15 July 2021

To the Editor-In-Chief:

Please accept our submission of “Quantifying the uncertainty in critical N concentration for potato using Bayesian methods” for consideration to be published in the Special Issue “SI: Improving Nitrogen-Use Efficiency at the Cropping System Scale: Agronomic and Genetic Aspects” of Plants. Neither this manuscript nor any parts of its content are currently under or have previously been under consideration for published in another journal.

Our manuscript builds upon recently published work to characterize the uncertainty in critical nitrogen concentration across the interactions of genotype [G] and environmental [E] factors. In this manuscript, we utilized a set of both previously published and unpublished experimental data for potato to derive critical N dilution curves across these G x E interactions using a hierarchical Bayesian framework. The methods used in this manuscript expand upon previously published statistical methods to enable direct comparison of critical N concentration across the G x E interactions considered. The results of this manuscript are subsequently discussed in light of the relationship between critical N concentration and N use efficiency in order to evaluate what effect the G x E interactions may have on improving N use efficiency. While this manuscript provides value to the particular consideration of the effect of G x E interactions on critical N concentration and N use efficiency for potato, this methods and results of this manuscript also provides a meaningful contribution to the broader study of optimal N management based on the N nutrition index framework.

Thank you again for your consideration and we look forward to your response.

Sincerely,

Brian Bohman, Michael Culshaw-Maurer, Feriel Ben Abdallah, David Mulla, and Carl Rosen