



**Implementation of Upgraded Consultancy Services for MSMEs thru Consultancy for
Agricultural Productivity Enhancement (CAPE) Program in Region12**

FINAL REPORT

1. Name of Farm/Location: Sox Free-Range Chicken Farm
Address : Brgy. Kipalbig Tampakan, South Cotabato

2. Brief Description of the Farm:

The farm has a total land area of eight (8) hectares which is comprised of two (2) sites (Site 1: 5 hectares loc and Site 2: 3 hectares). Both farm sites are located at Brgy. Kipalbig Tampakan, South Cotabato (Figure 1). The land is an inheritance, and it was established in February 2019 when the farm owner, retired from the government service. The farm is managed by Mr. Bonifacio Pales and assisted by his son, Dr. Chris George Pales.

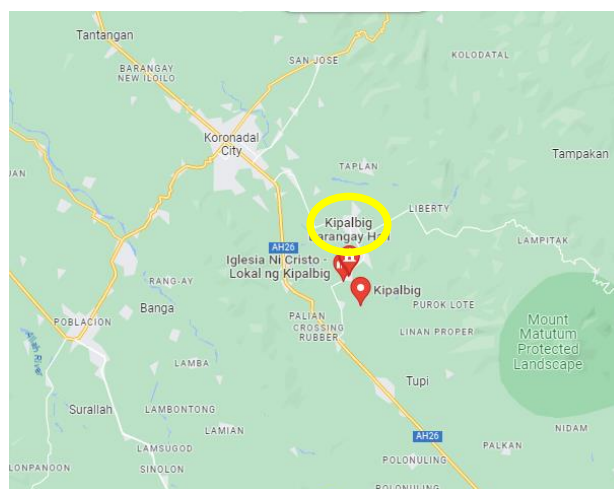


Figure 1. The estimated location of SOX Free-range Chicken Farm at Brgy. Kipalbig, Tampakan, South Cotabato as specified by the yellow circle.



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The farm has a loamy type of soil and flat to sloping terrain with an estimated elevation of 400 feet above sea level (ASL). Its location is suitable for propagating fruit trees and for raising livestock and poultry animals. The farm is planted with various fruit-bearing trees with at least 200 hills of cacao, 250 hills of coconut, 100 hills of dragon fruit, and 30 hills of black pepper.

The farm started raising heritage chicken adopting free-range production system in 2019. The breeds of these chickens are Black Australorp, Rhode Island Red, and Barred Plymouth Rock. With the aim to maximize the land area, the farm also extended its operation into rabbit production and raising cattle (15 heads), goat (5 heads), turkey (10 heads), native chicken (20 heads) and mallard duck (400 heads).

Currently, the farm has four (4) regular farm workers where two (2) of them are assigned in heritage chicken production, one (1) in rabbit and other animals, and one (1) in cacao including other farm crops.



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1. Technical Problems Encountered by Farm Beneficiary.

COMPONENT 1: FREE-RANGE CHICKEN

1. High feed cost (Pure commercial feeds)
2. High expense cost on commercial supplements.
3. Lack of pasture area for sustainable free-range chicken
4. Poor Breeding program (Low Fertility and Hatching Rate)
5. No Proper implementation of regular health program (deworming, supplements, and Vaccinations)
6. No implementation of biosecurity measures in the breeder house.
7. Poor sanitation practices inside the breeder house and incubation area.
8. Limited/lack of market linkages
9. No proper record keeping and inventory on number of stocks (# of breeders –hens and roosters, # of newly hatched chicks, and # of Pullets); breeding programs, Flock health management, financial inflow/outflow is undertaken.

COMPONENT 2: RABBIT PRODUCTION

1. Poor feeding and nutrition program for rabbits
2. No implementation of proper breeding program for rabbits.
3. No established forage area as primary source of feed for rabbits.
4. Inappropriate housing design (low height of roofing/ceiling; undersize cages/clutches)
5. Rabbit housing is lack of ventilation
6. Filthy water storage containers
7. No implementation of proper and regular health program (deworming, vit administration, etc).
8. Poor sanitation practices inside the rabbit house.
9. No implementation of biosecurity measures
- 10 Limited local market and lack of market linkages.
- 11 No proper record keeping and inventory on number of stocks (# of stocks i.e., doe, buck, fryers, kits); breeding programs, health management, financial inflow/outflow is undertaken.



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2. CAPE interventions

COMPONENT 1: FREE-RANGE CHICKEN

1. Incorporation of alternative feeds such as Madre de Agua and Azolla in the chicken's diet. These alternative feeds are high in protein and is low cost (almost no cost).
3. Introduced the different natural supplements such as decoction and concoctions.
4. Provision of IEC material, planting material and established alternative forage crops for chicken.
5. Developed and followed the proper breeding and Incubation techniques.
6. Established an isolation area for sick birds.
7. Performed daily cleaning of water storage and changing of water offered to chickens.
8. Enhanced and applied the proper health program in free-range chickens (Vaccination, Vitamin supplementation and Deworming).
9. Provision of dewormers and vitamins.
10. Implementation of proper biosecurity measures in the main gate and each chicken house.
11. Developed and practiced the proper sanitation such as regular cleaning and removal of manure, disinfection and maintain orderliness and cleanliness inside the farm.
12. Ensured basic care, proper provision of feed and water and maintenance activities for the animals.
13. Identified new market and/or established new market linkages through online advertisement (Facebook page).
14. Established a proper record keeping in all farm activities – production and financial aspects.



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COMPONENT 2: RABBIT PRODUCTION

1. Provided one on one technical advisory to the owner on proper nutrition, feeding and breeding program for rabbits including goat and cattle.
2. Provided learning material/guide on rabbit production and management.
3. Provided forage planting materials for the establishment of forage production area.
4. Provided one on one technical advisory to the owner on appropriate or suitable house and cage design for rabbits.
5. Provided learning material on rabbit production and management.
6. Provided technical advisory and emphasized the importance of cleanliness and sanitation on farm equipment and fixtures.
7. Advised the farm worker to perform thorough cleaning of the storage containers.
8. Provided one on one technical advisory to the owner on proper livestock health management.
9. Provided veterinary products (vitamins, antibiotic, and dewormer).
10. Provided one on one technical advisory to the owner on proper sanitation practices such as regular cleaning and regular removal of manure, disinfection, and preventive measures to maintain cleanliness of the farm and its perimeter to avoid disease infestation.
11. Provided one on one technical advisory to the owner on proper implementation, protocol, and importance of biosecurity measures in the farm.
12. Assisted the owner on the identification of other possible new market for rabbit.
13. Shared online linkage in terms of processing and development of rabbit meat products.
14. Provided one on one technical advisory and guide on proper recording and rabbit colonies monitoring/ inventory program.
15. Provided one on one lecture on the basics of animal husbandry practices including care and maintenance activities of the animals considering the ease and comfort of animals.



3. Accomplishments as against interventions

COMPONENT 1: FREE-RANGE CHICKEN

Interventions	Accomplishments
A. Nutrition, Feeding, and Breeding	
<ul style="list-style-type: none"> ▪ Incorporation of alternative feeds such as Madre de Agua and Azolla in the chicken's diet. These alternative feeds are high in protein and is low cost (almost no cost). ▪ Introduced the different natural supplements such as decoction and concoctions. ▪ Provision of IEC material, planting material and established alternative forage crops for chicken ▪ Developed and followed the proper breeding and Incubation techniques. 	<ul style="list-style-type: none"> ▪ Incorporation of low-cost alternative feeds to the diets of chicken. ▪ Practicing natural supplements for free-range chickens. ▪ Established pasture area and incorporation of alternative feeds to the diets of chickens ▪ Established and practiced the proper breeding and incubation techniques ▪ Established an isolation area for sick birds ▪ Enhanced and applied the proper health program for free-range chickens (Vaccination, Vitamin supplementation and Deworming).
B. Housing and other Facilities	
<ul style="list-style-type: none"> ▪ Established an isolation area for sick birds. ▪ Daily cleaning of water storage and changing of water offered to chickens 	
C. Health Management, Biosecurity, and sanitation Practices	
<ul style="list-style-type: none"> ▪ Enhanced and applied the proper health program in free-range chickens (Vaccination, Vitamin supplementation and Deworming). ▪ Provision of dewormers and vitamins. ▪ Implementation of proper biosecurity measures in the main gate and each chicken house. ▪ Developed and practiced the proper sanitation such as regular cleaning and removal of manure, disinfection and maintain orderliness and cleanliness inside the farm. 	<ul style="list-style-type: none"> ▪ Implemented a proper biosecurity measure in the main gate and each chicken house. ▪ Practiced the proper sanitation such as regular cleaning and removal of manure, disinfection and maintain orderliness and cleanliness inside the farm. ▪ Established a local market through online advertisement (facebook page).
D. General Husbandry practices/Animal Welfare	



<ul style="list-style-type: none"> Ensured basic care, proper provision of feed and water and maintenance activities for the animals. 	
E. Marketing	
<ul style="list-style-type: none"> Identified new market and/or established new market linkages through online advertisement (Facebook page). 	<ul style="list-style-type: none"> Established a local market through online advertisement (facebook page).

COMPONENT 2: RABBIT PRODUCTION

Interventions	Accomplishments
A. Nutrition, Feeding, and Breeding	
<ul style="list-style-type: none"> Provided one on one technical advisory to the owner on proper nutrition, feeding and breeding program for rabbits including goat and cattle. Provided learning material/guide on rabbit production and management. Provided forage planting materials for the establishment of forage production area. 	<ul style="list-style-type: none"> The farm has already established its forage garden and is currently expanding their forage production area by continuous planting and maximization of their available land area. The rabbits are now fed with quality forages (grasses and legumes) that were propagated in the forage garden of the farm.
B. Housing Management	
<ul style="list-style-type: none"> Provided one on one technical advisory to the owner on appropriate or suitable house and cage design for rabbits. Provided learning material on rabbit production and management. Provided technical advisory and emphasized the importance of cleanliness and sanitation on farm equipment and fixtures. Advised the farm worker to perform thorough cleaning of the storage containers. 	<ul style="list-style-type: none"> Repair of some existing rabbit cages was undertaken. The unnecessary housing fixtures and old cages were removed to improve the ventilation of the rabbit housing. Water containers and waterers were thoroughly cleaned and disinfected.
C. Health Management, Biosecurity, and Sanitation Practices	
<ul style="list-style-type: none"> Provided one on one technical advisory to the owner on proper livestock health management. 	<ul style="list-style-type: none"> The farm has adapted and implemented regular health program for rabbits.



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<ul style="list-style-type: none"> ▪ Provided veterinary products (vitamins, antibiotic, and dewormer). ▪ Provided one on one technical advisory to the owner on proper sanitation practices such as regular cleaning and regular removal of manure, disinfection, and preventive measures to maintain cleanliness of the farm and its perimeter to avoid disease infestation. ▪ Provided one on one technical advisory to the owner on proper implementation, protocol, and importance of biosecurity measures in the farm. 	<ul style="list-style-type: none"> ▪ An improved implementation of biosecurity measure in the farm has already been observed compared the previous farm visitation and consultation. ▪ The rabbit housing including its perimeter area were observed cleaned and in order. Farm wastes and garbage were properly segregated to biodegradable and non-biodegradable. A significant improvement in terms of waste disposal management of the farm has been observed.
D. Marketing	
<ul style="list-style-type: none"> ▪ Assisted the owner on the identification of other possible new market for rabbit. ▪ Shared online linkage in terms of processing and development of rabbit meat products. 	<ul style="list-style-type: none"> ▪ Accessed to possible online market
E. Recordkeeping	
<ul style="list-style-type: none"> ▪ Provided one on one technical advisory and guide on proper recording and rabbit colonies monitoring/ inventory program. 	<ul style="list-style-type: none"> ▪ The farm has started to make a record on its farm activities such as medication program and stocks inventory.
F. General Husbandry Practices/Animal Welfare	
<ul style="list-style-type: none"> ▪ Provided one on one lecture on the basics of animal husbandry practices including care and maintenance activities of the animals considering the ease and comfort of animals. 	<ul style="list-style-type: none"> ▪ A significant improvement on the overall production management system of the farm has been observed.



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4. Cost and return analyses before and after CAPE interventions Partial Budget Analysis

COMPONENT 1: FREE-RANGE CHICKEN

(Before Intervention)

COST AND RETURN ANALYSIS	
RETURNS:	
Cash	
Sales of Chicks and Growers (liveweight)	36,000.00
Total Cash Returns	36,000.00
Non-cash	
Home Consumption	4000.00
Total Non-cash Returns	4,000.00
TOTAL RETURNS	32,000.00
EXPENSES	
Cash	
Utilities/medication Expense	1000.00
Feed Cost	14,400.00
Labor Cost	6,000.00
TOTAL CASH EXPENSE	21,400.00
TOTAL EXPENSES	21,400.00
NET RETURNS	10,600.00
NET PROFIT MARGIN	33.12%



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(After Intervention)

COST AND RETURN ANALYSIS	
RETURNS:	
Cash	
Sales of Chicks and Growers (liveweight)	36,000.00
Total Cash Returns	36,000.00
Non-cash	
Home Consumption	4000.00
Total Non-cash Returns	4,000.00
TOTAL RETURNS	32,000.00
EXPENSES	
Cash	
Utilities/medication Expense	450.00
Feed Cost	10,800.00
Labor Cost	6,000.00
TOTAL CASH EXPENSE	17,250.00
TOTAL EXPENSES	17,250.00
NET RETURNS	14,750.00
NET PROFIT MARGIN	46.10%



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COMPONENT 2: RABBIT PRODUCTION

(Before the intervention)

COST AND RETURN ANALYSIS	
RETURNS:	
Cash	
Sales of rabbit (liveweight)	7,000.00
Total Cash Returns	7,000.00
Non-cash	
Home Consumption	3,500.00
Total Non-cash Returns	3,500.00
TOTAL RETURNS	10,500.00
EXPENSES	
Cash	
Utilities Expense	500.00
Feed Cost	3,600.00
Labor Cost	4,000.00
TOTAL CASH EXPENSE	8,100.00
TOTAL EXPENSES	8,100.00
NET RETURNS	2,400.00
NET PROFIT MARGIN	23%



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(After the intervention)

COST AND RETURN ANALYSIS	
RETURNS:	
Cash	
Sales of rabbit (liveweight)	7,000.00
Total Cash Returns	7,000.00
Non-cash	
Home Consumption	1,750.00
Total Non-cash Returns	1,750.00
TOTAL RETURNS	8,750.00
EXPENSES	
Cash	
Utilities Expense	500.00
Feed Cost	1,656.00
Labor Cost	4,000.00
TOTAL CASH EXPENSE	6,156.00
TOTAL EXPENSES	6,156.00
NET RETURNS	2,594.00
NET PROFIT MARGIN	30%



5. Impact of CAPE interventions (income production volume farm operation etc.)

1. Increased income of the farm
2. Reduced feed cost
3. Improved overall production management practices of the farm.
4. Improved animal welfare
5. Reduction of waste treatment costs
6. Improvement of working conditions

6. Comments/recommendations to ensure continuous adoption of yield increasing technologies

1. Expansion of the forage garden.
2. Proper implementation of alternative feeding and supplementation practices
3. Maintain biosecurity measures.
4. Close monitoring to all animals.
5. Observe proper management practices in the farm.

7. Pictures before and after CAPE interventions

Status of the farm before the intervention:



Figure 1. A major problem on housing ventilation and sanitation was observed.



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Figure 2. Existing forage (Madre de agua) has not been maximized for forage production. No forage garden/area was established to serve as primary source of feed for rabbits.



Figure 3. No biosecurity measures implemented around the farm and in every poultry house.



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Status of the farm after the intervention (1st to 2nd visitation):



Figure 4. The farm has started to propagate forage seedlings for the establishment of its forage area.



Figure 5. Newly established forage area of the farm. The area was planted with Madre de agua ang Indigofera



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Figure 6. Another area of the farm that has been already planted with Super Napier (Pakchong) grass. The farm is currently making efforts to maximize their area and add more napier seedlings to be planted in their farm.



Figure 7. An improved status of the rabbit housing after the first and second farm visitation/ intervention.



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Figure 8. Incorporation of alternative feeds to the diets of chicken.



Figure 9. Implementation of Biosecurity measures in the farm.

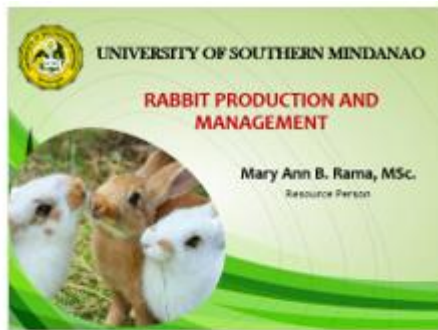


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8. Other supporting documents such as test results/soil analysis. Gantt chart of activities, farm layout/sketch, etc.

Learning Material/Guide on Rabbit Production





BASIC FACTS

- Rabbits have the same basic nutritional needs as humans.
- The number-one reason for diseases in rabbits is a poor diet.
- Rabbits are monogastric and herbivores however, they can consume an omnivorous diet.

Rabbit Production and Management (N.E. RAMALLOM) Rabbits

BASIC FACTS

- Rabbits' teeth are constantly growing, thus, constant chewing is important.
- Having the right diet is very important. If a rabbit develops a blockage in its digestive system, it can cause metabolic disease.

Rabbit Production and Management (N.E. RAMALLOM) Rabbits

BASIC FACTS

- Because its eyes are directed out to the sides rather than to the front, a rabbit cannot see the food in front of it. Instead, it must use its sense of smell to determine what food has been presented to it and where that food is.
- The rabbit produces two (2) types of droppings:
 - Fecal pellets – round, dry pellets
 - Cecotropes – made in a portion of the rabbit's digestive system called the cecum. The cecum contains bacteria and fungi that are essential for a rabbit's digestion for survival.
 - the ingestion of cecotropes is called coprophagy.

Rabbit Production and Management (N.E. RAMALLOM) Rabbits

Common Terminologies

- Doe – female breeding animal
- Buck – male breeding animal
- Dam – female parent
- Sire – male parent
- Kit – a young rabbit whose eyes are not yet opened
- Roaster – castrated rabbit
- Kindling – act of parturition
- Gestation – pregnancy period
- Weaning – act of separating the litter from the dam
- Litter – kits born in a single kindling

Oryctolagus cuniculus

Rabbit Production and Management (N.E. RAMALLOM) Rabbits



Common Terminologies

Fryer – to to 12 weeks old rabbit ready for market.

Fur – refers to a rabbit hair

Pelt – undressed skin with its hair, wool, or fur

Kit – a young a rabbit below 26 weeks of age

Weaning – act of separating the kits from the dam

Lapin – rabbit meat

Oryctolagus cuniculus



Economic Potentials and Advantages

- Requires low initial capital or investment.
- Can be very profitable if properly managed.
- Provides more meat from forage-based diets than any other type of livestock.
- High reproductive rates and rapid growth.
- Rabbit meat is low in fat, cholesterol, and sodium.



II. The Economic Potential and Advantages of Rabbit Production



Economic Potentials and Advantages

- Rabbit manure is a good source of fertilizer.
- Rabbits do not compete with humans for food (grains).
- Rabbit's fur turn into fiber and other useful and profitable products.
- Rabbits are gentle and quiet animals.
- Rabbits are the cleanest among herbivore animals. Affordable to feed.



Meat-type Breeds

- American Chinchilla** - gentle and docile
- adult weighs 4.1 Kgs. 
- Flemish Giant** - it was first bred in US
- adult weighs 3.5-5 Kgs.
- popular in the marketplace for decades. 
- Satin Rabbit** - raised mainly for meat and fur production (dual type)
- adult weighs 5.5 Kgs. 

Meat-type Breeds

- Californian White** - stocky
- adult weighs 3.0-5.4 Kgs.
- crossed between Chinchilla and NZ white. 
- New Zealand White** - most common and most popular breed.
- adult weighs 4.5-4 Kgs.
- kits may reach 3.6 Kgs. in 8 weeks. 
- Flemish Giant** - has a voracious appetite
- adult weighs 9 Kgs. 

Meat-type Breeds

- PS 200** - 1 month: 1 Kg 

PS 200 PROGENY DIAGRAM



The diagram shows a breeding cycle starting with a pair of rabbits (PS 200) that produces 20 offspring in 4 weeks. These 20 offspring are then bred in pairs, resulting in 200 offspring in 20 weeks.



Meat-type Breeds

- Transylvanian Giant** – originated in Romania
 - adult weighs 6-9 Kgs.



Fig. 4.148 Juvenile Transylvanian Giant (1) of World

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Fancy-type Breeds

- Harlequin** – called the “clown rabbits” and known for its unique color.
 - can be more expensive than other breeds
 - adult weighs 2.95 - 4 Kgs.
- Holland Lop** – one of the most popular breeds in US and UK.
 - are miniature rabbits
 - adult weighs .90 - 1.8 Kgs.
- Lionhead** – originated in France and Belgium.
 - has a wool mane encircling the head.
 - adult weighs 1 - 1.7 Kgs



Fig. 4.149 Harlequin Rabbit
 Fig. 4.150 Holland Lop Rabbit
 Fig. 4.151 Lionhead

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Fur-type Breeds

- German Angora** – originated in Germany
 - fur/wool yield: 700-1000 g/yr.
 - white; fine quality
 - adult weighs 3-4 Kgs.
- British Angora** – originated in UK
 - fur/wool yield: 400-600 g/yr.
 - white lustrous; fine quality
 - adult weighs 2.5-4.5 Kgs.
- Russian Angora** – originated in Russia
 - fur/wool yield: 300-400 g/yr.
 - white; medium fine wool; fine quality
 - adult weighs 3.5-5.5 Kgs



Fig. 4.152 German Angora
 Fig. 4.153 British Angora
 Fig. 4.154 Russian Angora

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CRITERIA IN SELECTING BREEDER STOCKS

BUCK	DOE
<ul style="list-style-type: none"> Vitality traits - should be in good physical condition – well developed testes; healthy, bright eyes, shiny hair coat, active disposition Breeding Efficiency - productivity; hereditary factors Growth Potential – fast growth but should not be fatty Resistance to diseases Purchase breeder stocks from a reputable source only Age of buck Best time to select buck is when they weigh at least 2.8 to 3 Kgs. 	<ul style="list-style-type: none"> Age of doe Best time to select doe is when they weigh at least 2 to 3 Kgs. A breeding doe should have minimum of 8 teats



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BREEDING TECHNIQUES

- Natural Mating** – best method
 - 90% conception rate
 - favored in small farms
- Artificial Insemination** – the process of collecting sperm cells from buck and deposit manually to the reproductive tract of a doe.
 - conception rate of this method can be equivalent to NM given with a well-trained AI technician.
 - advantageous for commercial breeding.

HOW TO BREED YOUR RABBITS

- May rebreed doe when litter is 45 days old
- Replace does with low litter production (if less than 5 litters in 2 production cycle)
- Replace buck with poor production records, poor weight gain and FCR
- Buck to doe ratio – 1:10
- Average gestation period: 30 days
- Prepare replacement stocks for expansion whenever needed.

HOW TO BREED YOUR RABBITS

- Does are best to breed at 6 months old at least 3 Kgs
- Breeder bucks should be 6 months old.
- It is best to breed early in the morning or late in the afternoon.
- The doe must be taken to the buck for mating.
- Do not leave the doe unattended in a buck's cage for more than 10 minutes.
- If the buck fails to breed the doe in given time, switch the doe to another buck.

DIFFERENT BREEDING CYCLES OF RABBIT

44 days after kindling	(71 days breeding cycle)	5 prod'n cycle/year
35 days after kindling	(65 days breeding cycle)	5.5 prod'n cycle/year
28 days after kindling	(58 days breeding cycle)	6 prod'n cycle/year
21 days after kindling	(51 days breeding cycle)	7 prod'n cycle/year
14 days after kindling	(44 days breeding cycle)	8 prod'n cycle/year




PRODUCTIVE PERIOD

- Productive life of buck and doe : average of 2-3 years but exceptional breeder stocks can be productive longer.
- Average production: 8 kits (some may have 12 kits/kinding).



WEANING PERIOD

- Kits open their eyes at 10 days old and comes out to the nest when they reached 20 days old.
- Wean the young at least 8 - 10 weeks old.

♦ Fryer rabbits should be in marketable size and weight when it reaches 14-16 weeks.

HOUSING AND EQUIPMENT




- The success of rabbit production relies on suitable site and design of houses
- Rabbit need proper housing for comfort and protection.
- Housing must be designed for ease of cleaning.
- Shelter premise should provide adequate shades of trees and peaceful environment.
- Rabbits can be housed in several ways depending on availability of resources - could be made of bamboo or wired-cages.




IV. Housing Management

Production and Management (M. & RARA), USM Kabacan

HOUSING AND EQUIPMENT






- Height of cages must be waist level.
- Dimension of cages:
 DOE - 24" x 24" x 16"
 BUCK - 12" x 24" x 16"
- Feeding trough - J feeders, grass, bamboo, earthen clay pots
- Waterer - bamboo, earthen clay pots, automatic watering system (nipple drinker)

Production and Management (M. & RARA), USM Kabacan



2. Carbohydrates

- Are sources of energy.
- Rabbit needs energy for contraction of muscles. It is also used to join substance to make products such as hair and milk
- Carbohydrate requirement for rabbits is in the form of **fiber**.

Nutrient Requirements of Rabbit

1. Water

- Cheapest and most abundant nutrient
- It is the most important nutrient for rabbits and should be always fresh and readily available.
- Rabbits consume approximately **10%** of their body weight in water per day.
- Accounts for 90-95% of blood and many tissues contain **70-90% water**.

Rabbit Production and Management (R.A. RAMA, DVM, Kabacan)

- A diet high in grain or fermentable fiber such as corn, oats and other cereals can cause **enteritis**.
- High levels of **non digestible fiber** such as Timothy grass, Alfalfa grass may help **prevent enteritis and obesity**.



3. Protein



- Act as enzymes, hormones and structural components.
- Needed to grow new tissues and repair old ones.
- The protein level of the feed is very important. For efficient rabbit feeding, a **16-17%** protein feed is needed.

4. Vitamins



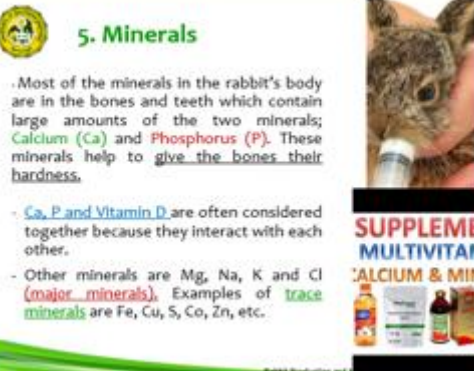
- Vitamins are chemical that are require in very small amount to speed up chemical reactions within the rabbit body.
- The **water-soluble vitamins** comprise the B-Vitamins and Vitamin C. The **fat-soluble vitamins** are A,D,E,K.
- Vitamins are synthesized by bacteria in the cecum and colon and are absorbed by eating cecotropes.
- To prevent destruction of vitamins A and E due to oxidation, **the feed should be fed within 90 days of milling.**



Protein Requirement of Rabbits

• Newly-weaned rabbits	>18% CP
• 12-24 weeks old	16-18% CP
• Breeder	15-17% CP
• Other stocks (normal growth)	12-14% CP

5. Minerals



Most of the minerals in the rabbit's body are in the bones and teeth which contain large amounts of the two minerals; **Calcium (Ca)** and **Phosphorus (P)**. These minerals help to give the bones their hardness.

- **Ca, P and Vitamin D** are often considered together because they interact with each other.
- Other minerals are Mg, Na, K and Cl (**major minerals**). Examples of **trace minerals** are Fe, Cu, S, Co, Zn, etc.



6. Fats

- Furnish a concentrated source of energy, up to 2.25 times as much energy as carbohydrates do.
- Rabbits use fat for energy and to absorb fat-soluble vitamins.
- Most food contain 2%-5% DM fat which rabbits can get from a vegetable diet.

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Common Forage Sources for Rabbits

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- According to **FAO (2010)**, the recommended feed requirement/ composition for rabbit is:

Forage & Greens	: 85%
Protein & Minerals	: 15%

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GRASSES

- **Trichantera** – *Trichantera gigantea*
- locally known as *Madre de Agua*
- from Latin American country of Colombia.
- CP content ranges from 12-22%
- Contains comparatively high ash and calcium concentrations at 16-20% and 2.4-3.8% of DM, respectively.

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 6. **Juncao** – *Pennisetum purpureum* x *Pennisetum typhoides*

- is native to China.
- Known in China as *Juncao*, meaning "the herbal plant for growing edible mushrooms as substrate"
- CP content ranges from 6 to 12%



 **LEGUMES**

1. **Indigofera** – *Indigofera tinctoria*

- is a species of plant from the **bean family** that was one of the original sources of **indigo dye**.
- it has been naturalized to tropical and temperate **Asia**, as well as parts of **Africa**, but its native habitat is unknown since it has been in cultivation worldwide for many centuries.
- *Indigofera* has **27-31% crude protein**, which is relatively higher than any of the locally available leguminous forages.



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 7. **Mulberry** – *Morus* spp.

- fast growing, deciduous woody tree species originated in Himalayan foothills of India and China
- Mulberry leaves have a high protein content ranging from **18-25%**.



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 2. **Arachis Pintoi** or Pinto Peanut

- is native to Brazil.
- is a valuable forage, easy to establish, persistent, and combines well in mixtures under a wide range of climate and soil conditions
- CP content ranges from 22 to 26%



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**3. Flemingia – *Flemingia macrophylla***

- Is native to South-East Asia.

- Is woody leguminous shrub or for fodder and soil conservation and improvement. It tolerates shade and many soil conditions.

- It contains 22-25% CP.



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**5. Calliandra – *Calliandra calothyrsus***

- is a small leguminous tree or large shrub; native to the tropics of Central America

- contains approximately 20-25% crude protein.



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4. Rensoni – *Desmodium rensonii*

- has been tagged as the "alfalfa of the tropics".

- contains approximately 20-22% crude protein.



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VI: Disease Management

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Disease – a disorder of structure or function in the body that produces specific signs and symptoms that directly result of physical injury.

- Identifying and treating diseases in their early stages is the key to a healthy rabbit.

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Common Diseases of Rabbits in the Philippines

No.	Disease	Symptoms	Cause	Prevention/Control	Remark
2	GI Stasis (Intestinal Blockage)	Rabbit will eat less or stop eating completely; fecal pellets become smaller, drier and stop in excreting fecal matters; bloated stomach	Diet is high in concentrate and fats while low in fiber – leads to slow GI tract motility; Other causes include anything that causes a rabbit to eat less – dental problem, abscesses, dehydration (eat less; slows GI motility); Change in GI Ph – change in bacterial population responsible in fermentation – less microorganisms – increases gas build-up)	Balanced diet – large amount of fiber; accessibility to water; administer enzymes (pine-apple based papain) to break down and digest intake feed particles	Obese rabbits are more prone to developing this disease.

Rabbit Production and Management (P.A. FRAU) 2018

Common Diseases of Rabbits in the Philippines

No.	Disease	Symptoms	Cause	Prevention/Control	Remark
1	Diarrhea	Watery, non-bloated feces (soft and loose); lethargy; loss of appetite; weight loss	Bacterial infection; Parasitic infection; poor diet; sudden change of diet; stress	Wet a full morning before weaning from the mother – antibodies and milk nutrients; gradual change in diet (not too high in fiber and not too low in CHO); medication	Young rabbits are prone to diarrhea

Rabbit Production and Management (P.A. FRAU) 2018

Common Diseases of Rabbits in the Philippines

No.	Disease	Symptoms	Cause	Prevention/Control	Remark
3	Pneumonia/ Snuffles	Nasal discharge, difficulty breathing, watery eyes, bluish color of ears; lungs show congestion; Secondary to enteritis, body sore with pus	Bacterial infection in (Pasteurella)	Reduce drafts and moisture snuffle on cages esp during rainy season or with cold climate; Administer antibiotic	

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No.	Disease	Symptoms	Cause	Prevention/Control
5	Heat stroke	Panting, salivation, high breathing rate	Lack of ventilation, and water	Provision of ventilation and shade, reduce exposure to sunlight, provide plenty of water; Apply cool compress
6	Conjunctivitis	Excessive tears that run down the cheek	Inflammation of the eye	Reduce sources of eye irritation
7	Coccidiosis	Poor appetite, dull, weight loss, diarrhea, rough fur	Protozoa (parasitic)	Use wire floors, keep pen clean, prevent fecal contamination in food and water, Disinfect pens, use sulfa quinoxaline in feed.

VII. Market Opportunities

No.	Disease	Symptoms	Cause	Prevention/Control
8	Mange	Affected rabbits show intense pruritus, head shaking, erythema, crusty, scaly, scabby lesions on the inner side and of the external canal	Are caused by ectoparasites: <i>Sarcoptes scabiei</i> , such as fleas, lice and mites.	Isolate infected animals and treat with Ivermectin
9	Mastitis	Swollen or tender mammary gland	Bacterial infection = <i>Streptococcus agalactiae</i> , <i>Staphylococcus aureus</i>	Administer antibiotic = penicillin Disinfect cages/hutches

**Predators (dogs, eagles, hawks) These are threat (pests) to rabbit production when proper housing is not established.

Rabbit can be produced for various markets as:

1. Breeder stock
2. Pet and show animals
3. Laboratory animals (educational purposes)



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Rabbit can be produced for various markets as:

- 4. Meat (fresh/lean)
- 5. Lechon Rabbit (Babbitchon/ bunnychon)

Rabbit can be produced for various markets as:

- 6. Processed meat products (value addition)

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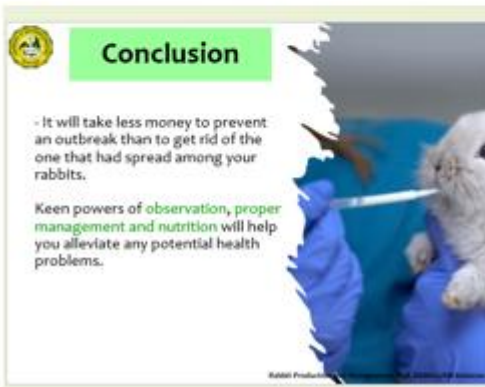
Rabbit can be produced for various markets as:

- 6. Rabbit dishes

Rabbit can be produced for various markets as:

- 7. Fur/Pelt products

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Health Program for Free-range Chickens

Pangangalaga sa Kalusugan ng mga Manok
 Marek's vaccine against Mareks disease on Day 1.
Vaccination and health program of the birds

Age of Birds	Vaccine/Health Management	Route
7 days	NCD 8181	Eye drop
14 days	IBD Intermediate Vaccine	Drinking Water
28 days	NCD La Sola	Drinking Water
60 days	Pox Vaccine	Wing Web
120 days	NCD La Sola	Drinking Water
	Pox Vaccine	Wing Web
	Deworming	Drinking Water
One year	NCD La Sola	IM



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9. Recommendations to improve the CAPE program
1. **Strengthen Collaboration:** Foster stronger collaborations between academic institutions, research organizations, industries, and government agencies. Encourage cross-disciplinary collaboration to address complex challenges and promote knowledge sharing.
 2. **Foster Entrepreneurship:** Provide training and support for farmers/ owners to develop entrepreneurial skills.
 3. **Enhance Public Awareness:** Increase public awareness of the CAPE program and its achievements.

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