



Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

PIG FARMING OPERATIONS

ANHGF402

CARRY OUT PIG FARMING OPERATIONS

Competence

RQF Level:4

Learning Hours



50

Credits: 5

Sector: Agriculture and food processing

Trade: Agriculture

Module Type: Specific

Curriculum: TVET Certificate IV in Animal health

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| | | | | | |
|--|--|-------------|-----------------------------|-------------------|------------|
| Purpose statement | This module describes the skills, knowledge and attitudes required for a learner to be competent in pig farming. At the end of this module, participants will be able to construct a piggery, rear pigs and control pig diseases under minimum supervision | | | | |
| Learning assumed to be in place | N.A | | | | |
| Delivery modality | Training delivery | 100% | Assessment | Total 100% | |
| | Theoretical content | 30% | Formative assessment | 30% | |
| | Practical work: | 70% | | 70% | 50% |
| | Group project and presentation | | | | |
| | Individual project /Work |% | | | |
| | Summative Assessment | | | 50% | |

Elements of Competence and Performance Criteria

| Elements of competence | Performance criteria |
|---------------------------------|---|
| 1. Construct piggery | 1.1. The piggery site is properly selected according to the standards |
| | 1.2. The piggery is appropriately sketched based on standards |
| | 1.3. The piggery is properly constructed as per standards. |
| 2. Apply pig rearing techniques | 2.1. The selection of the breed is done properly according to the rearing purpose. |
| | 2.2. Pigs are methodically stocked according to age and sex. |
| | 2.3. Adequate feeding is provided based on nutritional requirements. |
| | 2.4. The reproduction process is correctly monitored based on the production plan. |
| 3. Control diseases | 3.1. Hygienic measures are suitably applied according to biosecurity principles. |
| | 3.2. Bio-chemical prophylaxis is properly applied according to the prevention plan. |

3.3. Metabolic and nutritional disorders are prevented correctly according to their causes.

Knowledge, Skills, and Attitude

| Knowledge | Skills | Attitude |
|--|---|--|
| <ul style="list-style-type: none"> ✓ Study pig breeds and their characteristics. ✓ Understand swine nutrition and dietary requirements. ✓ Learn about pig health and disease management. ✓ Recognize optimal housing and ventilation practices. ✓ Comprehend swine reproduction and breeding techniques. ✓ Know government regulations and standards for pig farming. ✓ Familiarize yourself with market trends and pork demand | <ul style="list-style-type: none"> ✓ Select and purchase healthy piglets or breeding stock. ✓ Design and build appropriate pig housing and facilities. ✓ Formulate and provide balanced pig diets. ✓ Administer vaccinations and medication when needed. ✓ Manage and maintain pig health records. ✓ Implement breeding and farrowing management. ✓ Perform castration and piglet processing. ✓ Market and sell pork products effectively | <ul style="list-style-type: none"> ✓ Prioritize animal welfare and humane treatment in pig farming. ✓ Demonstrate patience and attention to detail in daily care. ✓ Take responsibility for pig health and well-being. ✓ Embrace adaptability to changing market conditions. ✓ Respect and comply with animal welfare and environmental regulations. ✓ Commit to continuous learning in pig farming practices. ✓ Exhibit dedication and a proactive approach to successful pig production |

Course content

| | |
|--|--|
| Learning outcomes | At the end of the module the learner will be able to: <ol style="list-style-type: none"> 1. Construct piggery 2. Apply pig rearing techniques 3. Control diseases |
| Learning outcome 1: Construct piggery | Learning hours: 15 |
| Indicative content | |

Selection of piggery site

- Piggery site selection criteria:
 - ✓ Ecological condition
 - ✚ Temperature
 - ✚ Humidity
 - ✚ Rainfall
 - ✚ Vegetation
 - ✚ Sunlight
 - ✚ wind
 - ✓ Soil structure
 - ✚ Soil type
 - ✚ Altitude
 - ✓ Environment
 - ✚ Code and regulation
 - ✚ Distance from other farms
 - ✚ Distance from wastes disposal
 - ✚ Distance from human habitation
 - ✚ Site dimension
 - ✚ Noise and vibration
 - ✓ Infrastructure and services:
 - ✚ Water supply
 - ✚ electricity
 - ✚ market
 - ✚ road

Sketching piggery

- Designing different types of piggery
 - ✓ Breeding piggery components:
 - ✚ Dry sow/gilt pen
 - ✚ Pregnant pen
 - ✚ Farrowing pen
 - ✚ Lactating pen
 - ✚ Weaner pen
 - ✚ Boar pen
 - ✚ Annexes :
 - Office
 - Run
 - Weighing yard
 - Drug store
 - Feed preparation room
 - Kitchen
 - Compost pit
 - ✓ Fattening piggery components:
 - ✚ Fattening pen

✚ Annexes :

- Office
- Run
- Weighing yard
- Drug store
- Feed preparation room
- Kitchen
- Compost pit

✓ Breeding and fattening piggery components:

✚ Dry sow/gilt pen

✚ Pregnant pen

✚ Farrowing pen

✚ Lactating pen

✚ Weaner pen

✚ Fattening pen

✚ Boar pen

✚ Annexes :

- Office
- Run
- Weighing yard
- Drug store
- Feed preparation room
- Kitchen
- Compost pit

Construction of piggery

● Selection criteria for construction material

- ✓ Cost
- ✓ Availability
- ✓ Durability
- ✓ Hygiene
- ✓ Safety
- ✓ Vermin protection
- ✓ Maintenance

● Types of construction material

- ✓ Wooden materials
- ✓ Metallic materials
- ✓ Muddy bricks
- ✓ Fired bricks
- ✓ Cement and cement bricks
- ✓ Concrete and stones
- ✓ Plastic materials

● Part of piggery

- ✓ Roof
- ✓ Walls
- ✓ floor

- Tools , materials and equipment specifications of piggery
 - ✓ Feed Trough
 - ✓ water trough
 - ✓ water tank

Resources required for the learning outcome

| | |
|------------------------------|---|
| Equipment | PPE, Grinding and mixing machine, Feeding system facilities, Feeder and drinker, high-pressure sprayer, Scale |
| Materials | (sows, boars, piglets) Disinfectant, Cleaning materials and products, Clinical materials (Clip needle teeth, side-cutter pliers, stub, castration material, Feed stuffs (creep feed, concentrate, kitchen residues, forage, nutrient supplement like iron sources, bagger starters and feed additives), Drugs (tincture of iodine, farrowing inducers) and vaccines, Bio-chemical product for pig, Disinfectant |
| Tools | Thermometer, Decameter, Ear tags, Ear tags applicator, Ear notcher, Blades, Farm cards and records, Pig reproduction diagram, Obstetrical tools (pig pullers, forceps or nylon cord |
| Facilitation techniques | Demonstration, group work, Practical works, Group discussion, Brainstorming |
| Formative assessment methods | Written assessment, performance assessment |

Learning outcome 2: Apply pig rearing techniques

Learning hours: 25

Indicative content

Selection of pig breeds

- Common pig breed :
 - ✓ Local breed
 - ✓ Large white
 - ✓ Landrace
 - ✓ Pietrain
 - ✓ Duroc
 - ✓ Hampshire
 - ✓ Tamworth
 - ✓ Wessex saddleback
 - ✓ Saddle back
 - ✓ Combrough
 - ✓ Large black
 - ✓ Middle white

- Factor to consider in pig breed characterisation :

- ✓ skin colour
- ✓ origin
- ✓ body conformation
- ✓ Weight
- ✓ ear position
- ✓ adaptability
- ✓ litter size
- ✓ prolificacy

- element to consider in Selection of pig to rear

- ✓ Productivity of parents
- ✓ Adaptability(hardness)
- ✓ Age
- ✓ Physical appearance
- ✓ Feed conversion rate
- ✓ Health status
- ✓ Resistance against diseases
- ✓ Productivity
- ✓ Maturity period
- ✓ Fecundity
- ✓ Temperament

- Method of selection:

- ✓ Mass selection
- ✓ Progeny testing or offspring testing
- ✓ Pedigree selection
- ✓ Collateral relative selection
- ✓ Tandem selection

- Rearing systems:

- ✓ Intensive system
- ✓ Semi intensive system
- ✓ Extensive system:
 - ✚ Scavenging
 - ✚ Backyard/tethering

- Animal identification techniques:

- ✓ Tagging
- ✓ Ear notching
- ✓ Tattooing

stocking pigs

- categorization of pigs:

- ✓ Dry sow/ gilt
- ✓ Pregnant sow
- ✓ Lactating sow with her piglets

- ✓ Weaners
- ✓ Growers
- ✓ Boars
- Factors to consider in assessing stocking densities:
 - ✓ Type of breed
 - ✓ Category of pig
 - ✓ Welfare requirement
 - ✓ Type of housing
 - ✓ Type of flooring and drainage
 - ✓ Type of feeding system

Feeding pigs

- Feeding practices for :
 - ✓ Boar
 - ✓ dry sow and gilt
 - ✓ Pregnant sow
 - ✓ Lactating sow and litter
 - ✓ Young piglets
 - ✓ Weaners
 - ✓ Grower and finisher pigs
- Watering pig
- Feeding records:
 - ✓ feeding cards
 - ✓ feeding data collection
 - ✓ cost ratio analysis

Monitoring pig reproduction

- Element to consider in selection of sows for breeding
 - ✓ Number of teats
 - ✓ Body conformation
 - ✓ Size of litter of which the pig was a member
 - ✓ Live weight
 - ✓ Feed conversion rate
 - ✓ Easy to handle
 - ✓ From healthy parents
- Element to consider in selection of boar for breeding
 - Body conformation
 - ✓ Size of litter of which the pig was a member
 - ✓ Live weight
 - ✓ Feed conversion rate
 - ✓ Easy to handle

- ✓ Two equal testicles for boar
- ✓ From healthy parents
- Management of boar:
 - ✓ Puberty time
 - ✓ Mating time
 - ✓ Mating ratio
 - ✓ Culling
- Management of sow and gilts:
 - ✓ Puberty time
 - ✓ Mating time
 - ✓ Heat detection
 - ✓ Farrowing
 - ✓ Fostering
 - ✓ Culling
- Methods of services:
 - ✓ Natural mating
 - ✓ Artificial insemination
- Management of young piglet:
 - ✓ Climatic condition monitoring
 - ✓ Iron supplementation
 - ✓ Castration
 - ✓ Canine clipping
 - ✓ Tail docking
 - ✓ Weaning
- Pig genetic improvement:
 - ✓ Cross breeding
 - ✓ Commercial breeding
 - ✓ Up grading
 - ✓ Backcrossing
 - ✓ Terminal cross system
- Reproduction record keeping:
 - ✓ Technical reproduction diagram (Annual reproduction chart)
 - ✓ Reproduction cards
 - ✓ Reproduction data entry

Resources required for the indicative content

Equipment

PPE, Grinding and mixing machine, Feeding system facilities, Feeder and drinker, high-pressure sprayer, Scale

| | |
|------------------------------|--|
| Materials | sows, boars, piglets Disinfectant, Cleaning materials and products, Clinical materials (Clip needle teeth, side-cutter pliers, stub, castration material, Feed stuffs(creep feed, concentrate, kitchen residues, forage, nutrient supplement like iron sources, bagger starters and feed additives), Drugs (tincture of iodine, farrowing inducers,) and vaccines, Bio-chemical product for pig, Disinfectant |
| Tools | Thermometer, Decameter, Ear tags, Ear tags applicator, Ear notcher, Blades, Farm cards and records, Pig reproduction diagram, Obstetrical tools (pig pullers, forceps or nylon cord |
| Facilitation techniques | <ul style="list-style-type: none"> • Demonstration, group work, Practical works, Group discussion, Brainstorming |
| Formative assessment methods | <ul style="list-style-type: none"> • Written assessment, performance assessment |

| | |
|--------------------------------------|--------------------|
| Learning outcome 3: control diseases | Learning hours: 10 |
|--------------------------------------|--------------------|

Indicative content

Hygienic measures.

- General piggery hygienic measures
 - ✓ Sanitization of piggery:
 - ✚ Cleaning
 - ✚ sanitation
 - ✓ Biosecurity measures:
 - ✚ Quarantine
 - ✚ Isolation
 - ✚ Fencing
 - ✚ Disposal of dead animals
 - ✚ Feed management
 - ✚ Personnel safety
 - ✚ Internal regulation protocol

Bio-chemical prophylaxis

- Selection of Bio-chemical prevention products:
 - ✓ anthelmintics
 - ✓ Acaricids
 - ✓ Insecticides
 - ✓ Vaccines
 - ✓ disinfectant
- Administration techniques of bio-chemical prevention product
 - ✓ Splaying
 - ✓ Injection
 - ✓ Medicated feed
- Sanitary record keeping:
 - ✓ Zoo-sanitary cards

- ✓ Zoo-sanitary data entry
- Preventing metabolic and nutritional disorders
- Common metabolic disorders:
 - ✓ Parakeratosis
 - ✓ Acidosis
 - ✓ Photosensitization
 - ✓ Three weeks crisis
 - Basic principles to control metabolic disorders:
 - ✓ Prevention of further absorption,
 - ✓ Supportive/symptomatic treatment
 - ✓ Specific antidotes

Resources required for the indicative content

| | |
|------------------------------|--|
| Equipment | PPE, Grinding and mixing machine, Feeding system facilities, Feeder and drinker, high-pressure sprayer, Scale |
| Materials | (sows, boars, piglets) Disinfectant, Cleaning materials and products, Clinical materials (Clip needle teeth, side-cutter pliers, stub, castration material, Feed stuffs(creep feed, concentrate, kitchen residues, forage, nutrient supplement like iron sources, bagger starters and feed additives), Drugs (tincture of iodine, farrowing inducers,) and vaccines, Bio-chemical product for pig, Disinfectant |
| Tools | Thermometer, Decameter, Ear tags, Ear tags applicator, Ear notcher, Blades, Farm cards and records, Pig reproduction diagram, Obstetrical tools (pig pullers, forceps or nylon cord |
| Facilitation techniques | <ul style="list-style-type: none"> • Demonstration, group work, Practical works, Group discussion, Brainstorming |
| Formative assessment methods | <ul style="list-style-type: none"> • Written assessment, performance assessment |

Integrated/Summative assessment

Integrated situation

COEPO is a cooperative, located at RULINDO District in Northern Province. This cooperative in the past time has a pig farm that was managed in a traditional system. Now days the cooperative want to renew his farming and modernize his project of pig farming in order to maximize profit.

At this time, COEPO has adopted:

- ✚ To keep sows and boar to generate piglets to be sold at weaning stage (farrow to wean),
- ✚ To keep the sows and boars to grow weaners for market (farrow to finish),
- ✚ To purchase weaners to grow them for the market (wean to finish)

For better results, the cooperative wants to recruits you as a veterinary nurse in charge of this pig farming project.

You are requested to:

- **Check if the piggery respects all requirement for a modern piggery in 40 minutes**

- ✚ Select best quality pigs for breeding in 50 minutes
- ✚ Establish the feeding plan in 30 minutes
- ✚ Establish the prophylactic plan in 30 minutes

Be aware that:

- All tools, material, equipment, products, land, buildings are available.

Resources

| | |
|-------------------------------|---|
| Equipment | <ul style="list-style-type: none"> - Boots - Overall - gloves - Wind vane - Piglets’ hot boxes - Water supply facilities - high-pressure sprayer - Scale |
| Tools | <ul style="list-style-type: none"> - Thermometer - Hygrometer - Decameter - Ear tags applicator - Farm cards - Cleaning tools (spade, brush, wheelbarrow, hoe) - Feeders - drinkers |
| Materials/ Consumables | <ul style="list-style-type: none"> - Animals (sows, boars, piglets) - Cleaning products (soap, disinfectant) - Bio-chemical product for pig (anthelmintics, vaccines, Acaricids, insecticides) - Feed stuffs - Blades - Ear tags - pen |

| Assessable outcomes | Assessment criteria (Based on performance criteria) | Indicator | Observation | | Marks allocation |
|---------------------------------|--|---|-------------|----|------------------|
| | | | Yes | No | |
| 1. Construct piggery | 1.1. The piggery site is properly selected according to the standards | Assessment Indicator 1: The assessment of whether the piggery site selection complies with established standards, considering factors such as location, soil quality, drainage, and accessibility, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the chosen piggery site aligns with the specified standards, ensuring optimal conditions for pig rearing and minimizing environmental impacts, is performed. | | | 5 |
| | 1.2. The piggery is appropriately sketched based on standards | Assessment Indicator 1: The assessment of whether the piggery layout and design conform to the prescribed standards, including aspects such as pen arrangements, drainage systems, and waste management, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the piggery sketch aligns with the established standards, facilitating efficient pig management and ensuring animal welfare, is performed. | | | 5 |
| | 1.3. The piggery is properly constructed as per standards. | Assessment Indicator 1: The assessment of whether the piggery construction complies with the specified standards, covering structural integrity, ventilation, insulation, and materials used, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the piggery construction aligns with the prescribed standards, providing a safe and comfortable environment for pigs while meeting regulatory requirements, is performed. | | | 5 |
| 2. Apply pig rearing techniques | 2.1. The selection of the breed is done properly according to the rearing purpose. | Assessment Indicator 1: The assessment of whether the breed selection process aligns with the intended rearing purpose, | | | 5 |

| | | | | | |
|--|--|---|--|--|---|
| | | considering factors like growth rate, meat quality, and reproductive traits, is conducted. | | | |
| | | Assessment Indicator 2: The evaluation of whether the chosen pig breed(s) suitably match the specific rearing objectives, ensuring optimal performance and economic viability, is performed. | | | 5 |
| | 2.2. Pigs are methodically stocked according to age and sex. | Assessment Indicator 1: The assessment of whether pigs are stocked in a systematic manner based on their age and sex, as specified in the rearing plan, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the stocking of pigs aligns with the age and sex categorizations outlined in the rearing strategy, optimizing management practices and growth performance, is performed. | | | 5 |
| | 2.3. Adequate feeding is provided based on nutritional requirements. | Assessment Indicator 1: The assessment of whether feeding practices adhere to the nutritional requirements of the pig herd, including balanced diets, feed formulations, and feeding schedules, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the feeding regimen aligns with the nutritional needs of the pigs, promoting health, growth, and production efficiency, is performed. | | | 5 |
| | 2.4. The reproduction process is correctly monitored based on the production plan. | Assessment Indicator 1: The assessment of whether the monitoring of the reproduction process conforms to the guidelines specified in the production plan, including estrus detection, mating records, and farrowing management, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the supervision of the reproduction process aligns with the production plan, ensuring reproductive success | | | 5 |

| | | | | | |
|---------------------|---|---|--|--|---|
| | | and a consistent breeding program, is performed. | | | |
| 3. Control diseases | 3.1. Hygienic measures are suitably applied according to biosecurity principles. | Assessment Indicator 1: The assessment of whether hygienic measures are implemented in accordance with established biosecurity principles, including sanitation protocols, disinfection procedures, and visitor control, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the application of hygienic measures aligns with biosecurity principles, preventing disease introduction and transmission within the piggery, is performed. | | | 5 |
| | 3.2. Bio-chemical prophylaxis is properly applied according to the prevention plan. | Assessment Indicator 1: The assessment of whether bio-chemical prophylaxis is administered correctly as per the prescribed prevention plan, considering vaccination schedules, medication dosages, and disease prevention strategies, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the application of bio-chemical prophylaxis aligns with the prevention plan, effectively safeguarding pig health and minimizing disease risks, is performed. | | | 5 |
| | 3.3. Metabolic and nutritional disorders are prevented correctly according to their causes. | Assessment Indicator 1: The assessment of whether measures are taken to prevent metabolic and nutritional disorders based on identified causes, such as dietary imbalances, stress factors, or management practices, is conducted. | | | 5 |
| | | Assessment Indicator 2: The evaluation of whether the prevention of metabolic and nutritional disorders aligns with the specific causative factors, ensuring the well-being and productivity of the pig herd, is performed | | | 5 |

| | |
|--|------|
| Total marks | 100 |
| Percentage Weightage | 100% |
| Minimum Passing line % (Aggregate): 70% | |

Reference:

1. David H. Holness, 1991, pigs, Harare, Zimbabwe
2. Devendra, C. and Fuller, M.F., 1979, pig production in the tropics, Oxford University Press; Oxford, England
3. Eusebio, J.A. 1980, Pig production in the tropics. Longman, Harlow, England
4. Aherne, F. X., and R. N. Kirkwood. 1985. Nutrition and sow prolificacy. J. Reprod. Fertil. Suppl. 33:169.
5. Wiley John, 2010, the Merck Veterinary Manual, 10th edition.
6. ADAP Project, 1996, swine management manual
7. Animal Husbandry in the Tropics by G. Williamson and W.J.A Payne
8. Pig Diseases by D.J. Tayler
10. Russ Grayson, 2004, pig farming, Honiara, Solomon Islands.

11. Electronics links:

- <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/180202.htm>.
- <http://www.defra.gov.uk/animalh/welfare/farmed/pigs/pigcode.pdf>
- <https://www.herald.co.zw/construction-factors-to-consider-when-choosing-building-materials/>
- <https://animalcorner.co.uk/domestic-pig-breeds/>
- <https://thepigsite.com/focus/advertiser/3663/the-different-breeds-of-swine-middle-white-middle-white-pig-breed-middle-white-gilts-sows-and-boars>
- <https://www.msdevetmanual.com/management-and-nutrition/nutrition-pigs/feeding-levels-and-practices-in-pigs>
- <https://www2.illinois.gov/sites/agr/Animals/AnimalHealth/Pages/Biosecurity-Measures.aspx>
- <https://articles.extension.org/pages/65877/livestock-biosecurity>

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