

Expert Meeting on Crop Monitoring for Improved Food Security

Adoption of Agricultural Land Information System (ALIS) for Agricultural Area Estimation

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Food Security and the Agriculture Sector

- Food security -- a priority program of the Department of Agriculture
- Better data support systems lead to better design of projects and programs and consequently, better development outcomes in the agriculture sector.
 - Inaccurate estimation of the staple food production can lead to inappropriate policies
- Agricultural data collection methods
 - Administrative reporting system
 - Censuses and survey
- Adoption and institutionalization of sustainable methodologies for timely and reliable statistics



What is ALIS?

- Agricultural Land Information System
- A methodology developed under the ASEAN Food Security Information System (AFSIS)
- First adopted in Vientiane Province, Lao PDR and Kandal Province, Cambodia
- Uses satellite imagery that can be accessed free of charge (i.e. Google map)
- Provides estimates of total agricultural land area and area planted to major crops
- Survey support

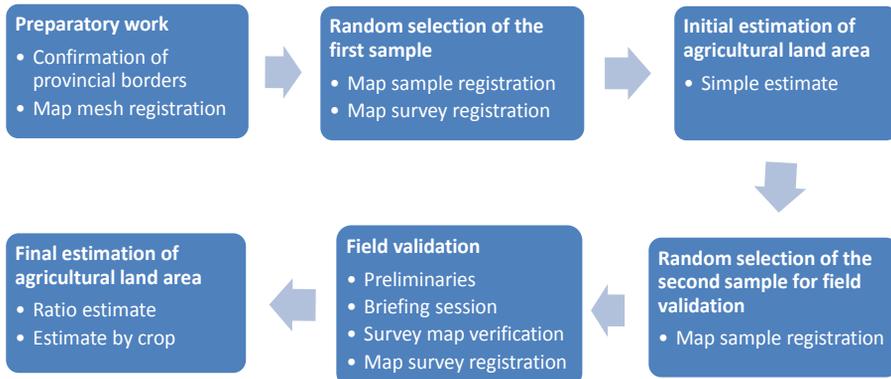


Objectives

- To study the use of ALIS for agricultural area estimation. Specifically,
 1. apply existing remote sensing technology in estimating agricultural land areas;
 2. estimate total agricultural land area and crop planted area of the pilot province.

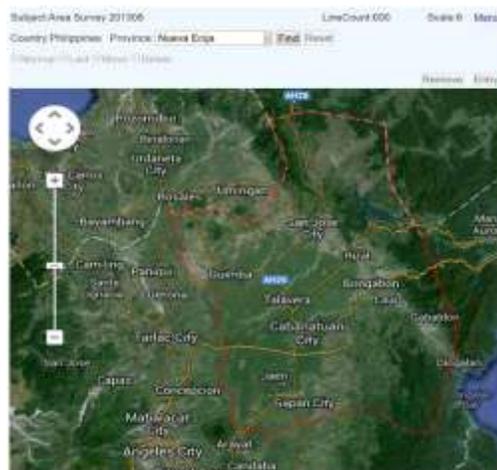


Methodology



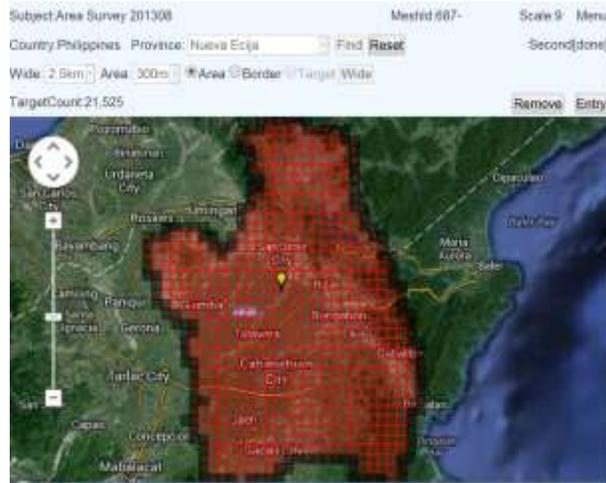
1. Preparatory work

- Confirmation of provincial boundary



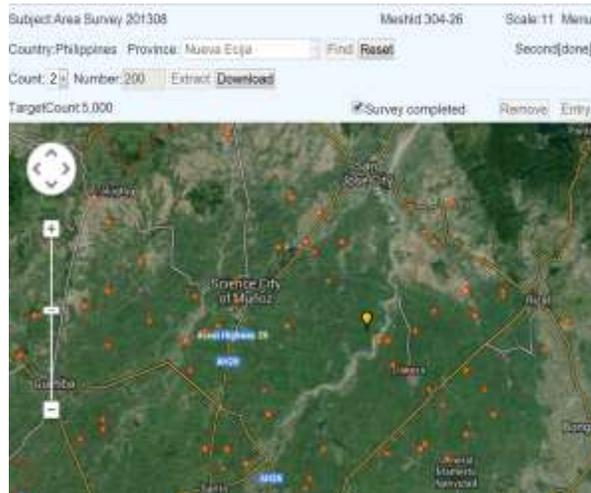
1. Preparatory work

- Map mesh registration



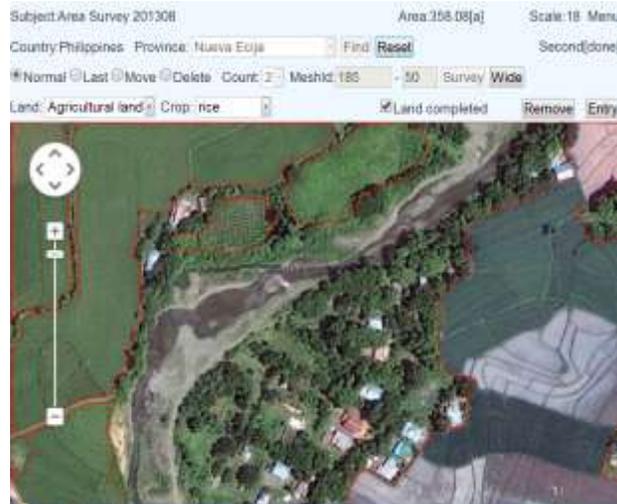
2. Random selection of the first sample

- Map sample registration



2. Random selection of the first sample

- Map survey registration



3. Initial estimation of agricultural land area

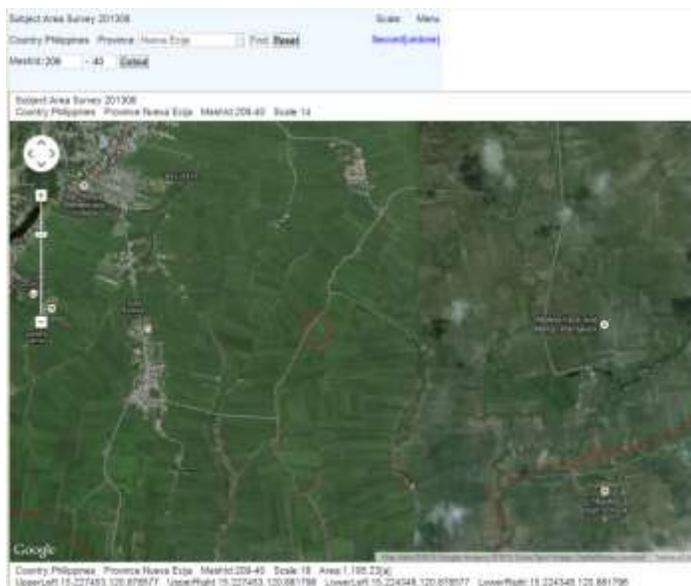
- Simple estimate

<<Estimate Agricultural Land Area>>		
Simple Estimate (hectares)		221,542.24
Ratio Estimate		225,637.45
<<Estimate Crop Planted Area>>		
Rice		17,644,591.92
Cassava		57,394.58
Maize		33,356.76
Other		4,859,702.92



4. Random selection of the second sample

- Map sample registration



5. Field validation

- Survey map verification



6. Final estimation of agricultural land area

- Ratio estimate
- Estimate by crop

<<Estimate Agricultural Land Area>>		
Simple Estimate		221,542.24
Ratio Estimate		225,637.45
<<Estimate Crop Planted Area>>		
Rice		17,644,591.92
Cassava		57,394.58
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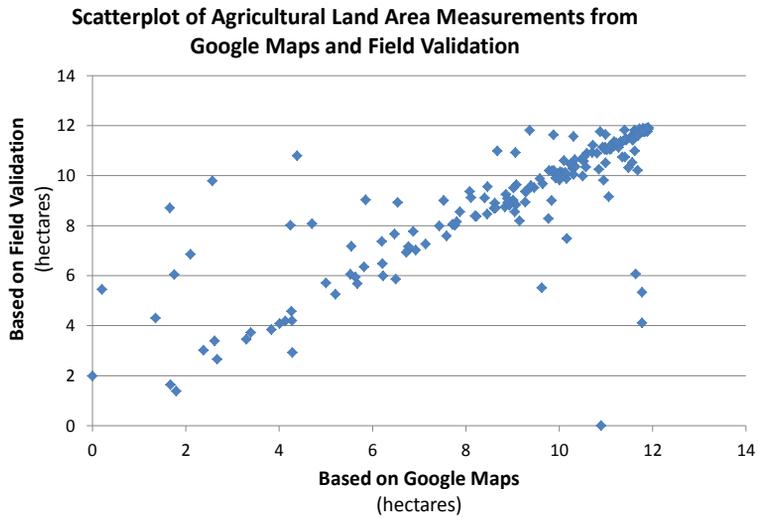
Results

Table 1 **Total Agricultural Land Area Estimates, Nueva Ecija**
(in hectares)

Estimate	Value	Standard Error	Coefficient of Variation	Sample Size
Simple Estimate	221,542.24	872.56	0.39%	4,928
Ratio Estimate	225,637.45	2,960.24	1.31%	200



Results



Results

Table 2 Crop Planted Area Estimates by Type of Crop, Nueva Ecija
(in hectares)

Type of Crop	Value	Share (%)	Standard Error	Coefficient of Variation
Rice	176,445.92	78.09	7,015.47	3.98
Maize	333.57	0.15	225.74	67.68
Cassava	573.95	0.25	430.57	75.02
Others	48,597.03	21.51	5,833.48	12.00



Conclusion

- A reliable estimate of total agricultural land area can be derived using ALIS.
- Only the estimate for rice planted areas in the province of Nueva Ecija is considered reliable, but not the estimate of planted area for other crops.

Recommendations

- Software should allow for stratified SRS sampling of meshes so that areas planted to other crops can be better estimated.
- Instead of classifying meshes as agricultural vs. non agricultural, classification of meshes can be according to types of crops.
- Software should be open to inputs from data sources other than Google Earth.

Recommendations

- Another round of field validation may be conducted during another cropping season to further assess the level of accuracy of the system.
- ALIS may also be applied in other provinces to evaluate how effective the system is in estimating agricultural land area in other provinces.
- There is a need to further enhance the use of remote sensing technology in generating official agricultural statistics.



Thank You!