

TOWARDS IMPROVING SMALL-SCALE PIG KEEPING

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INTRODUCTION

PIGLET CARE

Piglet Mortality – It is typical that 10% of all piglets born alive will die before weaning. If you have 10 piglets born alive, you will be doing well if you are weaning 9 pigs. If you have 12 piglets born alive, you should be able to wean 10.5 piglets. As the number of pigs born alive increases, the mortality rate usually increases. This is because large litters usually have some very small pigs born alive and these pigs have a high mortality rate. If only 6 pigs are born alive, it may be possible to wean all of the pigs from the sow.

Clipping of Pigs` Needle Teeth

In an intensive, swine unit, where the litter sizes average 11 piglets, the tips of the needle teeth (4 pairs of long, sharp teeth) should be clipped in order to prevent the pigs from cutting one another's faces. This needs to be done within the first 24 hours of birth. These cuts lead to a bacterial infection (Staph. hyicus) that shows up as a crusty black skin infections on piglet's faces.

Piglets reared outdoors and those in litters of less than 11 pigs do not need to have their teeth clipped

If you wish to dock piglet's tails and ear notch pigs, be sure to clean and disinfect the pliers after the teeth are done and again after the tails are done. If the pliers are not cleaned and disinfected, pigs will get infections of the joints in their legs. This infection will spread and the pigs will likely die.

Iron Injection

Pigs are born without enough iron stored in their bodies. Pigs do not get enough iron from milk. More than half of the iron in the body is found in the form of haemoglobin. Pigs without enough iron become anaemic. This anaemia leads to low growth rate, long hair, higher morbidity and higher mortality.

Baby pigs get enough iron from soil if they are farrowed and raised outside or in an enclosure with a dirt floor. If piglets are born and raised on cement, they must be given extra iron in the feed or by injection. Pigs should be injected at 3 – 5 days of age. The injection should be given in the muscle along the side of the neck.

Biology behind iron deficiency anaemia:

Piglets have a haemoglobin level of 9-11 g /dl when born. A physiological fall to 4-5 g / dl occurs in all pigs, lowest level at the 8-10th day of life. Iron levels

in the liver vary and cannot be increased by supplementary feeding. Intramuscular injection of sows with iron dextran can be done. The rapidity of growth in piglets is the main cause of the iron deficiency. They reach 4 to 5 times their birth weight at the end of 8 weeks.

Castration

Male pigs not required for breeding can be castrated. A boar pig produces a sex odor when it reaches maturity. This objectionable odor can then be detected in the meat. Castration stops this odor and also makes the boar more gentle and easier to handle as he grows older.

Pigs are best castrated at 7 to 10 days of age. If castration is not done in the first two weeks of life, it must be done at least 10 days before weaning so that the wound will heal before weaning. Castration at weaning adds to the stress experienced by the pig, increases the chance of infection due to castration and reduces the weight gain of the pig at weaning.

NURSING PIGLETS AND THE USE OF FOSTERING

Colostrum

Piglets are born without antibodies needed to fight infection. Colostrum is the first milk produced after giving birth. Colostrum gives piglets antibodies to fight infection. Pigs will consume most of the colostrum in the first 24 hours of life. If a sow has more than 10 pigs born alive, the smallest pigs and those that are the last to be born may have trouble getting enough colostrum. After the whole litter has been born, put the biggest 5 pigs in a box for one hour and let the smallest pigs drink colostrum without competition. Do this for two, one hour time periods on the day of birth.

What is fostering

Fostering the piglet implies removing it from its own natural mother to another sow so that it is able to gain access to a teat, suckle and thereby survive. This is important to consider if the pigs are reared in a large commercial barn where many sows farrow on the same day. Pigs should be fostered onto another sow in the first 48 hours after birth. Older pigs may not survive if they are fostered and should only be fostered if the birth sow dies or is ill and therefore cannot produce milk.

Ideally, piglets will be moved to a new sow after they have received their mother's colostrum and before the foster mother's spare teats dry off. Piglets decide which nipple is theirs and they use this nipple while they are nursing the sow. The "ownership" of the nipple happens by the time the pigs are 48 hours

old. Therefore, fostering should happen after the pigs are 24 hours old but before they are 48 hours old.

If more than one sow is farrowing at the same time, foster the piglets 24 hours after they are born. This is done to even up the size of the litters and to be sure that each piglet has a functional nipple to suckle. Always move the largest pigs from the litter and leave the smallest pigs with the birth mother.

The milk produced by the sow changes one week after farrowing. If sows are not farrowing at the same time, fostering must be done when the pigs are at least two weeks of age. The exception to this rule is when a sow dies or becomes very ill shortly after farrowing. If a sow becomes very ill, she may not produce milk. Then the pigs are put on what ever sow is available.

Keeping the piglet warm and dry

The baby piglet is born with minimal fat reserves (no energy reserves), no acquired immunity and an inability to control its own body temperature. It undergoes a marked drop in environmental temperature from 39°C in the uterus (102°F) often down to as low as 18°C (65°F). It has no fat insulation, has little hair and a poor thermo-regulating mechanisms Pigs must have a warm environment (39°C) to maintain its own body temperature. If not, the pig will develop hypothermia and die. At birth, piglets need to satisfy three very important requirements.

1. The intake of antibodies from the colostrum, in particular IgG (immunoglobulin G) and IgA (immunoglobulin A). Without these it will die, having no protective mechanisms against the environmental organisms.
2. It must conserve heat to be able to utilize its scant energy resources to compete with litter mates and gain access to a teat.
3. It requires an immediate digestible source of energy (i.e. sows milk).

Clinical abnormalities of the piglet at birth include: Low birth weight; Hypoglycemic. - low blood sugar; Anoxic - short of oxygen; Defective - e.g. splay leg, cleft pallet; Anemic; Diseases e.g. PRRS, E. coli; Trauma / injuries

Age of the pig	Sold between Jun '06 – Nov '06			Sold between Nov '06 – Feb '07		
	Number of farmers	Lowest price	Highest price	Number of farmers	Lowest price	Highest price
< 4 wks	6	400	500	11	500	600
4 – 8 wks	10	400	500	7	400	500
3 – 6 mos	6	700	2600	5	600	900
7 – 12 mos	20	200	3500	10	800	3000
Sow	13	900	3800	25	700	4500
Boar	6	600	3200	30	900	4000

Discuss the price of a pig per kilogram and then determine how big a pig would have to be to be valued at 5000 or 7500Ksh. Discuss why the price of a 4 wk old pig and a 4 – 8 wk old pig are worth the same. Why would a farmer want to sell a 4 week old pig? Why would a farmer want to purchase a 4 week old pig? What happens to this 4 week old pig – discuss villous atrophy and poorly developed (mature) intestine and long term effects on growth and diarrhea.

Age of the pig	Farmer's responses Nov '06			Farmer's responses Feb '07		
	Number of farmers	Expected price low	Expected price high	Number of farmers	Expected price low	Expected price high
< 4 wks	6	500	500	10	500	600

4 – 8 wks	10	500	500	7	500	700
3 –6 mos	7	500	3000	5	800	7500
7 – 12 mos	21	1000	6000	9	1400	4500
Sow	13	400	4500	26	500	6000
Boar	6	1000	5000	29	1000	5000

	Sold between Jun and Nov 2006				Sold between Nov '06 and Feb '07			
Pig Age	Neighbour	Butcher-man	Pig trader	Farm slaughter	Neighbour	Butcher-man	Pig trader	Farm slaughter
< 4 wks	5	0	0	0	11	0	0	0
4 – 8 wks	11	0	0	0	6	0	0	0
3 –6 mos	2	6	0	0	2	3	0	0
7 – 12 mos	0	19	0	1	0	10	0	0

Sow	0	12	0	1	3	22	0	0
Boar	0	7	0	0	0	30	0	0

Age of the pig	Weight of the pig in kilograms		
	Too small	Average	Growing well
Less than 2 months	≤5	6	9
Less than 5 months	≤8	12	16
5 to 10 months	≤22	30	35
More than 10 months	≤30	42	50

Pigs from birth to weaning are called nursing pigs (0-8 wks), weaners (weaning to 16 weeks), growers (16 – 28 wks), finishers (28 – 40 wks)

Correct heat detection during estrus is important for profitable pig productivity enterprises. Pigs are pregnant for almost 4 months (115 days). Sows give birth to 6 to 12 piglets at a time. Typically, 10 % of the piglets die before they are weaned.

Gilts are needed for replacement of breeding sows. Selection of gilts should begin at birth, based on genetic potential for litter size. Gilts born to sows that show obvious signs of estrus and then produce large litters will likely be successful breeding females as well. Gilts selected should be healthy and have good growth rate, sound feet and legs and good conformation and spacing of functional teats. Gilts can be raised from a piglet born on the farm or they can be purchased. If you raise a gilt born on your own farm, you must find a boar that is not related to this gilt when she needs to be bred. A young gilt mated in her second observed heat (estrus) will have more piglets and a better chance of farrowing than if she is mated in her first heat. It may be profitable to purchase a sow that has already successfully given birth and weaned a good-sized litter. On average, sows are able to wean more pigs than gilts. Sows giving birth to their 3rd, 4th and 5th litters are typically the most productive. Mature sows need to have strong feet and legs, good conformation and spacing of functional teats, a history of showing strong estrus and weaning a good sized litter. Sows should be in good body condition and not show evidence of drastic weight loss due to nursing the litter.

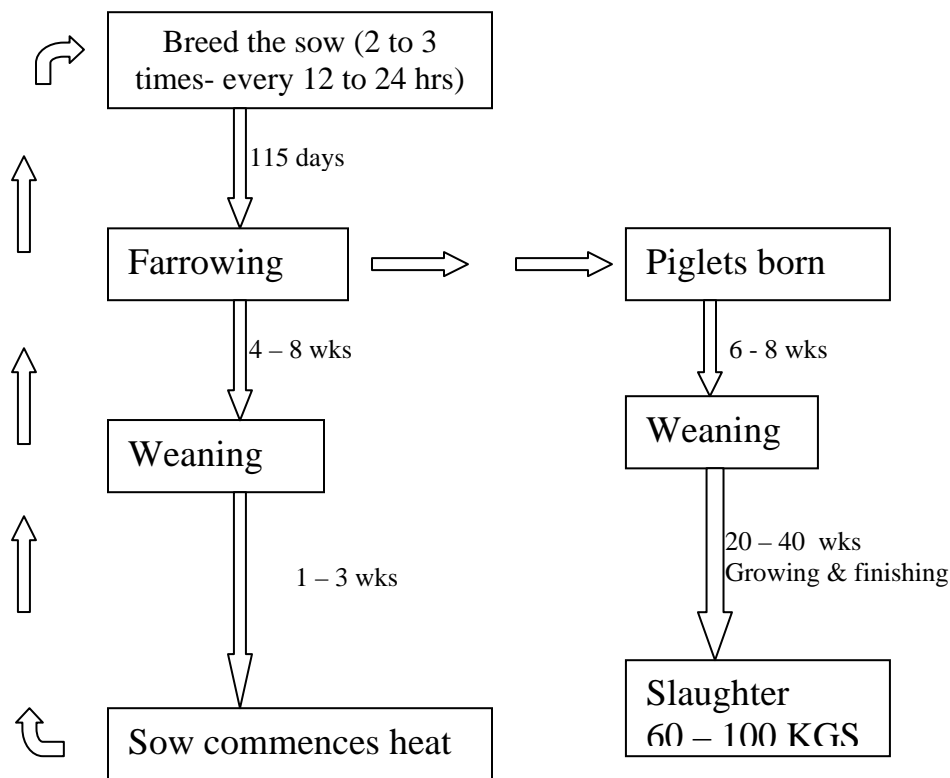
Choose your breeding boars carefully; avoid boars with history of reproduction problem such as reduced libido or penile or testicular abnormalities. In-breeding

(breeding a boar to a sibling, parent or off-spring) will result in small litter size, reduced chance of farrowing and increased numbers of piglets with deformities. Boars purchased as weaned pigs may have a nose ring inserted to increase the safety of handling the boar when he becomes older. Boars grow tusks that they use for fighting. The tusks can be removed by a veterinarian who will sedate the boar and then saw the tusks just past the gum line.

The pig production cycle

A breeding sow goes through three major physiological periods, namely:

1. The Gestation period- This is the period when the sow is pregnant
2. The Lactation period- Is the period when the sow is nursing her piglets
3. The service period- Occurs after weaning piglets, and ends after successful mating



When should the sow be served?

Pigs come into heat every 21 days (this ranges from 18 – 25 days)

The heat period lasts 24 – 36 hours in gilts and 48 – 72 hours in sows.

Signs of estrus include;

1. Grunting, restlessness; vulval swelling, vulval discharge, ears held upright, frequent urination, sow may not eat as well as usual
2. The sow will stand still when you press on her back

The sow should be served the first day when she shows signs of heat. Gilts need to be bred every 12 hours while she is in heat. Sows need to be mated every 24

hours while she is in heat. Mate her 2 – 3 times to make sure she gets pregnant and to increase the number of piglets that will be born. Ideally, the sow will be exposed to a boar between 18 and 25 days after mating. If she does not show signs of heat during this time, she is likely pregnant. However, she can abort, so the farmer should watch for signs of heat during her pregnancy.

The best way to ensure that a sow comes into heat after weaning her litter is to wean all of the piglets on the same day. This means that every pig must be removed from the sow and kept from nursing her (even if it is a piglet the farmer wishes to keep). If a sow does not come in heat after she is weaned, keep her close to a breeding boar or close to other sows in heat to bring her into heat. The sow must be fed well if she is going to come into heat, especially if she has lost weight while she was nursing the piglets of her previous litter.

One can use the natural method to serve their sows / gilts. Artificial insemination can also be used, and allows for use of superior boars. However, semen from boars cannot be frozen and must be used fresh within a few hours of collection. It can be stored in a specialized boar cooler for up to 5 days, provided it is mixed with commercial semen extenders and kept between 17 and 20 degrees Celsius.

What can cause infertility in my farm?

- Poor nutrition
- Diseases
- Genetics
- Hot weather
- Stress

What should I do?

Select your breeding boars carefully. Make sure the sow has plenty to eat while she is nursing the piglets and after she is weaned to help bring her in heat. Consult veterinary doctor early enough for help!

Should I give my sow supplement feed?

Yes. Feeding of the pregnant sow is essential;

1. It ensures proper foetal survival and growth during pregnancy
2. It maximizes litter growth rate
3. It minimizes days between when the sow is weaned and when she comes into heat to be bred for the next litter.
4. It maximizes the size of the next litter.

How do I know my sow is about to farrow?

- She becomes restless
- She starts making nests
- Teats produce some milk when squeezed
- Blood stained fluid is seen from the vagina
- Small greenish pellets appear from the vagina (indicating that the first piglet will be out in an hours time)
- There is usually not more than 20 minutes between piglets being born

- If the sow is straining for a long time (more than 30 minutes) you may need to assist her by reaching into her and pulling out a pig

Feeding the nursing sow is even more important than feeding the pregnant sow

- The sow must produce a lot of milk so the piglets will grow well and not die and so she will come back into heat after you wean her.
- Provide a nursing sow with plenty of protein and energy.
- Feed in two equal meals; one in the morning and the other in the afternoon
- A sow with piglets must have clean water all the time
- Separate the sow from the rest of the pigs.
- The farrowing area must be clean, dry and warm.
- Piglets must be kept warm and dry or they will get diarrhea and die.
- Give piglets iron if they are not on dirt
- Castrate male pigs when they are 1 – 2 weeks old using a sterile technique. If the pigs are to be castrated, it is important to do this at least one week before the piglets are weaned.
- Pigs will want to nurse all together, every hour of the day. Keep the piglets in an enclosure with the sow.

Weaning and rebreeding the sow

Sows will come into heat 3 to 11 days after the pigs are weaned as long as all of the piglets are weaned on the same day. If piglets are weaned over several weeks, sows may come into heat while they are nursing. However, these sows may not come into heat until all of the pigs have been weaned and if they are gradually weaned, it is difficult to know when to expect them to come into heat.

Sows should be bred as soon as they come into heat after weaning

Older sows may stay in heat longer than young sows

Mate the sow every 24 hours while she is in heat (this may be for 3 days)

It is important to have an up to date record keeping system. This allows you to know and tell what is happening in your farm at any one given time. Keep a record of when the sow is bred. Sows are expected to farrow approximately 4 months after being bred. Typical gestation length is 113 to 116 days. Check the sow 18 to 25 days after she is bred to see if she comes into heat. Check her again at 42 days after breeding. If she does not come into heat at those times, she is likely pregnant and will typically remain pregnant as long as she does not abort due to an infectious disease.

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PIG HOUSING

What it entails

Good sanitation and management is crucial in pig housing to lessen the chances of disease. Farmers can build their own pig houses using locally available materials. It is important to consult livestock department for proper planning of your pig house. Pig houses must be strong and well built. Piglets are able to squeeze through small openings and older pigs can root under fences and break down their house. Pigs are very strong animals at maturity.

Pig houses may have a cement or dirt floor. Cement floors must not be too rough or the pigs will get cuts and abrasions. They also must not be too smooth or the pigs will slip. Cracked and deeply pitted floors are difficult to clean. In all pens the floor should slope away from the sleeping area and towards the dunging areas to allow drainage of urine.

Who said pigs were dirty?

Pigs are very clean animals, only that they like rolling in the mud. Pigs are sensitive to heat; they can die from heatstroke after being left in the sun with no shelter or water. Pigs roll in mud or water to cool off in the summer. They also cover themselves in mud to prevent sunburn. If pigs are in a pig house with a concrete floor, they can be cooled by having water poured on their bodies. Pigs can also suffer from sunburn. Even though mud is important, pigs do not like being in the mud 24 hours a day. They like to dry off. Another behavior of pigs is that they root as a natural way to investigate and find food.

Pink pigs are more sensitive to sunburn than black or brown pigs. All pigs must be able to lie in the shade out of the sun. Part of the pen must have a roof to provide enough shade for all the pigs. If the roof is made of metal, it may be covered with grass or branches to keep it cool. Ideally, the pig house will be built under the shade of a large tree.

Pigs do not have much hair on their bodies to protect them from the cold. Pigs suffer if they get too cold. Piglets that are cold get diarrhea. Piglets need a small area with bedding (straw) and solid walls to prevent the wind from coming in. Older pigs get pneumonia if left in the cold, wind or rain. Even if the pigs do not die, they will not be as healthy and strong as they should be. Pigs must have a warm, dry sleeping area.

Pig's pens need to be kept clean to reduce the chance of disease, limit the number of flies and parasites and decrease the odor. Pigs always dung in the same place. Make sure that this mess is cleaned out at least twice a week. Pig manure can be dug into the soil to act as a fertilizer. If water does collect in the

pen, dig a drainage furrow or ditch, leading out of the pen. Food and water containers must be cleaned thoroughly at least twice a week.

Pigs like to scratch and be scratched. They will rub against fencing, housing and everything else. Pigs like to play, they will run in circles and chase each other, barking and grunting in delight. Also, pigs like toys. These can be anything from an old feed bucket, cardboard box, stone, stick or feed sack.

How big to make the pig house - Space estimates

- Sows 1.4 m²/pig
- Weaners (up to 12 weeks) 0.3 m²/pig
- Growers (20-45 kg l.w.) 0.5 m²/pig
- Finishers (45-90 kg l.w.) 0.7 m²/pig
- Boar and mating pen 7.5 m²
- Farrowing sow and litter 4.7 m²

Waste Disposal

Waste constitutes waste feeds, manure and urine. The manure trenches must be emptied regularly to prevent the buildup of foul odours. Manure trenches should slope towards the outlet, which may then lead to hole to collect the manure or a methane digester. Usually, the waste is used directly as fertilizer. Pig manure makes very good fertilizer for crops. Waste can be dug into the field or garden where crops are to be planted. Proper disposal of waste reduces nuisance from odours and flies; reduces pollution of water resources; and controls disease causing agents.

Pigs will not waste feed and water if they are given the correct amount of food split into two to three meals in a day. Young pigs need to eat three times a day and nursing sows will produce more milk if they are fed three times a day. Pigs like to drink water when they eat. Some farmers mix the feed with the water in the same trough.

Remove the wastes from the vicinity of pigs on a daily basis. Disposal of waste from the pigs can be done by either applying it directly in to the soil, or putting in a pit. The pit should be covered.

FEEDING PIGS

Pigs offer a way for farmers to increase the value of their crops by turning the crops into animal protein (pork). The pig's feed is the most expensive part of raising the pig. If feeding is incorrect, profits and income to the pig farmer go down. The feed must contain the nutrients in the right quantities. Pigs are single-stomach animals just like people. They digest and eat the same kind of food as people and require two or three meals a day. Divide the food into two portions;

feed half in the morning and the rest in the late afternoon or evening. Young pigs need 3 meals a day.

Important nutrients in pig feed include:

1. Proteins- for growth and body repair e.g. fish processing waste.
2. Energy: -for maintenance of normal body functions e.g. cereals (maize, cassava).
3. Vitamins: - for the maintenance of normal body health e.g. sweet potato, sunlight.
4. Minerals: for strong bones and normal body functions
5. Water: - Necessary for all body functions like digestion, excretion, circulation etc. You must provide clean water. Pigs require 5 to 10 litres of water daily, sows will need more (30 litres when she is nursing a litter of pigs).

No single feedstuff can supply all the nutrients required for all body functions.

Pigs grow rapidly and their demand for food is high. They cannot digest grass or leaves from a bush (like cows and goats). Pigs thrive well on foods consumed by humans, as well as on feeds deemed useless for humans, (eg cassava peels and cassava leaves).

Possible sources of pigs feed

Crops grown for human food can be used as pig feed

Beans- needs to be cooked

Maize- is an excellent energy source. This can be used to make flour.

Wheat is almost equal to maize in energy value

Sorghum grains are similar to corn in nutritional value

Soybean needs to be cooked but is an excellent source of protein

Cassava and cassava peelings are very suitable for pigs. Dried, chopped cassava root or flour made from cassava. Pigs will digest it better if it is chopped or ground. It's important to boil cassava to destroy the poisonous substances found in many varieties. Cassava leaves have also been utilized to other parts of the world. They are safe to use if they are dried.

Sweet potatoes- Both roots and leaves can be fed. Slice the roots and dry and these slices and the leaves if you want to store the sweet potato for up to 9 months. Peelings from the sweet potato can be collected and fed to pigs.

Molasses

Increased palatability of pig feed so pigs will eat well.

If molasses is a major portion of the pig's diet (more than 1/3) the diet will have to be supplemented with salt to balance the high potassium content

Raw sugar

Can be used as an energy source. You can also use the sugarcane juice

Bananas

Green and over-ripe bananas are very palatable and the pigs grow well on them. Waste green bananas need to be boiled before they are fed to the pigs.

Avocado pearls

Small amounts of waste avocados can be used

Sugarcane

Can be used as part of foliage

Left over vegetables or fruits from family consumption or industry

Any part of a vegetable (tomato, pumpkin, cabbage) or fruit (banana, pineapple, mango) that is not being eaten by people can be given to the pigs. Waste vegetables and fruit that are not fit for human consumption because they are bruised, damaged or have bugs in them can be given to the pigs.

Kitchen leftovers from your own family can be fed to the pigs

Left over food from other sources

Some farmers have access to left over food from schools, hospitals and hotels. For safety, left over food should only be fed after boiling for at least 30 minutes.

Pasture/Forage Feeding

Pasture/forage can be a source of nutrients for pigs but pigs fed only on pasture will grow very slowly. Forage can be harvested or pigs may be allowed to graze. Pigs can also be allowed into a field after the crop has been harvested to eat what was left behind.

Animal processing wastes

Includes: Fish processing wastes; Chickens slaughtered wastes (intestines, heads and legs); as well as raw blood and rumen contents from slaughter-houses. These need to be thoroughly boiled before they are fed to the pigs. Pigs will need an energy source such as maize to supplement the protein.

Commercial feeds

These are feeds you buy from the market (feed shops, agro veterinary shops, and feed companies). They are prepared to meet the needs of a particular group of pigs such as piglets, weaners, growers, and sow feeds. They are expensive and you need to transport them. No matter what you feed the pigs, they will all grow better if you can provide even a limited quantity of complete meal.

Inexpensive feeds for pigs, What are they?

The least expensive way to feed pigs is to gather "food" that is not being used by people. This might include waste from the posho mill, innards from fish or chickens, mash from making beer (machicha), corn cobs, sugar cane after some has chewed it, waste from the market, banana peels and peelings of all food used in your home.

COMMON CONDITIONS IN PIGS

It is important to maintain the health of your pigs. Diseases can lower the amount of money the farmer gets from sale of pigs. Diseases increase the length of time the pig gets to reach market weight. Farmers should observe pigs daily for any change, keep close contact with the Veterinarian for guidance and report any diseases as soon as it's observed. Proper nutrition, sanitation, housing and management can prevent diseases that affect pigs.

Common Signs of Disease include:

1. The animal loses appetite (fails to eat)
2. Breathing becomes difficult and abnormal
3. The animal appears dull
4. The animal passes excessively hard or watery feaces
5. The feaces may be blood stained or contaminated with worms
6. High temperature (fever) and heart beat becomes abnormal
7. Loss of condition, and rough hair coat

Other signs include: Coughing; Lameness; Diarrhea; Abortion; and Skin discoloration

Note: Different diseases will manifest differently. Report any signs of abnormality to your nearest Animal Health Provider / Veterinarian for help.

African Swine Fever????

Cate will still complete this section???

SALT POISONING

What is it?

Salt toxicity (sodium chloride, NaCl), occurs in pigs when they do not have enough water. It can also happen if a pig eats too much salt when water is limited. A pig will die if it eats 2.2 gm salt / kg of body weight.

How does it come about?

Salt poisoning happens when pigs do not have access to fresh drinking water. Ideally, a pig will have access to fresh water all of the time. If you must bring water to the pig, it should be given three to five times a day (3 times for big pigs, 5 times for small pigs). Pigs must drink at least 10 % of their body weight in water each day. A 10 kg pig will drink 1 – 2 litres and a 30 kg pig will drink 3 – 6 litres each day depending on the outside temperature. A nursing sow needs 10 – 30 litres each day.

What are the signs?

Early signs are increased thirst, pruritus (itchy skin), red skin and constipation. Affected pigs may be blind, deaf, and oblivious to their surroundings. They will not eat, drink, or respond to people. They may wander aimlessly, bump into objects, circle, or pivot around a single limb. After 1-5 days of limited water intake pigs have intermittent seizures that repeat every 7 minutes. First the pig will sit, jerk its head backward and upward, and finally it will fall on its side and seizure (clonic-tonic seizures (paddling their feet) and opisthotonos). In severe cases, pigs lie on their sides, paddling in a coma, and die within 4 to 48 hr.

Pigs deprived of water or fed too much salt have nervous system signs because they have edema or excess fluid in their brain. This swelling increase if a pig that is deprived of water is then allowed to drink as much water as it wants. If you know the pig has not had water for a day, the next day, give it only small amounts of water (250 ml) every 30 minutes so that it can become hydrated slowly. This will reduce the chance of getting the swelling in the brain.

Diagnosis

Salt poisoning (water deprivation) can be diagnosed by:

- a. the classic clinical sign of intermittent seizures that occur every 7 minutes.
This
- b. a history of water deprivation
- c. serum and CSF concentrations of sodium >160 mEq/L, especially when CSF has a greater sodium concentration than serum

Poisoning due to pigs eating insecticides such as organochloride and diseases such as pseudorabies and *Streptococcus suis* can cause seizures. However, only salt poisoning causes these intermittent seizures with the pig standing and wandering around between seizures.

Treatment

- There is no specific treatment
- Immediate removal of offending feed with excess salt
- Provision of 250 ml of water every 30 minutes to rehydrate the pig
- Fresh water must be provided to all animals
- Ingestion of large amounts of water may exacerbate neurologic signs due to brain edema

Remember!

Water should NEVER be rationed to any animal!

THE PIG TAPEWORM

What is it?

Taenia solium cysticercosis is one of the most common infections in pigs, with a significant zoonotic and economic impact. It is caused by a cestode (Tapeworm), *Taenia solium*, whose larval (cystic) stage, *Cysticercus cellulosae* occurs mostly

in pigs. The cysts are commonly found in skeletal muscles, tongue, diaphragm, heart and other organs, including brain and eye. The cysticerci are whitish vesicles measuring 8-10 mm with the invaginated scolex appearing as a white spot with a double row of hooks like that of the adult worm. The body of the adult worm is divided into three parts: Scolex (head) is globular in shape and has organs of adhesion (suckers) and may have a rostellum, with one or more rows of hooks; the neck, lies behind the scolex and this is where new segments are formed; the strobila (body) is composed of a variable number of proglottids.

Life cycle

The two-host life cycle of this tapeworm comprises human beings as the only definitive hosts and swine as intermediate hosts. Pigs become infected when by ingesting vegetation / feeds contaminated with eggs or gravid proglottids.

In the animal's intestine, the oncospheres hatch, invade the intestinal wall, and migrate to the striated muscles, where they develop into cysticerci / larva. A cysticercus can survive for several years in the animal.

Humans become infected by ingesting raw or undercooked infected pork. In the human intestine, the cysticercus develops over 2 months into an adult tapeworm, which can survive for years. The adult tapeworms then attach to the small intestine by their scolex and reside in the small intestine, leading to the intestinal form of the disease. Length of adult worms is usually 2 to 7 m. The adult worm produce proglottids which mature, become gravid, detach from the tapeworm, and migrate to the anus or are passed in the stool. The eggs contained in the gravid proglottids are released after the proglottids are passed with the feces. Up to 50,000 eggs per proglottid can be produced in one proglottid.

Human beings can also become intermediate hosts, by directly ingesting *T. solium* eggs shed in the faeces of human carriers of the parasite. These eggs then develop into cysticerci which migrate mostly into muscle (causing cysticercosis) and into the central nervous system causing neurocysticercosis (NCC).

Risks of contacting *T. solium* taeniosis / cysticercosis

- Irregular meat inspection procedures
- Eating improperly cooked meat
- Poor personal hygiene eg not washing hands after visiting latrines
- Absence of latrines
- Failure to properly confine pigs

Diagnosis

1. Tongue Test

Diagnosis can be made in live pigs using the lingual palpation method where cysts are palpable on the base / underside of the tongue. It is not easy to see cysts at early stages of the infection.

Examining a pig for *T. solium* larval cysts

2. Postmortem Meat Inspection

This involves palpation and incision of various parts of the carcass including the tongue for the presence of the cysts. Cysts can be seen during routine meat inspection procedures

3. Serological Tests

This involves use of blood / serum to test for the presence of antibodies / antigens to *T. solium*

In humans, direct recognition of proglottids in human faeces is the best option for identification of *Taenia* infections but it may be hard to differentiate eggs of *T. saginata* and *T. solium* which are similar morphologically

Control

Taenia solium taeniosis / cysticercosis is a potentially eradicable disease. Why?

1. Humans are the only definite hosts hence carriers can be diagnosed and treated.
2. Pigs are the only intermediate hosts of epidemiological importance

The control and prevention of taeniosis / cysticercosis consists of breaking the life cycle.

Control measures will include;

- Proper inspection of pig carcasses
- Proper disposal of human waste (use of latrines)
- Personal Hygiene
- Total confinement of pigs
- Eating pork that is properly cooked

EXTERNAL PARASITES

Includes Lice, mange, fleas

You can control external parasites such as mange mites and lice with applications of approved pesticides and by maintaining a clean environment. Use of injectible treatment such as Ivermectin requires only a single injection. The withdrawal period (time when the pig should not be slaughtered for human consumption) for the drug is however long eg..... and should be observed. If a pig is treated with with topical medication, the same treatment has to be repeated after 14 days.

INTERNAL PARASITES

Includes worms such Ascarids, the pig Tapeworm discussed above etc. Deworm your pigs frequently. Internal parasites must be controlled for the pig to grow and perform at its best. Young pigs are usually de-wormed about one week after weaning and twice more at 30-day intervals. It is important to read and follow the directions on the de-wormer label. Don't de-worm too close to market date because medication residues may remain in the meat. The package label will contain specific instructions in this matter. If you have questions or concerns consult your veterinarian.