On the Cover: Root system architecture and development traditionally have been difficult to measure with high throughput and accuracy. Using a transparent gellan gum growth system, root systems can be digitally captured and quantified as they grow. By combining improved root imaging and computational analysis techniques, it is now possible to reconstruct root systems in three dimensions and quantify specific root system architecture traits. The current work and other recent research on root system architecture have revealed a wide range of morphological variation in rice (Oryza sativa) root systems, and three-dimensional reconstructions help to visualize and quantify those differences. In this issue, Clark et al. (455–465) present a high-throughput growth, imaging, and analysis platform to phenotype growing root systems in three dimensions. The enhanced quantification capabilities and capacity to image over 100 root systems per day, combined with an expanding array of genotypic resources, will now make it possible to more deeply explore the genetic components of root system architecture as they relate to both developmental processes and root traits associated with the acquisition of limiting resources (e.g. water and phosphorous). Images and root system reconstructions provided by Randy Clark, Janelle Jung, James Jones-Rounds, and Leon Kochian. Volume renderings were performed using the Volume Viewer plug-in for ImageJ software (http://imagej.nih.gov/ij/).
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CORRECTIONS


[C] Some figures in this article are displayed in color online but in black and white in the print edition.

[W] Indicates Web-only data.

[OA] Open Access articles can be viewed online without a subscription.