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Effect of electric pulse charged to culture soil on improvement of nutritional soil condition and growth of lettuce (*Lactuca sativa* L.)

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ABSTRACT

This study is intended to measure variations of nutritional soil condition and mass spectrometric patterns to describe the specific effects of electric pulse charged to culture soil which induced an increase of lettuce growth. In a previous study, lettuce cultivated in an electrically pulsed culture soil (EPCS) grew more actively than those in a conventional culture soil (CCS). Lettuce growth increased about 20% more in EPCS than CCS during cultivated for 21 days in this study. Content of nutrient salts and minerals varied in CCS and EPCS when assayed after the period of lettuce cultivation. Ammonium content in CCS was higher than that in EPCS but nitrate content was opposite of the ammonium. Inorganic N-compounds in EPCS was about 2.5 times higher than that in CCS. Content of phosphate in CCS increased greatly by lettuce cultivation but was about 2 times lower than that in EPCS. Contents of minerals in EPCS were relatively higher than those in CCS excepting Fe. Patterns of chromatography and mass spectrometry for water soluble compounds extracted from lettuces cultivated in EPCS were considerably different from those in CCS. Conclusively, electric pulse caused increased lettuce growth, improved nutritional soil conditions, and varied mass spectrometric patterns.

KEYWORDS

Electrically Pulsed Soil; Lettuce; Inorganic Nutrients; Minerals; Weathering

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