RWANDA POLYTECHNIC

TVET LEVEL II

AGRICULTURE

Rabbit Farming

TRAINER MANUAL

RWANDA POLYTECHNIC

Approved by: Workforce Development Authority

USAID FROM THE AMERICAN PEOPLE

EDC Education Development Center

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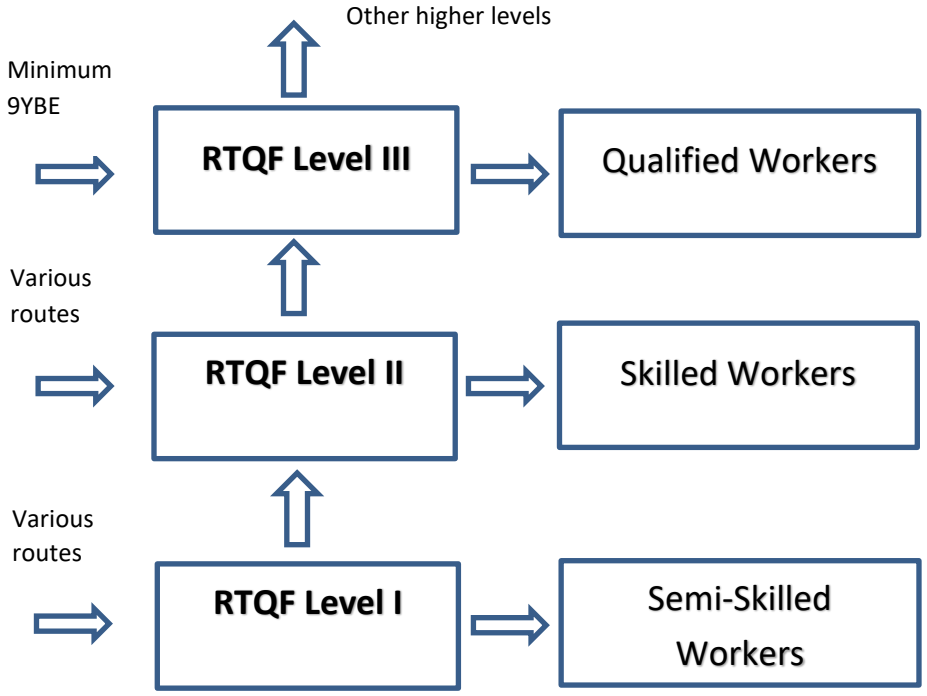
Introduction to RTQF Level II Training Modules

Background

Rwanda Polytechnic, with support of and in collaboration with USAID Huguka Dukore Akazi Kanoze, has developed RTQF TVET Level II programs that combine basic education, soft skills and vocational skills modules. Bridging the gap between Level I and Level III programmes, Level II aims to prepare learners who have a minimum education level of Primary 6 or equivalent to continue with their education or become skilled workers in the labour force.



Following the Workforce Development Authority (WDA) curriculum development process that involved experts from Rwanda Polytechnic, Rwanda Education Board, Ministry of Agriculture, technical vocational institutions, Education Development Center, Akazi Kanoze Access and other technical experts, training modules were developed in basic education, soft skills (work readiness) and, initially, agriculture. Additional vocational areas will be added over time. Trainees will be trained in all Basic Education and Soft Skills modules listed below, as well as in 6 - 8 modules that make up their chosen technical vocational programme.

Module Requirements:

Basic Education	Soft Skills	Vocational Skills
• English • Kinyarwanda • Mathematics	• Basic Entrepreneurship Skills • ICT Essentials • Communication Skills	• Vocational programmes will have a set of 6 – 8 required technical modules.

• Integrated Science (Physics, Chemistry, Biology)	• Safety, Health and Sustainable Environment • Personal Development and Career Guidance	E.g. Food Crop Production and Processing includes the following modules: 1. Food Crop Production 2. Small Scale Post-Harvest Operations 3. Growing Medium 4. Food Safety and Sanitation 5. Food Preservation and Storage 6. Flour Processing

Organization of the Training Manuals

For each module there is a Trainer Manual and a Trainee Manual. These manuals, based on the curricula for each subject, are divided into Learning Units, and each Learning Unit includes 3 – 5 Learning Outcomes. The learning outcomes make up the essential skills, knowledge and attitudes to be acquired by trainees. To make the Trainee Manual more user friendly, Unit and Topic are used respectively for Learning Unit and Learning Outcome. The number of hours per training module varies, ranging between 30 and 120 hours.

Teaching & Learning Methodology of RTQF Level II 2 TVET Materials

The teaching and learning methodology used in the materials is based in experiential and adult learning. Activities are designed to engage trainees, build upon what they know and learn and provide them with opportunities to build their skills in the classroom and in the workplace. More specifically, guiding principles in the development of the manuals include:

- Building on participants' knowledge, skills and experiences
- Facilitating a learning process through active engagement of participants rather than through lecturing
- Providing opportunities to practice – inquiry based and hands on practice, both in the classroom and workplace
- Using simple and clear language
- Connecting to the real world: use local resources and the environment for learning
- Promoting critical thinking through properly debriefing activities and asking questions that get learners to think, analyze, relate issues and topics to their own lives and come up with solutions

- Applying social inclusion principles: Finding ways to include all types of youth (and trainers) – males and females; different cultural/ethnic/religious backgrounds, people with disabilities (PWD); people with different types of health status …

- Encouraging risk taking – promote questioning and being free to explore

- Promoting habits of mind that support life-long learning: curiosity and wonder, open mindedness, creativity

These principles are reflected in the layout and flow of activities in the manuals:

1. **Key Competencies:** Table found at the beginning of each Learning Outcome that describes the main knowledge, skills and attitudes to be gained by the end of the activities.

2. **Self-Assessment:** Conducted at the beginning and end of each Learning Unit to get a sense of trainees' knowledge and skills going into it and what they have gained by the end of the Learning Unit (and steps they need to take to further their understanding and skills).

3.  **Getting Started Activity:** Typically, a quick activity or questions to 1) give the trainer a sense of trainees' existing knowledge and skills; 2) spark the interest of trainees in the topic; 3) introduce the objectives and key competencies of the topic.

4.  **Problem Solving Activity:** A challenging activity to get trainees engaged and to learn through discovery instead of memorization of facts. A variety of teaching and learning methodologies are used, including individual and group work such as reading real life work-based scenarios and answering accompanying questions to activities such as identifying proper tools and equipment from the school workshop to conduct a certain activity. Following the sharing of responses, the trainer guides trainees through the content and processes being introduced.

5.  **Guided Practice Activity:** Building on the concepts and skills gained in the Problem Solving Activity, the trainer guides trainees through practical examples.

6.  **Application Activity:** Consolidates trainees' knowledge and skills through a real-life application of the topic in the classroom, community or workplace. Trainees are given more independence in applying what they have learned.

7. **Key Facts boxes:** Throughout the Trainee Manual, one will find Key Facts boxes. These contain the main information or content for a given Learning Outcome. They are there for the trainees' reference and are used throughout the different types of activities.

8.  **Points to Remember:** List of the top key learning points or "take-aways" from the topic.

9.  **Formative Assessment:** Questions and activities to assess trainees' level of understanding of the concepts introduced.

10.  **Summative Assessment:** Based on the integrated, real life situation approach used in other TVET levels, this is done at the end of every module for agricultural modules and, with some variations, at the end of each Learning Unit for Basic Education and Soft Skills modules.

11.  **Self-Reflection:** Trainees re-take the Self-Assessment given at the beginning of the Learning Unit and identify their strengths, challenges and actions to improve their level of competence.

The Trainer and Trainee Manuals are meant to be used in conjunction with each other and are well coordinated through the headings and labelling of activities. The trainer will always be able to refer trainees to specific activities by the coordinated numbering system. For instance, a specific exercise might be labelled Topic 1.2 Task 2. The Topic is the number of the Learning Outcome and the task is the specific exercise to be done. The Key Facts are also numbered for easy reference. These nor the Self-Assessment tables are in the Trainer's Manual so the trainer should have a copy of both manuals.

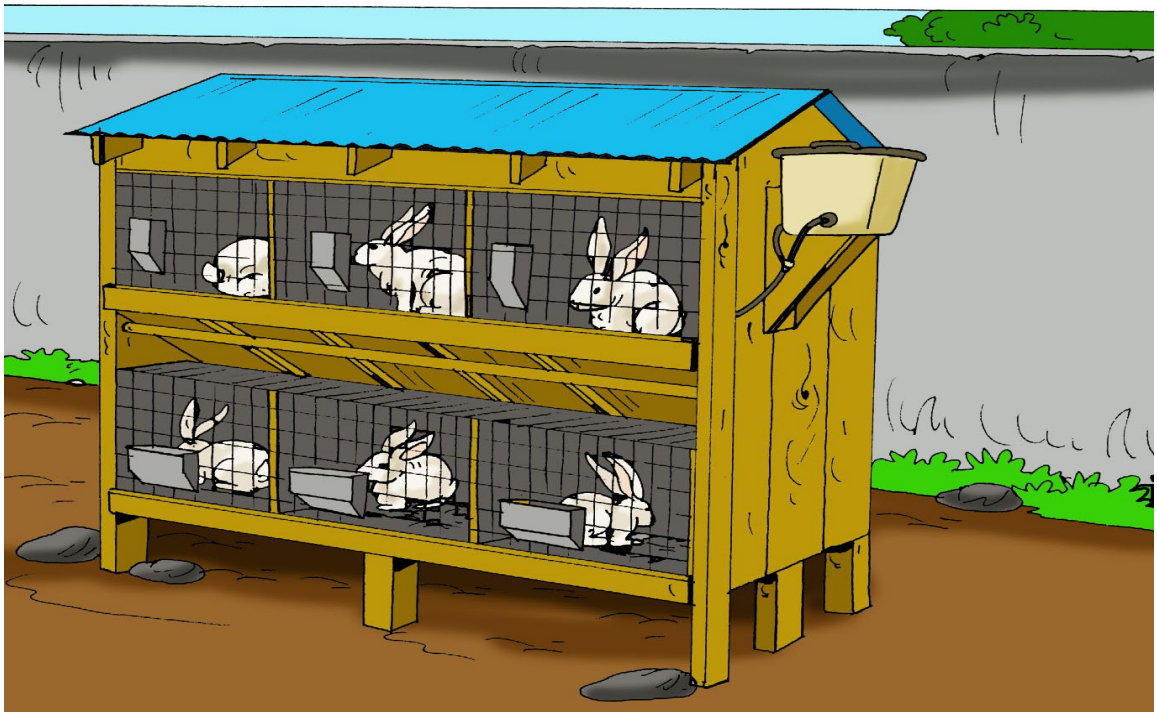
The Trainer's Manual includes answers (or guidelines to the trainer as appropriate) to Formative and Summative Assessments as well as to problems given throughout the activities. Summative Assessments are not included in the Trainee's Manual. These are meant to be used as a guide for those who will be developing a context-appropriative Summative Assessment at the end of the Module or Learning Unit. Basic Education and Soft Skills modules include Summative Assessments at the end of every Learning Unit while the technical modules include it only at the end of the module.

Lastly, there is a section in the Trainer's Manual for additional information to the trainer that includes either specific information or references to information that can help them deepen their understanding of the particular content.

RABBIT FARMING

Learning Units	Learning Hours	Learning Outcomes
Learning Unit 1: Manage rabbit farming	30	**1.1** Identify characteristics of rabbit hutches
		1.2 Feed and water rabbits
		1.3 Apply best practices to rabbit farming
Learning Unit 2: Manage rabbit reproduction	30	**2.1** Select rabbit breeds
		2.2 Mate rabbits
		2.3 Monitor pregnancy and weaning

Learning Unit 1: Manage rabbit farming



Learning Outcomes

By the end of the Learning Unit, trainees will be able to:

1.1 Identify important characteristics of rabbit hutches

1.2 Supply food and water to rabbits

1.3 Apply best practices to rabbit farming

Learning Unit 1 Self-Assessment

1. Ask trainees to look at the illustration of the unit in their manual and discuss what they observe. What topics do they think this unit will be talking about?

2. Ask trainees to fill out the self-assessment at the beginning of the unit in their Trainee Manuals. Explain that the purpose of the self-assessment is to become familiar with the topics in the unit and for them to check what they know or do not know at the beginning. At the end of the unit, they will do a self-reflection, which includes re-taking the self-assessment and identifying their strengths, areas that need improvement and actions to take. The self-assessment is not a test!

Learning Outcome 1.1: Identify important characteristics of rabbit hutches

Objectives: By the end of the learning outcome, trainees will be able to:

a. Identify different characteristics for rabbit cages

b. Identify different materials and equipment used to clean rabbit cages

Time Required: 2 hours

Learning Methodology: Group discussion, group work, field visit

Materials Needed:

- **Standard training materials**: Flipchart, markers, scotch/masking tape
- **Cleaning materials**: brush, squeegee, soap, towel
- **PPE**: Overalls, boots, gloves

Preparation:

❑ Contact manager of the school farm to ensure the availability of rabbits, cleaning materials, and PPE.

Cross Cutting Issues:

✓ **Environment and sustainability**: Some materials and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Management and use of disinfectants must discussed with respect for the environment. While identifying the cleaning solutions consider the environment. Emphasise the need to protect the environment through proper disposal of waste materials as some of the used materials and equipment are pollutants and represent hazards for rabbit, employees and the environment.

✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.

✓ **Financial education:** Consider financial burdens while identifying consumables for PPE, cleaning materials, tools, and equipment.

Prerequisites:

- Basic biology

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain methods for cleaning rabbit hutches	**1.** Clean hutches	**1.** Detail oriented
2. Describe good placement of hutches	**2.** Apply environmental practices when cleaning rabbit cages	**2.** Responsible
3. Describe the installation of hutches and nesting boxes	**3.** Describe nesting boxes and their value	**3.** Patient

Steps:

Getting Started: What do we know and where are we going?

Topic 1.1 Task 1:

1. Ask trainees to review the picture at the beginning of this unit. We can see that we will be discussing rabbits.

2. To get started, tell the class to share their experiences raising and eating rabbit meat with a partner. Tell them to consider the following questions:
   - **a.** Have you ever raised (or seen a friend or neighbour) raise rabbits?
   - **b.** What is the benefit of raising rabbits?
   - **c.** Explain the process of raising rabbits from your experience.
   - **d.** Have you ever eaten rabbit meat?
   - **e.** Did the meat taste good? Was it tender and juicy?
   - **f.** Why is the meat of rabbit classified among white meats?
   - **g.** Explain any nutritional facts you may know about eating rabbit meat.

3. Ask volunteers to share their thoughts and experiences.

4. After discussing as a class, explain the following:

Rabbits mate easily and grow quickly, eat food scraps among other things, and they grow quickly so they give meat in a short amount of time. They usually live in small cages. Rabbit meat is tender and juicy. It is considered white meat because it turns white when cooked. It is in a category with chicken and other young, milk-fed animals. Rabbit has the advantage of providing MORE protein and LESS fat than chicken meat. It is a healthy option!

5. Review the Key Competencies table as a large group. Explain that this learning outcome will focus on installation of rabbits into small cages called hutches.

Problem Solving Activity

Topic 1.1 Task 2:

1. In pairs, trainees should share their thoughts and experiences on the following illustrations and questions.

a. Think about housing: Why do we live in houses?

Possible Answer: Mainly to protect us from weather and predators, but also to make us comfortable. It is much the same for a rabbit cage or hutch. We have rabbits in hutches to keep them safe and comfortable.

b. Observe the following picture and describe all the elements of the rabbit cage that you see including if this cage is suitable for housing rabbits.

[1]

[1] A&A Logistik-Equipment GmbH & Co. KG. (n.d.). *Meshbox100.JPG* [Photograph]. Wikipedia. https://de.wikipedia.org/wiki/Datei:Gitterbox100.JPG

Possible Answer: Remember that rabbit hutches need to be designed to protect rabbits from weather and rodents or other predators, give them space to live comfortably, and be easy to keep clean. The cage is made from wire mesh. The floor and the lower sides have smaller holes than the top and the upper parts of the sides. There is a metal pan about 5 cm under the floor. There is a big door with a clip to keep it tight. This looks like a good cage. Note: some cages are made from wood (or partly from wood) but remember that rabbits chew on wood so they can destroy those cages. Rabbits cannot chew through wire mesh. Also, it is important for cages to have thin holed mesh on the floor and near the bottom of the walls so babies cannot fall through, but at the same time the waste can fall through.

c. If a rabbit were living in this cage, what would happen with the rabbit droppings and the rabbit urine? Would that be easy to clean up each day? What tools and materials would you need to clean the tray?

Possible Answer: The waste from the rabbit (feces and urine) will drop through the wire mesh on the floor and land inside the metal tray under the cage. This cage keeps the waste away from the rabbit so the rabbit can stay comfortable and clean—and also makes it easy to clean because the tray can be removed and washed every day to avoid bad smells or disease.

You would need soap and a disinfectant with water to clean the cage every day, along with a brush to scrub the tray. For PPE you would need gloves and boots. Be careful that the waste and waste water go into a sewer NOT into an open river or waterway.

d. List three things that you need to add to this cage before a rabbit would feel comfortable living here.

Possible Answer: Add containers to hold the food and the water, put wood shavings or cut hay on the floor

e. The door is about 25cm wide and about 60cm tall. Use that information to estimate the length of each edge of the cage. Note: This cage is for one adult rabbit, or for a mother rabbit and her small babies. Each adult rabbit should be in a single cage.

Possible Answer: This cage for an adult rabit should be approximately 60cm x 60cm and about 75cm tall.

2. Ask a few of the pairs to share their answers. Complete the responses using the **Possible Answers** provided to ensure that correct learning has happened.

3. Ask a volunteer to read the **1.1 Key Facts** aloud to the class. Answer any questions from trainees.

Guided Practice Activity

Topic 1.1 Task 3:

1. Tell trainees that they will visit the rabbit-raising area at the school or on a nearby farm. While there, they should observe as much as they can. The trainees' task is to observe the operation closely, ask the farm manager any questions that they have, and learn as much as they can from what they see and hear.

2. Use the following questions to guide the visit:
   a. Identify as many different equipment for rabbit raising as you can and state the reason for each tool or other item you see.

      Possible Answers: hutches, cleaning supplies, PPE

   b. What material and tools are needed for cleaning? How often is each hutch cleaned? Where does the waste and dirty water from cleaning the rabbit cages (old hay as well as urine/faeces) go?

      Possible Answers: Brushes, water, soap etc, hutches should be cleaned daily. Wastewater and faeces etc should not be washed into any water source, such as rivers, lakes, or nearby houses.

   c. Are there different types of cages for different rabbits? Why do you think there are such differences?
      Possible Answers: Will vary

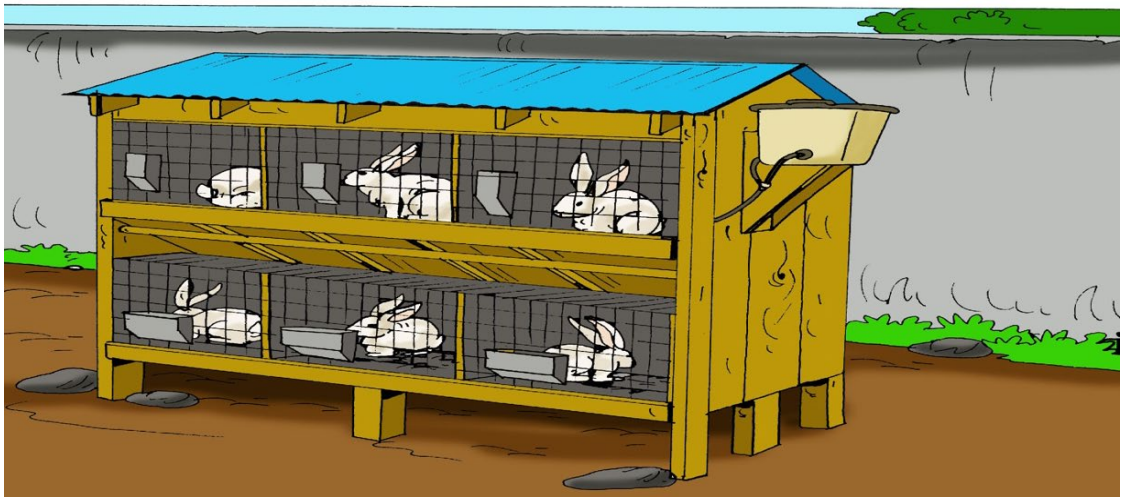
3. Upon returning to the classroom, let trainees ask any remaining questions and respond. Ask several volunteers to share their observations and responses to each of the questions.

Application Activity

Topic 1.1 Task 4:

1. In pairs, trainees should review the following illustrations and answer the questions that follow.

2. **Illustration 1**: Family rabbit hutch



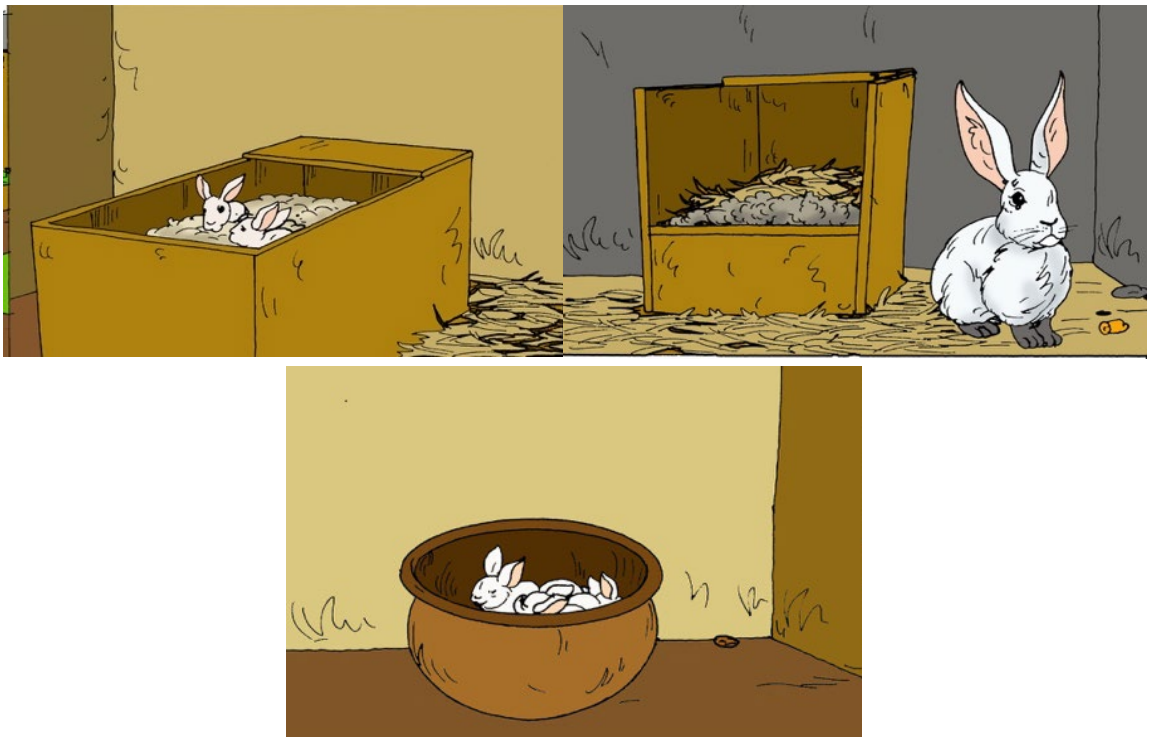
a. In the hutch shown above the cages have floors made of wire grid and under that are pans are slipped out from the back side of the cage. Why must we be able to remove the floor pans?

Possible Answers: It is necessary to have removeable floor pans so the hutches can be cleaned daily to remove urine and faeces and ensure that the rabbits do not get sick

b. Each of the rabbits shown are adult rabbits, so the floor of each cage must be approximately 60 cm x 60 cm. Give an estimate for how big the entire hutch is.

Possible Answers: This hutch will be about 2 m long and about 60 cm deep (or a little more) and about 1.5 m high. That will allow adequate space for each of the rabbits.

3. **Illustration 2**: Three different ways that nesting boxes could look



   a. Explain why you should put a nesting box in with a pregnant mother rabbit.

      Possible Answer: A nesting box is needed because new-born rabbit kits can fall through the wire floor, so they need a nest to stay safe and warm. A nesting box keeps the kits safe and warm and protects them from winds and weather when the mother is not sitting with the babies.

   b. List some advantages of each of the different nesting boxes shown.

      Possible Answer: The box on the left is a bit bigger so if the rabbit has many babies a bigger box will be good. The cup shaped nest is comfortable and will keep the baby kits all together and protected. The box on the right provides more protection from rains and winds because it has walls and a roof to keep winds out and warmth inside, even when the mother is not with the babies.

4. Discuss the answers with the trainees and then ask trainees to re-read **1.1 Key Facts**. Respond to any questions regarding hutches.

Points to Remember

- Hutches (or rabbit cages) must have good ventilation but also keep rabbits secure and away from rodents and predators. Hutches also protect the rabbits from sun, wind, and rain. A good hutch makes the rabbit feel comfortable, clean, and calm.
- To maintain good health and hygiene in rabbit hutches, remove uneaten food from the cage daily, wash out the food bowls, wash and refill the water bottle. Then add clean and dry roughage (hay, straw or grasses) into the cage.
- Clean the floor pan daily: remove urine and faeces, wash with soap, water, and brush.
- During the cleaning process, put all waste (including dirty water) where it will not get near household food, and far from all water sources to keep a safe environment.
- When rabbits give birth and care for babies (kits) and are lactating, the rabbit cage must be in quiet environment or the mother may stop caring for the kits.

Formative Assessment

Read and answer the following questions.

1. Give at least three characteristics of a good rabbit shelter.
   Possible Answers: Protect rabbit against rain, sun and wind, a good ventilation, protect rabbit against pests and predators

2. List at least four items needed in cleaning a rabbit cage.
   Possible Answers: brushes, soap, water, clean grass/hay/straw for the floors

3. Explain where rabbit hutches should be placed and why.
   Answer: Protected location (protected from weather) good design for easy cleaning, protection from predators, presence of food bins and watering pans, doors that closer carefully to avoid escape, and a place to put the waste safely

4. What personnel protective equipment might be helpful on a rabbit farm?
   Answer: Overalls, boots, and gloves.

Further Information for the Trainer

1. https://willowcreekfarm.wordpress.com/2016/06/17/getting-started-with-meat-rabbits-housing/
2. https://www.raising-rabbits.com/rabbit-breeding.html

Learning Outcome 1.2: Feed and water rabbits

Objectives: By the end of the learning outcome, trainees will be able to:

a. Identify feed for rabbits
b. Perform feeding and practice watering rabbits
c. Control overgrowth of teeth in rabbits

Time Required: 10 hours

Learning Methodology: Presentations, field visit, group work

Materials Needed:

- Pictures of rabbit feeders/drinkers
- Feed samples
- Wire cutter

Preparation:

- ❑ Contact the farm manager for site visit.
- ❑ Prepare materials, tools, and equipment, as well as rabbit for teeth clipping demonstration.
- ❑ Collect different feed samples.

Cross Cutting Issues:

- ✓ **Environment and sustainability**: Some material, products, and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Emphasize the need to protect the environment through proper disposal of waste materials.
- ✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.
- ✓ **Financial education:** Consider financial burdens while identifying consumables (PPE, cleaning materials, tools, equipment). In animal production, feed accounts for 80% of costs so must be considered within the business income generation.

Prerequisites:

- Basic biology: rabbit anatomy and physiology
- Types of forage

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain the different types of feed rabbits need	**1.** Identify different feeds and amounts needed	**1.** Proactive
2. Describe watering techniques	**2.** Determine quantity of water rabbits need	**2.** Dependable
3. Explain teeth cutting techniques	**3.** Control overgrown teeth	**3.** Detail oriented

Steps:

Getting Started: What do we know and where are we going?

Topic 1.2 Task 1:

1. In groups of five, tell trainees to discuss the following questions. Tell trainees that there is not just one correct answer, rather they should think of as many possible answers as they can.

a. Discuss the role of feeding in animal production.

Possible Answer: Feeding an animal will help the animal grow but it costs money too. If you do not feed the animals the correct food that they need for proper nutrition, then the animals may fall ill.

b. Discuss how feeding impacts the profitability of the farm.

Possible Answer: Food costs money so you need to balance that cost against the profits. If an animal falls ill or dies that also costs money. A nutritious diet helps an animal stay healthy.

c. Rabbits are herbivores. Discuss what this means by suggesting some foods that would be good for an herbivore and some that would NOT be good.

Possible Answer: A herbivore is an animal that eats only plants. They need lots of fresh hay and grass.

- Rabbits should never eat meat or dairy products.
- Rabbits should not eat baked goods (bread, cake, crackers, cookies, etc.).

- Rabbits should not eat chocolate or nuts.
- Rabbits should never eat avocados, rhubarb, onions, or tomato plants.

2. After groups have discussed the questions, ask for volunteers to share their responses. Verify the correct answers using the **Possible Answers** provided.

3. Introduce the Key Competencies and explain the objectives of the lesson.

Problem Solving Activity

Topic 1.2 Task 2:

1. In pairs, trainees should research one or more of the following topics. One topic may be covered by more than one pair – if this occurs try to ensure that pairs studying the same topic have different resources.

2. The research topics are as follows:

a. Which grasses that are good for rabbits to eat?

Answer: all fresh grasses are good for rabbits to eat. About half the rabbit's food should be grasses and hay (also called 'forage').

b. Are there tubers and roots which are healthy food for rabbits?

Answer: Tubers and roots can be eaten by rabbits, along with other vegetable and fruits.

c. What foods should a rabbit NOT eat?

Answer: Rabbits must not eat avocados, meat, dairy, and rabbits should not eat any sweets or baked goods or any food that is mouldy or spoiled. Rabbits should not eat potato or tomato plants and should not eat rhubarb.

d. What are the ingredients in rabbit feed concentrate?
Answer: Grains and/or pellets

e. How often does an adult rabbit eat during one day's time? AND how much?

Answer: Adult rabbits eat all day long as they snack and nibble on things. Rabbits should eat between 50-250 grams of feed pellet concentrate each day. Pregnant and

lactating does need more food than other adult rabbits. All rabbits need dry or fresh hay or grass every day.

f. Other research questions about rabbit farming provided by the trainer.

3. Ask trainees to prepare a short presentation for their classmates. Verify the responses for accuracy using the **Answers** provided.

4. Ask all trainees to read **1.2 Key Facts** silently and ask trainer if any of the facts are not clear.

Guided Practice Activity

Topic 1.2 Task 3:

1. Demonstrate how to trim (cut) rabbit teeth using a sharp wire cutter as the clipper. Ensure that there is a rabbit in need of teeth trimming. Explain all the important points and describe the process carefully in advance of the demonstration so trainees will know what they will be seeing.

Important points:

- Teeth trimming is very stressful for the rabbit, so it should only be done when necessary.
- Care must be taken to avoid cracking or breaking the entire tooth.
- Do not cut the tooth too short and avoid cutting the rabbit's lips, tongue, or gums.

Process:

- Wrap the rabbit in a towel to secure the feet and keep the animal steady and immobile.
- Force the mouth open by pushing a finger into the mouth behind the teeth area.
- Cut only a small portion of the tooth at a time and ensure all teeth are even and smooth.

2. Demonstrate how to cut the rabbit's teeth. Encourage trainees to observe closely and ask questions. If there are enough rabbits available, trainees may try it for themselves with your close supervision.

3. Ask trainees to share their observations and discuss.

Application Activity

Topic 1.2 Task 4:

Note: The trainer must prepare this visit in advance!

1. Inform the trainees that the class will visit a nearby rabbit farm and the trainees should observe the operation there with a particular focus on feeding and watering the rabbits.

2. Tell trainees to make detailed observations and take notes on everything they see including the following guiding questions. **Answers** will vary depending on the farm.
   a. Describe all the different food containers that you see at the rabbit farm. Are the containers different based on the kind of food that is inside each? What foods are the rabbits eating?
   b. Is the farmer using concentrated food pellets or grains? If so, describe.
   c. Explain how the rabbits are given water. Is there a bowl with water? A drip drinker? How can rabbits take drinks? How often does the rabbit drink?
   d. Ask the farmer to describe how often the food and drink dispensers are cleaned. How often is the whole hutch cleaned? Where does the farmer dispose of the wastewater?
   e. Did the farmer give a demonstration of the teeth cutting? What was your impression?
   f. What else do you observe?

3. Upon returning to class, ask several trainees to share their observations and responses to the questions.

4. Ask a volunteer to read aloud the **Points to Remember.**

Points to Remember

- Rabbits are herbivores—they eat plants. Rabbits eat lots of forage (fresh and dried hay and grasses), cereals, legumes, roots/tubers, and vegetables. They can also eat agri-industry products, pellets or food concentrate, with vitamins and minerals.

- Rabbits must not eat avocado, tomato/potato plants, rhubarb, meat, or dairy.

- Always provide plenty of fresh, clean water for your rabbits to drink.

Formative Assessment

Select or write the correct answers to the following questions.
Answers are in bold or indicated.

1. Which processes should be completed before feeding rabbits in the evening?
   a. Clean drinkers and feeders
   b. Remove old fodder and add fresh new forage to the hutch
   c. Clean the hutch to remove all urine and faeces
   d. Weigh food if using pellets or commercial produced concentrated foods.
   e. **All of the above**

2. What criteria should be considering for determining amounts of rabbit feed needed?
   a. If the rabbit is young and still nursing or has been weaned.
   b. If the doe is pregnant, she will need more food.
   c. If the doe is lactating, she will need more food.
   d. If you are trying to fatten the animal for sale.
   e. **All of the above**

3. What is the main food for a rabbit?
   Answer: The main food for a rabbit is the forage (fresh hay or grass or green plants).

4. What foods should a rabbit NOT eat?
   Answer: avocado, rhubarb, tomato and potato plants, meat, dairy, anything with sugar

5. Explain the process of overgrown teeth cutting.
   Answer:
   a. Wrap the rabbit in a towel to secure the feet and keep the animal steady and immobile.
   b. Force the mouth open by pushing a finger into the mouth behind the teeth area.
   c. Cut only a small portion of the tooth at a time—and ensure all teeth are even and smooth.

ⓘ Further Information for the Trainer

1. Rabbit food resource:
   https://www.peta.org/living/animal-companions/foods-rabbits-shouldnt-eat/
2. Rabbit teeth trimming:
   https://rabbitpedia.com/rabbit-care/trim-rabbits-teeth/
3. General information on rabbit farming in Rwanda:
   - https://www.newtimes.co.rw/business/untapped-potential-rabbit-farming-rwanda
   - https://tipsinfluencer.com.ng/how-to-start-rabbit-farming-in-rwanda/
   - https://www.newtimes.co.rw/business/teacher-expands-income-through-rabbit-farming

Learning Outcome 1.3: Apply best practices to rabbit farming

Objectives: By the end of the learning outcome, trainees will be able to:

a. Discuss rabbit-rearing norms and standards
b. Apply rabbit handling methods
c. Determine the gender of an adult rabbit
d. Apply rabbit identification techniques

Time Required: 10 hours

Learning Methodology: Group discussion and work, trainer presentation, trainee presentation, field visit

Materials Needed:

- Prepared pictures
- Several rabbits each in their own cage
- Earrings and pliers for earrings application

Preparation:

- ❑ Contact the farm manager to schedule the class visit.
- ❑ Prepare materials and tools as well as rabbits for class demonstration.

Cross Cutting Issues:

- ✓ **Environment and sustainability**: Some materials, products, and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Emphasise the need to protect the environment through proper disposal of waste.
- ✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.
- ✓ **Financial education:** Consider financial burdens while identifying consumables, such as PPE, cleaning materials, tools, and equipment.

Prerequisites:

- Rabbit anatomy and hutch construction design

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain standards and norms to be considered in rabbit rearing	**1.** Determine the sex of a given rabbit	**1.** Attentive
2. Describe rabbit handling methods and rabbit identification techniques	**2.** Handle rabbits correctly	**2.** Patient
3. Explain the how to differentiate male and female rabbits	**3.** Apply identification techniques on rabbits	**3.** Persistent

Steps:

Getting Started: What do we know and where are we going?

Topic 1.3 Task 1:

1. In groups of three people, tell trainees to brainstorm the important features of a rabbit hutch and explain why that feature will ensure the wellbeing of the rabbits inside the hutch.

2. Ask group to share their ideas and write them down on the board.

3. Refer trainees to **1.1 Key Facts** to review necessary details.

4. Referring to what you have written on the board, note that many of the hutch features are designed to keep the rabbits calm and free from stress because the rabbits will grow better and reproduce more if they are calm, clean, protected, and cared for with proper food and a lot of water.

5. Introduce the Key Competencies and explain the objectives of the lesson.

Problem Solving Activity

Topic 1.3 Task 2:

1. Ask trainees to individually review the following pictures and decide which of them are good or bad rabbit rearing practices. They must provide reasons why.

a.

b.

c.

d.

Answers:

a. **Good:** The rabbit is held firmly at the back of the neck and is supported under the feet.
b. **Good:** The rabbit head is held in place by the right arm and the back is supported by the left arm. This may be unstable if the rabbit is kicking but it is still a safe way to hold a rabbit.
c. **Bad:** The rabbit will be hurt because the ears are not strong, and the rabbit will kick and scratch.
d. **Bad:** The rabbit will be scared and stressed if held upside down.

2. When trainees have completed their individual work, ask them to find a partner and to compare their answers. Allow a few minutes for all trainees to update their answers with partners.

3. Ask for volunteers to share their answers with the entire class and ensure that all trainees agree on the correct answers and the reasoning.

4. Read **1.3 Key Facts** aloud to the class. Use the classroom rabbits for examples of how to hold the rabbit and how to determine the gender of rabbits.

5. After reading **1.3 Key Facts**, let trainees practice holding rabbits correctly using the rabbits that trainer has brought to class.

Guided Practice Activity

Topic 1.3 Task 3:

1. Read the following scenario to the trainees and tell them to follow along in their manuals:

On Paul's rabbit farm, he keeps 12 rabbits all year long, 6 does and 6 bucks. The rabbits have a gestation period of about 1 month and then the mothers nurse the kits for about 2 months so most of the does have two litters each year. When the babies are weaned Paul gives them more food to fatten them so he can sell them. His goal is to sell 4 rabbits from each litter. His family eats the rest of the rabbits—if there are extras.

The hutches on Paul's farm are beside a small flowing river. The river is a good source of water both for cleaning the cages (which Paul does each week) and for providing drinking water to the rabbits. The hutches are under a tree which provides a bit of protection from the sun and from rain, but it is also near the road where big noisy trucks drive by frequently.

Every day Paul gives the rabbits hay from the river edge as well as the vegetable cuttings that remain from his wife's cooking (which is usually carrots and cabbage as well as cassava and potato). Approximately once each week Paul gives his rabbits a cup full of grain which may be maize or millet.

While Paul is satisfied with the situation, he wonders if he could be making more money – as well as making more meat for his family to eat. Occasionally he finds that the does seem nervous and do not get pregnant or do not care for the young so the young then die. He has also found that the males do not always eat well, again, they seem nervous. And he wonders if he should keep more females than males so he could have more offspring.

2. Tell trainees to reflect individually and give Paul some suggestions that might make the business more successful.

Possible Answers:

- Paul should review the weather parameters of the hutches: It is likely that it may be too hot sometimes and too cold sometimes for the hutches that are just beside a river where a wind will blow with little protection. Move to a quieter place that is more protected from the weather.

- It is likely that ventilation there is good—but maybe too windy, too sunny, too rainy and too loud (with the trucks driving by).
- Paul should examine if the structures to ensure that predators cannot get in.
- The hutches should be cleaned EVERY DAY and Paul should be careful not to dump the dirty things from the hutches into the river (or near any water source).
- Paul should consider the techniques used for feeding and watering. The rabbits need lots of grass or hay (about 50% of their diet should be forage such as this). The rabbits need to have fresh drinking water every day as well as vegetables and grains.
- Paul should sell more of the males and keep more of the females, since males can reproduce with more than one female. Ideal would be for Paul to keep just 3 males and 9 females.

3. Once trainees have thought individually about suggestions for Paul, write all the correct suggestions for Paul on the board, using the **Possible Answers** provided to determine which suggestions are correct. Tell the trainees that these suggestions are all considered 'best practices' for rabbit farming.

4. Ask trainees to re-read **1.3 Key Facts** to verify that they have provided all the suggestions that they can. Ask trainees to note the diagram in the **Key Facts** that shows how to determine gender of a rabbit.

5. As a class, discuss the diagram which shows how to tell the gender of a rabbit—how are the two the same? How are they different?

6. Demonstrate with a male and female rabbit how to determine gender of a rabbit.

7. Put all the rabbits back into their cages and then explain that the trainees will now have a chance to practice careful handling of rabbits. At the same time, they will determine the gender of the rabbit that they are holding under the supervision of the trainer.

8. Call individual trainees to the rabbit cages to try to correctly determine the rabbit's gender. Allow trainees to practice holding the rabbits correctly. Support trainees in correctly holding the rabbit and identifying its gender.

Application Activity

Topic 1.3 Task 4:

1. Trainees will visit a rabbit farm to determine if best practices are being used. Tell the trainees to work in pairs to take notes in each of the following areas and identify if there are any areas in which the farmer could improve their care for the rabbits.

2. Tell trainees to answer the following, including any improvements needed. Answers will vary upon the trainee and the farm visited.

   Physical characteristics of the hutches:
   - **a.** Temperature
   - **b.** Ventilation
   - **c.** Light
   - **d.** Noises
   - **e.** Protection from wind and rain
   - **f.** Protection from predators
   - **g.** Food and water containers are clean and filled correctly
   - **h.** Cage/hutch is clean and comfortable
   - **i.** If a doe is pregnant or with kits, is there an adequate nesting box?
   - **j.** How has the farmer labelled the rabbits or the hutches? Is it adequate?

3. During the visit, ask trainees to correctly identify the sex of five young rabbits chosen randomly.

Points to Remember

- Determining the gender of your rabbits will help in deciding which rabbits to keep for breeding and which to fatten and sell.
- Identification of rabbit by tagging ears or cages helps in animal monitoring.
- Monitor your rabbits carefully to see that they are not stressed or sick.

Formative Assessment

Read and answer the following questions. Use complete sentences.
Answers are provided.

1. Explain how the following factors impact the rabbit life and rabbit production.
   a. Low or high temperature
   b. Bad ventilation
   c. Noise
   d. High/low Light
   e. Wind/rain

   Answer: All the listed characteristics are bad and will stress a rabbit and make them sick or die.

2. Explain how to determine the sex of a rabbit? Why is this important in rabbit farming?

   Answer: look under the tail, it is important so you know which will reproduce.

3. What is the importance of animal tagging? What details should be included on a tag?

   Answer: The tag lets the farmer know the details of each rabbit such as age, gender and illness.

4. Describe what foods are good for a rabbit and list two that are bad for rabbits.

   Answer: Forage should be 50% of all the food, vegetables and fruit are good. Avocados are bad. Tomato and potato leaves are bad. Rhubarb is bad. Sweets and baked goods are bad.

Self-Reflection

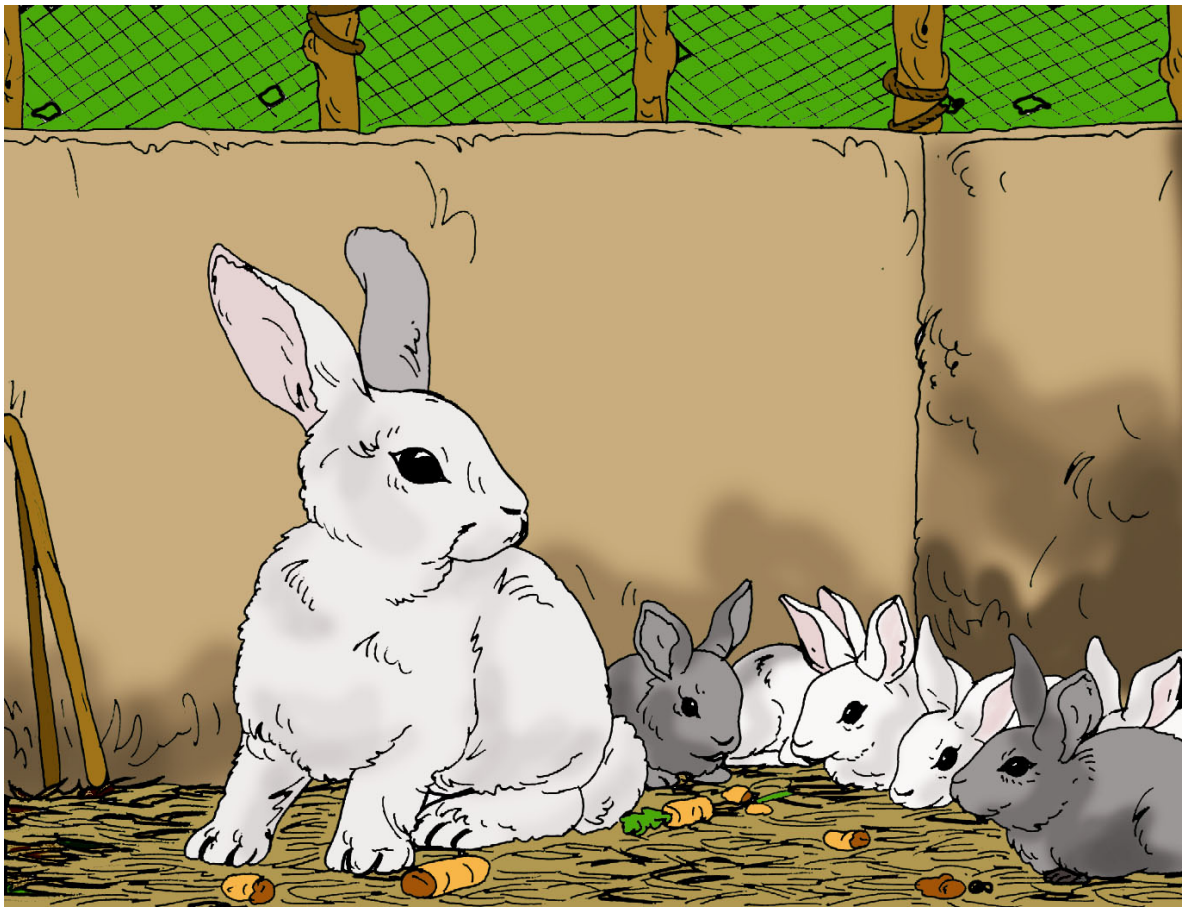
1. Ask trainees to re-take the self-assessment found at the beginning of this unit. They should then fill in the table under self-reflection in the Trainee's Manual to identify their areas of strength, areas for improvement and actions to take towards improvement.

2. Ask trainees to complete the table by identifying areas from the unit where they have improved and where they need improvement and then they should decide on actions/strategies to help themselves improve their own learning process.

Further Information for the Trainer

1. https://rabbitpedia.com/rabbit-care/

Learning Unit 2: Management of rabbit reproduction



Learning Outcomes

By the end of the Learning Unit, trainees will be able to:

2.1 Select rabbit breeds

2.2 Breed rabbits

2.3 Monitor rabbits from pregnancy to weaning

Learning Unit 2 Self-Assessment

1. Ask trainees to look at the illustration above and discuss what they see. What topics do they think this unit will include based on the illustration?

2. Ask trainees to fill out the self-assessment at the beginning of the unit in their Trainee Manuals. Explain that the purpose of the self-assessment is to become familiar with the topics in the unit and for them to see what they know or do not know at the beginning. At the end of the unit, they will do a self-reflection, which includes re-taking the self-assessment and identifying their strengths, areas that need improvement and actions to take. The self-assessment is not a test!

Learning Outcome 2.1: Select rabbit breeds

Objectives: By the end of the learning outcome, trainees will be able to:

a. Identify rabbit breeds based on their characteristics
b. Identify rabbit breeds selection criteria
c. Characterize rabbit breeds according to their end use

Time Required: 10 hours

Learning Methodology: Group discussion and work, field visit, presentations

Materials Needed:

- Pre-prepared drawing of different rabbit breeds
- Photos of different rabbit breeds along with detailed information written about each breed

Preparation:

❑ Identify different breeds and gather information on those breeds

Cross Cutting Issues:

✓ **Environment and sustainability**: Some material, products, and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Emphasize the need to protect the environment through proper disposal of waste.
✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.
✓ **Financial education:** Consider financial burdens while identifying consumables, such as PPE, cleaning materials, tools, and equipment.

Prerequisites:

- Basic biology

Key Competencies:

Knowledge	Skills	Attitudes
1. Describe rabbit breeds and the main characteristics	**1.** Identify rabbit breeds using breed characteristics	**1.** Determined
2. Explain breed selection criteria	**2.** Apply rabbit selection criteria	**2.** Precise

Steps:

Getting Started: What do we know and where are we going?

Topic 2.1 Task 1:

1. Ask trainees to sit in pairs. With their partner, tell the trainees to brainstorm a list of the different reasons people raise rabbits.

2. Once pairs have made lists, then ask for volunteers to share ideas with the class. Write all answers on the board.

Possible Answers: For meat, for pets, for fur, to make money (by selling them)

3. Explain that all these reasons are based on the ability of rabbits to breed and produce young quickly, as well as to grow well with minimal investments.

4. Read the objectives and Key Competencies together. Ask if anyone has questions.

Problem Solving Activity

Topic 2.1 Task 2:

Note: Photos and detailed information on different breeds of rabbit available locally is required for this activity. **Trainer must research for information on each breed prior to the class, so groups have real local data to work with.**

1. Separate trainees into groups based on numbers of different local rabbit breeds available. If there are more than six people in any group, form a new group – this may mean there is more than one group studying the same breed of rabbit.

2. Provide information and photos to groups. Again, one group = one breed of rabbit. Tell groups to study the information provided and to develop a short presentation of why their rabbit breed is better for one of the following reasons: meat production, fur production, or other reasons than other breeds of rabbit based on breed characteristics.

3. Instruct groups to use the following questions to guide them:
   a. What are the average characteristics of your breed of rabbit?
      - Average weight
      - Skin/fur colour
      - Place of origin
      - Eyes colour
      - Adaptability to different climate conditions
      - Litter size, on average
      - Prolificacy (number of live births in each litter)
      - Other important characteristics for your assigned breed
   b. Given the qualities of your breed, suggest the main purpose for raising this breed.
   c. Complete the following statement for the breed that your group has been assigned:

      _____ breed of rabbit is the best choice for a rabbit farmer if the purpose of that rabbit farmer is to _____ because this breed has the qualities of _____ which will be helpful in attaining the farmer's goal.

4. Have each group present their findings and conclusions.

   Possible Answers: Answers will vary according to the breeds that the trainer has chosen and also according to the information on each breed that the trainer has given to each group.

Guided Practice Activity

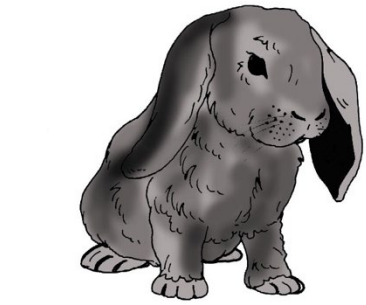
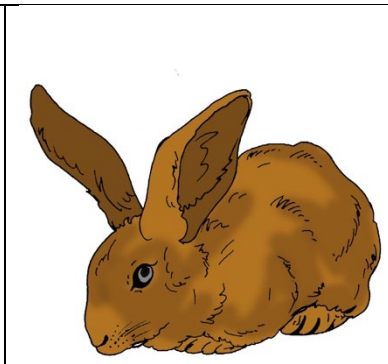
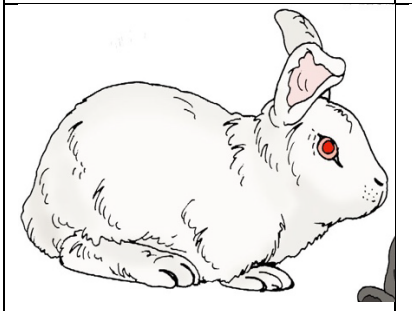
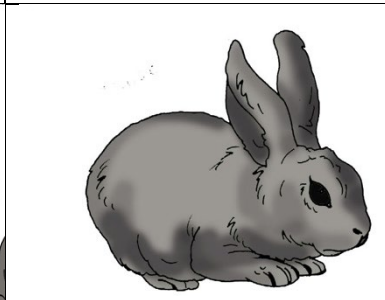
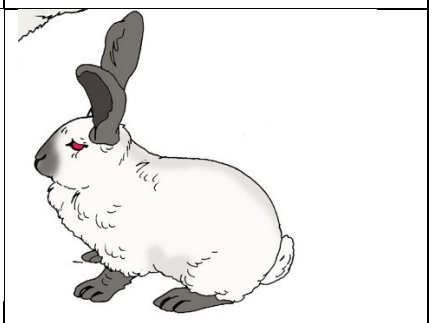
Topic 2.1 Task 3:

1. Tell trainees that that a farmer will choose a breed of rabbit based on the purpose of raising rabbit. For example, if a farmer wants to sell baby rabbits then the farmer should choose a breed that produces many live babies and that can reproduce often. However, if a farmer wants to raise rabbits for meat then a farmer should choose a breed that grows quickly so there is more meat on each rabbit.

2. Explain to trainees that we need to consider how many kits are born live, but also how many are alive at weaning time. We should also consider how soon a doe can give birth because the earlier she can give birth, the more babies we can expect at the farm.

3. Explain to trainees that in pairs they will read information about different breeds of rabbits and analyse which breed the information is referring to.

4. Tell trainees to look at the pictures of the rabbits and the accompanying information. Pairs should determine which information accompanies which breed of rabbit.

		
French Giant	Flemish Giant	Californian Rabbit
		
New Zealand	Small Chinchilla	Himalayan

5. Consider the rabbits according to size and final products.
   a. Heavy breeds**:** Adult weight exceeds 5 kg. Includes: Flemish Giant and French Giant
   b. Medium breeds: Adult weight ranges from 3 to 4.5 kg. The Californian is 3.6 to 4 kg. The New Zealand is 3.5 to 4.5 kg.
   c. Lightweight breeds: Adult weight ranges from 2.5 to 3 kg. Himalayan, the Small Chinchilla, the Dutch, and the French Havana. Note that not all these breeds are pictured.
   d. Small breeds: These rabbit breeds weigh about 1 kg at maturity.
   e. Soft white fur: Usually found in the albino offspring of coloured rabbits. New Zealand and California are representative of this group.
   f. Fancy Breeds: Rabbits for showing, exhibits, and pets but not too strong and cannot survive climate extremes! French and Flemish Giants.

g. Fur Breeds: Originally bred for their fur. Chinchilla and Himalayan are bred for fur.
h. Meat breeds: Considered good for eating. Californian and New Zealand.[2]

6. Classify the rabbits (best, medium, low) in the pictures above in terms of prolificacy (live births per litter) using the following information table.

Mean doe prolificacy by adult sizes of New Zealand, Californian, and Chinchilla[3]

Strains	Litter size	Live births per litter	Rabbits weaned per litter	Age at first mating (days)
New Zealand	8.5	8.0	6.5	144
Californian	8.0	7.2	5.8	140
Chinchilla	8.7	8. 1	6.0	132

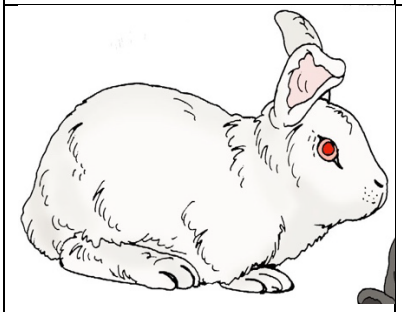
7. Consider main selection criteria used in rabbit farming:
a. Fertility
b. Viability
c. Growth

8. Rate each of the above rabbit breeds in terms of all three of these criteria and decide which breed would be your best choice if you were opening a rabbit farm.

9. Ask different pairs to present their results including the 'best rabbit breed' and go through the correct answers as shown below.

[2] Lebas, F., Coudert, P., Rouvier, R., & De Rochambeau, H. (1986). *The rabbit: Husbandry, health and production: Genetics and selection*. Food and Agriculture Organization of the United Nations. https://www.fao.org/3/x5082e/X5082E08.htm
[3] Lebas, F., Coudert, P., Rouvier, R., & De Rochambeau, H. (1986). *The rabbit: Husbandry, health and production: Genetics and selection*. Food and Agriculture Organization of the United Nations. https://www.fao.org/3/x5082e/X5082E08.htm

Answers:

		
French Giant Heavy (good for meat) Fancy variety—not too strong' Best for growth	**Flemish Giant** Heavy (good for meat) Fancy variety not too strong Best for growth	**Californian Rabbit** Medium sized (not too much food) Soft white fur Good for eating High litter rate-poor weaning Low viability
		
New Zealand Medium sized (not too much food) Soft white fur Good for eating Big litter—high wean rate **Best breed all around**	**Small Chinchilla** Lightweight (less good for meat) Best fur Big litter-poor wean rate. Low growth	**Himalayan** Lightweight (less good for meat) Best fur Low growth

Topic 2.1 Task 4:

1. Explain to the class that you have discussed selection of breeds and selection criteria. Now you will move on to discuss some tools to keep good records on a rabbit farm.

2. Begin by brainstorming what data will be needed to have an organised rabbit farm.

   Possible Answers: Purchase date, cost of feed, date of breeding, information on the buck (as well as the doe), date of birthing (or kindling), number of kits in a litter, number of kits that wean, any illness, numbers of kits sold, profit made from each kit sold

3. Explain that several examples of useful records for rabbit farming are found in the trainee manual. Ask trainees to look in their trainee manuals at **Topic 2.1 Task 4**. They should take about three minutes to review the record samples and ask questions.

RECORD A: Doe Breeding Record

The following record should be kept for each breeding doe.

Doe number.....	**Breed.....**
Date of birth.....	Sire (Father).....
Litter number of the Doe.....	Dame (Mother).....

Date mated	Buck number	Date kindled	Litter	Number Born		Weaning			Remarks
			Number	Alive	Dead	Date	Age	Weight	

RECORD B: Litter Record

Completed at weaning as every young rabbit is given its own number.

Litter number	Date of birth	Individual number	Dame	Sire	Weaning			Remarks
					Date	Age	Weight	

RECORD C: Buck Breeding Record

Similar to a doe breeding record, it is important to keep details on breeding bucks, too.

Buck number.....	**Breed.....**
Date of birth.....	Sire (Father).....
Litter number of Buck.....	Dame (Mother).....

Date mated	Doe number	Date kindled	Number born alive	Number born dead	Remarks

RECORD D: Financial Recording Documents

On a rabbit farm, it is also important to keep track of expenses and costs as well as the income from selling rabbits. This will be done using financial recording documents that are detailed in other classes.

4. Tell trainees that after reviewing the record documents for rabbits, they should think about what other information may be helpful when farming rabbits.

Answer: Answers will vary and may include more details on finances related to rabbit farming.

5. As a class, read aloud the points in **2.1 Key Facts**. Respond to any questions.

Application Activity

Topic 2.1 Task 5:

1. Explain to the trainees that this is a homework activity that can be done individually or in pairs.

2. Trainees will find a rabbit farmer in their community and set up a date and time for a visit. During that visit, trainees will observe the rabbit farming operation, review the documents available, and ask the farmer several guiding questions to develop a report.

3. The questions are as follows:
   a. Explain your opinion about the breeds present. Why did you choose this type of rabbit?
   b. Explain the data that is kept for a farming record, and why each data point is important.
   c. Explain how bucks and does are selected for breeding. Where can good breeding bucks and does be bought in the local area? What is the cost of a good breeding doe? Buck?
   d. Enumerate the factors, which affect the reproductive characteristics of rabbits on this farm?
   e. What else is important to have a profitable rabbit farm?

4. Tell trainees that after the visit to the farm, the report should be submitted to the trainer at the beginning of the next session.

Points to Remember

- Breed selection should be based on fertility, viability, and growth.
- Good record keeping is a must on a rabbit farm.

Formative Assessment

Respond to the following questions.

1. Define the following terms:
   a. Fertility
      Answer: How often a doe kindles/reproduces

   b. Prolificacy
      Answer: How many kits per litter survive

   c. Viability
      Answer: How well the rabbits withstand illness and poor weather conditions

2. Explain the use of the following records:
   a. Doe breeding record
      Answer: Used to follow doe and her offspring

b. Litter record
Answer: Where babies are given individual tracking numbers

c. Buck breeding record
Answer: To follow the same for the buck

ⓘ Further Information for the Trainer

1. https://willowcreekfarm.wordpress.com/rabbitry/

Learning Outcome 2.2: Breed rabbits

Objectives: By the end of the learning outcome, trainees will be able to:

a. Select buck and doe for breeding

b. Manage buck and doe records and timing for breeding

c. Conduct mating according to standards

Time Required: 10 hours

Learning Methodology: Group discussion, work, and presentation, trainer demonstration, field visit

Materials Needed:

- Buck and does for classroom demonstrations
- Illustrations

Preparation:

- ❑ Contact farm manager to prepare visit. Ensure breeding is happening at the farm.
- ❑ Bring bucks and does to class along with breeding crates.

Cross Cutting Issues:

- ✓ **Environment and sustainability**: Some material, products, and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Emphasize the need to protect the environment through proper disposal of waste.
- ✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.
- ✓ **Financial education:** Consider financial burdens while identifying consumables, such as PPE, cleaning materials, tools, and equipment.

Prerequisites:

- Basic knowledge of biology/reproduction

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain criteria for mating bucks and does	**1.** Select a buck and does for reproduction	**1.** Practical
2. Explain how to determine if a doe is in heat	**2.** Manage a buck and a doe to facilitate mating process	**2.** Patient
3. Describe the process of facilitation or rabbit breeding	**3.** Detect if a doe is in heat	**3.** Persistent

Steps:

Getting Started: What do we know and where are we going?

Topic 2.2 Task 1:

1. Separate trainees into groups of four people and assign each group member one of the following tasks:
   a. Writer: Writes down all the answers that the group can find to their prompt.
   b. Questioner: Ensures that the group stays on task and responds well to the prompt.
   c. Timer: Keeps the group moving forward quickly and in correct timing for the task.
   d. Presenter: Reports the group ideas to the class when trainer requests summaries.

2. Tell groups that they have 5 minutes to brainstorm one of the following. Assign each group a different topic to discuss.
   a. What makes a doe rabbit a good choice for breeding?

   Answer: A doe that is old enough (4-8 months old, depending on breed) and has shown signs of being in heat. A doe that has produced large litters and who has nursed the kits until successful weaning age.

   b. What makes a buck rabbit a good choice for breeding?

   Answer: A buck that is old enough (4-8 months, depending on breed), and has sired litters with many live birth kits.

c. How can a farmer prepare a cage for breeding?

Answer: a farmer should have a buck in a cage that is in a calm and quiet place so rabbits are not stressed. Female rabbits should be brought to the male's cage (not the other way around – female rabbits are territorial and may attack if a male is in her cage). The cage should be clean and have food and water.

d. What records must be kept if a farmer is planning to breed rabbits?

Answer: A farmer should have financial records, as well as a doe breeding record for each doe, a buck breeding record for each buck, and a litter record for each litter.

e. How can a farmer manage the process of breeding two rabbits?

Answer: The farmer should look for when a female is in heat and at that time move her to the buck's cage for just one day or even less (if the breeding happens quickly). The farmer should observe to see that the breeding happened then move the female back to her own cage. The female cage should have a nesting box introduced when the birth is near.

3. Tell groups that the presenter from each group should now present their group's ideas to the rest of the class. Support groups as necessary.

4. Explain the objectives and Key Competencies.

Problem Solving Activity

Topic 2.2 Task 2:

1. Ask trainees in pairs to read the **2.2 Key Facts** together.

2. Then, tell them to work with a partner to answer the questions that follow:

a. List characteristics of a doe that is good for breeding.

Answer: Aged 4-8 months and in heat. Good nutrition is important. Choose a doe that gives birth to many live kits in each litter—a who weans many live rabbits. Less than 4 years old.

b. List characteristics of a buck that is good for breeding.

Answer: Aged 4-8 months. Good nutrition. Choose a buck that has produced litters with many live babies. Less than 3 years old.

c. Which records should a rabbit farmer keep to ensure that breeding is done well?

Answer: Doe record, buck record, and litter record, as well as clear finance records.

d. Explain why you should bring the doe to the cage of the buck – not the other way?

Answer: Bring the doe to the cage of the buck because does are territorial and may attach a male if the male is brought to her cage.

e. Describe what culling means—and explain why you do that on a rabbit farm.

Answer: culling means getting rid of rabbits that are no longer productive. That is, selling or eating them and keeping stronger rabbits who reproduce better.

5. Support trainees. Ask different pairs the answer to different questions. Review all responses with trainees.

Guided Practice Activity

Topic 2.2 Task 3:

Note to trainer: Six does (at least one pregnant and one lactating and one in heat as well as others) and two bucks of different ages are required for this activity.

1. Tell trainees that they will learn the following by observing your demonstrations:
- **a.** Review how to handle a rabbit correctly
- **b.** Review how to determine the gender of a rabbit
- **c.** Learn how to identify if the doe is in heat
- **d.** Learn the indications that a doe is pregnant
- **e.** Learn how a doe appears when lactating

3. Show trainees how to do the tasks listed above and encourage trainees to take notes. Allow trainees to practice handling the rabbits and to identify the characteristics of rabbits as outlined above, such as a lactating doe.

Application Activity

Topic 2.2 Task 4:

Note: Prepare visit to a rabbit farm in advance including relevant documentation.

1. Tell trainees they will observe the process of managing rabbit breeding. Prepare trainees before the visit to ask the following questions:
   a. How is the farmer keeping records of the breeding process?
   b. What is the number of does at the farm? Of bucks at the farm? Why are there more does than bucks?
   c. Where is the breeding process happening? Explain why.
   d. What other questions do you have for the farmer?

2. Tell trainees that they will present their observations upon return to the class. Support trainees when presenting materials using the prompting questions as necessary.

Points to Remember

- Rabbits reproduce when they reach maturity at 4-8 months old, depending on the breed.
- Choose rabbits that produce many live births, wean healthy rabbits, and resist sickness.
- The best time for mating is early in the morning or in the evening.
- When you mate rabbits always put the female into the pen of the male.

Formative Assessment

Respond to the following in complete sentences.

1. Explain how to choose a good doe for breeding.

Answer: A doe should be mature (4-8 months old) but less than 4 years old. She should produce litters with many live kits and should wean her kits well. She should be healthy.

2. Explain how to choose a good buck for breeding.

Answer: A buck should be mature (4-8 months old) but less than 3 years old. He should have produced litters with many live kits. He should be healthy.

3. When and where should the breeding occur?

Answer: Breeding should happen in the buck's cage in the morning or evening.

Learning Outcome 2.3: Monitor rabbits from pregnancy through weaning

Objectives: By the end of the learning outcome, trainees will be able to:

a. Manage pregnant rabbit and new-born kits
b. Prepare the nest
c. Perform kindling and mother care

Time Required: 10 hours

Learning Methodology: Group discussion, presentation and work, trainer demonstration, field visit

Materials Needed:

- Pregnant rabbit
- Rabbit with kindles
- Boxes, nest, register

Preparation:

- ❑ Contact farm manager to prepare site visit.
- ❑ Identify pregnant and lactating does for class demonstration.

Cross Cutting Issues:

- ✓ **Environment and sustainability**: Some material, products, and equipment used are pollutants and represent hazards for rabbit, employees, and the environment. Emphasize the need to protect the environment through proper disposal of waste.
- ✓ **Gender:** When forming small groups or scenarios consider gender balance and inclusivity.
- ✓ **Financial education:** Consider financial burdens while identifying consumables, such as PPE, cleaning materials, tools, and equipment.

Prerequisites:

- Basic knowledge of biology/reproduction
- Rabbit shelter construction

Key Competencies:

Knowledge	Skills	Attitudes
1. Explain the management of pregnant rabbits	**1.** Manage a pregnant rabbit	**1.** Persistent
2. List materials used for nest preparation	**2.** Prepare and install the nest	**2.** Kind
3. Explain the process of kindling and how to care for mother and kits	**3.** Perform kindling and care for the mother and the kits	**3.** Patient

Steps:

Getting Started: What do we know and where are we going?

Topic 2.3 Task 1:

1. Tell trainees to brainstorm in pairs what they know about pregnancy and caring for babies in general (not only for rabbits!) by finding as many answers as possible to the following questions:

a. What signs indicate that an animal is pregnant?

Answer: Often the belly is enlarged.

b. What special care does any mother need while pregnant?

Answer: The mother needs more food and more healthy food as well as lots of water. The mother needs more rest.

c. How does a mother animal care for her new-born young?

Answer: The mother nurses her young and protects them from extreme weather and other threats.

d. What can you do to help a mother animal (and her children) through a successful pregnancy, birth, and lactating period?

Answer: We can provide more nutritious food for pregnant and lactating mothers, we can protect them from bad weather and other threats (with nesting boxes and safe cages in quiet places), we can ensure clean cages and ample clean water.

2. Ask different pairs to call out a response to different questions. Write the responses on the board.

3. Ask the class if these details also relate to caring for rabbits as they reproduce. (Yes!)

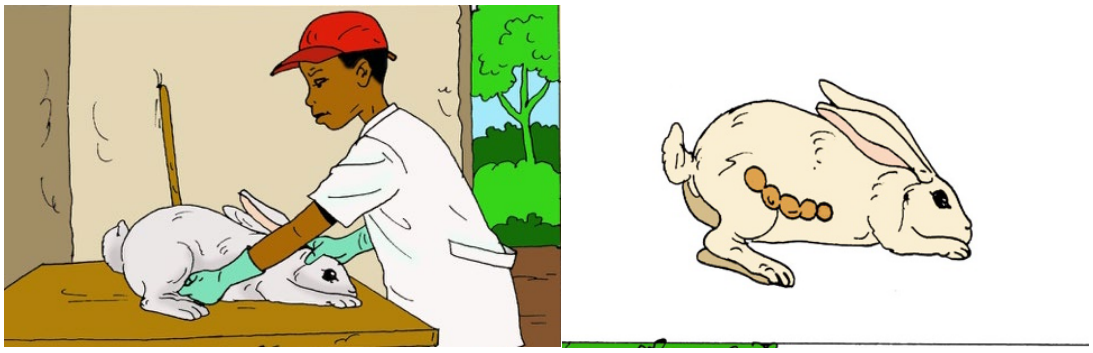
4. Introduce the objectives and Key Competencies.

Problem Solving Activity

Topic 2.3 Task 2:

1. Tell trainees to read the following questions and use the pictures to support their answers. They can work in small groups of up to four people.

Scenario: A farmer is doing palpation of the abdomen of a doe. He feels with his hands the presence of embryos inside her belly as shown in the second picture.



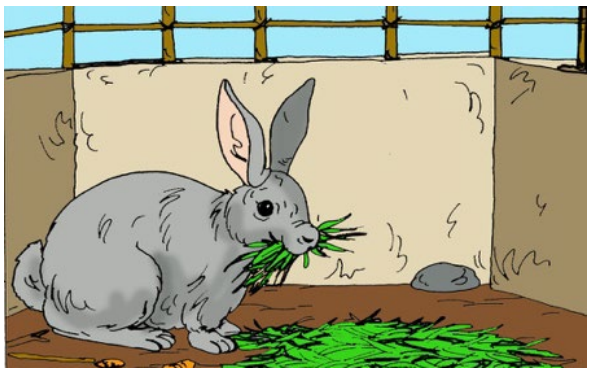
a. Give three good reasons why it is important for a farmer to know if his rabbits are pregnant.

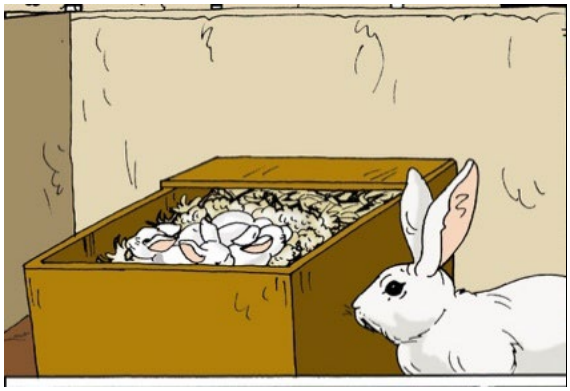
Possible Answer: To ensure correct nutrition and watering for the doe, to prepare her cage for kindling, and to breed her again if he finds that she is not yet pregnant.

2. Ask trainees to think back to the first topic when rabbit cages and nesting boxes were discussed. Ask the trainees to:

a. Look at the pictures and discuss what the pregnant does is doing and why this is important.

Possible Answer: Nesting boxes are so the pregnant doe can prepare her nest. She uses fresh grasses and fur from her belly to keep the kits safe and warm. The doe will complete this task a few days before she kindles (gives birth).





3. Review the answers with trainees. Then ask for a volunteer to read **2.3 Key Facts** aloud. Respond to any questions from trainees.

Guided Practice Activity

Topic 2.3 Task 3:

Note: This activity requires at least 6 rabbits including 3-4 pregnant, one lactating, one male, one female, and others for examples. It is important that trainees handle the rabbits one at a time and do not stress the rabbits.

1. Explain to trainees that this activity will look at how to determine if a doe is pregnant or not.

2. Demonstrate how to examine if a doe is pregnant. Explain that a pregnancy diagnosis can be done by the following methods:
   a. Palpation of abdomen by which embryos can be felt with the hand. This technique can be perfected through experience.
   b. Note swelling of the uterus or from changes in body weight (from good records).

   Note: There is sometimes a condition called Pseudo-Pregnancy or False Pregnancy where signs of pregnancy are exibited (swelling of uterus—but not foetus being felt, and weight gain) after approximately 15 days these signs will go away and the doe can mate again.

3. Allow trainees to practice examining if a rabbit is pregnant or not.

Application Activity

Topic 2.3 Task 4:

Note: You must prepare this visit in advance to ensure that the farmer is willing to let the trainees handle the rabbits, particularly the pregnant and lactating rabbits who are sensitive to shocks.

1. Tell trainees they will visit a rabbit farm and will have set tasks to complete. Remind trainees about the proper way to handle rabbits and how extra care should be taken with pregnant does.

2. Tell trainees the tasks are as follows:
   a. Take a sample of does and do a pregnancy diagnosis, have another trainee confirm.
   b. Explain the process of kindling to the farmer and ask if you have it correct.
   c. Watch does with their litters and notice how they behave and care for the young.
   d. Discuss and apply the fostering process with the farmer. How often is it done?
   e. Ask the farmer to discuss the criteria of culling process and the criteria used to decide which rabbits are culled and which remain on the farm to reproduce.

3. Upon returning to the classroom, ask trainees to share their experiences with the class.

Points to Remember

- A rabbit pregnancy lasts approximately 30 days during which the doe needs quiet.
- If a doe stops feeding her young, they can be fostered with another lactating doe.
- A doe can become pregnant again within a few days of giving birth. This is not good practice!
- To maximize breeding, a farm should have a reserve of mature does ready for mating rather than mating a recently kindled (having given birth) doe.

Formative Assessment

Read and respond to the following questions.

1. How long, on average, is a rabbit pregnancy?
Answer: 30 days

2. How do you know a doe is pregnant?
Answer: Pregnancy diagnosis with palpation, weight gain, can eat more, Seem cranky or moody.

3. How many rabbits can a doe rear successfully?
Answer: Approximately 12

4. What should you do with any extra baby rabbits that the mother does not feed?
Answer: Foster with another doe who has recently weaned her litter.

5. Which criteria can be used to identify a good breeding does?
Answer: Does that produce many live births, are healthy and resistant to disease, mature but not older than 4 years.

6. How can you avoid in-breeding?
Answer: To avoid inbreeding, new bucks and/or does should be obtained from or traded with another breeder.

Self-Reflection

1. Ask trainees to re-take the self-assessment at the beginning of the unit. They should then fill in the table in the Trainee's Manual to identify their areas of strength, areas for improvement and actions to take to improve.

2. Discuss trainees' results with them. Identify any areas that are giving many trainees difficulties and plan to give additional support as needed (ex. use class time before you begin the next learning outcome to go through commonly identified difficult concepts).

Summative Assessment

This assessment will take place on a rabbit farm.

Summative Assessment

Integrated situation	Resources
RUTAYISIRE Fidel is rabbit farmer from Rwamagana district and he has a huge market of supplying rabbit meats in Kigali hotels. He received a loan from SACCO/KIGABIRO to solve the problems of rabbit meat scarcity according to the market. After a deep analysis of the market, he decides to increase the quantity of meat production by improving his farming methods. Specifically, he plans to remove bad breeds and introducing good breeds. He also plans to increase the rabbit population on his farm. As trainee from TVET Level 2, Fidel calls you to help him select good breeds to introduce to the farm and identify non-productive breeds to remove from the farm. He also asks you to show him how to handle and place rabbits in cages according to age and sex and how to feeds rabbits at each level. You have one hour to ensure the following: - The rabbit cages are well constructed. - Farm where to buy new breeds is available. - All kinds of rabbit feeds are available. - The farm has materials, equipment, and labour required. **Tasks:** ✓ Select rabbit breeds. ✓ Handle and place rabbits in cages. ✓ Ration formulation and feed rabbits.	– PPE – Different breeds of rabbits – cages – drinkers – feeders – Roughages feeds for rabbits – Leguminous feeds for rabbits – Concentrated feeds for rabbits – Hand chuff cutter – Availability of water – Boxes – Nets – Bucket

Assessment Criterion 1: Quality of Process

Checklist	Score	
	Yes	No
Indicator: Identification criteria for rabbit breeds are well respected		
✓ Weight is checked		
✓ Skin colour is checked		
✓ Origin is verified		
✓ Conformation is checked		
✓ Ears are checked		
✓ Position is checked		
✓ Eye colour is checked		
✓ Adaptability is checked		
✓ Litter size is preferred		
✓ Prolificacy is verified		
✓ Weight is checked		
Indicator 2: General hygienic measures for cleaning hutches are well respected		
✓ General hutch hygienic measures are respected		
✓ Sanitization of hutch is performed		
Indicator 3: Application of biosecurity measures is verified		
✓ Offensive measures		
✓ Defensives measures		
Indicator 4: Placement of rabbits in boxes is well performed		
✓ Lactating doe cage is prepared		
✓ Grower cage is prepared		
✓ Fattening cage is prepared		
✓ Young female rabbit cage is prepared		
Indicator 5: Ration formulation and feeding of rabbits are well performed		
✓ Fresh plants are well selected and distributed		
✓ Rich feed is well prepared and distributed		
Observation		

Assessment Criterion 2: Quality of product

Checklist	Score	
	Yes	No
Indicator 1: Rabbit breeds are well selected		
✓ Local rabbit		
✓ Californian		
✓ New Zealand white		
✓ Fauve de bourgone		
✓ Angora		
✓ Dutch		
✓ Chinchilla		
✓ Petit russe		
✓ Flemish giant		
Indicator 2: Sanitization of hutch is performed		
✓ Hutch is kept clean		
✓ Waste and soiled bedding are removed		
✓ Rabbit showing signs of disease is isolated		
✓ Newly acquired rabbit are isolated for at least 2 weeks		
✓ All nest boxes are cleaned and disinfected before using		
✓ Watering containers are disinfected and cleaned		
Indicator 3: Offensive measures and defensives measures are verified		
Indicator 4: Rabbits are well placed in cages		
✓ Lactating doe cage		
✓ Grower cage		
✓ Fattening cage		
✓ Young female rabbit cage		
Indicator 5: Ration formulation and feeding of rabbits are well performed		
✓ Identification of feeds in line with their nature is well performed		
✓ Ration formulation and feeding practices are well performed		
✓ Appropriate watering of rabbit		
Observation		

Assessment Criterion 3: Relevance

Checklist	Score	
	Yes	No
Indicator 1: Time is well respected		
Indicator 2: Instruments and materials are well used		
Indicator 3: Quality rabbit meats are produced		
Indicator 4: Quantity of meat meats produced is increased		
Indicator 5: Business is profitable		
Observation		

Assessment Criterion 4: Safety

Checklist	Score	
	Yes	No
Indicator 1: PPE are well used		
✓ Boots are well used		
✓ Gloves are well used		
Indicator 2: Hazardous material are well used		
✓ Hand chuff cutter is well used		
Indicator 3: Working place and materials are well cleaned and rearranged		

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