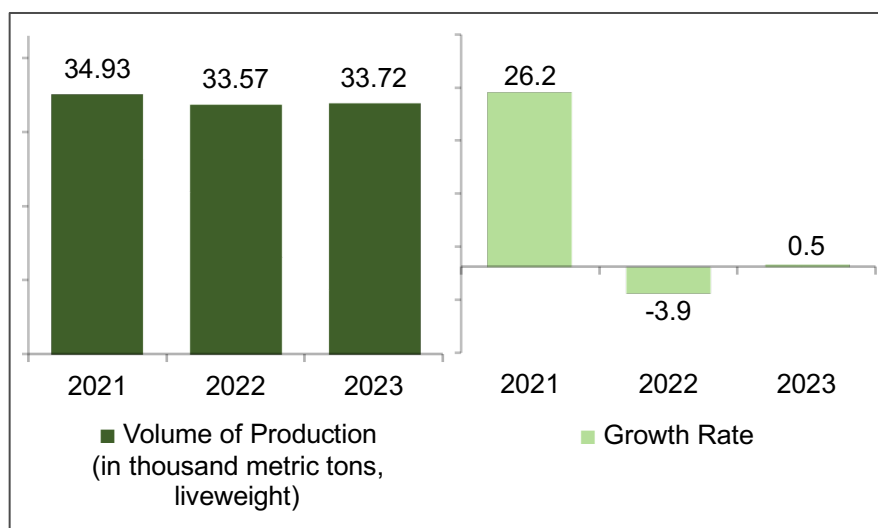


SPECIAL RELEASE

CARABAO SITUATION REPORT April to June 2023

Date of Release: 22 August 2023
Reference No. 2023-SSO-135

Figure 1. Volume and Annual Growth Rate of Carabao Production
Philippines: April to June 2021 – 2023^P



^P – preliminary

Sources: Philippine Statistics Authority, Backyard Livestock and Poultry Survey (BLPS), and Commercial Livestock and Poultry Survey (CLPS)

The volume of carabao production from April to June 2023 was recorded at 33.72 thousand metric tons, liveweight. This indicates an annual increase of 0.5 percent from the 33.57 thousand metric tons, liveweight output in the same period of 2022. (Figure 1 and Table 1)

Western Visayas was the top producer of carabao with 4.40 thousand metric tons, liveweight or 13.0 percent share to the total carabao production during the period. Completing the top five regions with the highest volume of carabao production at liveweight in the second quarter of 2023 were the following:

- a. Northern Mindanao, 3.04 thousand metric tons;
- b. Davao Region, 2.94 thousand metric tons;
- c. Eastern Visayas, 2.84 thousand metric tons; and
- d. CALABARZON, 2.62 thousand metric tons.

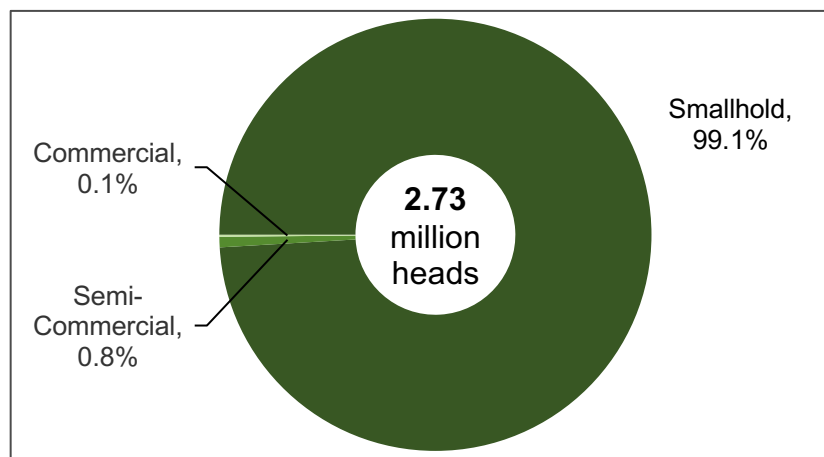
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These regions accounted for 46.9 percent of the country’s total carabao production during the quarter.

Relative to their outputs in the same quarter of 2022, 11 regions registered increments in production during the period. In terms of level, Central Visayas recorded the highest increase of 0.34 thousand metric tons, from 1.38 thousand metric tons in the second quarter of 2022 to 1.72 thousand metric tons in the same quarter of 2023. (Table 1)

Figure 2. Distribution of Carabao Inventory by Classification¹
Philippines: as of 30 June 2023^P



¹ – Based on new classification of animals per PSA Board Resolution No. 04, series of 2022 dated 13 May 2022 (Refer to Technical Notes Section V for the new classification)

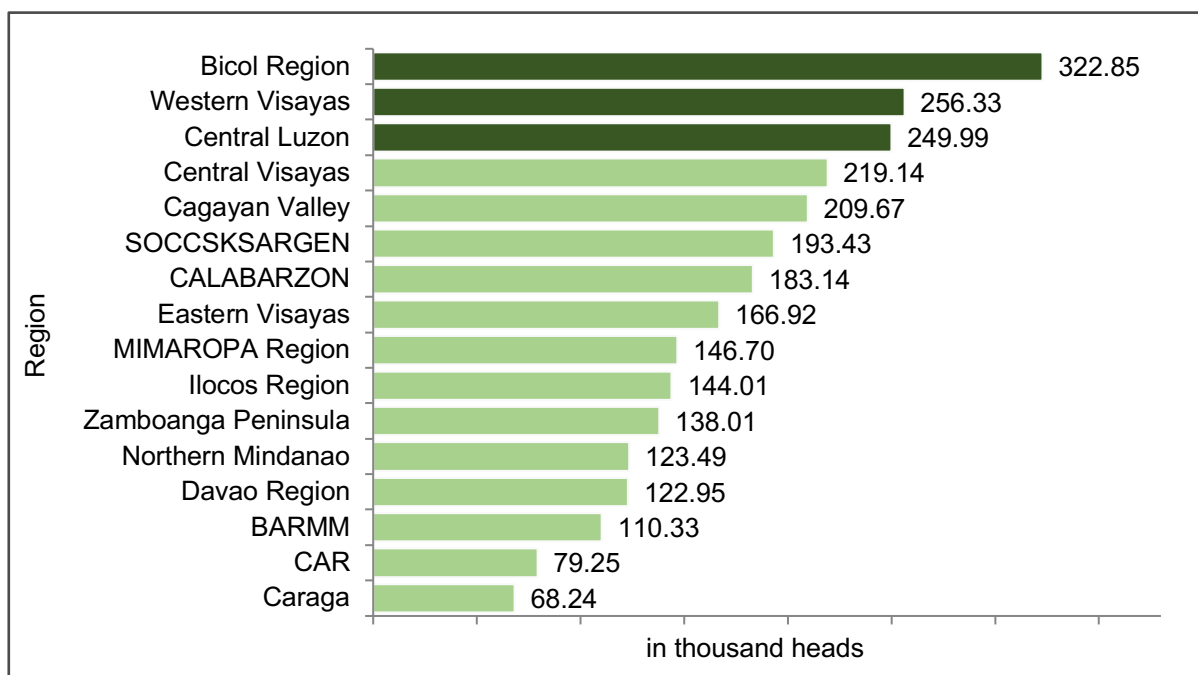
^P – preliminary

Sources: Philippine Statistics Authority, BLPS and CLPS

As of 30 June 2023, the total carabao inventory was estimated at 2.73 million heads. This indicates a decline of -1.2 percent from its previous year’s same period count of 2.77 million heads. About 99.1 percent of the country’s carabao population came from smallhold farms, while the remaining 0.8 percent and 0.1 percent were from semi-commercial and commercial farms, respectively. (Figure 2 and Table 2)

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Figure 3. Distribution of Carabao Inventory by Region
As of 30 June 2023^P

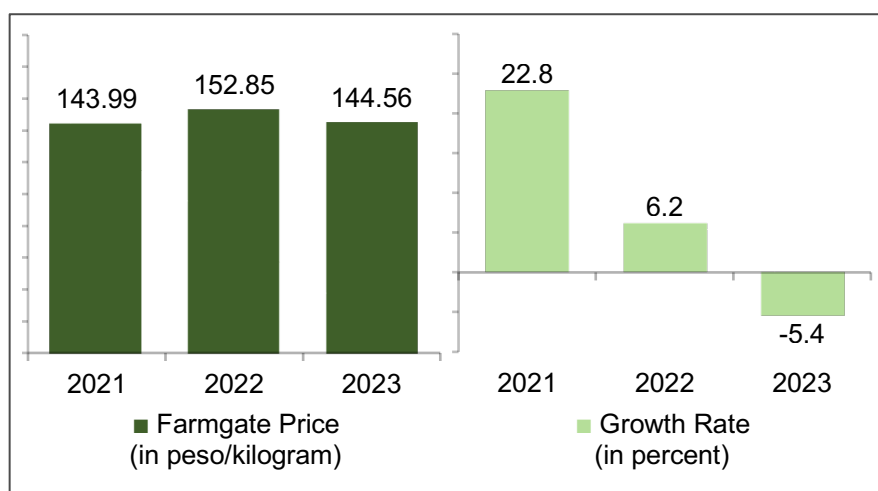


^P – preliminary

Sources: Philippine Statistics Authority, BLPS and CLPS

Bicol Region recorded the highest carabao population with 322.85 thousand heads as of 30 June 2023. This was followed by Western Visayas and Central Luzon with corresponding inventories of 256.33 thousand heads and 249.99 thousand heads. These three regions shared 30.3 percent to the country’s total carabao population during the period. (Figure 3 and Table 2)

Figure 4. Average Farmgate Price and Annual Growth Rate of Farmgate Price of Carabao for Slaughter, Philippines
April to June 2021 – 2023^P



^P – preliminary

Sources: Philippine Statistics Authority, 2021 Farm Prices Survey, 2022 – 2023 BLPS, and 2022 – 2023 CLPS

ft

The average farmgate price of carabao for slaughter was quoted at PhP 144.56 per kilogram, liveweight during the quarter. This reflects a decrease of -5.4 percent from the previous year's same period average farmgate price of PhP 152.85 per kilogram, liveweight. (Figure 4 and Table 3)

In the second quarter of 2023, the highest average farmgate price was observed in June at PhP 148.49 per kilogram, liveweight, while the lowest average farmgate price was recorded in May at PhP 138.64 per kilogram, liveweight. (Table 3)



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Deputy National Statistician

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RCL/PSJ

STATISTICAL TABLES

Table 1. Volume of Carabao Production by Region, Philippines
April to June 2021 – 2023^P

Region	Production (in metric tons, liveweight)			Annual Growth Rate (in percent)		Percent Share
	2021	2022	2023 ^P	2022	2023 ^P	2023 ^P
Philippines	34,932	33,567	33,719	-3.9	0.5	100.0
CAR	457	444	448	-2.8	0.9	1.3
I – Ilocos Region	1,973	2,315	2,132	17.4	-7.9	6.3
II – Cagayan Valley	2,114	1,974	2,049	-6.6	3.8	6.1
III – Central Luzon	1,750	1,584	1,783	-9.5	12.6	5.3
IVA – CALABARZON	2,823	2,600	2,617	-7.9	0.7	7.8
MIMAROPA Region	2,150	1,231	1,334	-42.7	8.3	4.0
V – Bicol Region	2,042	2,073	2,088	1.5	0.7	6.2
VI – Western Visayas	4,436	4,274	4,395	-3.7	2.8	13.0
VII – Central Visayas	1,409	1,379	1,722	-2.1	24.9	5.1
VIII – Eastern Visayas	2,923	2,630	2,836	-10.0	7.8	8.4
IX – Zamboanga Peninsula	2,165	2,244	1,936	3.6	-13.7	5.7
X – Northern Mindanao	2,760	3,065	3,039	11.1	-0.8	9.0
XI – Davao Region	3,612	3,314	2,943	-8.2	-11.2	8.7
XII – SOCCSKSARGEN	2,220	1,852	1,677	-16.6	-9.4	5.0
XIII – Caraga	486	478	524	-1.5	9.5	1.6
BARMM ^{1/}	1,612	2,109	2,197	30.9	4.2	6.5

^P – preliminary

^{1/} – The sample coverage for BARMM in 2023 includes provinces of Maguindanao del Sur and Maguindanao del Norte (previously Province of Maguindanao), Cotabato City, and the Eight Area Clusters (63 barangays, previously from Province of Cotabato).

Note: Details may not add up to total due to rounding. Growth rate and percent share may yield different results when computed manually due to rounding.

Sources: Philippine Statistics Authority, Backyard Livestock and Poultry Survey, and Commercial Livestock and Poultry Survey

Table 2. Carabao Inventory by Classification and Region, Philippines
As of 30 June 2021 – 2023^P

Region	Inventory (in number of heads)			Annual Growth Rate (in percent)		Percent Share
	2021	2022	2023 ^P	2022	2023 ^P	2023 ^P
Total						
Philippines	2,846,879	2,766,916	2,734,451	-2.8	-1.2	100.0
CAR	79,094	78,637	79,251	-0.6	0.8	2.9
I – Ilocos Region	179,354	156,710	144,005	-12.6	-8.1	5.3
II – Cagayan Valley	215,807	215,497	209,674	-0.1	-2.7	7.7
III – Central Luzon	234,993	241,032	249,991	2.6	3.7	9.1
IVA – CALABARZON	182,316	181,611	183,135	-0.4	0.8	6.7
MIMAROPA Region	112,108	122,703	146,695	9.5	19.6	5.4
V – Bicol Region	323,797	321,822	322,852	-0.6	0.3	11.8
VI – Western Visayas	289,287	268,987	256,334	-7.0	-4.7	9.4
VII – Central Visayas	209,315	222,632	219,140	6.4	-1.6	8.0
VIII – Eastern Visayas	207,042	184,404	166,919	-10.9	-9.5	6.1
IX – Zamboanga Peninsula	143,440	138,809	138,008	-3.2	-0.6	5.0
X – Northern Mindanao	130,723	123,225	123,491	-5.7	0.2	4.5
XI – Davao Region	141,974	129,593	122,954	-8.7	-5.1	4.5
XII – SOCCSKSARGEN	200,743	199,006	193,428	-0.9	-2.8	7.1
XIII – Caraga	80,566	70,441	68,241	-12.6	-3.1	2.5
BARMM ^{1/}	116,320	111,807	110,333	-3.9	-1.3	4.0
Smallhold						
Philippines	2,822,702	2,743,643	2,709,069	-2.8	-1.3	100.0
CAR	79,094	78,637	77,375	-0.6	-1.6	2.9
I – Ilocos Region	179,168	156,309	143,667	-12.8	-8.1	5.3
II – Cagayan Valley	213,966	213,658	207,362	-0.1	-2.9	7.7
III – Central Luzon	224,650	232,794	242,449	3.6	4.1	8.9
IVA – CALABARZON	177,754	176,625	178,420	-0.6	1.0	6.6
MIMAROPA Region	107,035	117,303	141,116	9.6	20.3	5.2
V – Bicol Region	323,316	321,650	322,774	-0.5	0.3	11.9
VI – Western Visayas	289,184	268,877	256,184	-7.0	-4.7	9.5
VII – Central Visayas	209,203	222,420	218,971	6.3	-1.6	8.1
VIII – Eastern Visayas	206,798	184,158	166,696	-10.9	-9.5	6.2
IX – Zamboanga Peninsula	143,440	138,809	138,008	-3.2	-0.6	5.1
X – Northern Mindanao	129,574	121,818	121,350	-6.0	-0.4	4.5
XI – Davao Region	141,974	129,593	122,954	-8.7	-5.1	4.5
XII – SOCCSKSARGEN	200,743	199,006	193,428	-0.9	-2.8	7.1
XIII – Caraga	80,483	70,179	67,982	-12.8	-3.1	2.5
BARMM ^{1/}	116,320	111,807	110,333	-3.9	-1.3	4.1

Continued

Table 2. – Concluded

Region	Inventory (in number of heads)			Annual Growth Rate (in percent)		Percent Share
	2021	2022	2023 ^P	2022	2023 ^P	2023 ^P
Semi-commercial						
Philippines	20,900	19,928	21,374	-4.7	7.3	100.0
CAR	0	0	1,876	..	..	8.8
I – Ilocos Region	186	401	338	115.6	-15.7	1.6
II – Cagayan Valley	1,464	1,334	1,986	-8.9	48.9	9.3
III – Central Luzon	8,532	6,737	5,903	-21.0	-12.4	27.6
IVA – CALABARZON	4,562	4,986	4,715	9.3	-5.4	22.1
MIMAROPA Region	5,073	5,400	5,579	6.4	3.3	26.1
V – Bicol Region	481	172	78	-64.2	-54.7	0.4
VI – Western Visayas	103	110	150	6.8	36.4	0.7
VII – Central Visayas	112	212	169	89.3	-20.3	0.8
VIII – Eastern Visayas	244	246	223	0.8	-9.3	1.0
IX – Zamboanga Peninsula	0	0	0	..	..	..
X – Northern Mindanao	60	68	98	13.3	44.1	0.5
XI – Davao Region	0	0	0	..	..	..
XII – SOCCSKSARGEN	0	0	0	..	..	..
XIII – Caraga	83	262	259	215.7	-1.1	1.2
BARMM ^{1/}	0	0	0	..	..	..
Commercial						
Philippines	3,277	3,345	4,008	2.1	19.8	100.0
CAR	0	0	0	..	..	..
I – Ilocos Region	0	0	0	..	..	..
II – Cagayan Valley	377	505	326	34.0	-35.4	8.1
III – Central Luzon	1,811	1,501	1,639	-17.1	9.2	40.9
IVA – CALABARZON	0	0	0	..	..	..
MIMAROPA Region	0	0	0	..	..	..
V – Bicol Region	0	0	0	..	..	..
VI – Western Visayas	0	0	0	..	..	..
VII – Central Visayas	0	0	0	..	..	..
VIII – Eastern Visayas	0	0	0	..	..	..
IX – Zamboanga Peninsula	0	0	0	..	..	..
X – Northern Mindanao	1,089	1,339	2,043	23.0	52.6	51.0
XI – Davao Region	0	0	0	..	..	..
XII – SOCCSKSARGEN	0	0	0	..	..	..
XIII – Caraga	0	0	0	..	..	..
BARMM ^{1/}	0	0	0	..	..	..

.. – data not applicable

^P – preliminary

^{1/} – The sample coverage for BARMM in 2023 includes provinces of Maguindanao del Sur and Maguindanao del Norte (previously Province of Maguindanao), Cotabato City, and the Eight Area Clusters (63 barangays, previously from Province of Cotabato).

Note: Growth rate and percent share may yield different results when computed manually due to rounding.

Sources: Philippine Statistics Authority, Backyard Livestock and Poultry Survey, and Commercial Livestock and Poultry Survey

Table 3. Average Farmgate Price of Carabao for Slaughter
Philippines: April to June 2021 – 2023^P

Month	Average Farmgate Price (in peso per kilogram, liveweight)			Annual Growth Rate (in percent)	
	2021	2022	2023 ^P	2022	2023 ^P
Average	143.99	152.85	144.56	6.2	-5.4
April	149.98	158.83	146.54	5.9	-7.7
May	132.28	149.38	138.64	12.9	-7.2
June	149.70	150.33	148.49	0.4	-1.2

^P – preliminary

Note: Quarterly average and growth rate may yield different results when computed manually due to rounding.

Sources: Philippine Statistics Authority, 2021 Farm Prices Survey, 2022 – 2023 Backyard Livestock and Poultry Survey, and 2022 – 2023 Commercial Livestock and Poultry Survey

TECHNICAL NOTES

I. Introduction

The Carabao Situation Report presents the industry situation in terms of volume of production, inventory by classification, and monthly average farmgate prices. 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 the second quarter of 2023, the number of sample households covered was 21,184 from the 1,156 sample barangays nationwide. On the other hand, the CLPS seeks to generate estimates on the supply and disposition of livestock and poultry commodities from the sample establishments. There were 60 sample carabao establishments covered in the second quarter of 2023.

Both surveys are conducted quarterly in all provinces, including National Capital Region (NCR). 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 field data collection for the second quarter of 2023 was conducted from 01 to 08 July 2023. The data collection was undertaken by hired Statistical Researchers (SRs) through face-to-face interview with qualified respondents of the sample households. Prior to data collection, training of selected staff from Field Offices, including SRs, was conducted to ensure uniform understanding of concepts and proper implementation of survey procedures. Field and manual editing of the accomplished questionnaires was done to ensure completeness, consistency, and reasonableness of the information gathered.

2. Survey Questionnaire

The BLPS Questionnaire is a 19-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 household operation/purpose
- b. Inventory by age
- c. Breeder that gave birth
- d. Supply indicator (number of births, received/acquired)

- e. Slaughtered in the household
- f. Sold live for slaughter
- g. Sold live for other purposes (breeding, fattening)
- h. Average farmgate price
- i. Milk production indicators
- j. Deaths/Losses
- k. Average liveweight per head
- l. Disposition by areas of destination
- m. Assessment of household's production

B. Commercial Livestock and Poultry Survey

1. Data collection procedure

The schedule of field data collection for the second quarter of 2023 was during the last 10 days of June 2023. The data collection was undertaken by hired SRs through face-to-face interview with qualified respondents of the farms/establishments. Prior to data collection, training of Field Office personnel, including SRs, was conducted to ensure that the procedures and concepts of the survey are understood and properly implemented. Field and manual editing of the accomplished questionnaires was done to ensure completeness, consistency, and reasonableness of the information gathered.

2. Survey Questionnaire

The CLPS Carabao Survey Questionnaire is a five-page questionnaire that aims to gather necessary information on supply and disposition of carabao commercial farms/establishments.

The data items included in the survey are as follows:

- a. Type of establishment operation
- b. Inventory by age
- c. Supply indicator (number of births, received/acquired)
- d. Slaughtered in the establishment
- e. Sold live for slaughter
- f. Sold live for other purposes (breeding, fattening, drafting)
- g. Average farmgate price
- h. Milk production indicators
- i. Deaths/Losses
- j. Average liveweight per head
- k. Disposition by areas of destination
- l. Assessment of establishment's production

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 Households (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 Provincial Statistical Offices every quarter.

2. Sample Selection Procedure

The BLPS uses two-stage sampling design. The first stage is the selection of sample barangays or Primary Sampling Units (PSUs) using probability proportional to size where the measure of size is the total animal inventory.

The second stage is the selection of sample households or Secondary Sampling Units (SSUs) 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.

The sample size was determined based on a five percent (5%) target coefficient of variation.

3. Domain

The domain of the survey is the province. In the case of NCR, the region is the domain.

4. Estimation Procedure

a. Survey Weight

a.1. Base Weight

PSU Weight

The PSU weight is computed as follows:

$$w_{1i} = \frac{X}{aX_i}$$

Where:

w_{1i} = PSU weight

a = barangay sample size for the province

X = total animal inventory for the province
 X_i = animal inventory of barangay i
 i = subscript for barangay

SSU Weight

The SSU weight is computed as follows:

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

Where:

w_{2ij} = SSU weight
 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 of barangay i
 m_{ij} = number of sample operators in household j of barangay i
 j = subscript for household

Base Weight

The base weight is the product of the PSU and SSU weights. That is,

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

Where:

w_{ij} = base weight of household j in barangay i
 w_{1i} = PSU weight
 w_{2ij} = SSU weight

a.2. Adjustment Factor

The adjustment factor to account for non-response 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 province 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 responding, 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 Weight

The final weight formula is given as follows:

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

Where:

w'_{ij} = final weight for province p

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

A_p = adjustment factor for province p

b. Estimation of Total

b.1. Estimation of Provincial Total

Estimation of provincial total is done per animal type and the formula is given as follows:

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

Where:

\hat{Y}_p = estimated total for province p

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 for the provinces within the region, while the national estimate is derived by adding all the regional estimates obtained in each region.

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 farms/establishments using the FMF.

2. Sample Selection Procedure

The CLPS uses stratified probability proportional to size sampling design, where the establishment is the primary sampling unit. The animal type serves as a stratification variable and the size measure is the maximum farm/housing capacity of the establishment. Per animal type, the establishments are sorted by maximum farm/housing capacity and sample establishments are selected using systematic sampling. A panel sample establishment is maintained for a year and a new set of samples is selected during the first quarter of the next year.

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

3. Domain

The domain of the survey is the province. In the case of NCR, the region is the domain.

4. Estimation Procedure

a. Survey Weight

a.1. Base Weight

The base weight per animal type is given as follows:

$$w_i = \frac{X}{aX_i}$$

Where:

w_i = base weight of establishment i

a = number of sample establishments in the province

X_i = maximum farm/housing capacity of establishment i

X = total maximum farm/housing capacity of the province

a.2. Adjustment Factor

The adjustment factor to account for non-response is given as follows:

$$A_p = \frac{\sum_{i=1}^a w_i X_{1i}}{\sum_{i=1}^a w_i X_{2i}}$$

Where:

A_p = adjustment factor for province p

X_{1i} = eligible status of establishment i (1 if eligible, 0 otherwise)

X_{2i} = responding status of establishment i (1 if responding, 0 otherwise)

Eligible establishments are the following

- Operational
- Refusal
- Cannot be contacted/Not accessible

Ineligible establishments are the following:

- Temporarily Stopped Operation
- Permanently Closed/Stopped Operation
- Shifted Farm Operation
- Cannot Be Located
- Duplicate
- Out-of-scope - Recreation
- Out-of-scope - Change Sector
- Out-of-scope - Main Office/Ancillary Unit

a.3. Final Weight

The final weight formula is given as follows:

$$w'_i = w_i \times A_p$$

Where:

w'_i = final weight of establishment i

w_i = base weight of establishment i

A_p = adjustment factor for province p

b. Estimation

b.1. Estimation for the Province

Estimation of provincial total is done per animal type and the formula is given as follows:

$$\hat{Y}_p = \sum_{i=1}^a w'_i y_i$$

Where:

\hat{Y}_p = estimated total for province p

y_i = survey data (inventory, production, etc.) for establishment i

b.2. Estimation of Regional and National Total

The regional estimates are obtained by aggregating the estimates for the provinces within the region, while the national estimates are derived by adding all the regional estimates obtained in each region.

IV. Concepts and Definitions of Terms

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

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

Volume of production refers to the number of tended/raised carabao disposed for slaughter, including those which were shipped out for slaughter. 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	Tending not more than five (5) caracows
Semi-commercial	Tending six (6) to 50 heads of caracows
Commercial	Tending 51 caracows and above

The data on the inventory of carabao based on the definitions indicated above can be accessed in the OpenSTAT website of PSA with the link: bit.ly/livestock-inventory-by-type-classification



Similarly, data on inventory of carabao by farm type (i.e., backyard and commercial) can still be accessed in the OpenSTAT website of PSA with the link: bit.ly/livestock-inventory-by-type-farm



VI. Dissemination of Results and Revision

The PSA disseminates the Carabao Situation Report quarterly and 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

Philippine Statistics Authority. (22 August 2023). *Technical Notes on Q2 2023 Carabao Situation Report*. <https://psa.gov.ph/livestock-poultry-iprs/carabao/technical-notes>



VIII. Contact Information

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