the moment monitoring growth stages. IF anyone would like to come and sample something, please contact JH.

MN - how is the CSFB? **JH** - very low.

WP4.2 Assessment of heterosis in spring x winter hybrid oilseed rape. Activity Q7-Q18; Milestone 35, 58, 61, 79

Discussed as part of WP 3.5

WP4.3 Assessment of the impact of modified leaf wax composition in disease and pest interactions. Activity Q15-Q19; Milestone 83 (scheduled for May 2021)

JW - planned for May, but it's more likely it will be October this year CSFB is better in the autumn. **IB** - that would be just milestones delayed and should be fine. **HR** - yes.

WP4.4 Interpretation of trial data. Activity Q11 – Q19; Milestones 48, 68, 84

LH - UoY received data from TW and YJ. AT performed and results shared back with providers. Next step will be to discuss and look together remotely at these data.

AP40: **LH** to discuss the AT results with each group (YJ and TW).

GIN Activity 3 – Develop and exploit opportunities for further research

WP5. Promote spin-off projects (all)

KS - there is some potential waterlogging effect at Elsoms, we are looking at the moment.

JH - project with John Deere validating technology for monitoring grain quality at harvest.

We use the combine on OREGIN plots last year and validated the data they got from the combine with our lab results on the OREGIN trials.

IB - two sentence summary of any project would be good for presenting to the advisory group. Please just send that along and I will try to capture it.

AP41: **JH** to send information about the project with John Deere

GIN Activity 4 – Dissemination and knowledge exchange

WP6. Provide information resources to underpin rapeseed breeding

WP6.1 Provision of molecular data from current phase of OREGIN. Activity throughout the project; Milestones 10, 12, 18, 30, 53, 73, 89

YJ - OREGIN website with information about crop cultivars, linkage map, genotype data, field trial data, pathogen collection, links to different places etc.

DB - does it include publications? **AP42:** **IB** - any publications including old ones related to OREGIN funding should be sent to Jamie.

DB - also link to the CPM magazines would be good (<http://www.cpm-magazine.co.uk/2020/07/06/theory-to-field-the-oregin-of-resilience/>)

HR - Yes and also Defra crop genetics improvement platform (<https://defracropgenetics.org/>) - link could be included as well.

AP43: Jamie to add these links to the OREGIN website

**WP6.2 Provision of trait data from current phase of OREGIN. Activity Q9-Q20;
Milestones 49, 68, 86**

YJ – Trait data uploaded to OREGIN website managed by UH

IB - still talking with Graham King but no recent progress on management of old Crop Store data base also including OREGIN data

Reporting to the authority

IB - Helen is there anything coming up we should be aware of? **HR** - coming program management group meeting in March. Ian should send a 2 page summary update, simplified overview and presentation.

IB - especially impact-related updates.

HR - Also an overview of the amount of data accumulated during the OREGIN would be good.

Date for next meeting

The next OREGIN meeting - Zoom meeting in June 2021

AP44: **LH** to send Doodle Poll for next meeting in June