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Agricultural Innovations in Family Farming: Case Study From Esmeraldas in Ecuador

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ABSTRACT

In Ecuador, family farming (FF) is the predominant form of agriculture for food production as it represents 80% of the agricultural employment of the rural population and provides almost half of the consumed basic food. This study deals with identification and characterization of innovations in family farms and analysis of factors that affect their adoption. It values the strategic importance of the implication of innovations and technologies in FF in Ecuador. Results are based on an online survey applied with professionals from the three micro climate zones in the country; coastal plains, mountain chain and Amazonia. In order to get a general overview, an accurate territorial case study was carried out in Esmeraldas based on focus group discussions with farmers. They suggested a wide range of innovations that come to support public policy makers and institutional frameworks in future strategies to let farmers produce competitively. The identified innovations have been classified according to multiple criteria: degree of novelty, nature and technological level. This generates eight types of innovations and an appraisal of fourteen typologies. A wide range of typologies has been evidenced in the field such as R_aP_cT that corresponds to radical process innovations based on generic technologies which modify profoundly the productive, environmental and economic parameters in production processes using existing technologies outside the local environment. However, to understand the social problematic of the adoption of innovations, factors have been pointed out from which the most important are economic, cultural, organizational and lack of technical information. To conclude, it has been evidenced that in FF in the Ecuadorian context, many innovations are considered because they modify and improve a production system and are adapted to territorial conditions. However, they cannot be considered as such in other production systems or territories. Therefore, state or private interventions must adjust to these realities. Furthermore the application of innovations in FF requires more than action by farmers alone, it involves the public sector, civil society and organizations in an innovation network to lead to a strong, competitive and sustainable FF.

INTRODUCTION

- Family Farming (FF): the predominant form of agriculture and the key to global food security.
- The importance to discuss and reflect on Technology Factor and Innovation in FF. "The potential for improving the performance and productivity of the workforce can only be realized if family farmers are able to innovate" (FAO, 2015).

Objectives

1- Establish the concept of FF and Innovations in the Ecuadorian context.

2- Establish a general overview of innovations applied in FF.

3- Identify innovations through a specific case study in Esmeraldas and classify them by typologies.

4- Analyze the factors that influence the adoption and replication of innovations in FF.

METHODOLOGY

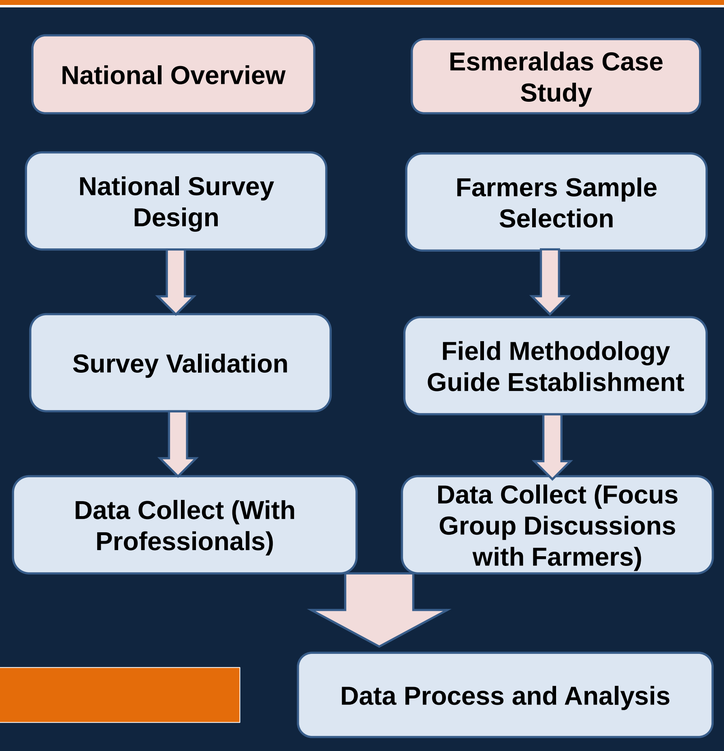

Table 1: Innovations Classification Criteria

Degree of Novelty	
Radical (R_a)	Incremental (I)

Nature		
Product (P_d)	Process (P_c)	Organizational (O)

Technological Level		
Generic Technologies (T)	Technical Adaptation (A)	Reintroduced (Re)

Table 2: Innovations Typologies

TYPOLOGIES				
R_aP_dT	R_aP_cT	IP_dT	IP_cT	RaO
R_aP_dA	R_aP_cA	IP_dA	IP_cA	IO
R_aP_dRe	R_aP_cRe	IP_dRe	IP_cRe	

RESULTS

Table 3: Data Analysis

	REGION	FF RATE ESTIMATION	FARM AVERAGE SIZE (ha)	INNOVATIONS ADOPTION	IDENTIFIED INNOVATIONS	
NATIONAL LEVEL	COASTAL PLAINS	52,5 %	4,62	27,5 %	4	25 %
	MOUNTAIN CHAIN	74¨%	1,9	32,2 %	9	56 %
	AMAZONIA	45 %	23	11,6 %	3	19 %
ESMERALDAS		66%	5	*	9	100%

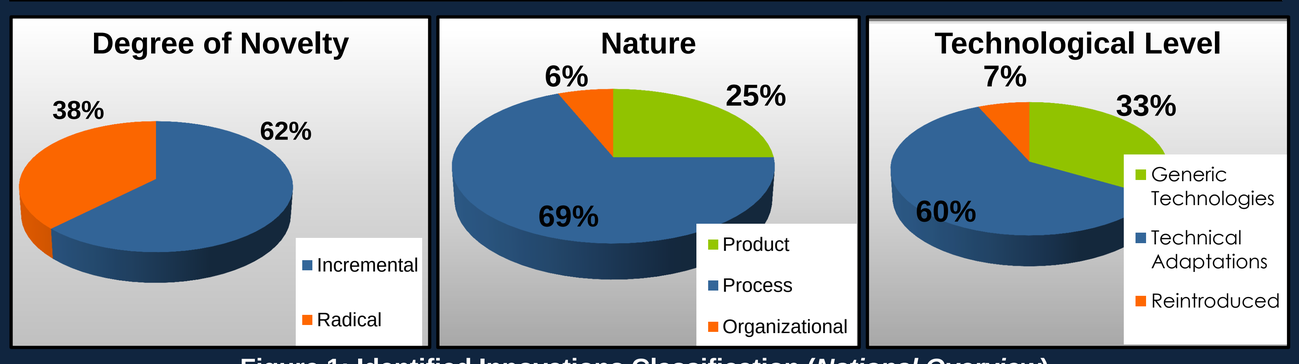

Figure 1: Identified Innovations Classification (*National Overview*)

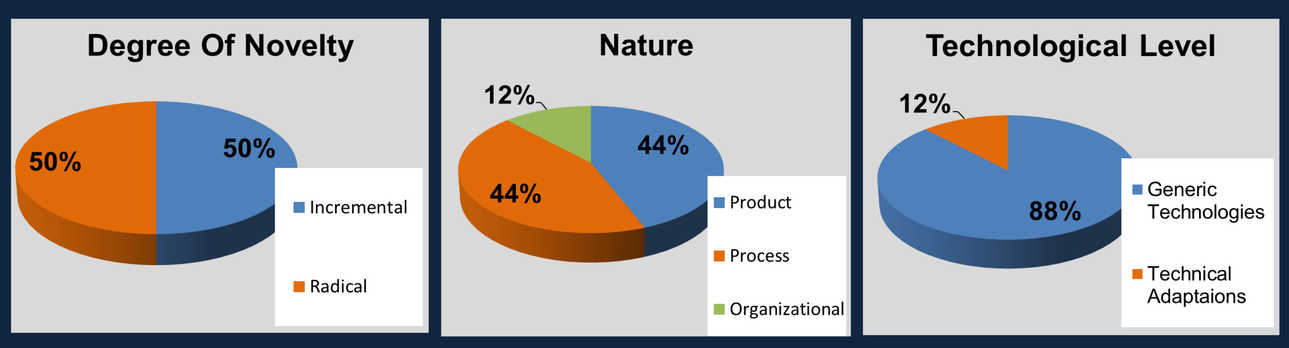

Figure 2: Identified Innovations Classification (*Esmeraldas*)

RESULTS

Table 4: Examples of Identified Innovations

NAME	TYPOLOGY
National Overview	
Altramuz Processing For Ice Cream Making	IP_cA
Potatoes Harvester	R_aP_dT
Sprinkler irrigation	R_aP_cA
Esmeraldas	
Tilapia Farming	R_aP_dT
Cocoa Paste Making	R_aP_cT

Figure 4: Cocoa Paste *(Source: Fieldwork Photo)*

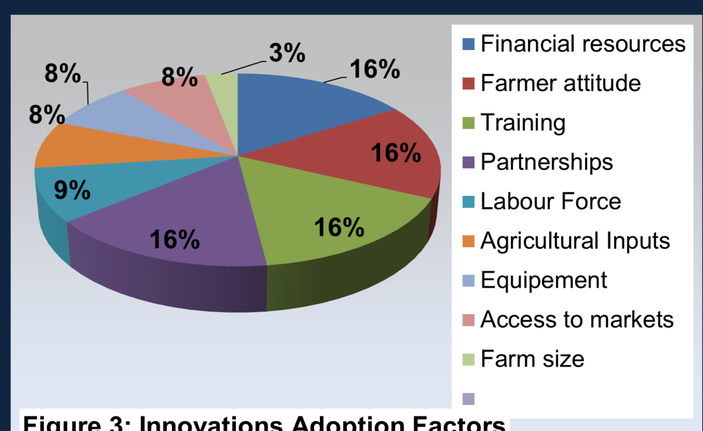

Figure 3: Innovations Adoption Factors

CONCLUSION

Figure 5: Tilapia Farming Pool *(Source: Fieldwork Photo)*

- 25 Innovations have been identified corresponding to multiple typologies;
- A proposal of fourteen innovations typologies elaborated from their classification criteria is a study new output.
- State institutions support innovations in traditional products and primary production: Pest Management, irrigation, etc. Whereas NGOs, support innovations in non-traditional products and secondary production: Processing of aromatic herbs, Onion processing, etc.
- Both nationally and in Esmeraldas, the attitude of farmers, financial resources, training and technical assistance are important factors on which the innovation adoption depends.
- Many innovations are considered because they modify and improve one production system and in an accurate territorial conditions. However, they can not be considered as such in other production systems or different territories.

REFERENCES

FAO, (2015). El estado mundial de la agricultura y la alimentación 2014. La innovación en la agricultura familiar. Roma.

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