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ASIA AND PACIFIC COMMISSION ON AGRICULTURAL STATISTICS

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Agenda Item 5.2
Pilot Palay Crop Cutting Survey in the Philippines

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AMIS

Pilot Palay Crop Cutting Survey in the Philippines

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Outline

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3. Conceptual Framework
4. Sampling Design
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Outline

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Background

- Pilot Palay Crop Cutting Survey (PPCCS)
  - one of the activities of AMIS under the G20 framework, "Strengthening Agricultural Market Information in Thailand and the Philippines (MTF/RAS/359/JPN)"
- Funding Support:
  - Food and Agriculture Organization of the United Nations (FAO)
  - Donor Country: Japan

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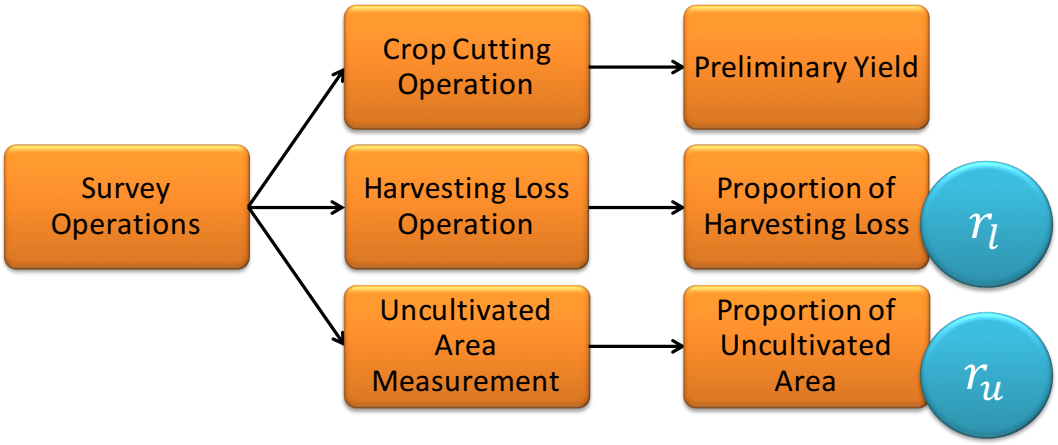
Objective

- to capture benchmark information on the average yield per hectare of palay in a certain domain

Specifically:

- to estimate the average palay yield for a particular area using crop cutting method; and
- to compare the estimated yield obtained between the crop cutting survey and the traditional interview method.

Conceptual Framework



Sampling Design

Domain: Provinces with high yielding palay production

Design: 2-stage stratified replicated sampling

- Primary sampling unit (PSU)
  - barangay (village) selected through probability proportional to size sampling
- Secondary sampling unit (SSU)
  - household selected systematically

Sampling Design – *cont.*

Pilot Province:

- Nueva Viscaya
- Bukidnon
- Nueva Ecija
- Pampanga
- Iloilo

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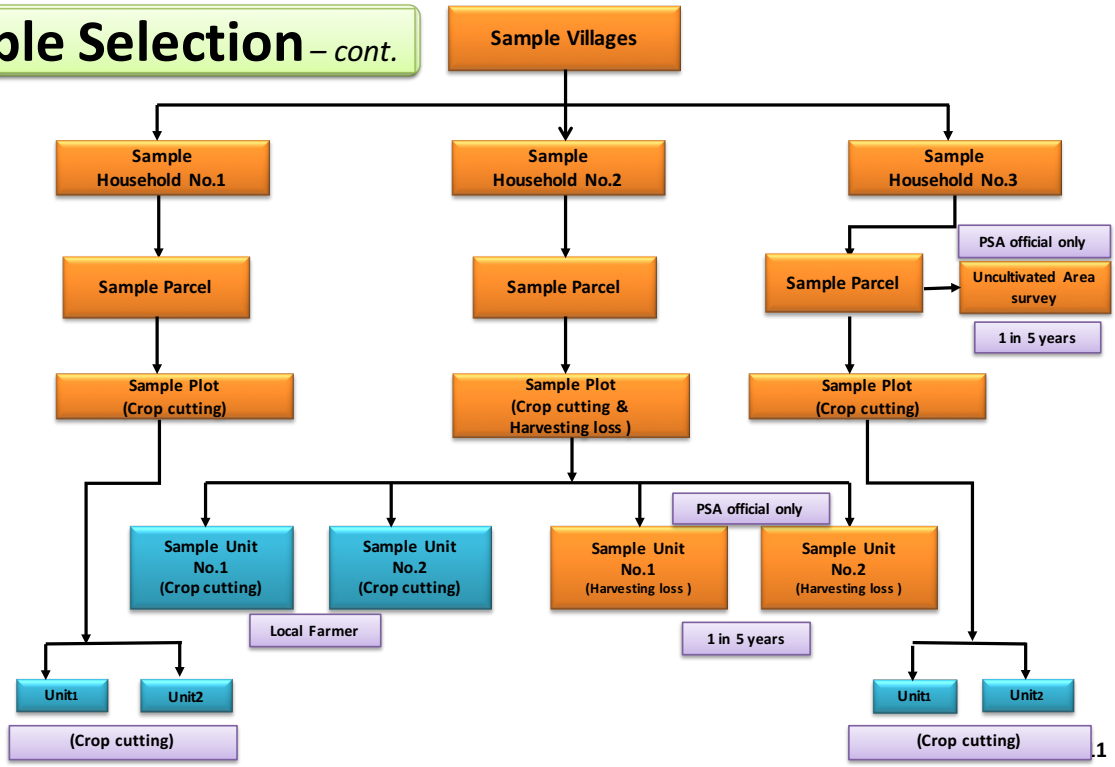
Sample Selection

1 province	at most 20 villages
1 village	3 households
1 household	1 parcel
1 Parcel	1 plot
1 plot	2 units

- Crop cutting survey in all 3 households
- Harvesting loss survey in 2nd household
- Uncultivated area survey in 3rd household

Sample Selection – *cont.*



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Yield Estimation Procedure

Let, **i** = the i^{th} sample village
j = the j^{th} sample farm household (j = 1,2,3)
k = the k^{th} sample of sample unit (k = 1,2)
m = the number of sample villages
$\mathbf{y}_{ijk}$ = weight of dry grain in the k^{th} unit of the j^{th} household in the i^{th} village

Then, **yield** of the province in **grams/m²** is computed as follows:

$$\bar{y} = \frac{1}{6m} \sum_{i=1}^{m} \sum_{j=1}^{3} \sum_{k=1}^{2} y_{ijk}$$

Adjusted to 14% MC

Yield Estimation Procedure – *cont.*

The **final (adjusted) yield** of the province is :

$$\bar{y}_f = [\bar{y}(1-r_l)(1-r_u)] \quad \text{(in grams/m}^2\text{)}$$

$$\bar{y}_f = [\bar{y}(1-r_l)(1-r_u)]x10 \quad \text{(in kilograms/hectare)}$$

$$\bar{y}_f = [\bar{y}(1-r_l)(1-r_u)]/100 \quad \text{(in MT/hectare)}$$

where: **$1-r_l$** = adjusting factor for **harvesting loss**
$1-r_u$ = adjusting factor for **uncultivated area**

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Crop Cutting Operation

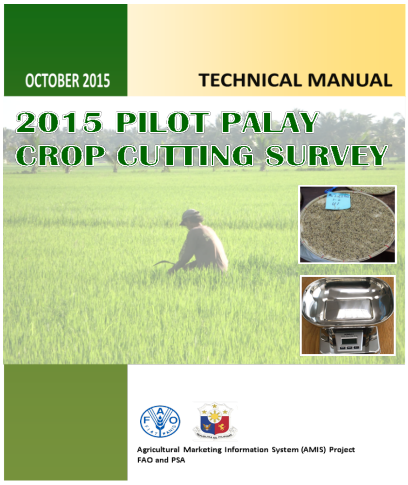
- **Stage 1: Village & Household Selection**
- **Stage 2: Parcel Selection**
  - Uncultivated Area Measurement
- **Stage 3: Plot Selection**
- **Stage 4: Crop Cutting/Harvest Loss**
- **Stage 5: Delivery to PSO**
- **Stage 6: Contact and Update**

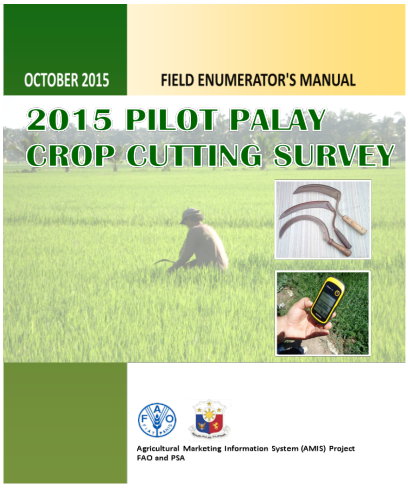
Survey Manuals

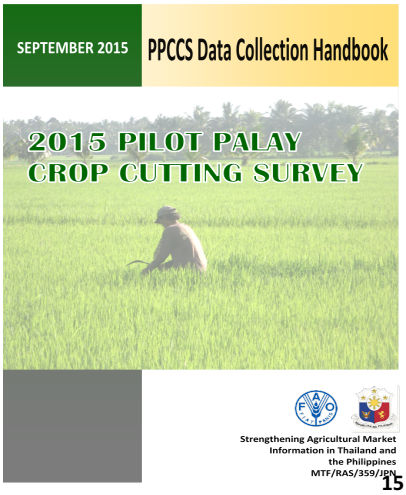
Technical Manual which includes survey design, estimation procedures and tabulation forms.

Enumerator's Manual which includes field work operations procedure and questionnaire forms.

Data Collection Handbook procedures on the use of instruments and instruction infilling out the forms







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Equipment Utilized

Grain Moisture Meter

Rice Tester

GPS Receivers

Digital balance

Tape Measure

Crop Cutting Frame

Equipment Utilized – *cont.*

Iron Stick

Sickel

Flat Basket/Winnower

Plastic Container

Sack

Identification Tag

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Survey Results

PPCCS Adjusted Yield

Province	Marketing Yield (kg/ha)	Adjusting factor for harvesting Loss	Adjusting factor for uncultivated Area	Adjusted Yield (kg/ha)
Bukidnon	6,093.06	0.992	0.971	5868.89
Iloilo	4,243.03	0.989	0.973	4,083.15
Nueva Vizcaya	6,243.66	0.991	0.925	5,722.02
Pampanga	4,768.15	0.993	0.935	4,425.12

Survey Results – *cont.*

Percentage Harvesting Loss and Uncultivated Area

Province	Harvesting Loss (%)	Uncultivated Area (%)
Bukidnon	0.80000	2.90000
Iloilo	1.08483	2.71281
Nueva Vizcaya	0.94358	7.48173
Pampanga	0.71076	6.52995

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Survey Results – *cont.*

Standard Deviation and Coefficient of Variation (CV)

Province	Marketing Yield (kg/ha)	Standard Deviation	CV
Bukidnon	6,093.06	1,340.12	1.37
Iloilo	4,243.03	1,130.58	1.57
Nueva Vizcaya	6,243.66	1,331.38	1.94
Pampanga	4,768.15	826.38	1.73

Survey Results – *cont.*

Comparison obtained from Marketing level Yield, Interview Yield, Final Adjusted Yield and PPS Yield

Province	Seed type	Interview Method Yield (Mt/ha)	Marketing Yield (Mt/Ha)	Adjusted Yield (Mt/Ha)	July-December 2014 PPS Yield (Mt/Ha)
Bukidnon	Farmer's/Good seeds	4.33	5.35	4.15	4.21
Iloilo	Farmer's/Good seeds	3.81	4.03	3.61	3.31
Nueva Vizcaya	Inbred-Certified seeds	5.15	6.41	5.20	4.75
Pampanga	Inbred-Certified seeds	4.55	4.78	4.46	4.69

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Key Learnings

Pilot Palay Crop Cutting Survey

✓ established benchmark data on yield per hectare to serve as "barometer' in validating production data from surveys.

Key Learnings

Crop cutting method:

- ✓ is timely and requires efforts in establishing benchmark figures
- ✓ needs well-trained staff
- ✓ is expensive because of use of equipment, etc.