



WinRHIZO TRON™ 2025

Software Program For Analysis of Roots growing in Soil and Rhizotron

WinRHIZO Tron and **Tron MF** are manual root measurement programs that allow for analysis of images produced by minirhizotron underground video camera systems or other sources that do not offer a good contrast between roots and their background*. Analysis is done by manually tracing over the roots in the image with a mouse, or if its suits you, by touching the screen of a tablet or all-in-one computers.



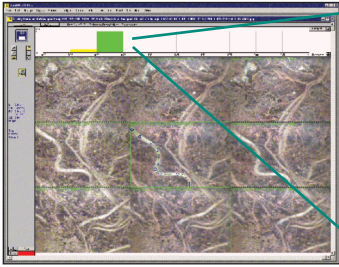
WinRHIZO Tron is available in two models;

- **WinRHIZO Tron** which can analyse one frame at a time,
- **WinRHIZO Tron MF** which can analyse multiples frames simultaneously (MF=Multiple Frames).

*For automatic measurement of washed roots and Arabidopsis seedlings, please refer to our WinRHIZO Basic, Reg, Pro or Arabidopsis family of products.

Our products runs on PC computers or tablets with the Windows operating system (Windows 7 to 11, 32 or 64-bit).

In WinRHIZO Tron you can measure roots interactively and easily



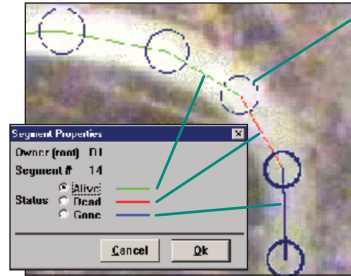
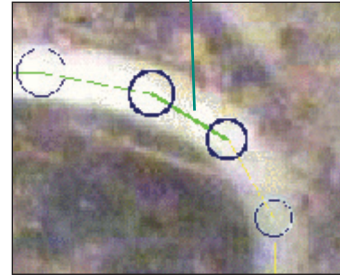
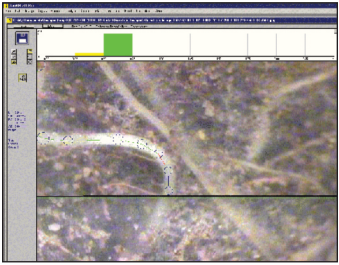
The distribution of root length, area, volume or number of tips is displayed as a function of diameter in a graphic above the image. The color classes are the same as those used to draw the roots in the image. **WinRHIZO Tron** measures the real root diameter distribution rather than the average diameter as some other programs do. For example, if a root segment encompasses three diameter classes, the root length will be distributed among those three classes rather than only in the average class.

An analysed root is made of segments delimited by nodes.

The root color can be function of:

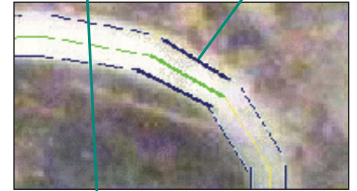
- segment diameter
- livings status (live, dead, gone)

You can scroll and zoom in on some parts of an image or zoom out to view larger areas or more images.

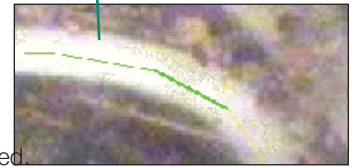


Root diameter can be shown with;

- circles at nodes,
- lateral lines along the root edge,
- no display at all.

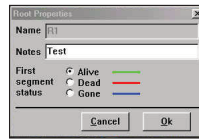


As you trace roots to indicate their presence, **WinRHIZO Tron** measures the roots and displays complete morphological information in the command area (see Measurement data below). Root segments or nodes can be modified (moved, resized, deleted or added) using mouse clicks or keyboard commands. As you modify the roots, morphological measurements and data in files are automatically updated.



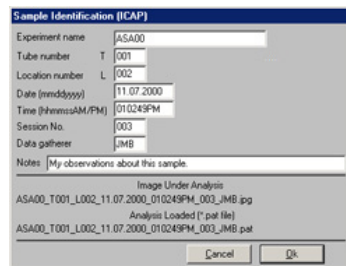
Details that make your work more efficient or faster

- When you create a root segment, you can either enter its properties manually or, with the press of a keyboard key, automatically assign it the same as the previous segment.



- Root and segment naming can be done individually (you enter the name you want) or it can be done automatically (you enter the beginning of a fixed name and **WinRHIZO Tron** appends to it a number which is increased for each subsequent root).

- When you load an image which name follows the ICAP naming convention, **WinRHIZO Tron** automatically extracts the parameters that will be used to identify the sample (tube #, location #, date...) from the file name (you don't have to type



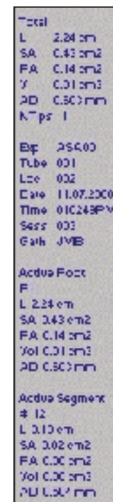
Note: The ICAP naming scheme is used by a few Rhizotrons image acquisition systems.

Other features

- You can shift the position of a single root or all of the roots in an analysed region (useful to align a prior analysis over a new image).
- Use menu commands to view/edit root properties entered during root creation or to continue/modify a previously measured root.
- The original images are never modified. The analysis is displayed over them.
- You can change the colors used to display information.
- You can add notes (comments, observations) to images, roots or segments.

Measurements data

You can choose which information is displayed and how it is presented (content, text size and color). Each analysed frame has its name written in its upper left corner, over the image. You can also select which of the following morphological information to display in the command area;



- Total root measurements (for the whole image) (root length, surface area, projected area, volume, average diameter and number of tips).

- Image information extracted from file name using the ICAP naming scheme (Experiment, Tube, Location, Session, Date, Time and Data Gatherer).

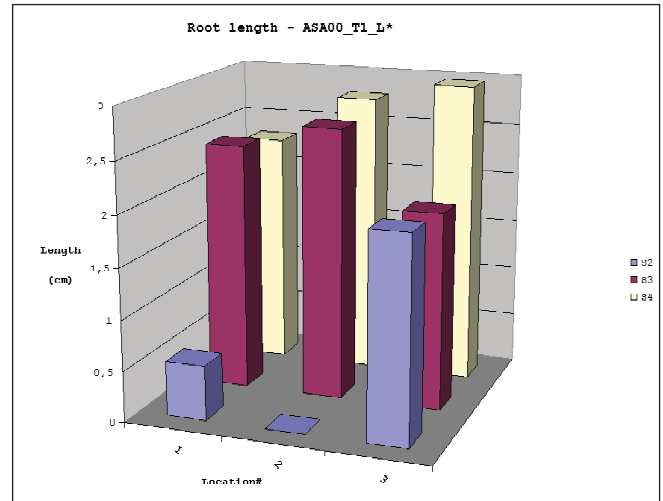
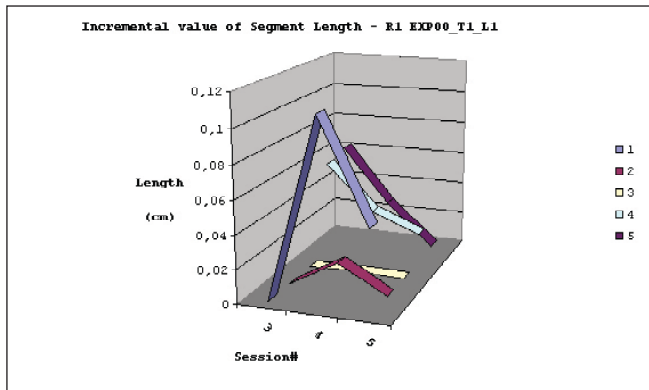
- Active root name (Ex: R1) and its measurements data (length, surface area...).

- Active segment number and its measurements data (length, surface area...).

Detailed sample information, analysis settings and measurements data are saved in data files. These files are in ASCII text format and are well adapted for opening in spreadsheet-style programs such as Excel. We do offer, as an option, a program written in VBA that runs in Excel for root data visualization and manipulation. This program simplifies data handling and comparison. Root growth can be calculated and plotted graphically as a function of time, for example.

XLRhizo Tron companion program for data visualization

XLRhizo Tron is greatly appreciated to visualize and analyse data produced by WinRHIZO Tron & Tron MF. This utility program runs in Microsoft Excel. It allows you to manipulate, reorganize and display measurement data graphically. It can, for example, plot root growth as a function of time for images acquired at different moments and analysed with WinRHIZO Tron & Tron MF. XLRhizo Tron companion program is optional and can be ordered separately or with WinRHIZO Tron & Tron MF. It is very affordable and can save a lot of time and manipulation errors.



Competent and prompt technical support is offered exclusively by email.

Complementary products sold by Regent Instruments Inc.:

 **WinSEEDLE™**
seed/needle morphology & count

 **WinSCANOPY™**
canopy & solar radiation

 **WinRHIZO Tron™**
root morphology & topology in soil

 **WinFOLIA™**
leaf area & morphology

 **WinCAM NDVI™**
color area, basic morphology & ndvi

 **WinDENDRO™**
tree-ring & wood density analysis

 **WinCELL™**
wood cell anatomy *Free WinCELL Regular with WinDENDRO Regular & Density Software

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