2022 TECHNICAL NOTES ON DUCK

TECHNICAL NOTES

I.   Introduction

The Duck Situation Report presents the industry situation in terms of volume and value of production, monthly average farmgate and retail prices, and volume and value of duck imports. It serves as a ready reference for the various clients and stakeholders of the Philippine Statistics Authority (PSA) in the agriculture sector.

The data for this report were collected by PSA through the two surveys, namely, Backyard Livestock and Poultry Survey (BLPS) and the Commercial Livestock and Poultry Survey (CLPS).

The BLPS aims to generate estimates on the supply and disposition of livestock and poultry commodities at the household level. In 2022, the number of sample households covered was 21,961 from the 1,145 sample barangays nationwide. On the other hand, the CLPS seeks to generate estimates on the supply and disposition of livestock and poultry commodities from sample establishments. There were 193 sample duck establishments covered in 2022.

Both surveys are conducted quarterly in all provinces including National Capital Region. Moreover, the commodities covered in the surveys include: cattle, carabao, swine, goat, chicken, duck, and other animals raised/tended by households and establishments.

II.   Data Collection

A. Backyard Livestock and Poultry Survey

1. Data collection procedure
    The schedule of field data collection is every first seven (7) days of the month after the reference quarter. However, the data collection for fourth quarter is done one (1) month earlier to comply with the Philippine System of National Accounts (PSNA) calendar. The data collection is undertaken by hired Statistical Researchers (SRs) and is done through face-to-face interview with qualified respondents of the sample households. Prior to data collection, training of selected staff from Central Office, and Field Offices, including SRs, is conducted to ensure uniform understanding of concepts and proper implementation of survey procedures. Field and manual editing of the accomplished questionnaires is done to ensure completeness, consistency, and reasonableness of the information gathered.

2. Survey Questionnaire
    The BLPS Questionnaire is a thirteen-page form composed of 16 blocks that aims to gather information on the basic characteristics and operations of the household.

    The data items included in the survey are as follows:
    a. Type of Operation/Purpose
    b. Inventory

   c. Number of hatched live
   d. Number of acquired animals
   e. Dressed in the household/farm
   f. Sold live for dressing and for other purposes
   g. Disposition by areas of destination
   h. Average liveweight
   i. Average farmgate price
   j. Number of deaths/losses and cause/reason
   k. Egg production indicators
   l. Egg disposition

B. Commercial Livestock and Poultry Survey

1. Data collection procedure

   The schedule of field data collection is during the last ten (10) days of the quarter. However, the data collection for fourth quarter is done one (1) month earlier to comply with the Philippine System of National Accounts (PSNA) calendar. The data collection is undertaken by hired Statistical Researchers (SRs) and is done through a face-to-face interview with qualified respondents of the farm/establishment. Prior to data collection, training of Central Office and Field Office personnel, including SRs, is conducted to ensure that the procedures and concepts of the survey are understood and properly implemented. Field and manual editing of the accomplished questionnaires is done to ensure completeness, consistency, and reasonableness of the information gathered.

2. Survey Questionnaire

   The CLPS Duck Survey Questionnaire is a two-page questionnaire that aims to gather necessary information on supply and disposition of duck commercial farms/establishment.

   The data items included in the survey are as follows:
   a. Type of Operation/Purpose
   b. Inventory
   c. Number of hatched live
   d. Number of acquired animals
   e. Dressed in the farm/establishment
   f. Sold live for dressing and for other purposes
   g. Disposition by areas of destination
   h. Average liveweight
   i. Average farmgate price
   j. Number of deaths/losses and cause/reason
   k. Egg production indicators
   l. Egg disposition

III. Sampling Design

A. Backyard Livestock and Poultry Survey

1. Sampling Frame
The BLPS sampling frame is based on the results of the 2017 Listing of Farm Household (LFH) and 2012 Census of Agriculture and Fisheries (CAF). For barangays not covered in the 2017 LFH, the list of households was taken from the 2012 CAF. The sampling frame is updated quarterly based on the status of the sampled households using structured Frame Maintenance Form (FMF) submitted by the PSOs every quarter.

2. Sample Selection Procedure
The BLPS uses two-stage sampling design. The first stage is the selection of barangays using probability proportional to size where the measure of size is the total animal inventory. The number of sample barangays is based on a target coefficient of variation of five (5) percent. The sample barangays are the same for all quarters of 2022.

The second stage is the selection of sample households that are engaged in livestock and poultry raising in the sampled barangays using systematic sampling.

The number of sample households per selected barangay is 20 but this could be less if the selected barangay has less than 20 households. The sample households per quarter are independent.

3. Estimation Procedure

   a. Sampling Weights

   a.1. Base Weight
   The base weight is computed as follows:

$$w_{1i} = \begin{cases} \dfrac{\sum_{i=1}^{A} X_i - X_{certain}}{a' X_i} & , if\ non-certainty\ brgy \\ 1 & , if\ certainty\ brgy \end{cases}$$

$$w_{2ij} = \begin{cases} \dfrac{N_i}{n_i} & , if\ household\ has\ at\ most\ 3\ operators \\ \dfrac{N_i}{n_i} \times \dfrac{M_{ij}}{m_{ij}} & , if\ household\ has\ greater\ than\ 3\ operators \end{cases}$$

$$w_{ij} = w_{1i} \times w_{2ij}$$

Where:
w_{ij} = base weight of household j in barangay i
w_{1i} = 1st stage weight
w_{2ij} = 2nd stage weight
A = total number of barangays in the domain

a = barangay sample size in the domain

a' = non-certainty barangay sample size in the domain; equal to a if there are no certainty barangays

$X_{certain}$ = total animal inventory of all certainty barangays

X_i = size measure of barangay i

N_i = total number of households in barangay i

n_i = number of sample households in barangay i

M_{ij} = total number of operators in household j in barangay i

m_{ij} = number of sample operators in household j in barangay i

i = subscript for barangay

j = subscript for household

a.2. Adjustment Factor

The adjustment factor formula is given as follows:

$$A_p = \frac{\sum_{i=1}^{a} \sum_{j=1}^{n_i} w_{ij} X_{1ij}}{\sum_{i=1}^{a} \sum_{j=1}^{n_i} w_{ij} X_{2ij}}$$

Where:

A_p = adjustment factor for domain p

X_{1ij} = eligible status of household j in barangay i (1 if eligible, 0 otherwise)

X_{2ij} = responding status of household j in barangay i (1 if eligible, 0 otherwise)

Eligible households are the following:
- Interview completed;
- Refused to be interviewed without replacement;
- Temporarily away/Not at home without replacement; and
- HH temporarily not accessible without replacement.

Ineligible households are the following:
- Resides outside the barangay;
- Unknown in the locality; and
- Deceased (No other livestock and poultry operator in the household).

a.3. Final Weights

The final weights formula is given as follows:

$$w'_{ij} = w_{ij} \times A_p$$

Where:

w'_{ij} = final weights for domain p

w_{ij} = base weight of household j in barangay i

A_p = adjustment factor for domain p

b. Estimation of Total

   b.1. Estimation of Provincial Total
   Estimation of domain total is done per animal type and the formula is given as follows:

   $$\hat{Y}_{qp} = \sum_{i=1}^{a} \sum_{j=1}^{n_i} w'_{ij} y_{ij}$$

   Where:
   $\hat{Y}_{qp} =$ estimated total for domain p at quarter q
   $y_{ij} =$ survey data (inventory, production, etc.) for household j in barangay i

   b.2. Estimation of Regional and National Total
   The regional estimates are obtained by aggregating the estimates of the provinces within the region, while the national estimate is derived by adding all the regional estimates.

B. Commercial Livestock and Poultry Survey

1. Sampling Frame
   The CLPS frame is based on the results of the 2021 Updating of the List of Establishments (ULE). It is updated quarterly based on the results of visit of the sample establishments using the FMF.

2. Sample Selection Procedure
   The CLPS uses a stratified sampling design with the maximum farm/housing capacity as stratification variable. Stratum boundaries are obtained using Dalenius-Hodges method. Sample size is determined using Neyman procedure with a target coefficient of variation of five percent (5%). A minimum of five (5) samples are taken when the population for the stratum is greater than or equal to five (5). For stratum with population less than five (5), all farms will be enumerated. The number of strata per province ranges from two (2) to four (4) depending on the homogeneity of the stratification variable.

   Complete Enumeration (CE) is applied for provinces with less than 25 commercial farms/establishments, otherwise, stratified sampling design is used.

3. Estimation Procedure

   a. Sampling weights

      a.1. Base Weight
      The base weight for CLPS is computed by animal type and province. The formula for base weights is given as follows:

      $$w_h = w_{hi} = \left(\frac{N_h}{n_h}\right)$$

w_{hi} = weight of commercial farm/establishment i in stratum h
N_h = total number of establishments in stratum h
n_h = number of sample establishments in stratum h

a.2. Adjustment Factor

The adjustment factor is given as follows:

$$A_h = \frac{\sum_{i=1}^{n_h} w_{hi} X_{1hi}}{\sum_{i=1}^{n_h} w_{hi} X_{2hi}}$$

Where:

A_h = adjustment factor at stratum h
w_{hi} = base weight of establishment i at stratum h
n_h = number of sample establishments in stratum h
X_{1hi} = eligible status of sample establishment i at stratum h
      (1 if eligible, 0 otherwise)
X_{2hi} = responding status of sample establishment i at stratum h
      (1 if responding, 0 otherwise)

X_{1hi} (Eligible) = $\begin{cases} 1, if\ result\ of\ final\ visit\ is\ 1, 5, 6\ and\ 7 \\ 0,\ otherwise \end{cases}$

X_{2hi} (Responding) = $\begin{cases} 1, if\ result\ of\ final\ visit\ is\ 1 \\ 0,\ otherwise \end{cases}$

Eligible establishments are the following:
- Operational
- Refusal
- Cannot be contacted/Not accessible/Temporarily away

Ineligible establishments are the following:
- Temporarily Stopped Operation
- Permanently Closed/Stopped Operation
- Shifted farm operation
- Cannot Be Located
- Not yet in operation
- Duplicate
- Out-of-scope - Recreation
- Out-of-scope - Change Sector
- Out-of-scope - Main Office/Ancillary Unit

a.3. Final Weights

The final weight formula is given as follows:

$$w'_{hi} = w_{hi} \times A_h$$

w'_{hi} = final weight of establishment i at stratum h
w_{hi} = base weight of establishment i at stratum h
A_h = Adjustment factor

b. Estimation

b.1. Estimation by Stratum
Each stratum yields an independent estimate. The formula to be used is given as follows:

$$\hat{Y}_h = \sum_{i=1}^{n_h} w'_{hi} y_{hi}$$

Where:
$\hat{Y}_h$ = estimated total for stratum h of the province
w'_{hi} = final weight of establishments i at stratum h
n_h = no. of sample establishments in stratum h
y_{hi} = survey data (inventory, production, etc.) for establishment i in stratum h

b.2. Estimation of Provincial Total
The total estimate for the province is obtained by simply aggregating all the expanded stratum estimates in the province. Hence, the statement of the total for the pth province is given by:

$$\hat{Y} = \sum_{h=1}^{L} \hat{Y}_h$$

Where:
$\hat{Y}$ = estimated total for the province
$\hat{Y}_h$ = estimated total for stratum h of the province
L = total number of strata

b.3. Estimation of Regional and National Total
The regional estimates are obtained by aggregating the estimates of the provinces within the region, while the national estimate is derived by adding all the regional estimates.

IV. Concepts and Definitions of Terms

Farmgate price refers to the price received by raisers for their produce at the location of farm. Thus, the marketing costs, such as the transport and other marketing costs (if any) incurred in selling the produce, are not included in the farmgate prices.

Imports refer to the number of meat products originating from foreign country. The data on meat importation data are compiled by the Trade Statistics Division (TSD) of PSA from the copies of Import Entry and Internal Revenue Declaration collected from the Bureau of Customs (BOC).

Inventory refers to the actual number of duck present in the farm as of a specific reference date.

Retail price refers to the prices at which retailers sell their goods or commodities to consumers in the marketplace. The 2020 to 2022 retail prices included in this annual

release were based on the revised method of computation by the Price Statistics Division of the PSA.

Value at constant price refers to the valuation of transactions, wherein the influence of price change from base year to the current year has been removed.

Value at current price refers to the value based on prices during the reference year; nominal year.

Value of production refers to the value of the animal with reference to its farmgate price. It is derived by multiplying the volume of production by its farmgate price.

Volume of production refers to the number of tended/raised duck disposed for dressing including animals shipped-out for dressing. This is expressed in metric tons, liveweight.

V.   Farm Classification

The following are the new farm classifications and definitions based on the approved PSA Board Resolution No. 04, series of 2022:

Classification	Definition
Smallhold	Raising 250 birds and below
Semi-commercial	Raising 251 – 5,000 birds
Commercial	Raising 5,001 birds and above

The data on the inventory of duck based on the definitions indicated above can be accessed in the OpenStat website of PSA with the link:
https://openstat.psa.gov.ph/PXWeb/pxweb/en/DB/DB__2E__LP/?tablelist=true&rxid=bdf9d8da-96f1-4100-ae09-18cb3eaeb313.

Similarly, data on inventory of duck by farm type (i.e., backyard and commercial) can still be accessed in the OpenStat website of PSA with the link:
https://openstat.psa.gov.ph/PXWeb/pxweb/en/DB/DB__2E__LP/0022E4FINL0.px/?rxid=bdf9d8da-96f1-4100-ae09-18cb3eaeb313.

VI.   Dissemination of Results and Revision

The PSA disseminates the Duck Situation Report annually, every March, with previous year as the reference period. This report is uploaded in the PSA Website.

The livestock and poultry statistics follows the revision policy as stipulated in the PSA Board Resolution No. 1, Series of 2017-119 approving the revision of quarterly estimates on agricultural production, prices and related statistics to be limited to the immediately preceding quarter and for the past three years with quarterly breakdown to be done only during May of the current year.

VII. Citation

This presents how the Technical Notes will be cited by users in their research works. It contains the following information:

1. Philippine Statistics Authority
2. Date of Publication/Release of the Technical Notes
3. Title of the Technical Notes
4. Link to the Technical Notes

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