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## INVESTIGATION OF ACIDIC ION MIGRATION IN BIOCHAR-AMENDED SOIL UNDER LEACHING CONDITIONS

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### Abstract

Increasing acidification of arable soils not only affects food security but also causes environmental pollution. Challenges such as susceptibility to reacidification as well as unclear mechanism of traditional acidic soil improvement inputs have been identified in existing studies. In this study, we applied biochar to prepared molded and collected acidic soils at mass ratios of 0%, 2%, 5%, 8%, and 10%. And analyze the effect of biochar on the longitudinal migration of acidic ions and the change pattern of exchangeable acid content under leaching condition. Our results revealed that compared with the natural state, leaching shortened the time of acidic soil improvement by biochar, and no soil reacidification occurred. The conductivity was higher by 2.4-3.7 and 2.6-3.9 times in the 0-10 and 10-20 cm soil layers, respectively, in the 8% treatment group than in the CK. The maximum decrease in the exchangeable acid concentration was 3.32  $\mu\text{mol/L}$ , and the maximum increase in acidic ion mobility was 11.57%. The migration of acidic ions might be one of the important factors underlying the improvement soil acidification by biochar with leach irrigation. The application of biochar in acidic soil with leaching can serve the purpose of improving acidic soil by affecting the migration of acidic ions. This study can provide theoretical support for improving the efficiency of acidic soil improvement and the comprehensive utilization of biomass energy.

*Key words:* exchangeable acid, improvement efficiency, molded soil, soil improvement

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