TVET CERTIFICATE V in

PIG FARMING

ANH PF 501

PERFORM PIG FARMING

Competence

Credits: 5

Learning hours: 50

Sector: AGRICULTURE AND FOOD PROCESSING

Sub-sector: ANIMAL HEALTH

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Purpose statement

This core module provides the skills, knowledge and attitude for a learner to be competent in a range of routine tasks and activities that require the application of practical skills in a defined context of pig farming and breeds identification:

Upon completion of this module, the trainee will be able to:

1. Identify pig breed;
2. Sketch and equip piggery;
3. Manage pig farming;
4. Perform pig health and diseases control

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Learning Unit 4: Perform pig health and diseases control		
	4.3. Appropriate establishment of prophylactic plan.	
	4.4. Proper selection of bio-chemical prevention products according to product available.	
	4.5.Proper administration of bio- chemical prevention product.	
	4.6. Adequate record keeping and interpretation of zoo-sanitary data.	

Learning Unit 1: Identify pig breed

INTRODUCTION

a. Generalities

The origins of the domestic pig (*Sus scrofadomesticus*) are not fully known but it appears its ancestors belonged to single wild boars of Europe (*Sus scrofa*) and Asia (*Sus vittatus*). Two theories have been put forward as to the domestic pig's origin. One is that the pig is domesticated in several different regions, while the other is that they were domesticated in Western Asia, from where they diffused to others parts of the world.

Zoologically, the domestic pig is a member of the order Ungulata through the sub-order Artiodactyla and the family Suidae. Today, these indigenous breeds of British, American and Scandinavian origin. If properly fed and managed, these exotic breeds are invariably more productive than the indigenous breeds.

Domestication, which according to biblical records was as early as 2000 BC, has developed the pig as a meat animal.

Has developed from an animal with a relatively large, narrow head, heavy forequarters, tapering light hind-quarters and compact body to a longer and wider body, smaller head, lighter forequarters and well-developed hindquarters. Selection, which is part of the domestication process, caused major changes in the conformation of the pig as a man selected for the most suitable animal to cater for his needs. The selection process; feeding and sleeping are two activities that dominate the life of a pig. In captivity, the pigs do not require feed during the night and their sleeping behavior can be equated to that of humans.

Rearing of pigs in the present day depends on a number of factors. A pig may be favored as a meat supplier by one cultural group, whilst to another it is considered a taboo animal, unclean and untouchable.

b. Distribution of pigs

The population size of pigs in area depends mostly on climate and social and religious beliefs. Not many pigs are found in arid areas of the world, while in Muslim populations one rarely comes across a herd of pigs. The whole world is estimated to have over 830 million pigs. The pig population is outnumbered by cattle, sheep and poultry but has a higher meat output, indicating greater productivity. Half the world's pig population is in Asia, while the tropics and subtropics have a relatively smaller population.

Owing to continued unreliability of the climate and also to the fact that pigs have a high turnover rate compared with other livestock species, many people are turning to pig production.

However, for successful pig production enterprises, farmers need improved skill in appropriate housing designs, nutrition, genetic and management practices. Adoption of pig farming is on the increase in the tropic owing to realization that the pig is highly focused, has high growth rate and gives a relatively rapid of return.

c. Constraints and opportunities

The scavenging pig has been rightly described as a dirty animal, an object of distaste and a parasite trafficker to humans. When kept under well-managed, confined conditions, the pig is the exact opposite of the above description, with an ameliorated, idiosyncratic behavior. For most of the countries, social and religious tendencies form the first the barriers to pig production. Areas such as the Middle East, Pakistan and some parts of Africa, with a considerable number of followers of different religious, do not produce many pigs because, for example, Islam and Judaism, Adventists forbid eating of pig meat.

Generally, the inadequate of food for humans in most developing countries is a limitation to pig production. This is in view of the fact that pigs are simple-stomached animals and thus will compete with humans for the staple grains and oilseeds. Raising pigs thus requires farmers to

produce more grain than they need for their own consumption and this calls for increased inputs into the crop enterprise.

The fact that pigs cannot provide draught power and milk makes the pig enterprise unsuitable for the subsistence mixed farming of developing countries. Priority is therefore given to cattle, goats and sheep-rearing.

The need for the pig enterprise to be situated close to human habitation for close monitoring means that humans must skillfully handle effluent from the enterprise. Abundant water is needed for the successful running of a piggery unit. This water is needed both as drinking water for the pig and for cleaning pigs and their sites. Water is not always in abundance in developing countries, where water reservoirs are not a common sight. This results in pig waste accumulating and posing a health hazard to humans.

Generally, smallholder farmers in the developing world have limited expertise. Resulting in poor management and planning of piggery expertise. This lack of technical know-how is a common problem with new enterprises and it coupled with a general lack of supporting services (extension services, credits facilities, communication network).

The use of imported breeds in developing countries presents farmers with a major challenge, as these breeds require intensive management for them to realize their full production potential.

Some constraints to pig production pertain to the properties of pig meat that affect its acceptability. Pale color, softness and excessive exudation (PSE) of pork create merchandising problems. For a pig farmer who has to transport his pigs over very long distances, this problem may account for a large proportion of his losses, causing him to switch to other livestock enterprises.

Production of boars could be the most profitable pig enterprise if there was no problem of boar taint. Boars weighing more than 90kg produce meat with an objectionable odour and flavor when cooked. Research to eliminate boar taint without castration will be advantageous to the pig producer; otherwise this problem is a constraint to the development of pig production systems.

It has been known that undercooking of pork causes parasitic infection in humans by the parasite *Trichinella spiralis*. The threat of trichinosis has posed a major limitation to the development of pig production.

d. The potential of pig production in developing countries

Compared with other livestock, the pig has some major potentials that include:

- Quick return on investment. With a gestation period of only 114 days, an average litter size at birth above seven, 5% pre-weaning mortality rate, an average weaning age of six weeks (4weeks in Europe), a high growth rate and a short generation interval, the pig is one of the most productive livestock species, bringing returns within a short space time
- Pigs can be raised for their entire lifetime in enclosures.
- Genetically, pigs are superior to ruminants in converting feed to meat. Efficiency of pigs is recorded as twice that of ruminants.
- The white meat of pigs is particularly suitable for processing, especially with salt and spices, giving a product with a very long shelf life. A long shelf life means a product can reach a wider section of consumers.
- Production of pigs in confinement assures a pig farmer of manure and effluent, needed to fertilize fishpond and crops.
- Owing to the pig's relatively small size, farmers without refrigerators find it easy to slaughter a pig and consume most of the meat while it is still fresh. The smaller size thus provides for flexible marketing and consumption.
- Pork is less variable in tenderness, juiciness, color, aroma and flavor than are beef and lamb, so that age, breed and environment differences have little effect on pork quality.

LO 1. 1. Identify pig breed

- **Topic 1. Identification of pig breeds**

There are many types of pig breeds in the world. The following breeds are found in our region:

- Local breed
- Large white
- Landrace
- Pietrain
- Duroc
- Hampshire
- Tamworth
- Wessex saddleback
- Saddleback
- Combrough
- Large black
- Middle white

Local breed

Description: In truth, this pig is derived from disordered crossbreds between European breeds, especially Spanish, imported in the early 19th century by missionaries from Mediterranean regions. The live-weight of the adult can reach 100 kg in a rational farming. Small and often black.

Figure1: Local breed

Figure2: Local breed

Large white

Description: This is a large pig, with a parallelepiped elongated body, with erected ears, with strong limbs. Coat is uniformly light, white, without blemish, with white hair on a white rind; adult weight is respectively of 280 and 320 kg;

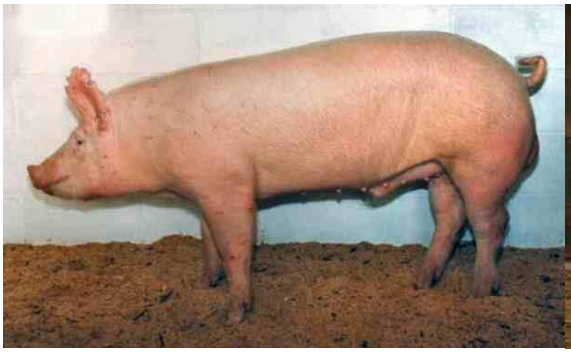


Figure 3: Large white boar

Figure 4: large white sow

Landrace

Description: this breed is characterized by a long body, white hair on a white skin. Ears are horizontally directed forward, long head with concave profile. Its weight in adulthood varies from 280 kg sow and 320 kg for boar.

Figure5: Landrace boar

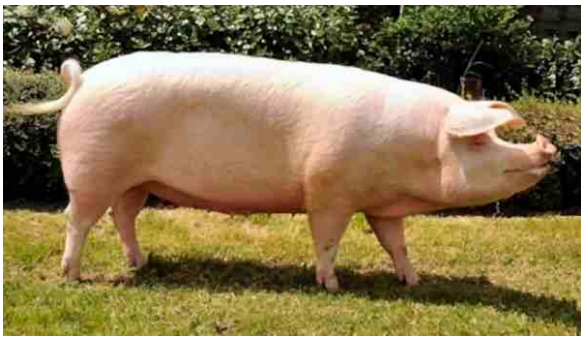


Figure 6: Landrace sow

Pietrain

The Pietrain pigs come from a town called Brabant in Belgium. It originated from Norman pigs, and its mutation was due to a genetic mutation in the halothane gene. It has high lean meat percentage, but a low growth, conversion and reproduction rate (requires a high level of feeding to increase its weight and reproduction).

On the other hand, it has the highest percentage of prime cuts, but with quite a lot of intramuscular fat. It is one of the breeds that provide most PSE (pale meat, soft and exudative).

It is considered to be one of the most muscular breeds in the world as well as having optimum qualities as in ham production, and adapting well to the different modes of operation.

This race is the only one that does not produce fat in their flesh, so that the relationship between muscle weight and lean meat percentage is the highest. It produces 83% meat, so it is widely used in cross-breeding, to improve other breeds.

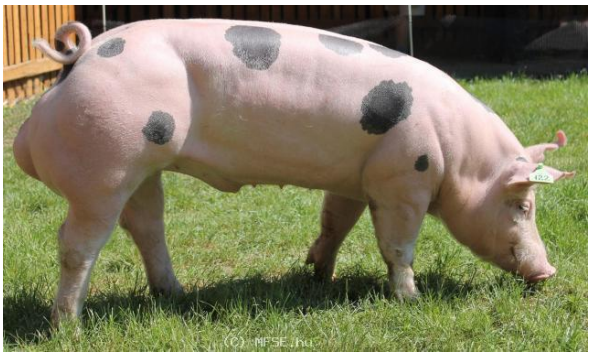


Figure 7: Pietrain boar

Figure8: Pietrain sow

Duroc

The Duroc breed was developed in the USA, and is thought to have been derived from red pigs originating from Europe in the early 1800s. It was originally called the Duroc-Jersey, as it developed from a very large breed called the Jersey Red (a red hog from New Jersey state) and a line of smaller, early maturing red pigs from New York state called 'Duroc'.

The Duroc became one of the breeds of pigs in the USA that went on to have a significant impact on commercial pig genetics throughout the world.

Figure 9: Duroc boar

Figure 10: Duroc sow

Large black

The Large Black breed was developed from the black pigs of Devon and Cornwall and the European pigs found in the East Anglia area in England.

In the early 1900s the Large Black was used for the production of pork in outdoor operations. Its coat color makes it tolerant of sunburn, and its hardiness and grazing ability make it an efficient meat producer. Large Blacks are also known for their mothering ability, milk capacity and prolificacy. The breed is known for its good mothering ability.

Early selection was toward the bacon type.

Figure 11: Large black pig and their litter

Tamworth

The Tamworth originated from the town of Tamworth in Staffordshire, England, and is regarded as one of the early traditional English breeds.

In the early 1900s the Tamworth was used mainly for bacon production. Its coat colour makes it tolerant of sunburn, and its hardiness and grazing ability make it an efficient meat producer well suited to foraging in extensive free range systems.

Figure 12: Tamworth pigs.

Wessex saddleback

The Wessex Saddleback originated from Dorsetshire, England. In England in the middle 1900s the Essex Saddleback and Wessex Saddleback were combined to form the British Saddleback, so sadly the Wessex Saddleback as a unique breed is no longer found in England.

In the early 1900s the Wessex Saddleback was used mainly for bacon production. Its coat colour makes it tolerant of sunburn, and its hardiness and grazing ability make it an efficient meat producer well suited to foraging in extensive free range systems.

Figure 13: Wessex saddleback boar

Figure 14: wessex saddleback sow

LO.1.2. Characterize pig breeds

- **Topic1. Characterization of pig breeds**

Local breed

Potential productivity: It gives meat. (70% of live-weight)

Hardiness and environment: it is quite resistant, tolerant to food deficiencies.

Large white

Potential productivity: It produces a very good quality meat (75% of live- weight)

Hardiness and the environment: It is known for its resistance and easy adaptation to various climates and environment. It ideal temperature is between 12 and 15°C.

Litter size

Decades of performance recording and rigorous selection has made the Large White more prolific than most rare breeds. Average litter size is around 11-12 piglets/litter.

Landrace

Potential productivity: this breed is called "butcher pig". Meat: 70% of live-weight.

Hardiness and environment: its optimal temperature is between 12 and 15°C. Little resistance, demanding fresh environment.

Pietrain

The main characteristics:

Their structure and bones are quite adequate, equipped with stiff short, hair and with a reddish hue around the black spots.

- Male pigs usual weigh between 260 and 300 kg, and females between 230 and 260 kg

- It is white in color, with irregular black spots.
- **Head:** not very heavy, short, concave line, and the fleshy part of the face is underdeveloped
- **Ears:** rather small, situated towards the front of the head, with the tips folded upwards.
- **Back:** very long and wide, with curved shape.

Duroc

Their main characteristics:

- Large solid size.
- Reddish brown color.
- Drooping ears.
- As well as its production characteristics.
- Fast growth rates.
- And lean carcasses.

Large black

Now the breed is characterized by:

- Great length
- Depth of body.
- The heavy drooped ear is also a characteristic of the breed. In fact, the ears are so large that they cover much of the face and seem to obstruct their sight.

The disadvantages of the breed are that they do not have the growth rate and early maturing characteristics of the commercial breeds, and the black pigmentation of the skin is not removed by processing.

Tamworth

Their main characteristics:

- Good length and depth of body.
- Reddish-gold colour
- Long snout is also strong characteristics of the breed.
- Very alert nature and good mothering ability.

The disadvantages of the breed are that they do not have the growth rate and early maturing characteristics of the commercial breeds, and while docile can be more difficult to manage than some other breeds.

Wessex saddleback

Their main characteristics are:

- Good length and depth of body.
- White belt and floppy ears are also strong characteristics of the breed.
- Very docile nature and good mothering ability.

The disadvantages of the breed are that they do not have the growth rate and early maturing characteristics of the commercial breeds, and the black pigmentation of the skin is not removed by processing.

Learning Unit 2: Sketch and equip piggery

LO.2.1. Select the site of piggery

- **Topic1. Site selection criteria for a piggery**

➢ **Legislation /code and regulation**

Animal buildings must respect the local government regulations which often do not allow certain types of buildings to be constructed in certain places.

➢ **Environment**

The physical environment that the pig lives in has a significant impact on its growth rate, general health and levels of disease. They need access to clean drinking water, and fed in a way that allows each pig to have its share of food.

Pigs like to be able to cool off in summer when the temperature and humidity rises, and use wallowing behavior as a cooling mechanism. If the pigs are unable to wallow in mud or water to cool off, they can become heat stressed.

Pigs love to keep warm in winter, and like to cuddle up to other pigs to stay warm. The like a dry and draft-free environment, particularly if there is some bedding to snuggle in to. The much prefer to sleep on a wood floor rather than directly on concrete.

Pigs are very susceptible to disease related to overcrowding poor ventilation can significantly increase the risk of pneumonia, particularly if they are confined to a small area where there are high ammonia levels from urine. Very damp conditions also tend to result in more cases of scours in piglets.

The ideal environment if a pig is kept indoors is to use a type of flooring or deep litter system that assists waste disposal, with good insulation of the walls and ceiling but with sufficient air flow and air quality to manage humidity and reduce ammonia levels.

Outdoor pigs should be provided with sufficient shelter that enables them to stay warm and dry in winter conditions. In summer they should have access to shade and a wallow.

- **Ecological condition**

  - **Rainfall**

Do not farm out of doors in high-rainfall areas more than 500 to 800 mm per year.

  - **Soil structure**

The soil type will determine the type of foundations that are necessary, and may also provide materials for walls. The land should be cleared of bushes, rocks and any other obstructions. Avoid damp areas or near creeks over flowing in rainy reason. The slope of land and drainage should be considered so as to avoid flooded; conversely, it is difficult to construct a building on land that slope too much.

The ground should be as permeable as possible to avoid mud and puddles of matter near the buildings. It must be sufficiently strong to ensure proper collection of urine and manure to facilitate cleaning and proper disinfection.It must be resistant to insulation. It should not be slippery to man and animals. It is essential to give the soil a slight slope (1to2 cm/m^2).

  - **Temperature**

In tropical regions, the problem is to protect animals against temperature and excessive sunlight. The room temperature depends on the outside temperature of nature, the wall thickness of the material (the insulating wall).

Temperatures must be within the thermic neutral zone for pigs preferably not below 15 °C and not higher than 30 °C.

- **Wind direction and air supply**

In choosing the site for building it is necessary to consider the direction of prevailing wind. The back wall should face the wind unless special ventilation is required. It ensures the circulation fresh air in room. The ventilation play important role in thermal regulation. The ventilation can be natural or artificial.

- **Site dimension**

The site should be large enough to facilitate the future expand of the farm

- **Distance from other farms**

Check out local zoning laws and regulations for a proposed location. If it is zoned other than agriculture, study the situation carefully before building the pig pen or pig house. Secure all required permits such as building, environmental and other permits required by the government before constructing.

- **Basic infrastructure and services:**

  - **Accessibility to road, water supply and power**

The buildings must be easier accessible and will not be too far from the human habitation as a safety factor because the monitoring is simplified. During implementation of farm building, the farmer has to think on market and accessibility of main road to facilitate feed and animal products distribution.

Water is a vital element for livestock, reason for why the infrastructures for water supply must be taken in consideration. The water supply should be near the building, as even if this consists of piped water, in case of an emergency such as a fire, it should not be too far away.

Climate

Climate affects many environmental aspects of a piggery's operations. Rainfall and evaporation rates affect the availability of surface waters. Options for using effluent also depend on local rainfall and evaporation. In most regions, effluent irrigation is needed for conventional piggeries. Climate also influences the required size of the effluent treatment systems and reuse areas, and the plants that can be grown on these areas. Prospective sites in high rainfall areas will usually require significantly more land for the treatment and reuse of effluent, and potentially have higher capital and operating costs. Climate also affects irrigation opportunity. For example, in winter-dominant rainfall areas, effluent may have to be held in storage for up to six months until the soil dries out sufficiently to allow effluent irrigation. In some areas of Australia, the net annual evaporation may allow piggery effluent to be removed solely by evaporation from suitably lined holding ponds. However, this concentrates salts in the sludge, limiting its suitability for reuse.

LO.2.2. Sketch a piggery

- **Topic 1: Selection criteria of a piggery**

Selection criteria must be based on type of piggery. Selection criteria for:

- Breeding piggery
- Fattening piggery
- Breeding and fattening

The construction of pig pens and houses will depend to a certain extent upon the climate and local circumstances (e.g. numbers of pigs to be kept). Local conditions are also important in terms for example of the construction site (waterlogged, exposed to wind, etc.) or the building materials and the skills available for the construction of the installations.

In hot, humid, or damp areas, breeze and shade are important factors.

The buildings should be as open and airy as possible. The walls of the pens should be so constructed that the wind can pass freely through for good ventilation. In some areas, animals should be protected against periodic temperature drops by ensuring that any heat can be retained.

A few important requisites for the pen are:

- It should not be draughty.
- Bright sunshine and heavy rain should not be able to enter.

- There should be no great variation in temperature inside the pens.
- They should be easy to clean.
- Provision should be made for storing the manure, litter and run-off for later use.

A pen satisfying these requirements will make a major contribution to the good health of the herd, counting towards lower piglet mortality, faster growth and increased feeding efficiency. The most suitable housing for less intensive holdings in tropical regions consists of a walled and roofed pen with a yard or run.

- **Topic2: Basic infrastructure and services**

A. Piggery component and specification
Pregnant sow pen

Pregnancy lasts 114 to 116 days. Sows are put in the pregnant sow pen about 24 days after service and are only moved to the farrowing pen seven days before they give birth. They stay in these pens for about 85 days. The pens can be similar to dry sow pens. Provided the sows are about the same size, up to five pregnant sows can be kept in one pen. To make sure that each pig receives the correct quantity of feed, provision should again be made for individual feeding. The construction of this pen is also similar to that described for boar pens. At least two and preferably three pens (to house a maximum of five pregnant sows each) are needed.

Farrowing pen

The farrowing pen is the most important pen on the farm. It has to be designed in such a way that the right temperature is provided for the sow and her piglets during the first seven to 10 days after birth, while trampling and overlying is prevented as far as possible.

It is advisable to build a farrowing house (large room) containing five or six farrowing pens. A five-pen house should be 13, 25 m long, and a six-pen house 15,5 m. The width in both cases should be 4 m. Each pen will be 2 x 2,25 m with a 1 m wide feed passage on the northern side of the pens and a 1 m wide dung passage on the southern side. The entrance must be on the

short side of the building with a 1 m space between the outside wall and the first pen. The space is linked to the feed and dung passages.

Each pen must have a farrowing crate where the sow is kept from one week before the piglets are born until they are weaned when they are 28 or 35 days old. The crate is placed in the pen allowing a space of about 1 m on the one side and 0.5 m on the other side. The feed trough (500 mm long and 200 mm high) for feed and water is on the feed passage side of the pen. If water is laid on in the farrowing house a water nipple can be placed above the feeding trough. The entrance gate is on the side of the dung passage.

A creep area must be provided for the piglets. A steel or wooden box, 600 x 600 mm which is large enough for the litter to creep into, can be placed next to the feed trough and the feed passage wall. The creep is important because it helps to reduce deaths as a result of crushing. It also provides a draught-free area where the piglets heat one another. In this way the creep area provides the required temperature of 27 to 32 °C for piglets during the first 10 days of life.

The farrowing house must have windows on both sides (on the long wall sides) to ventilate and cool the house. The temperature where the sow is kept (in the farrowing crate) should preferably not be higher than about 21 °C.

Gilt/ dry sow pen

The slats in dry sow pen should be designed so dung does not accumulate behind the sows and urine does not form puddles. If there is a common feeding and watering trough, the stalls should prevent gilts and thin sows from turning around and urinating or dunging in the trough.

Boar pen

One boar is required for every 15 to 20 sows. The boar should be kept separately in a pen with a minimum floor area of 7 m^2. However, if the pen is to be used for servicing purposes, a minimum floor area of 9.3 m^2 is required, with the shortest side not shorter than 2.1 m. This is necessary so that the boar may easily turn around in his pen.

The boar pen has to be cool, well ventilated and free of draughts. If possible, the temperature in the pen should never go higher than 22 °C for long periods. Boars that are exposed to temperature of higher than 32 °C may become infertile for up to six weeks thereafter. Sufficient roof insulation is essential for proper temperature control.

Fattening/Growers pens

The fattening or growers pig houses ***the young pigs*** after weaning. They are housed in groups of 10 -30 pigs. However, there should be provision for individual pens to isolate sick pigs. Figure 9 shows part of a fattening/growers unit.

Creep feeding area

This is a section in the farrowing pen where the feed for the piglets is put. A simple creep feeding area can be made quite easily by barricading off the corner of the pen. A small inlet door is put to allow piglets to enter and not the sow. This is done because the nutritional requirements of piglets are different from the sow and the feed for the piglets is very expensive to feed to the sow

B. Annexes

Those are:

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

- **Topic 3: Ground plans of a piggery**

Floor space requirements in square meters per animal			
	Covered area (m^2)	**Open paddock(m^2)**	**Maximum number per unit(m^2)**
Boar	6-7	8.8-12.0	1
Farrowing sow	7-9	8.8-12.0	1
Weaner/ fattening pig	0.9-1.8	0.9-1.8	30
Dry sow	1.8-2.7	1.4-1.8	3-10

Table1. Floor requirement space for pigs

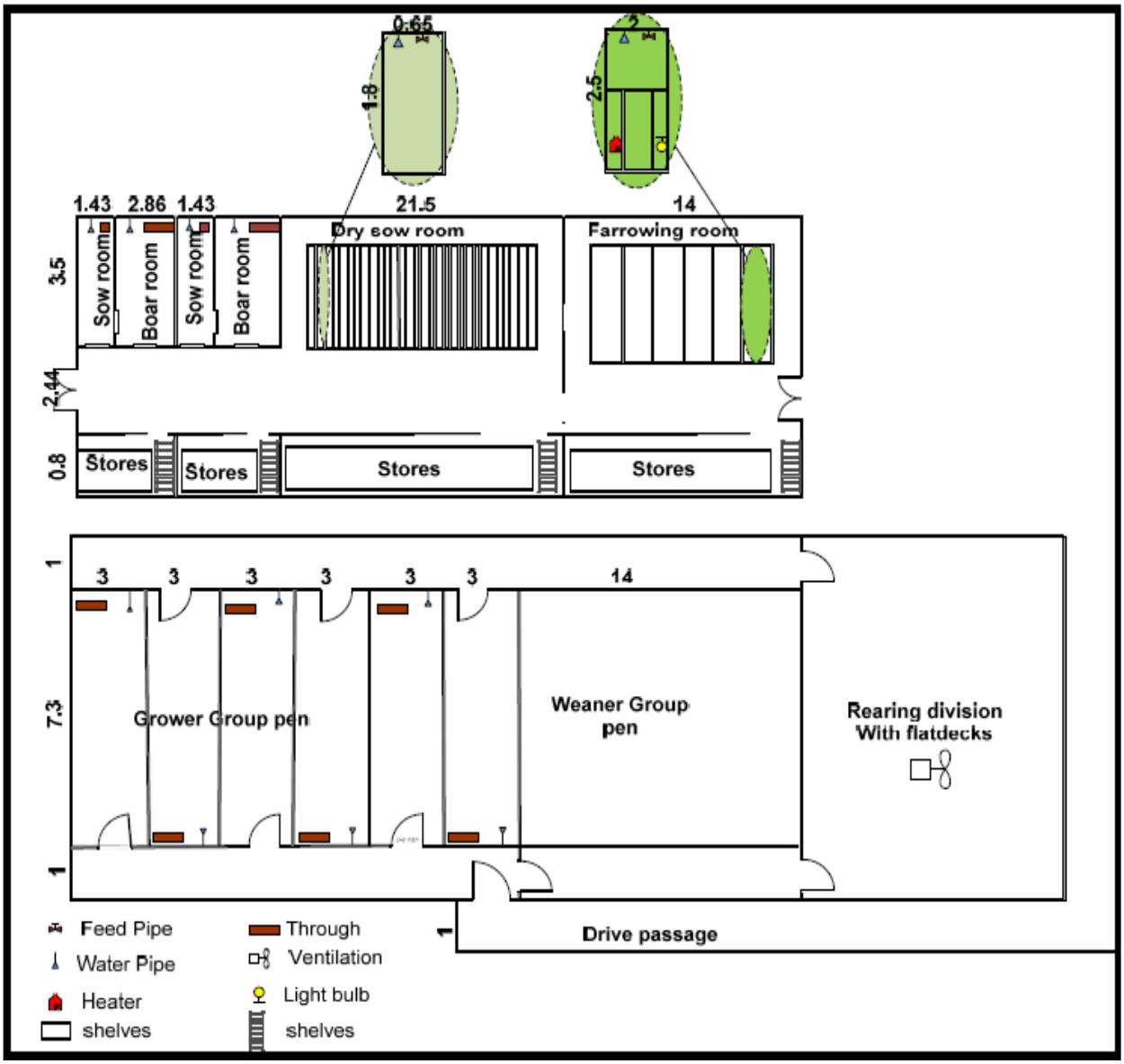


Table2. Ground plan of piggery

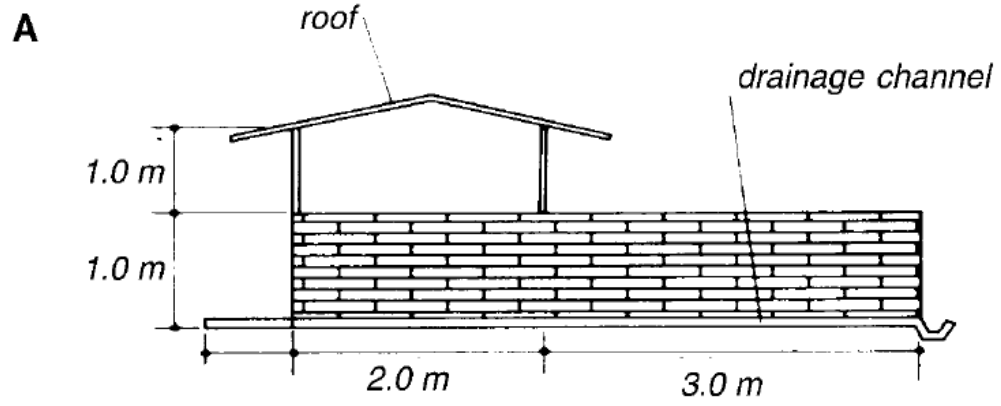


Figure15. Size of pen and run

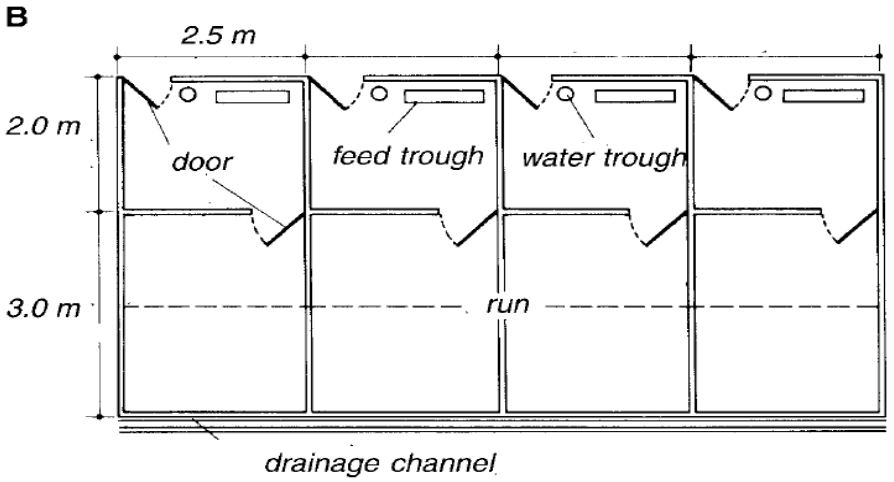


Figure16. Size of another pen and run

LO.2.3.Use construction materials and equipment of a piggery

- **Topic1. Selection of construction materials**

Selection criteria

To select materials for pig's shelters constructions will depends on:

- Cost
- Strength and durability
- Availability
- Hygienic
- Safety
- Vermin protection
- Degradation of materials in pigshed (animal damage, vermin, contaminants, condensation, corrosion and decay)

Types of construction materials

These materials include the followings:

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

General requirement of construction materials

The type of house depends on the system of production. Whatever system is adopted, the following must be put into consideration while constructing a pig house.

- **Roof**

It is important that the roof is able to protect the pigs from direct sunlight and rain. It should be preferably thick so that the underside remains cool and water tight.

The following materials can be used:

- Wooden materials
- Metallic materials
- Plastic materials
- Iron sheets

- **Wall**

The wall must be partially open to allow movement of air through the house. Some walls may be solid to give protection against the outside environment and predators.

Movable partitions can be put as walls. Such partitions if used can be moved and the layout is changed according to need.

The following materials can be used:

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

- **Floor**

The floor must have proper drainage such that it is possible to keep it clean and dry. Dung and urine on a damp floor create conditions idealfor the spread of disease organisms.
To achieve this, the floor should be made of concrete and sloping, or slatted so that water drains away. A slope of at least 5% (a fall of 5 cm for every lm) is recommended. Ensure that water troughs and feeders are placed at the lower end of the sloped floor so that the floor remains dry.

Slats as a floor for your pig house: Slats are a good way of keeping the floor clean and dry. However, they are less suitable for young animals because the feet get stuck between them. Slats can be made using different types of materials, which include wood, split bamboo, concrete, wires or expanded metal mesh.
The space between slats should be big enough to allow manure to drop easily but small enough to prevent the feet from passing through.
The following materials can be used:

- Wooden materials
- Metallic materials
- Fired bricks
- Cement and cement bricks
- Concrete and stones

Topic2. Selection of piggery tools and equipment

a. Feed Trough and water trough

Pigs should have free access to feed and water troughs depending on the size of operation. They can be incorporated into building design or constructed specially. They should be easy to clean and should be washed and disinfected at least once a week. These prevent the harbouring of disease causing agents and thus minimize infections.

b. water tank

The water tank should be large enough to store water used in different activities in the farm

c. Cleaning materials include:

- wheelbarrow
- hoes/ spade
- Brush

d. water bath

In very hot areas a water bath should be provided in the run for the animals to cool down in The bath should not be too deep: for older sows about 20 cm deep, for younger animals the water level can be adjusted accordingly. Care should be taken to prevent the young piglets from drowning.

The bath should be cleaned out regularly to prevent the development of parasites and diseases. Cement is the most suitable construction material, since a pit dug in the soil will quickly develop into an unmanageable mud bath.

Learning Unit 3: Manage pig farming

LO.3.1. Selection of pig breeds

Topic1. Analysis of Selection criteria

Selection is defined as the process of allowing certain animals to be parents of future generation.

- **Factors to consider when choosing a breeding stock/ animals to be parent of future generation**

For selection to be carried out effectively, the farmer should consider the following:

- Productivity of parent:

Select animal whose parents are good producers of pork or bacon …

- Adaptability:

Animal chosen should be able to adapt to environmental conditions without losing weight.

- Age:

Select animal which are still young but have attained sexual maturity. Avoid old animals as their productivity level decrease with increasing age; young animals can stay in production for a long time.

- Physical appearance:

Animals chosen should conform to the characteristics of pork or bacon producer.

- Feed conversion rate:

Animals chosen should have the ability to change food eaten into useful products such as pork or bacon.

- Health status:

Animals chosen should not have health problems. When selecting animals avoid those whose parents have inheritable diseases.

- Resistance against diseases:

Animals which show resistance to common diseases should be selected. This enables them to survive in case there in outbreak.

- Productivity:

Choose animal that can produce enough and for a long or large litter numbers and amounts of pork or bacon.

- Maturity period:

Select animals which have a high growth rate. This means that they can reach the production or breeding stage quickly. This will contribute to an increase in the number of animals on the farm. Early maturing animals can be sold off early and the farmer will be to realize profit in a short time.

- Fecundity:

Animals chosen should farrow down easily and regularly, prolific animals should be chosen.

- Temperament:

Choose those which have good temperament. This enables easy handling.

- **Topic2. Description of breed methods of selection**

Before selection is carried out effectively, one should consider the effects of genes on inheritance and environmental influence on the characteristics of individual animals. This greatly determines the methods of selection to be use.

The following methods can be used:

Mass selection

Selection based on gene influence, for example: length /depth of body, other than environmental is carried out using mass selection method. Mass selection is the choosing of individual purely on the basis of their appearance and allowing them to mate randomly.

This is the most reliable and efficient method when considering inheritable characteristics.

Contemporary comparison

Selection based on performance of individual boars and gilt in a herd is regarded as contemporary comparison. The animals compared are of about the same age. The method requires a high level of record keeping.

Comparison is normally carried out between males which have produced offsprings through mating. To be effective, it has to be carried out on large herds. In small herds where only one boar is used, the method may not be effective.

Collateral relative selection

This method of selection is based on the performance of many animals that are closely related. It should be used traits/ characteristics that are highly inherited and when there is limited interval between generations (very close animal).

Progeny testing

This is the same as performance testing. An animal is evaluated on the performance of its offspring after which it is selected or rejected. It is common when selecting breeding boar.

Tandem selection

Selection based on one trait at a time until it is improved and then another selected. For example disease resistance and then prolificity, etc.

Pedigree selection

This method is based on performance of the parents (ancestors). This requires presence of well-kept records. It is a useful method when the animal to assess is too young or the traits under investigation are sex-linked.

LO.3.2. Apply pig rearing techniques

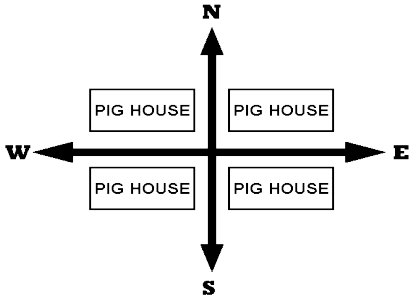
- **Topic1. General conditions for pig rearing**

Temperature

In tropical regions, the problem is to protect animals against temperature and excessive sunlight. The room temperature depends on the outside temperature of nature, the wall thickness of the material (the insulating wall).The orientation allows buildings protection against too heavy sun stroke, or against the rain and winds.

Orientation

The front side of the building should be facing EAST and the rear side should be facing WEST



This would prevent the animals from too much exposure to the sunlight. This orientation would ensure equal distribution of sunlight throughout the day.

Areas regularly visited by the outsiders should be situated near the gate. These areas are offices, feed storage, and market area and finishers pen. The farm road should be near the pig houses with alleys connecting them.

Ventilation

The health condition of the pigs can be affected by the specific swine house climate. Any disturbance in this climate can cause respiratory and intestinal diseases. The comfort zone of the pigs in the temperate region is between 18.5 - 20°C. Thus, it is very important to make the animals comfortable by designing a pig house with high roofing and proper ventilation.

Ventilation serves the following purposes:

- Replacement of foul air with fresh air or removal of odors
- removal of moisture
- removal of excess heat

Pig houses should be well-ventilated, however, avoid direct drafts and coldness.

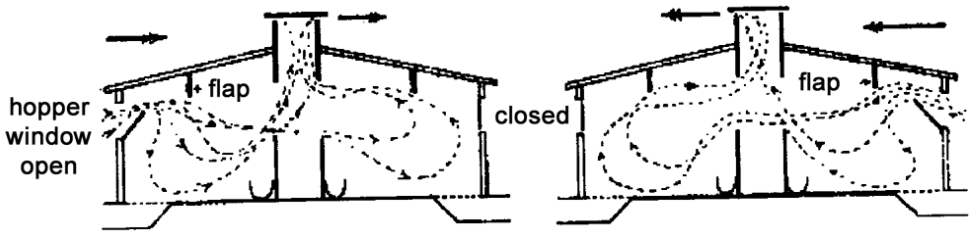
To achieve proper ventilation, consider the following factors:

- Inlets to serve as passageway of fresh air into the pig house.
- Insulation should be available to keep house warm when necessary.

- Supplemental heat during cold weather.
- Presence of vapor barriers.
- Removal of moist air through the outlets.

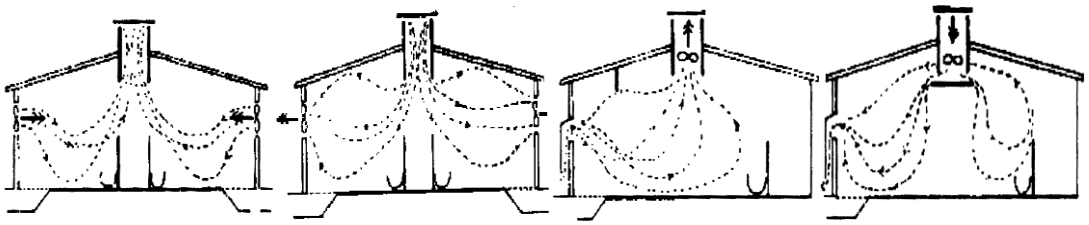
Different Designs of Ventilation System

- **Natural ventilation** is mainly a ventilation system which depends on wind effect and convection effect. Ventilation in wind effect is created by the wind-blown against one side of the building creating suction pressure. In the convection effect, ventilation is caused by a still or slowly moving air. One example of natural ventilation is the monitor type building.
- **Automatically controlled natural ventilation system** is a system where curtains or flaps are installed/constructed on the sides the building, and adjusted when the temperature inside the pen is high or low.



Curtains can be used to prevent draft and as a protection for the rapid change of temperature in the evening during inclement weather.

- **Fan ventilation system** uses a fan to maintain the normal temperature inside the pen. Ventilating or oscillating fans/blowers are the most commonly used equipment for putting air where it is needed. One problem with this system is that it entails additional cost for running the fan.



Normal air movement inside the house is very important. Thus, pig houses should not be constructed too close to each other. A distance of 10 - 15 meters between houses should be maintained for proper ventilation. However, this practice is too expensive. To make full use of the land, trees should be planted between buildings or buildings can be constructed near the rice fields, vegetable gardens, biogas lagoon, or fish ponds. This set-up is suitable for ecological balance to keep the surroundings cooler. As much as possible, the walls should have holes or G. I. pipes or steel bars or railings to ensure air flow. Although high perimeter walls are needed for security reasons, it is wiser to use barbed wire or posts with barbed wire.

Construction of very wide houses does not prevent ventilation problems. On the other hand, wide houses are not very efficient in heat exchange since accumulation of body heat by the pigs increases the temperature inside the house. To be efficient, the width of the house should not be more than 10 meters.

Light

The direction the building will face towards or away from sunlight (the hot rays of the sun should not come into the house) at different times of the day and during different seasons

- **Topic2. Methods of selection in rearing systems**

There are basically 3 systems of pig management. The classification depends on the levels of inputs in raising the pigs and therefore the system to be adopted depends on the capital available.

Extensive farming system

Backyard or scavenging is the most rearing techniques practiced in extensive farming system. This system is characterized by following tips:

- The pigs are completely left on their own to scavenge for food all the time. Usually the pigs are left to the compound of the owner and some form of supplementary feed either as family food leftovers or occasionally commercial pig feed is offered.
- Indigenous pig types are predominantly used because they are tolerant to low quality feeds and are resistant to some parasites such as ascaris.
- As might be expected, the growth rate and body condition of pigs under the scavenging or backyard system of management are generally poor.
- The meat quality of the pigs kept under this system is poor.
- It is difficult to control the spread of diseases under this system and there will be high piglet mortality caused by disease infections and other factors like malnutrition, predators, crushing, and chilling.

Semi-intensive farming system

- This is the system practiced under situations varying from backyard/scavenging conditions to conditions similar to that of an intensive system.
- Commercial feed is commonly used as kitchen leftovers are not sufficient to sustain the requirements of the pigs.
- The pigs are housed at night but are allowed to gaze out. Farmers are usually able to keep about 20-30 pigs under this system of management.
- 1f this system is well managed, the performance of the pigs will be as well as those managed under intensive system.
- It requires plenty or land and pigs must be confined in fenced paddocks.

Intensive farming system

Under this system:

- Pigs are kept in total confinement
- Herd size ranges from 50 sows and more

- Commercial feed is used
- There must be good husbandry practices with respect to feeding,hygiene, disease control and housing
- The growth rate is fast, there is good feed conversion ratio, high sow

- **Topic3. Animal identification techniques**

Importance

- Proper identification allows a good selection replacement program for gilts and boars by tracing their history and bloodlines.
- Performance of finishers can be easily traced to sows and boars that have been properly identified.

Methods of marking pigs

Ear tattoo

- Tattoo piglets when they are 2-3 weeks old.
- The equipment consists of pliers, digits (0-9), and tattoo ink.
- Place the proper digits in the pliers and apply pressure to the piglet's ear until the digit marks are visible. Smear ink on the digit marks to produce a tattoo.
- Shine a flashlight from behind the ear to make it easier to read the numbers.

Procedures:

- Place the tattoo character dies (letters and/or numbers) in the appropriate sequence and position in the pliers.
- Check that the tattoo is correct by testing on a piece of cardboard or other similar surface.
- Clean the fat/wax layer off the ear surface with alcohol and remove any hair. When tattooing piglets, clean the outside of the ear.
- If you are new to this technique, place a rubber ear-release stripper over the tattoo dies and close the pliers. Place a second stripper over the first. The pins should be visible

through the rubber stripper material, which acts as a spacer and prevents the ear from remaining stuck to the tattoo needles.

- Slip the pliers over the ear in the position where the tattoo is to be placed.
- Close the pliers with a quick, firm motion so that the tattoo character pins pierce through the ear. Open the pliers immediately and remove.
- Spread a small amount of tattoo ink on the tattoo area and rub it into the holes made by the pins.
- The excess ink will fade in time, while the ink in the holes of the tattoo will leave a permanent mark when the skin recovers. Tattooing ink has antiseptic properties that promote healing.
- After use, clean and dry the pliers and dies with a soft brush in water containing liquid dishwashing detergent. Do not use harsh solvents. Dry with a hair dryer.
- Store equipment in a clean, dry place.

Ear tags

- Plastic or aluminium tags are commonly used for replacement and breeding animals. They are easy to read even at a distance.
- Attach the tags to the piglet's ear by using pliers.

Procedures:

- Restrain the animal,
- Locate a suitable tagging site on the animal’s ear,
- Disinfect the applicator to decrease the risk of infection,
- Load the two halves of the tag into the applicator,
- Check the alignment of the applicator jaw,
- Position the applicator over the tagging site,
- Clamp the applicator shut firmly and quickly,
- Inspect the finished tag,
- Tag the other ear if desired,
- Let the piglet go,
- Check the tagging site for signs of infection for the next 5-7 days.

Ear notching

- This is the most common identification practice. It is usually done when piglets are one day old.
- Use a system with litter and individual pig numbers or just the individual pig numbers. Use a single system to reduce unnecessary notches on the ears.

Note: Ear notching is a simple and handy method to identify animals individually from a distance.
There are variations in systems, but each identifies the animal by an individual number expressed in the relative positions of a combination of notches in the ear rim. It can be used for all livestock species, but is particularly common in the **pig industry**.
It involves removing **V-shaped** or **U-shaped** portions of the ear rim in a specific and individual combination of positions, using a special ear notching pair of pliers. A sharp knife gives less predictable and controllable results.

Thus no two animals will have the same combination of notches. Not all operations may find it necessary to use individual numbers, but individual numbers are needed when any animal has to be recognized separately from others

Other marking systems may be used in combination with ear notches:

- **Universal Ear-notching System**

Ear-notching helps identify a pig's litter and which one of the litter it is, giving each pig a unique identity number. Notches are placed in one of five locations in the pig's right ear to show the litter number and in one of three locations in the left ear to show the individual pig number. "**Reading**" the notches allows producers, judges, and other swine professionals to know more about the pig they're viewing.

Correctly notching the pig is key. Each pig must be notched differently. So, to notch pigs properly, you must know the location and associated number of each notch.

The most common ear-notching system is shown in **Figure 17**.

The right ear has five locations for notches, and each location is assigned a number. Those five numbers are 1, 3, 81, 9, or 27. Look at Figure 17 to find each notch location. Except for the 81 notch, one or two notches may be at each of the other four locations.

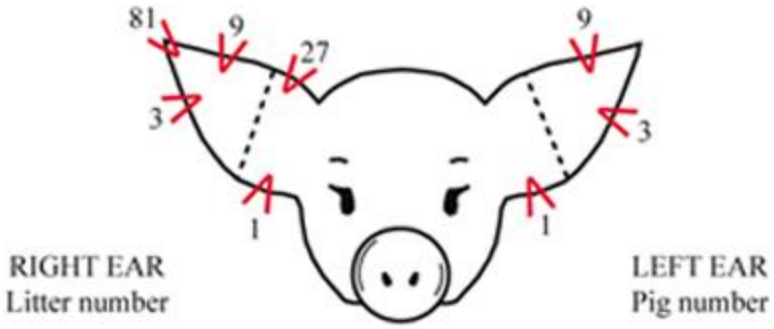


Figure 17. Universal ear notching system

To determine the litter number for a pig, add the numerical values assigned to each notch, as shown in **Figure 18***.*

Litter No. = 1+1+81+9 = 92

Litter No. = 1+3+3+27 = 34

Figure 18. Examples for litter numbers 92 and 34.

The left ear has three locations for notches, and each location is assigned a number. Those three numbers are 1, 3 and 9. Look at Figure 17 to find each notch location. As with litter numbers, the number values are added. *(*Figure19*)*.

The litter number is notched in the pig's right ear and the individual pig number in the pig's left ear.

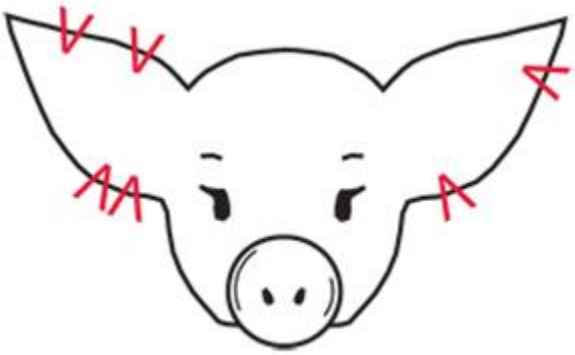
Pig No. = 1+1+3+9 = 14

Pig No. = 1+3+3 = 7

Figure 19. Examples for pig numbers 14 and 7.

- **Combining Both Ears**

After a pig is notched in its right and left ear, it has a unique identity. Examples are shown in Figure 20.



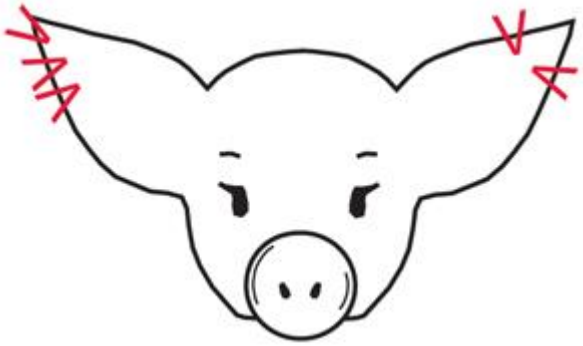


Figure 20. Examples of properly notched pigs

Litter No. 1+1+9+27 = 38 (pig's right ear)
Pig No. 1+3 = 4 (pig's left ear)

This pig's identity is 38-4.

Litter No. 3+3+81 = 87
Pig No. 3+9 = 12

This pig's identity is 87-12.

- **Techniques to Ensure Effective Notching**

Avoid placing a notch midway in the outside edge of either ear (that is, close to the dotted line indicated in Figure 17). Such marks can easily be mistaken for either a 1 or a 3 or a 9 or a 27.

NOTE: Remember, the reference to left and right ear refers to the pig's left or right ear, as viewed from the rear of the pig. Left and right does not refer the viewers' left or right in a situation where the pig is facing the viewer.

LO.3.3. Perform pig feeding

- **Topic1. Feed stuffs distribution**

Feeds for pigs are classified as: carbohydrates, fats, proteins, minerals, vitamins and water.

- **Carbohydrates**

These provide energy and are necessary for fattening. The following are the common feeds used in pig production as a source of carbohydrates:

- **Cereals and cereal products**

Corn and cob meal: This is a meal made from the whole maize cob while feeding pigs on this meal, farmers must know that it has only about two-thirds the nutritive value of maize. It is commonly used as feed for sow and boar.

Maize or corn: Of all cereal grains, maize is one of the richest in carbohydrate and fat.

- **Proteins**

This is a nutrient required for forming muscle, internal organs, skin, hair, hooves and also milk in adults.

Sources of protein

- **Blood meal:** this is one of the common sources of protein during the formulation of pig feeds. It can be used at a rate of 5 **%**of the feed ration.

- **Cotton seed meal:** this is another good source of protein. However its inclusion should not exceed 10% of the ration because of the risk of gossypol poisoning if it is fed in excessive quantities.

- **Fish meal:** This is another source of animal protein, and its inclusion in the ration should not exceed 10% this is the best source of animal protein for pig rations.

- **Meat and meat plus bone meals:** This one can be used at the tale of 5-10% of the ration. Farmers must always exercise caution while feeding pigs with meat left overs as pork left over from eating places may serve as a source of disease.

- **Milk and milk by-products:** These can also be used as a source of protein and ratios vary from 10-30% of the ration

- **Soya bean meal:** Soya bean is best source of plant protein for pig feed formulation. Its quantity should not exceed 10% of the ration.

- **Minerals**

Most essential minerals for pigs are calcium, phosphorus and iron.

Calcium and phosphorus can be fed to pigs by including bone meal in the ration Iron is very important especially in piglets and can be given to pigs by allowing them access to clean red soil otherwise iron sulphate can be given to the pig as an oral formulation or as an injection.

Note: Other nutritional requirements include vitamins which must be purchased and put in the feed ration as feed additives; Water must always be available to the pig and water containers must not be empty at any one time.

- **Topic2. Feeding practices**

A. Feeding of boar, dry sow and gilt

Boars and dry sows may be fed on rations containing 14% crude protein. Water must always be available for the boar.

B. Feeding of Pregnant sow

During gestation the sow is limit fed for 2-3 Kg per day of a 14% protein diet (Sow and weaner meal). Close to farrowing, maize bran may be added as 25%and this will be mainly the source of energy. Maize bran will also increase bulk and this prevents constipation. Water must always be available for the sow.

C. Feeding of lactating sow and litter

Bulky ingredients should be removed from the sow ration soon after farrowing. Sows are fed on rations containing 14% protein and those nursing large litters need full feeding during lactation. Sows that finish lactation with excessive weight losses have delayed estrus beyond the usual 3 to 7 days post weaning. Sows nursing fewer than eight piglets may be fed an amount of 3 kg per day with an added bonus of 0, 25 kg for each piglet being nursed

D. Feeding of young piglets

Each newborn piglet should be fed on colostrum within the first 18 hours after birth. If the sow is hostile, bottle feeding of the colostrum to the piglets is recommended.

Sow's milk does not contain enough iron to meet the requirements of baby pigs. Iron should be given to baby pigs within their first 3 or 4 days to prevent anemia.

Creep feed: starting at one week of age, piglets should be given creep feed. Creep feeds should be fed dry and piglets prefer feeding them when pelleted. Water should always be available Creep feeds are commercially available in feed meals. It is very important that the creep feed used between one week and three weeks of age contains 20% crude protein. At 3 weeks farmers may switch to starter feed which contains 18% crude protein and this is fed to the piglets until they reach weaning age where the weight will also be about 15kg

E. Feeding of weaners

After weaning the pigs should be switched from the creep feed to a lower cost pig grower feed which contains 16% of crude protein

Clean fresh water should be available to the pigs at all times

F. Feeding of grower and finisher pigs

Growing pigs should be fed to appetite if the farmer can afford. This gives a faster growth rate but it is expensive. Finishing pigs should be limit fed on a scale of body weight. Restricted feeding avoids development of fatty carcasses.

Growing pigs can also be limit fed as follows:

Body weight (kg)	**Amount of feed (kg per day)**
20	1.2
40	1.7
60	2.0
80	2.3
100	2.5

Table2. Feeding of grower and finisher pigs

G. Watering pig

Pig should have free and convenient access to water, beginning before weaning. The amount of water required varies with age, type of feed, environmental temperature, status of lactation, fever, high urinary output or diarrhea. Normally, growing pigs consume 2-3 kg of water for every kg of dry feed. Lactating sows consume more water because of high water content of the milk that they produce. Water restriction reduces performance and milk production and may result in death if the restriction is severe.

L O.3.4.Manage pig reproduction

- **Topic1. Selecting boar and sows for breeding**

1. Selection of breeding gilt/sow

It is extremely important to select a good boar since it contributes half the quality of the herd. Areas to be consider while selecting breeding Gilt:

- It is better to start a pig unit with gilts.
- They should be selected preferably at 4 –5 months of age.
- Crossbred gilts are better performers than purebreds.
- Look at appearance and background when selecting gilts
- Gilt must be at least 8 months old at first service

Appearance:

- Smooth shoulder, clean cut head, strong bones, full heart girth.
- Sound feet and legs to be able to withstand the weight of the mounting boar
- Seven well developed evenly spaced nipples on each side.
- Long straight back.

Background:

- Crossbred females (Largewhite x Landrace) are preferred to take advantage of heterosis/hybrid vigour
- Gilts should come from sows with very good records on all traits, docility, maternal ability, feed efficiency, longevity.
- Must come from a litter of at least 10.
- No physical abnormalities like hernia, lameness, atresia ani

2. Selection of breeding boar

It is extremely important to select a good boar since it contributes half the quality of the herd.

Areas to be consider while selecting breeding Boar:

- It is best to select a boar before 8 months of age.
- Take great care/detail in choosing a boar to buy because of the large number of offsprings to which he may transmit his characteristics.
- Ask about the history of the parents of the boar in addition to physical observation
- Boar must be at least 8 months old at first service.

Before buying/selecting a boar look at its appearance and background.

Appearance:

- Good body constitution.
- Long straight back, deep thighs, strong bones, and full heart girth.
- Sound feet and legs to be able to hold its own weight during mounting
- Good looking, non-inverted, and well placed teats – minimum of 12 teats
- Nobody defects like hernia (abdominal, scrotal), atresia ani (see glossary) one testicle not descended into the scrotum (Cryptorchidism), blind or inverted nipples, hermaphrodite, small inside toe.
- Well-developed testicles of equal size

Background:

- Must come from a litter of more than 10 piglets
- Weighed more than 12 kg at weaning (8 weeks)
- Dam should have high reproductive performance, be docile, have good feed conversion ratio, and good mothering ability.
- Check health records to know how many times it has been attended to by a Vet and for what condition.

- **Topic2. Management of boar**

Puberty time

A boar should be ready for service at 7 and 7.5 to 8 months of age. In the first instance, he should be introduced to a small sow that is well on heat and standing firm. This will prevent him becoming frustrated and allow for a successful first service and favorable sexual experience.

Mating time of boars

Boars are not normally sexually mature until at 7 months of age and should not be used. Test-mate at between 7 to 8 months may be done. The procedure is as follows; Take a gilt in estrus (heat) to the boar and observe the boar for aggressiveness and desire to mate.

Mating ratio

To avoid overworking boars the ratio of sows to boars should not be too large. The standard recommendation is 1 boar to 10-20 sows and gilts. However, this must be related to peaks of service activity. In units where boar numbers are low, it may be beneficial to allocate two days each week instead of one for weaning sows so as to spread the work-load of the boars.

Culling

There are different factors that can cause the culling of boars in the herd. It includes:

a. Bleeding penis

- This may be due to an injury incurred:

- During copulation
- From fighting
- From other causes

- Infections of the urogenital system may also cause bleeding from the penis
- Seek the advice of a vet to determine if:
  - The problem can be surgically corrected
  - The boar should be culled

b. Abnormal penis

- There are 2 common abnormalities:
  - Tied penis: A small piece of tissue ties the penis to the skin sheath surrounding it (penis)
  - Small limp penis
- Such boars cannot enter the sow
- The best option is to cull such boars

c. Degeneration of testicles

- Observe for clear differences in size or shape of the testes
- This may lead to a reduction in boar fertility
- Such a boar should be culled

d. Decreased libido (sex desire)

- This may be caused by:
  - Injury to the feet or reproductive system
  - Prior painful mating experience
  - Bullying by large sows
  - Hormonal deficiencies
  - Housing with a very dominant boar
  - Other causes

- Cull such a boar

e. Lameness

- Lameness may be caused by:
    - Bone fractures
    - Illness of the joints or **Arthritis**
    - Other causes
- Cull such boars

- **Topic3. Management of sow and gilt**

Sow and gilts are the basic units in pig production, sows that are efficient in reproduction make a profitable pig herd

Gilts should be managed so as to:

- Reach puberty at an early age
- Continue showing signs of heat (estrus cycles) regularly until they are served
- Conceive readily at first service

Puberty time

Attainment of Puberty

- Most well managed gilts reach puberty between 4.5 and 6 months of age
- It is advised to delay serving such gilts until 7 to 8 months of age
- Serving gilts too young impairs their development and productivity
- Cull gilts that do not attain puberty by 7.5 months

Heat detection

- **Signs of Heat**

Gilts in estrus exhibit certain behaviors and physical signs, which include:

- Aggressively seeking out a boar
- Restlessness
- Vulva swells and reddens
- Frequent urination and vaginal mucus discharge

- Mounting others or when mounted it stands still
- When pressed on the back by the farmer they stand still (standing reflex)

Figure21. Showing standing reflex

Mating time

- Gilts observed on heat in the morning (AM) should be mated in the evening of the same day (PM)
- Gilts detected in the evening (PM) should be mated in the morning of the following day (AM). This is what is called the AM – PM rule.
- Gilt once mated should be brought back for a second mating twelve hours after the first mating.

Note:

- Keep an accurate record of the date when the sow/gilt was served
- From day 20 to 21 after service, observe the pig for signs of heat, if no signs are observed the animal is most likely to be pregnant

Management during Pregnancy

- Ensure good health

- Keeps the pregnant pig in a well-ventilated clean building without a lot of direct wind blowing onto it
- Keep the bedding dry all the time
- Provide enough space
- If they are kept in groups make sure they are not more than 10 pigs per pen
- Avoid long distance travel by pregnant pigs
- If kept outside on pasture make simple structures to protect them from intense heat or heavy rainfall
- Rotate them in the paddocks to avoid build up of diseases
- Regularly deworm
- Avoid excessive feeding which makes them too fat. Such pigs experience difficulties during farrowing.

Management during the farrowing

1. Signs of Farrowing

Observe the sow for the following signs which show that it is about to give birth:

- The sow becomes restless about 24 hours before farrowing.
- There is a distinct swelling of the vulva
- The teats are turgid and small amounts of milk come out when you press the teats
- The sow builds a nest if bedding is available.
- It lies down and abdominal contractions may be noticed
- A bloody fluid will come out from the vulva

2. Management During and Immediately after Farrowing

- Most times the sow will farrow on its own without any problems
- The sow should not be disturbed unless it is necessary
- However, the farmer is advised to be present and observe the sow during farrowing in case it becomes necessary to give assistance to the sow or the piglets

3. When may Assistance Become Necessary?

- Some sows especially gilts injure their piglets during farrowing
  - Remove the piglets until farrowing is completed
  - Return the piglets after the sow has settled down.
- Piglets may be born when they are all covered in membranes.
  - Such piglets will not start breathing
  - If breathing does not start, follow the procedure outlined in Figures

Figure22. Clear the membranes away for the piglet to begin breathing

Figure23. Massage the chest area

Figure24. Hold it hind legs and swing it gently

- Sows may kill the piglets by lying on them.
  - Remove the piglets to safety
- Some piglets may be too weak to suckle or fail to locate a teat
  - Show such piglets to a teat
- The length of the navel cord may be excessively long
  - Shorten such navels by cutting off a piece, and dip the end attached to the piglet in an iodine solution to prevent infection

- **Farrowing Process**

- Farrowing takes 4 - 5 hours on average, but may be shorter or longer than this.
- When farrowing the sow usually lies down and pushes out piglets.
- Piglets come out with their front feet first or hind legs first. Either is normal.
- Ensure that each piglet has access to a teat to take colostrum (the first milk). Colostrum contains antibodies that give the piglets immunity. This is very essential for piglet survival.
- Remove the afterbirth shortly after it is dropped
- After farrowing the sow should be left alone as much as possible.

Farrowing process (Head first or hind feet first are all normal)

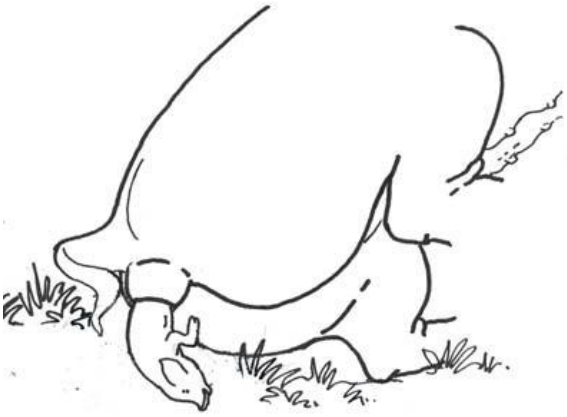


Figure25.Head first

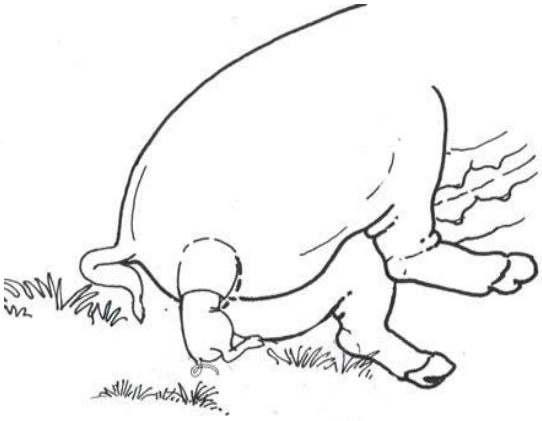


Figure 26.Hind feet first

Problems Related to Farrowing

- Lack of contractions of the uterus (uterine motility)
- Failure to expel the afterbirth (Retained placenta)
- Abnormal presentation of the piglet within the birth canal (Mal-presentation of piglets).
  - Farmer should reposition such piglets using a clean disinfected arm with gloves
- Nervous or hysterical sows/gilts
  - Such sows/gilts stand up and lie down during farrowing and may injure the piglets.
  - Piglets should be taken away as they are born and returned later when the mother has calmed down.
- Partial or complete absence of milk flow from the mammary glands. This condition is referred to as agalactia and may be caused by:
  - Painful conditions of the teats
  - Anything, which disturbs milk ejection from the udder.

- Some form of poison from non-specific infection

Treat with antibiotics and hormones (e.g. Oxytocin and Prolactin)

- Inflammation of the udder due to infection by bacteria. A condition called Mastitis:
  - The udder is congested, hot and painful
  - Sow may not allow piglets to suckle due to pain
  - There may be no milk secretion or milk let down
  - Control by keeping the pen dry and clean
  - If the animal has a fever it requires an antibiotic injection
- Inflammation of the uterus due to non-specific infection.
  - This condition is referred to as metritis and it occurs especially in cases of:
    - ✓ Retained placentas, abortion and dead piglets within the uterus
  - The signs which are usually observed 2 – 5 days after farrowing include:
    - ✓ Fever
    - ✓ Sticky, white-yellow discharges from vulva with foul smell.
    - ✓ Arched back due to pain when walking.
    - ✓ Slow and uncoordinated movement.
  - Seek assistance of a veterinarian to:
    - ✓ Remove placentas or dead fetus
    - ✓ Flush the genitalia with mild antiseptic
    - ✓ Insertion of uterine tablets of antibiotics (pessaries)
    - ✓ Injection with antibiotics

Fostering

This is a management tool where piglets are moved between litters mainly to even out numbers among the litters. If the piglets are introduced into a particular litter this is called fostering on and the opposite is fostering off.

- Involves giving piglets to a sow other than its own mother
- May become necessary in the event that
    - A sow dies during or soon after farrowing
    - A sow falls sick at farrowing and cannot produce milk
    - A sow produces more piglets than the number of teats she has
    - A sow produces an excessively large litter and has poor milking ability.

- If there is a sow which has farrowed within 3 days
    - Adjust litter size for the number of functioning teats or milking ability of the sow
    - Move the larger piglets to a the foster sow
    - Move piglets before they are three days old
    - Make sure they have received colostrum from their mother before you transfer them
- To ensure that the foster sow does not recognize and reject the fostered piglets cover the smell of the piglets so that it cannot recognize its young by smell by:
    - Smearing all the piglets including her own piglets with a strong smelling substance like iodine
    - Soaking all the piglets thoroughly in a salt solution
- Observe the foster sow as you go through this process to ensure that it is not battering the fostered piglets

Culling

In order to maintain overall productivity in the herd, it is important to have culling policy so that sows are removed at the correct time. In the majority of cases the reasons for culling sows will

be obvious. E.g.: lameness, other injury, farrowing problems, poor litter size, poor mothering ability and low fertility. However, the performance of a sow which regularly produces a good litter will eventually start to decline with age, probably around her tenth litter. If she is producing well, a good guide to allow her remaining in the herd until her performance falls below the average of the gilts in the herd. At the same time it is important to have a supply of pregnant gilts available to replace sows that need to be culled.

- **Topic4. Methods of services of pigs**

1. Natural mating

Male animals have the natural ability to detect female animals on heat. Once detected, the male animal mounts the female and deposits the sperms in the vagina. Natural mating takes places during the act of copulation by the penis. There are two types of natural mating:

- **Pen breeding:** In pen breeding, a boar is left to run with a group of sows as opposed to keeping the boar in a pen to which sows on heat are brought for service. Pen breeding requires less labour and there is less stress on the boar ingetting a large number of females mated to him. When using pen breeding divide sows or gilts into groups of 8-10 and one boar be put with each group. It is advisable to rotate boars among groups every 12 -24 hours.
- **Hand breeding:** This is where the pig on heat is taken to the boar for service. The boar is kept in a separate pen it has an advantage that it is easy to know the exact breeding date.

2. Artificial insemination (AI)

Artificial insemination (AI) involves the collection of semen from a boar and then the introduction of semen into a sow or gilt at a later stage by means of a catheter. This contrasts with natural service where a boar mounts a sow and introduces his semen.

- **Benefits**

The major advantage of AI is that it allows for the wider use and distribution of boars of high genetic merit. The ejaculate from one boar can be extended to inseminate up to 25 sows.

- **Other benefits of AI are:**
  - It overcomes the need to purchase, house and feed a boar. This is particularly pertinent to the small –scale producer who cannotjustifykeeping a boar for small number of sows, and who cannot afford a boar of good quality. The effective use of AI is especially relevant where small-scale producers are involved in group or cooperative pig development schemes, and their units can be served from a central boar holding Centre.
  - It prevents the transmission of disease from farm to farm by the sale and purchase of boars and on-farm reproductive diseases cannot be spread by boar to sows contact.
  - It overcomes the practical problems of differences in size of males and females. On occasions, this problem can severely limit the use of boars of high caliber.
  - It reduces the risk to farmer of handling boars for natural service.

- **Topic5. Management of young piglet**

Climatic condition monitoring

Weather conditions (temperature, humidity, solar radiation, wind strength, wind direction and precipitation) have a significant impact on the behavior of farm animals. Pigs have developed a wide range of thermoregulation behavior that is particular for this species. With increases in temperature, the most characteristic behaviors for pigs are decreased activity and increased wallowing in wet surfaces. More over the hat stressed animals increase water intake and reduce feed intake. Local characteristics such as a temperature, humidity, precipitation and soil cover are the main abiotic and biotic factors affecting animal behavior.

Iron Supplementation

Oral Iron Supplement is an iron supplement for newborns. The manufacturing of Oral Iron Supplement uses a special, cheated process that bonds the available iron, thus allowing the piglet's system to safely absorb the iron in order to raise and maintain adequate iron levels.

The ideal method of administering Oral Iron Supplement to the newborn piglet is to rub the liquid iron onto the udder of sow. when the piglets move from teat to teat they will slowly absorb the iron thus reducing the chances of any toxic reaction due to excessive amounts of iron.

No injections are required when using Oral Iron Supplement thereby eliminating chance of toxic reaction due to iron dextran.

Anaemia is caused by iron deficiency. This iron is needed for the formation of haemoglobin. This is an important problem, especially for young piglets kept indoors. At birth the piglets have about 50mg of iron in their body. They receive additional 1-2 mg/day from milk while they need 7mg during the first week. It is obvious that the quantity of iron decreases rapidly and if not supplemented. The piglets become very pale a few weeks after birth and their growth slows down.

This can be prevented by:

- Giving the piglet (3 and 10 days after birth) iron injection (1 and 2 ml respectively) IM preferably at neck muscles.
- Oral iron- paste containing iron is put in the mouth within 24 hours of birth
- Feeding compost- must be of good quality and supplied daily. Compost of poor quality may contain bacteria.
- Wood ash can also be put into the pen. This will not provide iron, but it does contain other important minerals.

Teeth trimming/ canine clipping

It is usually necessary to trim the piglets' teeth to prevent them biting the udder.

The piglets are born with needle sharp teeth which may injure the sow's udder and prevent the sow from letting the piglets suckle. The piglets would then be left to starve. Only the points of the teeth should be removed. If any more is removed there is a risk of damaging the mouth. When trimming the teeth the tongue of the piglets should be rolled back to avoid injuring it.

Procedure:

- Restrain the piglet by grasping the head with one hand.
- Force the mouth open using fingers on the same hand near the back edges of the mouth. Be careful that you do not choke the piglet.
- Use sharp pliers taking care not to injure the gums. Hold the clippers as perpendicular as possible to the teeth
- Completely cut off the teeth as close to the gum as possible
- After clipping the teeth on one side turn the pig to give access to the teeth on the other side of the head.
- Clean the pliers with a disinfectant after working with each litter of piglets

Procedure of clipping of the needle teeth:

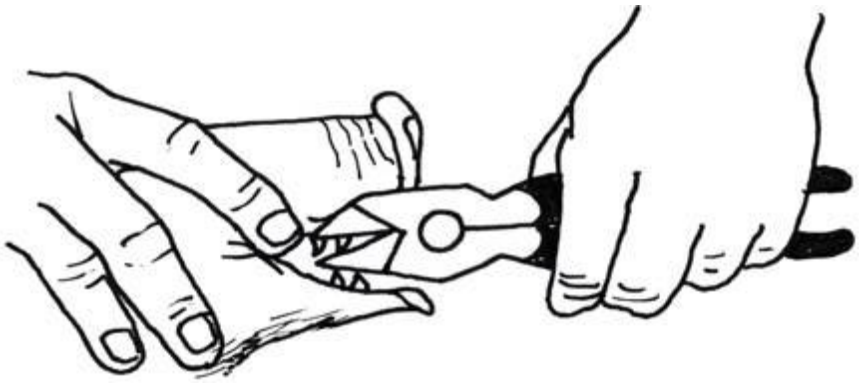


Figure 27.Teeth clipping

Tail Docking

- It involves cutting off the tail to leave a small piece about ½ inch
- It helps to prevent tail biting
- Tail biting can lead to injury and infection
- Tail docking should be done within the first 4-7 days after birth because:
  - The piglet is small and easy to hold
  - At this age other piglets are less likely to bite a newly docked tail

- The pig is well protected with antibodies obtained from colostrum

- **Procedure:**
  - Hold the piglet suspended by the rear legs with one hand
  - Using a sharp sterile knife cut off the tail to leave ½ inch from the place where the tail joins the body
  - Disinfect the wound.
  - Disinfect the knife after working with each litter of piglets.

Procedure of Tail docking:

Figure28. tail docking

Castration

Male piglets are castrated to prevent their meat from boar taint. Castration also makes them more manageable when they become sexually mature. Castration should be done in the first two weeks of a piglet's life. The animals should be fit and healthy. If this is not the case it is better to postpone the operation.

- Male piglets are castrated:
  - When they are not to be used as boars
  - To make docile for easy handling
  - To remove the male smell from their meat
- Castration should be done early before the piglets grow to 3 weeks of age because:
  - The piglet is small and easy to hold

- At this age piglets recover faster with minimal effect on growth
- The piglet is well protected with antibodies obtained from colostrum

- **Procedure:**

  - Hold the piglet by the hind legs as shown
  - Clean the scrotal area with a detergent or any disinfectant
  - Grasp the testicles and push them upwards to tighten the skin
  - Make a cut down the length of each testicle.
  - Cut only through the skin and white membrane.
  - The cut must be at the lower end of the scrotum to allow easy drainage of the blood
  - Pull the testicle through the opening, twist and scrape the cord
  - Treat the wound with an antiseptic e.g. iodine to prevent infection

Weaning

This is the process of separating the sow from the piglets or removing the piglets from suckling the sow's milk

It can be done:

- Early i.e. 3 – 5 weeks
- Late i.e. 6 - 8 weeks

Under production conditions weaning should not be done early because it requires:

- An expensive diet for the weaners
- High management standards

To avoid exposing the weaners to undue stress remove the sow from the farrowing pen and leave the piglets in the pen they are used to for some time.

Weaning should be done gradually probably over a four-day period:

- Cut back the daily feed allowance to just 3 kg
- This helps to dry the sow off conveniently

Alternatively practice Split Weaning:

- At the end of the 5th week remove the piglets that are above average in size from the litter
- Allow the small piglets to suckle for an extra 4 to 5 days
- This gives them a chance to take more milk and add on extra weight
- In any case they should not be allowed to suckle beyond 8 weeks of age.
- Split weaning reduces the intensity of suckling and allows a sow to come back to heat early after weaning.

- **Topioc6. Pig genetic improvement**

Cross breeding

In previous section, methods of pig improvement have been based on selection within breeds. There is, however another means by which the producer can attempt to genetically improve the performance of his pigs and this involves cross-breeding, that is, the mating of individuals from two separate breeds or strains. The two major advantages which may accrue from cross-breeding are:

- Exploitation of the phenomenon of heterosis which occurs when two breeds which are genetically different are crossed. If the cross-bred individual shows an improvement in performance above the mean of both parents it is said to exhibit hybrid-vigour.
- Complementarity or the ability to combine in one or more individuals the desirable characteristics of two or more existing breeds.

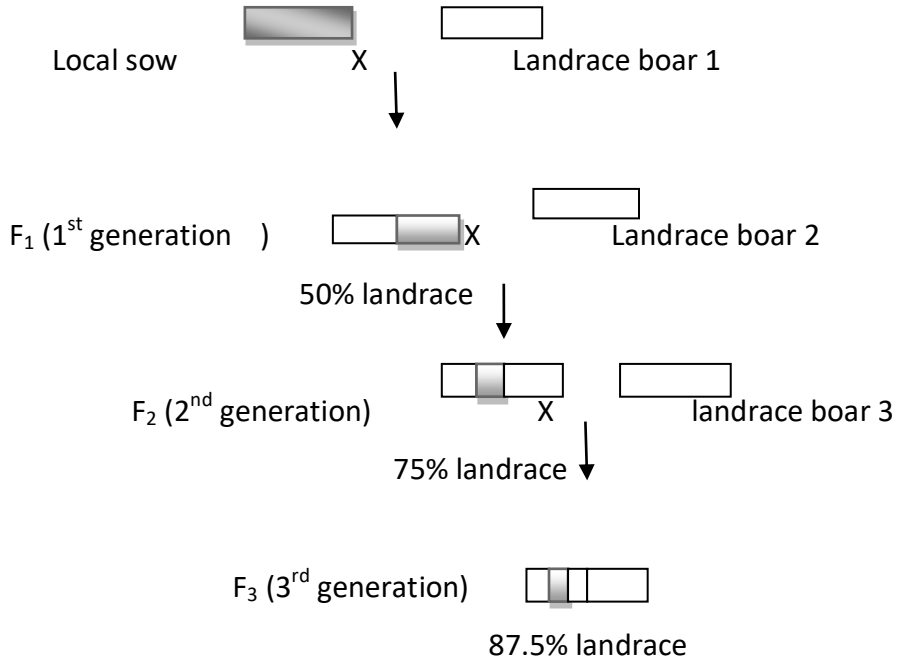
There are different types of cross breeding

1. Upgrading or absorption cross-breeding

Is a form of cross-breeding in which cross-bred females are crossed back to a male of a superior pure breed for several generations. For example, in the first generation a Landrace boar with desirable characteristics such as high growth rate and Local sow with good resistance to tropical

conditions. Subsequent generations of gilts are also mated with landrace boar or with the original landrace boar.

They will acquire more and more landrace characteristics as time goes on, while maintaining the basic local ones.



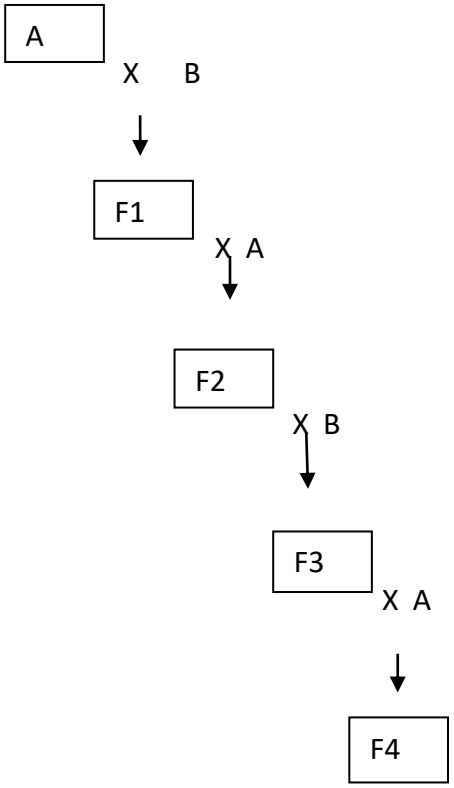
2. Back crossing

In a backcross system, gilts from a first cross are mated to a boar from one of the breeds in their own breed makeup. For example, black-baldy gilt might be mated to a large white boar. The backcross is most often used when a particular breed is well suited to the production environment such as indigenous breeds in tropical areas. Backcrosses yield maximum maternal heterosis but only 50 percent of maximum individual heterosis. The reduction in individual heterosis is due to the common breed makeup between sow and boar in the backcross.

3. Rotational/alternating cross-breeding

The aim of rotational cross-breeding is to combine 2 breeds while benefiting from hybridization effect and thus from heterosis, in each cross breeding. We first crossbreed the A breed female with B breed male, then we crossbreed the daughter with A 50% and B 50% with an A breed male, then we crossbreed the obtained grand-daughter with a B breed male, and so on, by every time alternating as a father an A breed male, then of B breed.

The father must of course be always different to avoid inbreeding. With that cross breeding type, we finally make a hybrid that has around 50% A, 50% B, by benefiting from heterosis effect.



4. Terminal cross-breeding (or commercial crossbreeding)

It is not really a crossbreeding technique, but rather a technical term. A terminal crossbreeding is a simple and direct crossbreeding between two breeds, to improve the production. The

offspring is directly sold and are not used for additional breeding (We crossbreed a large white with a landrace). It is therefore suitable for meaty animals.

5. Selection of breeds in pig genetic improvement

5.1. Genetic improvement

Genetic improvement (also known as genetic progress) in within-herd performance is a result of increasing the frequency of desirable genes and decreasing the frequency of undesirable genes in the herd. Genetic improvement from selection can occur regardless of the type of management, feed, or facilities used in the herd.

5.2. How genetic improvement is achieved

To obtain genetic improvement, the breeding value of the animals must be estimated fro the phenotypes (that can be observed or measured) of the animals themselves and (or) those of the relatives. The phenotypes may be performance records on the prospective replacement stock, performance records on the relatives of the prospective replacement stock, or a visual evaluation of the animals or their relatives. Visual evaluation is not recommended for traits which can be measured. The amount of genetic improvement obtained in each generation of selection depends on three items. These factors are:

- Accuracy of the phenotypic evaluation(s) or the performance records in predicting the animal's true breeding value or genotype
- Intensity or degree of selection based on the phenotypic evaluation practiced on animals
- Amount of genetic or true breeding value variation among animals for the trait under selection .

- **Topic7. Reproduction record keeping**

1. Technical reproduction schedule

First week after weaning breed the sow (Put the sow to the boar)

- 2 weeks before farrowing treat for internal and external parasites
- At 110 days after breeding, thoroughly wash sow and move to farrowing pen begin feeding high fibre ration
- From 111 days to farrowing observe the sow for signs of parturition
- Provide special care for weak or small pigs and for large litters
- Cull sows at weaning on basis of productivity, temperament and other economic factors

2. Reproduction cards

In order to monitor both the technical and economic efficiency of a pig farm, it is absolutely essential to keep some basic records. These should cover all aspects of the farm, so that evaluations can be made of boar performance, sow productivity, weaner growth and grower/ finisher efficiency. By looking at the recent history of the farm, each phase of production can be critical examined and weakness pin-pointed. It is then possible, based on facts, to plan rectify these weaknesses.

Many types of recording are available. Simple recording sheets which can be used are important because provide records for day to day , and these records can be then be used for compiling individual animal and herd performance sheets for assessment. For breeding, the first essential is to keep an accurate service record of all sows and gilts in the piggery. Farrowing and lactation performance details can then be kept on individual sow record cards.

All this information is available for transfer on to a sow lifetime record card, which enables an assessment of her contribution to the herd performance. This information can also be used to compile a record on individual boar performance.

As major differences in boar performance become evident, the lower performance boars can be removed from the herd. These data can then be combined together with details of pigs sold, to give an overall herd performance report. This allows the producer to monitor the performance of his herd on a monthly and six-monthly basis.

Different record cards are fund in the appendix n^{o} 2-6

3. Reproduction data collection and interpretation

Being organized is essential for timing insemination accurately. Use this information to develop your own records for effective service routines.

3.1. Why are records so important?

Setting up and following an effective heat detection and service pan for your farm helps you:

- Detect the signs of heat accurately
- Schedule insemination at the optimum times

This is essential for optimizing breeding performance and achieving the best results.

3.2. What should be recorded?

Make sure you record this information for each female:

- Tag number (weaning to estrus interval)
- Date and time of proestrus
- Date, time and duration of oestrus
- Date and time of first standing heat
- Date and time of all inseminations
- Projected and actual return dates

- Any other observations

3.3. Use the information

- Review recorded information regularly to determine any trends for your farm or for individual females
- Determine if your herd is generally a 2or3- day standing heat day
- Tailor the insemination routine accordingly

LO.3.5. Perform record keeping and interpretation

- **Topic1. Importance of recording**

In order to monitor both the technical and economic efficiency of a pig farm, it is absolutely essential to keep some basic records. These should cover all aspects of the farm, so that evaluations can be made by looking at the recent history of the farm, each phase of production can be critical examined and weakness pin-pointed. It is then possible, based on facts, to plan rectify these weaknesses. The total live weight of pigs leaving the farm is fundamental to profitability. Production is monitored from individual records of the sow,, sucking pig, weaner and grower-finisher and in each of these disease, treatment and mortality levels are recorded

Many types of recording are available. Simple recording sheets which can be used are important because provide records for day to day , and these records can be then be used for compiling individual animal and herd performance sheets for assessment.

Example of feeding record keeping is fund in the appendix n°2.

There are five reasons for producing information:

a) To improve overall efficiency

b) To maximize profitability

c) To produce end data that defines:

1. Production levels
2. Reproduction levels
3. Management achievements
4. Economics
5. The use of feed
6. Growth performance
7. The levels of disease
8. The levels of medicinal treatment

d) For epidemiological studies to understand problems

f) Finally as aids for daily use by management

In summary, the records can:

- Be used in determining profitability of various techniques used at the farm
- Be used to keep your memory on what you did and / or what happened
- Be used to compare the efficiency of use of inputs, such as land, labour and capital, for example when implementing a new/ alternative systems
- Help the farmer/ investor in improving the efficiency of farm's operations

- **Topc2. Major types of recording :**

The major types of records are:

- Identification/ physical
- Breeding
- Production
- Feeding

- Health/ disease and treatment records
- Financial

What is to keep record?

To keep record is simply to collect relevant information that can help you to take good decisions and to keep track of activities, production and important events on a farm.

- **Topic3.Interpretation of record keeping**

1. Identification records

- An identification method should be cheap, not harming the animal , reliable to read at distance of at least 2-3 metres and by preference be permanent.
- Identification of the animals is of course not necessary if a farm has only one animal of a certain species, sex, and age group.
- Intrusive methods of physical records or identification records are subdivided into 2 categories: permanent identification and non-permanent identification.

a) Permanent identification

- Tattooing (ear or under)
- Brand (hot iron, freeze and chemicals)
- Ear notching, punching
- Tags (EAR TAGS, FLANK-TAGS, TAIL-TAGS)

b) Non-permanent identification

- Collars or neck or leg straps (chains)
- Paint and dyes

2. Breeding records

The importance of breeding records is to measure the productive efficiency of the herd and to enable selection. The most important data in breeding records include:

- Pedigree/parentage (name or other identification of parents and grandparents)
- Fertility (dates of all services, dates of giving birth and the period between successive birth)
- Birth details (number and weight of newborns, was assistance necessary?/ perinatal deaths/ vitality score)

3. Production records

These records are useful in measuring the performance of the animals and the herd. It contributes greatly to the economic appraisal of the enterprise.

Production records are kept of:

- Animal products
- Animals which are slaughtered, in terms of for example weight, weaning age, and weight

4. Feeding records

Feeding records give information about the amount, type and quality of the feed. Feeding records can be used both for day to day management and adjustment of the feed ration. The important feeding records are:

- Produced and available fodder on farm; quantity and if possible quality of the different feeds. Including content of energy, protein and minerals

- A feeding plan which tells how much feed is required per day per animal in different age groups
- Left-over feed if any
- Spoilage

5. Disease and treatment records

They are necessary to keep track of the disease events in which each animal is involved during its lifetime. On basis of the disease and treatment records, success of interventions both for prevention and treatment can also be evaluated. Disease and treatment records can for example involve:

- Disease occurrence and date
- All handlings to cure diseases
- Vaccination
- Dipping/ spraying
- Treatment
- De-worming
- Postmortem

6. Financial records

The records of the costs and earnings related to the animal farming be kept for cash analysis and enterprise appraisal. They are simple overview over the family cash flow, which is the total economy in the household: what comes in? And what do we buy?

Learning Unit 4: Perform pig health and diseases control

LO.4.1. Identify specific pig diseases

- **Topic1. Specific infectious diseases of pig**

These are caused by tiny living organisms, which may be viruses, protozoa or bacteria

They produce toxins that destroy body tissues.

Diseases Caused by Viruses

Those of importance in pigs are:

- African Swine Fever
- Gastroenteritis
- Foot and mouth disease

1) African Swine Fever (ASF)

A highly fatal and contagious viral disease that has no known treatment or vaccine. This disease must be reported immediately to the Veterinary Authorities, as it is a "Notifiable disease".

Pigs infected with ASF show the following signs:

- High fever for about 4 days, which subsides, followed by marked reddish-bluish marks on the skin.
- Vomiting, inability to walk properly and huddling together.

Transmission

- Direct contact with sick pig, contaminated workers and visitors
- Contact with contaminated equipments, vehicles other domestic animals and rats.
- From wild pigs, warthogs and soft ticks
- Feeding on garbage containing meat of infected pig

Control

To avoid introduction of the disease into a herd:

- Keep all your pigs enclosed in pens
- Place a foot-bath at the entrance of the pig pen/farm to disinfect the foot wear of those who enter or leave
- Avoid feeding pigs on garbage containing pig products
- Boil garbage with meat products before it is fed to the pigs
- Bury or burn dead pigs
- Ideally slaughter the pigs, which have had contact with the dead pig(s).
- Disinfect the pens where the infected animals were
- Do not re-stock before 3 months have elapsed

2) Gastroenteritis (inflammation of the stomach and intestines)

- Affects all ages but causes very high mortality in piglets in the first week.
- Signs are basically vomiting and diarrhea leading to dehydration and emaciation.
- Controlled by observing strict hygiene
- Isolate the sick

3) Foot and Mouth Disease

- It affects all two-hoofed livestock, leading to loss of condition and death.
- It spreads fast within a herd. Its outbreak has to be reported to the Veterinary authority as it is a “Notifiable disease”.
- It is characterized by lesions on the mouth leading to salivation and lesions on the feet leading to lameness.

Transmission

Through contact with

- Sick animals and their products
- Contaminated materials or objects

Clinical Signs

- Fever
- Vesicles (blisters), which develop into ulcers on the gums and tongue and between the claws of the hooves (inter-digital space).
- The animal salivates excessively and may fail to eat. The animal is lame on the affected leg(s).

Treatment

- There is no effective treatment; however, symptomatic treatment for wounds can be applied.

Control

- Vaccination
- Control of movement of livestock and livestock products (Quarantine restrictions)
- Destroy all affected animals

Diseases Caused by Bacteria

The major ones are:

- Swine dysentery
- Swine erysipelas

1) Swine dysentery

- ✓ It affects all ages but there is high mortality in the young.
- ✓ Transmitted through contamination of feed with fecal matter.
- ✓ Clinical Signs: Bloody diarrhea.
- ✓ Treat with antibiotics (such as Streptomycin)
- ✓ Controlled by hygiene, isolation of the sick, quarantine of new entrants.

2) Swine erysipelas

Transmitted by:

- Contact with sick animals
- Contact with soil contaminated by faeces from other animals.

There are two types of signs:

- Acute signs, which include high fever, develop skin lesions (diamond shaped plaques on the skin).
- Chronic signs are characterized by inflammation of the joints.

Treat with antibiotics (such as Penicillin)

Control by observing strict hygiene

3) Anthrax

A highly fetal (high death rate) disease characterized by:

- High fever and sudden death

- Dark blood oozes out of all body openings

Treatment

- In very early stages, it can respond to antibiotics (Penicillin is effective)

Control

- Vaccination in areas where the disease is considered to be a problem

Note:

- Avoid opening animals, which have died suddenly and have blood oozing out of their bodies, as it may lead to spread of spores in the environment.
- Notify a veterinarian as soon as possible
- Dead animals should not be eaten as the disease affects man and other worm blooded animals

4. Pneumonia

- Affects the lungs and is caused by different agents, viruses, bacteria etc.
- Some agents may infect the pig simultaneously
- The signs include:
    - Coughing, laboured breathing and exhaustion
    - Fever
    - Loss of appetite

The predisposing factors for the establishment of pneumonia are:

- Poor nutrition
- Low temperatures and dump conditions in the pens
- Inadequate ventilation
- Infestation by lung worms

Treatment and Control of Pneumonia

- Can be treated with antibiotics, and sulphur drugs
- Controlled through:
  - Observing strict hygiene
  - Ensuring proper housing that is warm and well ventilated
  - Control of lung worms

- **Topic2. Specific parasitic diseases of pig**

Parasites are organisms, which live on other living things (hosts) and obtain food and shelter from the host. In so doing their harm the host by either:

1) Transmitting diseases;

2) Sucking blood or

3) Eating the food of the host.

Pigs have two types of parasites

1) Endo-parasites - found on the inside of the animal;

2) Ecto-parasites -found on the outside of the animal

Endo-parasites and their control

Worms are a major problem in that they:

- Deny the animal of its food
- Cause reduced feed consumption
- Reduce growths rate
- They make the animal to lose weight**.**
- Decrease carcass value due to tissue and organ damage.
- Predispose animals to other diseases.

Sign for worm infestation include:

- Stunted growth, rough coat and potbelly.
- Diarrhea
- Erratic appetite
- Coughing in case of lungworms.
- Worms in the feaces

Control and Treatment of Endo-parasites:

Select a recommended dewormer (anti-helmintic), which is effective against the parasite. Examples on the market include Nilvam, Wormicid, Bimectin.

De-worm routinely as follows:

- Boars and sows – every 4 months
- Piglets – one week after weaning
- Growers/finishing – every 3 months

Ecto-parasites and their control

Parasites that live outside or on the body of the animal

1) Mange mites

- Cause a highly contagious skin condition.
- Infestation starts around eyes, nose and ears
- The mite barrows into the skin causing intense itching

Animals affected with mites show signs, which include:

- Rubbing against hard objects
- Scabs on the skin
- Wrinkling and hardening of skin
- Loss of hair.

2) Lice

- Large parasite, which bites to suckle blood.
- They are seen on the skin in folds especially around the neck and below the ear base.
- Females glue their eggs in the hair.

3) Jiggers and Fleas

- These mainly live in dirty dusty environment
- Jiggers burrow into the skin around the **Coronary band** (are where the hoof is attached to the skin) and in the space between the toes.
- Can lead to poor mobility or lameness
- Fleas are found all over the body causing irritation and rubbing against hard objects
- Fleas suck blood and may lead to anaemia

Control and Treatment of Ecto-parasites

To control mange and lice a farmer should:

- Avoid cracks in the floors and walls of pig pens
- Thoroughly clean the pens and remove all manure followed by disinfections with chemicals, steam, or boiling water.
- Spray the walls and floor with an acaricide
- Disinfect pens and spray the sow before farrowing and after the piglets are weaned.
- The affected pigs can be injected with systemic drugs (e.g. Ivermectin). This is more effective in eliminating the mites which barrow deep in the skin.

- **Topic3. Specific nutritional deficiencies and metabolic disorders of pig**

Nutritional deficiencies

Diagnosis of nutritional deficiencies by observation is difficult. Quite often, the clinical signs are the result of a complex of mismanagement and infectious diseases, including parasitism, as well as malnutrition. For most nutritional deficiencies, the signs are not specific.

E.g.: poor appetite, reduced growth, and unthriftiness.

Deficiency of a single nutrient may bring about inanition, and the subsequent starvation may cause multiple deficiencies. Then, too, a nutritional deficiency may exist without the appearance of definite signs. In the field, the deficiency may be only slight or borderline, which makes diagnosis difficult.

Diagnosis of a deficiency by observing the response to nutritional therapy is not always clear, particularly for longterm deficiencies, the lesions of which may be irreversible. A nutritional deficiency should be diagnosed positively only after observance of several of the expected clinical signs and a careful review of the dietary, disease, and management history of the animals.

1. Protein Deficiency

Protein deficiency, which may result from suboptimal feed intake or a deficiency of one or more of the essential amino acids, causes reduced gains, poor feed conversion, and fatter carcasses in growing and finishing pigs. In lactating sows, milk production is reduced, excess weight loss occurs, and sows may fail to exhibit postweaning estrus or have delayed return to estrus. For optimal use of protein, all essential amino acids must be liberated during digestion at rates commensurate with needs. Therefore, protein supplements should not be handfed at infrequent intervals but should be mixed with the grain or be available at all times with grain on a free-choice basis.

No evidence has been presented to support the theory of “protein poisoning” in pigs. Diets containing as much as 35–50% protein were found to be laxative and less efficiently used, but no toxic effects were noted.

2. Fat Deficiency

Certain long-chain polyunsaturated fatty acids are essential for swine. Linoleic acid is essential in the diet and is used to produce longer-chain fatty acids that are probably also essential. A linoleic acid deficiency induces hair loss, scaly dermatitis, skin necrosis on the neck and shoulders, and an unthrifty appearance in growing pigs. Conventional swine diets generally contain adequate fat from the natural ingredients to furnish ample amounts of essential fatty acids.

3. Mineral Deficiency

Deficiencies of **calcium** or **phosphorus** result in rickets in growing pigs and osteomalacia in mature pigs. Signs include deformity and bending of long bones and lameness in young pigs, and fractures and posterior paralysis (a result of fractures in the lumbar region) in older pigs. Sows that produce high levels of milk and nurse large litters are particularly susceptible to posterior paralysis toward the end of lactation or after weaning if dietary calcium or phosphorus is deficient. These signs can also result from a deficiency of vitamin D, but phosphorus deficiency is the most common cause.

Pigs fed diets low in **salt** (NaCl) growth poorly and inefficiently, due largely to a marked reduction in feed intake. Though not specific for salt deficiency, poor hair and skin condition may also develop. There have been reports of salt-deficient pigs attempting to consume urine of other pigs.

Sows fed diets deficient in **iodine** produce hairless pigs that are weak or stillborn. With a borderline deficiency, the newborn pigs may be weak only at birth, but their thyroids are enlarged and have histologic abnormalities. Some feedstuffs (including soybeans and soybean

meal) contain goitrogens that may cause marginal goiter if iodine is not included in the diet. Iodized salt at recommended levels prevents this deficiency.

Deficiencies of **iron** and **copper** reduce the rate of Hgb formation and produce typical nutritional anemia. Signs of nutritional anemia in suckling pigs include low Hgb and RBC count, pale mucous membranes, enlarged heart, skin edema about the neck and shoulders, listlessness, and spastic breathing (thumps). Iron deficiency is more common than copper deficiency and is most common in nursing pigs that do not receive an iron injection or oral iron early in life.

A deficiency of **zinc** results in parakeratosis in growing pigs, particularly when fed diets high in phytic acid (or phytate, the primary form of phosphorus in cereal grains and oilseed meals) and more than the recommended amount of calcium. The exact mode of action of zinc in the prevention of parakeratosis is not known.

Deficiencies of **selenium** and/or **vitamin E** can cause sudden death of young, rapidly growing pigs. In addition, selenium/vitamin E deficiency in nursing pigs makes them more susceptible to iron toxicosis from iron injections

4. Vitamin Deficiency

Most commercial diets are fortified with vitamins, and vitamin premixes are readily available for farm-mixed feeds, so deficiencies are less common than they were years ago.

Deficiency of **vitamin A** results in disturbances of the eyes and the epithelial tissues of the respiratory, reproductive, nervous, urinary, and digestive systems. Reproduction is impaired in sows, and they may farrow blind, eyeless, weak, or malformed pigs. Herniation of the spinal cord in fetal pigs is reported as a unique sign of vitamin A deficiency in pregnant sows. Growing pigs deficient in vitamin A show incoordination and develop night blindness and respiratory disorders. Vitamin A deficiency is rare due to the ability of the liver to store this vitamin.

Signs of **vitamin D** deficiency include rickets, stiffness, weak and bent bones, and posterior paralysis. These signs are indistinguishable from those of a calcium or phosphorus deficiency.

Vitamin E deficiency can result in poor reproduction and impaired immune system. Many of the signs of vitamin E deficiency are similar to those of selenium deficiency.

Pigs deficient in **vitamin K** have prolonged blood clotting time and may die from hemorrhages. Certain components in moldy feed can interfere with vitamin K synthesis. Also excessive levels of dietary calcium interfere with vitamin K activity, causing these signs.

In pigs deficient in **riboflavin**, reproduction is impaired; postpubertal gilts fail to cycle but show no other clinical signs. Deficient sows are anorectic and farrow dead pigs 4–16 days prematurely. The stillborn pigs have very little hair, often are partially resorbed, and may have enlarged forelegs. Growing pigs fed diets low in riboflavin gain weight slowly and have a poor appetite, a rough coat, an exudate on the skin, and possibly cataracts.

Pigs deficient in **niacin** have inflammatory lesions of the digestive tract and exhibit diarrhea, weight loss, rough skin and coat, and dermatitis on the ears. Intestinal conditions can be due to niacin deficiency or bacterial infection. Deficient pigs respond readily to niacin therapy and, although not a cure for infectious enteritis, adequate dietary niacin probably allows the pig to maintain its resistance to bacterial invasion.

Growing pigs and pregnant sows develop a typical “goose-stepping” gait, ataxia, and a noninfectious bloody diarrhea when maintained on diets deficient in **pantothenic acid**. When the deficiency becomes severe, anorexia develops.

Pigs with a **choline** deficiency exhibit incoordination and an abnormal shoulder conformation. At necropsy, they may have fatty livers and usually show kidney damage. Sows deficient in choline have reduced litter size and may give birth to spraddle-legged pigs.

Biotin deficiency includes excessive hair loss, skin ulcerations and dermatitis, exudates around the eyes, inflammation of the mucous membranes of the mouth, transverse cracking of the hooves, and cracking or bleeding of the footpads.

Neonatal pigs fed synthetic diets low in **vitamin B_{12}** show hyperirritability, voice failure, and pain and incoordination in the hindquarters. Histologic examination of the bone marrow reveals an impaired hematopoietic system. Fatty livers are also noted at necropsy.

5. Metabolic disorders

5.1. Anaemia in piglets

Anaemia is a common nutritional disease in piglets. This condition can be prevented and cured by supplying iron either orally or by injection. Oral administration consists of spraying or swabbing the sow's udder with a saturated solution of ferrous sulphate (0.5 kg of ferrous sulphate in 10 litres of hot water). This solution must be applied daily from birth until the piglets start eating creep feed. Intra muscular infection of iron –dextran compounds is the more effective method of preventing anaemia.

LO. 4.2. Apply hygiene and biosecurity measures

- **Topic1.Hygiene and biosecurity measures**

Good intensive housing can aid in disease control; but if it is not properly maintained, the risk of disease may be increased. Pens should be kept free of manure at all times. As any cracks in the floor or walls can harbour disease organisms and are difficult to clean, they should be filled. When a group of pigs vacates a pen, it should be cleaned out thoroughly with a pressure hose and brush. Then the walls and floors should be cleaned with 5% washing soda. The pen should then be disinfected with 10% formalin and left unstocked for one week before new pigs are introduced.

- **Topic2. Sanitization of piggery**

The common cause for spread of disease in pig is ascribed to improper sanitation. It is often noticed that the pig farmers ignore the basic principal of hygiene and sanitation. Adopting hygienic measure will not only minimize to the influences that deteriorates health but also ensures production of good quality pork and pork products.

Proper cleaning and sanitation will remove or kill the germs and eggs of parasites.In weaken condition of germs and parasites will greatly reduce the possibility to cause potential harm to the pigs. Such measures will not only enhance the productivity of the animal but also prevents economic loss due to infections.

- **Topic3. Biosecurity measures**

Biosecurity is very important to maintain the improved health status of pigs.

Biosecurity means keeping a swine herd safe from the introduction of disease from the environment and other swine. Common sources of disease transmission include birds, rodents, contact with other swine and human traffic. You can have two healthy swine herds that have immunity to the organisms that exist within the individual herd and when they come in contact, both herds may become sick. By avoiding all contact with other swine, biosecurity can be maintained.

Common measures used by pig producers to maintain biosecurity are isolating new breeding stock until it can be tested for health problems, limiting visitors to pig facilities, and providing boots and clothing for visitors.

Isolation and Quarantine

- Quarantine is a government regulation for the prevention of the spread of infectious diseases.

- Animals from infected areas are restricted from mixing with other animals.
- Any sick animal must be isolated from the rest of the animals as soon as the disease is suspected.
- When new animals are introduced on a farm isolate them for a minimum period of not less than 1 month.
- Follow instructions by the veterinary personnel

- **Disposal of dead animals**

  If an animal dies:

  - It should not be cut open
  - The meat should not be sold or eaten as the disease may be transmissible to humans.
  - Invite a veterinarian to establish the cause of death
  - Burn or bury dead animals at the site of death.
    - Bury deep 3 – 4 m under the ground
  - Beware of diseases dangerous to man, such as anthrax. In suspected cases of anthrax burn or bury the carcass.

- **Control of carriers**

  - Some wild animals can get infected with a disease but do not get clinical signs, such animals (carriers) are a potential danger as source s of infection
  - House or fence animals to avoid contact with carriers
  - Ticks can also act as carriers of diseases. Spray the pigs with acaricide regularly

- **Fencing**

In case of emerging and very contagious diseases, it is recommended to fence the shelter for a better management of outbreak; this serves to avoid contamination between herds and in the herd between the individual animals.

LO.4.3. Apply bio-chemical prevention measures

- **Topic1. Selection of Bio-chemical prevention products**

Those products are anthelmintics, acaricids, antibiotic, insecticides and vaccines

Use of medicines and drugs

- For some diseases, this can be done by the farmer e.g. drenching
- Complicated cases and those which need injection of drugs require a veterinarian

Use of antiseptics and disinfectants

The proper use of disinfectants can play a vital role in an effective disease control programme for pig units.

Procedure:

- Remove all portable equipment for cleaning outside the house or pen
- Pre-clean the house or pen and equipment to remove all dust and dung/litter
- Brush and sweep out the house or pen and remove the sweepings
- Thoroughly apply the disinfectant to all surfaces and equipment in the house or pen.
- Effective disinfection requires surfaces to be thoroughly wet for at least 30 minutes.

Common disinfectants

- Washing soda (sodium carbonate)
- Potassium permanganate (PP)
- Phenol (carbolic acid)
- Bleaching powder
- Boric acid

Vaccination

- Vaccines are developed to protect animals against some diseases
- Vaccines stimulate the body defense mechanism to fight against infection

- **Topic2. Establishment of prophylactic plan**

Making a plan of biosecurity on a pig farm

Infectious diseases on a pig farm may be spread by exposing animals in their incubation period to dead animals that were not removed properly, vehicles, equipment, clothing and shoes of visitors or employees who have had contact with other animals (horses, dogs, cats, wildlife, rodents, birds, insects, but also by contamined food and improper management of manure when it comes to the creation of dust and spraying. The biosecurity plan we have developed based on detailed observation and analysis of the relevance of indicators and on biosecurity which includes:

- Actual written plan for achieving and maintaining the biosecurity of the farm
- Isolation of the farm as a whole or individual segments of manufacturing and production operation
- Including new animals I the herd
- Health of the herd
- Evaluation of the equipment and the personnel
- Traffic and movement control
- Food and water control
- Attitude towards visitors
- Manure
- Disposal of carcasses of dead animals
- Relationship to other animals
- Population control of rodents and birds
- Sanitation

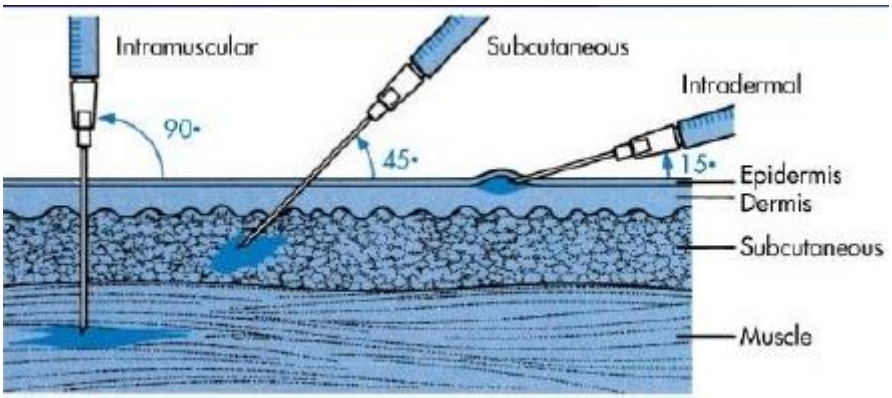
- **Topic3. Administration technics of bio-chemical prevention product**

- **Per xcos, drenching (watering and feeding medication):** commonly used to administer some antihelmintic drugs. Drugs administered through this route are the ones with fewer complications as far as administration is concerned. Therefore, farmers can easily administer drugs via this route with no assistance of a trained veterinary or para-veterinary officer.
- **Injection:** some drugs such as ivermectin, etc. are administered by injections. The types of injections in this case will vary according the drug and the animal species.

Common Injections in Domestic Animals

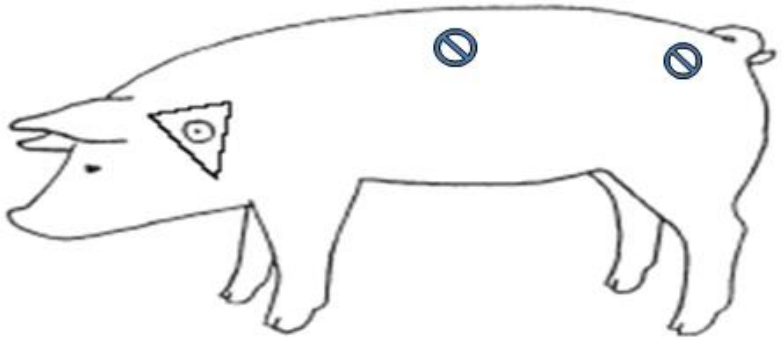
1. Subcutaneous injections

Subcutaneous injections are given under the skin using a short needle, 1 - 2.5 cm long.



2. Intramuscular

Intramuscular injections are the most common injection method and require the needle tobe inserted into a muscle. Intramuscular injections are commonly given in the triangulararea of the neck, in front of the shoulder. Do not give intramuscular injections in the loinor hind leg of sheep and goats that are used for meat to prevent injection site blemishesthat lower the value of the meat. Never give an injection near the spine to preventaccidentally causing nerve damage.



3. Intravenous

An intravenous injection requires skill to locate a vein, usually the jugular vein in the neck, insert the needle, and ensure that the needle remains in the vessel while the drug is given. These injections should always be given by a veterinarian or experienced animal health technician. Animals may react quickly to drugs given in this fashion due to rapid absorption. Very few drugs need to be given intravenously; however, blood samples often need to be collected and the technique is the same. Intravenous injections are usually done using an 18 or 20 gauge hypodermic needle.

- **Topic4. Sanitary record keeping:**

Technical sheet, zoo-sanitary cards, and zoo-sanitary data collection are the different sanitary records kept for animal welfare regulation. Sanitation is one the most important aspect of community well-being because it protects human and animal health and provides benefits to the economy. This record keeping system serves as guideline to start a minimum standard of animal protection.

APPENDIX

Appendix 1.Pig production terminology

Boar: a male pig of age over 6 months that is intended to be used in breeding herd

Conception: the establishment of a successful pregnancy

Conception rate: the percentage of sows and gilts that conceive compared with the number serviced.

Culls: Pigs that are slaughtered or removed from the herd for poor growth, lameness, health problems and/ or poor reproductive performance

Dry (sow): a female pig that has weaned her piglets and it is not producing milk

Farrowing: this is the act of giving birth (parturition) by a pig after the full gestation period of 114 days,

Feed conversion ratio (FCR): the amount of feed required (dry matter basis) to produce 1kg of pig meat. It is typically 3-4: 1 in pig production but can be 1.9:1 in very efficient feed converters.

Fostering: This is a management tool where piglets are moved between litters mainly to even out numbers among the litters. If the piglets are introduced into a particular litter this is called **fostering on** and the opposite is **fostering off.**

Gilt: A young female pig that is ready to be mated for the first time

Feeder/Finisher: A pig in the stages between the weaner period and slaughter stage.

Herd size: This is the average number of sows in a particular herd, usually over a 365-day period.

Herd weaning age: the average age at which the piglets in a particular herd are weaned.

Litter size: the total number of piglets born by a sow per each farrowing incident (including stillborn and mummified pigs)

Live birth weight of litter: the total weights of piglets born alive or that survive the first 24 hours.

Live born piglets: piglets that are born alive

Stillborn pigs: these are piglets found dead under the sow during farrowing.

Sow: A breeding female (dam) that has been served at least once.

Suckler: piglet between birth and weaning

Appendix 2. Feed record

Animal or group of animals	Feed or supplement	Amount fed	Date start feeding	Date end feeding

Appendix 3.A sow service record sheet

Sow ear n°.	Date weaned	parity	Services				Date due	Date farrowed	N°. born		weaned		Weaning age (days)
			date	boar	date	boar			alive	dead	N° .	date	

Appendix 4.An individual sow record card

Sow n°: ……Date: ……. Boar n°: …….
Due to farrow:---------- Farrowed: ---------- **Total born: ---------- Born alive: ----------** **Pigs fostered off: ---------- Pigs fostered on: ----------** **Date iron injection: ----------** **No. pigs weaned: ---------- Date weaned: ----------** **Total litter weight weaned: ----------** **Average / weaning weight: ----------**
Remarks:

Appendix 5. Boar performance record sheet

Boar N^{o}. ----------Date of birth: ---------- Breed: ----------						
Sow N^{o}.	**Service date**	**Return to service**	**N^{o}. born**	**N^{o}. weaned**	**Total litter mass weaned**	**REMARKS**

Appendix6. A sow lifetime record card

Sow N^{o}. ---------- Date of birth: ---------- Breed: ----------										
litter	**Weaning to service days**	**Service date**	**Actual farrowing date**	**Farrowing interval days**	**Live birth**	**Still birth**	**N^{o}. weaned**	**Pigs +or -**	**Litter weaning weight**	**REMARKS**
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Appendix 7. A herd performance report form

Date	Month	Month	Month	Six-month average	Suggested target
No. of sows					
No. of gilts					
No. of boars					
No. served to farrow					
No. Farrowed					
Farrowing rate					
Pigs born alive					
Pigs born dead					
%born dead					
Total pigs born/sow					
Live pigs born/sow					
Piglet mortality					
Weaner mortality					
Fattener mortality					
Pigs sold					
Pigs born/sow/year					
Pigs sold/sow/year					

Appendix 8.Diseases of the pre-weaning period

Disease	Major signs	Treatment	Prevention	Comments
Colibacillosis(*E. coli*)	Diarrhea(scours); sudden death	Fluid therapy; antibiotics (Injectable,Oral,Water medication); warmth	Improve hygiene; vaccinate sow/gilts; provide a warm clean creep area	Coccidiosis may be involved
Coccidiosis	Diarrhoea at 10-21 days of age	Fluid therapy; coccidiostats	Improve hygiene; provide a warm, clean creep area	-
Overlay / trauma	Sudden death	None	Provide a warm, clean creep area; check farrowing crate design	-
Starvation (hypo-glycaemia)	Weakness; death	Dextrose solutions; supplementary feeding	Improve sow's milk supply	Ensure gilts have adequate functional teats

Appendix 8.Diseases of the pre-weaning period

Disease	Major signs	Treatment	Prevention	Comments
Stillbirths	Born dead	None	Various methods	Many causes; consult a veterinarian
Miscellaneous infections	Lameness; sudden death	Antibiotics (Injectable)	Improve hygiene; repair flooring	Infection due to bacteria; swollen joints commonly seen
Exudative epidermitis (greasy pig)	Skin lesions; death	Antibiotics; skin protectant; vitamins	Improve hygiene; provide a dry, warm, clean creep area; prevent skin abrasions	*Staphylococcus hyicus* infection

Appendix9. Diseases of the post-weaning period

Colibacillosis (*E. coli*)	Diarrhoea; sudden death	Fluid therapy; antibiotics	Vaccinate; improve hygiene; provide warmth for weaners; reduce stress at weaning	A common and expensive problem
Respiratory disease	Coughing; sneezing; reduced growth rate; sometimes death	Antibiotics (Injectable,Watermedication,Feed medication); improved ventilation and environment	Improve ventilation; reduce stocking density; reduce stress; antibiotics; vaccinate	Enzootic pneumonia; pleuropneumonia; pasteurellosis; Glasser's disease; *Streptococcus suis*
Swine dysentery	Diarrhoea with blood; diarrhoea; reduced growth rates; death	Antibiotics (Injectable,Watermedication,Feed medication); reduced stocking density	Improve hygiene; antibiotics (Feed medication)	Avoid purchasing infected pigs; control rodents
Proliferative enteropathy (PE)(ileitis)	Diarrhoea with blood; diarrhoea; reduced growth rate;	Antibiotics (Injectable,Watermedication,Feed medication); iron; vitamin B	Antibiotics (Feed medication)	Three main syndromes affecting different aged pigs

Appendix9. Diseases of the post-weaning period

	sudden death			
Sarcopticmange	Itching; dermatitis; rubbing; scratching; reduced growth rate	Miticidal sprays; pour-ons; injection and in-feed premix	Strategically treat breeder pigs and weaners/growers	May go unnoticed in a herd; may add to pneumonia problems; pigs of all ages can be affected
Intestinal torsion	Sudden death	Diet manipulation	None	A common cause of death in some herds
Gastric ulceration	Loss of appetite; vomiting; death	Rarely effective	Manipulate diet, including feed coarseness; reduce stress; reduce disease	Probably feed and disease related; can affect pigs of any age
Erysipelas	Arthritis; skin lesions; reduced growth rate; condemnations at slaughter	Antibiotics (Injectable)	Vaccinate	Most losses occur between two and six months of age
Internal	Diarrhoea;	Parasiticides in-feed or	Parasiticides	Roundworm;

Appendix9. Diseases of the post-weaning period

parasites (worms)	reduced growth rate; pneumonia	injection		whipworm; kidney worm
Exudative epidermitis (greasy pig)	Skin lesions; death	Antibiotics; skin protectant; vitamins	Improve hygiene; provide a dry, warm, clean weaner pen; prevent skin abrasions	*Staphylococcus hyicus* infection

Appendix 10.Diseases of breeder pigs

Disease	Major signs	Treatment	Prevention	Comment
Farrowing sickness (mastitis, metritis, agalactia - MMA)	Reduced milk production; loss of appetite; higher body temperature	Antibiotics (Injectable,Watermedication,Feed medication); oxytocin; anti-inflammatory drugs	Reduce feeding prior to farrowing; ensure good hygiene in farrowing crate; reduce stress on	Reduces number of pigs weaned per sow; infection due to bacteria

Appendix 10.Diseases of breeder pigs

Disease	Major signs	Treatment	Prevention	Comment
			sows	
Lameness	Premature culling; reduced herd fertility	Rarely effective	Improve floor design; control erysipelas; prevent injuries; reduce conformation defects	Regularly check breeder pigs for leg lesions
Porcine parvovirus	Mummification; returns to service; stillborn and weak-born piglets	None	Vaccinate	Endemic and epidemic forms of this disease; fewer pigs sold per sow a year
Vaginal discharge syndrome	Reproductive tract infections	Antibiotics (Injectable,Watermedication,Feed medication); antibiotic treatment of boar's prepuce	Cull affected animals; improve hygiene of	Caused by bacteria and poor

Appendix 10.Diseases of breeder pigs

Disease	Major signs	Treatment	Prevention	Comment
			mating pens and dry-sow shed	hygiene
Bladder infection (cystitis) Kidney infection	Blood-stained urine Reluctance to stand; sudden death	Antibiotics (Injectable,Watermedication,Feedmedication) Antibiotic infection of boar's prepuce	Antibiotics Increase water intake; improve hygiene in dry sow shed	Boars transmit bacteria to sows and gilts at mating
Leptospirosis	Stillborn or weakborn pigs; abortion; returns to service	Antibiotics (Injectable,Watermedication,Feed medication)	Vaccinate	Can also affect humans
Erysipelas	Abortions; reproductive failure	Antibiotics (Injectable,Watermedication,Feedmedication)	Vaccinate	Can also cause arthritis and skin lesions
Gastric torsion (intestinal	Sudden death	None	Feed twice or three times per	Commonly seen when

Appendix 10.Diseases of breeder pigs

Disease	Major signs	Treatment	Prevention	Comment
torsion)			day; do not overfeed hungry pigs	level of feeding is increased
Gastric ulcers	Loss of appetite; vomiting; depraved appetite; blood in dung; sudden death	Antibiotics (Injectable); wet feed	Investigate feed, fineness, crude fibre and vitamin E/selenium; reduce stress	Can occur in pigs of any age

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