



Cambridge-Africa ALBORADA Research Fund Project

Establishment of tissue culture and genetic transformation for scalable cowpea improvement in sub-Saharan Africa

This Project was a partnership between Dr Alison Bentley, NIAB, Cambridge and Dr John Eleblu, from the West Africa Centre for Crop Improvement (WACCI) at the University of Ghana, Ghana. We are grateful to have received project funding and have subsequently received further Cambridge-Africa funding to continue the work (“Upscaling cowpea improvement for food security in Ghana”).

At NIAB we have now developed a pipeline for implementing reliable and reproducible tissue culture in African cowpea accessions (an accession being a distinct, uniquely identifiable sample of seeds representing a cultivar, breeding line or a population).

This allows for the production of whole cowpea plants from cotyledonary (embryonic seed leaf) nodes from 4- day-old germinated seeds. Based on a rapid screen of 14 cowpea accessions (selected by WACCI to represent the diversity of material currently grown by farmers in Sub-Saharan Africa) we have identified the accession high levels of germination, efficiency of regeneration in tissue culture and transformation potential (based on numbers of shoots generated per explant). We will transfer the established protocol to the newly commissioned tissue culture laboratory at WACCI. We will deliver a workshop to train staff and early career researchers on the use of the developed protocols and discuss the potential uses of the system for supporting cowpea research in Ghana.



Seed diversity in Ghanaian cowpea accessions for tissue culture testing



Ghanaian cowpea accessions in glasshouse regeneration at NIAB



Staining (blue) shows early evidence for transformation in 2-month-old shootlets

To maximise the benefit from the work already undertaken, we have recently been awarded Cambridge-Africa ALBORADA funding to continue this work and to optimize the transformation protocol for and to establish production of pure lines in Ghana. This project is entitled “Upscaling cowpea improvement for food security in Ghana”.

Examples of publicity generated by the project

We have publicised the project via a display at the NIAB Poster Day in January 2018 and the NIAB Open Day in June 2018 with ~200 visitors in attendance at both events.



Sharing our work with ~200 visitors from the ag industry at the 2018 NIAB Open Day



We also hosted a visit from the Director of WACCI Dr Eric Danquah to discuss the project and future opportunities on 2nd May, 2018. We also presented a poster at the Cambridge-Africa 10th Anniversary meeting (1st May 2018)



Discussing the project and opportunities for future collaborations with Dr Eric Danquah, Director of WACCI (above and left). Alison Bentley & Charline Soraru presenting at the Cambridge-Africa 10th Anniversary meeting (right).



