ASIA AND PACIFIC COMMISSION ON AGRICULTURAL STATISTICS

TWENTY-SEVENTH SESSION

Nadi, Fiji, 19 – 23 March 2018

Agenda Item 9.3

Technology use in Agricultural Census, Thailand experience

Contributed by: Nampung Chirdchuepong
National Statistical Office
Thailand
nampung@nso.go.th nampung.gs4@gmail.com
Outline

❤ The 2013 Agricultural Census
❤ Technology for field data capture
❤ Lesson Learnt
History of Agricultural Census

Agricultural Census
- 1950
- 1963
- 1978
- 1993
- 2003
- 2013

Intercensal Survey
- 1983
- 1988
- 1998
- 2008
- 2018

Next Census: 2023
Main sources of agricultural data

National Statistical Office: NSO
- Agricultural Census
- Agricultural Intercensal Survey

Ministry of Agriculture and Cooperatives
- Agricultural Surveys (Major crop, livestock, Production, Price, Forecast Survey...)
- Registration Base
  - Farmer One: Registration of farmers Database, Raising animal Database, Fisheries Database
- Administrative data
## The 2013 Agricultural Census

|                               | - The Royal Degree on Agricultural Census B.E. 2013 |
| Budget                        | ~$US17 million (538 million Bath)  
|                               | Tablet : 23.3%  PR : 3.9%  Field work : 42.2%  
|                               | Training : 1.8%  Other : 28.8% |
| Respondents                   | - National statistical office : NSO  
|                               | - Agricultural Extension Department |
| Methodology                   | The integrated census and survey (complete and sample enumeration) |
| Method                        | Face to Face Interview using Tablet |
| Census Day                    | May 1st, 2013 |
Questionnaire & Data Collection

• Listing Form
  - Coverage: Interview all heads of households (10 millions) to find out agricultural holders

• Enumeration Form
  • Interview 5.9 million holders;
    - complete enumeration: Basic agricultural structure
    - sample enumeration: additional agricultural structure
Enumeration Area (EA)

87,434 EA from The Total 129,048 EA in 77 provinces (municipal and non-municipal)
Fieldwork Operators

**Enumerator;**

Village agricultural volunteer 15,465 persons

**Supervisor;**

- District agricultural officer (DOAE) 3,087 persons
- National Statistical office’s officer 2,600 persons

**Master trainer;**

- NSO Staffs (central & province) 300 persons
Innovation for field data capture

2003 agricultural census

Lesson from MICS (in 2012) use Tablet

2013 agricultural census
Use Tablet

Data entry (scan : ICR)
The 2013 Agricultural Census

The concept of using tablet for field data capture and questionnaire compilation

- Possible code check
- Consistency check

Questionnaire design on Tablet

Agricultural census
Questionnaire

Application for data entry
Tablet pc
The 2013 Agricultural Census

Training

Training head of provincial office (by project manager)

Training for field operators (3 stages)

Master trainers # 300
• By Subject matter

Supervisors # 5,687
• By Master trainers

Enumerators # 15,465
• By Supervisors

Lecture, VDO, workshop, practice in the field
Fieldwork management

Headquarter

- Setting war room
- Sending out Mobile team throughout the country
- The department inspectors visited on-site for fieldwork monitoring
- Assign Master trainers at Headquarters responsible for each province

High-executives and related managers of both agencies monitored the progress through Web application

NSO office
Agricultural Extension Department

Monitoring the progress of their assignments by each districts/EA through Web app.

Coordinate, give suggestion and supporting (each region reported the progress to the high-executives from time to time)
Using Web Application for monitoring and tracking the progress of fieldwork operation

Consists of
- Monitoring at Headquarter base
- Monitoring at Local office base

By setting the target of tracking the progress (from the listing form) as Real Time
Fieldwork monitoring

Tracking system
Fieldwork monitoring
Tracking system through Web Application
(Real time basis)
Fieldwork monitoring

Tracking the progress
Data Processing

Input Files / Databases

Data Cleansing

Cleaned Data

Create & Load Database

Tabulation

Database

Census Tables

Data Warehouse

GIS

Data Laboratory

G-Cloud (EGA)
1. Training and Instruction for field work.
2. Data checking in the field
   (using tablet able to immediately check for data consistency and completeness)
3. Re-interview by supervisor (2 holders / EA).
4. Comparing census data and other data source (farmer registration base, population census, previous agr. census, smallest administrative (village) data)
4. Post Enumeration Survey (PES.) (all households of 1,280 EAs)
1. Documentation, Report, Fact Sheet, CD-ROM

2. Web site http://www.nso.go.th

3. Data Warehouse

4. Geographic Information System: GIS
Data Warehouse

Data Sources:
Agricultural Census
1998, 2008 Intercensal Survey of Agricultural

Presentation Data:
1) Via Web Site
2) Table / Graphic / Figures
3) Single year or comparison between years
# Achievements

- Field work has been completed in time.
- **Time saving for data processing:**
  - Reducing mistake and difficulties in recording text data
  - Reduce paper usage about 50 million pieces
- **Manpower saving:** reduced 10,000 enumerators // 25,000 enumerators for the 2003 census (5.6 million holders) to 15,000 for the 2003 census (5.9 million holders)
- **Capacity building staff in census management and technology**
Some main issues arising from fieldwork operation

1. Internet Network
   - some area don’t have Internet
   - some area have low signal of Internet

Solutions
- Interview on offline mode
- to copy the data, and send the data at provincial office
- the supervisors/numerators to come to some particular places which equipped with Internet access
- Install the Router at the community center for the Internet accessible
Some main issues arising from fieldwork operation

2. Synchronizing the data to the Server
   Especially during the first synchronization which took long time / could not send the data

Solutions
   - Schedule the synchronization period at different time
   - Frequently synchronize the data but not with a big size of data
   - Increase ‘Time out’ (the supervisors can check the data at all time)
   - Reschedule the monitoring period
   - Separate the Server for the monitoring system and the data storing (data sync. from Tablet) system
   - adjust the CPU of the Cloud Server as from 8 → 16 → 32 Core
3. Geographical and Climate Conditions

- Mountain area
- Islands
- Rainy area (mostly at the southern region)

Solutions

1) Allow enumerators to stay overnight in some particular area
2) Hire the boat to the particular islands
3) Waiting and spread out the enumerators at one time
The lessons learnt for further improvement

- Budget
- Field work operators
- Skill for using technology
- Server
- Insufficient performance of server
- Tablet
- Insufficient Memory
- Application for data entry
- Internet network
- Database management
“register-based census is the main for the next census.”

Conditions:
- To reduce cost of interviewing all households
- Successful experience of using tablets in 2013 agriculture census
- To reduce redundancy in agricultural data collection
- To integrate data from relevant agencies
Next Census

Data matching

Farmer (holder) basic information in personnel level and household level

Village basic information in village level

Agr. HH and holder information in personnel level and household level

Matching data in village level, hh. Level, personnel level
Thank you