

PINEAPPLE CROPPING SYSTEM DESIGN WITH THE SIMPIÑA MODEL

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INTRODUCTION - PINEAPPLE PRODUCTION

- 'Queen Victoria' pineapple is the 1st fruit production on Reunion Island
- Large range of climatic conditions and cultural practices

**VARIABILITY
ON SYSTEM
PERFORMANCES**

METHODOLOGY

MODEL

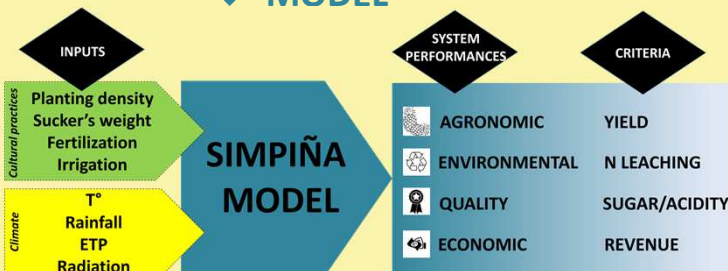


Figure 1. General description of the SIMPIÑA model

TYPOLOGY OF PRACTICES

- 39 farms surveyed, 3 types identified (Fig.2)

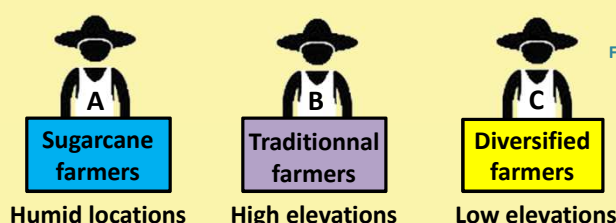


Figure 2. Farm-types identified

SIMULATIONS

- SIMPIÑA (Fig.1) was used to explored a wide range of practices combination with ≠ constraints identified by typology (Tab.1)
- 4 criteria evaluated for each simulation

	A	B	C
Planting months	1-2-3	1 to 12	1 to 12
Planting density	50000 plants ha ⁻¹ to 100000 plants ha ⁻¹		
Flowering induction	150 to 300 days after planting		
Number of N application	1-4-8		
Levels of N	0 to 400 kgN ha ⁻¹		
Sucker's weight	200 to 400g		
Number of simulations	8748	34992	69984

Table 1. Combination of practices simulated for each types after identifying constraints with the typology

- Systems with 10 % best performances > mean of actual system performances were selected for each type
- Ranges of cultural practices for current systems (Fig.3) were compared to selected systems

RESULTS & DISCUSSION

planting months were extended for B type and were reduced for A & C types

earlier dates of flowering induction for A & B types, later for C type

lower N fertilization

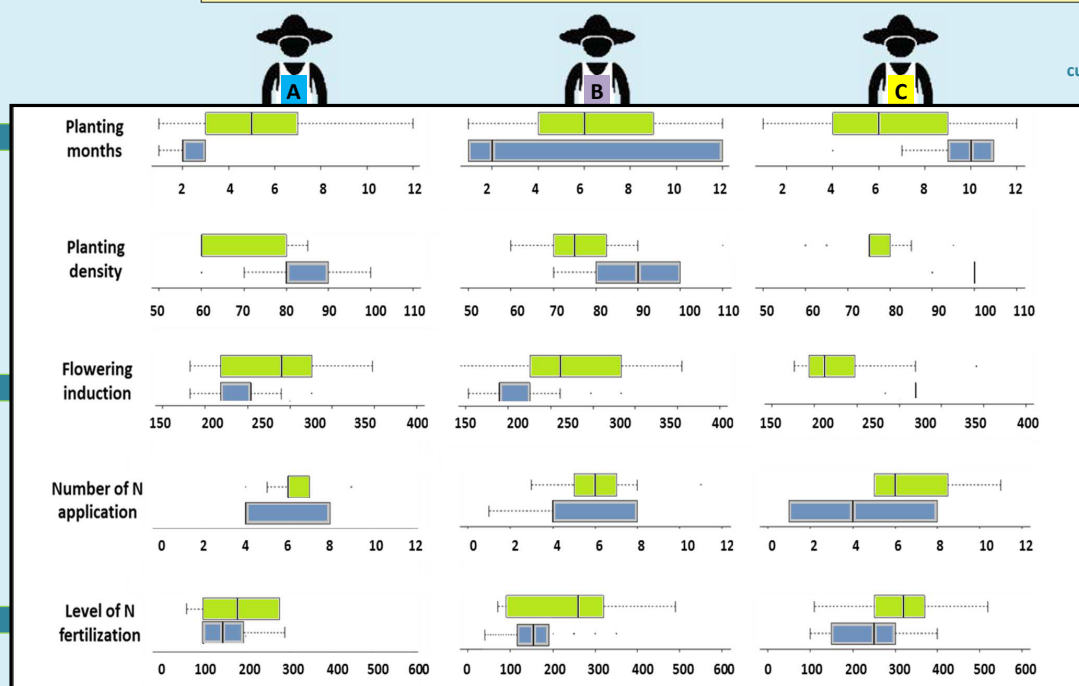


Figure 3. Representation of range of practices for current pineapple systems and selected systems

higher planting density

number of N application was extended for C type

The method generates **ranges of combination** → farmers could identify management recommendations which match with their objectives and strategic choices.

REFERENCES

Dorey, E., P. Fournier, M. Léchaudel, and P. Tixier. 2015. Validity of the pineapple crop model SIMPIÑA across the climatic in Réunion Island. *European Journal of Agronomy* 62:1-12.
Dorey, E., P. Fournier, M. Léchaudel, and P. Tixier. 2016. Modeling sugar content of pineapple under agro-climatic conditions on Réunion Island. *European Journal of Agronomy*, 73 : 64-72.
Pissonnier, S., E. Dorey, T. Michels, and P.Y. Le Gal. 2015. Simulating impacts of marketing strategies on pineapple growers and grower organizations' profits on Réunion Island. In : *ISHS International Symposium INNOHORT : innovation in integrated & organic horticulture*