

Category	: International Rice Research Conference
Select Theme	: Disruptive technologies and innovations
Endorsement email	:
Keyword 1	: Imaging
Keyword 2	: Phenomics
Keyword 3	: Innovation systems
Title of Entry	: A live-imaging phenotyping platform for rice seedling vigour improvement
Presenting author	: Guillaume Menard
Presenting author email	: guillaume.menard@rothamsted.ac.uk
Co author 1	: Peter Eastmond
Co author 2	: Smita Kurup
Affiliation presenting author	: Rothamsted Research, Harpenden, United Kingdom
Affiliation 1	: Rothamsted Research, Harpenden, United Kingdom
Affiliation 2	: Rothamsted Research, Harpenden, United Kingdom
Select only one type of presentation	: 3-5 minute flash talk
Abstract	: In areas of South and Southeast Asia, rice production systems are shifting from puddled transplanted rice to (dry) direct seeded rice (DSR). Shortages in labour and irrigation are among the reasons why farmers are switching to DSR. To obtain a good crop using DSR it is imperative that the seed germinate quickly in a wide range of seedbed conditions and that the etiolated seedlings grow rapidly through strong soils and emerge. Historically, there has been comparatively little selection for seed vigour in modern rice varieties, which have been bred for transplanting, and agronomists have highlighted a need for improvement in this trait for DSR. One of the factors that limits seed vigour in modern rice varieties is elongation of the mesocotyl, which is important to allow emergence from deeper soil. Rapid development of a long and thick root system is also important for DSR to promote water and mineral uptake under the variable soil moisture conditions. It is relatively easy to make 'end-point' measurements on tissues of etiolated rice seedlings that have been grown in vitro. However, no method currently exists to measure dynamic changes in the growth rates of these tissues over time. Such measurements may help breeders to develop better rice varieties for direct seeding. We have recently developed an open source phenotyping platform for live imaging of etiolated seedling growth from germination up to ~14 days after seed imbibition. This platform uses a DSLR camera for HD image capture, equipped with a low aperture macro lens and an adapted flashgun with a green light filter to allow repeated image capture, without inhibiting skotomorphogenesis (e.g. mesocotyl elongation). The platform is currently being

used to phenotype a subset of accessions from the 3000 Rice Genomes Project. The system, the first results and further applications will be discussed in this presentation.

[Read Less»](#)

Uploaded Files »

No files found.