A Method to Separate Plant Roots from Soil and Analyze Root Surface Area. (S06-benjamin085438-Poster)

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Abstract:

Analysis of the effects of soil management practices on crop production requires a knowledge of these effects on plant roots. Much time is required to wash plant roots from soil and separate the living plant roots from organic debris and previous years' roots. We developed a root washer that can accommodate relatively large soil samples for washing. The root washer has a rotary design and will accommodate up to 36 samples (100 mm diam. by 240 mm long) at one time. We used a flat-bed scanner to digitize an image of the roots from each sample and used a grid system with commercially-available image analysis software to analyze each sample for root surface area. Comparisons were made between 'dirty' samples containing the roots and all the organic debris contained in the sample and 'clean' samples where the organic debris was manually removed from each sample. We found that manually separating the roots and debris was required only in very dirty samples where the amount of non-root debris was greater that twice the amount of roots in the sample.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 2:00-4:00 pm
Poster Board Number: 1734

Keywords:

plant roots, digital imaging, root surface area, root washer