

Strengthening Agricultural Market Information

2nd Joint Workshop on Rice Data for Thailand and Philippines

ADB Activities for Improving Agricultural and Rural Statistics

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3 December 2014

Outline of Presentation

- R-PATA 8029: Improving Agricultural and Rural Statistics for Food Security
 - Intended Impact and Expected Outcome
 - Key Activities
 - Implementation Arrangement
 - Completed Activities
 - Ongoing Research Activities
- R-CDTA 8369: Innovative Data Collection Methods for Agricultural and Rural Statistics
 - Intended Impact and Expected Outcome
 - Key Outputs
 - Completed Activities
- Remaining Activities

R-PATA 8029: Improving Agricultural and Rural Statistics for Food Security

- Intended impact:
Increase in the use of agricultural and rural statistics in policy making for food security
- Expected outcome:
Increase in agricultural and rural statistics that are of better quality and that are collected regularly

Key Activities of R-PATA 8029

- Development of the regional implementation plan for improving agriculture and rural statistics;
- Conduct of methodological studies;
- Training programs and workshops to support countries in developing their own action plans.

Implementation Arrangement

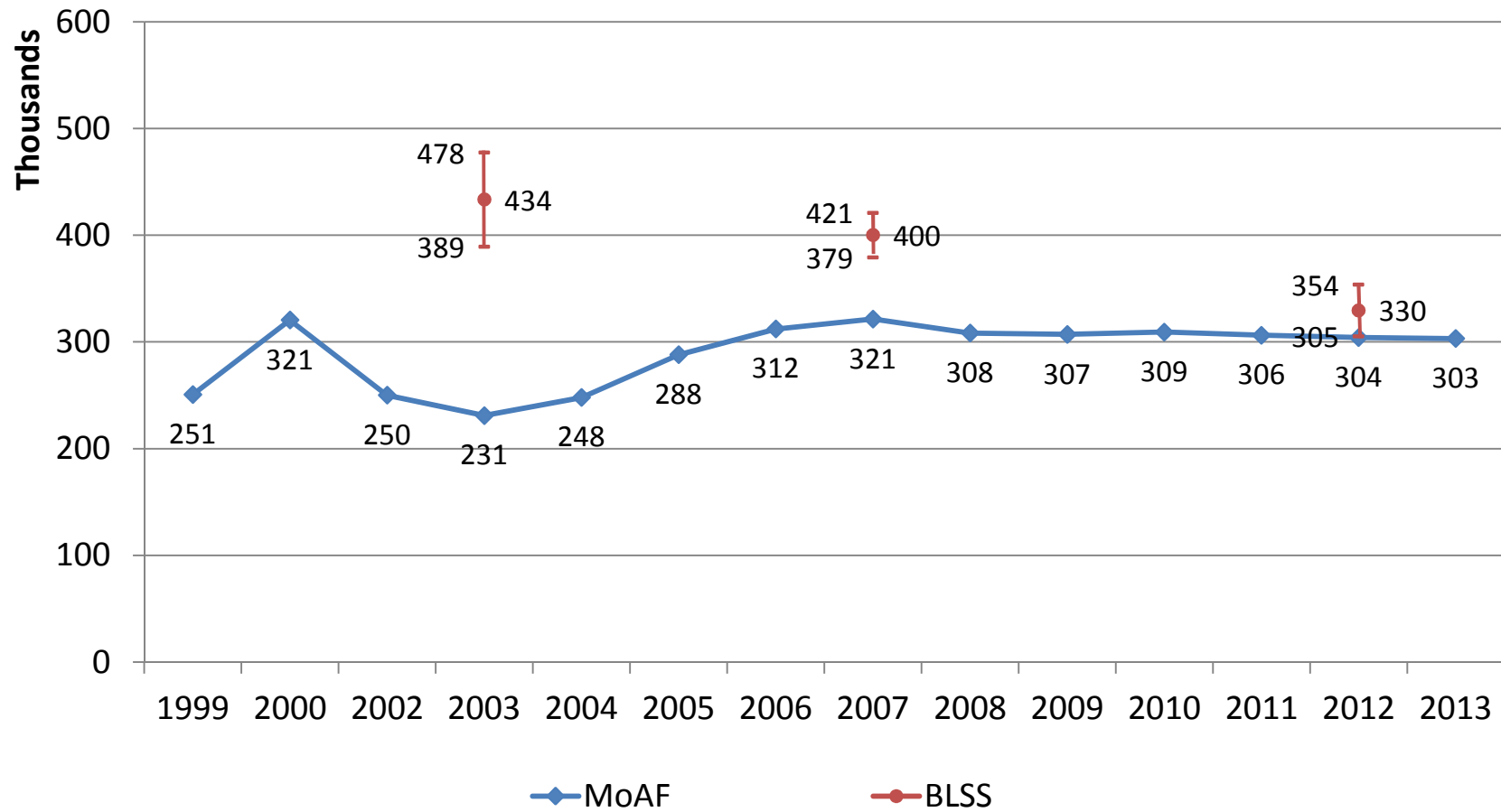
- Total cost of R-PATA 8029 -- \$500,000
- Implementation period: December 2011 - March 2015
- Close collaboration with SGAS, ESCAP and FAO.
- Countries covered: Bhutan, **Lao PDR**, Maldives, **Philippines**, **Thailand** and **Viet Nam**
- Instrument for collaborating with countries: Letter of Agreement
- Approach: Country driven, consultative; through government hierarchy and existing institutions and organizations; ADB provided technical advice and funding support when requested

Methodological Studies

- Comparative Analysis of Existing Agriculture Data Sources in Lao PDR
- Comparative Analysis of Urban and Rural Households Using the Bhutan Living Standard Survey
- Comparative Analysis of Different Sources of Agriculture Statistics in Bhutan
- Improving the Agricultural Data Collection System in Lao PDR
- Adoption of **A**gricultural **L**and **I**nformation **S**ystem (ALIS) for Agricultural Area Estimation in the Philippines
- Designing the Livestock Survey in Viet Nam

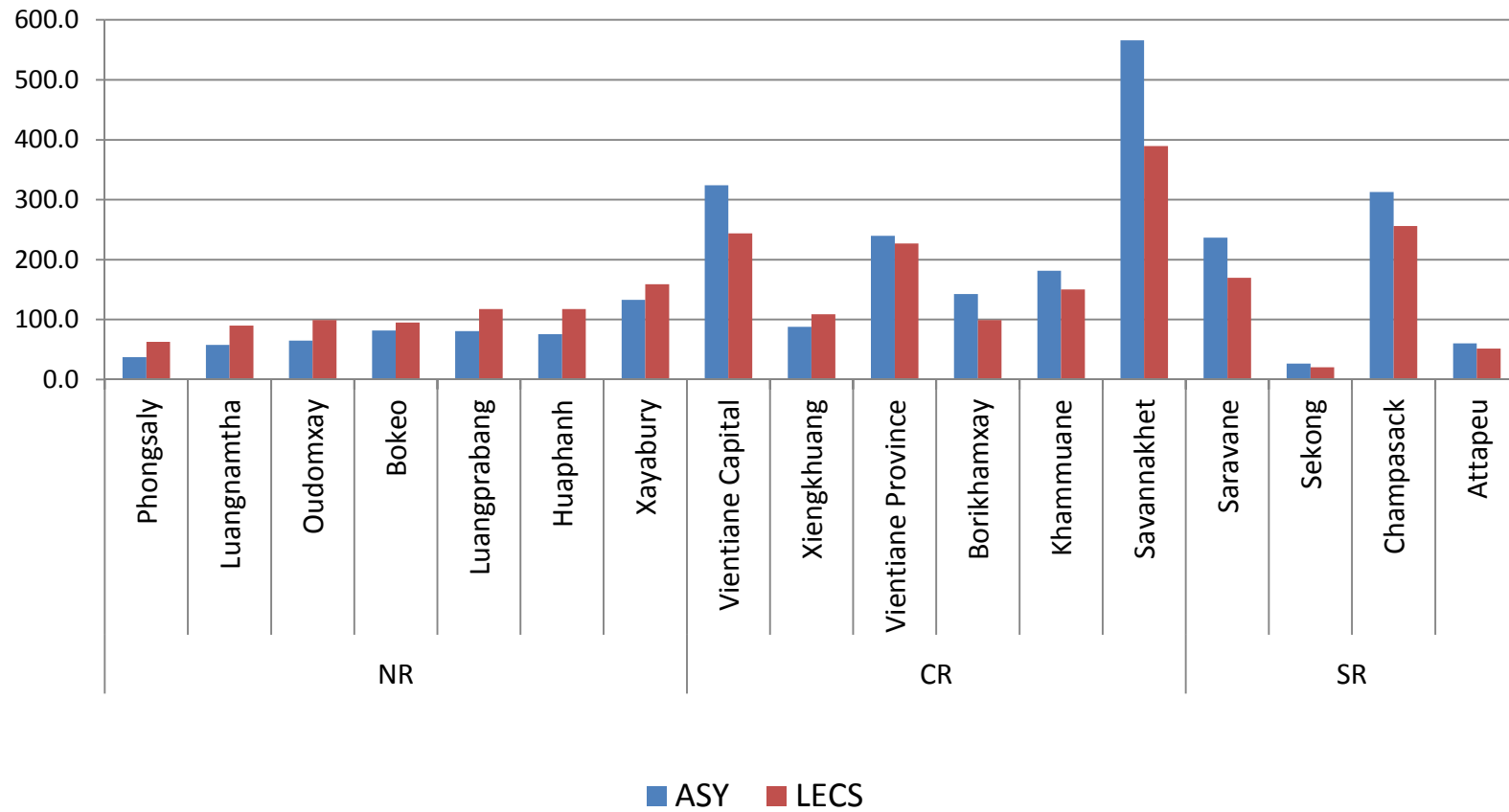
Bhutan

Comparison of MoAF and BLSS Data on Number of Cattle Owned by Households



Lao PDR

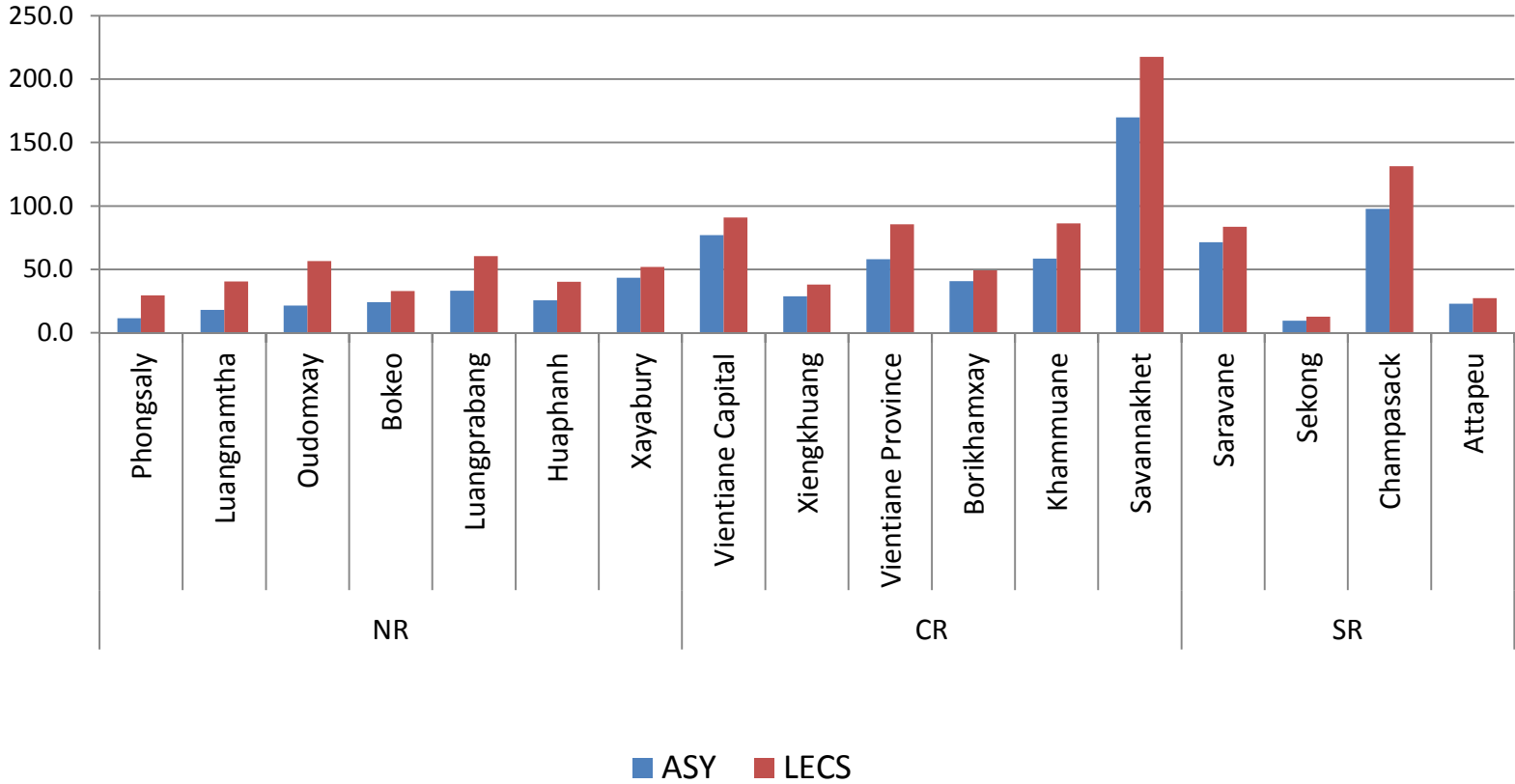
Rice Production ('000 tons), 2007



Sources: ASY 2007 and LECS 2007/2008

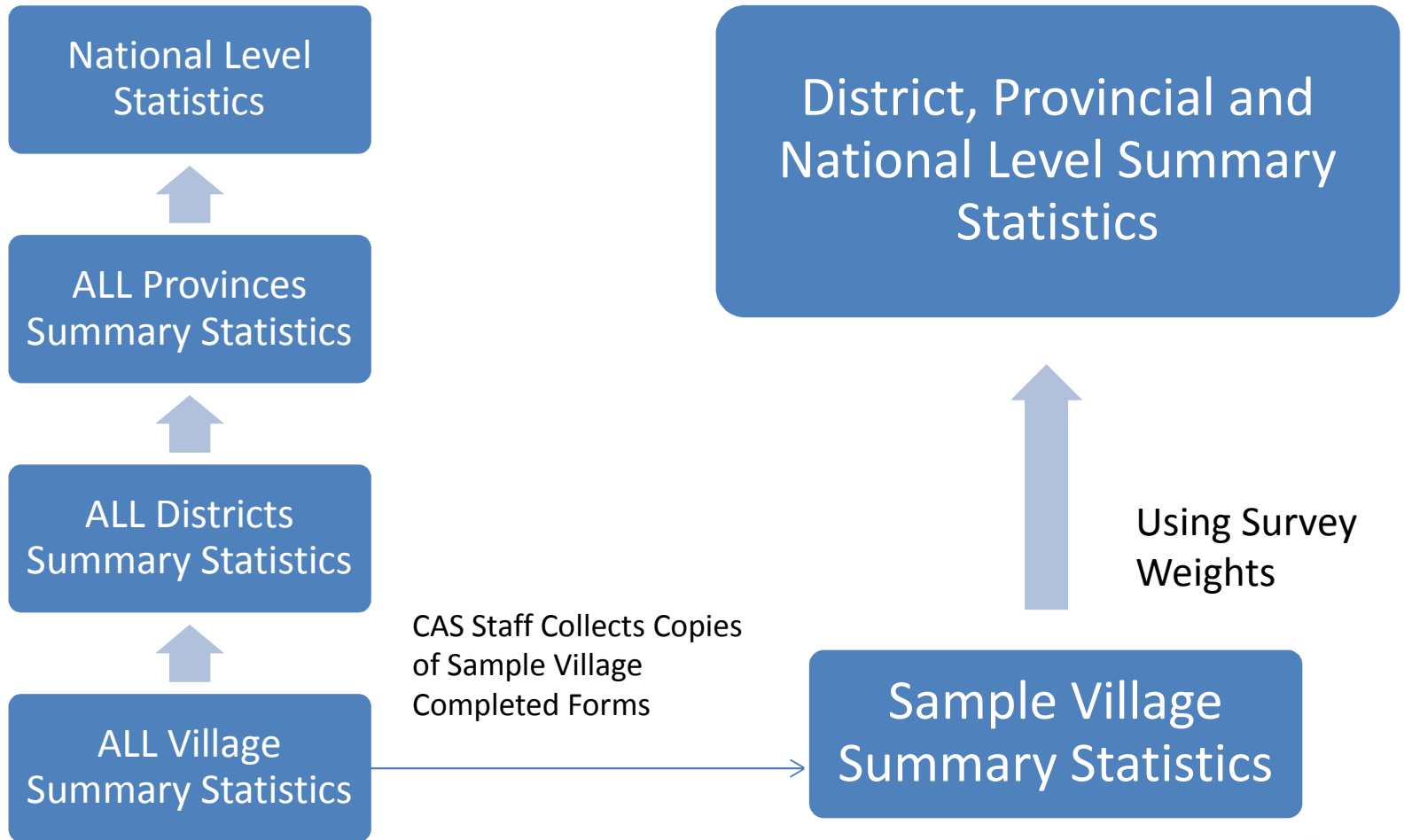
Lao PDR

Area Planted with Rice ('000 ha), 2007



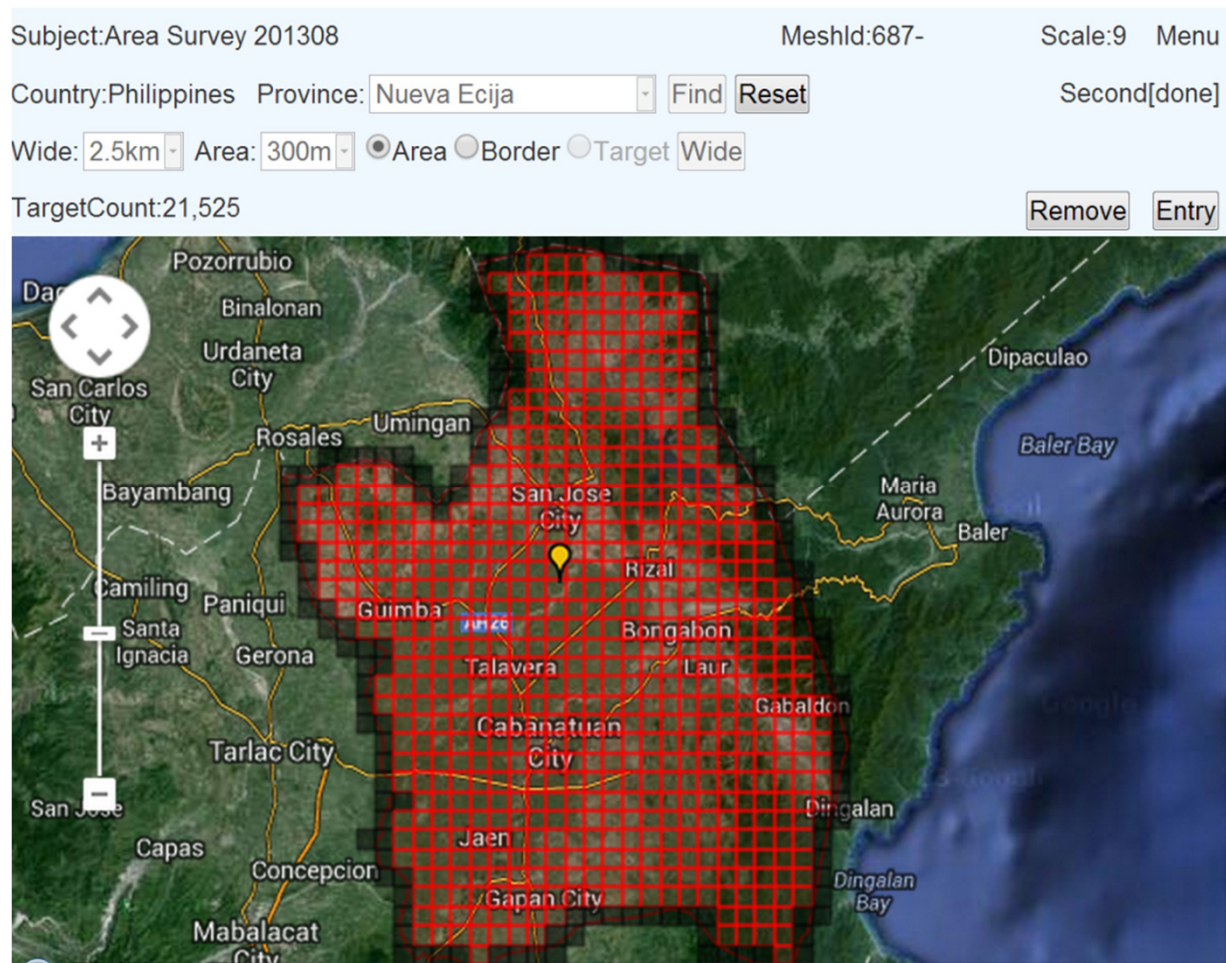
Sources: ASY 2007 and LECS 2007/2008

Improving the Data Collection System



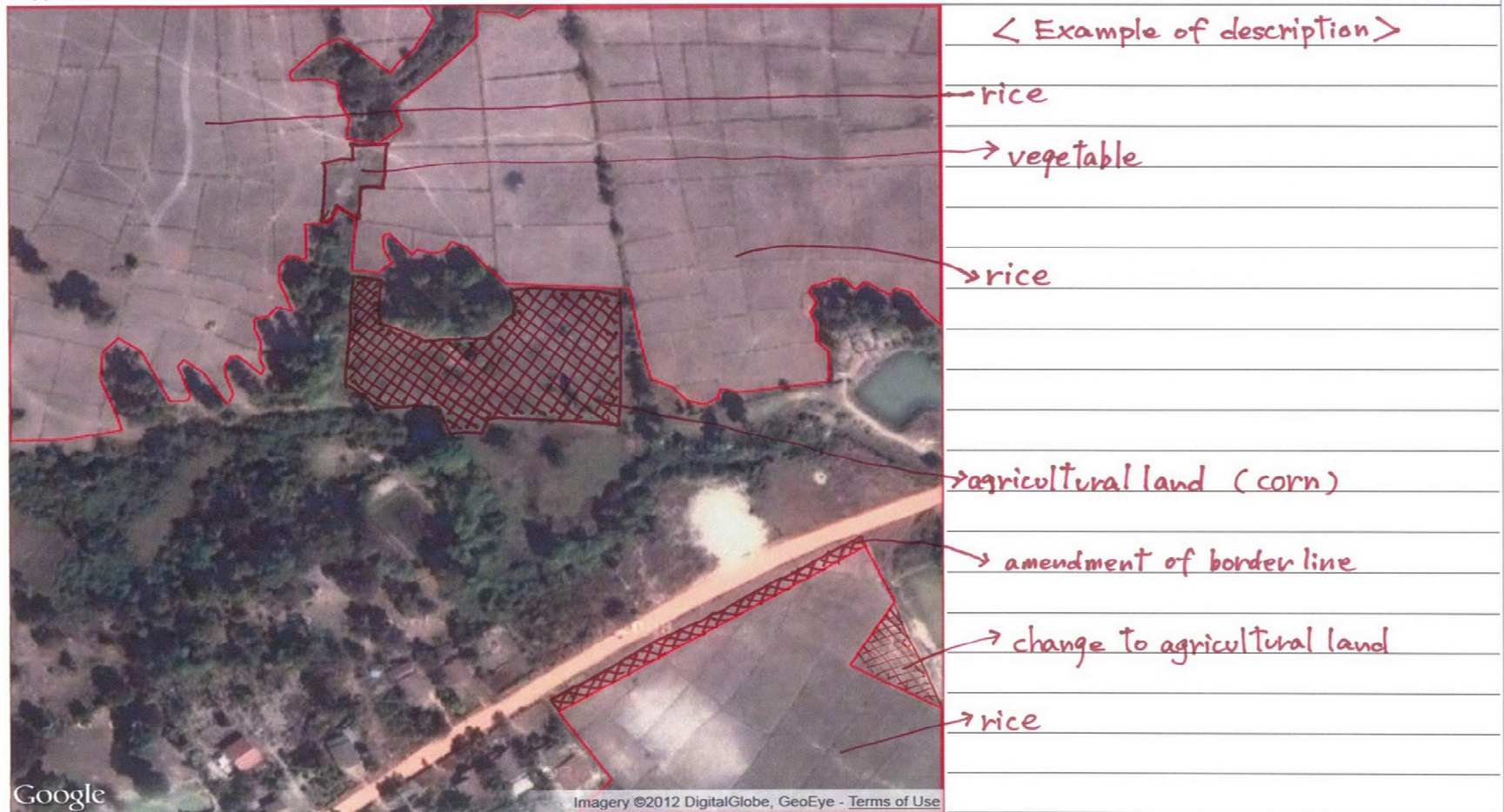
Philippines: Agricultural Land Information System

Map mesh registration



Philippines

Field validation: Survey map verification



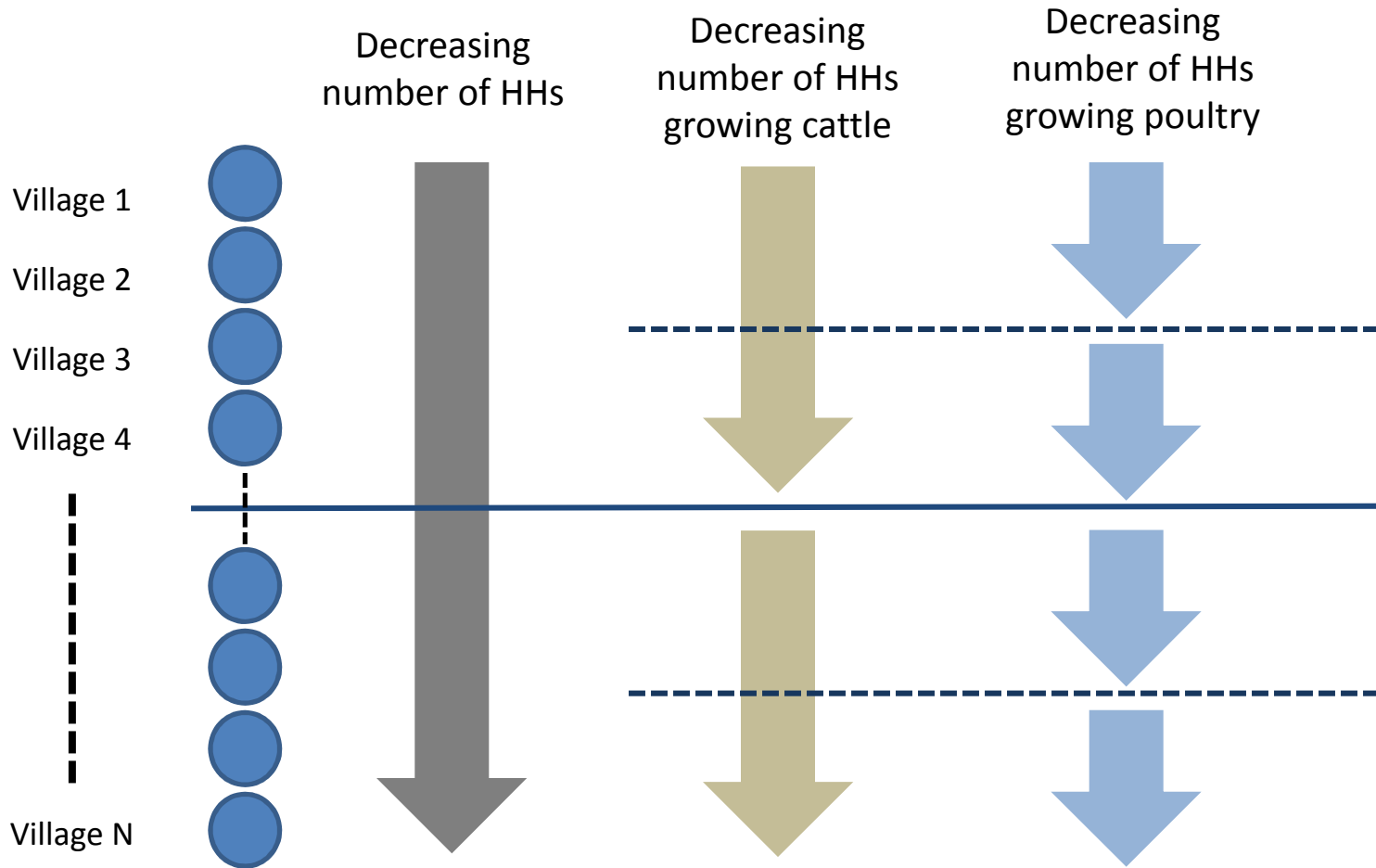
Results

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

Viet Nam

Illustration of Sampling Frame Construction for Livestock Survey



Viet Nam

Assessment of Prospective Sampling Design for Livestock Survey

Characteristics of Interest	Population			Systematic Sample			SRS	Deff
	N	Mean	Var	Mean	Var(Mean)	CV	Var(Mean)	
Number of Households	3220	213.7584	31394.83	213.76	40.90	2.99	87.75	0.47
No. of buffalo growing households	3220	18.70963	636.2589	18.71	1.19	5.82	1.78	0.67
No. of cattle growing households	3220	53.07081	5175.173	53.07	1.96	2.64	14.46	0.14
No. of goat growing households	3220	0.443478	3.967913	0.44	0.01	16.31	0.01	0.47
No. of sheep growing households	3220	0	0	0.00	0.00			
No. of pig growing households	3220	88.73478	7185.012	88.73	11.64	3.85	20.08	0.58
No. of chicken growing households	3220	128.3842	11858.6	128.38	11.28	2.62	33.15	0.34
No. of duck growing households	3220	24.45466	1069.732	24.45	1.65	5.26	2.99	0.55
No. of swan/goose growing households	3220	9.35528	365.1723	9.36	0.28	5.63	1.02	0.27
No. of buffalos	3220	27.34472	1749.111	27.34	3.85	7.18	4.89	0.79
No. of cattle	3220	103.4944	30366.18	103.49	16.44	3.92	84.87	0.19
No. of goats	3220	5.193168	553.7639	5.19	1.25	21.50	1.55	0.81
No. of sheep	3220	0	0	0.00	0.00			
No. of pigs	3220	455.5407	368710	455.54	1030.64	7.05	1030.56	1.00
No. of chicken	3220	5814.884	75258458	5814.88	124474.21	6.07	210349.73	0.59
No. of ducks	3220	1212.034	5183001	1212.03	3624.86	4.97	14486.65	0.25
No. of swans/geese	3220	192.4242	188152.6	192.42	631.48	13.06	525.89	1.20

Inputs and Activities to Achieve Research Outputs

- In-country stakeholders consultation and high level meetings to assess the current situation and issues in the compilation of agricultural and rural statistics in each country
- Development of the country action plan (Bhutan, Lao PDR, Maldives and Viet Nam) to identify the key methodological research areas to focus and prioritize
- Training courses to prepare the implementing agencies in undertaking the methodological studies

Training Programs Undertaken

Lao PDR

- Basic Course on Statistics
 - 20 September 2013
 - basic statistical concepts and definitions
- A Short Course on Understanding National Accounts
 - 10-14 March 2014
 - data sources and indicators used in estimating the GDP share of agriculture; uses of GDP for policy analysis and resource allocation
- A Short Course on Sample Survey Concepts and Analysis
 - 24-28 March 2014
 - follow up course; sample survey concepts, design and operations
- Training on Improving the Data Collection System for Agricultural Statistics
 - 11-13 August 2014
 - uses of agricultural statistics, existing data sources, inconsistencies identified from surveys, censuses and administrative reporting system (ARS); supplemental agricultural data collection system to support ARS

Training Programs Undertaken

Viet Nam

- A Short Course on Sample Survey Design
 - 10-14 February 2014
 - basic sample survey techniques applicable for crops and livestock production surveys
- An Intermediate Course on Probability Sample Survey
 - 3-7 March 2014
 - deriving survey weights, design effects and computation of sampling errors
- Designing Survey Instruments and Planning Survey Operations
 - 13-16 October 2014
 - planning a probability sample survey, questionnaire design, survey operations plan

Training Programs Undertaken

Philippines

- Training on the use of **Agricultural Land Information System (ALIS) Software**
 - 21-23 August 2013
 - random selection of sample meshes, deriving estimates of areas planted to major crops, procedures for field verification

Bhutan

- **Workshop on Data Documentation and Archiving**
 - 1-5 September 2014
 - held in collaboration with the Partnership in Statistics for Development in the 21st Century (PARIS21)
 - use of the International Household Survey Network (IHSN) Microdata Management Toolkit, international standards and tools for microdata documentation and archiving, technical issues relating to microdata dissemination

R-CDTA 8369: Innovative Data Collection Methods for Agricultural and Rural Statistics

- Remote sensing applications with crop cutting exercises will be developed to derive rice area and production estimates and rice area maps. Both radar and optical satellite imagery will be used.
- The main application software that will be used is the Japan Aerospace Exploration Agency's International Asian Harvest Monitoring System for Rice (INAHOR)

Innovative Data Collection Methods for Agricultural and Rural Statistics

- Intended impact:
More evidence-based policies and programs on food security
- Expected outcome:
Improved quality and timeliness of rice crop area and production estimates and forecasts

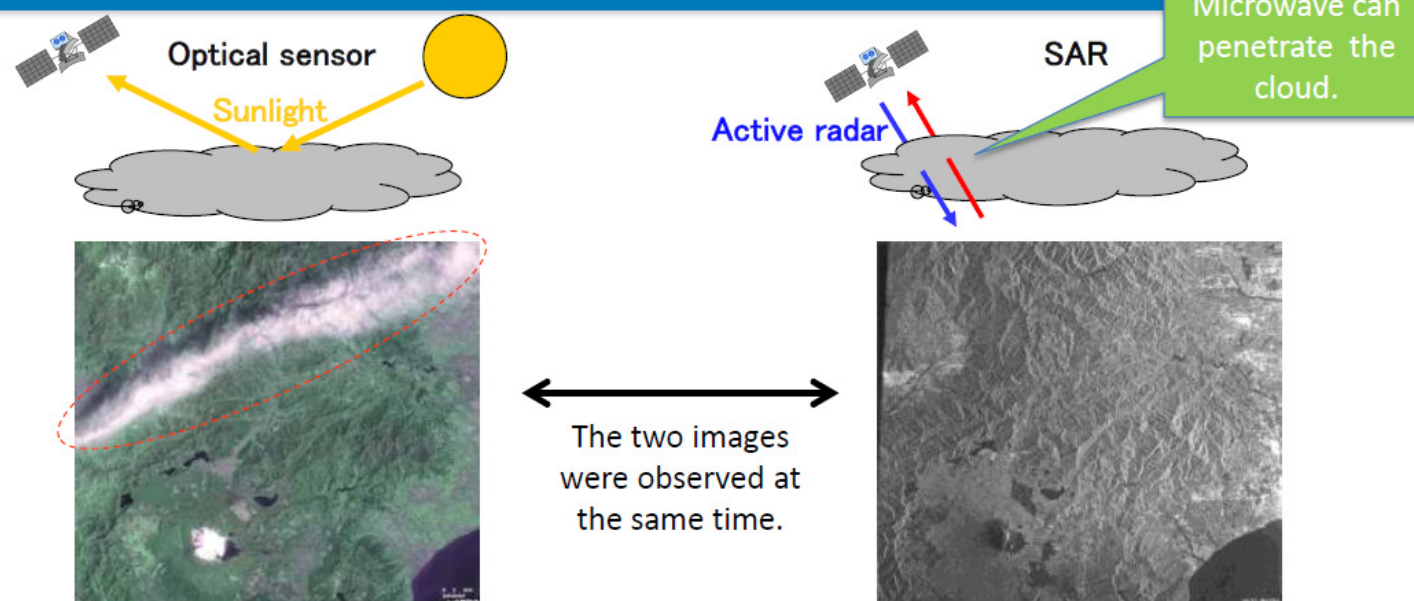
Innovative Data Collection Methods for Agricultural and Rural Statistics

OUTPUTS

1. Customized software applications on analyzing satellite imagery and similar tools provided to pilot countries.
2. Selected staff in pilot countries are able to use output 1 as inputs into rice crop estimation and forecasting methods.
3. Online training program on the use of satellite imagery and similar tools for agricultural and rural statistics provided for open access.

Innovative Data Collection Methods for Agricultural and Rural Statistics

Why do we need SAR to rice crop area estimation?

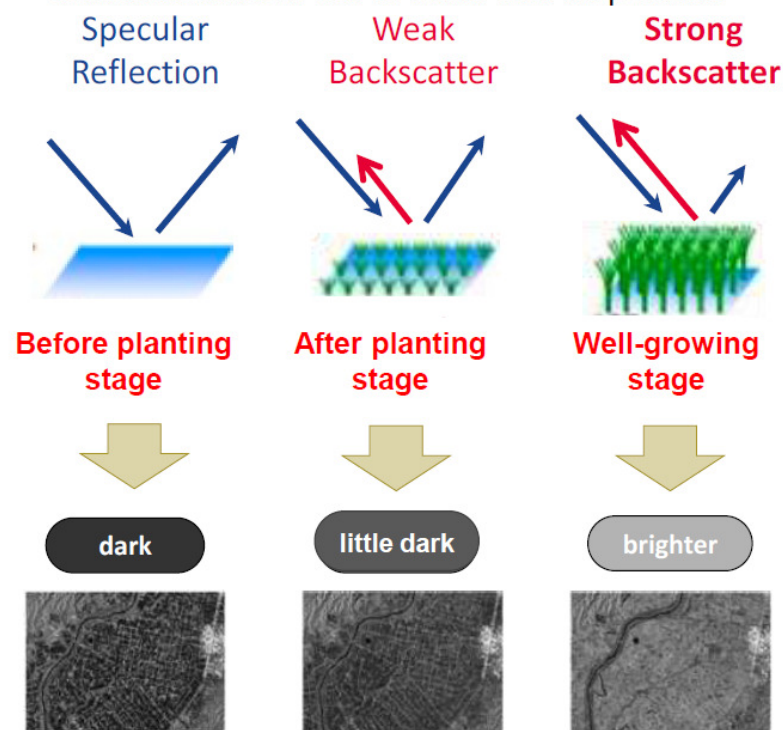


- ❖ Optical sensor cannot observe the ground under the cloud/rain.
- ❖ SAR can observe the ground under the cloud (all weather and night time).
- ❖ Main crop season in Asia is Monsoon season when it is very cloudy in rainy season

Innovative Data Collection Methods for Agricultural and Rural Statistics

Basic concept for detecting rice crop planting area

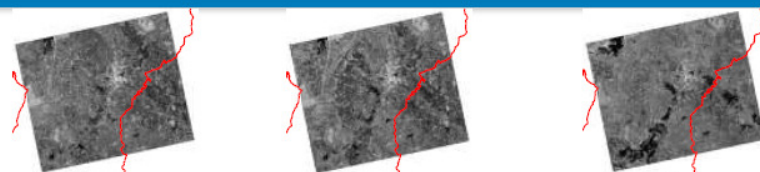
Characteristics of the SAR for rice crop fields.



Can detect rice planting area by differentiating the dark areas in planting stage and the brighter areas in well-growing stage

Innovative Data Collection Methods for Agricultural and Rural Statistics

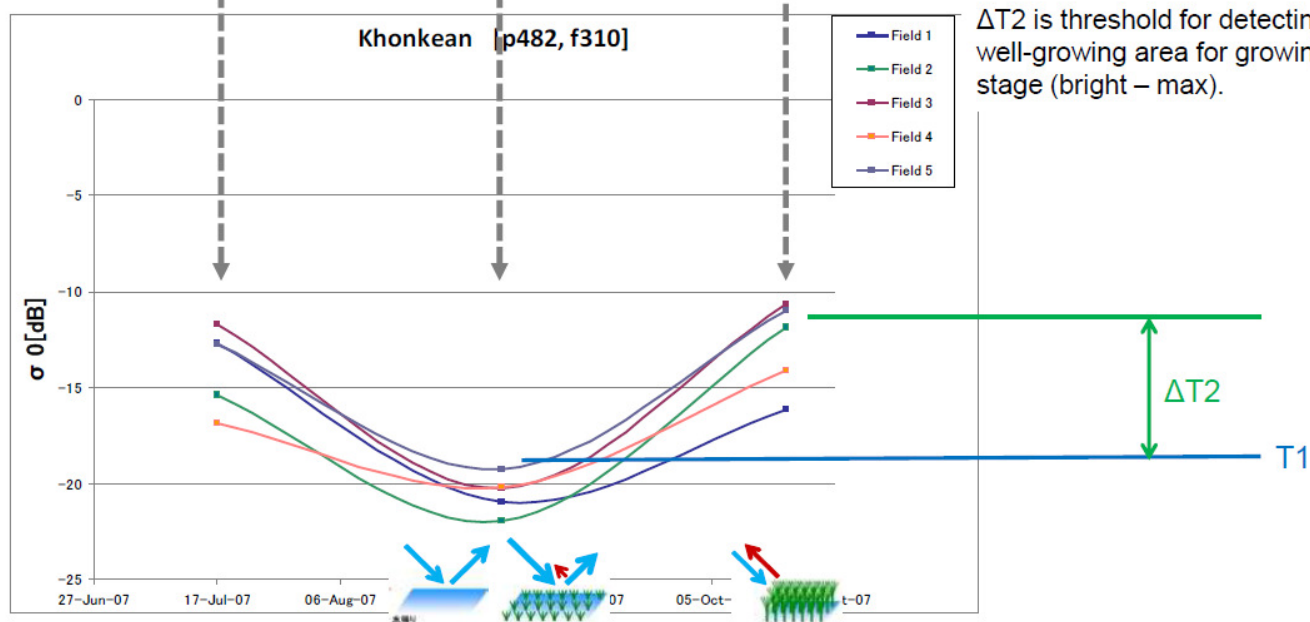
Basic concept for detecting rice crop area



You need two threshold (min and max) to detect rice crop area by using INAHOR.

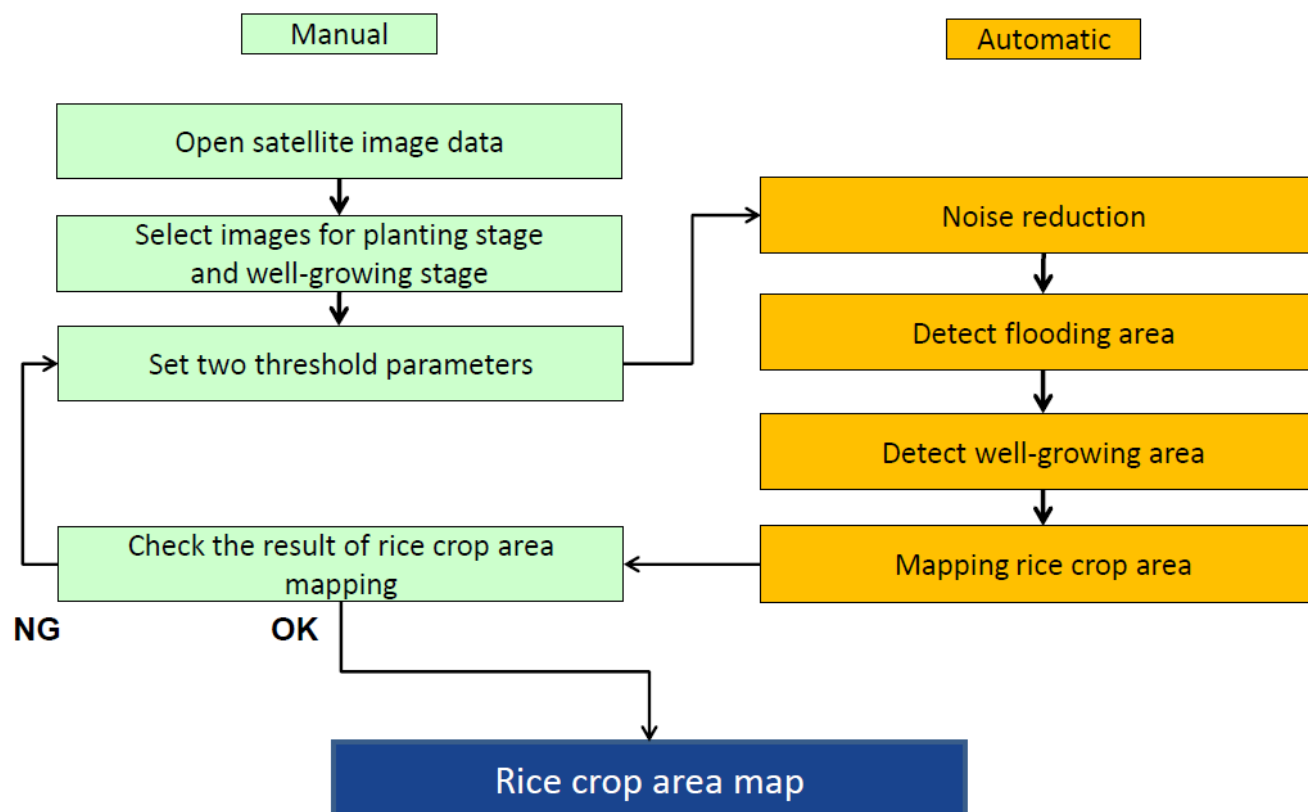
T1 is threshold for detecting flooding areas at planting stage (dark – min).

$\Delta T2$ is threshold for detecting well-growing area for growing stage (bright – max).



Innovative Data Collection Methods for Agricultural and Rural Statistics

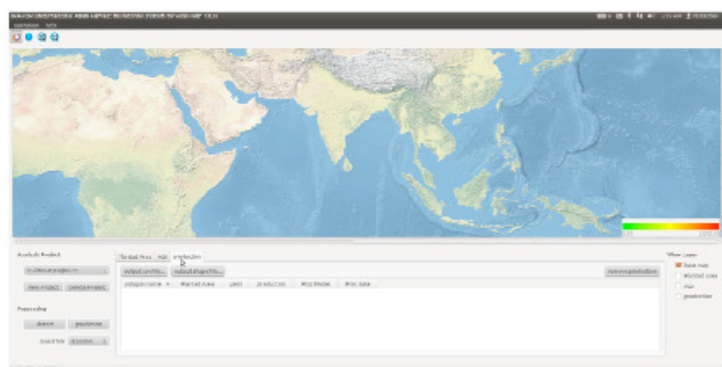
Flowchart of rice crop area mapping



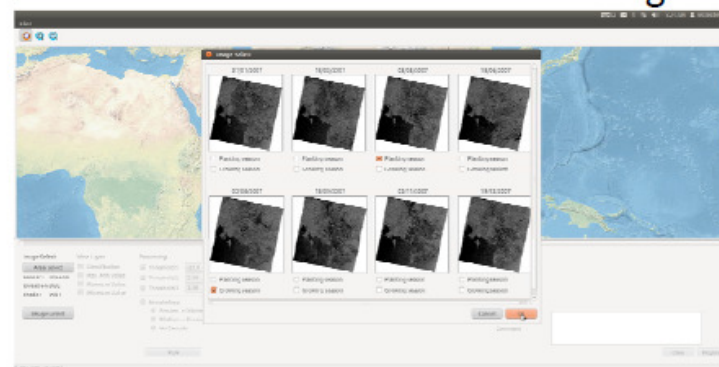
Finally, you can get production by multiplying the rice crop area and yield per unit.

Innovative Data Collection Methods for Agricultural and Rural Statistics

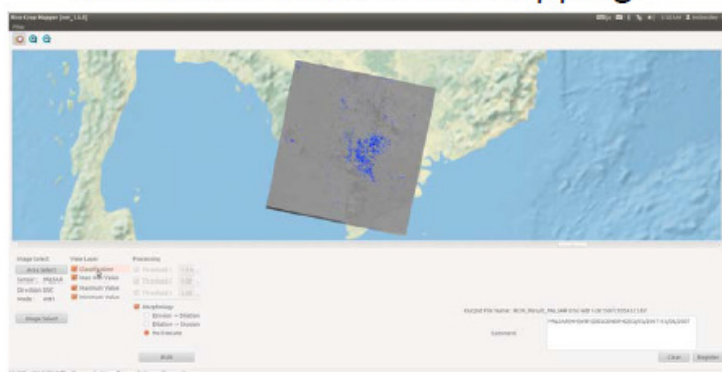
1. Main Window



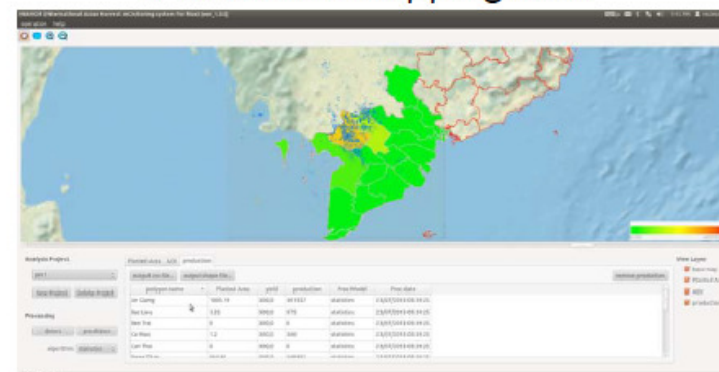
2. Select SAR data for Processing



3. Rice Cultivated Area Mapping



4. Calculate Mapping Area



This software enables to map rice cultivated area easily from time-series SAR data.

Innovative Data Collection Methods for Agricultural and Rural Statistics

What has been done so far?

- Inception workshop in each pilot country – Lao PDR, Philippines, Thailand, and Viet Nam
- Training on basic remote sensing concepts and use of the International Asian Harvest Monitoring System for Rice (INAHOR) software
- Consolidation of proposed software enhancements from the implementing agencies for the business and technical requirements of INAHOR modification
- Field visit in Lao PDR
- Training on the use of Khon Kaen University (KKU) Rice Crop Model in Thailand

Remaining Activities

- Completion and publication of technical papers on methodological research completed by March 2015
- Mid-project assessment for R-CDTA 8369 – June 2015
- Phased Software Development, Training and Field Validation for remote sensing application for agricultural statistics, until mid 2016
- Crop cutting exercises in Lao PDR, Philippines, Thailand and Viet Nam during harvest season of 2015
- On-line training program for remote sensing application in agricultural statistics by end 2015



For More Information:

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(Community for Agricultural and Rural Statistics)