

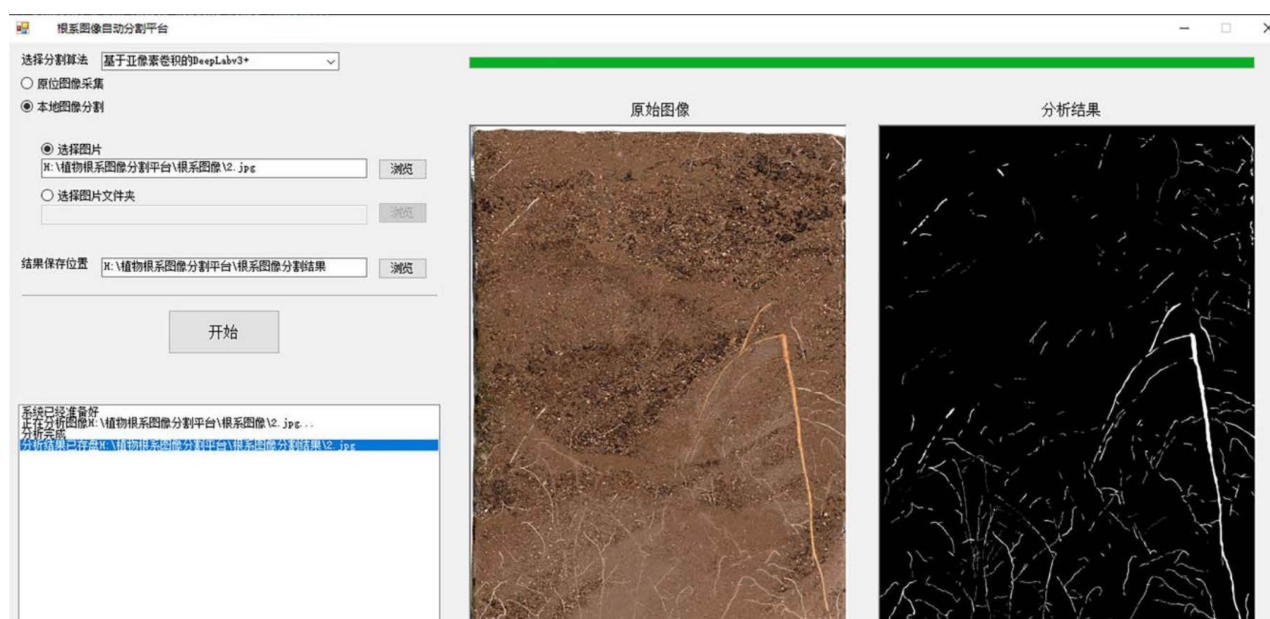
LK-1600 RhizoPot in Situ Root Culture and Analysis System

The main function of the LK-1600 RhizoPot in situ root culture and analysis system is the dynamic observation and analysis of the phenotype of the micro-root system (fine roots and root hairs). The LK-1600 can acquire images of root systems at 1200 dpi and 4800 dpi, and can be used to analyze root system length, diameter, area, and other root system indicators and their dynamics, as well as to analyze the longevity of fine roots and root hairs.

To improve efficiency and accuracy, the LK-1600 integrates automatic root image acquisition software, which allows presetting of image acquisition resolution, time, image saving and naming.



For efficient and accurate background segmentation of root images, LK-1600 also integrates DeepLabv3+, a root image segmentation software. The software achieves fast root background segmentation through deep learning algorithm. It takes about 20 min to segment the background of a 1200 dpi root image, but the segmentation efficiency is at least 20 times higher than that of the conventional manual tracing method.



Features

- Integrated root culture and imaging design to meet the needs of long-term dynamic root imaging;
- Image resolution up to 4800 dpi, enabling fine root and root hair longevity studies;
- Highly automated high-throughput imaging control is possible;
- Image segmentation software enables automatic segmentation of root image backgrounds;
- Can be used with a variety of root image analysis software to measure more than 20 root indexes.

Technical Specifications

1.Control software: Windows interface control software (It has the functions of setting the resolution, time, saving and naming of the acquired image) ;

2.Image collector

Optical resolution: 1200dpi and 4800dpi;

Imaging size: 22×29cm;

Exposure time (min-max): 0.053ms - 814ms;

Power supply type: DC 5V, 500mA;

Power supply power: 2.5W (扫描) , 1.1W (待机) ;

3.Environmental parameters

Working temperature: 10-35 °C;

Working humidity: 20-80%;

4.Other functions: pre calibration, plug and play;

5.Incubator

Material: Acrylic opaque material and transparent material;

Specification: The size can be customized according to customer requirements, and the standard size is 26cm *

31cm * 15cm (W * H * D);

6.Support: made of stainless steel, each support can place 5 cultivation devices.



Reference

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3. Zhang Z, Zhu L, Li D, Wang N, Sun H, Zhang Y, Zhang K, Li A, Bai Z, Li C and Liu L (2021) In situ Root Phenotypes of Cotton Seedlings Under Phosphorus Stress Revealed Through RhizoPot. *Front. Plant Sci.* 12:716691. doi: 10.3389/fpls.2021.716691
4. Shen C, Liu L, Zhu L, Kang J, Wang N and Shao L (2020) High-Throughput in situ Root Image Segmentation Based on the Improved DeepLabv3+ Method. *Front. Plant Sci.* 11:576791. doi: 10.3389/fpls.2020.576791

Origin and Manufacturer: China Eco-mind