

CARABAO-BASED BUSINESS PORTFOLIO

Series | Number 1



Department of Agriculture
PHILIPPINE CARABAO CENTER
CERTIFIED ISO 9001 | ISO 14001 | ISO 43001

**AN INVESTMENT
OVERVIEW**



5-COW START-UP DAIRY BUFFALO FARM BUSINESS

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5-COW START-UP DAIRY BUFFALO FARM BUSINESS

An Investment Overview

Monitoring and Business Planning Support Section
Planning and Information Management Division
DA-Philippine Carabao Center National Headquarters and Gene Pool

Publications in the "Carabao-Based Business Portfolio Series":

1. 5-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
2. 10-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
3. 15-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
4. 20-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
5. 25-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
6. 50-Cow Start-up Dairy Buffalo Farm Business: An Investment Overview
7. Corn Silage Production Business: An Investment Overview
8. Vermicast Production Business: An Investment Overview
9. Small-Scale Dairy Processing Facility Business: An Investment Overview
10. Dairy Box One-Stop Shop Business: An Investment Overview
11. Kardeli Meat Products Retail Business: An Investment Overview



5-COW START-UP
DAIRY BUFFALO
FARM BUSINESS
AN INVESTMENT OVERVIEW



FOREWORD

The current national landscape defines the Philippines as undergoing challenges because of economic shocks and market instability as consequences of the recent pandemic, international disputes, and natural calamities. The goal is to recover as soon as possible, strategically refocus in time of the new leadership, and continue with our allegiance to the global Sustainable Development Goals. The Department of Agriculture (DA) is vital in the attainment of the president's 8-point economic agenda, particularly those concerning food security, job creation, and investment flow to the agriculture sector – all towards reduced vulnerability, hunger, and poverty.

Attached to the DA, the Philippine Carabao Center is mandated through RA 7307 to conserve, propagate, and promote the carabao as a source of milk, meat, draft power, and hide. Since its creation in 1992, the agency has established its credibility as a premiere research and development institution serving as the lead agency for livestock and biotechnology research pursuant to DA AO no. 9 s. 2008, and just recently, as the National Livestock Cryobank for the department. DA-PCC have become a vital cog in the livestock industry working closely with various international and local funding institutions, national legislators, private organizations, LGUs, and all the other players across the carabao value chain towards increasing productivity, championing innovations, and proving the economic viability of carabao-based businesses.

With the reception of the 2018 released prototype publication of DA-PCC's Carabao-Based Business Portfolio Series featuring the investment requirement and financial viability of 6 Dairy Buffalo Businesses, to wit:

- (1) 5-Cow Start-up Dairy Buffalo Farm Business,**
- (2) 10-Cow Start-up Dairy Buffalo Farm Business,**
- (3) 15-Cow Start-up Dairy Buffalo Farm Business,**
- (4) 20-Cow Start-up Dairy Buffalo Farm Business,**
- (5) Silage Production, and**
- (6) Dairy Box One-Stop Shop.**



This official publication of investment guide is hereby issued to update the technical and economic assumptions given the innovations and the price changes of late. Additional businesses will also be introduced, and opportunities were divided in categories making the final portfolio that will be released in 2024 to 2027 consisting of the final investment modules as follows:

A. Dairy Value Chain

- 5-Cow Start-up Dairy Buffalo Farm Business
- 10-Cow Start-up Dairy Buffalo Farm Business
- 15-Cow Start-up Dairy Buffalo Farm Business
- 20-Cow Start-up Dairy Buffalo Farm Business
- 25-Cow Start-up Dairy Buffalo Farm Business
- 50-Cow Start-up Dairy Buffalo Farm Business
- Small-scale Dairy Processing Facility Business
- Dairy Box One-Stop Shop Business

B. Meat Value Chain

- 5 Carabao Fattening Business
- 10 Carabao Fattening Business
- Kardeli Meat Products Retail Business

C. Dairy and Meat Value Chain Inputs

- Vermicast Production Business
- Corn Silage Production Business
- Individual/Group AI Business
- Semen Straw Production Business

These publications are designed to guide potential investors as they consider venturing in the carabao value chain. Information on what crucial factors and events should and should not happen to earn profits in the long run are all included in the assumptions formulated after a series of consultation with DA-PCC technical experts, farmers, and other value chain players in the field.

With the effects of the National Feeding Program pursuant to RA 11037 also known as the “Masustansiyang Pagkain Para sa Batang Pilipino Act”, and the Carabao-based Business Improvement Network (CBIN) and Coconut-Carabao Development Project (CCDP) championed by Sen. Cynthia A. Villar, the carabao sector has gained much stability that it thrived even during the pandemic. These factors, along with DA-PCC’s brand of research, business, technical, market, and extension services provision

make the carabao value chain a promising investment opportunity. This portfolio conveys DA-PCC’s honest commitment to stimulating investment not just for the carabao sector but also for the agriculture sector in general. These business modules were just some of the tools that DA-PCC had developed to ensure a more private-led and thriving carabao value chain.

Mabuhay ang sektor ng Kalabawan!


DR. LIZA G. BATTAD
Executive Director



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INTRODUCTION

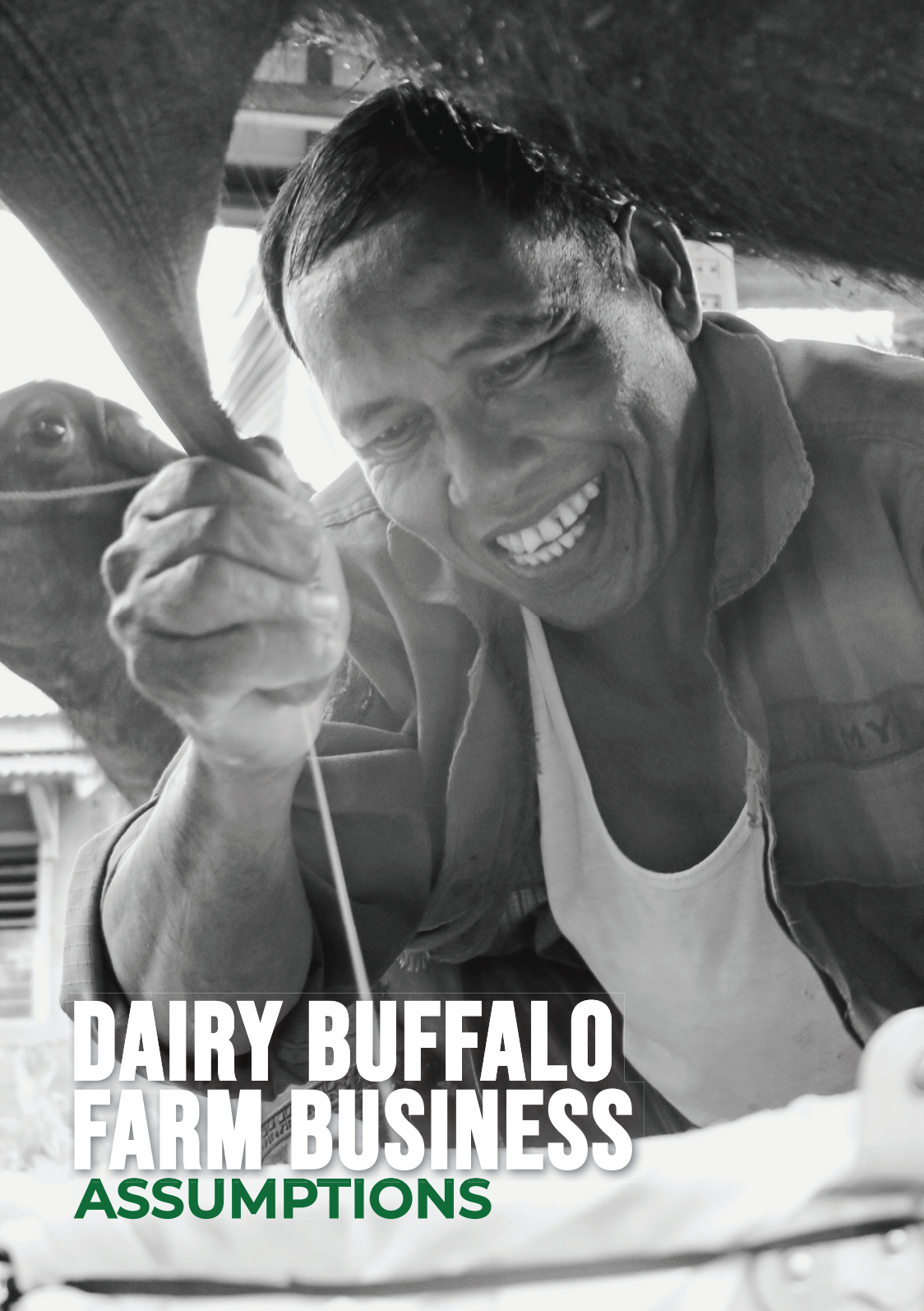
We present to you the 5-Cow Start-up Dairy Buffalo Farm Business as derived from the Dairy Value Chain segment of the Carabao Value Chain with an initial investment requirement of PHP779,018.58, projected to earn an Internal Rate of Return of 28.57%, with a payback period of 5.26 years.

Like each investment opportunity presented in the series, we begin with a set of assumptions from the technical, economic, and market aspect of the business. This section must be read thoroughly specially for interested investors with little to no background in the investment opportunity at hand. This is followed by a conceptual discussion of selected investment worthiness indicators i.e. Net Present Value, Hurdle Rate, Internal Rate of Return, Payback Period, Profitability Index, and initial investment requirement. A dedicated page showing the Summary of Profitability Indicators follows showing the numerical merits of the opportunity.

Details of the 10-year analysis follow starting with the projected Income Statement which shows the annual Revenues, Expenses, Net Income, and ROI. Supporting notes for specific revenues and expense items were provided afterward to show how the amounts were computed. Projected Cash Flows were then shown from which the investment worthiness indicators were generated. Finally, for the quantitative parts, the breakdown of the initial investment requirement was also provided with details as may be necessary.

Succeeding pages contain other vital information to wit: (1) Profitability Indicators, Summary of All Business Modules in the Portfolio, (2) Testimonial from actual adopters, (3) List of available DA-PCC technologies and contact information, (4) Inventory of best practices, (5) Glossary of terms, (6) Authors and other contact information, and (7) Pool of Technical Experts.





**DAIRY BUFFALO
FARM BUSINESS
ASSUMPTIONS**

THE BEAMING BUFFALO

Milk is a profitable commodity that we source naturally from our beloved carabaos. Being natural, projecting the profitability of dairy buffalo farming business will need to anchor on some necessary biological assumptions.

To visualize a financial flow of sets of annual revenues, expenses, income and returns encompassing a 10-year operating period, we hold the following set of assumptions that guided all the dairy farming models' profitability calculations.

The following dairy buffalo farm business assumptions were created with the guidance of technical experts of the agency and are based on the Business Development and Commercialization Unit's (BDCU) case study entitled: Profitability Analysis of Dairy Farming Business Portfolio, 2016 by Z. Sanchez et al.

ASSUMPTIONS MILK REVENUES



Heifers bought at establishment of the farm will be conditioned for breeding within six months.



Gestation period is estimated at 320 days



Lactation days for first Parity cows is estimated at 270 days, 285 days for 2nd to 4th parity cows and 280 days for fifth parity cows



Calving interval is estimated at 16 months or 480 days
*no reproductive disorders



First lactation: Ave. 5.2L/day
Next lactations: Ave. 6.5L/day
*using twice-a-day milking



Milk fed to calf per day for 60 days is equal to an average of 3 liters



There is a mixed population of crossbreeds for the initial animals (50:50, 25:75, 83:17)



Lactation days are assumed to be strictly followed to prevent complications in the succeeding lactation of cows



Proper feeding management is still implemented during dry period of cows



Raw milk price is at PHP75.00 at year 1 increasing by 3% annually to account for inflation



Each heifer is impregnated every after one month



Heifer assumed impregnated every after one month through either artificial insemination or natural mating



Sex of calves produced is 50:50 ratio of male and female

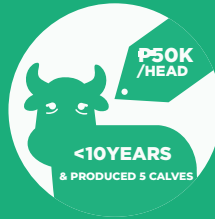


Fixed-time AI is considered as intervention to the breeding of animals

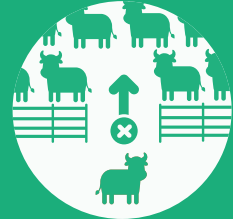
ASSUMPTIONS MEAT REVENUES



Male calves are sold at minimum of PHP45,000 per head after 8 months at year 1 (increasing by 3% annually to account for inflation)



Culled cows which are less than 10 years and have produced 5 calves are sold at PHP50,000 at year 1 (increasing 3% annually to account for inflation)



No cows are bought from outside entities to replace culled cows. Incoming replacements are heifers staging their first parity calving

OTHER REVENUES



Other revenue line items such as manure, silage, used sacks, etc.) are accounted as 5% of the sum of milk and meat revenues

TRIVIA

On a mountainous island in the Philippines, an indigenous group collectively known as Mangyans is sharing their home with the rarest buffalo in the world, the critically endangered tamaraw. The mountains of Iglit-Baco in Mindoro Island in the central region of the Philippines are home to 480 of 600 remaining tamaraws in the wild. (UNDP Medium, 2020)

1 of 4





In compliance with Philippine Accounting Standards 41 titled "Agriculture", the increase or decrease in total value of herd is estimated at year-end and is treated as other non-cash income.

All female calves are not sold and are prepared for dairying purposes in the future.



The occurrence of mortality increases as the herd population grows. This is primarily because the attention given by the manager/owner will be divided among the growing number of carabaos. This forces the owner to hire additional laborers, although these additional manpower would still have to be familiarized with the management system in the farm.

Acceptable annual mortality rate of the agency is 5% for calves and 2% for adult animals. Mortality rate for the calves was applied on all the calving for the year in random manner. On the other hand, the mortality rate for adult cows was applied for the existing number of cows for the year in random manner. This assumption showed mortalities starting on the 20-cow start-up dairy buffalo farm business module onwards.



ASSUMPTIONS GAIN OR LOSS ON CHANGES IN FAIR VALUE OF BIOLOGICAL ASSETS

Animals are valued based on the following pricing assumptions:

| Type | Beginning Value (PHP) | Ending/Transferred/Selling Value (PHP) |
|-----------------|-----------------------|--|
| Male Calf | 20,000.00 | 45,000.00 |
| Female Calf | 20,000.00 | 50,000.00 |
| Female Yearling | 50,000.00 | 60,000.00 |
| Heifer | 60,000.00 | 70,000.00 |
| Bull | 75,000.00 | 75,000.00 |
| Cow | 70,000.00 | 75,000.00 |

Source: Supplier from Pampanga

ASSUMPTIONS EXPENSES

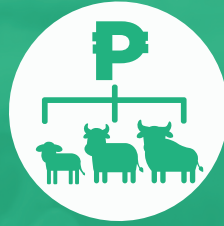
Direct Materials, which include feeding and drugs and biologics requirements, Direct Labor, Overhead and Selling and Admin Expenses are estimated using the following annual rate:

| | Direct Material (PHP) | Direct Labor (PHP) | Overhead (PHP) | Selling and Admin (PHP) | Total Estimated Cost of maintaining each animal per year (PHP) |
|----------------------------|-----------------------|--------------------|----------------|-------------------------|--|
| Cost per Cow per year | 30,335.00 | 3,758.05 | 2,558.38 | 184.39 | 36,835.82 |
| Cost per Bull per year | 21,234.50 | 3,758.05 | 2,558.38 | 184.39 | 27,735.32 |
| Cost per Heifer per year | 22,751.25 | 3,758.05 | 2,558.38 | 184.39 | 29,252.07 |
| Cost per Yearling per year | 15,167.50 | 3,758.05 | 2,558.38 | 184.39 | 21,668.32 |
| Cost per Calf per year | 15,167.50 | 3,758.05 | 2,558.38 | 184.39 | 21,668.32 |

**Source: 2022 Updated costs by technical consultants based on the Case study by Z. Sanchez, et al., 2016)*

Direct Materials are allocated based on the following feeding cost equivalencies:

| | |
|----------|------|
| Cow | 1 |
| Bull | 0.7 |
| Heifer | 0.75 |
| Yearling | 0.5 |
| Calf | 0.5 |



Direct Materials expenses are estimated using annual rates. Direct Labor excludes the labor pertinent to feeding as it was included in the direct material costs.



Cost equivalences are used to allocate Direct Materials to different animal types.

TRIVIA

In 2019, the top country in the world with the most buffaloes is India, with a total of 109,850,000 heads. (Livestock Census in India, 2019)

2 of 4

ASSUMPTIONS NET INCOME AND RETURN ON INVESTMENT



30% of overhead expenses i.e. non-cash expenses and the unrealized gain or loss on changes in fair value of biological assets are excluded in the time value analysis.



Annual return on investment is computed by dividing accrual net income by total accrual expenses

$$ROI = \left(\frac{\text{ACCRUAL NET INCOME}}{\text{ACCRUAL NET EXPENSES}} \right) \times 100$$



Annual net income is computed by deducting the total expenses from the total revenues under accrual accounting method.

$$\text{ANNUAL NET INCOME} = \text{TOTAL REVENUES} - \text{TOTAL EXPENSES}$$

INVESTMENT-WORTHINESS INDICATORS

For identifying the investment worthiness of this portfolio, following indicators were computed as follows:

Net Present Value of Cash Flows is computed by discounting annual cash flows using a hurdle rate of 14%

Hurdle Rate is the minimum rate that a company expects to earn when investing in a project. Hence the hurdle rate is also referred to as the company's required rate of return or target rate. In order for a project or business venture to be accepted, its internal rate of return must exceed the hurdle rate.

Here, the hurdle rate is assumed to be 14%. Hence, the portfolio must carry an Internal Rate of Return higher than 14% or else, the investment will have to be rejected.^[1]

Internal Rate of Return (IRR) is a metric used in evaluating investment options to estimate the profitability of potential investments. IRR may be understood as the rate of growth a project or business is expected to generate within a specified time frame.

For this investment portfolio, IRR is also estimated and compared vis-à-vis the set hurdle rate of 14%. The IRR should be greater than 14% to become investment-worthy.^[2]

Payback Period is the time at which all initial investments will be recuperated. An investment portfolio of this type should return a Payback Period of at most 6 to 7 years. With this, it is imperative to note that Dairy Farming Business is for committed businessmen only

Profitability Index All annual Net Cash Inflows (disregarding the initial investment) are discounted using the hurdle rate of 14% for indexing purposes with the amount of Initial Investment. This is actually the model used for ranking different investment portfolios. As a general rule, the profitability index should be greater than 1.

Initial Investment is the summation of the estimated capital investment requirement (i.e. Property, plant and equipment, working capital)

[1] Averkamp, Harold (CPA, MBA. What is hurdle rate?. Accounting Coach, 2018. <https://www.accountingcoach.com/blog/what-is-hurdle-rate>. March 7, 2018

[2] Internal Rate of Return – IRR. Investopedia, 2018. <https://www.investopedia.com/terms/i/irr.asp>. March 7, 2018

5-COW START-UP DAIRY BUFFALO FARM BUSINESS

SUMMARY OF PROFITABILITY INDICATORS

BASED ON ZERO-DEBT 10-YEAR PROJECTION

Initial Investment

PHP779,018.58

Daily Net Income

PHP1,407.04

Total Daily Revenue

PHP2,524.47

Total Daily Cost

PHP1,117.43

Payback Period

5.26 Years

Net Present Value (NPV)

PHP890,034.65

Internal Rate of Return

28.57%

VS

Bank Time Deposit 5-6%
Equity Security in Financial Market 10-14%
Treasury Bills (Phil.) 6%

We see the 5-Cow Start-up Dairy Buffalo Farm Business as an advancement from smaller herd sizes prevailing in rural farms.

This upgraded level has resulted from owners' commitment in stabilizing their farm's financial and operational viability.

At this level of operation, the farm is gradually adopting carabao raising technologies and ideal farm management practices.

Dairy Farms with 5-9 cow heads may earn an average daily net income of PHP1,407.04 per day. In this stage and scale, the key to achieve a felt stability in running a farm business is to continue growing and upgrading the herd through either breeding or acquisition.

INTRODUCTION TO
FINANCIAL
STATEMENTS



REVENUE FORECAST PROJECTED INCOME STATEMENT

CASE 1: ZERO DEBT

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|--------------------|--------------------|-------------------|-------------------|
| REVENUES | | | | |
| Raw Milk Sales | - | 83,910.00 | 399,134.01 | 569,716.56 |
| Revenue from Sale of Animals | - | - | 139,050.00 | 47,740.50 |
| Other Revenues | - | 4,195.50 | 26,909.20 | 30,872.85 |
| Unrealized Gain on Change in FV of Biological Assets (PAS 41) | 50,000.00 | 60,000.00 | 30,000.00 | 130,000.00 |
| Total Farm Revenues | 50,000.00 | 148,105.50 | 595,093.21 | 778,329.91 |
| EXPENSES | | | | |
| Total Direct Material | 113,756.25 | 155,466.88 | 197,177.15 | 223,720.63 |
| Direct Labor | 18,790.25 | 24,427.33 | 30,064.40 | 35,701.48 |
| Total Overhead Expenses | 12,791.90 | 18,429.47 | 22,267.04 | 26,704.61 |
| Total Selling and Admin Expenses | 921.95 | 1,198.54 | 1,475.12 | 1,751.71 |
| Total Expenses | 146,260.35 | 199,522.21 | 250,984.06 | 287,878.42 |
| Farm Net Income/Net Loss | (96,260.35) | (51,416.71) | 344,109.15 | 490,451.50 |
| ROI* | -65.81% | -25.77% | 137.10% | 170.37% |

**For the purpose of continually computing the ROI after the initial investment, the total expenses will be considered as the annual "investment". The new formula of the annual ROI will be: Net Income divided by Total expenses. This is with the assumption that annual total expenses are considered investments in the business.*



| YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 | YEAR 10 |
|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| 484,959.07 | 575,889.09 | 799,919.40 | 1,156,044.12 | 975,728.12 | 1,147,337.41 |
| 98,345.43 | 151,943.69 | 394,153.19 | 268,661.77 | 221,377.30 | 114,009.31 |
| 29,165.23 | 36,391.64 | 59,703.63 | 71,235.29 | 59,855.27 | 63,067.34 |
| 150,000.00 | 165,000.00 | (35,000.00) | 170,000.00 | 165,000.00 | 320,000.00 |
| 762,469.73 | 929,224.42 | 1,218,776.21 | 1,665,941.18 | 1,421,960.68 | 1,644,414.06 |
| 284,390.63 | 356,436.25 | 382,221.00 | 404,213.88 | 464,883.88 | 582,432.00 |
| 46,975.63 | 58,249.78 | 65,765.88 | 71,402.95 | 75,161.00 | 92,072.23 |
| 34,979.75 | 43,254.89 | 48,971.65 | 48,609.22 | 51,167.60 | 62,680.31 |
| 2,304.88 | 2,858.05 | 3,226.83 | 3,503.41 | 3,687.80 | 4,517.56 |
| 368,650.88 | 460,798.96 | 500,185.35 | 527,729.46 | 594,900.28 | 741,702.09 |
| 393,818.85 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 106.83% | 101.66% | 143.66% | 215.68% | 139.03% | 121.71% |

Income Statement INSIGHT

Dairy Buffalo Farm Business owners expect to start gaining positive income in the 3rd year of operation. The financial performance begins to turn around as the business builds up revenues in raw milk sales.

1 of 4



REVENUE FORECAST PROJECTED INCOME STATEMENT

CASE 2: 70% DEBT

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|---------------------|---------------------|-------------------|-------------------|
| REVENUES | | | | |
| Raw Milk Sales | - | 83,910.00 | 399,134.01 | 569,716.56 |
| Revenue from Sale of Animals | - | - | 139,050.00 | 47,740.50 |
| Other Revenues | - | 4,195.50 | 26,909.20 | 30,872.85 |
| Unrealized Gain on Change in FV of Biological Assets (PAS 41) | 50,000.00 | 60,000.00 | 30,000.00 | 130,000.00 |
| Total Farm Revenues | 50,000.00 | 148,105.50 | 595,093.21 | 778,329.91 |
| EXPENSES | | | | |
| Total Direct Material | 113,756.25 | 155,466.88 | 197,177.50 | 223,720.63 |
| Direct Labor | 18,790.25 | 24,427.33 | 30,064.40 | 35,701.48 |
| Total Overhead Expenses | 12,791.90 | 18,429.47 | 22,267.04 | 26,704.61 |
| Total Selling and Admin Expenses | 921.95 | 1,198.54 | 1,475.12 | 1,751.71 |
| Total Expenses | 146,260.35 | 199,522.21 | 250,984.06 | 287,878.42 |
| Farm Net Income/Net Loss | (96,260.35) | (51,416.71) | 344,109.15 | 490,451.50 |
| Less: Interest Expense* | 81,796.95 | 65,437.56 | 49,078.17 | 32,718.78 |
| Earnings after Interest | (178,057.30) | (116,854.27) | 295,030.98 | 457,732.72 |
| ROI** | -78.08% | -44.10% | 98.32% | 142.78% |

* Interests are computed at 15% annual rate

**For the purpose of continually computing the ROI after the initial investment, the total expenses will be considered as the annual "investment". The new formula of the annual ROI will be: Net Income divided by Total expenses. This is with the assumption that annual total expenses are considered investments in the business.



| YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 | YEAR 10 |
|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| 484,959.07 | 575,889.09 | 799,919.40 | 1,156,044.12 | 975,728.12 | 1,147,337.41 |
| 98,345.43 | 151,943.69 | 394,153.19 | 268,661.77 | 221,377.30 | 114,009.31 |
| 29,165.23 | 36,391.64 | 59,703.63 | 71,235.29 | 59,855.27 | 63,067.34 |
| 150,000.00 | 165,000.00 | (35,000.00) | 170,000.00 | 165,000.00 | 320,000.00 |
| 762,469.73 | 929,224.42 | 1,218,776.21 | 1,665,941.18 | 1,421,960.68 | 1,644,414.06 |
| 284,390.63 | 356,436.25 | 382,221.00 | 404,213.88 | 464,883.88 | 582,432.00 |
| 46,975.63 | 58,249.78 | 65,765.88 | 71,402.95 | 75,161.00 | 92,072.23 |
| 34,979.75 | 36,391.64 | 59,703.63 | 71,235.29 | 51,167.60 | 62,680.31 |
| 2,304.88 | 2,858.05 | 3,226.83 | 3,503.41 | 3,687.80 | 4,517.56 |
| 368,650.88 | 460,798.96 | 500,185.35 | 527,729.46 | 594,900.28 | 741,702.09 |
| 393,818.85 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 16,359.39 | | | | | |
| 377,459.46 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 98.04% | 101.66% | 143.66% | 215.68% | 139.03% | 121.71% |

Income Statement INSIGHT

Here in the Carabao-Based Business Portfolio, we presented a variety of cases featuring debt financing at 50%, 60% and 70% with a 15% annual interest rate. With debt financing, interest payments are expected to create a dent in the early years of operation, thus lengthening the payback period. Although there is a delay, this strategy saves the investor by transferring a portion of the inherent possible risk of loss to the creditors.

2 of 4



REVENUE FORECAST PROJECTED INCOME STATEMENT

CASE 3: 60% DEBT

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|---------------------|---------------------|-------------------|-------------------|
| REVENUES | | | | |
| Raw Milk Sales | - | 83,910.00 | 399,134.01 | 569,716.56 |
| Revenue from Sale of Animals | - | - | 139,050.00 | 47,740.50 |
| Other Revenues | - | 4,195.50 | 26,909.20 | 30,872.85 |
| Unrealized Gain on Change in FV of Biological Assets (PAS 41) | 50,000.00 | 60,000.00 | 30,000.00 | 130,000.00 |
| Total Farm Revenues | 50,000.00 | 148,105.50 | 595,093.21 | 778,329.91 |
| EXPENSES | | | | |
| Total Direct Material | 113,756.25 | 155,466.88 | 197,177.50 | 223,720.63 |
| Direct Labor | 18,790.25 | 24,427.33 | 30,064.40 | 35,701.48 |
| Total Overhead Expenses | 12,791.90 | 18,429.47 | 22,267.04 | 26,704.61 |
| Total Selling and Admin Expenses | 921.95 | 1,198.54 | 1,475.12 | 1,751.71 |
| Total Expenses | 146,260.35 | 199,522.21 | 250,984.06 | 287,878.42 |
| Farm Net Income/Net Loss | (96,260.35) | (51,416.71) | 344,109.15 | 490,451.50 |
| Less: Interest Expense* | 70,111.67 | 56,089.34 | 42,067.00 | 28,044.67 |
| Earnings after Interest | (166,372.02) | (107,506.04) | 302,042.15 | 462,406.83 |
| ROI** | -76.89% | -42.06% | 103.07% | 146.37% |

*Interests are computed at 15% annual rate

**For the purpose of continually computing the ROI after the initial investment, the total expenses will be considered as the annual "investment". The new formula of the annual ROI will be: Net Income divided by Total expenses. This is with the assumption that annual total expenses are considered investments in the business.



| YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 | YEAR 10 |
|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| 484,959.07 | 575,889.09 | 799,919.40 | 1,156,044.12 | 975,728.12 | 1,147,337.41 |
| 98,345.43 | 151,943.69 | 394,153.19 | 268,661.77 | 221,377.30 | 114,009.31 |
| 29,165.23 | 36,391.64 | 59,703.63 | 71,235.29 | 59,855.27 | 63,067.34 |
| 150,000.00 | 165,000.00 | (35,000.00) | 170,000.00 | 165,000.00 | 320,000.00 |
| 762,469.73 | 929,224.42 | 1,218,776.21 | 1,665,941.18 | 1,421,960.68 | 1,644,414.06 |
| 284,390.63 | 356,436.25 | 382,221.00 | 404,213.88 | 464,883.88 | 582,432.00 |
| 46,975.63 | 58,249.78 | 65,765.88 | 71,402.95 | 75,161.00 | 92,072.23 |
| 34,979.75 | 43,254.89 | 48,971.65 | 48,609.22 | 51,167.60 | 62,680.31 |
| 2,304.88 | 2,858.05 | 3,226.83 | 3,503.41 | 3,687.80 | 4,517.56 |
| 368,650.88 | 460,798.96 | 500,185.35 | 527,729.46 | 594,900.28 | 741,702.09 |
| 393,818.85 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 14,022.33 | | | | | |
| 379,796.52 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 99.25% | 101.66% | 143.66% | 215.68% | 139.03% | 121.71% |

Income Statement INSIGHT

Income Statement Insight Based on the Assumptions on Meat Revenues (See Page 12), cows will be culled after producing 5 calves. As we project the productive timeline of the original stocks, they would have given birth to 5 calves by the seventh year of operation. This event may imply a huge loss in the fair value of the farm's biological assets, but culling unproductive cows is necessary to mitigate bigger losses in maintaining inefficient and unproductive aging cows.

3 of 4



REVENUE FORECAST PROJECTED INCOME STATEMENT

CASE 4: 50% DEBT

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|---------------------|--------------------|-------------------|-------------------|
| REVENUES | | | | |
| Raw Milk Sales | - | 83,910.00 | 399,134.01 | 569,716.56 |
| Revenue from Sale of Animals | - | - | 139,050.00 | 47,740.50 |
| Other Revenues | - | 4,195.50 | 26,909.20 | 30,872.85 |
| Unrealized Gain on Change in FV of Biological Assets (PAS 41) | 50,000.00 | 60,000.00 | 30,000.00 | 130,000.00 |
| Total Farm Revenues | 50,000.00 | 148,105.50 | 595,093.21 | 778,329.91 |
| EXPENSES | | | | |
| Total Direct Material | 113,756.25 | 155,466.88 | 197,177.50 | 223,720.63 |
| Direct Labor | 18,790.25 | 24,427.33 | 30,064.40 | 35,701.48 |
| Total Overhead Expenses | 12,791.90 | 18,429.47 | 22,267.04 | 26,704.61 |
| Total Selling and Admin Expenses | 921.95 | 1,198.54 | 1,475.12 | 1,751.71 |
| Total Expense | 146,260.35 | 199,522.21 | 250,984.06 | 287,878.42 |
| Farm Net Income/Net Loss | (96,260.35) | (51,416.71) | 344,109.15 | 490,451.50 |
| Less: Interest Expense* | 58,426.39 | 46,741.11 | 35,055.84 | 23,370.56 |
| Earnings after Interest | (154,686.74) | (98,157.82) | 309,053.32 | 467,080.94 |
| ROI† | -75.57% | -39.86% | 108.05% | 150.07% |

*Interests are computed at 15% annual rate

**For the purpose of continually computing the ROI after the initial investment, the total expenses will be considered as the annual "investment". The new formula of the annual ROI will be: Net Income divided by Total expenses. This is with the assumption that annual total expenses are considered investments in the business.



| YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 | YEAR 10 |
|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| 484,959.07 | 575,889.09 | 799,919.40 | 1,156,044.12 | 975,728.12 | 1,147,337.41 |
| 98,345.43 | 151,943.69 | 394,153.19 | 268,661.77 | 221,377.30 | 114,009.31 |
| 29,165.23 | 36,391.64 | 59,703.63 | 71,235.29 | 59,855.27 | 63,067.34 |
| 150,000.00 | 165,000.00 | (35,000.00) | 170,000.00 | 165,000.00 | 320,000.00 |
| 762,469.73 | 929,224.42 | 1,218,776.21 | 1,665,941.18 | 1,421,960.68 | 1,644,414.06 |
| 284,390.63 | 356,436.25 | 382,221.00 | 404,213.88 | 464,883.88 | 582,432.00 |
| 46,975.63 | 58,249.78 | 65,765.88 | 71,402.95 | 75,161.00 | 92,072.23 |
| 34,979.75 | 43,254.89 | 48,971.65 | 48,609.22 | 51,167.60 | 4,571.56 |
| 2,304.88 | 2,858.05 | 3,226.83 | 3,503.41 | 3,687.80 | 62,680.31 |
| 368,650.88 | 460,798.96 | 500,185.35 | 527,729.46 | 594,900.28 | 741,702.09 |
| 393,818.85 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 11,695.28 | | | | | |
| 382,133.57 | 468,425.46 | 718,590.86 | 1,138,211.73 | 827,060.41 | 902,711.97 |
| 100.47% | 101.66% | 143.66% | 215.68% | 139.03% | 121.71% |

Income Statement INSIGHT

In the sixth year, the Dairy Buffalo Farm Business will begin to recuperate and reap the payback of investing in dairying.

4 of 4

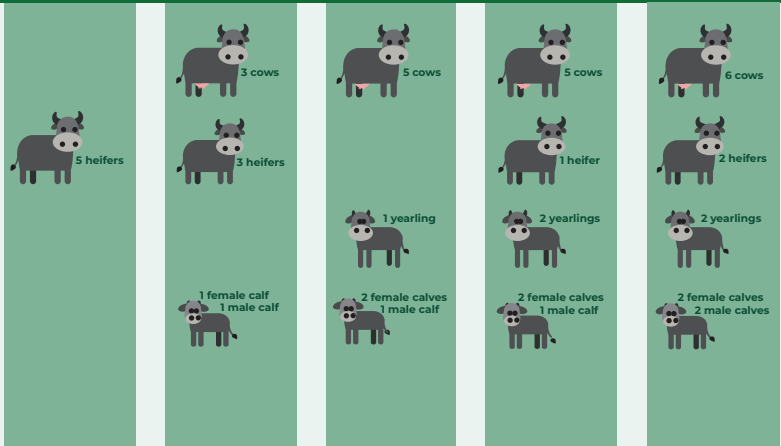


EXPENSE FORECAST

PROJECTED INCOME STATEMENT


| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 |
|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Direct Material | 113,756.25 | 155,466.88 | 197,177.50 | 223,720.63 | 284,390.63 |
| Direct Labor | 18,790.25 | 24,427.33 | 30,064.40 | 35,701.48 | 46,975.63 |
| Overhead | 12,791.90 | 18,429.47 | 22,267.04 | 26,704.61 | 34,979.75 |
| Selling and Admin | 921.95 | 1,198.54 | 1,475.12 | 1,751.71 | 2,304.88 |
| Total Expense | 146,260.35 | 199,522.21 | 250,984.06 | 287,878.42 | 368,650.88 |

Average Inventory:



Cost Assumptions PER ANIMAL STATUS

Direct Materials, which include feeding and drugs and biologics requirements, Direct Labor, Overhead and Selling and Admin Expenses are estimated using the standard annual rate. See Expenses Assumptions starting page 10.

| | | | |
|--|------------------|---|------------------|
| DM | 21,234.50 | DM | 30,335.00 |
| DL | 3,758.05 | DL | 3,758.05 |
| OH | 2,558.38 | OH | 2,558.38 |
| S&A | 184.39 | S&A | 184.39 |
|  Cost per Bull | 27,735.32 |  Cost per Cow | 36,835.82 |

YEAR 6

356,436.25
58,249.78
43,254.89
2,858.05

460,798.96



YEAR 7

382,221.00
65,765.88
48,971.65
3,226.83

500,185.35



YEAR 8

404,213.88
71,402.95
48,609.22
3,503.41

527,729.46



YEAR 9

464,883.88
75,161.00
51,167.60
3,687.80

594,900.28



YEAR 10

582,432.00
92,072.23
62,680.31
4,517.56

741,702.09



DM 22,751.25
DL 3,758.05
OH 2,558.38
S&A 184.39



Cost per Heifer 29,252.07

DM 15,167.50
DL 3,758.05
OH 2,558.38
S&A 184.39



Cost per Calf 21,668.32

DM 15,167.50
DL 3,758.05
OH 2,558.38
S&A 184.39



Cost per Yearling 21,668.32

PROJECTED CASHFLOW

ASSUMPTIONS

Hurdle Rate
used for Discounting Purposes
14%

Working Capital
PHP142,422.78

Capital Investment
PHP636,595.80

Total Initial Investment
PHP779,018.58

CASHFLOWS (IN PHP)

CASE 1 ZERO DEBT

| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 |
|--------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| (142,422.78) | (105,887.86) | 320,789.27 | 368,462.88 | 254,312.78 | 316,401.93 | 768,282.36 | 982,794.49 | 677,410.69 |

CASE 2 70% DEBT

| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 |
|--------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| (333,282.33) | (280,388.03) | 162,648.49 | 226,681.50 | 128,890.79 | 316,401.93 | 768,282.36 | 982,794.49 | 677,410.69 |

CASE 3 60% DEBT

| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 |
|--------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| (306,016.68) | (255,459.43) | 185,240.03 | 246,935.98 | 146,808.21 | 316,401.93 | 768,282.36 | 982,794.49 | 677,410.69 |

CASE 4 50% DEBT

| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 | YEAR 8 | YEAR 9 |
|--------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| (278,751.03) | (230,530.84) | 207,831.57 | 267,190.47 | 164,725.64 | 316,401.93 | 768,282.36 | 982,794.49 | 677,410.69 |

TRIVIA

Water buffalo are fast and furious. Though domesticated buffalo are gentle enough to be milked (and even ridden), wild buffalo are notoriously aggressive and aren't afraid to face off with their only natural predators: tigers and lions. And they are fast! When threatened, water buffalo can reach speeds of 30 mph (48.2kmph). (Heifer International, 2019)

3 of 4

| | Present Value of Cash Flows | NPV | IRR | Payback Period (Years) | Profitability Index |
|-----------------------|--------------------------------|------------|--------|------------------------------|------------------------|
| YEAR 10 601,516.06 | 1,526,630.45 | 890,034.65 | 28.57% | 5.26 | 2.40 |
| YEAR 10 601,516.06 | 969,110.85 | 332,515.05 | 18.65% | 6.73 | 1.52 |
| YEAR 10 601,516.06 | 1,048,756.51 | 412,160.71 | 19.89% | 6.58 | 1.65 |
| YEAR 10 601,516.06 | 1,128,402.17 | 491,806.37 | 21.18% | 6.43 | 1.77 |

INITIAL INVESTMENT ESTIMA

| Items | Quantity | Cost(PHP) | Amount(PHP) | Total(PHP) |
|---|----------|-----------|-------------|--------------------------|
| Breeding Stocks | | | | |
| Heifer | 5 heads | 70,000.00 | 350,000.00 | |
| Total Cost of Breeding Stocks | | | | 350,000.00 |
| Property, Plant, and Equipment (PPE) | | | | |
| Land | | | | |
| (Residential/Agricultural) | | | | |
| For Animal Housing | 50 sqm | 235.00 | 11,750.00 | |
| For Nipa Hut/Storage | 10sqm | 235.00 | 2,350.00 | |
| For Milking Barn | 10sqm | 235.00 | 2,350.00 | |
| | | | | 16,450.00 |
| Building | | | | |
| Animal Shed | 1 unit | 81,000.00 | 81,000.00 | |
| Nipa Hut/Storage | 1 unit | 14,000.00 | 14,000.00 | |
| Milking Parlor | 1 unit | 23,500.00 | 23,500.00 | |
| | | | | 118,500.00 |
| Farm Machineries and Equipment | | | | |
| Jetmatic/Water Pump | 1 unit | 3,200.00 | 3,200.00 | |
| Grass Cutter | 1 unit | 17,500.00 | 17,500.00 | |
| Stainless Milk Can (20 L) | 1 unit | 9,500.00 | 9,500.00 | |
| Power Spray | 1 unit | 7,500.00 | 7,500.00 | |
| Wheelbarrow | 1 unit | 4,500.00 | 4,500.00 | |
| Stainless Steel Pail | 2 units | 4,500.00 | 9,000.00 | |
| Weighing Scale | 1 unit | 1,200.00 | 1,200.00 | |
| Storage Equipment | 1 unit | 1,200.00 | 1,200.00 | |
| Farm Tools and Supplies | 1 lot | 18,045.80 | 18,045.80 | |
| | | | | 71,645.80 |
| Vehicles | | | | |
| Tricycle with Kolong-kolong | 1 unit | 80,000.00 | 80,000.00 | |
| | | | | 80,000.00 |
| Total PPE | | | | 286,595.80 |
| Working Capital for 1 year | | | | 142,422.78 |
| Total Investment | | | | <u>779,018.58</u> |

Equally important as investing in superior breeding stocks and optimal equipment and other physical properties are capitalizing on the know-how and technical knowledge in dairy farming. The team of experts and extension workers of the DA-Philippine Carabao Center shall provide for your needs on practical expertise. Listed below are the DA-PCC units to provide an array of support for your dairy farm start-up:

| | | |
|---|---|---|
| Dairy Herd Acquisition | Operations Group | Edwin C. Atabay Scientist II Head, Operations |
| Farm Management and Veterinary Support Services | National Dairy Business Hub (NDBH) | Cyril P. Baltazar Farm Superintendent II NDBH Coordinator |
| Feeding Management/ Forage Management | Production Systems and Nutrition Section (PSNS) /Gene Pool | Mary Rose D. Uy-De Guia Senior Science Research Specialist Head, PSNS Lawrence P. Belotindos Science Research Specialist I Head, Gene Pool |
| Breeding/Artificial Insemination | Animal Breeding and Genetics Section (ABGS)/ Reproduction and Physiology Section (RPS) | Ester B. Flores Scientist I Head, ABGS Excel Rio S. Maylem Senior Science Research Specialist Head, RPS |
| Dairy Business Feasibility/ Operational and Financial Status Check | Monitoring and Business Planning Support Section (MBPSS) | Pauline A. Maramag Project Evaluation Officer II Head, MBPSS |
| Milk Handling/Milk Processing/Trade and Marketing | Carabao Enterprise Development Section (CEDS) Product Development and Innovation Unit Processing and Marketing Unit (PMU) Outlet | Patrizia Camille O. Saturno Science Research Specialist II Head, CEDS Teresita M. Baltazar Science Research Specialist I Head, PDIU Marivic A. Orge Project Development Officer II, Manager, CDCPF Jeraldin S. Torres Marketing Manager Manager, Milka Krem Outlet |
| Information on Training and other Services Provided by DA-PCC | Knowledge Management Division | Khrizie Evert M. Padre Information Officer II Head, Learning Events Coordination Section |

You can reach our pool of technical experts at:

 (044) 456 0731 to 34

 (044) 456 0730

 oed@pcc.gov.ph



TESTIMONIAL



Nagsimula po kami sa tulong ng DA-PCC, sila po ang nag-engganyo sa amin para simulan ang business na pag-aalaga ng kalabaw. Ang isa sa mga naging pagsubok sa amin ay ang pagpapagatas ng kalabaw.

Marami pong naitulong sa amin ang DA-PCC, una na po rito ay tinuruan po kami kung paano magpagatas ng kalabaw Pangalawa sila din ang tumulong sa amin para magbuntis ang aming kalabaw. Sa tulong ng pagkakalabaw, napagtapos ko ng college ang isa kong anak at unti-unting umuunlad ang aming pamumuhay.

"We started with the help of the DA-PCC, they are the ones who encouraged us to start the dairy buffalo farm business. One of the challenges we had was milking the buffalo and DA-PCC helped us a lot.

First, they taught us how to milk a buffalo. Second, they also helped us get our buffalo pregnant. With the help of the dairy buffalo farm business, I was able to provide for one of my children to finish college and our living standard is gradually improving."



PANFILO TUTOR SR.

Owner, 5-Cow Head Module
Mabini, Bohol / 5 Carabao

PROFITABILITY OF ALL MODULES IN

| MODULE | Initial Investment (PHP) | Daily Net Income (PHP) |
|--|---------------------------------|-------------------------------|
| 5-Cow Start-up Dairy Buffalo Farm Business | 779,018.58 | 1,407.04 |
| 10-Cow Start-up Dairy Buffalo Farm Business | 1,935,910.16 | 2,837.33 |
| 15-Cow Start-up Dairy Buffalo Farm Business | 2,314,177.54 | 4,692.60 |
| 20-Cow Start-up Dairy Buffalo Farm Business | 3,008,600.32 | 3,117.00 |
| 25-Cow Start-up Dairy Buffalo Farm Business | 3,634,407.00 | 4,227.93 |
| 50-Cow Start-up Dairy Buffalo Farm Business | 7,153,355.56 | 12,919.26 |
| Small-scale Dairy Processing Facility Business | 7,441,992.87 | 3,599.22 |
| Kardeli Meat Products Retail Business | 870,910.05 | 1,324.64 |
| Dairy Box One-Stop Shop Business | 1,466,500.00 | 2,116.51 |
| Vermicast Production Business | 821,287.14 | 19,666.11 (monthly) |
| Corn Silage Production Business | 1,274,000.00 | 125,347.88 (Per Cycle) |

INDICATORS THE PORTFOLIO

| NPV (PHP) | IRR (%) | Payback Period (years) | Profitability Index |
|--------------|---------|------------------------|---------------------|
| 890,034.65 | 28.57% | 5.26 | 2.40 |
| 1,424,462.57 | 23.94% | 6.08 | 1.88 |
| 3,442,615.76 | 32.52% | 4.78 | 2.85 |
| 158,033.27 | 14.86% | 7.10 | 1.07 |
| 460,745.64 | 15.98% | 7.14 | 1.16 |
| 8,236,572.28 | 28.68% | 5.14 | 2.45 |
| 1,864,074.24 | 22.47% | 4.53 | 1.33 |
| 1,872,655.37 | 102.37% | 2.13 | 5.68 |
| 2,478,155.15 | 51.67% | 4.86 | 5.24 |
| 703,700.97 | 40.04% | 3.81 | 2.30 |
| 1,289,698.20 | 37.35% | 2.98 | 2.12 |

DA-PCC

available technology



Blockmate is a legume-based strategic feed supplement for ruminants as a source of protein, energy, and minerals. Using Blockmate increases the feed intake digestibility and increases the weight gain and growth of the animals. It also increases the growth of microbes in the rumen, which is the key to increasing milk production.

Buro Booster is a silage inoculant for corn, sorghum, and grass that enhances the production of lactic acid that is used for preservation. It minimizes undesirable yeast and mold growth and prevents spoilage. Buro Booster also improves the fermentation quality and nutritive value of the silage and shortens the duration of silage fermentation to 14 days, which is normally 21 days.



gies



Verisire is the Philippines' first Microsatellite-based technology parentage testing service for cattle and buffaloes. Through this, the sire identity is objectively verified or known, breeding animals can be chosen based on genetic worth and animals can be easily traced in the breed registry. Superior animals can be properly valued because of the true parentage validated.



Enhanced Rice Straw (e-RS) is a ruminant feed treated with urea and molasses with an improved nutritive value. It has a 4% higher crude protein (CP), 14.2% and 7% increase in crude protein and dry matter digestibility, respectively, compared to plain rice straw. It is also an environmentally responsible technology as it lowers greenhouse gas emissions and carbon footprint.



INVENTORY OF BEST PRACTICE

BREEDING

- 1 Strict estrus observation, monitoring, and detection early in the morning and late in the afternoon**
Mahigpit na pagsipat sa naglalanding kalabaw lalo na tuwing umaga at hapon
- 2 Complete feeding and vitamin supplementation to support in conditioning breedable females**
Kumpletong pagpapakain at pagbibigay ng bitamina sa kalabaw upang suportahan ang pagkandisyon ng mga magbubuntis na kalabaw
- 3 45 days to 2 months after calving the Carabao should be impregnated**
45 na araw hanggang dalawang buwan pagkatapos manganak ang kalabaw ay inoobserbahan ang pag lalandi at pinapabulog o pinapasemilyahan
- 4 Ensuring that the Body Condition Score of the pregnant buffalo is at least 4.0 before calving**
Tinitiyak na ang BCS o pangangatawan ng buntis na kalabaw ay hindi bababa sa 4.0 bago manganak
- 5 Ensures the calf production every 14-16 months**
Tinitiyak ang panganganak ng inahing kalabaw kada 14-16 na buwan
- 6 Use of teaser bull to aid in estrus detection**
Paggamit ng teaser bull na syang tumutulong sa pag kilatis ng naglalanding kalabaw
- 7 Good contact with AI Technicians**
May magandang kontak sa AI Technicians
- 8 Prioritizing Artificial Insemination to ensure offspring is of good genetics**
Prayoridad ang Artificial Insemination (AI) upang matiyak na ang bulo ay may magandang lahi
- 9 Maintains good records of estrus occurrences and breeding to easily monitor estrus cyclicity and pregnancy**
Mayroong magandang talaan ng paglalandi ng kalabaw at pagkasta o pag-AI upang masubaybayan ang pagbubuntis at panganganak ng alagang kalabaw

MILK PRODUCTION

- 1** **Thorough cleaning of the udder**
Masusing paglilinis at pagdi-disinfect ng suso ng kalabaw bago gatasan
- 2** **Removing the first milk (3-5 squeezes) or fore milking, before continuing milking**
Pagtatanggal ng unang gatas (3-5 piga) o fore milking, bago ituloy ang paggagatas
- 3** **Spraying or dipping the buffalo's udder in disinfectant with glycerin and sorbitol after milking**
Pag-spray o pagsawsaw ng suso ng kalabaw sa disinfectant na may glycerin at sorbitol pagkatapos gumatas
- 4** **Establishing a milking parlor for more sanitary milk collection**
Mayroong isang milking parlor/ipitan o gatasan para sa isang malinis na koleksyon ng gatas
- 5** **Maintaining hygienic animal shed and milking parlor**
Pagpapanatili ng kalinisan sa kulungan ng mga kalabaw at sa lugar ng gatasan
- 6** **Provide the standard feed ration and supplementation with Dicalcium Phosphate to support the lactating cow**
Pagbibigay ng tamang pakain at pagbibigay ng Dicalcium Phosphate para sa mga naggagatas na kalabaw
- 7** **Use of molasses to boost the appetite of lactating cows thus producing more milk**
Pagbibigay ng pulot upang mas ganahang kumain ang ginagatasang kalabaw
- 8** **Milk testing for at least once a month**
Pagsasagawa ng milk testing ng hindi bababa sa isang beses sa isang buwan
- 9** **Flushing cows with dairy concentrates two months before expected calving and two months after calving for maximum milk production**
Pagbibigay ng dairy concentrates sa kalabaw dalawang buwan bago at makalipas manganak upang magbigay ito ng mas maraming gatas
- 10** **Weaning or stopping milking (dry-off) two months before the scheduled birth**
Pag-aawat o paghinto sa paggagatas (dry-off) dalawang buwan bago sa nakatakda nitong panganganak



INVENTORY OF BEST PRACTICE

ANIMAL NUTRITION

- 1 Development of pasture area and feeding animals with roughage ad libitum through cut and carry feeding system**
Pagkakaroon/paghahanda ng lupang pagsusugahan ng mga kalabaw o pagkukunan ng pagkain para sa mga nakakulong na kalabaw
- 2 Employs grazing system using land with adequate forage supply**
Nagsusuga ng kalabaw sa lupang may sapat na damong pagkain
- 3 Employs cut-and-carry system**
Nagsasakati lang ng pagkain para sa mga nakakulong na kalabaw
- 4 Plants Legumes supplementation and/or substitution**
Nagtatanim ng Legumbre (ipil-ipil, kakawate, malunggay) para sa pagkain ng kalabaw
- 5 Feeds the buffalo with grass (napier, mulato, mombasa, etc.), legumes (ipil-ipil, kakawate, horseradish), and grains (corn, etc.)**
Nagpapakain ng damo (napier, mulato, mombasa atbp), legumbre (ipil-ipil, kakawate, malunggay) at grains (mais, etc.)
- 6 Provides different types of concentrates according to the age of the buffalo (starter, grower, dairy)**
Nagbibigay ng iba't-ibang klase ng concentrates ayon sa edad ng kalabaw (starter, grower, dairy)
- 7 Secures the availability of unlimited water supply**
Tinitiyak na ang kalabaw ay hindi nauubusan ng tubig na maiinom
- 8 Customized feeding technique was carefully employed for each animal based on body score or growth related observations**
Iba't-ibang estilo ng pakain sa bawat hayop base sa timbang, paglaki at kalusugan ng kalabaw.
- 9 Maintains buffer stock of rice straw to be used during lean season**
Nag-iimbak ng dayami at ibang pagkain na pwedeng buruhin na syang maipapakain sa kalabaw sa panahon ng walang makuhang pagkain

ANIMAL MANAGEMENT

- 1** **Hands-on in managing the herd /farm which includes daily monitoring**
Hands-on sa pamamahala ng mga kalabaw, saklaw nito ang araw-araw na pagsubaybay sa mga ito
- 2** **Daily cleaning of the animal and animal housing**
Araw-araw na paglilinis ng mga alagang kalabaw at ang kulungan nito
- 3** **Separating of animals by pen for administering appropriate actions like grouping all pregnant cows in one pen, grouping the calves together, etc.**
Pinaghihiwalay ang mga kalabaw base sa klasipikasyon (bulo, inahin, buntis) upang mapagtuunan ng atensyon ang particular na grupo
- 4** **Separating of animals based on body condition or behavioral traits (weak Carabao's are separated from strong/aggressive Carabao to ensure that all Carabao will be fed)**
Pinaghihiwalay ang mga kalabaw base sa pangangatawan at pag-uugali (ang mahinang kumain na kalabaw ay nakahiwalay sa malakas kumain na kalabaw)
- 5** **Ensuring that the proper feeding of the buffalo is followed**
Sinisiguradong nasusunod ang tamang pakain ng kalabaw
- 6** **Ensuring that the Animal Health Program (vaccination, deworming, supplementation) is followed for the buffalo and its environment (disinfection)**
Sinisiguradong nasusunod ang Animal Health Program (bakuna, purga, suplementasyon) para sa kalabaw at sa kapaligiran (disinfection) nito



INVENTORY OF BEST PRACTICE

ANIMAL HEALTH

- 1** **Colostrum feeding to newborn calf for the first 5 days**
Pagpapainom ng colostrum o gatas sa bulo sa unang limang araw
- 2** **Navel cord treatment of newborn calf**
Paggagamot sa pusod ng bagong panganak na bulo upang maiwasan ang impeksyon
- 3** **Iron supplementation for newborn calf**
Pagbibigay ng Iron sa mga bagong panganak na bulo
- 4** **Deworming twice or more (depending on the management system) per year**
Pagpupurga sa alagang kalabaw ng dalawang beses o higit pa sa isang taon (Adult)
- 5** **Deworming the calf one month after birth, wiwill be repeated after 6 months**
Pagpupurga sa bulo isang buwan makalipas ang pagkapanganak at ulitin makalipas ang 6 na buwan
- 6** **Administering vitamins as needed**
Pagbibigay ng bitamina alagang kalabaw kung kinakailangan
- 7** **Administering or regularly updating animal vaccination to animals**
Pagbibigay ng bakuna sa alagang kalabaw sa takdang iskedyul
- 8** **Maintaining accurate records of animal health information (animal ID, signs and symptoms, diagnosis, treatment made, corrective measures done)**
Mayroong isang mahusay na pagtatala ng impormasyon tungkol sa kalusugan ng hayop (gaya ng animal ID, sintomas ng sakit, mga sakit, ginawang paggagamot)
- 9** **Performing mastitis test and tuberculosis screening test on lactating cows**
Pagasagawa ng mastitis test at tuberculosis screening test sa mga gatasang kalabaw
- 10** **Administering first aid treatment for animals who are observed to be unhealthy, and consult the nearest veterinarian**
Pagbibigay ng paunang lunas sa kalabaw na nakitang may karamdaman o sakit, at mag pagkonsulta sa pinaka malapit na beteryaryo
- 11** **Regular examination (like excrement, blood, urine and others) by the animal technician and veterinarian to prevent serious and contagious diseases**
Regular na pagpapasuri (katulad ng dumi, dugo, ihi at iba pa) ng alagang kalabaw sa mga kinauukulan (animal technician at beteryaryo) upang maiwasan ang pagkakaroon ng malala at nakakahawang sakit
- 12** **Preventing the entry and exit of visitors and other animals that may carry pathogens that can be transmitted to the buffalo**
Pag-iwas sa pagpasok at paglabas ng mga bisita at ibang mga hayop na maaaring magdala ng mikrobyo na maipapasa sa alagang kalabaw

TRIVIA

The oldest buffalo in captivity was “Wheezy” (USA, b. 24 September 1982) who was 34 years and 11 days old when she died at the Tulsa Zoo in Tulsa, Oklahoma, USA, on 5 October 2016. Wheezy was a cape buffalo (*Syncerus caffer*). Wheezy had 15 calves over the course of her lifetime. (Guinness World Records, 2016)

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GLOSSARY

BUSINESS TERMS

Annual Net Cash Flow refers to the difference between cash inflows and outflows of the business in a year.

Capital Investment refers to money invested in a business with the understanding that the money will be used to purchase fixed assets, rather than used to cover the business's day-to-day operating expenses.

Direct Labor includes the salaries paid and other benefits such as meals and bonuses provided for farm workers.

Direct Material includes feeds, forages, legumes, vitamins, and supplements which are directly involved in maintaining each animal.

Earnings after Interest refers to the income derived from the investment after deducting the interest expense of the credit financing.

FarmNet Income/Loss or Net Income/Loss is the total return after deducting all expenses incurred during the period.

Hurdle Rate is the minimum rate of return on a project or investment required by a manager or investor. The hurdle rate denotes appropriate compensation for the level of risk present; riskier projects generally have higher hurdle rates than those that are deemed to be less risky.

Inflation Rate is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling.

Interest Expense is a non-operating expense which represents interest payable on any borrowings – bonds, loans, convertible debt or lines of credit.

Interest Payment refers to the payment amount determined by the interest rate on an account

Interest Rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets.

Internal Rate of Return (IRR) is a metric used in capital budgeting measuring the profitability of potential investments. Internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

Loan Amortization Schedule is used to determine loan amortization payments and the allocation of each payment to interest and principal.

Meat Revenue represents the amount received by selling the animals either for slaughter or for raising purposes.

Net Present Value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of a projected investment or project. It is computed by discounting annual cash flow using a hurdle rate of 16 %.

Other Revenues is maintained to account for the sale of various farm by-products like manure, used sacks, etc.

Overhead Expense are expenses related to maintaining the farm but are not classified as direct materials and direct labor.

Payback Period is the amount of time it takes for a project's cumulative net cash inflows to recoup the initial investment.

Present Value of Cash flow refers to the value today of a cash flow to be received at a specific date in the future, accounting for the opportunity to earn interest at a specified rate.

Principal Payment is a payment toward the amount of principal owed.

Profitability Index is capital budgeting tool, defined as the present value of a project's cash inflows divided by the absolute value of its initial cash outflow.

OF TERMS

Projected Cash Flow shows the expected amounts of money that will come into a business along with what will go out as expenses.

Projected Income Statement is a projection schedule that looks at the money the business will gain over a specific period, normally one year, minus anticipated expenses for that period.

Property, Plant and Equipment is a summation of all a company's purchases of property, manufacturing plants and pieces of equipment to that point in time, less any amortization.

Raw Milk Sales is the total milk revenue received from selling the milk produced by the cows.

Return on Investment is measure of a firm's overall effectiveness in using its assets to generate returns to common stockholders.

Selling and Admin Expense are costs incurred for marketing and distribution of the milk; managing and record keeping of the farm.

Total Expense covers all the expenses incurred to operate and maintain the farm. This includes Direct Material, Direct Labor, and Overhead.

Total Farm Revenues is the summation of all revenue items including milk, meat, manure, other revenue, and Unrealized Gain on Change in FV of Biological Assets. Total Initial Investment is the total amount required to start a business.

Unrealized Gain or Change in FV of Biological Asset is in compliance with Philippine Accounting Standards 41 titled Agriculture, the increase or decrease in total value of herd is estimated at year-end and is treated as other non-cash income.

Working Capital refers to the capital of a business that is used in its day-to-day trading operations, calculated as the current assets minus the current liabilities.

DAIRY BUFFALO FARM MANAGEMENT TERMS

Breedable Female is any mature female carabao that is ready for breeding.

Breeding Stocks is a group of carabao used for the purpose of planned breeding. This includes heifer and cow

Bull is a breeding male carabao aged 2 years old and above.

Calf is a young carabao of either sex and below 1 year of age.

Calving is the act of giving birth.

Calving Interval refers to the period of time between two successive calving. The shorter the calving interval, the higher is the reproductive efficiency of the farm. The ideal calving interval in a dairy buffalo farm is a minimum of 380 days and a maximum of 410 days. This is broken down into 320 days gestation period and 60-90 days service period.

Cow is a mature female carabao that has already given birth.

Gestation Period also known as gestation length. It is the duration from the time of fertilization until parturition (calving), which on the average is 320 days (310-330 days) and 312 days (295-320 days) for the swamp and dairy buffalo types, respectively.

Heifer is a female carabao aged 2 years and above that has not yet given birth.

Lactation Days also known as lactation period. Refers to the period of milk production and suckling. The latter condition is eliminated in dairy farms when the calf is immediately weaned from the dam right after calving. The average length of lactation in dairy buffaloes in DA-PCC herds is 265 days, which ranges from 200-359 days.

Parity refers to the number of times a dam has given birth.

Yearling is a young carabao of either sex and aged one-year-old to 2 years old.

ZADIESHAR G. SANCHEZ **Project Development Officer V** **Chief, Planning and Information Management Division**

Mr. Zadieshar G. Sanchez took his BS Accountancy degree from Central Luzon State University and became a Certified Public Accountant in 2012. He earned his master's degree in Agricultural Economics minor in Environmental Science at the University of the Philippines Los Baños in 2022. He entered DA-PCC in 2014 and assisted in the establishment of the newly created Business Development and Commercialization Unit under the Planning and Special Projects Division. He was tasked to develop various financial reporting systems, monitoring dashboards, and assisted in the creation of several business models and technology economic valuations which are now being used or adopted by the stakeholders. He also established the DA-PCC's Internal Audit Section in 2016 where internal controls were assessed and installed agency-wide to ensure assets are safeguarded, financial reports are accurate and reliable, laws are followed, managerial policies are complied with, and most importantly, to evaluate value-for-money by ensuring that operations are efficient, effective, economical, and ethical. He was the lead author of the prototype publication of the Carabao Business Portfolio. He also concurrently serves the agency as the OIC-Chief of the Administrative and Financial Management Division where systems, manuals, and new programs are being developed.

JAN CZARINA M. SALAS **Former Project Evaluation Officer III**

Jan Czarina M. Salas worked as Project Evaluation Officer III under the Planning and Information Management Division of DA-PCC. She was part of the pioneering team of staff that launched the Business Development and Commercialization unit under the said division, which trailblazed the provision of business workshops, and the creation of business models, dashboards, and operations guidelines for cooperatives and dairy entrepreneurs. She spearheaded the implementation of the Dairy Box program strategy wherein cooperative operators are provided with marketing assistance to advocate standard operations and quality dairy buffalo products. She is currently studying Master's in Business Administration while also being an entrepreneur, and a professional illustrator and graphic designer.

JOSHUA G. VILLANUEVA **Accountant II**

Joshua G. Villanueva used to work as Financial Analyst under the Business Development and Commercialization Unit of the DA-Philippine Carabao Center. He is a Certified Public Accountant and currently studying for his Master's in Business Administration at Central Luzon State University. He provided business financial analyses, created various business models, organized business training, developed monitoring dashboards, and gave business assistance to clients. He was the point person for the available government loan programs available for carabao industry players. He also worked as an accountant at Philippine Rice Research Institute. He now handles the monitoring and coordination of the 500-Million PL480 Project entitled "Intensified Community-based Dairy Enterprise Build-Up", develops performance-based budgeting of the agency, and collects data for the Carabao Industry Fact Sheet/Outlook. He was recently appointed as an Accountant II of DA-PCC.

ANGELIQUE ANLOCOTAN-OREJANA **Former Business Development Analyst**

Ms. Angeliue Anlocotan-Orejana is a graduate of BS in Business Administration major in Economics at Central Luzon State University and has units in Masters of Science in Economics from Polytechnic University of the Philippines prior moving to New Zealand in 2022. She worked as Business Development Analyst under the Planning and Information Management Division from 2016 to 2019. She was one of the brains of Business Development and Commercialization Unit who developed financial monitoring tools now coined as "Dashboards". She spearheaded the development of Strategic Performance Management System (SPMS) Dashboard, and she facilitated the implementation of 6 Value Chain Projects across the country. Currently, she is working as Operations Administrator of Alliance Group Limited in New Zealand, overseeing the export shipments of the company.

PROFILE

PAULINE A. MARAMAG

Project Evaluation Officer II Head, Monitoring and Business Planning Support Section

Ms. Pauline A. Maramag is a Certified Public Accountant since 2018 who took her BS in Accountancy degree at Central Luzon State University and is currently taking up her Master of Business Administration degree at the same university. She started as a Financial Analyst and was promoted to Science Research Specialist II in the Business Development and Commercialization Unit (now Monitoring and Business Planning Support Section) who is responsible for the regular audit and monitoring of the production and business dashboards of the clients and agency's national headquarters and 12 regional centers, crafting of business plans, financial projections, feasibility studies, and profitability analysis for investment portfolios and industry proposals, technology valuation for commercialization, and the writing and conduct of researches. She led the launching of the Youth Development Program to prepare the second liners in Carabao entrepreneurship. She currently leads the MBPSS with both agency performance monitoring and client business planning tasks and initiatives.

QUEENIE B. RUIZ

Science Research Specialist II

Queenie B. Ruiz obtained her Bachelor of Science in Accounting Technology from Central Luzon State University in 2015, and her Bachelor of Science in Accountancy from Dr. Gloria D. Lacson Foundation Colleges Inc. in 2017, the same year that she passed the CPA Licensure Exam. She previously held the position of branch head in a real estate corporation for almost four years, where she was in charge of overseeing the day-to-day operations of the company. She now worked as a Science Research Specialist II at the Monitoring and Business Planning Support Section, where her responsibilities include creating investment portfolios, conducting financial performance analyses, and auditing DA-PCC Institutional Herds, Processing and Marketing Outlets, and DA-PCC Clients along the Value Chain.

GISELLE M. SACUPASO

Financial Analyst I

Giselle M. Sacupasos is a Financial Analyst at the Monitoring and Business Planning Support Section under the Planning and Information Management Division of DA-PCC. She is a graduate of BS Accounting Technology at Central Luzon State University and took BS Accountancy at Dr. Gloria D. Lacson Foundation Colleges, Inc. She was assigned to monitor the Processing and Marketing Outlet (PMO) Dashboard of DA-PCC Regional Centers and visited different dairy boxes and client PMOs across the country to audit their stores and processing facilities. She is also responsible for auditing their financial statements. She also helps the Internal Audit Section in auditing the DA-PCC Regional Centers as well as the center's Institutional Herds and PMOs.

ERICKA JOYCE L. MALLARI

Former Internal Auditor I

Ericka Joyce L. Mallari is a graduate of BS Mathematics major in Business Application at Bulacan State University. She is worked as an internal auditor in the Internal Audit Section. Part of her work is to perform a value-for-money audit of DA-PCC's 12 regional centers, including the Institutional Herd and Processing and Manufacturing Outlet. She also assists the Business Development and Commercialization Unit (now Monitoring and Business Planning Support Section) in auditing the DA-PCC-managed cooperatives' dairy boxes, processing, and manufacturing facilities.

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GOT QUESTIONS
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