new, improved experiment also fails to support the model because attempts to evaluate the coefficients of the CAB, whether in a linear equation or in the authors' sigmoidal equation, generate nonsignificant values for the coefficients of log\([\text{Al(OH)}^+]\) and log\([\text{Al(OH)}_3^-]\). This is probably the consequence of high collinearity between these variables \((r = 0.912)\).

Despite high correlations between root elongation and the CAB in all three articles, the data offer no justification for inclusion of all four terms in the index, which may mislead readers into believing that the toxic Al species have been identified and that their relative toxicities are known. In particular instances, the CAB does not predict trends. In solutions of constant total Al and Ca (with HCl the only variable input) the relative root elongation in four dicotyledonous plants decreases with increasing pH (as though mononuclear hydroxy-Al were toxic) (Kinraide and Parker, 1989; Noble et al., 1988b). In contrast, relative root elongation in wheat increases with increasing pH (as though mononuclear hydroxy-Al were not toxic) (Parker et al., 1988a; Kinraide and Parker, 1989).

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References


