Shailron™
(AN ISO 9001 : 2015 CERTIFIED COMPNAY)
Trade Mark No.: 2454166

Plant Root Analyzer

ST-GX02 : Plant Root Analyzer

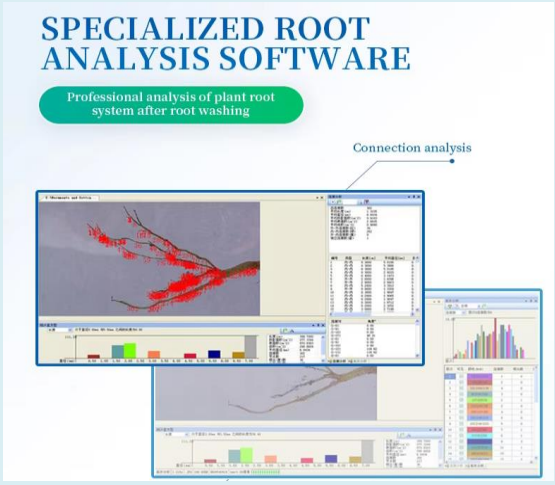
Descriptions:-
Plant root phenotype analysis system is based on image recognition technology. It is professionally used for root analysis of plants after washing the roots in vitro. It can analyze root length, diameter, surface area, volume, root tip number, branch number, etc., and widely applicable to root morphology and structure research, using non-statistical methods to measure and calculate parameters such as the length of the root system in the overlapping part, and the analysis results are highly accurate. It can be used to solve the problem that root structure and geometric parameters are difficult to obtain. It has the characteristics of convenience, efficiency and high accuracy, which can improve the work efficiency of practitioners, reduce labor costs, provide rapid multi-parameter root phenotype analysis methods, and serve plant scientific research .

Package Includes:-
1. Plant root analysis system software
Pen drive - **1 set**
2. Root Scanner (optical resolution 4800×9600, A4 extended dual-light color scanner) **- 1 unit**
3. Root imaging Tray – **1 Unit**
4. Transparent Tray for root wash – **3 unit**
5. Data Storage & Handling System **1 set**
(i5 Processor 9 Gen, 8GB RAM, Windows 11 Software, 1TB Hard Disk) for operation and download data
5. User manual **-1 Unit**

Principle of the instrument:-
ST-GX02 Root Analysis System uses a high-quality graphic scanner to obtain high-resolution plant root color or black and white images. It can analyze root length, diameter, surface area, volume, root tip number, The scanner is equipped with a special dual-light source lighting system under the scanning panel and in the upper cover, and a dual-light source calibration area is reserved on the scanning panel. In addition, it is also equipped with special, high-transparency root placement trays of different sizes. During scanning, the light source under the scanning panel and the light source in the upper cover simultaneously scan the root samples in the high-transparency root plate, which can avoid the shadows and unevenness that are easy to occur during root scanning, and effectively ensure the quality of the acquired image.

This soft root analysis software can read images in TIFF and JPEG standard formats. For the acquired images, the high-quality root images obtained by scanning are analyzed using the software decrypted by inserting the dongle. The basic morphological parameters such as the length, diameter, area, volume, and root tip of the cross-overlapping part of the root system are measured and calculated using non-statistical methods. This meets the researchers' research on different categories and levels of plant roots.

Analytical measurements:-
(1) Total root length
(2) Branching frequency
(3) Average root diameter
(4) Median root diameter
(5) Maximum diameter
(6) Total root area
(7) Total projected area
(8) Total root volume
(9) Root tip count
(10) Fork count
(11) Overlap count
(12) Root diameter grade distribution parameters



ST-GX02 : Plant Root Analyzer

(13) It can customize segmented diameters without equal spacing, and automatically measure the length, projected area, surface area, volume, etc. of each diameter segment, as well as its distribution parameters.
(14) It can carry out color analysis of the root system, determine the number of surviving roots, and output the diameters, lengths, projected areas, surface areas and volumes of roots of different colors.
(15) Can carry out topological analysis of the root system, automatically determine the number of root connections, relationship angle, etc., and can also automatically analyze length, area, volume, etc. of main root or any one of the lateral roots individually, and can separately display corresponding parameters of any diameter section of marked root system (which can be customized without equal spacing).
(16) It can make corrections such as root bifurcation cropping, merging, connecting, etc., and the correction operation can be rolled back in order to quickly obtain 100% correct results.
(17) It can automatically measure the fractal dimension of the root system by the box dimension method. It can analyze the percentage of rhizobium volume in the root system to objectively determine the amount of rhizobium body contribution.
(18) A large number of fully automated root system analysis, batch save, the results of each analysis of the map can be edited and corrected.
(19) Capable of doing large-volume automated estimation of root biomass distribution.
(20) Ground angle analysis, horizontal angle analysis, and main root extraction analysis characteristics.
(21) Each analysis image, distribution map, and result data can be saved and output to Excel sheet, and analysis marking map can be output.

Technical Specifications

Analyze and measure:-
(i) Total root length
(ii) Branching frequency
(iii) Average root diameter
(iv) Median root diameter
(v) Maximum diameter
(vi) Total root area
(vii) Total projected area
(viii) Total root volume
(ix) Root tip count
(x) Fork count
(xi) Overlap count

Scanning element : 6-line alternating microlens CCD
Maximum format : A4
Interface type : USB2.0
Optical resolution (dpi) : 4800x9600dpi
Maximum resolution : 12800 × 12800dpi
Minimum pixel size : ≥ 0.005mm × 0.0026 mm
Accuracy : 0.01mm
Scanning light source : white cold cathode fluorescent lamp CCFL, color bit number 48 bits
Scanning range : 320 x 216 mm
Scanning speed reflective : A4, 300dpi: monochrome 11 seconds, color 14 seconds
Film scanning, 35mm, 2400dpi: positive : 47 seconds, negative: 44 seconds
Data Storage & Handling System (Laptop Device) : i5 Processor 9 Gen, 8GB RAM, Windows 11 software, 1TB Hard Disk, 39 cm display screen