Measuring plant roots is for everyone: RhizoVision Explorer

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Background

- Measurements of plants roots are typically acknowledged as among the most difficult in plant biology. At the same time, over the past 20 years, knowledge gaps associated with how roots contribute to crop productivity and soil health through carbon sequestration have become critically important to fill. Therefore, plant biology would be greatly aided if more researchers had access to efficient tools for measuring roots.

Approach

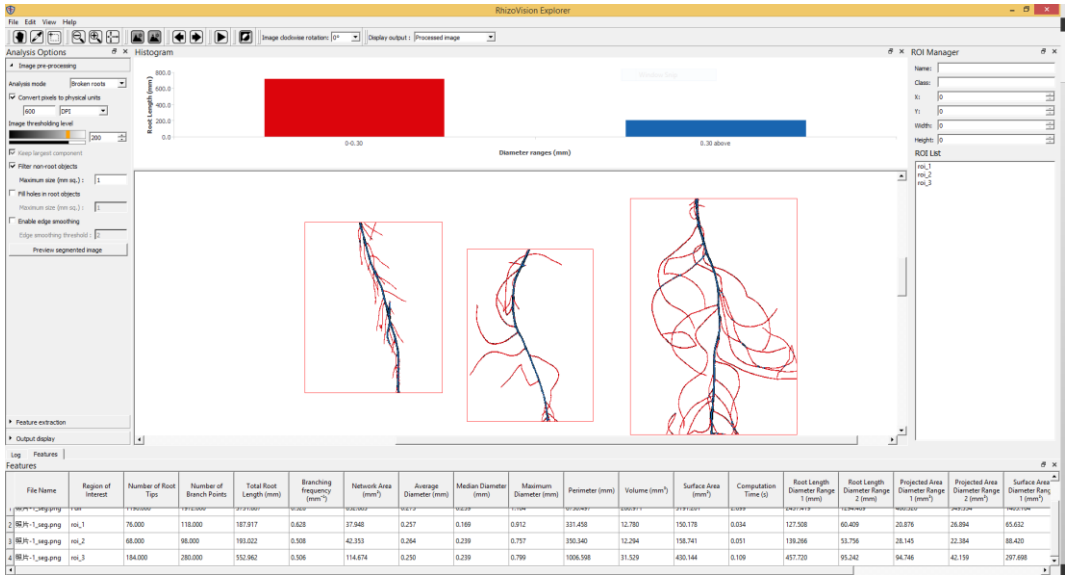
- Most image-based software used in plant biology has other dependencies or require knowledge of programming for use that ultimately create barriers to widespread use. A self-contained software was written for Windows in the reliable C++ programming language with the intent to enable everyone.

Outcome

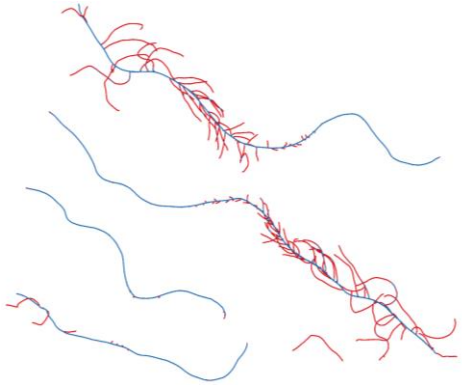
- RhizoVision Explorer was created and shared freely with the plant biology and soil communities. The software has a relatively simple interface, is fast and stable, and has been shown to provide reliable measurements compared to other analyses.
- In the simplest mode, washed roots are scanned on a flatbed scanner, Rhizovision Explorer provides measurements like length, diameter and volume.
- Other modes using complete root systems provide additional measurements such as angles and root depth.

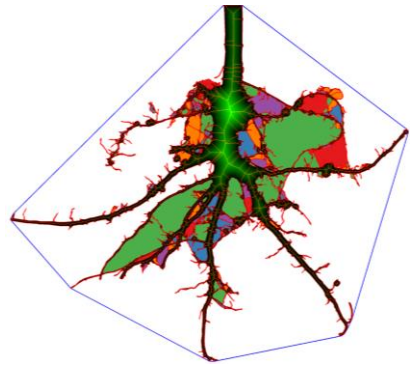
Significance

- RhizoVision Explorer will greatly facilitate plant root and soil science.
- It has more than 2,500 downloads; it is already the number one free software for root image analysis. Software Website



RhizoVision Explorer interface (above) with root measurement examples (below).





Seethepalli, A. et al. (2021). “RhizoVision Explorer: Open-source software for root image analysis and measurement standardization”. *AoB Plants* 13, plab056. doi: 10.1093/aobpla/plab056

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