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# Can a customised agricultural LCA tool respond to the needs of different user types? The case of MEANS-InOut



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## Abstract

A survey was conducted on MEANS-InOut, a customised LCA tool dedicated to agriculture, to better understand the expectations and needs of users of such a tool. This study showed that MEANS-InOut customised LCA tool:

- ✓ Was efficient to create agricultural LCI and evaluate systems (initial goals)
- ✓ Lacked of efficiency for eco-design (secondary goal),
- ✓ Was adapted to advanced LCA users,
- ✓ Was difficult for beginners to handle: a need for support was identified.

Consultation with users can ensure the perpetuation of customised LCA tool.

## Introduction

Customised agricultural LCA tools provide a user-friendly interface for collecting data and focus on the most significant life cycle phases for assessment of agricultural systems :

- ✓ A point of view on agricultural modelling
- ✓ A framework to reduce the risk of errors
- ✓ Simplification of LCA studies of agricultural production systems
- ✓ Less flexibility than generic tools
- ✓ Difficulties to handle new uses or research questions.

**Challenge for customised tools:**  
Handle enough uses or users needs to ensure a long life and amortize the cost of development of the tool

What are the objectives of users when using a customised tool? What are the needs of users, depending on their level of expertise?

Case study: MEANS-InOut software



## Methodology

**MEANS-InOut** customised LCA tool:

- ✓ generates LCIs of agricultural systems.
- ✓ initially designed for users with limited LCA knowledge, and high agricultural knowledge.

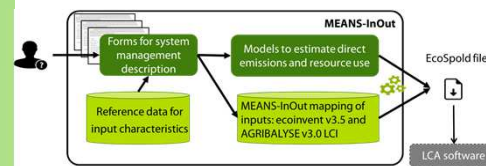


Figure 1: Main functions of MEANS-InOut customised agricultural LCA tool

A survey was carried out amongst MEANS regular users to assess the efficiency of MEANS-InOut. The survey used multiple choice questions. Users auto-evaluated their level in LCA during the query. Then the survey focused on the objectives of using LCA and using MEANS-InOut to perform LCA, and how the tool met these objectives.

A special focus was performed amongst partners of ACV Bio project, research project dedicated to the LCA of products of French organic agriculture. MEANS-InOut was chosen to produce LCI data in ACV Bio project.

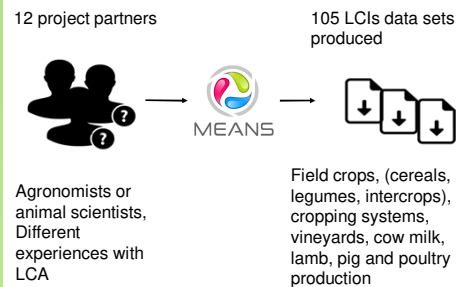


Figure 2: Use of MEANS-InOut within ACV Bio project

## Results

15 users answered the survey, 8 of them were members of ACV Bio project.

Table 1: Level of satisfaction of MEANS-InOut users depending on their objective

Objective	Importance of objective	Satisfaction				Total
		Very satisfied	Fairly satisfied	Not very satisfied	Not satisfied at all	
Evaluation of agricultural system	Highest	1	4	0	0	5
	High	0	6	2	0	8
	Medium	0	1	0	0	1
	Low	0	0	0	0	0
<b>Total</b>		<b>1</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>14</b>
Creation of new agricultural LCI	Highest	4	1	1	0	6
	High	2	1	0	0	3
	Medium	0	1	0	0	1
	Low	0	0	0	0	0
<b>Total</b>		<b>6</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>10</b>
System eco-design	Highest	0	0	0	2	2
	High	0	3	2	0	5
	Medium	0	1	0	0	1
	Low	0	0	0	0	0
<b>Total</b>		<b>0</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>8</b>

Most satisfying functionality: creation of agricultural LCI

Satisfying functionality: evaluation of systems

Disparate answers : eco-design

Table 2: Level of satisfaction of MEANS-InOut users depending on their level in LCA practice

Objective	LCA level of user	Satisfaction				Total
		Very satisfied	Fairly satisfied	Not very satisfied	Not satisfied at all	
Evaluation of agricultural system	LCA beginner	0	2	0	1	3
	Advanced LCA practitioner	1	4	0	0	5
	LCA specialist	0	2	0	0	2
	<b>Total</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>10</b>
Creation of new agricultural LCI	LCA beginner	1	1	0	0	2
	Advanced LCA practitioner	4	1	0	0	5
	LCA specialist	1	1	0	0	2
	<b>Total</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>9</b>
System eco-design	LCA beginner	0	0	0	2	2
	Advanced LCA practitioner	0	2	1	0	3
	LCA specialist	0	1	1	0	2
	<b>Total</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>7</b>

Most satisfied users: advanced practitioners

LCA specialists: fairly satisfied but frustrated by some limitations of the tool.

LCA beginners: less satisfied.

## Conclusion

Objectives of MEANS-InOut achieved for advanced LCA users: to facilitate LCA studies by generating agricultural LCIs.

Objectives of MEANS-InOut not fully achieved for LCA beginners: software is considered to be too complicated.

Possible explanation: lack of LCA experience before using the tool.

Beginners did not know the inherent complexity of LCA, and were surprised by the high level of hypothesis embedded. They asked for more detailed instructions and a simpler modelling. A training should be associated to the access of MEANS-InOut.

Key functionality missing for eco-design: parametrization of relevant levers for the studied system improvement.

- ✓ Already available: feed formulation.
- ✓ New functionalities developed to match the users needs since the survey (e.g. fuel consumption of agricultural operations).

A special attention is needed because a compromise is difficult to find between more precise functionalities and simpler software.

The conclusions of the study should be taken with caution, given the very small sample size consulted.

Regular consultation with users of customised LCA tools should be conducted to ensure:

- ✓ The adequacy of the tool to their needs,
- ✓ The effective use of the tool,
- ✓ The perpetuation of the tool.

## Acknowledgements

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Pictograms : Target by David from the Noun Project; Question by Alice Design from the Noun Project; example by darwis from the Noun Project; user question by Wilson Joseph from the Noun Project; download file by Tereza Moravcová from the Noun Project.