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# Combining computer based tools for getting a better approach to rice growers' characterization: GIS, SICA and CAISU.

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**ABSTRACT** - *INIA Uruguay is a demand - oriented agricultural research institute, and so, the opinion of farmers about technology is highly relevant to adjust research programs, trying to fit growers' needs. Consequently, the more the information the INIA can get about farmers and production systems, the better. In this work, information from the last Census of Agriculture (2000) was combined with Soils Units and topographic zones to obtain the outputs aggregated by the latter criterion. In summary, this work will characterize and generate diagnostics about rice farmers in the Uruguayan region of Merin Lagoon basin by fine-tuning the available information using computer - based tools. It represents a novel and useful approach to figure out INIA Treinta y Tres customers' needs.*

**KEY WORDS** - *farmers' characterization, computer- based tools, rice grower, Uruguay.*

## I. INTRODUCTION

Located in the middle of the Merin Lagoon's basin, INIA Treinta y Tres is the eastern experimental station of the National Agricultural Research Institute (INIA) of Uruguay. Main subject research areas are rice, meat and wool production, pastures and other non- irrigated crops. Merin Lagoon basin area includes three topographic zones from west to east: mountain range, hills and hillocks and plains. Plains are the zone where rice crop have initially developed, due to the benefits in water availability and management (easier irrigation). Currently, in this region is planted about 70% of national rice area. Therefore, most rice research in the country is conducted in INIA Treinta y Tres. INIA is a demand - oriented institute, and so, the opinion of farmers about technology is highly relevant to adjust research programs, trying to fit growers' needs. Consequently, the more the information the INIA can get about farmers and production systems, the better. In this work, information from the last Census of Agriculture (2000) was combined with Soils Units and topographic zones to obtain the outputs aggregated by the latter criterion. The availability of new computer- based tools such as GIS, SICA (Census of Agriculture Information System, a software developed by the Ministry of Agriculture, Livestock and Fishing of Uruguay) and CAISU (Soils of Uruguay - Actualized Information) made it possible.

In summary, this work will characterize and generate diagnostics about rice farmers in the Uruguayan region of Merin Lagoon basin by fine-tuning the available information. It represents a novel and useful approach to figure out INIA Treinta y Tres customers' needs.

## II. MATERIAL AND METHODS

### A. Soils Units and topographic profiles.

First of all, the Soils Units corresponding to the Merin Lagoon's basin were identified by using the CAISU [1]. These Units were classified according to their topographic status into seven groups. The seven groups were arranged into one of the following broad topographic category: 1) mountain range, 2) hills and hillocks and 3) plains.

### B. Census Enumeration Areas.

Census Enumeration Areas (CEA) are the smallest territorial units recognized in the Census of Agriculture.

Supported by Ing. Agr. José P. Castaño (GRAS Unit of INIA) and using GIS, it was possible to cross the information of the three topographic zones mentioned above and the CEA. It was also possible to get the area and the percentage corresponding to each topographic zone inside every CEA.

Merin Lagoon's basin includes only eastern region from mountain range zone, so, western CEAs were excluded of this study (Figure 1). As it can see in Figure 1, there are many CEAs that have more than one topographic zone inside. Attending the parsimony principle, such cases were reclassified according to this criterion: the highest percentage defines the topographic zone of the whole CEA. For example, the CEA 405003 has a total area of 20586.1 ha. with 57.5% of mountain range, 40.4% of hills and hillocks and 0% of plains. So, it was considered as belonging to the mountain range zone.

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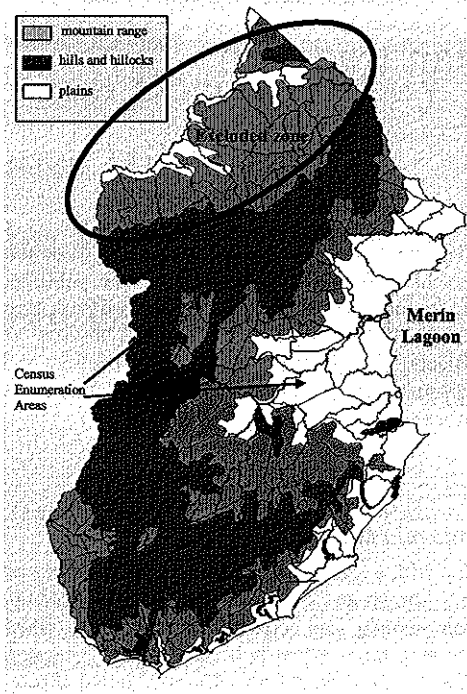


Fig. 1. Topographic Zones of Merin Lagoon's basin.

Table I shows the total number of CEAs finally included in each topographic zone.

Table I. Census Enumeration Areas by Topographic Zones		
Number of CEAs		
Mountain range	Hills and hillocks	Plains
63	46	27

Once each CEA was put in a topographic zone according to the above criterion, the SICA [2] information was used. Using the SICA software it was possible to select all the CEAs of the mountain range zone, and download the compiled tables for that zone. Same procedure was followed to hills and hillocks and plains zones.

### III. RESULTS AND DISCUSSION

The main product of this work is an Excel file containing all the tables offered by the Census of Agriculture 2000, but compiled according to the topographic zone.

#### A. Topographic Zones by Political Division.

Table II shows a summary of topographic zones by political divisions (Cerro Largo, Lavalleja, Maldonado, Rocha and Treinta y Tres) and totals for the Merin Lagoon basin.

Table II. Topographic Zones by Political Division  
Total area corresponding to:

Department		Mountain range	Hills and hillocks	Plains
Cerro Largo	ha	356,059.9	43,902.4	85,735.1
	%	73.3	9.0	17.7
Lavalleja	ha	604,202.4	398,626.2	0.0
	%	60.2	39.8	0.0
Maldonado	ha	296,573.4	177,437.2	8,128.1
	%	61.5	36.8	1.7
Rocha	ha	205,219.8	284,770.1	529,677.9
	%	20.1	27.9	51.9
Treinta y Tres	ha	366,342.7	222,792.9	338,031.1
	%	39.5	24.0	36.5
Total:	ha	1,828,398.2	1,127,528.8	961,572.2
	%	46.7	28.8	24.5

#### B. Compiled Information from Census

Each table offered by the Census of Agriculture is now available for each topographic zone, compiled in a friendly Excel environment as the following example:

Table III. Number of resident workers in farms by gender, according to labor situation and working place

Labor Situation	Total	Number of people					
		Mountain range		Hills and hillocks		Plains	
		Gender Male	Gender Fem.	Gender Male	Gender Fem.	Gender Male	Gender Fem.
<b>Working in the farm</b>	18,455	5,155	2,564	4,607	2,419	2,728	982
<b>Out of the farm:</b>							
Agricultural tasks	1,721	758	75	518	45	288	37
Non- & agricultural tasks	1,614	376	269	382	304	123	160

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#### REFERENCES

- [1] CAISU – Compendio Actualizado de Información de Suelos del Uruguay. Dirección de Recursos Naturales Renovables, División Suelos y Aguas, MGAP.
- [2] SICA. Sistema de Información del Censo Agropecuario, DIEA – MGAP. Available: <http://www.mgap.gub.uy/Diea/SICA/SICA.htm>