

Supporting Information

Effect of Soil Moisture Content and End-Effector Speed on Pick-up Force and Lump Damage for Seedling Transplanting

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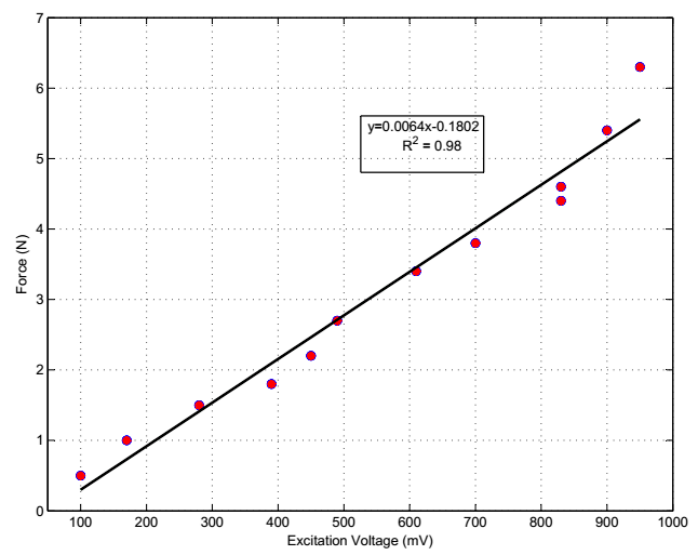
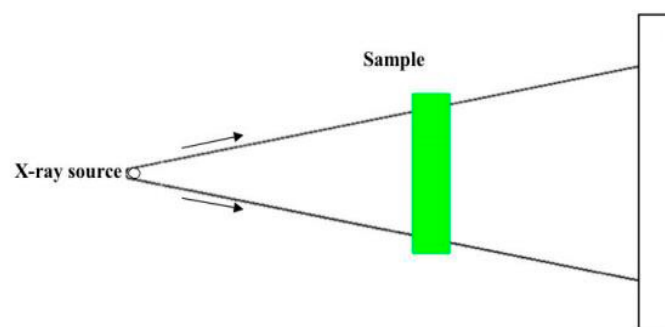


Figure 1. Force versus excitation voltage plot. The correlation between the signal (mV) and load (N). calibrated using 1N, 2N, 3N, 4N, 5N, 6N, and 7N loads.



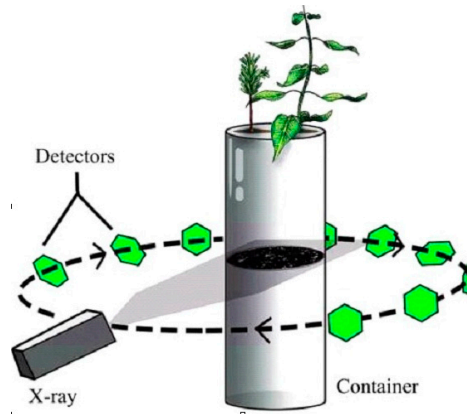


Figure 2. Illustration of the general principle of CT in imaging (top) and specific application in plant- soil (bottom) [1].

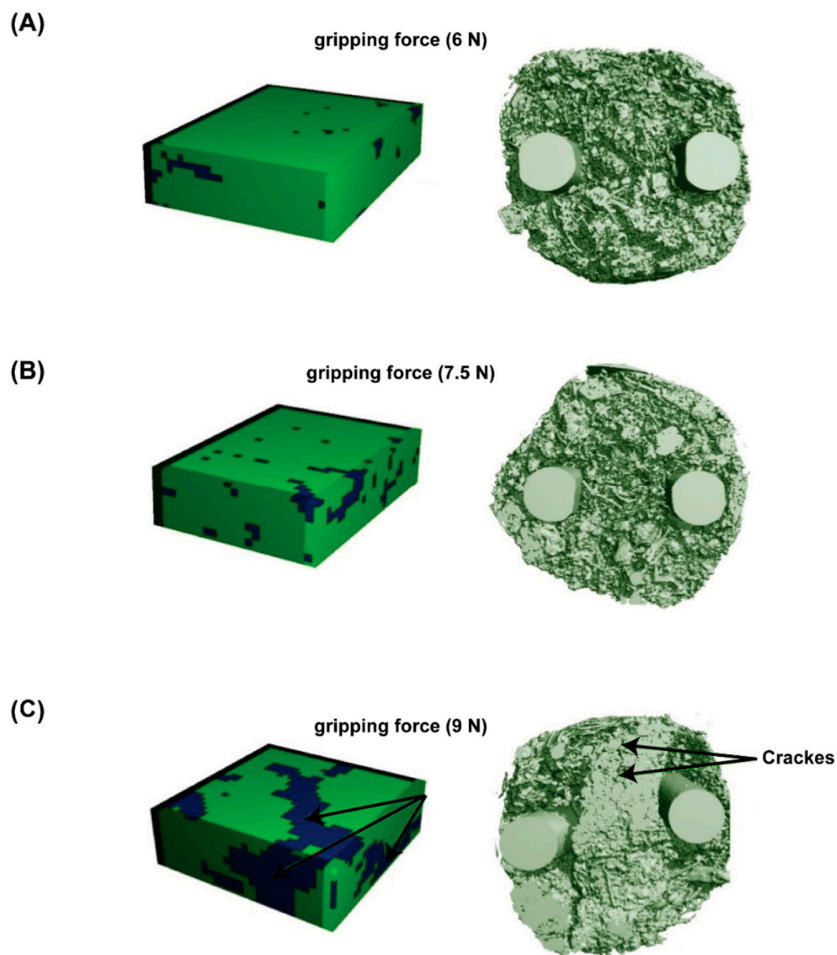


Figure 3. CT image of seedling soil (right) with its sub-volumes (left) under gripping force application of (A) 6 N, (B) 7.5 N and (C) 9 N. (sub-volumes cracks are shown in blue color).

Table 1. Ct Scanning configuration/parameters used in this study.

Condition	Energy(kV)	Number of Projections	Intensity (μA)	Resolution (μm)	Exposure time (μs)	Total scan time (min)
Value	90	1000	44	51.3	200,000	52

References

- 1 Paya, A.M; Silverberg, J.; Padgett, J.; Bauerle, T.L. X-ray computed tomography uncovers root-root interactions: quantifying spatial relationships between interacting root systems in three dimensions. *Frontiers in Plant Science*, **2015**; *6*; 274.