



Primary 5 Integrated Science

Term 3

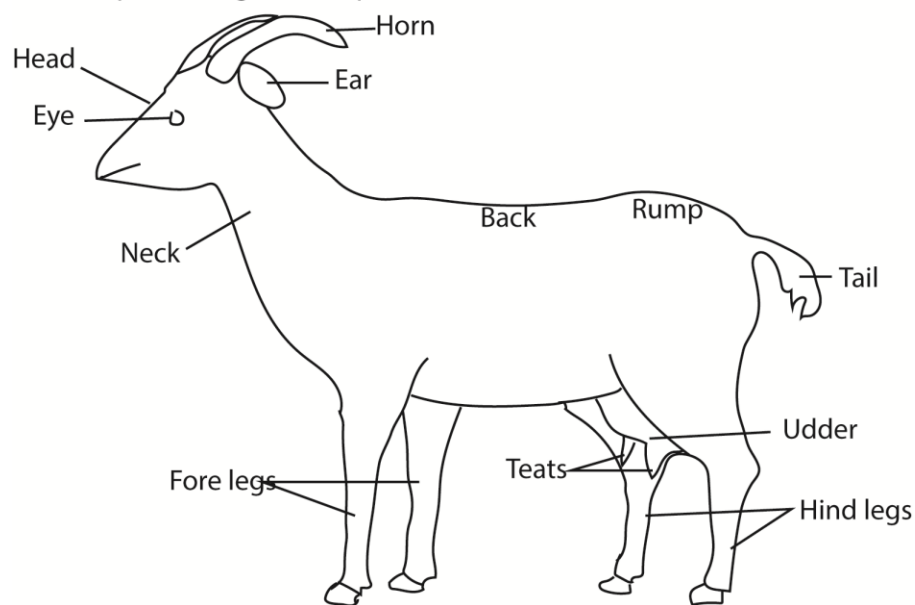
Theme: SCIENCE IN HUMAN ACTIVITIES AND OCCUPATIONS

Topic 2/4 – Keeping Goats, Sheep and Pigs

Learning outcome: The learner is able to demonstrate scientific knowledge and skills necessary for keeping bigger animals as well as start and manage animal keeping projects.

Goats and sheep rearing

External parts of a goat/sheep



Products from goats and sheep: Meat, Skins, Wool, Milk

Exercise 1

State two importance of rearing goats and sheep

Caring for goats and sheep

Caring for goats and sheep requires attention to their **basic needs, health, and environment**. Both are herd animals, so they thrive best when kept in groups.

Shelter

- (i) Provide a clean, dry, and well-ventilated shelter.
- (ii) Protect them from rain, wind, and extreme sun.
- (iii) Ensure enough space for movement and resting.
- (iv) The shelter should be lockable at night to prevent thieves

Feeding

- (i) **Goats:** Prefer browsing (shrubs, leaves, weeds). Supplement with hay, grains, and minerals.
- (ii) **Sheep:** Prefer grazing (grass and pasture). Provide hay during dry seasons.
- (iii) Always supply fresh, clean water.

Health Care

- (i) Regular deworming and vaccinations.
- (ii) Trim hooves to prevent infections.
- (iii) Watch for signs of illness (loss of appetite, unusual behavior).
- (iv) Provide salt licks and mineral supplements.

Breeding & Young Care

- (i) Monitor pregnancy and provide extra nutrition.
- (ii) Assist with lambing/kidding if necessary.
- (iii) Ensure newborns get colostrum (first milk) for immunity.
- (iv) Wean gradually to reduce stress.

Exercise 2

Mention any two types of care you would give to goats on a farm.

Management Practices

- (i) Keep them in secure fencing to prevent escape
- (ii) Keep proper farm record by identifying each animal on the farm. Common types of identification of animals include
 - **Ear tagging** – the most widely used method, where a numbered or coded tag is attached to the animal's ear.



- **Branding** – marking the skin with heat or cold (less common today).



- **Ear notching** – small cuts in the ear to represent numbers.



- **RFID microchips** – electronic tags for modern tracking systems

- (iii) Maintain hygiene in pens to reduce disease.
- (iv) Rotate grazing areas to prevent overgrazing and parasite buildup.

Exercise 3

Describe importance of any two management practices on a goat or sheep farm

Types of Grazing Systems



Tethering system



Zero grazing



Paddock system

Grazing System	Description	Advantages	Challenges
Continuous Grazing	Animals graze freely on one pasture for a long period (season or year).	Simple, low cost, less labor.	Can lead to overgrazing, poor pasture quality, uneven forage use.

Grazing System	Description	Advantages	Challenges
Tethering	farm animals (like goats, sheep, or cattle) are tied to a fixed point using a rope, chain, or tether so they can graze within a limited area.	<p>Controls animal movement and prevents crop damage.</p> <p>Allows grazing in small plots or along roadsides.</p> <p>Low cost compared to fencing.</p> <p>Easy to manage for individual animals.</p>	<p>Risk of injury (entanglement, choking).</p> <p>Animals are exposed to predators and harsh weather.</p> <p>Limited exercise and social interaction.</p> <p>Requires frequent supervision and moving the tether to fresh grass.</p>
Rotational Grazing	Pasture is divided into paddocks; animals rotate between them, allowing regrowth.	Improves pasture health, better forage use, reduces parasites.	Requires fencing, water systems, and more management.
Strip Grazing	Animals graze a small strip of pasture at a time, moved frequently.	Maximizes forage use, reduces waste.	Labor-intensive, requires movable fencing.
Deferred Grazing	Some pastures are rested and only grazed later in the season.	Conserves forage for dry periods, reduces overgrazing.	May require more land planning.
Zero Grazing (Cut-and-Carry)	Animals are kept indoors; forage is cut and brought to them.	Prevents overgrazing, good for small land areas, easier disease control.	High labor and cost, requires constant feed supply.

Exercise 4

State any two types of grazing system and one disadvantage of each.

Common diseases of goats and sheep, cause and their symptoms

Bacterial Diseases

Disease	Cause	Symptoms
Anthrax	<i>Bacillus anthracis</i> bacteria	Sudden death, bleeding from body openings, swelling.
Brucellosis	<i>Brucella</i> bacteria	Abortions, infertility, swollen joints, fever.
Caseous Lymphadenitis (CLA)	<i>Corynebacterium pseudotuberculosis</i>	Abscesses in lymph nodes, weight loss, reduced milk.
Foot Rot	Mixed bacterial infection	Lameness, foul odor, swelling between hooves.
Mastitis	Bacterial infection of udder	Swollen, painful udder, abnormal milk, fever.

Viral Diseases

Disease	Cause	Symptoms
Contagious Caprine Pleuropneumonia (CCPP)	Viral infection	Severe pneumonia, coughing, nasal discharge, high mortality.
Contagious Ecthyma (Orf)	Poxvirus	Scabby sores on lips, mouth, and udders.

Parasitic Diseases

Disease	Cause	Symptoms
Internal parasites (worms)	Gastrointestinal nematodes	Diarrhea, weight loss, anemia, poor growth.
External parasites (ticks, lice, mites)	Infestation	Itching, hair loss, skin irritation, weakness.
Coccidiosis	Protozoa (<i>Eimeria</i> species)	Diarrhea (sometimes bloody), dehydration, poor growth.

Nutritional & Metabolic Diseases

Disease	Cause	Symptoms
Pregnancy Toxemia (Ketosis)	Energy deficiency in late pregnancy	Weakness, loss of appetite, nervous signs, coma.
Polioencephalomalacia	Thiamine deficiency	Staggering, blindness, seizures.
Enterotoxemia (Pulpy Kidney Disease)	<i>Clostridium perfringens</i> toxin	Sudden death, diarrhea, abdominal pain.

Other Diseases

Disease	Cause	Symptoms
Listeriosis	<i>Listeria monocytogenes</i> bacteria	Circling, head tilt, abortions.
Pneumonia	Bacteria/viruses + poor housing	Coughing, nasal discharge, fever, difficulty breathing.
Pinkeye	Bacterial infection	Red, watery eyes, blindness if untreated.

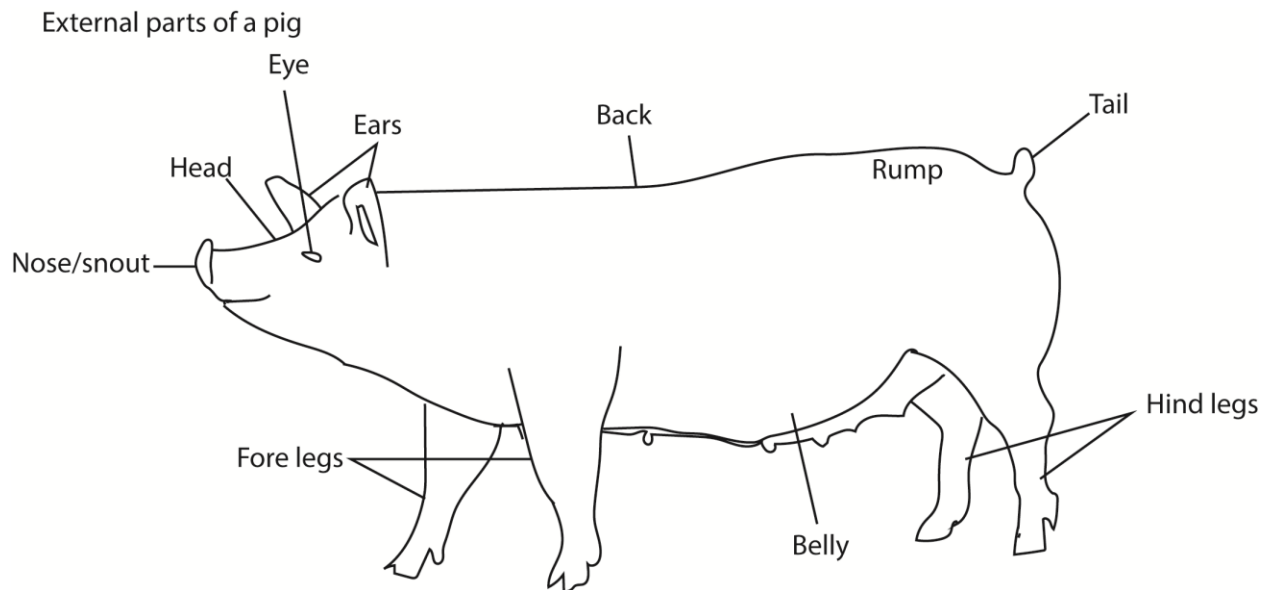
Key Takeaway

- (i) **Causes** range from bacteria, viruses, parasites, and nutritional imbalances.
- (ii) **Symptoms** often include weight loss, weakness, diarrhea, respiratory distress, and reproductive problems.
- (iii) **Prevention:** good hygiene, vaccination, parasite control, balanced nutrition, and regular veterinary care.

Exercise 5

- (i) Name one bacterial and one viral infections of goats and sheep.
- (ii) Suggest two ways of minimizing goats and sheep diseases on a farm.

Pig rearing



Products from pigs

(i) Food Products

- Pork cuts: bacon, ham, pork chops, sausage, ribs
- Gelatin (from skin and bones) used in candies, marshmallows, and desserts
- Lard (rendered fat) used in cooking and baking

(ii) Medical & Pharmaceutical Uses

- Insulin (originally derived from pig pancreases, though now often synthetic)
- Heart valves for surgical transplants
- Heparin (an anticoagulant from pig intestines)
- Burn dressings and wound-healing materials

(iii) Industrial & Household Products

- Leather (from pigskin) for shoes, gloves, and upholstery
- Brushes (from pig bristles)
- Biodiesel (from pig fat)
- Glue and adhesives (from collagen)

(iv) **Cosmetics & Personal Care**

- Shampoo and conditioner (using fatty acids)
- Lipsticks and lotions (using glycerin and collagen)

(v) **Miscellaneous Everyday Items**

- Crayons (using fatty acids)
- Matches (using bone-derived materials)
- Pet food (using meat scraps and by-products)
- Fertilizer (from pig manure)

Exercise 6

Name four products obtained from pigs

Caring for pigs

Caring for pigs involves meeting their **housing, feeding, health, and management needs**. Pigs are intelligent, social animals, and with proper care they grow quickly and stay healthy. Here's a practical guide:

Housing

- (i) Provide a clean, dry, and well-ventilated shelter.
- (ii) Protect them from extreme sun, rain, and cold.
- (iii) Ensure enough space for movement — pigs dislike overcrowding.
- (iv) Use bedding (like straw) for comfort.

Feeding

- (i) Balanced diet: grains, vegetables, protein sources, and clean water.
- (ii) Supplement with vitamins and minerals for growth.
- (iii) Avoid spoiled or moldy food.
- (iv) Feed regularly and monitor weight gain.

Health Care

- (i) Vaccinate against common diseases (swine fever, pneumonia, etc.).
- (ii) Deworm regularly to control parasites.
- (iii) Keep pens clean to prevent infections.
- (iv) Watch for signs of illness: coughing, loss of appetite, diarrhea, or unusual behavior.

Management Practices

- (i) Provide wallowing areas or mud patches — pigs use them to cool down.
- (ii) Maintain strong fencing (pigs are strong and curious).
- (iii) Group pigs by age/size to reduce fighting.
- (iv) Record breeding, feeding, and health details for better management.

Breeding & Piglet Care

- (i) Ensure pregnant sows get extra nutrition.
- (ii) Provide safe farrowing pens for piglets.
- (iii) Piglets need colostrum (first milk) for immunity.
- (iv) Iron supplements are often given to prevent anemia.

Key Insight

Healthy pigs grow fast and can be raised for meat, breeding, or even as pets. The essentials are **good housing, balanced feeding, clean water, disease prevention, and proper management.**

Exercise 7

Name two ways pigs can be care for.

Common Pig Diseases

1. Porcine Reproductive and Respiratory Syndrome (PRRS)

- **Cause:** PRRS virus (Arterivirus).
- **Symptoms:** Reproductive failure in sows (abortions, stillbirths), respiratory distress in piglets (coughing, fever, poor growth).

2. Swine Influenza

- **Cause:** Influenza A virus (H1N1, H3N2 strains).
- **Symptoms:** Sudden fever, coughing, nasal discharge, loss of appetite, lethargy.

3. Erysipelas

- **Cause:** *Erysipelothrix rhusiopathiae* bacteria.
- **Symptoms:** Skin lesions (“diamond-shaped” patches), arthritis, fever, sudden death in severe cases.

4. Swine Dysentery

- **Cause:** *Brachyspira hyodysenteriae* bacteria.
- **Symptoms:** Severe diarrhea (often bloody), dehydration, weight loss, poor growth.

5. Porcine Epidemic Diarrhea (PED)

- **Cause:** PED virus (Coronavirus).
- **Symptoms:** Watery diarrhea, vomiting, dehydration, high mortality in piglets.

6. Porcine Circovirus Associated Diseases (PCVAD)

- **Cause:** Porcine circovirus type 2 (PCV2).
- **Symptoms:** Wasting, enlarged lymph nodes, respiratory distress, poor growth.

7. Mycoplasmal Pneumonia

- **Cause:** *Mycoplasma hyopneumoniae* bacteria.
- **Symptoms:** Chronic coughing, slow growth, reduced feed efficiency.

8. Porcine Ileitis

- **Cause:** *Lawsonia intracellularis* bacteria.
- **Symptoms:** Diarrhea, poor growth, sudden death in severe cases.

9. Actinobacillus Pleuropneumoniae (APP)

- **Cause:** *Actinobacillus pleuropneumoniae* bacteria.
- **Symptoms:** Fever, difficulty breathing, coughing blood, sudden death.

10. Atrophic Rhinitis

- **Cause:** *Bordetella bronchiseptica* and *Pasteurella multocida* bacteria.
- **Symptoms:** Sneezing, nasal discharge, twisted/deformed snouts, poor growth.

Summary Table

Disease	Cause	Key Symptoms
PRRS	Virus	Reproductive failure, coughing, fever
Swine Influenza	Virus	Fever, coughing, nasal discharge
Erysipelas	Bacteria	Skin lesions, arthritis, sudden death
Swine Dysentery	Bacteria	Bloody diarrhea, dehydration
PED	Virus	Watery diarrhea, vomiting, piglet mortality
PCVAD	Virus	Wasting, respiratory distress
Mycoplasmal Pneumonia	Bacteria	Chronic cough, poor growth
Ileitis	Bacteria	Diarrhea, poor growth, sudden death
APP	Bacteria	Breathing difficulty, coughing blood
Atrophic Rhinitis	Bacteria	Sneezing, nasal deformity

Exercise 8

Name any two bacterial and two viral disease that affect pigs

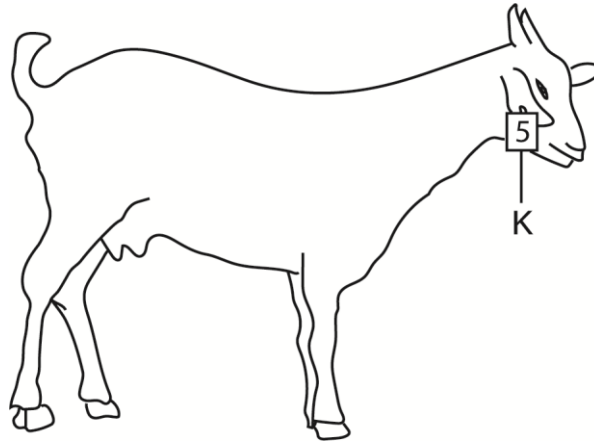
Revision questions

1. Name any one exotic breed of goats kept for the same purpose as Friesian cows.

Exotic Dairy Goat Breeds for milk in Uganda

- (i) Saanen (Switzerland)
- (ii) Toggenburg (Switzerland)
- (iii) Alpine (France/Switzerland)

2. The diagram below shows one of the management practice in goat rearing. Use it to answer questions that follow



- (a) Name the management practice shown with Letter K

Livestock identification

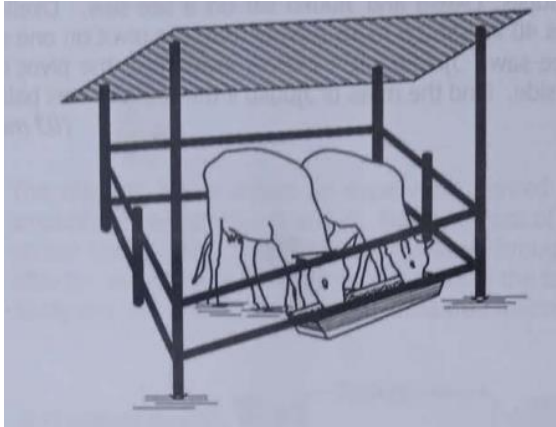
- (b) How is the above practice important to a goat owner

- (i) Proves ownership
- (ii) Prevents theft
- (iii) Makes it easy to recognize individual animals in a herd.
- (iv) Supports disease control and vaccination programs.
- (v) Helps in breeding management and performance monitoring.
- (vi) Ensures proper record keeping for farm planning.

3. State any one advantage of having proper housing for goats

- Easy to control diseases
- Minimizes theft
- Protects goat from bad weather.

4. The diagram below shows a cattle grazing system. Study and use it to answer the questions that follow.



(a) Name the cattle grazing system shown above

Zero grazing

(b) What type of natural manure can be got from the above system?

Composite manure (a mixture of cow dung and plant remainings)

(c) Apart from easy collection of manure, state any two advantages of the above cattle grazing system

- Easy to control parasites
- Easy to control disease
- Easy to tell how much food an animal has taken

5. (a) Give one example of an exotic breed of goats kept in Uganda

Exotic Dairy Goat Breeds for milk in Uganda

- (i) Saanen (Switzerland)
- (ii) Toggenburg (Switzerland)
- (iii) Alpine (France/Switzerland)

Exotic Meat Goat Breeds in Uganda

- (iv) Boer goat (from South Africa)
- (v) Savanna Goat (from South Africa)
- (vi) **Kasolwe Brown Goat (recently developed in Uganda)**

(b) Name one example of fibre got from goats

- **Cashmere goats** → produce cashmere fibre.
- **Angora goats** → produce mohair fibre.

☞ So, a clear example of fibre from goats is **cashmere**, and another is **mohair**.

(c) State any two reasons why some farmers would prefer rearing goats to cattle.

(i) **Lower cost of keeping**

- Goats require less feed and water compared to cattle.
- Housing and fencing costs are cheaper.

(ii) **Small land requirement**

- Goats can thrive on smaller plots of land.
- They can browse shrubs and weeds, not just grass, making them suitable for mixed farming.

(iii) **Faster maturity & reproduction**

- Goats reach market weight quicker than cattle.
- They reproduce faster, with twins or triplets being common, increasing herd size quickly.

(iv) **Hardiness & adaptability**

- Goats tolerate harsh climates and poor grazing conditions better than cattle.
- They are less prone to some diseases that affect cattle.

(v) **Market demand**

- Goat meat (chevon) is popular and often fetches higher prices per kilogram than beef.
- Goat milk is also valued for its digestibility and nutritional benefits.

(vi) **Easier management**

- Goats are smaller and easier to handle than cattle.
- They can be tethered or housed with less labor.

6. Apart from labor, give **one** other requirement for starting a livestock farm.

- (i) **Land acquisition or leasing** for grazing and housing animals.
- (ii) **Infrastructure** such as fencing, water supply, housing structures, and feed storage.
- (iii) **Livestock purchase** (buying quality breeds).
- (iv) **Feed and veterinary care** to maintain animal health and productivity.

7. Name the animal product used in leather industry.

Skin/hide

8. (a) Name any two products got from sheep.

Food Products

- **Mutton & Lamb** – Meat from adult sheep (mutton) and young sheep (lamb).
- **Milk** – Used to make cheese (like Roquefort, Feta, Manchego), yogurt, and butter.

2. Fiber

- **Wool** – Used in clothing, carpets, blankets, and upholstery.
- **Lanolin (wool grease)** – Extracted from wool, used in cosmetics, lotions, and ointments.

3. By-products

- **Leather (sheepskin)** – Used for jackets, gloves, shoes, and bookbinding.
- **Sheepskin rugs & pelts** – Valued for warmth and decoration.
- **Intestines** – Traditionally used for sausage casings.
- **Bones & hooves** – Can be processed into glue and gelatin.

4. Industrial & Miscellaneous Uses

- **Fertilizer** – Sheep manure enriches soil.
- **Medical uses** – Sheep-derived materials are used in surgical sutures and research.
- **Lanolin-based products** – Found in waterproofing and rust-prevention applications.

(b) What does shearing refer to in sheep rearing?

Shearing refers to the process of cutting or shaving off the wool from a sheep's body.

Benefits:

- Provides raw material (wool).
- Prevents overheating in warm seasons.
- Improves hygiene by reducing risk of parasites and skin infections.

(c) How can a farmer control pneumonia in sheep?

1. Housing & Environment

- Provide **well-ventilated housing** to reduce dampness and ammonia buildup.
- Avoid overcrowding; keep stocking rates low.
- Ensure shelters are dry and protected from extreme weather (cold drafts, rain).

2. Nutrition & General Care

- Feed balanced diets to strengthen immunity.
- Provide clean water at all times.
- Reduce stress by handling sheep gently and minimizing sudden changes in environment.

3. Biosecurity & Prevention

- Isolate sick animals to prevent spread.
- Quarantine new stock before mixing with the flock.
- Vaccinate against common respiratory pathogens where vaccines are available.

4. Veterinary Treatment

- Early detection is critical: watch for coughing, nasal discharge, fever, rapid breathing, and lethargy.
- Consult a veterinarian for appropriate antibiotics or supportive therapy.
- Treat promptly to reduce mortality and production losses.

9. How can a farmer make use of dung produced by his animals?

Use	Benefit
Fertilizer	Improves soil fertility
Biogas	Provides renewable energy
Fish farming	Enhances pond productivity
Building	Strengthens walls, insect repellent
Fuel	Alternative cooking energy

10. The diagram below shows one of the methods of grazing goats in Uganda.

Study it and use it to answer questions that follow.



(a) Name the method of grazing goats shown in the diagram.

tethering

(b) Give two advantages of using the methods shown in the diagram.

- (i) Cheap
- (ii) Protects farm plants
- (iii) Easy to manage

(c) Write down one disadvantage of using this method.

- (i) The goat may easily be stolen
- (ii) The goat can easily be eaten by wild dogs/animal
- (iii) Risk of injury (entanglement, choking).

Thank You

Dr. Bbosa Science