

December 22, 2022

To the Editorial Board of Field Crops Research:

On behalf of all co-authors, herewith I am submitting a manuscript entitled “The roots of the rotation effect run deep” to be considered for publication in Field Crops Research. This manuscript contains new information on how cropping systems impact crop root characteristics. We performed this study to address a lack of data concerning the link between ‘the rotation effect’, wherein crop yields increase as the crop is grown in longer rotations, and crop roots. Our study offers several innovative aspects:

- Comprehensive study of maize grown in different cropping systems that includes above-ground plant, below-ground root, and soil information across the growing season
- Estimates of maize rooting depth across the growing season in contrasting cropping systems
- Quantification of maize root additions across the growing season in contrasting cropping systems

This unique dataset allowed us to address a large knowledge gap concerning how crop roots respond to different cropping system histories, and how those responses are associated with crop yields. Our analyses indicate differences in crop roots may be a key component in explaining ‘the rotation effect’. Given the relevance of this finding to field crops, we believe this contribution is a very relevant to your journal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Virginia Nichols', with a stylized, flowing script.

Virginia (Gina) Nichols  
Post-doctoral scholar  
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University of California, Davis