Supporting crop-livestock farmers in redesigning their production systems: The CLIFS approach

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SUSTAINABLE ANIMAL PRODUCTION IN THE TROPICS (SAPT2)

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Designing and testing a support approach dedicated to crop-livestock farmers

✓Focus on farm projects (short- and mid-term)

- Strategic orientations (which activities?)
- Entreprise sizing (crops, herd)
- Selection of techniques to be implemented (including technological innovations)

✓Based on the comparison between prospective scenarios (what if?)

✓Using a generic simulation tool called CLIFS (Crop-Livestock Farm Simulator)

- Representation of flows between crop and herd entreprises
- Structure and operation understandable by farmers
- For use by advisers in the future

A three-stage support process

Farmer

Current practices

Production project

Researcher / Advisor

Suggestions of technical and organizational changes

Base scenario = modelling the current situation

Benchmark scenario

Alternative scenarios

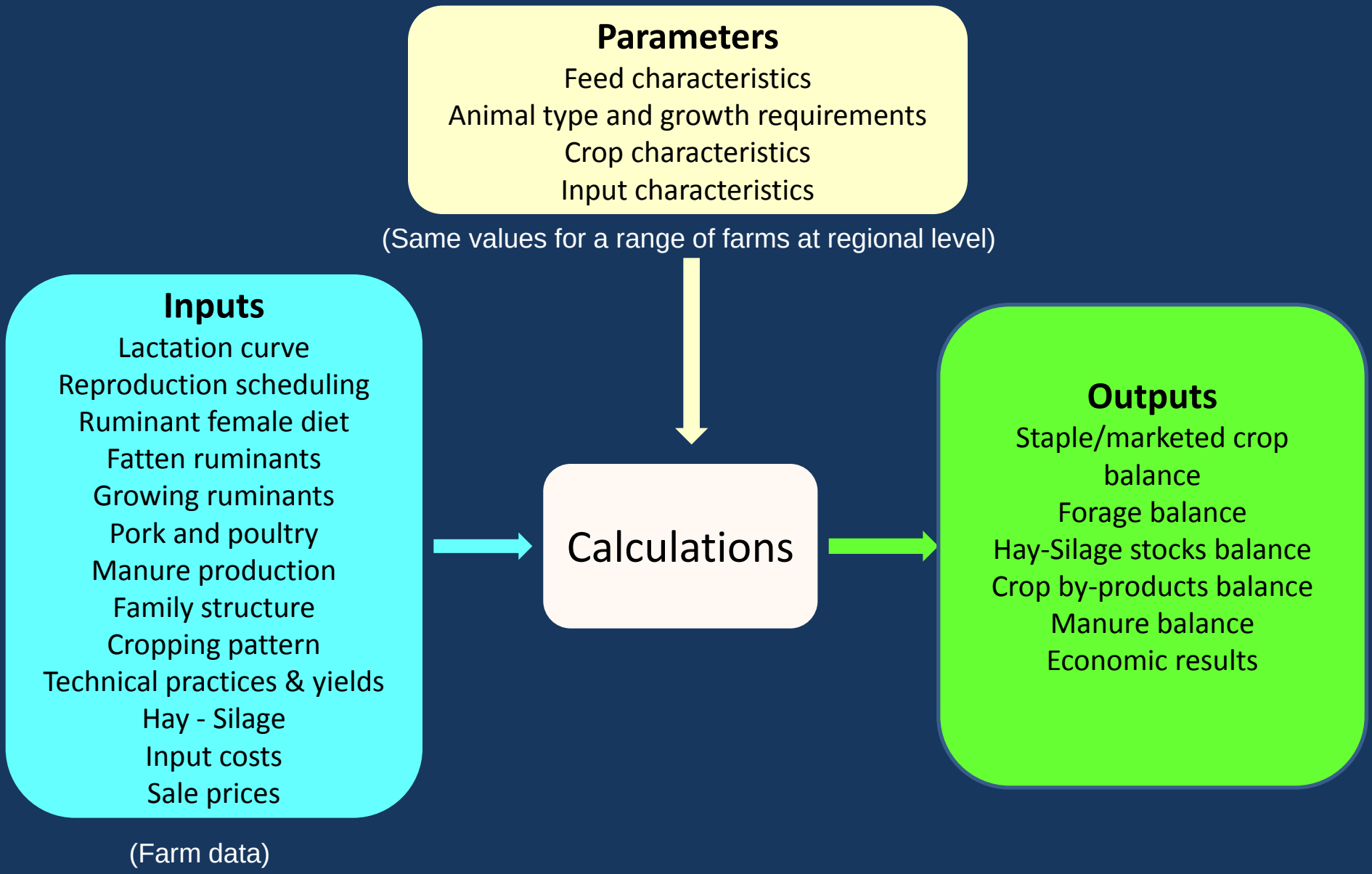
Farmer's evaluation

simulations

simulations

simulations

CLIFS structure



Production de Lait liée à la Ration 1

Pour la reproductrice "moyenne"

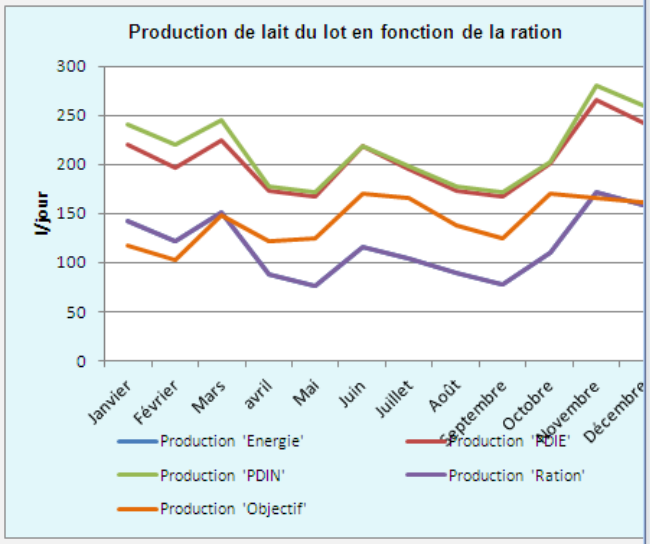
Attention : les calculs de production liées à la ration ne sont valables que pour les vaches laitières

Poids vif (kg)	400

Pour les vaches laitières	
Intervalle vêlage - fécondation en mois	3
Poids veau naissance (kg)	35

Fourrage	Janvier	Février	Mars	avril	Mai	Juin	Juillet	Août	Septembre	Octobre	Novembre	Décembre
Brachiaria ruziziensis	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	10,0	20,0	20,0
Penissetum kizozi	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0
Foin Chloris	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Paille de riz	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Maïs ensilage	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0

Concentrés	Mois après naissance											
	1	2	3	4	5	6	7	8	9	10	11	12
Drèche de bière	2	3	3	3	2	2	2	2	2	1		



Productions Lait	Janvier	Février	Mars	avril	Mai	Juin	Juillet	Août	Septembre	Octobre	Novembre	Décembre
% saturation fourrages	116	118	113	89	89	85	86	87	89	85	112	112
Production 'Energie'	142	121	151	88	77	116	104	89	77	110	171	159
Production 'PDIE'	220	197	225	173	168	219	196	173	168	201	266	243
Production 'PDIN'	240	220	245	178	172	218	197	178	172	203	281	260
Production 'Ration'	**142**	**121**	**151**	**88**	**77**	**116**	**104**	**89**	**77**	**110**	**171**	**159**
Production 'Objectif'	117	103	149	121	124	170	166	139	124	170	166	161
% Ration/Objectif	122	118	102	73	62	68	63	64	62	65	103	98
Production permise l/j	**117**	**103**	**149**	**88**	**77**	**116**	**104**	**89**	**77**	**110**	**166**	**159**
l/VL/j	7,8	6,9	9,9	5,9	5,1	7,7	6,9	5,9	5,2	7,3	11,0	10,6

Four contexts with crop-livestock farmers

Morroco

Irrigated dairy farms

5-60 cows over 2-30 ha

Alfalfa + Silage Maize

Brazil

Rainfed dairy farms

10-30 cows over 15-30 ha

Pasture + Sugarcane/Silage

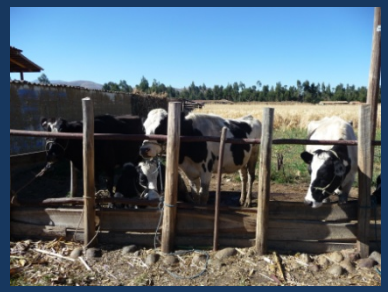
Madagascar

Irrigated + Rainfed dairy farms

1-3 cows over 3-8ha

Diversified forages and residues

Conservation agriculture



Peru

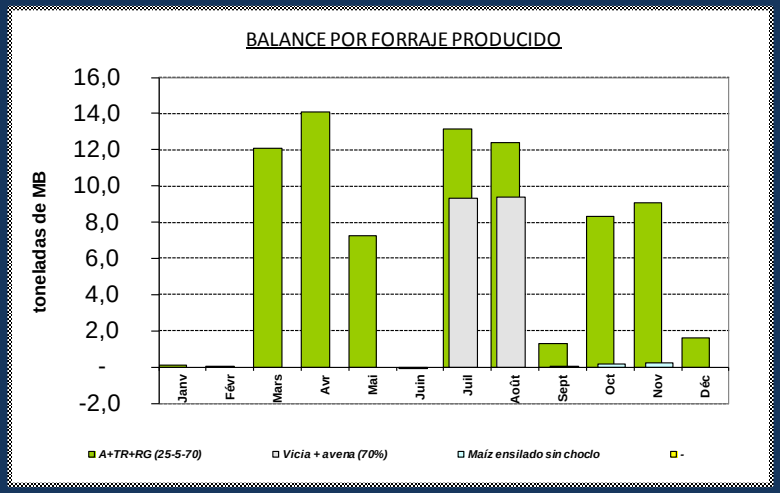
Irrigated dairy farms

3-65 cows over 1-60 ha

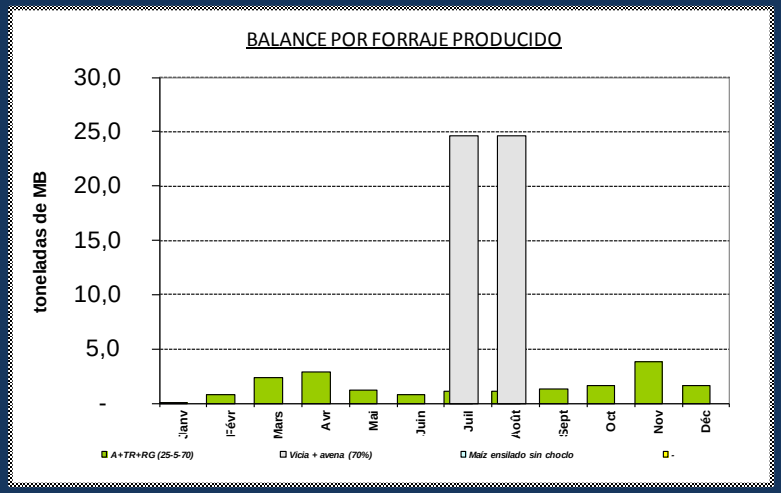
Diversified forage crops

A Peruvian case

- ✓ 25 cows, 3500 l/year/com, RG/Clover/Alfalfa + Oat/Vetch + corn silage
- ✓ Objective: increasing milk production with the same herd size

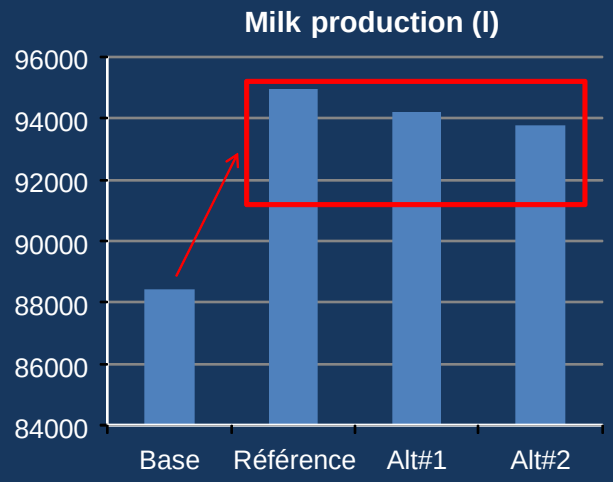


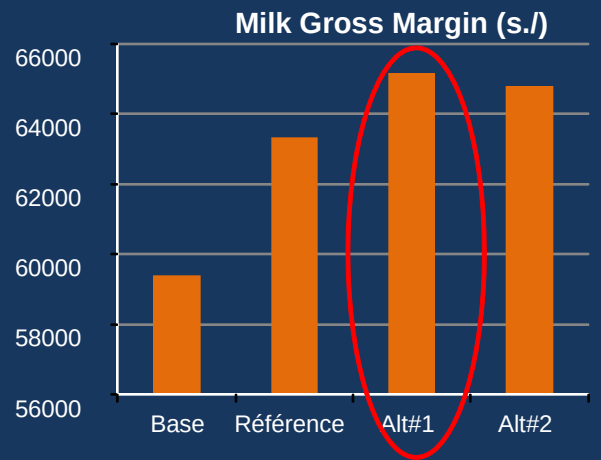
Excess of green forage



Using the excess ➔ + 6500 l/year

Comparing alternative scenarios





Lessons drawn from the four experiences

✓As viewed by farmers

- Support based on their own situation
- Promotes a more holistic focus
- Scenarios realistic and tangible
- Provided perspective and reorientation of projects
- Knowledge gain (e.g. animal nutrition)
- Highlights the value of data recording and activity planning

✓As viewed by researchers

- Participatory approach: interaction and involvement with farmers
- Possibility to address a large range of issues in many production contexts
- Better understanding of farmers' objectives, strategies and decision-making processes
- Linking biotechnical knowledge with farm management knowledge

The way forward

- Extending the support approach to larger populations of farmers by transfering it to agricultural advisors

- Improving the Input / Output interfaces of the simulation tools and simplifying their use (in progress)

- Formalizing an evaluation methodology which takes into account the various aspects of stakeholders' learning processes

- Strengthening the relationship with biotechnical researchers for using adequate technical and biophysical references












Thanks for attention