

# Minutes of the Oilseed Rape Genetic Improvement Network Management Meeting

15th December 2021

Zoom meeting

Present:

ADAS: Kate Storer (**KS**), Pete Berry (**PB**)

AHDB Dhan Bandari (**DB**)

DEFRA: Helen Riordan (**HR**)

Elsoms: Mark Nightingale (**MN**) Panida Wadsworth (B)

NIAB: Tom Wood (**TW**)

RRes: Fred Beaudoin (**FB**), Jon West (**JW**)

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

UoR: John Hammond (**JH**)

UoW Graham Teakle (**GT**)

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

Limagrain: Georgia Mitrouisia

BDC: Ryamond Sloan

Apologies: Rachel Wells (**RW**) Neil Graham (**NG**)

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**. - *ongoing*

**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.

**AP42:** All: any publications including old ones related to OREGIN funding should be sent to Jamie.

**AP45:** **IB** will contact **RW**

**AP46:** **LH** to check with **ZH** whether new fixed lines from **NG** were sequenced. It has been agreed that **GT** will make a list what to sequence (reasonable batch 30-40 could be sequenced) **AP49**

**AP47:** **NG** and **LH** to send to **MN** list of DFFS and mutation lines (with highlighted high EA content). **IB&LH:** All DFFS and pre-breeding lines from last year are low EA lines

## Project management and administrative matters

No administrative issues from DEFRA point.

## Updates on work programme OREGIN 5

### **GIN Activity 1 – Stakeholder network**

<b>WP1. Maintain &amp; expand interactions between UK stakeholders and academic researchers</b>
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**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**

**MN, LH & JM:** OREGIN Stakeholder's forum and UK BRC meeting (23.11.2021 in Rothamsted) had a great success within the Brassica community

### **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)

We collected some *L. maculans* isolates from the field. We have a new PhD student who is trying to do the screening for the micro viruses in these isolates. We also plan to do some testing for the R7. Existing isolates are still publicly available.

*L. biglobosa* – 6 international and 11 UK isolates. There is more work to do on *L. biglobosa* work.

Some isolates were collected from brassica vegetables, mainly kale

**IB:** Thank you very much. it's not very far off the time I have to do my next written report. So could you just perhaps send me your presentation after the meeting? So I've got all of the details of the information. **AP:50** - **YJ** – to send presentation to IB

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

**GT** last year went really well and 57 lines of the diversity set were multiplied. One particular accession didn't flower and a couple of others didn't produced seeds.

This year I've gotten so far 25 sessions for generating seeds to increase the stocks we've got. 17 spring accessions will get done in the spring.

**IB:** again, please send me a message with a key summary to capture for the report before March - **AP:50**

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

No update on WP2.3

#### **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 received material which was multiplied in Nottingham, out of that eight different lines has been sent for field trials this year. I would like to say big thanks to NG, MN for growing and processing the seeds. Another 10 lines are going to be multiplied at University of Nottingham this year. All lines which went for field trials are low EA. We need to fix only three lines (which will be multiplied at UoN) for FAE1.A8. Therefore I would like to ask **AP51** NG to send us leaf material from these lines.

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

**LH** No further progress with restorer lines - seems not very stable.

**IB** at the end of the meeting, under any other business, just going to come back to something that will give us an opportunity for a little discussion about what we might do with these lines that are still in development. And so as you remember, we are originally aiming to do more lines than the eight that we managed to get complete. And those additional 10ish are things that we could quite easily prepare now for for an additional field trial. But that would have to go to the next phase of funding. That's something I want to talk to you about.

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

**GM** last year we focused on production of the F1 hybrids of the OREGIN accessions against our CMS line. We had optimised protocol so we are more optimistic this year but a change due to the Covid restrictions didn't allowed to take as much care as we have hoped. So we haven't produced a lot of lines. We managed to get 10 at one time and this includes a spring ones. We should have enough seats for those to grow them and do any testing.

**IB** - Okay, that's really good. So I'm glad you you've managed to get some material out of that. Could we arrange to have a specific meeting, because I just have a look at the details because we'll need to plan exactly what we do with them to complete the milestones. **AP52** **IB** to organise meeting with **GM**

**IB** - So could I ask a quick one on the so these F1 hybrids are of course to do with trying to use heterosis to increase vigour and overcome cabbage stem flea beetle? Is this still an area of interest to the industry? **MN & PB** we think so it's an ongoing issue. Anything that can mitigate it or reduce it is of interest to the industry.

**IB** So probably the bottom line for this is that the work that Georgia is doing is still really very important for the industry. We need to get what we can out of this experiment. Because of course what we were planning to do was to try and put this forward as a linked proposal, because there's quite a lot of relatively basic science needed to understand what's happening with the, with the heterosis in there. So is that still something that that the industry might be able to support as a as a link?

**MN** - We would certainly be part of it.

<b>WP4. Conduct pre-breeding assessment of novel winter oilseed rape lines</b>
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**WP4.1 Establishment, management and phenotyping of field trials Activity in months 21-57; Milestones 29, 44, 51, 67, 71, 82**

**TW** - giving updates on field pathology trials and on AT results from previous assessments 19/20 and 20/21. Pathology trial drilled 7th September – 35 varieties, established well. Scoring for leaf spotting mid December and standard agronomic traits.

**YJ** presents assessments from the field trial established 5 September 2020. Light leaf spot and phoma leaf spot assessment 7 April 2021. Light leaf spot and phoma stem canker assessment, 5 July 2021. We observed very severe phoma stem cancer in some cultivars. In general light leaf spot is not severe this year. For the stem cancer almost in all lines it has been observed but for the light leaf spot it was not so bad in some cultivars. In some lines there was a difference in LLS on stem and pods. Cultivar Elgar performed really well this year.

**GM** – have you collected some spores from the pods? **YJ** not this year but it's something we may look into in the next year.

**JW** – we had some isolates in the past from pods so it's possible.

**FB** – there are really some dramatic differences between *B. rapa* secondary metabolites between stem, pods, leaves etc. and there is also geographical difference including difference between growing the material in the field or glasshouse. Other question would be because I could join the meeting a bit late, is there any possibility to share today's presentations?

**IB** – if everybody could please send LH presentations that would be great **AP53**.

**FB** – the reason I am asking is that if I could see these data I could see some trends between different tissues etc.

**KS** – Update from ADAS – trial drilled 20<sup>th</sup> August 2021 using new ADAS drill. Established well, good variation among varieties in growth habit, establishment & vigour assessment completed. All plots are beyond the risk point for CSFB and slugs. Site location 10 NE of Hereford, please contact KS or ADAS for access if you would like to do some assessment.

**MN** – drilled two sites as promised, established well, looks promising, long way behind in term of development to Kent site (very dry autumn). You are welcome to visit our 17ha of trial site. Second between Peterborough and Spalding – drilled towards the end of August, there was no rain in Sep-Oct so we lost 8 ha. I think we should deliver some nice data from the field trials this year.

**JH** – Drilled our trial but no rain until October so we lost ¼ of plots. If anyone want to visit, please contact JH. Problem with drought stress during establishment and water logging made things really difficult.

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

No update

**WP4.3 Assessment of the impact of modified leaf wax composition in disease and pest interactions. Activity Q15-Q19; Milestone 83**

**JWe** – Sep-Nov 2021: 10 Oct Flea Beetle Trial, 15 Oct Pathogen Inoculation. Scoring feeding damage and diseases. Some leaves very heavily affected, variation within the lines. Chlorosis, necrosis and flecking being observed in some lines. Recording leaf water droplet retention. In some plants small droplets were enough for the pathogen to colonise the leaves. Scored for leaf miner - majority plants *B. napus* (few *B. rapa*).

**FB** - data correlates with previous experiments done with HS on CSFB in *B. rapa*. No time to check it on gamma radiation panel because we don't have Hz double mutants. We will have in January some double mutant from protoplast work.

**DB** – do the waxy leaves affect how the disease spread? **JWe** – it has been looked into that, hydrophilic agents will be much more firmly distributed on the leaves once it dries.

**FB** it's more about the differences in wax structure – shape and size (droplets will drop off from wax with crystal shapes).

**IB** – explaining the strategy at the beginning of the project to identify mutant with small InDels or point mutation and the big structural variations has been used at the end.

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

**LH** - UoY received data from TW, YJ and KS. AT performed and results shared back with providers. Data interpretation managed via individual Zoom meetings. New meeting with Kyle and JWa to discuss interpretation of data from DNAseq accession susceptible and resistant lines.

#### **GIN Activity 3 – Develop and exploit opportunities for further research**

##### **WP5. Promote spin-off projects (all)**

**IB** – any spin off projects people would like to mention? Please send whatever you can think of through to me, so I can incorporate it into our final report.

#### **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** – Information about pathogen collection on the 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. Information about the Stakeholder's forum including all presentations, contact to the OREGIN partners and publications.

##### **Reporting to the authority**

**IB** – asking Helen what is the next thing we have to do.

**IB** - the last meeting of the GIN Research Advisory Group starting to think about what we might be able to do in the next phases of the gins. So that's early stages, and we need to have some more conversations across the gins. But I trust that people would like to continue origin in some form.

**IB** - What I've done so far is that we have this this problems with progressing the F1 hybrid work for the heterosis. So putting together a contingency in case we need to change some of the milestones because downstream work at the University has got quite a lot of value in the milestones and we may need to do something different with that. We have good seed stock for nearly all of the recurrent DFFs lines to get to a position where we can run another field trial. So for the initial operational things, I need to know that the funding outcome for sure by July just to continue the things that are already planned or very easy and a logical continuation of what we do already.

**GT** – how many seeds is needed for field trials?

**MN** – depends on the seed weigh – about 300g but usually it's even less.

**BF** - If you've got to present something to DEFRA, maybe we need some sort of meeting before 15<sup>th</sup> March?

**IB** - **AP54 LH** send out a Doodle poll for a date second half of February.

**IB** - DEFRA decision on the future work seems to be linking into some of the soil health, net zero stuff by looking at interactions across rotations, different types of fertiliser microbial communities. And this is quite a nice way at least for the three broad field crop gins, how the crops interact, and I'd actually I've got a kind of outline proposal for something like that. But all of the work really has still to be done to actually crystallise something. I was thinking of writing to the other GIN leads just to sort of see if they're still interested in that. I think we've had such a lot of value from these recurrent field trials. And the more years the better, as we're looking to address climate change and so on. Are there other things that people would see is increased priority or decreased priority for what we're doing, or new things you really want to fire into there?

**PB** - Focus on that net zero and work on nitrogen use efficiency was to a greater level of importance.

**MN** - I had some very interesting conversations with several agronomy groups who were very interested in net zero but they're looking at whole rotations. So not just the effect of one particular crop, what you have to do in the rotation to make it viable.

**IB** - We certainly have got three components covered already in the GINs so there's a rape, wheat and pulse crops.

**MN** - If we can link those three together on this one topic, perhaps it will give a lot more weight because it links the GINs on a joint piece of research instead of doing it independently.

**HR** – yes. Regarding to the soil health and soil microbiome related things are not potentially something that we would be able to cover.

**YH, BF, IB** - discussion about other ideas for the future project

### **Date for next meeting**

The next OREGIN meeting - 25th February