iLime - An App for Assessing the Management of Soil Acidity In Agricultural Systems

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Awareness of soil acidity as a constraint to agricultural production in Western Australia has led to increased use of lime, but rates remain too low to manage existing acidic soil and ongoing acidification. To invest in lime, growers need confidence in likely economic and production responses. This paper describes the development of an acidification calculator, in app form, that was developed with input and feedback to ensure that it would meet the needs and requirements of users. Information requirements regarding soil acidity and its management were sought from consultants and farmers. Acidification rates, the lime required to remediate soil acidity and to maintain target pH, the return on investment (ROI) for liming and comparisons of lime sources were consistently identified as important. In addition, information needed to be tailored to individual circumstances and available on mobile electronic devices. A draft acidification calculator was developed, based on a validated model, 'Optlime' with an intuitive, user-friendly interface. Further development of the calculator was conducted over three drafts with input from researchers, consultants and farmers. The 'iLime' app, was released in July 2019 and has been promoted widely since. The app is suitable for both iOS and Android and is available as a free download from either the AppStore or Google Play store. Once downloaded, it works completely off-line The app estimates the impact of applications of lime on soil pH, yield and profitability (including net present value and ROI) over twenty years. Default lime, crop and soil parameters are provided, but these may be customised by the user. Eighty-six percent of respondents (n = 84) to a questionnaire about the app rated it as easy or moderately to use (31% easy, 55% moderately easy). Respondents expected to use the app to compare lime sources (24%), evaluate economics (27%), investigate deeper placement (12%), priorities paddocks to lime (12%), determine when to re-lime (16%), assess rotational options (5%) or to raise grower awareness (1%) – multiple responses were allowed for this question. The app had been installed by 402 users to 30th September 2019. This app has filled a long-needed gap in the industry for an easy-to-use tool to evaluate the impact of lime applications on soil pH and economic responses. iLime will continue to be enhanced with added features and versions could be developed for other locations.