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Ignamarge: a technical and economic evaluation tool of yam production

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1. Issue and aims

Ignamarge creation answered two needs: first, we needed a model to analyze and simulate the economics of yam production (yam is the first food crop in Guadeloupe but is barely studied there); and second, we wanted a tool that farmers could use to choose technical practices that would help them optimize the economic performance of their cropping system.

2. Description: Ignamarge: What is it for? Who is it for?

Ignamarge is a software (cf. **Figure 1**) occurring as an Excel sheet that enables one to :

- i) Characterize yam production within farms while calculating technical and economic performance (labor time requirements, costs, benefit margin, break-even point, etc.).
- ii) Simulate the impact of technical or economic changes (changes in production modes, cultural innovations, evolution of market prices, etc...).

Input parameters :

- i) Yam production mode : cultivated area, labor cost, selling price, yield, etc...
- ii) Crop management system : each cultural operation is defined by its technical modality and described by its frequency, input quantities whenever applied and subsequent time load.

Output results:

- i) Production costs and their distribution (allocation between labor and inputs, allocation along the different steps in the crop management system);
- ii) Gross margin, net margin;
- iii) Total labour needed ;
- iv) Break-even point (the yield being the adjusted parameter), total cost per kilo of the final product.

2.1 Characterizing crop management systems and their economic performance

Six typical situations are suggested (cf. **table 1**). They do not cover the whole range of ways to grow yams in Guadeloupe but they do correspond to the most frequent cases and were assessed by surveys and expert knowledge. For each situation, baseline results are estimated.

Whenever a crop management system does not fit a suggested situation, any user can create its own type and investigate its own technical and economic performance. Simulating different crop management system is possible by redefining the initial situation.

2.2 Assessing the impact of different technical or economic changes on economic performance

As illustrative examples, here are a few scenarios that can be tested with Ignamarge :

- Changes in crop management system: transition from hand weeding to mulch, changes in cultivated variety, changes in fertilization strategy.
- Changes in cost of labor, fluctuation in yam selling price or input purchase price.
- Increase or decrease in labor time requirements or total yield.

2.3 Ignamarge simulator is directed at :

- Farmers and farm managers, farmers' organizations, extension services...
- Policy-makers, R&D institutes, etc ...

3. Limits and perspectives

The survey used for model calibration currently has a narrow base. Consulting with more farmers and professional from agricultural extension services will enable better parameters adjustment and analysis of new situations.

4. To learn more...

Causeret F., Barlagne C., Blazy JM., 2012. Ignamarge©: a technical and economic evaluation tool of yam production for decision making. Operating instructions. Version 1.01. September 2012, 8p. (In French)

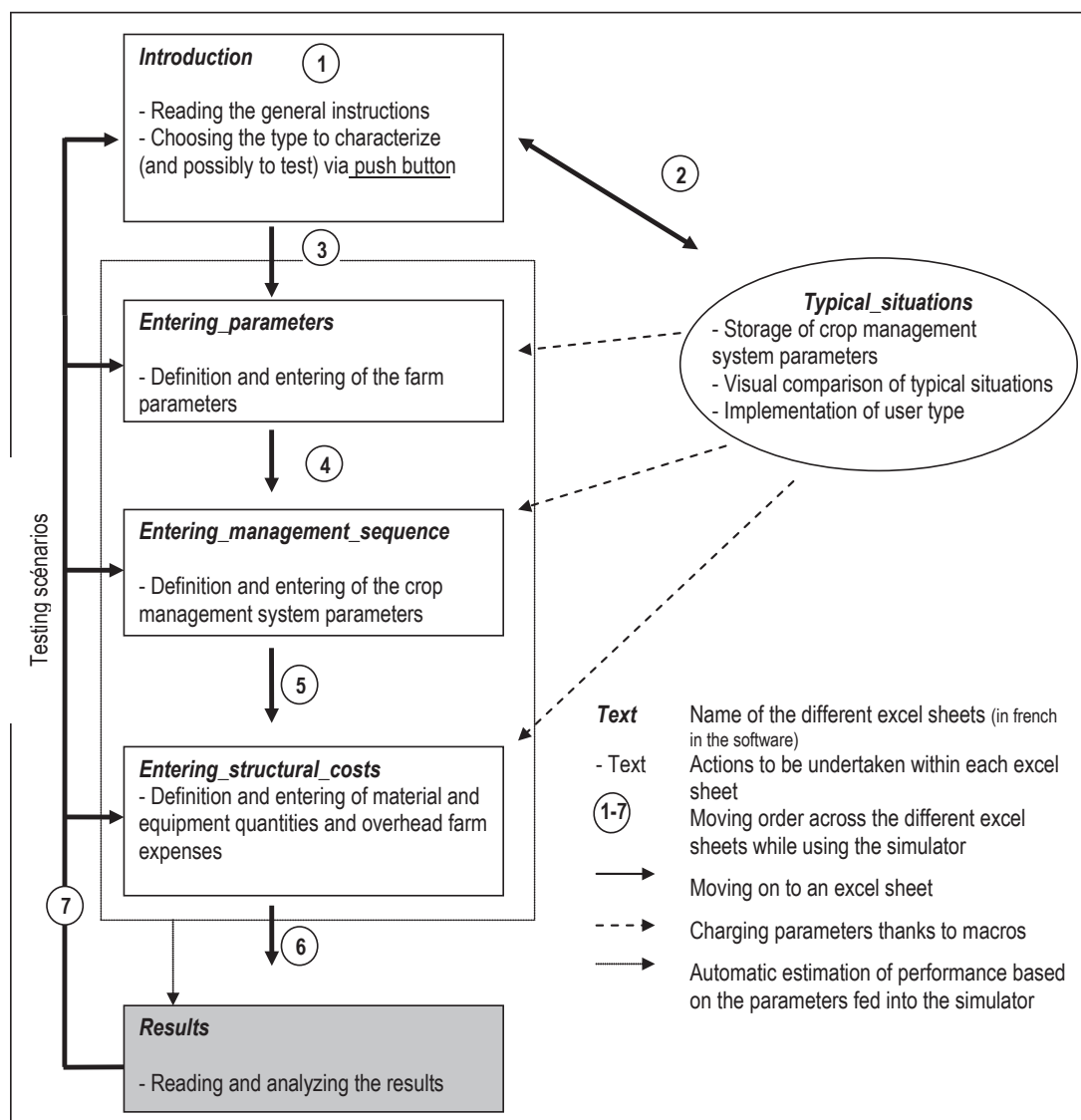
Bertrand, C., 2011. Technical and economic evaluation of yam cropping systems in Guadeloupe. Master report (1st year) l'ENSAIA Nancy, 21 pages. (In French).

Table 1 : Characteristics and typology of six common yam management systems

*A double harvest implies that farmers first collect the tubers that meet market standards and then seed tubers providing that the leafy part of the plant has not been removed in between the two harvests.

| | T1 | T2 | T3 | T4 | T5 | T6 |
|---------------------------|---------------------------|-----------------|----------------------|-----------------|---------------------|---------------------|
| Cropping area | Basse-Terre | Basse-Terre | Grande-Terre | Grande-Terre | Grande-Terre | Basse-Terre |
| Species | <i>D. cayenensis</i> | <i>D. alata</i> | <i>D. cayenensis</i> | <i>D. alata</i> | <i>D. esculenta</i> | <i>D. esculenta</i> |
| Staking | Yes | No | No | No | No | Yes |
| Irrigation | No | No | Yes | Yes | Yes | No |
| Type of harvest | By hand Double* | Half-mechanized | Half-mechanized | Half-mechanized | Half-mechanized | By hand |
| Weight of seed tubers (g) | 130 | 120 | 90 | 70 | 70 | 70 |
| Tillage | Mechanized | Mechanized | Mechanized | Mechanized | Mechanized | Mechanized |
| Type of harvest | Manual Double* | Half-mechanized | Half-mechanized | Half-mechanized | Half-mechanized | Manual |

Figure 1 : Overall structure, functioning and steps to implement as modeled in Ignamarge simulator.



Journ'iames 2012

Technical day on yam

September, 25 - INRA Duclos, Petit-Bourg

October, 2 - CFPPA Petit-Canal

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