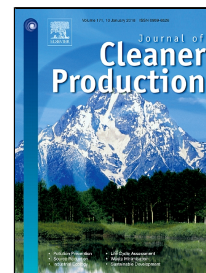


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## Effectiveness criteria for customised agricultural life cycle assessment tools

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sustainable agriculture, LCA, eco-design, eco-efficiency, environmental impact, simplified tools, streamlined tools

### ABSTRACT

Greater use of life cycle assessment (LCA) by agents of change will be needed to inform environmental improvements in agriculture, but the complexity of LCA can be a barrier. More accessible LCA tools customised for agriculture are emerging, but their effectiveness has not been considered. The aim of the work was to understand how tool features influence effectiveness and to propose criteria for effectiveness, for informing the design and evaluation of tools. We define 'customised' tools as those that focus on the life cycle phases and aspects of most relevance for the particular sector (in this case agriculture), and that parameterise practice variables to enable evaluation of practice alternatives. A theoretical framework for the role of tools in agricultural practice change was first used to define the desired objectives of LCA tools: i) to engage agricultural agents of change with LCA by catering to their needs, being accessible and manageable to use, ii) to generate information that users can interpret for informing environmental improvements, and iii) generate information that can align with the wider decision making context. A desktop review of 14 LCA customised agriculture tools identified the features that influence these objectives: tool purpose, mode of access, ease of use, results presentation, degree of practice parameterisation, capacity for regionalised analysis, system scope, impact categories assessed, and alignment with other assessment frameworks. From this, a set of effectiveness criteria for customised LCA tools was developed. A few criteria from amongst this set will be challenges for

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