

SECTION

6

CROP AND ANIMAL
HEALTH ISSUES



Agriculture, Health and Environment

Health Issues in Animal Production

Health Issues in Crop Production

INTRODUCTION

In this section you will be looking at how to promote good hygiene and sanitation on farms. By the end of the section, you will be able to practice and implement good hygienic practices and measures on crop and animal farms. The section also deals with the importance of maintaining good hygienic conditions in crop and animal farms and the effect of poor hygienic conditions on the farm. You will also learn about farm hygiene and sanitation activities in crops and animals' production and the tools, equipment and the chemicals that are used in carrying out the farm hygiene activities. You will learn all these through practical activities that will enable you to think critically and apply effective hygiene skills.

At the end of this section, you will be able to:

- Explain the meaning and importance of farm hygiene and sanitation and its effect on crop production
- Describe farm hygiene and sanitation activities in crop production
- Apply farm hygiene and sanitation principles in crop production process
- Explain the meaning and importance of farm hygiene and sanitation and its effect on animal production.
- Discuss farm hygiene and sanitation activities in animal production.

Key Ideas

- Farm hygiene is the set of practices and measures implemented on a farm to maintain cleanliness, prevent the spread of diseases and promote health.
- Farm sanitation refers to the promotion of hygiene and the prevention of diseases by maintaining sanitary conditions on the farm.
- A tool is a device or implement especially one held in the hand, used to carry out a particular function.

MEANING AND IMPORTANCE OF FARM HYGIENE AND SANITATION IN CROP PRODUCTION

Meaning of farm hygiene and sanitation in crop production

Farm hygiene in crop production is the set of practices and measures implemented on crop farms to maintain cleanliness, prevent the spread of diseases and promote health.

Farm Sanitation in crop production refers to the promotion of hygiene and the prevention of disease by maintaining sanitary conditions on crop farms.

Importance of farm hygiene and sanitation

1. **Disease Prevention:** Correct hygiene practices help prevent the spread of diseases in crops. Maintaining clean and sanitary conditions reduces the risk of pathogen transmission and minimises the likelihood of disease outbreaks, which can have devastating consequences for crops and the productivity of the farm.
2. **Food Safety:** Farm hygiene and sanitation play a crucial role in ensuring food safety. Contamination of crops with pathogens or harmful substances can pose risks to human health. Correct sanitation practices on farms helps to minimise the presence of contaminants and maintain the quality and safety of crop food products.
3. **Environmental Protection:** Adequate waste management and sanitation practices on farms help protect the environment. Correct and legal disposal of plant waste and agricultural chemicals reduces the risk of pollution to soil, water bodies and nearby ecosystems. It promotes sustainable farming practices and minimises the environmental impact of agricultural activities.
4. **Compliance with Regulations:** Farm hygiene and sanitation practices are often regulated by local, regional and national authorities. Compliance with these regulations is essential for farm operations to meet legal requirements and ensure public health and safety. Adhering to correct hygiene and sanitation standards helps farmers demonstrate their commitment to responsible and sustainable agricultural practices.

The effects of farm hygiene and sanitation on crop production

1. **Disease Prevention:** Correct farm hygiene practices can help prevent the introduction and spread of plant diseases. Maintaining clean equipment, tools and irrigation systems, as well as practicing good sanitation in storage and handling areas, reduces the risk of pathogen transmission and the establishment of disease-causing organisms. This can help protect crops from infections and subsequent yield losses.

2. **Pest Management:** Farm hygiene practices can directly impact pest management. Removing crop residues, weeds and other potential pest habitats helps reduce pest populations by eliminating their food sources and breeding sites. Correct sanitation practices can also help control certain pests, such as removing infested plant materials or properly disposing of harvested crop residues that may harbour pests or their eggs.
3. **Soil Health:** Good farm hygiene practices, such as correct waste management and the incorporation of organic matter into the soil, contribute to maintaining soil health. Healthy soil supports vigorous crop growth, nutrient availability and water-holding capacity, which are essential for optimal crop production. By ensuring clean and sanitary conditions, farm hygiene practices can indirectly promote soil health and fertility.
4. **Quality and Marketability of Produce:** Effective farm hygiene and sanitation practices contribute to the quality and marketability of agricultural produce. Clean and well-maintained storage facilities and processing areas minimise contamination, decay, and post-harvest losses. Correct sanitation practices also reduce the risk of cross-contamination during handling and packaging, ensuring that crops meet quality standards and food safety requirements.



Fig. 6.1: Effects of good hygiene in crop production

Activity 6.1

Search the internet and other relevant reference sources, for the meaning of farm hygiene and sanitation and write them down.

Share your thoughts with your peers for their input.

Activity 6.2

With the help of the internet and other sources come up with the importance of farm hygiene and sanitation. Present your findings to the class for their input.

Activity 6.3

Discuss in pairs the effects of poor farm hygiene and sanitation on crop production and present your key points from the discussion to the class for their input. In your discussion use the following questions as a guide;

- i. What are the consequences of poor farm hygiene and sanitation?
- ii. How can farm hygiene and sanitation impact crop health and productivity?
- iii. What role do farmers play in maintaining good farm hygiene and sanitation?

Activity 6.4

The teacher will arrange to visit a nearby crop production farm in your community for you to observe the farm hygiene and sanitation practices carried out on the farm. Write down your findings in your notebook and compare your observations with a peer.

FARM HYGIENE AND SANITATION ACTIVITIES IN CROP PRODUCTION

Examples of Farm hygiene and sanitation activities in crop production are:

1. **Practicing Crop Rotation:** Implementing crop rotation practices helps break disease cycles and reduce the build-up of pathogens and pests in the soil. By rotating different crops with varying nutrient requirements, disease susceptibility, and growth habits, farmers can disrupt the life cycles of pests and diseases, improving crop health.
2. **Sanitation Practices in Field Preparation:** Correct sanitation practices should be followed during field preparation. This includes removing crop residues, weeds, and other potential sources of pathogens and pests. Clearing debris and maintaining clean field conditions help reduce the risk of disease and pest outbreaks.
3. **Using Clean Seeds and Planting Material:** Using high-quality, disease-free seeds and planting materials is essential for establishing healthy crop production. Correct seed treatment and disinfection methods such as hot water treatment or seed coatings can help control seed-borne pathogens and ensure the production of healthy seedlings.
4. **Correct Irrigation and Water Management:** Maintaining correct irrigation and water management practices is important for preventing the spread of waterborne diseases and reducing moisture-related issues. Avoiding over-irrigation and minimising waterlogging can help prevent diseases such as root rot and certain foliar diseases caused by excessive moisture.
5. **Pest and Disease Monitoring:** Regular monitoring of crops for pests and diseases allows for early detection and timely intervention. Implementing integrated pest management (IPM) strategies, such as scouting, trapping, and use of biocontrol agents can help manage pests and diseases effectively while minimising the use of chemical pesticides.
6. **Correct Use and Storage of Inputs:** Ensuring correct handling, storage, and application of agricultural inputs, such as fertilisers and pesticides, is essential for farm hygiene. Following manufacturer instructions, maintaining clean and organised storage areas, and avoiding cross-contamination between different inputs helps prevent unintended impacts on crop health and reduce environmental risks.
7. **Field Hygiene and Weed Control:** Implementing good field hygiene practices such as removing diseased plant material and managing weed populations can help reduce the spread of diseases and pests. Controlling weeds is important as they can harbour pests and diseases, compete with crops for nutrients and water, and provide alternate hosts for pathogens.

8. **Correct Post-Harvest Hygiene:** Correct post-harvest hygiene practices are crucial for maintaining the quality and safety of harvested crops. This includes cleaning and sanitising storage and processing facilities, correct handling to minimise damage and bruising, and implementing appropriate storage conditions to prevent spoilage and contamination.

Field Hygiene and Weed Control:

Controlling weeds prevent the harboring of pests and diseases, competition with crops for nutrients and water, and prevent alternate hosts for pathogens

Post-Harvest Hygiene:

Proper post-harvest hygiene practices are important for maintaining quality and safety of harvested crops

Pest and Disease Monitoring

Regular monitoring of crops for pests and diseases allows for early detection and timely intervention.

Crop Rotation:

By rotating different crops with varying nutrient requirements, disease susceptibility, and growth habits, farmers can disrupt the life cycles of pests and diseases, improving crop health.

Clean Seed and Planting Material:

Using high-quality, disease-free seeds and planting materials is essential for establishing healthy crops

Irrigation and Water Management:

Maintaining proper irrigation and water management practices is important for preventing the spread of waterborne diseases and reducing moisture-related issues.

Fig. 6.2 : Management activities for good farm hygiene

Some of the tools for maintaining farm hygiene and sanitation are:

1. **Hoe:** A hoe is a handheld tool with a long handle and a flat or angled blade. It is used for weeding, breaking up clumps of soil, and creating furrows for planting.
2. **Cutlass:** Consists of a short, curved blade with a sharp edge and a sturdy handle. It is designed for cutting through vegetation, such as tall grass, weeds, branches etc.

3. **Rake:** A rake has a long handle and a series of tines or teeth. It is used to level the soil, remove debris, and create a smooth seedbed. Rakes are also helpful for gathering leaves and other materials.
4. **Hand Fork:** A hand fork, also known as a garden fork or hand cultivator, is a small handheld tool with multiple tines. It is used for loosening soil, aerating the root zone, and removing weeds around established plants.
5. **Pruning Shears:** Pruning shears or secateurs are handheld tools used for cutting and removing dead or diseased plant parts such as branches, leaves, or stems. Regular pruning helps eliminate potential sources of infection and improves air circulation within the crop canopy.
6. **Scissors or Harvest Knives:** Clean and sharp scissors or harvest knives are used for harvesting crops without causing unnecessary damage. They help ensure a clean cut, reducing the risk of contamination and post-harvest diseases.
7. **Hand Sprayers:** Hand sprayers or sprayer bottles are used to apply various treatments such as fungicides, insecticides, or foliar fertilisers. They allow targeted application, minimising chemical drift and ensuring effective control of pests and diseases.



Fig. 6.3: Tools for maintaining good farm hygiene in crop production.

Activity 6.5

Your teacher will arrange a visit to a crop production farm in your community for you to observe the farm hygiene and sanitation activities that are carried out on the farm, the tools/equipment's and chemicals that are used in the activities and their purpose. Make a copy of the table, shown below, to your notepad. Document your findings in the table.

Table 6.1

Activity	Tools/equipment/chemicals used	Purpose of the activity
e.g., clearing of weeds	Cutlass, hoe	To maintain clean field conditions and help reduce the risk of disease and pest outbreaks.

How to complete the table

- In the activity column indicate the farm hygiene and sanitation activity carried out on the farm
- In the tools/equipment/chemicals used column indicate the tools/equipment and chemicals that are used to carry out the farm hygiene and sanitation activity.
- In the purpose of the activity column indicate the purpose of carrying out the farm hygiene and sanitation activity.

Share and compare your findings with your classmates.

APPLICATION OF FARM HYGIENE AND SANITATION IN CROP PRODUCTION

Examples of farm hygiene and sanitation activities in crop production

1. Field Preparation:

- Clearing and removing crop residues and weeds from the field before planting.
- Correct disposal of crop debris to reduce the risk of disease and pest carryover.
- Cleaning and maintenance of equipment, tools and machinery used in field preparation to prevent contamination.

2. Seed and Planting Material Management:

- Using certified, disease-free seeds and healthy planting materials.
- Implementing seed treatment and disinfection methods to control seed-borne pathogens.
- Correct storage of seeds and planting materials in clean and dry conditions to maintain their quality and viability.

3. Irrigation and Water Management:

- Employing appropriate irrigation practices to avoid over-irrigation and waterlogging.
- Regular maintenance and cleaning of irrigation systems to prevent blockages and the growth of pathogens.
- Monitoring water quality to ensure its suitability for crop irrigation.

4. Pest and Disease Management:

- Regular monitoring of crops for pests and diseases through scouting and trapping.
- Implementing integrated pest management (IPM) strategies, including the use of natural predators, cultural practices, and targeted pesticide applications.
- Applying appropriate fungicides or bactericides to control plant diseases when necessary.

5. Weed Control:

- Implementing weed control measures to reduce competition for resources and minimising weed-related pest and disease problems.
- Using mechanical methods (such as ploughing, hoeing, or mulching) or applying herbicides judiciously to manage weeds effectively.

6. Fertiliser and Chemical Input Management:

- Following manufacturer instructions for the safe handling, storage, and application of fertilisers and agrochemicals.

- Maintaining accurate records of input usage and ensuring proper calibration of equipment during application.
- Preventing cross-contamination between different inputs and minimising their environmental impact.

Post-Harvest Handling and Storage:

1. Cleaning and sanitising storage facilities and equipment to prevent post-harvest contamination.
2. Correctly handling and packaging harvested crops to minimise physical damage and bruising.
3. Implementing appropriate storage conditions, including temperature and humidity control, to prevent spoilage and preserve quality.

Waste Management:

1. Implementing correct waste management practices, including the disposal of crop residues and other organic waste.
2. Managing agricultural waste in compliance with environmental regulations and guidelines.
3. Composting or utilising organic waste as a source of nutrients for future crops, when applicable.

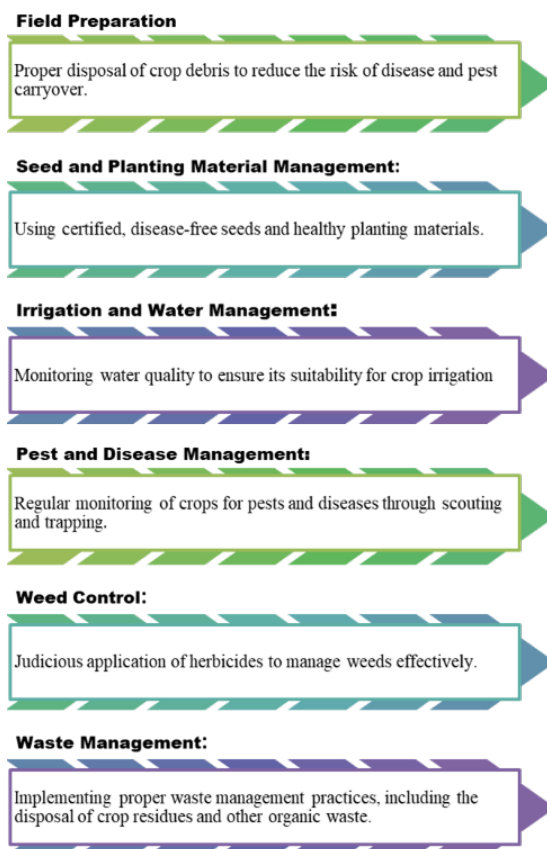


Fig. 6.4 : Management activities for maintaining good farm hygiene in crop production

Activity 6.6

Your teacher will arrange a visit to the school crop production farm or any nearby farm in your community, and with the help of the farm assistant or technician, you will undertake farm hygiene and sanitation activities and write a report on them. In your report you will focus on the following;

- i. The description of the activity carried out
- ii. The stage of the crop production that the activity was carried out e.g. pre-planting, post-planting and post-harvest stages.
- iii. The tools, equipment's and chemicals used in the farm hygiene activity
- iv. The purpose of the activity
- v. The precautions that were put in place during the activity.

Present your report to the class for others' input.

MEANING AND IMPORTANCE OF FARM HYGIENE AND SANITATION IN ANIMAL PRODUCTION

Meaning of Farm hygiene and sanitation in animal production

Farm hygiene in animal production is the set of practices and measures carried out on animal farms to maintain cleanliness, prevent the spread of diseases, and promote health.

Sanitation in animal production refers to the promotion of hygiene and prevention of disease by maintaining good hygienic conditions on animal farms.

Importance of farm hygiene and sanitation in animal production

1. **Disease Prevention:** Good hygiene practices help prevent the spread of diseases among animals. Clean and well-maintained facilities such as barns and pens, reduce the presence of pathogens, parasites, and vectors that can cause infections. Regular cleaning, disinfection, and waste management help control disease transmission and minimise the risk of outbreaks.
2. **Animal Health and Welfare:** Clean and hygienic environments promote better animal health and welfare. Animals raised in clean surroundings are less prone to stress, injuries, and disease.

3. **Production Efficiency:** Hygiene and sanitation directly impact production efficiency in animal farming. By maintaining clean and well-ventilated housing, animals are more comfortable, leading to better feed conversion rates, growth, and reproduction.
4. **Food Safety:** Ensuring farm hygiene and sanitation is important for producing safe and high-quality animal products for human consumption. Correct cleaning and disinfection practices minimise the risk of foodborne pathogens contaminating meat, milk, eggs, or other animal-derived products.
5. **Biosecurity:** Hygienic practices are essential components of a farm's biosecurity measures. Strict hygiene protocols, including correct cleaning, disinfection, and quarantine procedures, help prevent the introduction and spread of infectious diseases.
6. **Environmental Impact:** Farm hygiene and sanitation contribute to environmental sustainability. Correct waste management such as manure handling and disposal, prevents water and soil contamination, reducing the risk of nutrient runoff and environmental pollution. Nutrient runoff is when excess nutrients, primarily nitrogen and phosphorus, are washed away from land surfaces into nearby water bodies, usually due to rainfall or irrigation.

Effects of poor hygiene on animal production

1. **Increased Disease Risk:** Accumulation of manure, dirty bedding, and inadequate cleaning and disinfection of facilities can lead to the proliferation of pathogens, parasites, and disease vectors. This increases the risk of infectious diseases such as bacterial or viral infections, negatively impacting animal health and productivity.
2. **Reduced Animal Health and Welfare:** Exposure to high levels of ammonia, dust, or harmful gases due to poor ventilation can cause animals to experience respiratory problems, eye irritations, and discomfort. Lack of clean bedding and unhygienic environments can lead to skin infections, hoof problems, and stress-related conditions, compromising the overall well-being of the animals.
3. **Lower Productivity and Growth Rates:** Animals that are constantly exposed to unhygienic conditions have reduced feed intake, poorer nutrient absorption, and impaired growth rates. The energy that should be utilised for growth and production is diverted to fighting off infections and dealing with health issues.
4. **Increased Medication Use and Costs:** Inadequate hygiene practices often result in increased dependence on medications such as antibiotics and veterinary treatments to control and treat diseases. This increases the costs of production and also contributes to the development of antibiotic resistance, posing a threat to both animal and human health.
5. **Lower Reproductive Performance:** Poor hygienic conditions can lead to infections of the reproductive tract, reduced fertility rates, increased rates of abortion, and decreased conception rates. These reproductive issues can have

long-term implications on the breeding success and genetic progress of animal populations.

6. **Food Safety Concerns:** Contamination of animal products such as meat, milk, and eggs, with harmful pathogens poses a serious risk to consumer health. Consumption of contaminated food products can lead to foodborne illnesses and negatively impact the reputation of the livestock industry.
7. **Environmental Pollution:** Improper disposal of manure and wastewater can contaminate water sources, contribute to the spread of pathogens and pollutants, and negatively impact local ecosystems. This pollution can harm aquatic life, degrade soil quality, and pose risks to human and environmental health.
8. **Increased Economic Losses:** Costs associated with increased disease treatment, medication usage, reduced productivity, and higher mortality rates can impact the profitability and sustainability of farming operations. Additionally, reputation damage due to food safety concerns can result in decreased consumer trust and market value.

Activity 6.7

Based on your learning so far, what is the meaning of farm hygiene and sanitation in animal production? Write down your thoughts and when finished, compare and discuss your reflections with a peer.

Activity 6.8

Your teacher will arrange a visit to an animal farm nearby for you to observe or discuss with experts the activities that are carried out on the farm to maintain farm hygiene.

Record your observations and enquiries in the table below and share with a peer.

Table 6.2

S/N	Activity	Purpose	Frequency of activity on the farm
e.g.,	Disinfecting equipment	To kill pathogens and prevent infection	Before and after use
1			
2			
3			
4			
5			

How to complete the table

- At the activity column write the activities that are carried out to maintain farm hygiene on the animal farm
- At the purpose column write the main reason why the activity is carried out.
- At the frequency column write down the timings of when the activity is carried out.

Caution: Ensure that you observe all the safety protocols when on the farm.

Activity 6.9

In pairs, discuss the benefits of ensuring good farm hygiene and sanitation in animal production. In your discussion use the following as a guide;

- How regular cleaning and disinfection helps prevent the spread of diseases among animals.
- How clean and sanitary living conditions contribute to the overall welfare of farm animals.
- Ways that farm hygiene contributes to increased productivity and efficiency on the farm
- The potential cost savings associated with good hygiene and sanitation practices.
- How hygiene practices on the farm affect the health and safety of farm workers.

Present the key points from your discussion to the class.

Activity 6.10

Using the internet and other resources, create a presentation on the effects of poor farm hygiene in animal production and share it with your class. Use the following as a guide during the preparation of the presentation;

- The effects of poor hygiene on the quality and quantity of animal products such as milk, eggs and meat
- The economic impact of poor hygiene on animal production
- The effects of poor farm hygiene on the health and safety of farm workers
- The effects of poor farm hygiene on the market reputation of the farm
- The impact of poor hygiene on environmental concerns in the farm's neighbourhood.

FARM HYGIENE AND SANITATION ACTIVITIES IN ANIMAL PRODUCTION

Activities that promote farm hygiene and sanitation in animal production include:

1. Clean and Safe Housing:

- a. Providing clean and well-maintained housing facilities for animals. The housing facility should be properly ventilated and designed to meet the specific needs of the animals.
- b. Regularly cleaning and disinfecting the housing areas, including floors, walls, and equipment, to minimise the build-up and transmission of pathogens.
- c. Ensuring correct waste management systems such as manure collection and removal, to prevent contamination and odour.

2. Biosecurity Measures:

- a. Ensuring the compliance of safety protocols at the farm to control the entry and spread of diseases. This includes controlled access, quarantine procedures for new animals, and restricted movement of personnel and equipment.
- b. Maintaining correct hygienic practices for visitors, including the provision of disinfection stations and appropriate protective clothing.

3. Feed and Water Management:

- a. Providing animals with clean and uncontaminated feed and water.
- b. Correctly storing and handling feed to prevent contamination by pests, mould, or toxins.
- c. Regularly cleaning and disinfecting water sources and feeding equipment to ensure water quality.

4. Animal Health Management:

- a. Thoroughly following vaccination programmes and preventive health measures as recommended by veterinarians.
- b. Regular monitoring of animal health, including routine inspections, early disease detection, and appropriate treatment.
- c. Isolating sick animals to prevent the spread of diseases within the herd or flock.

5. Waste Management:

- a. Correct management and disposal of animal waste, including manure and bedding materials.

- b. Implementing effective strategies for waste storage, handling, and utilisation such as composting or correct storage for future use as fertiliser.
- c. Complying with regulations and guidelines for waste management to prevent environmental pollution and ensure sustainable practices.

6. Hygiene Practices for Personnel:

- a. Ensuring that farm workers follow good personal hygiene practices, including correct handwashing and use of personal protective equipment.
- b. Providing training on hygiene protocol to farm personnel to minimise the risk of disease transmission between animals and humans.

7. Cleaning and Sanitising Equipment:

- a. Regularly cleaning and sanitising animal equipment, such as feeding troughs, water dispensers, and handling tools to prevent disease transmission.
- b. Following correct cleaning procedures and using suitable disinfectants for effective sanitation.

8. Pest and Parasite Control:

- a. Implementing pest and parasite control measures to prevent infestations and reduce the risk of disease transmission.
- b. Using appropriate pest control methods, such as insecticides or biological control agents, following recommended guidelines.

9. Record-Keeping and Documentation:

Maintaining accurate records of animal health, vaccination programmes, medication usage and other relevant information. Tracking and documenting any disease outbreaks or unusual incidents for traceability and future prevention.

Tools for maintaining farm hygiene and sanitation

Some of the tools for maintaining farm hygiene and sanitation are;

1. **Hoe:** A hoe is a handheld tool with a long handle and a flat or angled blade. It is used for weeding around farmhouses to prevent hiding places of snakes that can attack farm animals.
2. **Cutlass:** Consists of a short, curved blade with a sharp edge and a sturdy handle. It is designed for cutting through vegetation, such as tall grass, and weeds to keep the farm environment clean and tidy.
3. **Rake:** A rake has a long handle and a series of tines or teeth. It is used to remove waste and helps gather leaves and other materials.
4. **Shovels and Pitchforks:** These tools are used for removing manure and soiled bedding from animal enclosures. Regularly cleaning and removing waste helps prevent the spread of diseases and reduces odour.

5. **Wheelbarrows and Carts:** These are used to transport manure, soiled bedding, and other waste materials to designated disposal areas. They make the process of waste management safer and more efficient.
6. **High-Pressure Washers:** High-pressure washers are effective for cleaning animal enclosures such as barns, poultry houses, and stalls. They help remove dirt, debris, and pathogens from surfaces, reducing the risk of infections.
7. **Scrub Brushes and Brooms:** These tools are used to scrub and sweep floors, walls, and other surfaces to remove dirt and organic matter. They are particularly useful for cleaning areas that cannot be easily reached by a high-pressure washer.
8. **Disinfectants and Cleaning Solutions:** Various disinfectants and cleaning solutions are used to kill pathogens and sanitise surfaces. Common disinfectants include chlorine-based solutions, quaternary ammonium compounds, and hydrogen peroxide-based products.
9. **Sprayers and Foggers:** Sprayers and foggers are used to apply disinfectants and sanitisers to large areas or hard-to-reach areas, ensuring comprehensive coverage and effective pathogen control.
10. **Pest Control Tools:** Effective pest control is essential for maintaining farm hygiene. Tools such as traps, insecticides, fly control devices and rodent bait stations are commonly used to manage pests that can spread diseases or damage farm structures.
11. **Personal Protective Equipment (PPE):** PPE, including gloves, masks, goggles, and coveralls, should be worn by farm workers to protect themselves from potential hazards, including pathogens and chemicals during cleaning and sanitation tasks.
12. **Waste Management Equipment:** Animal farms generate a significant amount of waste, including manure and soiled bedding. Correct waste management methods and tools such as composting systems or manure spreaders are necessary to handle and dispose of waste efficiently and minimise environmental impact.

Activity 6.11

With the help of the internet and other sources, make a list of the activities that are carried out in animal production to promote good farm hygiene and sanitation.

Share and compare your findings with your peers.

Activity 6.12

Your teacher will arrange a visit to an animal farm in your community or you can watch a video/picture on tools, equipment and chemicals that are used to maintain hygienic conditions on an animal farm.

Document your observation in the table below or create a copy in your notebook.

Table 6.3

Tool/ Equipment/ Chemical	Description	Purpose
e.g., Rake	Has a long handle and a series of tines or teeth.	It is used to remove waste from animal pen and helps gather leaves, manure and other materials.

How to complete the table

- At the tool/ equipment/chemical column write the name of the tool, equipment or chemical used in the carrying out the farm hygiene activity.
- At the description column describe the tool, equipment or chemical used in the carrying out the farm hygiene activity.
- At the purpose column indicate what the tool, equipment or chemical is used for.

Share your observations with your peers for feedback and discussion.

Caution: You must follow all farm safety protocols during the visit to the farm.

APPLICATION OF FARM HYGIENE AND SANITATION IN ANIMAL PRODUCTION

Farm Hygiene and Sanitation Activities in Animal Production

1. **Clean and Sanitised Animal Housing:** Maintaining clean and sanitised animal housing is essential. Regular cleaning and disinfection of barns, stalls, coops, and other enclosures help prevent the build-up of pathogens, parasites, and harmful bacteria. This promotes healthier living conditions for the animals and reduces the risk of disease transmission.
2. **Correct Waste Management:** Effective waste management is crucial to prevent the accumulation of manure and soiled bedding, which can harbour pathogens and attract pests. Implementing correct waste management systems such as composting or manure storage, helps minimise environmental pollution and reduces the risk of contamination.
3. **Animal Grooming and Hygiene:** Regular grooming of animals, including brushing, hoof trimming and bathing, when necessary, helps maintain their cleanliness and overall health. It also allows for early detection of any health issues such as skin diseases or parasites.
4. **Adequate Ventilation:** Correct ventilation in animal housing is important for maintaining good air quality and reducing the build-up of moisture, ammonia, and odours. Adequate airflow helps minimise respiratory problems and improves the overall comfort of the animals.
5. **Water Quality and Hygiene:** Providing clean and fresh water is essential for animal health and performance. Regularly cleaning and sanitising water troughs, pipes, and drinkers helps prevent the growth of harmful bacteria and ensures a safe water supply for the animals.
6. **Biosecurity Measures:** Implementing biosecurity measures is crucial to prevent the introduction and spread of diseases on the farm. This includes controlling access to the farm, practising correct quarantine procedures for new animals, and implementing hygiene protocols for visitors, vehicles, and equipment.
7. **Disease Prevention and Vaccination:** Following vaccination protocol and implementing disease prevention measures such as regular parasite control helps reduce the risk of disease outbreaks and improves the overall health of the animals.
8. **Personal Hygiene and Protective Equipment:** Practising good personal hygiene, such as handwashing before and after handling animals reduces the risk of disease transmission between animals and humans. Farm workers should also wear appropriate personal protective equipment (PPE) to protect themselves and prevent the spread of diseases.

9. **Regular Monitoring and Record Keeping:** Regular monitoring of animal health, production parameters, and hygiene practices is important for identifying potential issues and implementing corrective measures promptly. Keeping detailed records of vaccinations, treatments, and hygiene protocols helps track progress and ensures compliance with regulations.
10. **Training and Education:** Providing training and education to farm workers about proper hygiene and sanitation practices is essential. It helps create awareness, promotes a culture of cleanliness and responsibility, and ensures that everyone involved in animal production understands and follows the necessary protocols.

Activity 6.13

Your teacher will arrange a visit to an animal farm in your community or you can watch a video/picture of an animal farm and observe the activities involved in managing healthy and ailment free farm animals.

Write down your observations and share them with your peers for feedback.

Activity 6.14

In small groups undertake supervised farm hygiene and sanitation activities at the school animal farm or a nearby animal farm and write a report on the activity. In writing the report focus on the following;

- i. The activity that your group undertook.
- ii. The purpose of the activity.
- iii. The tools/equipment/chemicals used for your activity.

The farm hygiene issue that your activity is used to solve.

Present your report to the class for feedback.

Caution: The activity at the school farm should be carried out only under the supervision of the farm technician/supervisor and you should observe all the safety protocols in place.

Activity 6.15

Using the internet and other resources, identify biosecurity measures that can be used on your school farm to control and prevent diseases in animal production.

Share your ideas with your peers for feedback.

Activity 6.16

With the available vaccination data at the school farm or a farm in your community prepare a table on the vaccinations carried out and the diseases that are prevented as below;

Table 6.4

Animal	Vaccination	Period	Type of Diseases Prevented
e.g., Chickens	Newcastle Disease Vaccine	Initial dose at 1-day old booster every 4-6 months	Newcastle disease and Avian influenza

How to complete the table

- In the animal column write the type of animal on which the vaccination is carried out
- In the vaccination column indicate the vaccine used
- In the period column write the period in which the vaccination is done
- The type of diseases prevented, indicate the diseases that the vaccination is used to prevent.

Present your table to the class for feedback.

Activity 6.17

Your teacher will arrange a visit to the school farm, to observe the farm technician vaccinating a farm animal. Alternatively, you might watch a video of a vaccination of a farm animal. In some cases, and only under supervision, you may be asked to help carry out a routine vaccination on a farm animal.

Write a report on the activity you undertook, focusing on the following;

- i. The animal involved
- ii. The vaccine used
- iii. The dose of the vaccine used
- iv. The stage of the animal
- v. The type of diseases to be prevented
- vi. The safety precautions ensured during the activity

Present your report to your peers for feedback.

Caution: The activity should be carried out only under the supervision of the farm technician/supervisor and all the safety protocols should be observed.

REVIEW QUESTIONS

1. What does farm hygiene mean?
2. State and explain at least four effects of poor farm hygiene and sanitation in crop production.
3. Give the four areas of importance of farm hygiene and sanitation in crop production.
4. List three tools and their functions used for maintaining farm hygiene and sanitation in crop production.
5. State four ways by which you can apply farm hygiene and sanitation in crop production.
6. Explain the importance of using biosecurity and vaccination as a way of controlling diseases spread in farm animals.
7. Read the case study carefully and answer the questions that follow it.

Case Study

Green Pastures Farm is an animal farm that specialises in dairy and poultry production. In recent months, the farm has experienced several challenges, including a rise in animal diseases (mastitis in their dairy cows and avian influenza in their poultry), reduced productivity, and complaints from neighbouring communities about odours and poor waste management. The farm's management through their investigation discovered that the manure and other waste are not regularly cleaned from the animal enclosures, animal feeds are stored in open containers, the animal pens, particularly those for poultry, are not cleaned regularly and there is a lack of regular disinfection protocols for equipment and housing areas in the farm.

Answer the following questions:

- a. What are the causes of the adverse health issues at Green Pastures Farm?
- b. How do hygiene and sanitation practices affect animal productivity and the financial status of the farm?
- c. What steps can Green Pastures Farm take to improve their hygiene and sanitation practices?

ANSWERS TO REVIEW QUESTIONS:

1. Farm hygiene is the set of practices and measures implemented on a farm to maintain cleanliness, prevent the spread of diseases and promote health.
2.
 - a. **Pollution of soil;** Crop residues and chemicals if not managed correctly, by using it to make organic fertiliser and measuring the right quantities of chemicals, can cause pollution to soil.
 - b. **Establishment of disease-causing organisms;** Some weeds and crop residues are feeding and breeding places for some disease-causing organisms and can lead to disease outbreaks if care is not taken in managing them.
 - c. **Risk to human health;** Contamination of crops by pathogens and harmful substances pose risks to human health if not taken care of.
 - d. **Post-harvest losses;** Contaminants/harmful substances and pathogens destroy crops leading to reduction in yield or losses if left unattended to.
3.
 - a. Disease Prevention
 - b. Food Safety
 - c. Environmental Protection
 - d. Compliance with Regulations
4.
 - a. Hoe
 - b. Cutlass
 - c. Rake
 - d. Hand Fork
 - e. Pruning Shears
 - f. Scissors or Harvest Knives
 - g. Hand Sprayers
5.
 - a. Field preparation
 - b. Seed and planting material management
 - c. Irrigation and water management
 - d. Pest and disease management
 - e. Weed control
 - f. Fertiliser and input management

6.

Biosecurity: Hygienic practices are essential components of a farm's biosecurity measures. Strict hygiene protocols, including correct cleaning, disinfection, and quarantine procedures, help prevent the introduction and spread of infectious diseases.

Disease Prevention and Vaccination: Following vaccination protocol and implementing disease prevention measures such as regular parasite control helps reduce the risk of disease outbreaks and improves the overall health of the animals.

7.

- a. The causes of health issues at Green Pastures Farm include inadequate waste management, improper storage of feed, lack of regular cleaning, poor water management, and inconsistent use of disinfectants.
- b. Poor hygiene and sanitation practices will lead to stress and illness in animals, which in turn reduce their productivity. For instance, mastitis in dairy cows' results in lower milk yields, while avian influenza reduces egg production in poultry. Financially, the unhealthy animals will require veterinary care which will involve money for cost of medicines and drugs, and service charges for the veterinary officers thereby putting financial constraints on the farm.
- c. **Steps to Improve Hygiene and Sanitation**
 - Establish strict protocols for daily cleaning of animal enclosures, focusing on removing manure and soiled bedding.
 - Develop a comprehensive waste management system that includes regular removal and correct disposal of manure to prevent the buildup of pathogens and pests.
 - Store animal feed in sealed containers to protect it from contamination by rodents and insects.
 - Implement a schedule for regular disinfection of animal housing and equipment to prevent the spread of disease.
 - Provide training for farm staff on the importance of hygiene and sanitation practices and ensure they understand and follow the established protocols.
 - Regularly monitor the farm's hygiene practices and evaluate their effectiveness, adjusting as needed to ensure a healthy environment for the animals.

EXTENDED READING

1. Agriculture textbook for SHS
2. Exotic series by Eric Amoah
3. Grace, D, Bett, B. and Lindahl, J. (2018). Food safety risks one health-where do we need to look? *Current Opinion in Food Science*, 20, 87-93.

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5. Food and Agriculture Organisation (2023 23 August). *Hygiene*. <https://www.fao.org/3/x6557e/X6557E02.htm>.
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7. SHS Agriculture Teacher Manual Year 1 Book 2

Acknowledgements



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