Monthly BMS Working Group Meeting 2

Minutes recorded by Amit Singh and Julie Nicol

3rd September 2021, 3pm to 4pm AEST

Attendees: Richard Trethowan (CAIGE Wheat Leader), Mark Dieters (CAIGE Barley leader), Julie Nicol (CAIGE Coordinator), Robin Wilson (BMS-CAIGE), Amit Singh (CAIGE Database), Meiqin Lu (AGT BW Breeder), Scott Sydenham (LongReach BW Breeder), Amanda Box (Secobra, Barley Breeder), Chris Moore (SWS Seeds. BW. DW & Barley), Maqbool Ahmad, (BASF, BW), Mirza Dowla (EdStar Genetics, BW & Barley), Clarissa Pimentel (BMS), William Eusebio (BMS), Rowena Tulod (BMS)

Apologies: Pip Wilson

Julie welcomed all to the meeting and indicated this working group's objective is to interrogate the CAIGE data using the BMS and improve the usability and functionality for the end users which are predominately breeders.

Follow up from previous meeting – August 2021

Amit made mention of an issue raised by Chris Moore at the first CAIGE BMS Working Group. Chris asked if we have metadata on the trials and is this stored in BMS. Robin indicated that we could add metadata for individual trials under manage studies (Environment tab in studies). Chris wants to work with the values for those traits. He wants to get a list of studies based on metadata (like planting date, latitude, longitude, GPS). He would like a snapshot of what information is in those studies and wants to have searchability based on metadata. Julie also pointed out moving forward it is needed for collaborators to standardise the Meta Data collected so it can be used consistently. Robin- suggested to enter sowing date and harvest date as a trait to make it available for manipulations and searchability. The BMS developers should think to provide searchable function on the field on these metadata. We should load the metadata moving forward.

ACTION: Amit indicated this is presently not in BMS, and Amit is collating this so will be included in the coming months.

Chris indicated in August that he is unlikely to use BMS for data visualization, but rather to extract information and put into their data visualization tools.

QUERY: BMS needs to decide what service you are trying to provide us. He wants to interrogate BMS based metadata and some traits and use other visualization tools.

Presentations and Demonstration of BMS tools during the meeting

Amit provided a clear list of the status of data uploaded on BMS. The list of studies under CAIGE database are tabulated below. A summary of content of CAIGE database is a file (Status of loading CAIGE data to BMS) in the shared dropbox folder.

Crops	Studies
Bread Wheat	CAIGE_2014_BW_YDis
	CAIGE_2015_BW_YDis
	CAIGE_2016_BW_YDis
	CAIGE_BW2017_YDisSAGI
	CAIGE_BW2018_YDisSAGI
	CAIGE_BW2019_YDisSAGI
	CAIGE_BW2020_Means_YAgDis
	CAIGE_BW2020_Plot_AgDis
	Multi Year Yield Analysis 2017-20 VARIETY
	Multi Year Yield Analysis 2017-20 VE Effects
Durum	CAIGE DURUM MET data-2019
	CAIGE_Durum_2016_YDis
	CAIGE_Durum_2017_YDis_SAGI
	CAIGE_Durum_2018_YDis_SAGI
	CAIGE_Durum_2019_YDis_SAGI
	CAIGE_Durum_2020_YDA
Barley	CAIGE_Barley_2015
	CAIGE_Barley_2016
	CAIGE_Barley_2017
	CAIGE_Barley_2018_YD
	CAIGE_Barley_2019_YDisSAGI
	CAIGE_Barley_2020_YDA
	Multi Year Yield Analysis 2015-20 VARIETY
	Multi Year Yield Analysis 2015-20 VE Effects

Amit and Robin presented the 3 functions (directions and further info in the dropbox).

1. Germplasm Search and Building List (provide direct dropbox link for this)
2. Adding and exporting columns (provide direct dropbox link for this)
3. Data query tools and data compilation – (provide direct dropbox link for this)

The CAIGE working group will look at these functions and then provide feedback to Amit and Robin about list features and suggestions, they wish to foresee on BMS.

ACTION: Amit will collect comments and share before next CAIGE BMS Working Group Meeting and Robin and Amit will submit these to the BMS development team for prioritising our requirements.

COPs Discussion

Richard raised the need for computation of coefficient of parentage (COPs) for CAIGE entries, as much time have spent on curating pedigrees and fixing truncated pedigrees of CAIGE materials (by Ky and Robin). The members from team BMS, Robin Wilson and William Eusebio embraced this and indicated that it possible have this feature through BMS in future. This feature will generate COPs matrix of the selected entries and help in generation of diverse panel of genetic material for breeding purpose.

Robin indicated that moving forward in incorporating such features we should work on fixing the problem of improper data or no data especially for CAIGE checks in BMS. Meiqin and other breeders stressed the importance such functionality in BMS. Robin indicated that William will be able to do the COP on the CAIGE sets with the BMS data before it is incorporated in the BMS as a function once the entries have been curated to allow this.

ACTION: Robin is working with the BMS team (particularly William) to enable the COPs to be provided as part of the database and will update the progress as the next meeting.

OVER YEAR MET ANAYSIS

Meiqin queried why the checks over performed the entries in both the 7 and 4 year BW MET Analysis. Julie indicated the pedigree curation was not accurate in the 7 years but was rectified for the 4 year MET (2017-2020). The fact that the checks still over performed needs to be explored, but this affect was significantly less once the pedigrees were fixed. Julie also pointed out the OP and RMSD which were the 1st Factor in the analysis and accounted for 46% of the variation and that there was still another 40% explained by Factor 2-4 which needs to be considered. Julie asked colleagues to read in more detail the comprehensive report on each of the analysis that Ky and colleagues prepared, Meiqin indicated her priority is to pull out a handful of key lines from the analysis to promote to her crossing block, and she would like to use BMS in the most informative way to do so. Robin and Clarissa indicated that it is possible to use this in the data retrieval and possibly apply appropriate weighting to the various factors which could be search on.

ACTION: Robin and Clarissa will explore further if these weights to factors can be applied to enable better interpretation of the line performance. Julie will discuss with Brian Cullis further about the check performance.

ACCESS TO OTHER DATABASES WITH BMS

Robin- Indicated that, ICARDA is also using BMS and in due course we will be able to share studies. Julie noted that CIMMYT is not using BMS, so in future the BMS can work on being able to pull all data from CIMMYT, ICARDA and Australia into a composite database. Robin indicated that the databases should be able to communicate with each other, and the driving force of the IBP is to make that happen. Robin also mentioned about Gigwa and its ability to store genotypic data the BMS can access – this capability will only improve as more data is uploaded.

Some specific questions

Q: How to see pedigree of the lines in BMS?

Ans: Go to List- then Browse for a list,

Right click on header name “cross”- Fill with cross expansion-select the level of expansion.

Also, by clicking on Action-Add Columns-Fill with germplasm name-Click & select from the drop-down list.

Q: How to find lines with particular traits/attributes in BMS database

Ans: Go to “Manage Germplasm”-

Filter table- Add Attributes-“Purpose” -Purpose of the Cross (if recorded while crossing program). This will search the whole database and filter everything with entered purpose. They can then be sorted by Purpose.

Q: Search germplasm based on attributes

Ans: In the version 18.0. Search germplasm by whole range of criteria and are stackable filters. Add attributes criteria and apply purpose. It will be filter all germplasm with recorded purpose.

Q: It was pointed out that there are some traits in the CAIGE database which was never recorded in CAIGE.

Ans: Robin indicated that the traits are listed from the whole database not only of the specific study. We need explore/select the study while doing the germplasm search.

The meeting was closed at 4.30pm, and the next monthly meeting is Friday 1st October at 3pm.