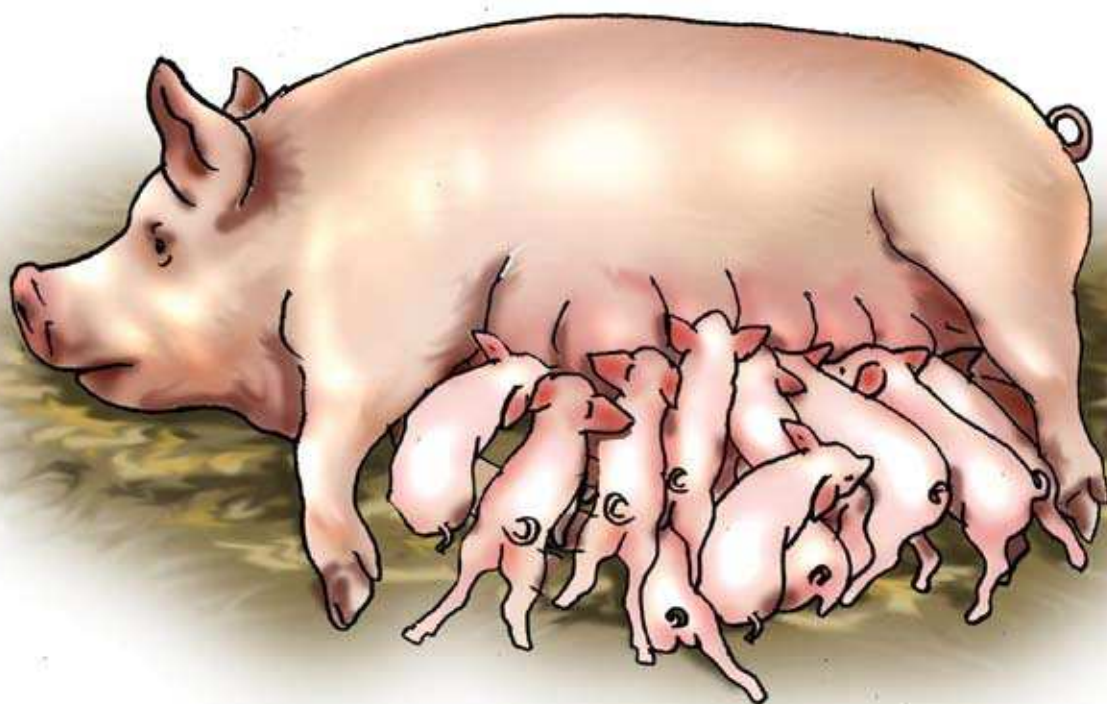




Farmer's Hand Book on Pig Production

(For the small holders at village level)



GCP/NEP/065/EC

Food and Agriculture Organization of the United Nations



Government of Nepal



FAO Nepal



European Commission

Farmer's Hand Book on Pig Production

(For the small holders at village level)

GCP/NEP/065/EC

Food and Agriculture Organization of the United Nations

With Financial Assistance from the European Commission

Disclaimer

The designations employed and the presentation of the material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of similar nature that are not mentioned.

The views expressed in this publication are those of the author(s) and do not necessarily reflect the views of FAO.

All rights reserved. Reproduction and dissemination of materials in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to: Chief, Electronic Publishing Policy and Support Branch Communication Division, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy or by e-mail to: copyright@fao.org

FAO 2009

design&print: **wps**, eMail: printnepal@gmail.com

Contents

Acknowledgements	iii
Introduction	iv
Breeds	1
<i>Native Breeds</i>	1
Jangali Bandel / Wild Boar	1
Pygmi Bandel	1
Hurra	2
Chwanche	2
Banmpudke	2
Pakhribas Black Pig	3
Dharane Kalo Banggur	3
<i>Exotic Breeds</i>	3
Yorkshire	4
Landrace	4
Hampshire	4
Duroc	5
Tibetan	5
Tamworth	6
Meishan	6
<i>Crosses between native and exotic for Improvement of local breeds:</i>	6
Breeding	9
<i>Pure-breeding</i>	9
<i>Out breeding</i>	9
<i>In breeding</i>	10
Effect of In-Breeding	10
<i>Methods of cross breedy:</i>	12
<i>Cross breeding</i>	12
Effect of Cross Breeding	13
Effect of Negative Selection	14
<i>Best Breeding Practices to be Adopted in the Villages</i>	15
<i>Selection of Breeding Gilt</i>	16
<i>Selection of Breeding Boar</i>	16
<i>Heat detection - Common signs of heat</i>	17

1st stage: Early heat signs	17
2nd stage: Service period signs	17
3rd stage: Post oestrus-period signs	17
<i>How to induce heat - Recommended practices</i>	18
Stimulating regular heat	18
When sow is in gestation	19
Culling	19
<i>Assistance</i>	21
<i>Reasons for not conceiving</i>	22
<i>Care and Management of breeding Boar</i>	22
<i>Care and Management of breeding Boar</i>	23
<i>Care and Management of breeding Sow</i>	24
<i>Minimum Breeding Ages for Boars and Gilts</i>	24
<i>Care and Management of New Born Piglets</i>	25
<i>Feeding piglets whose mother does not produce enough milk</i>	26
Colostrums Substitute	26
Teeth Trimming	26
Anaemia or Iron deficiency	27
Tail Cutting	28
Heating for Piglets	28
Creep feeding	28
Rearing motherless piglets	28
Feeding program	29
Feeding program for orphan piglets	29
Weaning	29
Selection of Replacement	29
<i>Culling of sows</i>	30
<i>Castration</i>	31
Castration - step by step	32
<i>Pig's Digestive Systems</i>	33
Feeding	33
Anatomy of the Digestive System	33
What you can feed to your pig?	34
What you cannot feed to you pig?	34
<i>Formulation feed</i>	35
Traditional pig feeds	36
Traditional feed processing	42
Feeding Forest Products	43
Feeding Alcohol distilling residues	43

<i>Daily Feed requirements</i>	44
<i>Feeder trough size</i>	45
<i>Drinkers</i>	46
<i>Elements for a good housing</i>	47
Housing Management	47
<i>How to keep a healthy pig</i>	48
<i>Effect of bad housing</i>	49
<i>Selection of housing locations</i>	49
<i>Construction plan for a good pig house/shed</i>	50
<i>Space requirement for pigs</i>	51
<i>Different models/types of pig house/sheds.</i>	52
<i>Parasitic diseases</i>	55
<i>Internal parasites (Worms)</i>	55
Disease and Parasite	55
The Location of parasites	55
Roundworm	56
Tapeworm	57
External parasites	58
Mange	58
Lice	59
Myiasis	60
Deworming	61
Anaphrodisias	63
Leptospirosis	63
Reproductive Disorders and Diseases	63
Brucellosis	64
Uterine Prolapsed	64
Mastitis	65
Endometritis (bacteria)	65
Prevention and treatment	66
Diseases and Disorders of Digestive Tract	66
Scouring	66
Birth diarrhoea	66
Red diarrhoea or clostridial enteritis	66
Transmissible Gastroenteritis	67
Fat diarrhea	67
Post diarrhea	68

<i>Salmonellosis</i>	68
<i>Swine Dysentery</i>	68
<i>Post weaning syndrome (oedema disease)</i>	69
<i>Diseases of the Respiratory Tract</i>	69
Influenza	69
<i>Pleural Pneumonia</i>	70
<i>Atrophic rhinitis (inflammation of the nose)</i>	70
<i>Pasteurellosis</i>	70
<i>Porcine Respiratory and Reproductive Syndrome (PRRS)</i>	71
<i>Disease Causing Problems in Walking</i>	71
Arthritis	71
<i>Streptococcal infections</i>	72
<i>Greasy Pig Disease</i>	72
<i>Nutritional Disorders</i>	72
Anaemia	72
<i>Other Diseases</i>	73
Foot and mouth disease (FMD)	73
Swine fever/Hog cholera	73
Anthrax	74
Vaccination Schedule for Pigs	74

References **75**

Breeds

Native Breeds

Native breeds of pig can be found throughout the country. They are a small body size compared to other exotic and crosses pig types. Their name varies from region to region, for example: Jangali Bandel / Wild Boar, Pygmi Bandel, Hurra, Banmpudke, Chwanche, Pakhribas Black Pig and Dharane Kalo Banggur. Their short description is given below.

Jangali Bandel / Wild Boar

Found in the wild throughout the country, for the commercial production to receive seed Rs 10,000 per piglet to be paid to the National Park and Wild Life Conservation Department of Nepal.

- ◆ Height ; 90 – 95 cm, Weight; 200 - 250 kg
- ◆ Color; Brown black with thick hair on the body
- ◆ Herd comprises ; 6 – 30 heads up to 3 generation, Conceive Oct – Dec, Farrowing Feb – April, Gestation period 115 days, Litter size; 4 – 6, Piglets look very different in appearance and in color strips at an early stage.



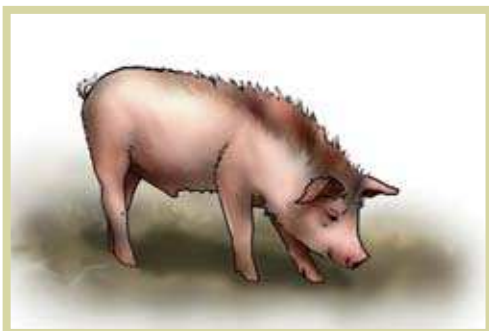
Pygmi Bandel



Found in throughout northern India, Bhutan, and Nepal. Smallest, adult males average 65 cm long and 25 cm tall. Females are slightly smaller. Males average 8.5 kg in weight. Their coats have blackish-brown bristles over gray-brown skin. Reproduction is seasonal, and the birth peak coincides with the monsoon in late April and May. Gestation is approximately 100 days and litters size 2 to 6, sexual

maturity at 13 to 33 months and live 10 to 12 years in the wild. Small family 5 to 20 members, it was placed in the Endangered category according to IUCN in 1960. Found in the wild, but for the commercial production to receive seed, Rs 10000 per piglet to be paid to the National Park and Wild Life Conservation Department of Nepal.

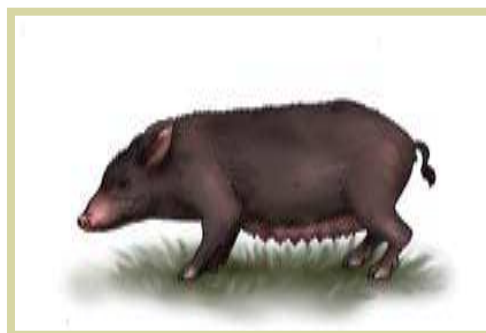
Hurra



Found in throughout Terai of Nepal. Kept under scavenging systems. Their coats have brown bristles on the neck portion. Reached adultery at 226 days. Average litter size is 5.72 and weaning size is 5.14 with birth weight 700gm. Matured males average 45 and female 49 kg live weight. Resistance to several diseases and parasites.

Chwanche

Found in across the mid hills of Nepal. Kept under semi-intensive systems. Mostly found in black color. Reached adultery at 219 days. Gestation period is 114 days with farrowing interval of 222days. Average litter size is 7.33 and weaning size is 6.0 with birth weight 800 gm. Matured males average 24 and female 32 kg live weight. Resistance to several diseases and parasites



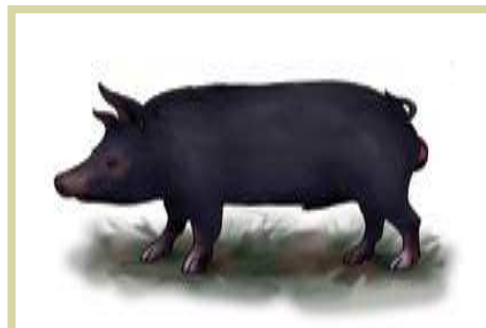
Banmpudke



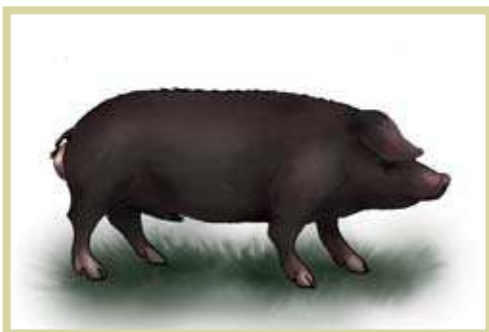
Banmpudke is the domesticated form of Jangali Bandel. Known as smallest domesticated breed of pig. Color varies red – brownish to black. Reached adultery at 187 days. . Gestation period is 114 days with farrowing interval of 138 days. Average litter size is 4.7 and weaning size is 3.4 with birth weight 650 gm. Matured males average 20 and female 19 kg live weight. Resistance to several diseases and parasites

Pakhribas Black Pig

The Pakhribas Black Pig was Developed at Pakhribas Agriculture Centre Dhankuta Nepal through three ways crossing between Saddleback, Fayun and Tamworth. Black in color. Average litter size is 9.4 and birth weight is 1.0 kg. Matured male average 170 and female 160 kg live weight. Resistance to several diseases and parasites, and superior over other local breeds.



Dharane Kalo Banggur

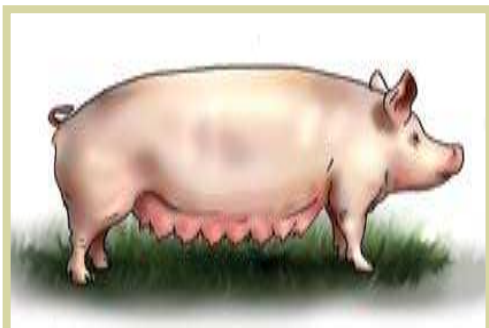


Black pig found in the eastern terai and hills of Nepal. Long body, large ear dropping upward. Highly prolific, average litter size 8 – 10 with high weaning rate. Resistance to several disease and parasites. Easily reared on locally available feed resources and crop by products. Perfect for semi-intensive systems.

Exotic Breeds

The most common pig breeds for commercial pig production are the Yorkshire, Landrace, Hampshire, Duroc, and Tibetan, Tamworth and Meishan breeds and their crosses. These breeds produce lean meat combined with efficient feed conversion (3 kg of good feed is needed to produce 1 kg of pork). Compared to local pig breeds, these commercial breeds are less resistant to diseases and suffer more from hot weather and low quality feeds. Pure exotic breeds generally do not perform well in rural pig production systems in Nepal.

Yorkshire



Yorkshire: white, long body, erect ears, good mothers, live weight of a mature male 300 – 450 and female 250 - 350 kg. High prolificacy, with a litter size of 12, weaning percent of > 70, and 7 pairs of teats.

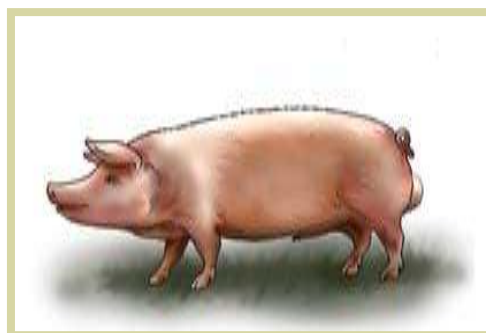
Widely used for upgrading local breeds

Landrace

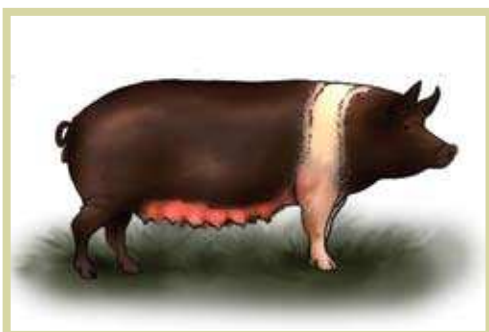
Landrace: white, large drooping ears, long body, good mothers. One of the newest breeds of a Danish origin.

They are noted for having the highest number of pigs per litter, average live weight of matured male is 310 – 400 kg and female is 250 – 330 kg.

Good for Bacon production. High prolificacy, average litter size of 11 with a good weaning rate.



Hampshire



Hampshire: black, white belt, muscular. Average live weight of matured male 300 kg and female is 250 kg.

Good for Bacon production.

High prolificacy, with a litter size of 9 with high weaning rate.

Duroc

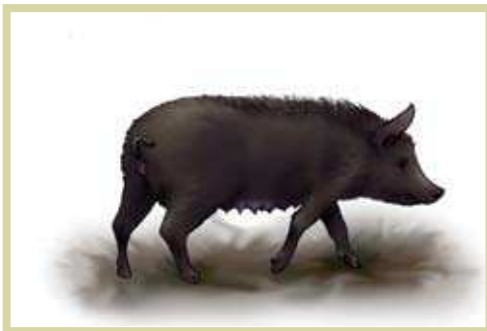
Duroc: red, muscular, partially drooping ears, desirable as sires.

They grow the fastest out of all the other breeds. Average live weight of matured male 300 kg and female is 250 kg.

High prolificacy, with a litter size of 9 with high weaning rate.



Tibetan



The Tibetan breed of pig is especially adapted to the high hills, cold climate and to being on pasture all year round. It is characterized by:

Light body weight (mature wt about 35 kg.)

Black hair coat, with long and dense bristles

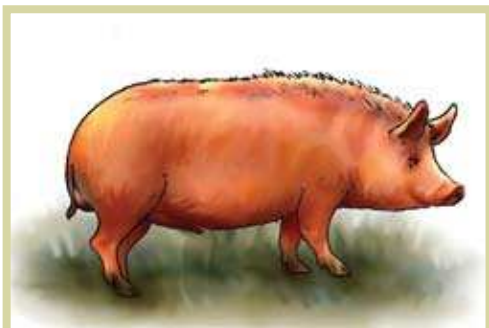
Highly developed digestive organs; the length of the intestine is about 36 times its own body length.

Ability to deposit fat in the body. The internal and visceral fat is about 15 percent of bodyweight.

Muscles with a marbled appearance and meat with a special flavor.

Low prolificacy, with average litter size of 5, weaning percent of 69, and 5 pairs of teats.

Tamworth



Tamworth: Ginger, golden red to dark red colored breed with a long head, prick ears, a straight face and snout, and a long, narrow body.

Mature boar may weigh 245 – 265 kg and sow 200 – 300 kg. They produce smaller litters than other commercial breeds. .

Meishan

The Meishan breed of pig was developed in China and characterized by: A black colored breed with short legs, big stomach, deep back and very ugly face are the major visible features.

Very high prolificacy, with a litter size of 14 -17 with average birth weight 900gm, weaning of 11 - 12, and having 8-9 pairs of teats.



Daily weight gain is 300 – 400 gm with FCR 5:1. An adult male weight about 450 kg and female weight 350 kg average.

This breed is found in eastern Nepal.

Crosses between native and exotic for improvement of local breeds:

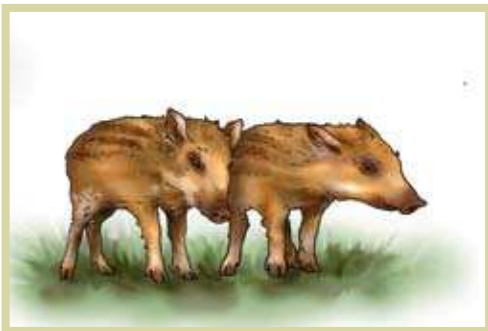
Breed improvement is important in obtaining improved and high yielding animals. The main purpose of breed improvement is to introduce a positive characteristic into a local breed. For example: by crossbreeding an indigenous sow with an exotic boar; the offspring is likely to inherit the body shape and good growth rate from its father and the tolerance to environmental stress from its mother.



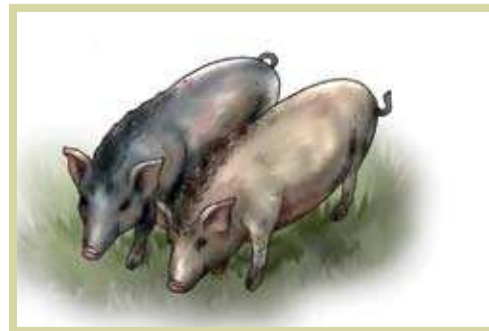
Cross breed between Exotic and local breed



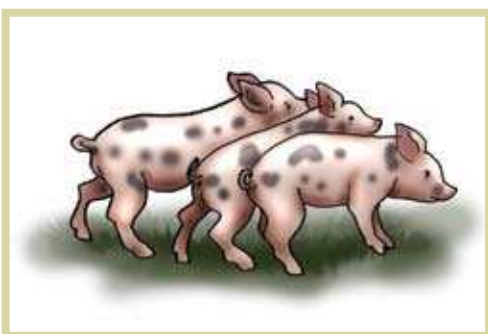
Cross breed between Yorkshire and local breed (Chwanche)



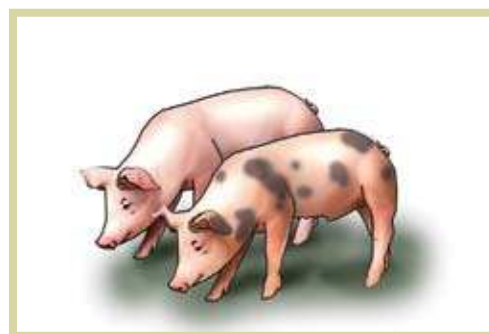
Cross breed between wild boar and local breed (Hurra)



Cross breed between Exotic and local breed (Hurra)



Cross breed between local and landrace.

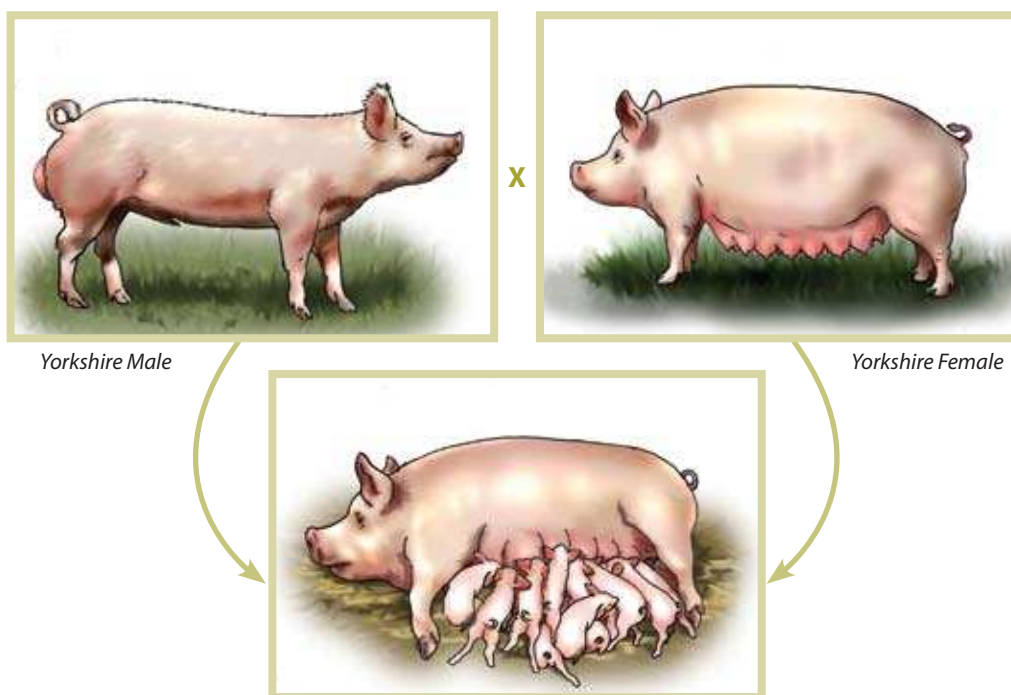


Cross breed between Chinese landrace and local breed

Breeding

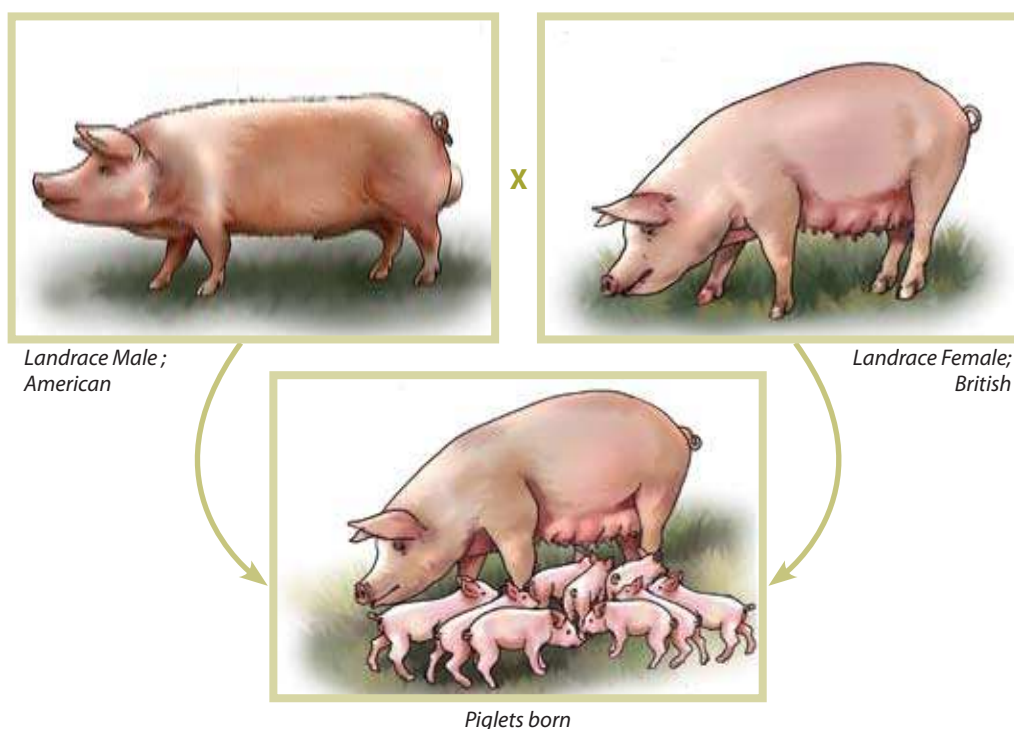
Pure-breeding

Mating purebred individuals of the same breed. The progeny has the same genetic makeup. The major objective of pure-breeding is to identify and propagate superior genes for use in commercial production primarily in crossbreeding programs as well as to propagate and identify superior females for maintaining valuable genetic material. Furthermore crossbreeding will not be worthwhile unless superior pure bred individuals are used.



Out breeding

Mating individuals of the same breed but who are less closely related than the average of the breed. There should not be a common ancestor for at least four generation back in the pedigree of the boar and the females with which he is mated. It is a useful mating system in purebred individuals.



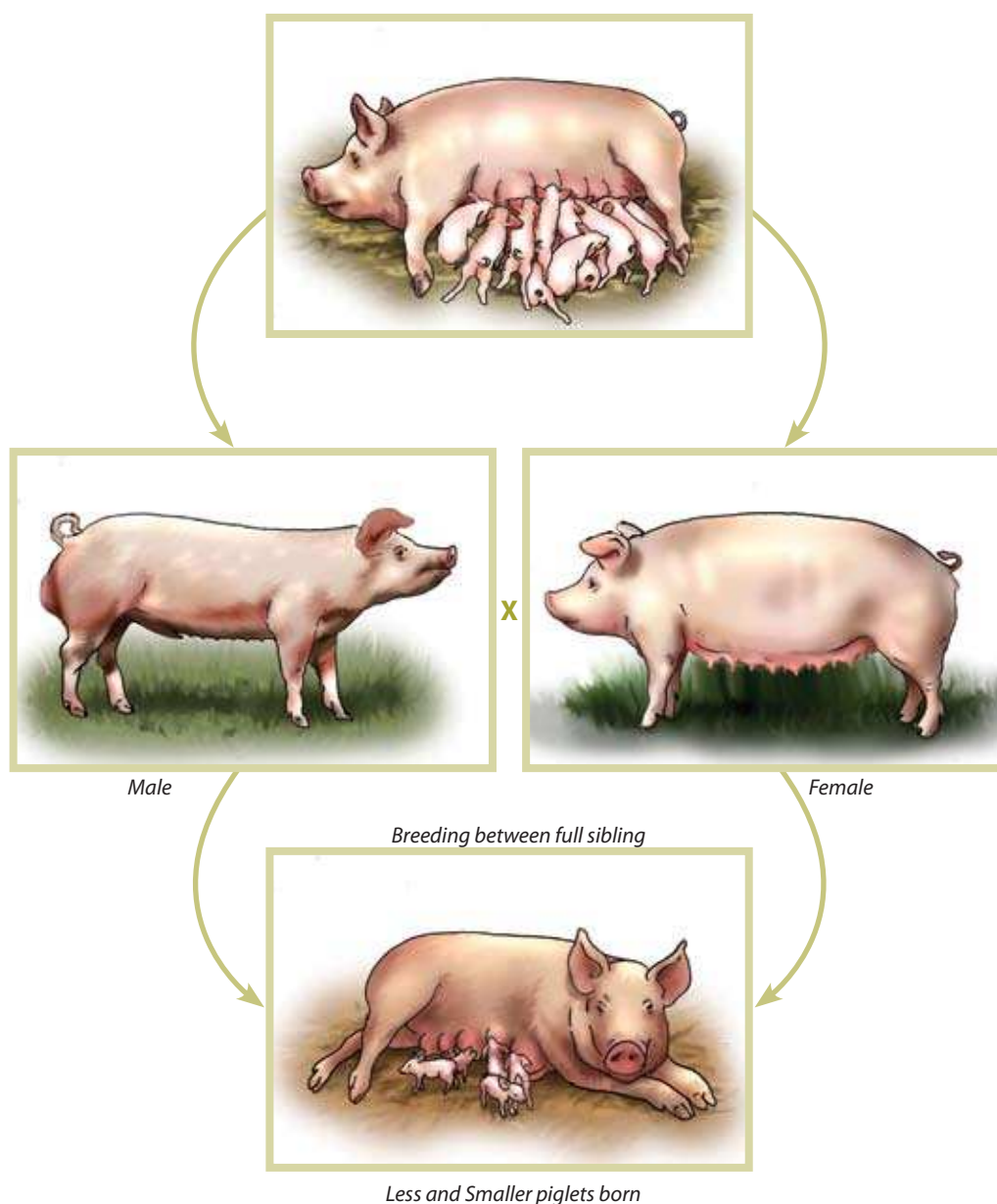
In breeding

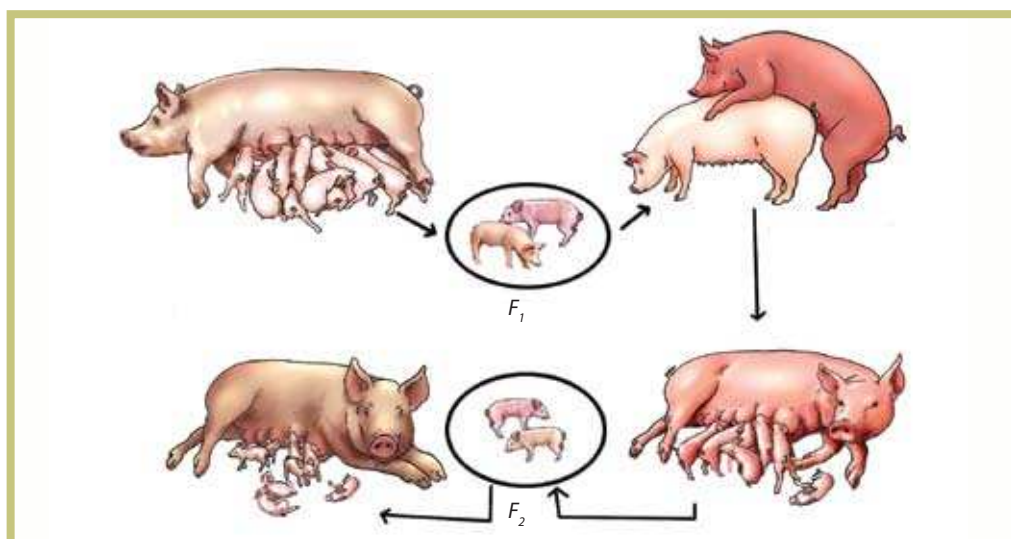
Mating between individuals of the same breed but which are more closely related than the average of the breed. This could be between as close individuals as full sibs or sire – daughter, mother - son. Pure breeding is a special kind of in-breeding. The effect of inbreeding is the concentration of common genes in the offspring. This high frequency of homozygous gene pairs applies to both desirable and undesirable traits. Many undesirable traits e.g. hernia and cryptorchidism involve recessive genes thus inbreeding perpetuates their expression phenotypically. Inbreeding causes decrease in litter size and increases mortality. Inbred sows are inferior in milking and mothering ability. It delays sexual maturity in gilts and boars. Inbred boars have less sexual libido. Inbred gilts have fewer eggs during oestrus and farrow smaller litters than those out bred.

Effect of In-Breeding

- ◆ Sow with newly borne litters about 12 piglets.
- ◆ Male and Female piglets taken by another farmers to his home.
- ◆ Breeding between the same siblings.
- ◆ Female giving birth about 9 piglets

- ◆ About 25 % less no of smaller and weak piglets are born as compared with first sow and some of them were borne dead
- ◆ Male and Female piglet taken by another farmers to his home
- ◆ Breeding between the same siblings about six piglets.
- ◆ About 50 % less no of vey smaller and weak piglets born as compared with the first sow, some of them were borne dead



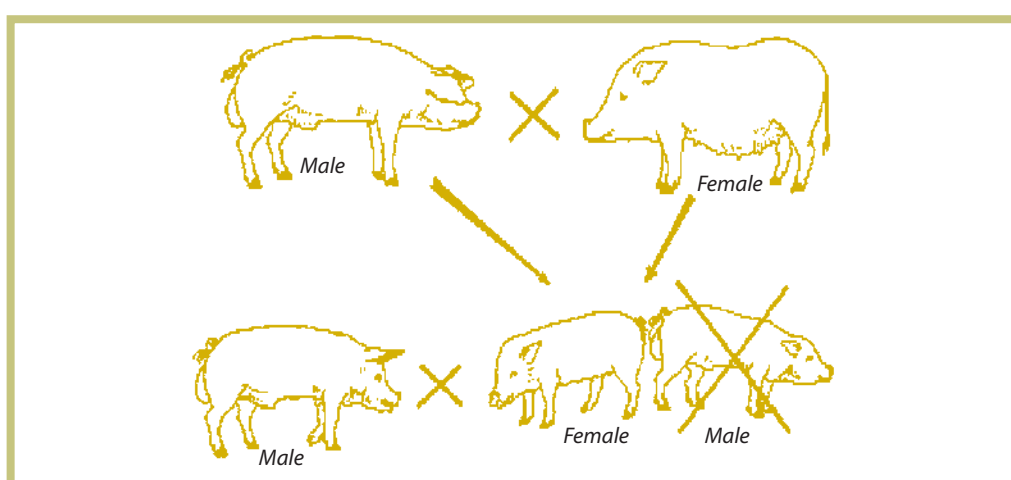


Cross breeding

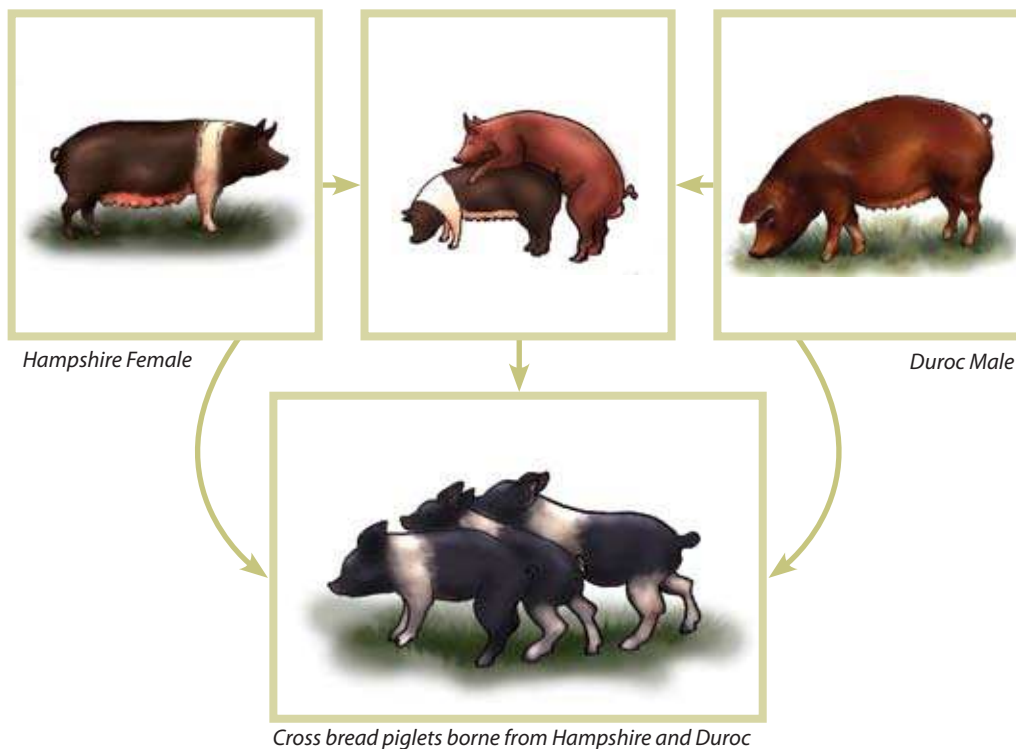
Mating two individuals from different breeds thus introducing into the progeny a gene combination that is different from that existing in either parent or in the breed of either parent. Cross breeding can involve two or more breeds, depending on the desired result. The sole purpose of cross breeding is to take advantage of the observed improvement in performance of the progeny above that of either parent - hybrid vigour or heterosis.

Methods of cross breedy

1: Cross Breeding Between Unidentified Breeds;

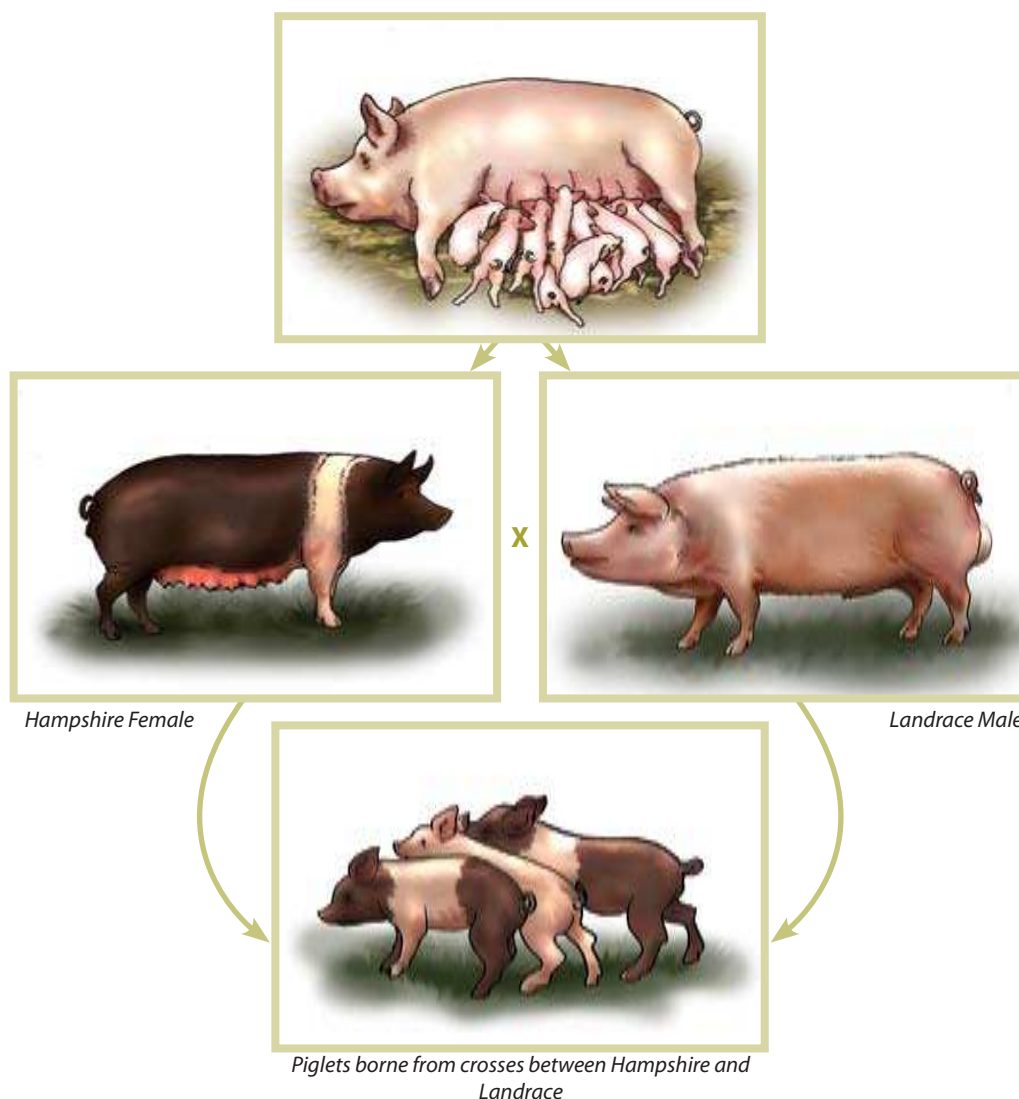


2: Cross Breeding Between Unidentified Breeds;



Effect of Cross Breeding

- ◆ Local sow with her piglets
- ◆ Exotic sow with her piglets
- ◆ Female piglet from local sow and Male piglet from exotic sow are taken by a farmer to his home for breeding propose
- ◆ Breeding between these male and female pig
- ◆ Healthy and bigger body size piglets are born from the local sow
- ◆ All male piglets are sold and few selected crossed bread female are kept for breeding
- ◆ Another exotic male which is not in relation with the herd introduced for breeding.
- ◆ Breeding between them
- ◆ Very healthy, strong, active and fast growing piglets are born



Effect of Negative Selection

- ◆ Sow with newly borne litters about 12 piglets.
- ◆ Stronger and healthy piglets were either sold or castrated for meat purpose
- ◆ Smaller and weak Male and Female piglets kept for breeding purpose.
- ◆ Breeding between the same siblings.
- ◆ Female giving birth about 9 piglets
- ◆ About 25 % less no of smaller and weak piglets are born as compared with first sow and some of them were borne dead
- ◆ Among the piglets stronger and healthy either sold for cash or castrated for meat and smaller and weak are kept for breeding purpose.

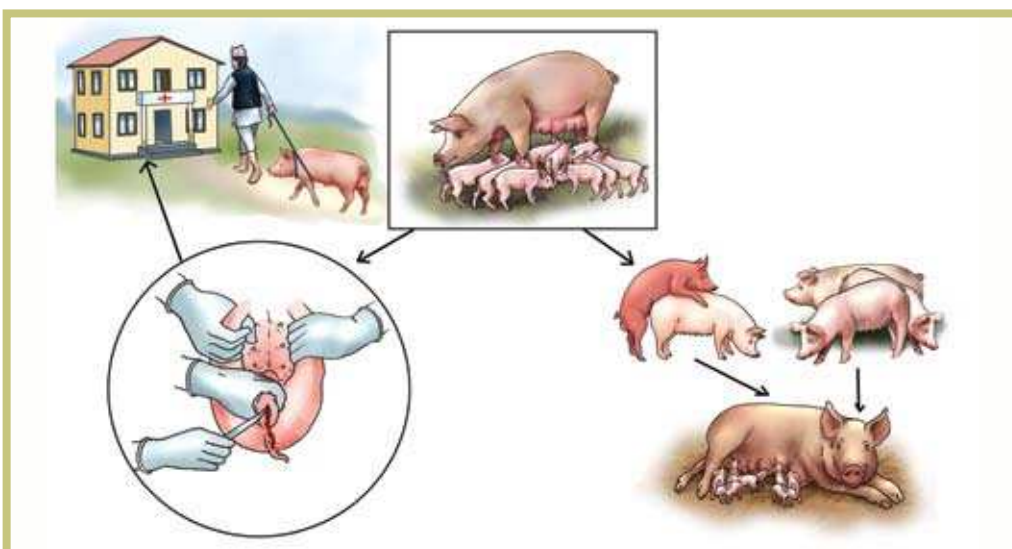
- ◆ Breeding between the same siblings about 6 piglets.
- ◆ About 50 % less, smaller and weak piglets born as compared with the first sow, some of them will borne dead.

Best Breeding Practices to be Adopted in the Villages

Best pig breeding pruchees adapted in the villagee. (Breeding boar exchange between villages / farmers grops.)



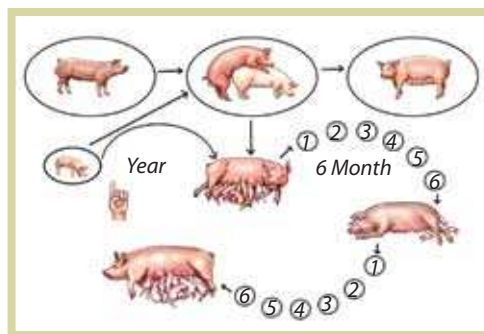
For crossbreeding; male piglet exchanged between villages. Every year breeding male must be changed with un-related herd to avoid inbreeding problems.



Selection of Breeding Gilt

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:

- ◆ Gilt selected to have at least 12 teats so as to accommodate a large litter
- ◆ Gilt to be selected from sows, which wean 9 -10 or more piglets per litter and are known to be good mothers and first farrowing at one year of age and farrowing interval of seven month.
- ◆ Select breeding gilts at weaning period, further selection should be done 5-6 months of age.
- ◆ Select fast growing weaners. These will likely consume less feed per unit live weight gain. Thus less costly to keep.
- ◆ Select gilts which have developed hams and comparatively light heads.
- ◆ The selected gilts should have good body confirmation i.e. strong legs, sound feet etc.
- ◆ Gilt should not select for breeding purpose having supernumerary and inverted teats, and fat deposited at the base of the teats
- ◆ Gilt must be at least 8 months old at first service.

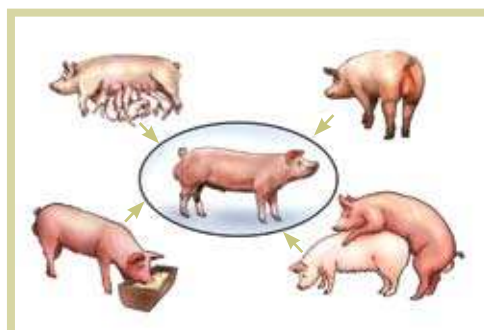


Age to breed gilts	8 months
Weight of breed gilts	100-120 kg
Length of heat period	2-3 days
Best time to breed in heat period	Gilts – first day and Sows- Second day
Number of services per sow	2 services at an interval of 12-14 hours
Period of oestrous cycle	18-24 days (Average 21 days)
Occurrence of heat after weaning	2-10 days
Gestation period	114 days

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:

- ◆ Boar to have sound feet with good, full hams, uniform curve at the back and of good length.



- ◆ Boar to have at least 12 nicely placed rudimentary teats so as to pass on this characteristic.
- ◆ Boar to be selected from sows, which wean 8 -10 or more piglets per litter and are known to be good mothers.
- ◆ Boar to be selected from the herd which is having normal sex organs, active, healthy and strong.
- ◆ Selection to be done before castration i.e. at 4 weeks. Select biggest from the litter.
- ◆ Boar must be at least 8 months old at first service.

Heat detection - Common signs of heat

1st stage: Early heat signs

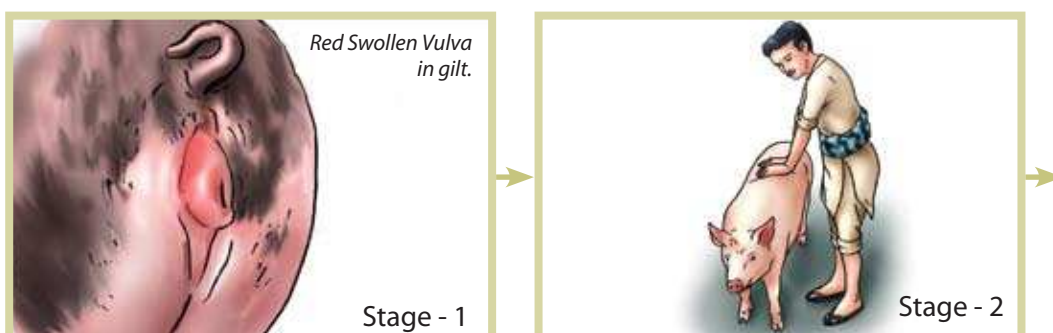
- ◆ General restlessness
- ◆ Vulva turns red and is swollen
- ◆ White mucus discharge

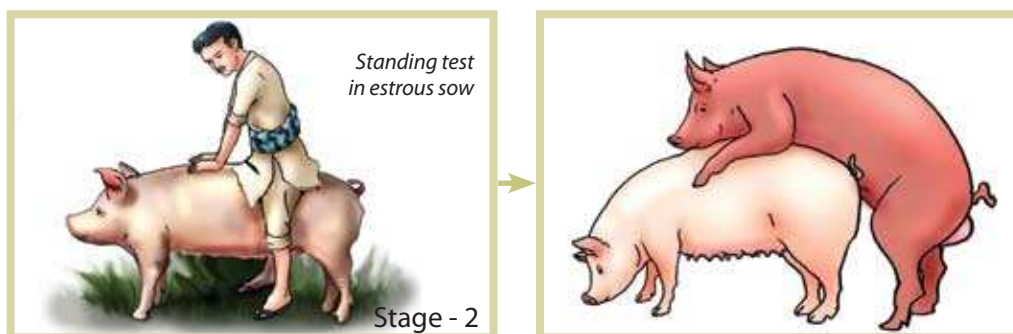
2nd stage: Service period signs

- ◆ Real Oestrus lasts for 40 - 60 hours
- ◆ Vulva becomes less red and swollen
- ◆ Slimy mucus discharge
- ◆ Tendency to mount and be mounted by others.
- ◆ The sow or gilt will stand still when pressure is applied to her back (can accept a man's weight sitting on her. Thus the right stage to send her to the boar).

3rd stage: Post oestrus-period signs

- ◆ The sow/gilt will not stand still when pressure is applied to her back.
- ◆ The swelling of the vulva disappears.





How to induce heat - Recommended practices

After farrowing, a sow may be slow to come into heat. Here are a few methods used by farmers to induce heat:

- ◆ Gently stroke the sow's vagina with a freshly cut papaya stalk every morning for 3-5 days.
- ◆ Spray the sow's (or gilt's) pen with boar urine every morning for 3-5 days.
- ◆ Grind 1 kg of fresh or dried lotus (*Semen nelumbinis*) seeds. Mix with 20 kg of dry feed. Feed to the sow twice a day for 5-7 days.
- ◆ Bring the sow to the boar, or place the sow in a pen next to the boar.
- ◆ Put the sow with the boar for a short period every day when the heat is expected.
- ◆ Always take the sow to the boar. This is less upsetting for him.
- ◆ Put the sow and boar together just before feeding.
- ◆ During her 24-hour pick heat period allow the boar to serve twice, with an interval of about 12-14 hour intervals between services. Do not mate animals during the hot time of day.
- ◆ If the sow doesn't conceive, she will return on heat again in about 3-week's time.
- ◆ 10 days before service, give the sow/gilt 1 - 2 kg of feed extra per day. Continue this for one week after service.
- ◆ During the last month of pregnancy, give 0.5 kg extra feed per day but decrease this gradually one week before farrowing. Provide plenty of water to help prevent congested gut during farrowing.
- ◆ Each boar should be kept in its own pen to avoid fighting. For mating, the sow is taken to the boar.

Stimulating regular heat

- ◆ Remove the sow from the piglets early (at 4 - 6 weeks of age) and all at once.
- ◆ Take the sow to a house with dry sows.
- ◆ Put the sow close to a boar, in a way that makes direct contact (hear, see, smell) possible.

- ◆ The sow should not be given any feed on the day of weaning.
- ◆ The next day feed about 4 kg/day. This is called flushing and should be done for a maximum of 10 days or until the service takes place.
- ◆ Put the sows in groups (stress stimulates heat)
- ◆ If there are heat problems, change the type of feed for a few days.
- ◆ Maintain a good climate; see to it that there is sufficient light in the house.
- ◆ Sows should not be too fat or too thin when they are served. It is important to keep this in mind when determining the ration during the suckling period.

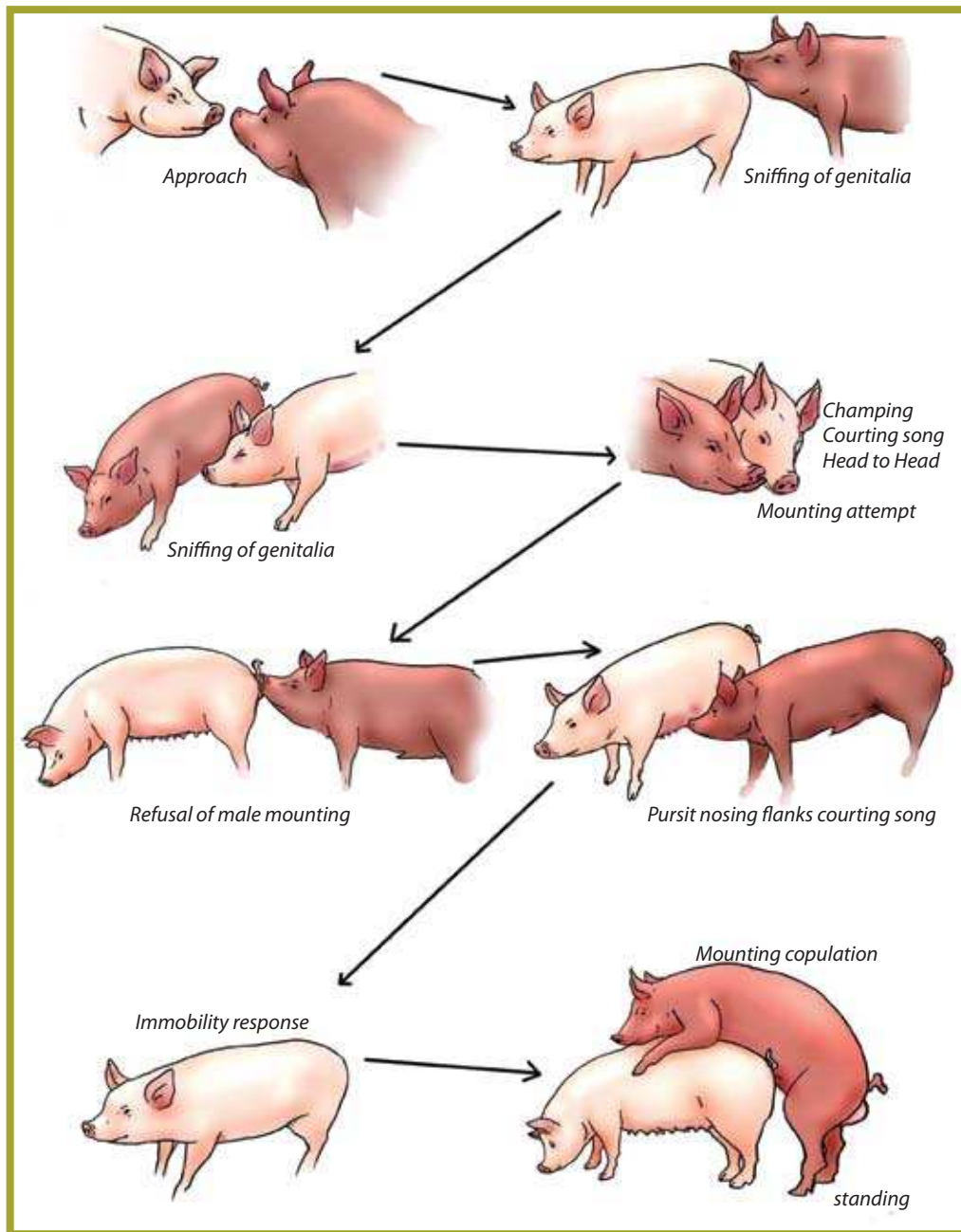
When sow is in gestation

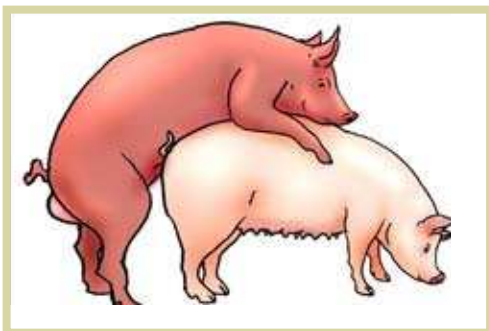
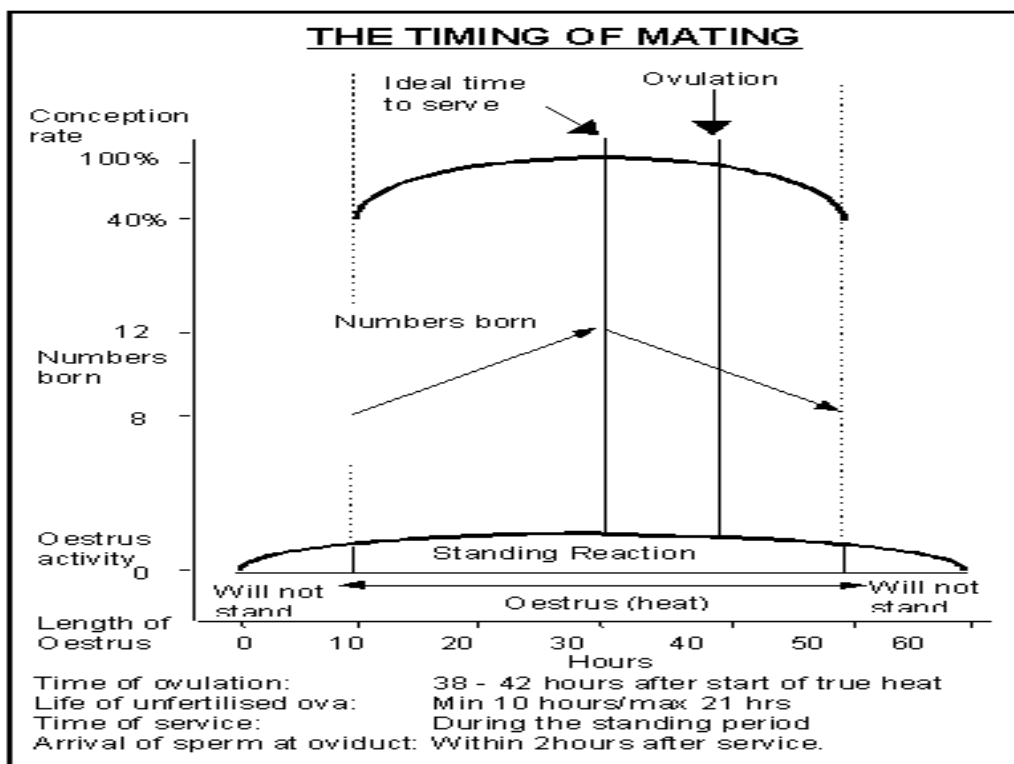
- ◆ after 21 days of serving she does not show heat signs
- ◆ Echo scan pregnancy detection 23 - 35 days, positive results

Culling

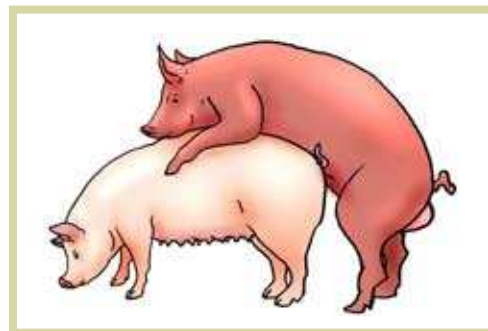
- ◆ Sows that are difficult to get in-pig (pregnant) which only manage to rear small litters should be sold off.
- ◆ Boars which are infertile or moderately infertile should be culled

Breeding Behaviour expressed during breedy period.





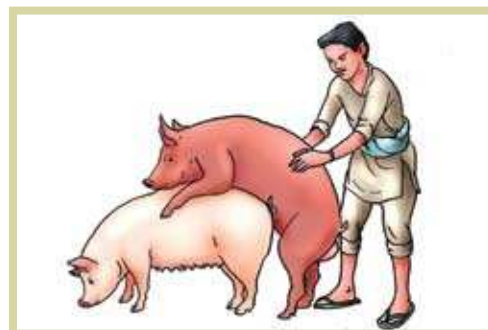
First mating between 10 – 22 hrs of estrus



Second mating 22 – 40 hrs of estrus

Assistance

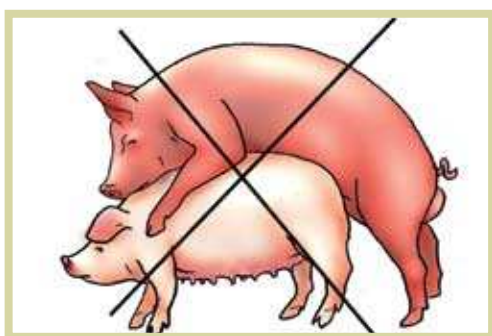
- ◆ Young boars may need assistance in lining up their mate. Make sure your hands and wrists are clean and your fingernails are trimmed.
- ◆ Pigs mate slowly. The boar may take a minute or more to reach the point of ejaculation.



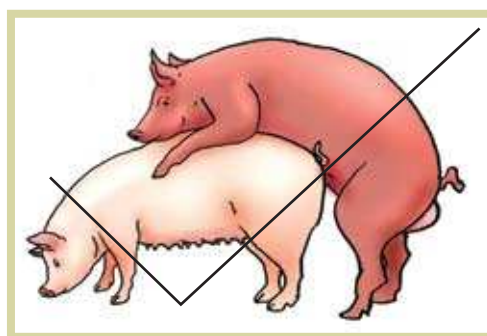
- ◆ To improve conception: Crush 1 kg of Semen nelumbinis (lotus) seed and mix with the sow's feed. Give 2 times per day for 3-5 days.
- ◆ Fat sows may have difficulty conceiving. Therefore, if a sow is too fat, reduce her feed.

Reasons for not conceiving

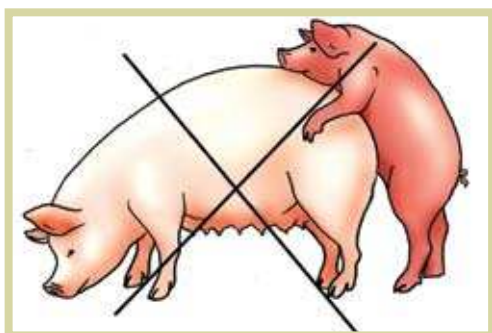
- ◆ The sow is too fat.
- ◆ It is the animal's first heat cycle.
- ◆ The boar is too young.
- ◆ The boar is overworked (used for more than five matings a week).



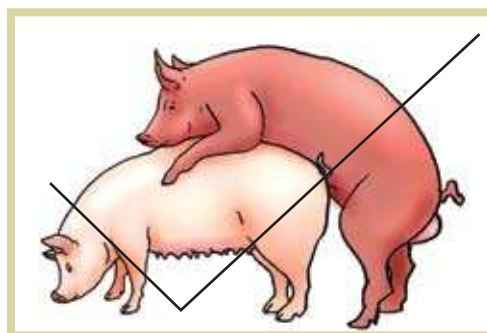
Too big male



Similar body size



Too small male



Similar body size

Care and Management of breeding Boar

- ◆ High priority should be given to the management of animals newly introduced into the breeding herd to achieve maximum reproductive efficiency. Good reproductive and nutritional management pays dividends through an increased number of pigs farrowed live and weaned. The following boar and gilt management practices will assist in the maximization of fertility and longevity.
- ◆ Upon completion of test, boars should be fed at a level of energy that will prevent excessive fat deposition. This practice should help ensure that they are

physically adept and sexually active. Nutrients other than energy should be provided to meet the minimum daily recommended allowance of the National Research Council. See Appendix A for details.

- ◆ Boars tested individually or in small groups in close confinement should be managed upon completion of the test in a manner to develop physical hardening and to stimulate sexual arousal and libido. Where possible, this should be done before delivery to their new owners and might include the following: a) Shifting boars to different locations. b) Providing fence-line contact with cycling females. This may be especially important where the aggressiveness of the boars precludes mixing them together.
- ◆ Although boars tested in large groups and in less confined settings are likely to require less physical conditioning and sexual stimulation before use, they may also benefit from exposure to the management procedures described for boars reared in close confinement.

Care and Management of breeding Boar

- ◆ To be evaluated for reproductive soundness, boars should be at least 7 1/2 months of age. The evaluation should be completed before the breeding period so problem boars can be identified and culled. Boars should be evaluated on the following criteria.
- ◆ **Mating behavior** may be evaluated by bringing a gilt in standing heat into the boar's pen and observing the following:
 - *Libido*: Observe the boar's aggressiveness and desire to mate. Boars may need assistance through at least one mating experience.
 - *Mounting*: Boars must have the ability to mount correctly. Some boars may be interested in mounting but lameness, arthritis, or injury may prevent success. Boars that mount the front end of gilt should be gently moved to the proper position.
 - *Mating*: Observe the boar's ability to erect the penis and properly enter the gilt. Examine the boar's penis for normal size and condition. Penis abnormalities encountered occasionally are: (1) adhered or tied penis, (2) limp penis, (3) infantile penis, and (4) coiling of the penis in the diverticulum. These conditions may be heritable, and boars exhibiting these problems should not be used to produce breeding stock.
- ◆ **Semen**. A few boars fail to produce sperm cells. Hence, semen from young boars should be submitted to a check. The simplest way to collect semen from a boar is to allow the boar to mount a gilt in standing heat. First place a rubber glove (latex) on one hand and after the boar begins to extend his penis, grasp firmly the corkscrew end of his penis and bring the penis gradually forward once extended ejaculation begins. Collect the entire ejaculate into a wide-mouth container

covered with a double layer of cheesecloth to separate the gel fraction. The volume of semen obtained is quite variable between boars but averages generally between 200-250 milliliters (about 1 cup). If the sperm concentration is high, the semen will be milky in appearance. Boars with watery or bloody semen should be evaluated by a reproduction specialist. Usually 70 to 80 percent of the sperm should be motile immediately after collection. Low sperm motility is not a serious matter unless the condition persists for several months. Boars that produce semen with no sperm or only a few sperm should be rechecked several times at weekly intervals. If the condition persists, the boar should be culled. The first ejaculate of a new boar may not provide an accurate test and should not be used for evaluation.

- ◆ **Test Mating.** To complete the soundness evaluation, two or three gilts should be bred and carefully checked as to whether they return to estrus within 4 weeks. Exposure to conditions or microorganisms on the new farm may have produced temporary infertility. High environmental temperatures, stress of transportation, illness, lameness, or injuries causing high body temperature can alter sperm motility and reduce fertility for up to 8 weeks.

Care and Management of breeding Sow

- ◆ At the end of the test, energy intake of selected gilts should be restricted to prevent overweight conditions. Nutrients other than energy should be provided to meet the minimum daily recommended allowances of the National Research Council (Appendix A).
- ◆ Moving gilts to new pens, increased exercise, and daily exposure to boars beginning between 160 and 180 days of age will help stimulate the onset of estrus. Breeding should be delayed until the second or third estrus to increase the probability of large litters and prevent dystocia. Gilts that do not conceive after mating at two estrous periods should be marketed. Likewise, gilts that have not expressed heat by 9 months of age should be culled. During gestation, gilts should be fed to gain about 75 lb and not become overly fat.

Minimum Breeding Ages for Boars and Gilts

- ◆ In order for the seed stock producer to measure performance to acceptable off-test weights, delivery of boars and gilts to the buyer is seldom earlier than 5.5 months of age. Sexual maturity and reproductive performance also are highly age dependent. The *minimum* age for successful breeding in boars is 7.5 months. Gilts should be bred on the second or third heat to take advantage of the expected increase in ovulation rate that usually occurs following puberty.

Care and Management of New Born Piglets

A few minutes after the birth the umbilical cord may be pulled gently away or cut if necessary (to about 5 cm length). After birth, the navel of each piglet should be soaked in a cup of iodine solution to prevent inflammation and tetanus. Each piglet should be rubbed carefully, dry with a cloth.



The navel of a piglet being dipped in iodine solution



Newly born piglets being assisted to suckle

Make sure the piglets are able to suck from the udder as soon as possible after birth. Their sucking will encourage the sow to let down her milk. Weak piglets may need to be assisted. It is important that the piglets immediately take advantage of the first milk called colostrums. Colostrums should be taken by all the piglets on the same day they are born. If taken at this time the colostrums is able to protect the piglets against diseases.

- ◆ After the first one or two days, the digestive system of the piglets breaks down the colostrum and its ability to protect from diseases is lost.
- ◆ The piglets can be given additional feed of goat or cow's milk, or a mashed bean porridge to which a little sugar has been added. If the milk produced by the sow is too little to meet the needs of the piglets or the sow completely neglects the piglets, they should be put on another sow or reared on cow or goat's milk.



A sow with her two-day-old piglets resting after suckling

Feeding piglets whose mother does not produce enough milk

- ◆ If the sow does not produce enough milk the piglets should be given to another sow which farrowed or gave birth up to three days before. This sow should have fewer piglets than the number of teats on her udder. This is because the teats which are not being used by piglets dry off after three days. Piglets normally take control of one teat at birth and continue to feed from it until they are weaned. Transfer extra piglets to the sow with fewer piglets after disguising them with a spray which has a strong smell e.g. engine oil/kerol diluted with water to last at least 1 or 2 days.
- ◆ All piglets should be sprayed as soon as introduction is done so that the foster mother doesn't recognize its own as foreigners. If there is no sow to take over feeding the piglets, they will have to be given extra food by hand. Goat or cow's milk can be given to the piglets in the same way as for motherless or orphaned piglets.

Colostrums Substitute

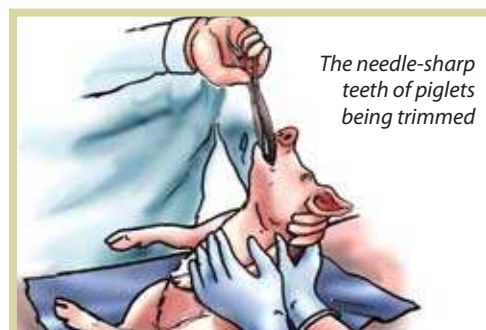


Colostrums Substitute is a complete nutritional "colostrums substitute" for newborn piglets containing sources of live, viable natural-occurring micro-organisms that need to be substituted when sufficient amounts of colostrums are not available to the piglets because of poor milk letdown or when the sow will not allow the piglets to nurse.

Colostrums Substitute may be frozen, as a powder, for longer shelf life. It is highly recommended that all breeders and rescuers have *Pet Pig Colostrums Substitute* on hand during farrowing in case of emergency.

Teeth Trimming

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.



Anaemia or Iron deficiency

Oral Iron Supplement

Oral Iron Supplement is an iron supplement for newborns. The manufacturing of *Oral Iron Supplement* uses a special, chelated 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.



Iron injection solution



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

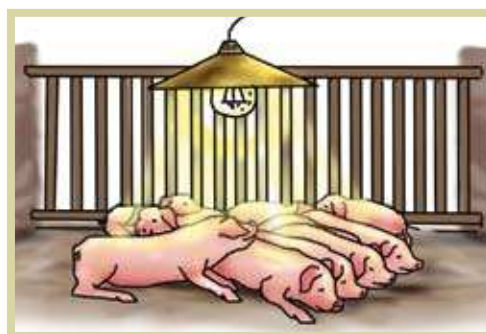
- ◆ Feeding compost- must be of good quality and supplied daily. Compost of poor quality may contain bacteria.
- ◆ Wood ash can also be put into the pen. This will not provide iron, but it does contain other important minerals.

Tail Cutting

Cut the tip of the tail within 4-7 days. This prevents tail chewing, which can lead to infections. A piece of chain can be hung down from the ceiling for the piglets to chew.

Heating for Piglets

In cold weather, a small area can be heated with an infrared lamp. This keeps the young pigs warm. It helps prevent pneumonia and crushing as the piglets tend to stay under the lamp when not feeding.



Piglets in creep area warmed by an infra red bulb

Creep feeding

- ◆ Young piglets from 7 days onwards should have high protein feed available to them. This has to be fed in a small area where the mother cannot eat the feed. The feed conversion rate of young piglets is very high and thus creep feeding is particularly economic. Creep feeding helps the piglets to get used to feeding at an early age.

NB: The sow's milk yield also begins to decrease just as the growing piglets require feed.

Rearing motherless piglets

- ◆ It is very important that newly-born piglets receive colostrum straight after birth to build up their natural resistance. Colostrum is the first milk that the sow produces after farrowing. If the sow dies whilst farrowing, the colostrum will have to be taken from another farrowing sow for the piglets. If they get no colostrum, their chance of survival is very small.
- ◆ Cow's or goat's milk can be given to the piglets. This is after the piglets have taken colostrum. The milk should not be diluted, as sow's milk is very concentrated. It should be warmed up to slightly above body temperature (37° - 40°C) in a pan lowered into a larger pan containing boiling water.

Feeding program

For the first two days the piglets should be fed at regular intervals 5 times a day, for about 10 minutes each time. On the third and on the fourth day they should be fed four times a day, and after that 3 times a day. After 14 days, increase the quantity of milk at each feed, but gradually decrease the number of feeds per day. Gradually change over to more solid feed, so that by the age of about three weeks they should be able to take regular feed. If no nutritious feed is available they should continue on milk for a while longer. The weaker ones can be fed four times a day for a longer time. The figures in the table are maximum quantities - it is better to give too little rather than too much feed. There should be a continuous supply of water, which should be boiled to avoid any contamination.

Feeding program for orphan piglets

Day	No. of feeding times	Quantity each time (ml)
1	5	30
2	5	40 – 45
3	4	60
4	4	70
5 - 7	3	80 - 100
8 - 9	3	120
10 - 11	3	140
12 - 14	3	160

As soon as possible, the orphan piglets should move onto regular food. This should be of good quality, protein-rich, and easily digestible. Note-despite the amount of care they receive, hand-reared piglets will never grow as fast as those reared by a mother sow.

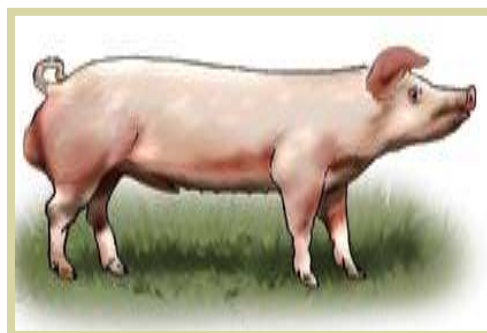
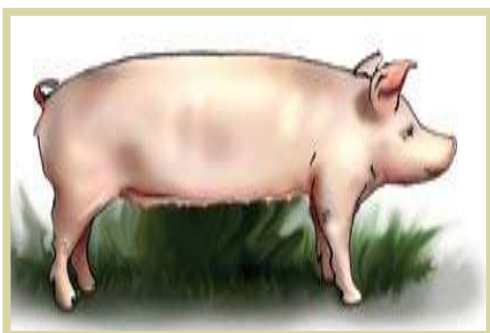
Weaning

Successful early weaning of pigs requires skill and attention to detail in all areas. Weaning is a great challenge to the young pig. Knowledge of the nutrient requirements, health status and growth patterns for modern breeds of early-weaned pigs continue to develop. Early weaning of piglets at 14-21 days increases sow productivity through the potential increase in the number of litters per sow per year.

Selection of Replacement

- ◆ Boars must be replaced when they become too large to serve most of the sows on the farm.
- ◆ Boars usually have a maximum working life of between 18 and 24 months. This means they should be replaced when they are 30 to 36 months old.

- ◆ It is very important to keep record of the boars' use so that infertile ones can be detected and replaced as soon as possible.
- ◆ A low sex drive (libido) can also be a problem. Some boars are slow workers and are sometimes reluctant and only now and then willing to work. Attention must be given to these boars so that they can be replaced if necessary.
- ◆ If replacement gilts are not available when needed or if they do not comply with the requirements, the gilts should be bought. It is advisable to buy them from the same farm where the boars come from, because in this way the previous owner can advise you on the breeding policy for a small pig farm.



Culling of sows

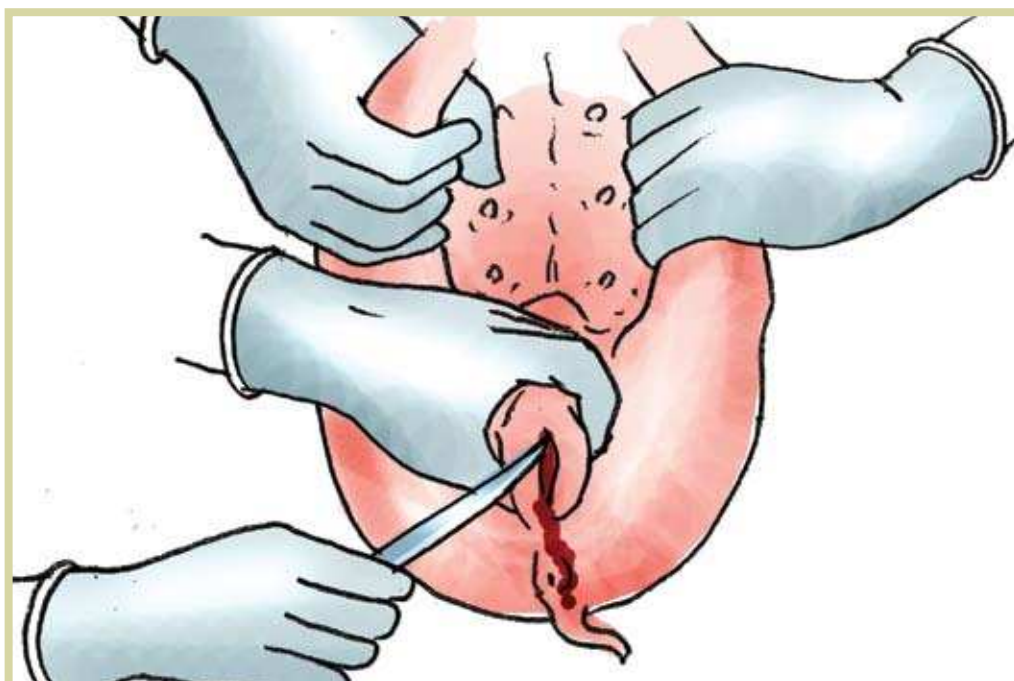
- ◆ Culled sows must be removed from the farm and sold as soon as possible. It does not pay to keep culled sows on the farm to gain weight before they are sold. As soon as the sow's udder has returned to normal after weaning it is wise to send her to the abattoir. Replacement gilt can then be brought into the herd immediately.
- ◆ Reasons for removing sows from the herd are usually not known beforehand. Therefore, replacement gilts should always be available so that the number of breeding sows on the farm always remains the same. Some of the major reasons for culling are reported by big piggeries;

Reasons for culling	% of sows to be culled
Not pregnant	17
Failure to conceive at service	12
Do not come on heat	5
Abortions	6
Lameness	12
Poor performance (small litters, etc)	14
Old age	25
Disease	4
Lack of milk	5
Total	100

- ◆ Sows that farrow regularly and rear large litters (nine or more piglets) and are free of other problems and diseases should rear five to six or even more litters before they have to be removed from the herd. A sow is usually removed from the herd when her litters start to become smaller (two small litters in succession) or when she does not readily come on heat after weaning.

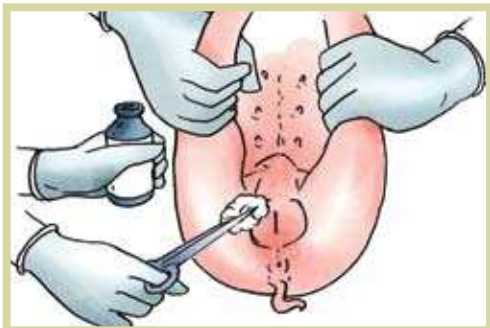
Castration

- ◆ 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. Two people are needed when castrating a piglet.
- ◆ One person will carry out the small operation and the other person will hold the piglet. The pen should be dry and very clean to prevent infection to the wound. The knife should be thoroughly cleaned with a disinfectant. One person takes the pig by the hind legs and holds it firmly between his or her legs. The piglet's head should point towards the ground.



A pig is held securely between the legs of the assistant with the scrotum exposed and testicles rounded out

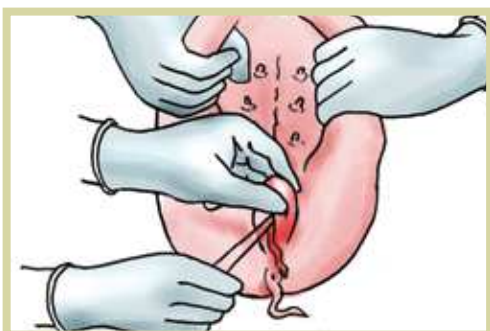
Castration - step by step



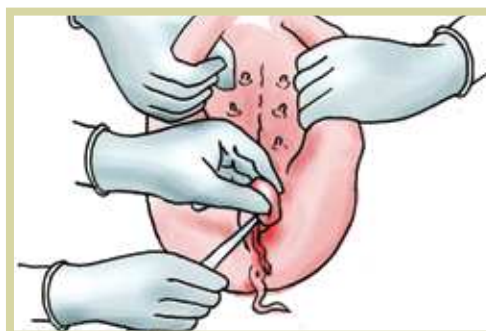
Step 1: Wash and wipe the scrotum with a disinfectant



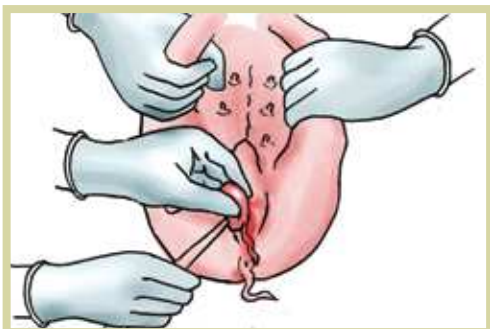
Step 2: Press one testicle against the scrotal skin to tighten the skin over the testicle. Make a cut, large enough to allow the testicle to be pushed out. Uses a very sharp and clean knife for the operation



Step 3: Pull the testicle out, so that the attached cord is also pulled to the outside.



Step 4: Hold the exposed testicle with the left hand while the cord is twisted twice.



Step 5: Cut the cord attached to the testicle by scraping away with the edge of the knife. There is more bleeding if the cord is cut in one stroke or sweep of the blade.



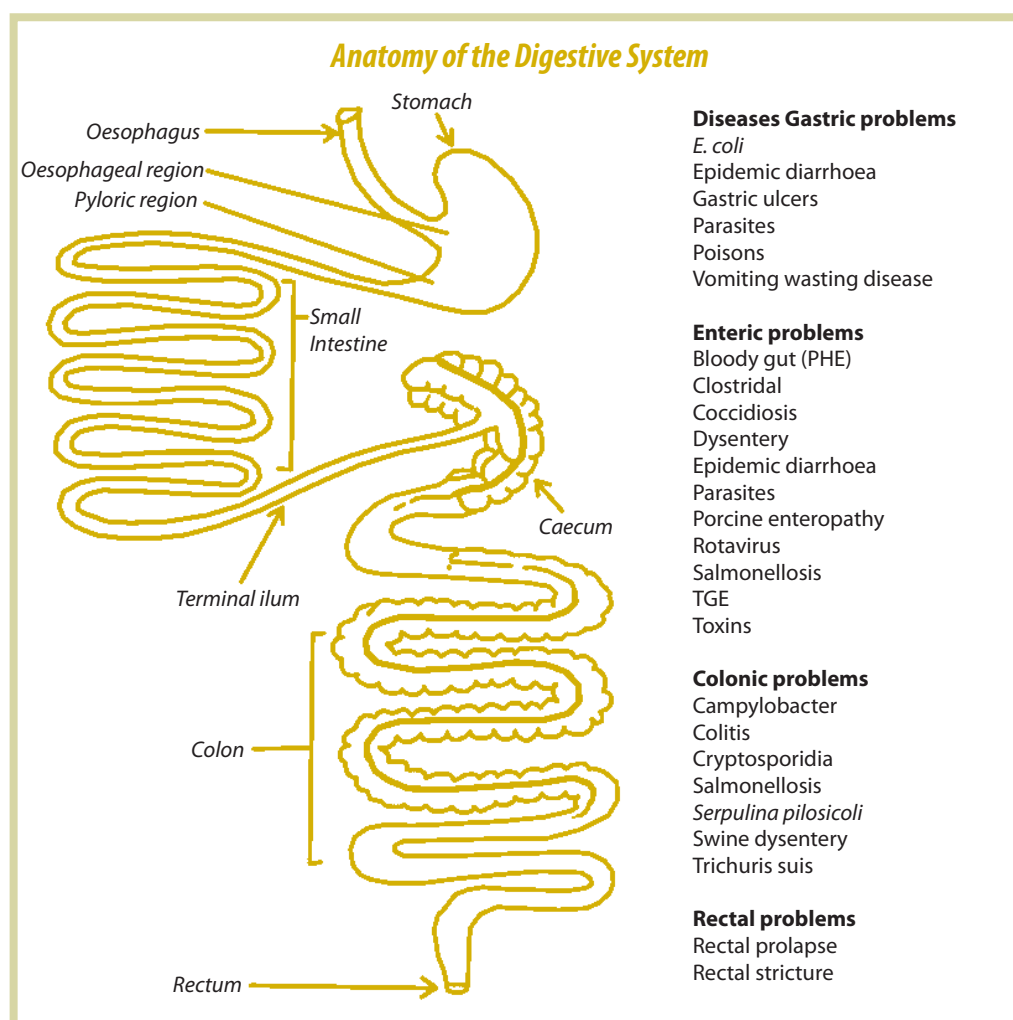
Step 6: Afterwards wash the wounds thoroughly with a disinfectant like iodine to prevent infection. The other testicle is removed in the same way.

“Always Request Technician to Perform Task”

Feeding

Good feed is necessary for growth, body maintenance and the production of meat and milk. You can use locally available feeds that are less expensive, but can be nutritionally complete when properly prepared. In fact, pigs can be fed well, using only kitchen scraps from a family's household. The nutritional needs of pigs can be divided into six categories or classes. These are water, carbohydrates, fats, proteins, vitamins and minerals.

Pig's Digestive Systems



What you can feed to your pig?



Commercially prepared swine rations from grain, fruit and vegetable from markets



Vegetable, fruit or bread scraps that have been not in contact with animal products or by-products if they are properly cooked.



Restaurants, food transporters and disposers of food waste products if they are properly cooked.



Forest Products, wild vegetables, wild bananas, wild cola – cassia, yam, forage grasses etc. if they are properly cooked.

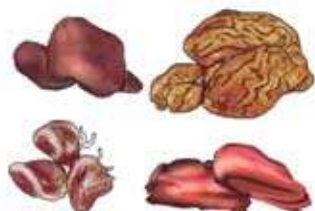


Alcohol distilling residues: local alcohol can be made from millet, rice, maize, sweet potato, banana, etc. if they are properly cooked.

What you cannot feed to you pig?



Any meat products; includes pies, sausage rolls, bacon and cheese rolls, pizza, salami and other delicatessen meats and table scraps without proper cooking and screening.



Any carcass or part of a carcass of any mammal or bird (raw and uncooked); includes any meat blood, offal, hide or feathers. Pigs that feed on carcass are also at risk of contracting diseases which is contagious to humans.



Any fish products and bones.

The excreta (droppings) of any mammal or bird
Any substance that has come into contact with a prohibited substance via collection, storage or transport in a contaminated container such as meat trays and take away food containers.

Household, commercial or industrial waste includes restaurant waste, without proper cooking and screening.

“Risks Associated with Feeding Raw or Improperly Cooked Food Wastes to Swine, if in doubt – don’t feed any food waste without checking first”

Formulation feed

Creep feed

- ◆ Creep Feed is the baby piglets’ first and most important dry food. It contains 20% protein that is highly fortified with milk by-products and is available in small, chewable, highly palatable pellets for easy digestion.
- ◆ A combination of protein source, milk replacer, vitamins, amino acids and rich feed ingredients makes this complete feed the ideal start for young healthy piglets.
- ◆ Feed ingredients in descending order: corn, soya bean meal, barley, wheat bran, vegetable protein, oilseeds extracts, fatty acids, feed phosphate, pig vitamins, and trace minerals.
- ◆ Creep feed (about 20g per piglet per day) or a good home-made mixture with fine rice bran, broken rice and milled maize grains. Clean drinking water must always be available.

Traditional pig feeds

Feeds should meet the animal's needs for maintenance, growth and reproduction. Good pig feed contains sufficient energy, protein, minerals and vitamins. Rice bran, broken rice, maize, soya-beans, cassava, vegetables and distillers' residues are often used in pig feed.

Distillery waste is much appreciated in the traditional pig husbandry, especially for fattening pigs. It is advisable however, not to give this high valued feed to pregnant and lactating sows and to piglets and weaners because of the alcohol contents in the waste.



Rice Bran: is very suitable for pig feeding. It contains 11% protein and can be used as the main ingredient. Rice bran can be mixed with other feeds to 30 - 45%. Rice bran can be kept no longer than 1 month because it can become mouldy.



Broken Rice: is very suitable for pig feeding. It can be mixed with other feeds up to 15 - 20%. Broken rice contains about 8% protein.



Maize: is a very good animal feed. It contains up to 65% carbohydrates and 9% protein. It can be mixed and cooked with other feeds, but not more than 40% in the mix ration



Soybeans: is a crop which has a high nutritional value and is very good for pig feeding. It contains 38% protein (=very high). It should be dried, milled or well cooked in combination with other feedstuff like rice bran, broken rice and maize.



Wheat Bran is particularly rich in dietary fiber and contains significant quantities of Carbohydrate, protein, vitamins, and minerals. Wheat Bran and is widely used as a major component animal feed. it contain ; Protein 14% to 16%, Fat Max 9.5% , Crude Fibre 8.0 to 10.0% and carbohydrate up to 25%.



Ipil – Ipil : Leucaena and Acacia are traditional, locally available tree-crops. The leaves are rich in protein. After drying, they can be mixed and fed to pigs with other feeds.



Root Crops: are being used for pig feeding, they can be mixed with other feeds up to around 10 - 20% (never more than 30%). First it should be peeled and washed and then sliced, dried and ground before use. It should not be fed to pigs as raw cassava with the skin, because of toxic substances. The sliced and dried cassava can be kept longer.



Fruits: Fruits damaged during transportation, storage and handling are used as supplementary feeds for pigs by boiling and mixing with other feeds such as rice bran, broken rice and maize. They can also be given fresh. Suitable fruits are: Banana, papaya, apple, pear, melons etc



Vegetables:Vegetables damage during transportation, storage and handling are used as supplementary feeds for pigs by boiling and mixing with other feeds such as rice bran, broken rice and maize. They can also be given fresh. Suitable vegetables are: cabbage, lettuce, spinach, morning glory, sweet potato vine, cola-cassia (needs boiling), pumpkin, guards, water hyacinth etc



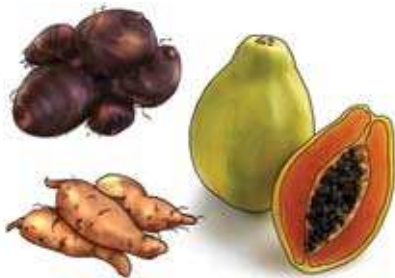
Restaurant/Kitchen waste: needs to be properly screening and cooking



Slaughter house offal; needs to be properly screen and cooking



Sweet potato vine and tubers can be used as pig feed



Potato, yam, papaya, sweet potato, etc



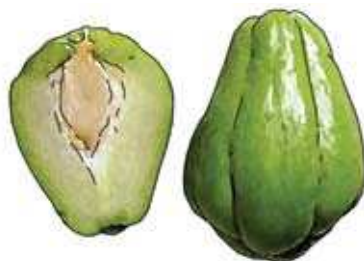
Maize, wheat, millet etc



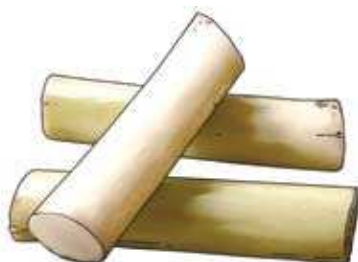
Green Soya bean plant: A reach source of vegetable protein



Cola-cassia/Pandalu : leaves and stems are quite a good local protein resources for pigs. Leaves contributed 20% of the dietary dry matter and 46% of the crude protein after cooking. It is also a rich source of calcium, phosphorus, iron, Vitamin C, thiamine, riboflavin and niacin, which are important constituents of diet. The fresh tuber has about 20% dry matter, while the fresh petiole has only about 6% dry matter (Inno Onwueme, 1999). Leaves and stems have a good composition with high crude protein content (16.51-18.20 % DM basic), they were used as local protein resource for pig production



Chayote; Both the fruit (vegetable) and the seed are rich in amino acids and vitamin C, potassium, phosphorus and calcium. Fruits is very low in calories, (12 calories per 100 g on average), chayote contains 0.5% protein, 0.2% lipids and 2% sugars



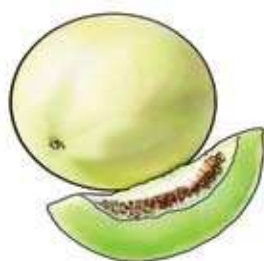
Banana Stem: The best way of feeding fresh green banana or plantain fruits is to chop them and sprinkle some salt on the slices since the fruits are very low in the in-organic nutrients. Cattle and pigs relish this material. For ensiling purposes, the chopped green bananas or plantains are preferred to the ripe fruits which lose some of their dry matter and, in particular sugars during ensiling. Similarly, green fruits are more easily dried than ripe fruits which are very difficult to completely dehydrate.



Pumpkin: Pumpkin is a good source of the vitamin B group, while a large proportion of these vitamins is lost during the preparation of the protein concentrate and isolates.



Bottle gourd: Important nutritive value in 100 grams of bottle gourd like energy-12 kcal, moisture- 96g, protein-little , fat- little, carbohydrates- 2g, fiber- 1g, calcium- 20mg, Iron- little and Phosphorus-10 mg.



Winter melon (Wax Gourd, White Gourd, Ash Gourd): The Winter Melon is a very large gourd that can grow up to 50 lbs or more! It develops a waxy coating when it matures. Unopened, the winter melon can typically be stored for up to 12 months. After it is cut open, it can only be stored for a single week. It contains very low Saturated Fat and Cholesterol, also a good source of Thiamin, Iron, Magnesium and Manganese, and a very good source of Dietary Fiber, Vitamin C, Riboflavin, Zinc and very high in Sodium.



Fruits damaged during transportation, storage and handling are used as supplementary feeds for pigs by boiling and mixing with other feeds such as rice bran, broken rice and maize. They can also be given fresh. Suitable fruits are: Banana, papaya, apple, pear, melons etc



Vegetables damaged during transportation, storage and handling are used as supplementary feeds for pigs by boiling and mixing with other feeds such as rice bran, broken rice and maize. They can also be given fresh. Suitable vegetables are: cabbage, lettuce, spinach, morning glory, sweet potato vine, cola-cassia (needs boiling), pumpkin, gourds, water hyacinth etc



Clover: sodium content is lower (0.05% vs 0.15%). Crude protein levels in the DM are around 25%. Phosphorus is 0.3% dry matter digestibility is up to 75%.



Stylo: is rich in protein, DCP levels range from 17-24% in green leaf and 6-12% in the stem, grows well in poor soil and can be feed directly to pigs without being cooked (unlike forest plants).



Alfalfa: Low in fiber, Palatable to consume for animal, Easily digestible, It is the best nutritional package you can put into the rations feeding your livestock, dairy cattle, poultry or pig. Contains a blend of 47 nutritional elements one of nature's most liberal balances of vitamins, minerals and amino acids.



Berseem: It is very palatable and is relished by all livestock. There has never been a case of bloat reported if given excess amount. It contains from 18 to 28 percent crude protein.



Water hyacinth: it is very important to the pigs, can replace 6% feed, but it cannot be fed to the cattle and the goats.

Effect of mixtures of water spinach and fresh water hyacinth leaves on growth performance of pigs fed a basal diet of rice bran is found good.



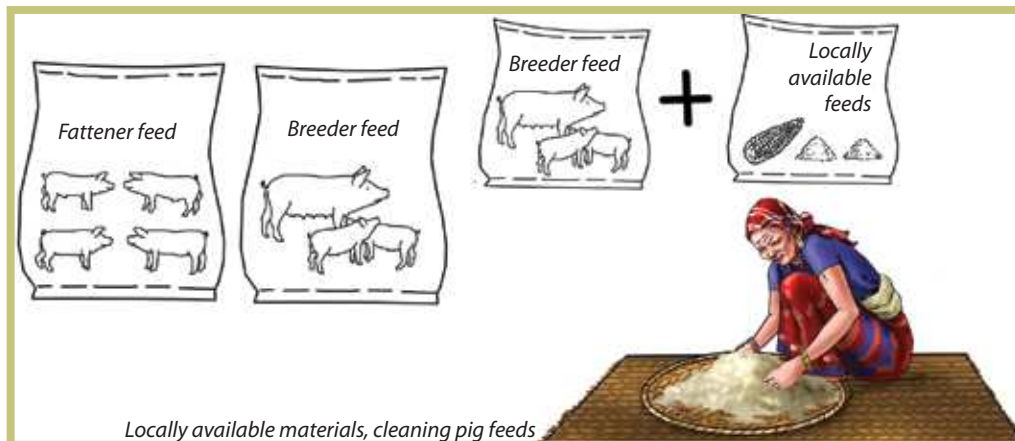
Mulberry: The protein content 89 g/kg dry matter in the fresh foliage of mulberry leaves is well utilized by growing pigs fed a basal diet of broken rice.

The tree foliage allows saving the cost of raising a pig by 15%.

Traditional feed processing

Different feeds are mixed and boiled to make the pig feed more palatable. There are 2 types of traditional processing:

- ◆ Mixing all different feeds together (rice bran, broken rice, crushed maize and soya, dried legume leaves, etc) in proportion and giving it directly to the pigs.



- ◆ Cooking the different raw materials together to improve digestibility and to break- down toxins from some feeds as raw cola-cassia, banana stem, maize and soya grains, beans, kitchen waste, forage crops, etc.
- ◆ Food Waste Feeding to Swine is also commonly known as Garbage Feeding or Swill. Food waste or garbage fed to swine must be cooked and sterilized properly.

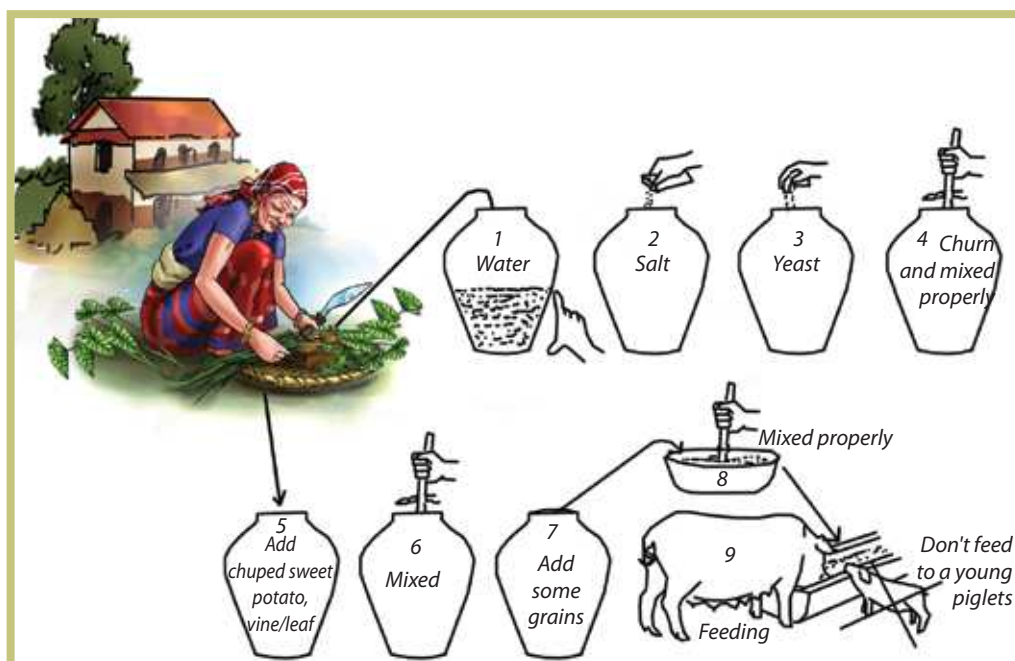


Feeding Forest Products

Pig feed can also be prepared with forest products (wild vegetables, wild bananas, wild cola – cassia etc). At the same time, food waste can be used (kitchen, restaurant, fruits, soup, rice, noodles etc). Growing legumes as feed for village pig production is having a big impact on the livelihoods of rural families in Nepal. Below is an example of a locally prepared supplementary pig feed from forest products.



A female farmer chopping stylo grous female



Feeding Alcohol distilling residues

Local alcohol can be made from millet, rice, maize, sweet potato, banana, etc. Most popular for pig feeding is distillery wastes from millet. It should be mixed with other feeds such as rice bran and broken rice/maize grids. Distillers' residues can be fed to fattening pigs, but not to pregnant or lactating sows. The following mixing ratio is commonly used in combination with distillery waste; Rice bran/Wheat bran (2 kg), broken rice (1 kg), and Distillers' residues (5-10 kg) and other locally available agricultural by-products.



Distillery Residues 5-10lit



Rice /Wheat Bran-1kg



Broken Rice or Maize grids-1kg mixed

Local alcohol can be made from millet, rice, maize, sweet potato, yam (Phul Tarul), banana, etc. Most popular for pig feeding is distillery waste from millet and rice, protein content ranged from 17 to 33% (mean of 23%) in dry matter basis. It should be mixed with other feeds such as rice bran, wheat bran, maize/millet flour, and broken rice etc. Distillers' residues can be fed to fattening pigs, but not to pregnant or lactating sows. Yet, these animals require high quality of feed and therefore distillery waste needs to be replaced by other high quality feed like commercial feeds

LOCAL PIG FEED/RATION: MIXING RATIO (KG)

Ingredients	Pig weight 15 - 30 kg	Pig weight 30 - 60 kg	Pig weight over 60 kg
Soya beans	25	20	15
Rice bran	25	30	35
Maize	20	25	30
Broken rice	5	5	5
Wheat bran	20	15	10
Leucaena tree leaves	5	5	5
Total (100 Kg)	100	100	100
Crude protein (%)	16	15	14

Daily Feed requirements

- ◆ **Dry/pregnant Sows and Gilts:** Dry sows and gilts give 2.5/kg day of sow and weaner meal. Give extra 1kg/day one week before serving gilts and sows and one week after service. Give lactating sows 2.5 kg/day of sow and weaner meal for maintenance and 0.25 kg/day extra for each piglet being suckled.
- ◆ **Boars:** Give boars 2.0 kg/day. If the boar is regularly used give it 2.5 Kg.
- ◆ **Piglets:** Give creep pellets i.e. 0.5 - 1.00 kg/day from day 7 up to weaning time(21 days) per piglet. The feed should be mixed with sow and weaner meal the last one week before weaning.
- ◆ **Feeding of Growing and Finishing pigs:** - Pigs weaned at 3 - 5 weeks of 11 - 13 kg body weight should continue being fed on the starter diet until they reach 18 kg live weight. Pigs weaned at 7 weeks or older may be switched gradually to

sow and weaner diet.

For growing or finishing pigs all ration changes should be made gradually. If this is not possible the feeding level of the new diet should be low until the pigs become accustomed to it.

Where post-weaning scours are a major problem, restricted feeding during the first week after weaning may reduce the incidents of scours.

For treatment in case of an outbreak of scouring, medication through drinking water is preferable since sick pigs go off feed.

FEEDING RATES BY AGE AND EXPECTED BODY WEIGHT GAIN

Age (wks)	Body Weight (kg)	Feed kg /day	Feed type
8-10	12-15	0.66	Sow and weaner/starter
10-12	15-20	1.0	Sow and weaner/grower
12-16	20-40	2.0	Sow and weaner/grower
16-18	40-50	2.5	Finisher
18-24	50-84	3.0	Finisher
24-28	84-105	3.5	Finisher

NB: When feeding animals any sudden changes can lead to loss of production. Thus feed changes should be as gradual as possible.

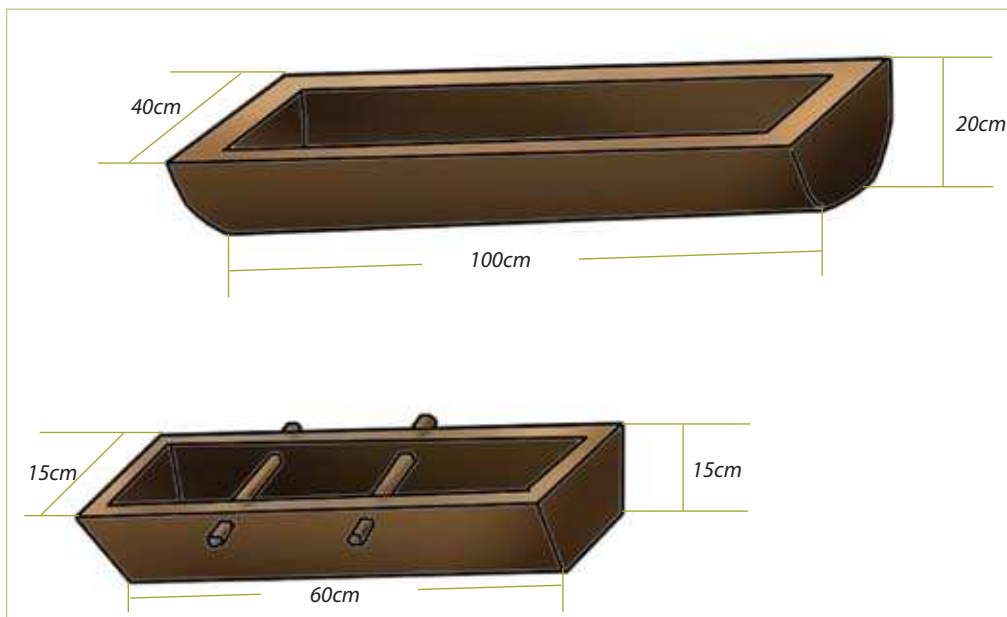
Feeder trough size

The feeding trough should be firmly anchored to the floor to prevent overturning and wasting feed. Size of feeding trough for different age and purpose is given in the table;

Pig categories	Length	Width	Height
Suckling piglet	15-20 cm per pig	20 cm	10 cm
Fattening pig	30-35 cm per pig	20 cm	15 – 20 cm
Pregnant sow	40-50 cm per pig	35-40 cm	15 – 20 cm
Lactating sow	40-50 cm per pig	35-40 cm	15 – 20 cm
Breeding boar	40-50 cm per pig	35-40 cm	15 – 20 cm

Good pig appetite is important. Pigs will eat more fresh clean feed than if it is contaminated, stale or moldy. Clean feed troughs daily. Sufficient feeder space is necessary, so each pig can eat what it wishes every day. On many farms feed waste is 15% or more. Feed waste must be avoided as much possible:

Pigs must be fed on time: this makes the pigs familiar to the feeding regime. Pigs need to be fed according to their sizes and ages. Troughs must be anchored so they cannot be turned over



Drinkers

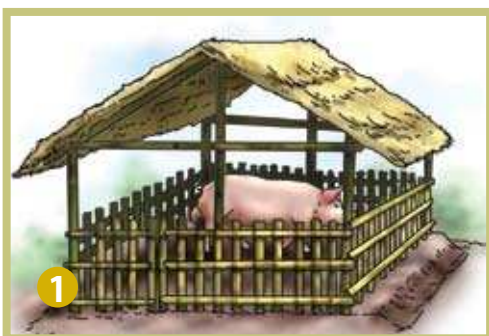
The feeding trough can also be used to supply water. At large farms automatic drinkers are used (bowls or nipples).

All pigs need sufficient clean drinking water. A pregnant sow: 10 - 12 liters water per day. A lactating sow: 20 - 30 liters per day. A growing pig: 6 - 8 liters per day. A boar: 12 - 15 liters per day. Not enough water can reduce daily feed intake. Ample clean water must be available to drink at all times.

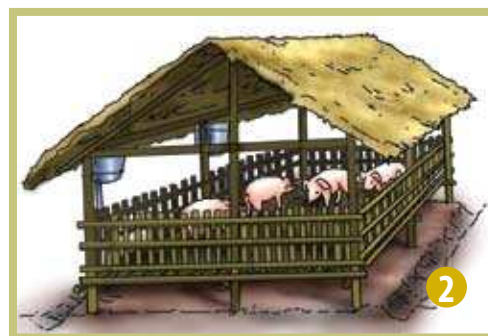


Housing Management

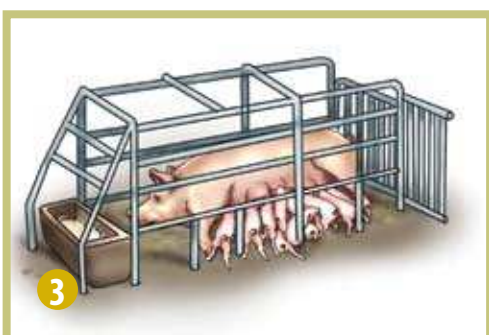
Elements for a good housing



1 Separate house for breeding boar/pregnant sow



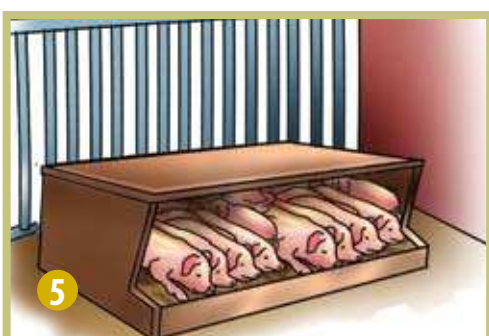
2 Separate house for gilt and dry sows



3 Provision for farrowing pan



4 Heating and cooling arrangement



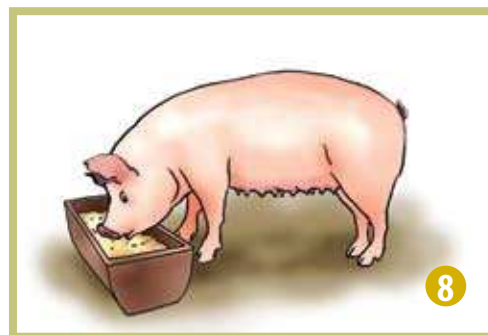
5 Provision of piglet nest/ box



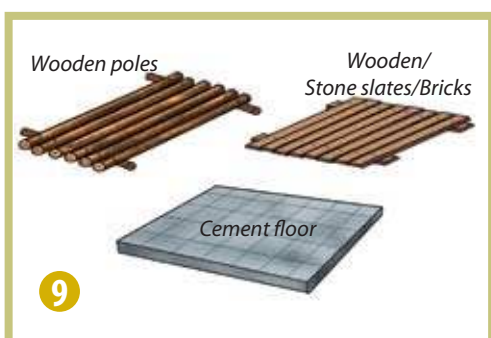
6 Provision of creep feed/starter feed



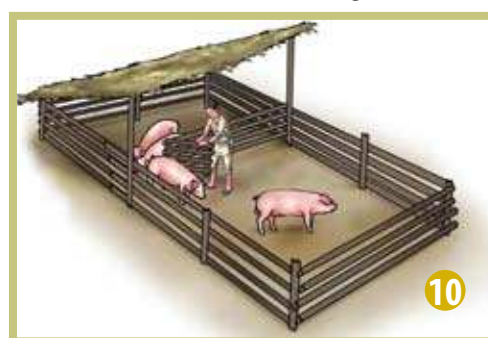
Suitable size of drinkers



Suitable size of feed trough



Suitable floor space

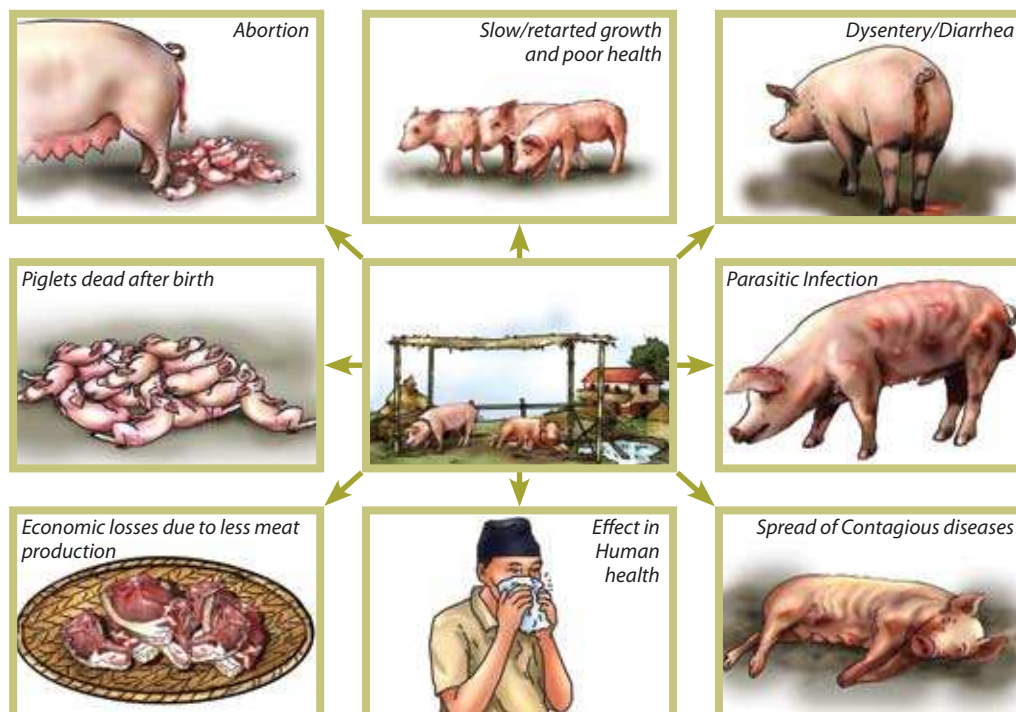


Sufficient space for exercise

How to keep a healthy pig



Effect of bad housing



Selection of housing locations

- ◆ The site should be at an elevated place that cannot be flooded by rain water.
- ◆ The site should be protected from the sun (shade from trees) and have ample fresh air.
- ◆ Away from residences (around 8-10 meter away downwind).
- ◆ In case of a large scale pig farm, the site selected needs also to be: well connected to roads throughout the year,
- ◆ Suitable for manure disposal, connected to reliable water and electricity sources.



Construction plan for a good pig house/shed

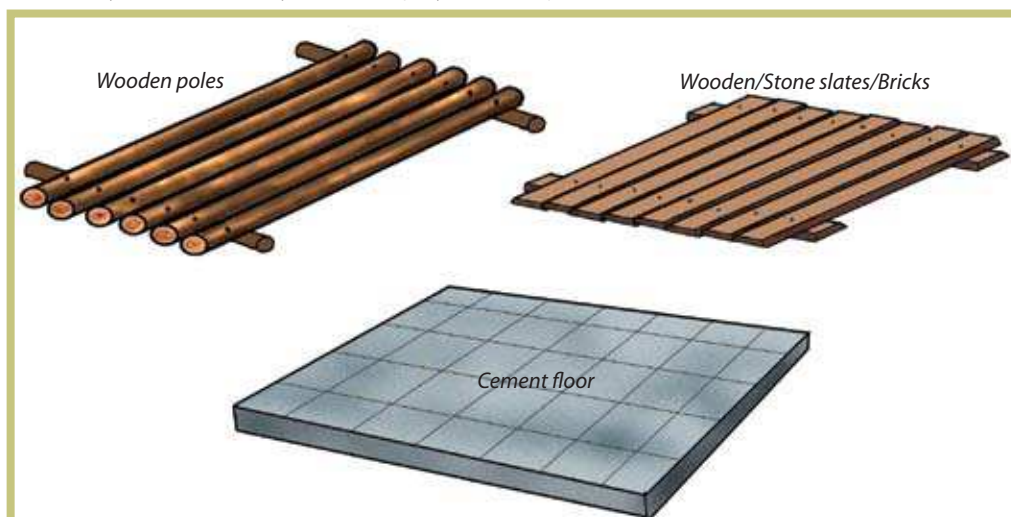
The important points about the pig house are as follows:

- ◆ The floor of the house must be 3 X 3 m.
- ◆ The floor of the house must be raised about 60 cm above the ground.
- ◆ The floor boards should have spaces of 2 cm between them.
- ◆ The roof must be rain, proof.
- ◆ The high side of the roof should face in a direction where some sun can shine a little way into the house on this side: but there must always be shade in some part of the house.
- ◆ The house must be strongly built.


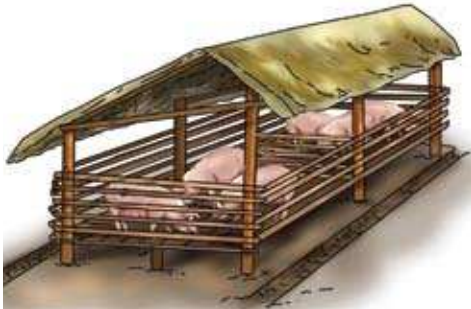
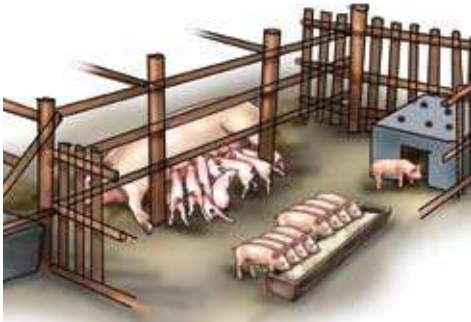
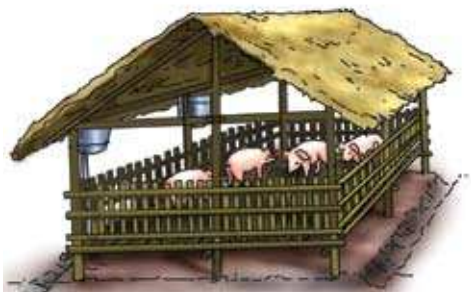
A pigsty can be constructed cheaply by using locally available materials. It needs to be constructed according to climatic conditions and according to the pig production system.


- ◆ The pigsty should be comfortable for the pigs: good ventilation and ample shade, no overheating, no smells, no draft and no dampness.
- ◆ The building should be constructed with its length axis in an East-West direction (protected from sun and rain).
- ◆ The pig building needs to be divided into different pens for each phase of the production cycle. The number and the size of the pens depend on the expected numbers of pigs to be housed in each production phase.
- ◆ The costs of constructing the pigsty should fit the pig production systems. An efficient pig production is required to cover high construction costs.

Generally, there are 3 types of pigsty buildings:

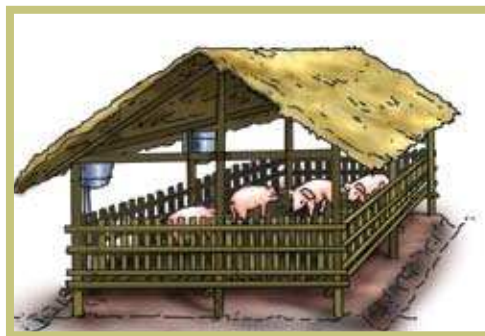


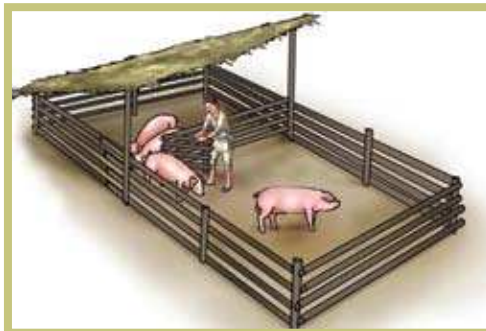
Space requirement for pigs

Pig's Category	Space required	Model	Remarks
Fattening pig	Per pig 0.5 - 1.0 sqm		A flat, solid floor is usually made from cement (but not polished to avoid slipping) or from hard soil. The floor should be sloping away to the rear to facilitate cleaning with water.
Pregnant sows	Per sow 1.5 - 2.0 sqm		Pregnant sows need a quiet environment. Therefore individual pens are some- times used for pregnant sows. In hot climates pregnant sows are alternatively housed in small groups of three.
Lactating sows	Per sow 4 - 6 sqm		Lactating sows need a quiet environment. Therefore individual pens are used. There should be provision for; farrowing pan, heating and cooling arrangements, Piglet nest/ box, creep feed /starter feed for piglets.
Weaner piglets	Per piglet 0.3 - 0.5 sqm		A flat, solid floor is usually made from cement (but not polished to avoid slipping) or from hard soil. The floor should be sloping away to the rear to facilitate cleaning with water.

Pig's Category	Space required	Model	Remarks
Breeding boars	Per boar 6 - 8 sqm		Special care is required to prevent boars from escaping to the gilts and sows that are on heat (strong and high partitions).

Different models/types of pig house/sheds.





Disease and Parasite

Sick pigs generally have the following signs:

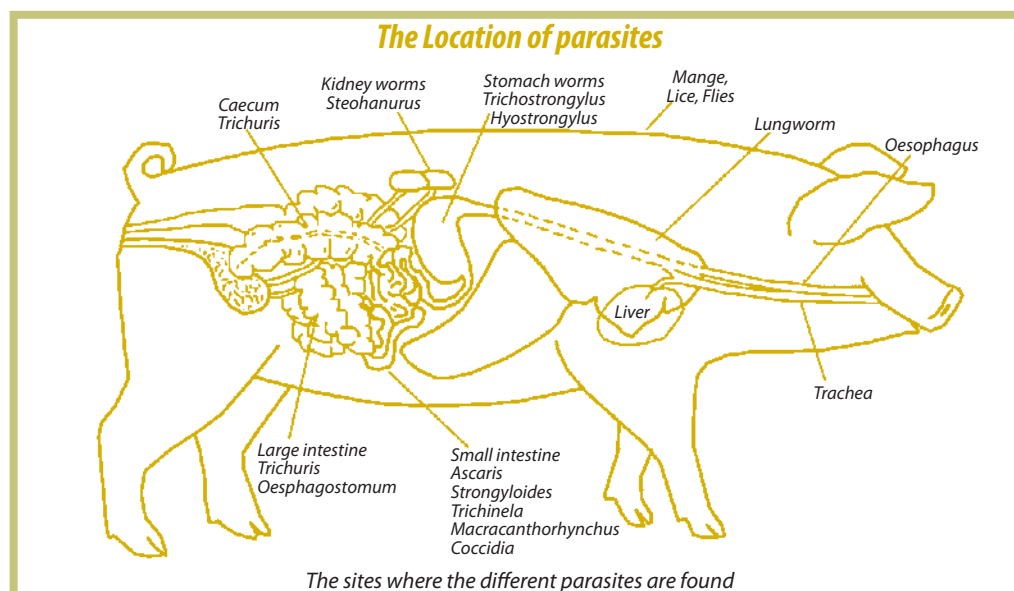
- ◆ It may not eat or not show interest in feed /water
- ◆ It may breathe rapidly indication of a fever
- ◆ In white skin-colored pigs the skin may become reddish.
- ◆ It may have diarrhea which may sometimes be bloody or blood stained.
- ◆ Droopy ears or ears pointing downwards.
- ◆ Dull eyes.
- ◆ Dull skin and hair.
- ◆ Its tail will become limp.
- ◆ Separates it self from the rest

Parasitic diseases

Parasites are divided into external and internal parasites.

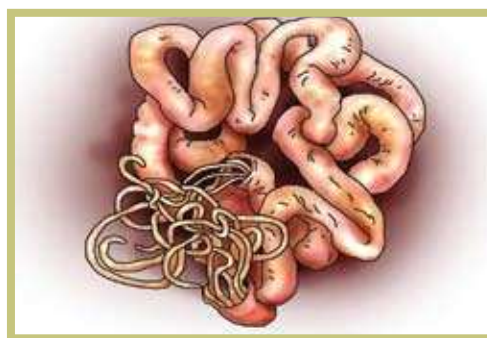
Internal parasites (Worms)

Worms are one of the most serious threats to pig keeping. There are more than 30 types affecting the intestines of pigs. The most important two are the intestinal roundworm and the tape worm.



Roundworm

Roundworms live in the gut and take food from the pig. The pig can therefore become thin. Giant intestinal roundworms (*Ascaris lumbricoides*) are common around the world, especially in warm, moist climates. These worms are large, about the size of a pencil. The infection begins with the ingestion of eggs which are usually present in contaminated soil, or on fruits and vegetables grown in infected soil.



Symptoms

- ◆ Anorexia in advanced stages.
- ◆ Anaemia loss of condition.
- ◆ Weight loss in later stages.
- ◆ When the worms die suddenly after treatment, they can block the gut and cause sudden death

Prevention

- ◆ Control with medicine in the food is useful and provide clean and dry pens.
- ◆ Rotational grazing and periodic disinfection of pastures.
- ◆ Separation of young ones from adults.
- ◆ Washing sows before farrowing.
- ◆ Periodic deworming
- ◆ Herbal treatment: herbs such as moringa are considered to be antihelmintic (able to kill intestinal worms)

Tapeworm

Tapeworms are flat and long ribbon like creatures which are common in all parts of the world. Tapeworms do not have a digestive system so they receive their food through their skin as they absorb our nutrients. They especially absorb folic acid and vitamin B-12. These parasites may cause what is referred to as “verminous intoxication” as they put out and leave dangerous waste products in our bodies. These tapeworms can roll themselves into a ball and can be felt on the right side of the abdomen under the liver.

Pork measles is caused by tapeworms which live in the muscles of pigs. They do not usually affect the pig, but can lead to pain and the pig may find it difficult to move around. When people eat undercooked meaty pork, the worms develop inside the people, and can make them very sick.



Symptoms

- ◆ Poor growth
- ◆ Rough grey hair coat
- ◆ Swollen belly
- ◆ Emaciation
- ◆ Anaemia

Prevention

- ◆ Prevent the pigs from wandering about where they can feed on human faeces
- ◆ Make sure that people working with pigs use toilets (hygiene and sanitation)
- ◆ Deworming

External parasites

External parasites mainly include mange, lice and myiasis.

Mange

It is caused by small parasites called mites that live in the skin. They provoke severe itching and irritation. Nowadays sarcoptic mange in pigs has been reported in all major swine producing countries and is prevalent in Brazilian swine herds. Lesions, or scabs, on the animals may start on any part of the body, but usually appear first on the head, around the eyes, nose, or ears; lesions may progress to hyperkeratosis and exfoliation of epidermal debris.



Symptoms

- ◆ The pig becomes itchy, and scratches and rubs against the walls of the sty and other objects with the skin between the legs, around the eyes, ears and neck being principally affected.
- ◆ The coat looks dull, and there are bare patches, heavy crusts, and lines on the body that look like ribs
- ◆ Restlessness and itching which can be very severe
- ◆ Red pimples on skin, which turn into crusts and scabs. Later the skin looks very rough, is thickened and covered with flakes scratching. Skin may show red spots or bite wounds
- ◆ Thick skin and rough hair coat
- ◆ Anaemia in severe cases especially in piglets
- ◆ Death in severe cases

Prevention

- ◆ Wash the sow before farrowing at least twice at a one week interval.
- ◆ Boars should be washed at least four times a year.
- ◆ Treat gilts upon entering the farm and before serving.
- ◆ Wash all pigs at the beginning of fattening if mange is already a problem.

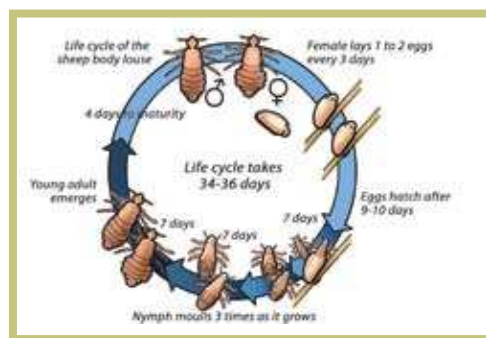
- ◆ Maintain proper animal nutrition and health program to reduce severity and spread of mange. Recommended control products are: ivermectin (1% injectable), or malathion (1% spray).
- ◆ General cleanliness.

Treatment

- ◆ Remove scales and dirt with soap and water and a stiff brush.
- ◆ Afterwards the pig should be washed with organophosphate compounds. Repeat this treatment several times
- ◆ Ivermectin injection is a very effective treatment against mange and all other parasites. Spraying the animals with cattle dip also kills many parasites on the skin
- ◆ Herbal treatment: Smearing with coconut oil can be an effective control in cases of light contamination

Lice

These are blood suckers that also cause irritation of the skin. The hog louse is the largest louse species (6,4mm) commonly associated with domestic animals. It is found most frequently in the folds of skin behind the ears and between the legs. The blood-sucking activity of hog lice results in much irritation and discomfort to swine



Symptoms

- ◆ Itching
- ◆ Skin may show red spots or bite wounds.
- ◆ Thick skin and rough hair coat.
- ◆ Anaemia in severe cases especially in piglets.

Prevention

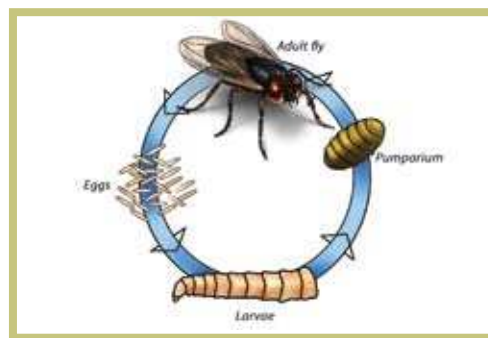
- ◆ General cleanliness
- ◆ Treat piglets before putting them in fattening house. Fatteners don't need to be treated
- ◆ Treat gilts before first service
- ◆ Treat boars twice a year
- ◆ Treat new stock on arrival and seven days later. Piglets below three weeks should not be treated

Treatment

- ◆ The insecticide benzene hexachloride is a very effective remedy (0.1 - 0.25% solution) against lice. Treatment should be repeated after 7 days since the insecticide only kills adults and not eggs.
- ◆ Lice can be kept away to a certain extent by planting a pole sturdily in the ground at an angle of 45° with an old sack wound around it immersed in crude oil or used motor-oil.

Myiasis

Disease caused by flies, which lay eggs in the wounds. The eggs hatch into larvae which live and feed on the flesh and developed into pupate, and fall off when they mature, creating more wounds.



Symptoms

- ◆ Infected wounds look very wet and dirty and the edges can be covered with a grey mass which are the eggs of flies.
- ◆ Later on, larva can be seen as screw-shaped pinkish worms crawling through the wound.
- ◆ The pigs show annoyance and try to find a shabby place.
- ◆ Death may occur.

Prevention and treatment

- ◆ Clean the wound daily with water and disinfectant then apply insecticide on wound to cover edges too.
- ◆ Best working insecticides are the long-acting ones e.g. diazinon or supona.
- ◆ Good mange control program to prevent wounds smooth walls and floors.
- ◆ Do not use sharp objects.
- ◆ Avoid overcrowding to reduce fighting.
- ◆ Tail docking, ears notching and castration should be handled properly and the umbilical cord disinfected.

Deworming

Those dewormers that are currently approved for use are effective and usually safe when given according to label directions. These include ivermectin (Ivomec®), fenbendazole (Safe-Guard®), levamisole (Tramisol®, Levasole®), pyrantel (Banminth®), dichlorvos (Atgard®) and piperazine. Their activity varies somewhat, so refer to Table 1 for the appropriate use.

The deworming schedule should include prebreeding for all breeding stock and prefarrowing for gilts and sows, prevention of *Strongyloides* and roundworms in baby pigs, and one or more dewormings in weanling and growing pigs. Specific strategic schedules should be arranged with your veterinarian.

- ◆ Boars - every 6 months
- ◆ Sows - 2 weeks before farrowing and after weaning
- ◆ Piglets - 1 week after weaning
- ◆ Fatteners - 1 week after weaning and 3 months later
- ◆ Gilts - 1 week after weaning, 3 months and at 7 months of age at least 2 weeks before service

DEWORMERS FOR COMMON PARASITES

Worms and stages	Compound
Ascarids (adults)	All of them
Ascarids (migrating larvae)	Fenbendazole
Ascarids (infective larvae)	Fenbendazole, pyrantel
Whipworms	Fenbendazole, dichlorvos
Nodular worms	All of them
Lungworms	Fenbendazole, ivermectin, levamisole
Kidney worms (adult)	Fenbendazole, levamisole
Kidney worms (larvae in liver)	Fenbendazole
<i>Strongyloides</i>	Levamisole, ivermectin

Control of Lice, Flies, Mange

- ◆ Scrub sows with Gamma BHC insecticides four days before farrowing.
- ◆ Clean and scrub the farrowing pens before use.
- ◆ Maintain proper animal nutrition and health program to reduce severity and spread. Recommended control products are: ivermectin (1% injectable), or malathion (1% spray).

Reproductive Disorders and Diseases

Anaphrodisias

When the sow does not come on heat

Symptoms

- ◆ No heat signs; This could be caused by low body weight due to poor feeding, overweight, mineral deficiency, intestinal worms, chronic disease, the animal has just given birth, heavy infestation with parasites

Prevention

- ◆ Improve feeding of mineral-rich feeds.
- ◆ Regularly deworm your animals.
- ◆ Allow the female to stay with the boar.

Treatment

- ◆ Gilts should not be treated at all because they may show anaphrodisias after every litter, if this hormone is used
- ◆ Sows should be treated on the same day as weaning, and in very severe cases, 3 weeks after weaning
- ◆ Repeating treatment is of no use

Leptospirosis

Symptoms

- ◆ Fever, anorexia, diarrhoea, bloody urine, nervous symptoms caused by meningitis.
- ◆ Abortion in last trimester.
- ◆ In sows which are affected later, weak piglets are born.
- ◆ Mummified and macerated foetuses are common in the litters.
- ◆ Infertility associated with venereal spread may be responsible for repeat breeders.

Prevention and treatment

- ◆ Elimination of mite and rats and other rodents.

- ◆ Vaccination and hygienic measures. Vaccines are not available for all types of the diseases and vaccination may not prevent bloody urine.
- ◆ Treat all sows with injection or streptomycin before serving.
- ◆ Use antibiotics especially streptomycin for all ages.

Brucellosis

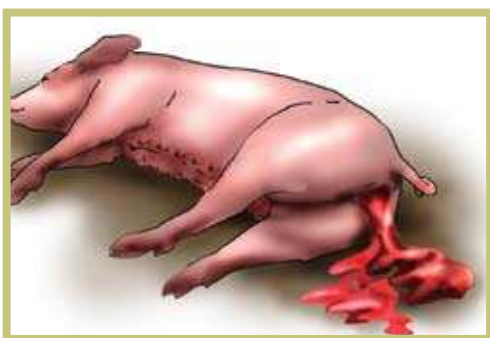
Symptoms

- ◆ Anorexia, fever, stiff legs, occasional lameness, early abortion (returns to oestrus 5 - 8 weeks after service as a result of infection of service)
- ◆ Infection later in pregnancy gives rise to litter with mummified, still born or weak piglets.
- ◆ Bloody vulva discharge and endometritis.
- ◆ Retained placenta.
- ◆ Boars usually develop orchitis (inflammation of one or both testicles) and epididymitis within seven days of infection.
- ◆ The testicles are swollen and painful and permanent sterility can be the result.

Prevention and treatment

- ◆ Prevention is based on hygienic measures and purchase of stock from clean herds only.
- ◆ Never treat by antibiotics.
- ◆ No treatment/vaccination is 100% effective
- ◆ Slaughter all animals and do restocking. Restocking should be after one month.

Uterine Prolapsed



Symptoms

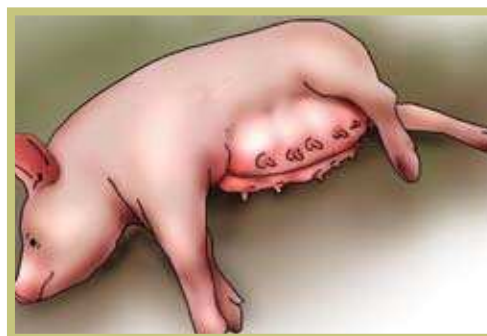
- ◆ The appearance of the uterus outside the vulva.

Prevention and treatment

- ◆ Uterine prolapsed reduction is often not possible since it is very traumatic and the best therapy is to amputate the whole uterus. However 50% of sows do not survive this operation, therefore slaughter should be considered.

Mastitis

Bacterial infection causes an inflammation of the mammary organ and results in changes in milk production. These bacteria enter the wounds in the udder.



Symptoms

- ◆ Swollen, hot and painful udder.
- ◆ Absence or reduction of milk in the affected udder.
- ◆ Sow refuses to suckle her piglets. As a result, piglets squeal due to hunger.
- ◆ Sow has depression and often fever.

Prevention

- ◆ Provide adequate bedding
- ◆ Keep pig pens clean, dry and free of sharp objects, clip milk teeth of baby pigs.

Treatment

- ◆ Gently massage the affected udder with lukewarm water.
- ◆ Do not allow the young to suck milk from the infected sow.
- ◆ Remove the milk from the infected udder and discard.
- ◆ Separate sow from piglets and reduce access to teats (allow a few piglets to suckle at a time). If possible, foster piglets to lactating mothers.
- ◆ Use antibiotics. Inject penicillin-streptomycin into the muscle of hip or neck.

Endometritis (bacteria)

Symptoms

- ◆ Vulval discharge of vaginal or uterine origin during urination.
- ◆ In case of metritis, fever and agalactia may occur.

Prevention and treatment

- ◆ Antimicrobial by injection or locally by irrigation of the uterus and vagina, oxytocin can be given to stimulate uterine contractions once or twice a day.
- ◆ Hygiene.

Diseases and Disorders of Digestive Tract

Scouring

- ◆ Hygienic measures should be taken to avoid or minimize scouring incidence.
- ◆ Regular deworming should also be done as a control measure to scouring
- ◆ Feed changes should be gradual and not drastic to avoid scouring

Birth diarrhoea

Symptoms

- ◆ Acute diarrhoea in piglets is watery, yellowish grey and within a very short time piglets become thin with sunken eyes due to dehydration.
- ◆ Death can occur within 2 - 3 days. Death in piglets can occur even within one day before any sign of diarrhoea is observed.

Prevention

- ◆ Keep pens, feed and watering troughs clean.
- ◆ Separate affected animals from healthy animals.
- ◆ Do not change abruptly an animal's ration.
- ◆ Make sure that piglets have sufficient colostrum within 36 hours of birth

Treatment

- ◆ Vaccination
- ◆ Plenty of drinking water with electrolytes
- ◆ Use of antibiotics.
- ◆ Herbal medicine: Fresh leaves of guava or star apple. This will treat the symptoms only.

Red diarrhoea or clostridial enteritis

Symptoms

- ◆ Acute haemorrhagic or necrotic inflammation of the gut during the first and second week of birth.

- ◆ In acute cases the diarrhea is watery with an orange-red color due to blood and its often bubbly.
- ◆ In later stages, shreds of dead tissues can be found.
- ◆ Piglets are weak and don't suckle. They get pale and die within a few days.

Prevention and treatment

- ◆ Vaccination
- ◆ Make sure that piglets have sufficient colostrums within 36 hours of birth
- ◆ Keep the pigs warm
- ◆ Cleanliness
- ◆ Contact the veterinary

Transmissible Gastroenteritis

Transmissible gastroenteritis is a common viral disease of the small intestine that causes vomiting and profuse diarrhea in pigs of all ages. It spreads rapidly. Piglets less than one-week old rarely survive the disease.

Symptoms

- ◆ Very high mortality mainly in piglets upto 14 days old.
- ◆ The piglets often vomit and have severe greenish-yellow watery diarrhoea, dehydration.
- ◆ In sows the diarrhoea is greyish, they vomit, abortion may occur.
- ◆ In fatteners the symptoms are like those in sows.

Prevention and treatment

- ◆ Give electrolytes to piglets and keep them warm.
- ◆ Antibiotics prevent secondary infection but don't provide a cure.

Fat diarrhea

Symptoms

- ◆ Faeces are pasty and fatty, white or yellowish

Prevention and treatment

- ◆ Remove creep feed for a few days.
- ◆ Use antibiotics as prescribed by a veterinary doctor.

Post diarrhea

Symptoms

- ◆ Diarrhoea with no traces of blood.
- ◆ Death from dehydration or blood poisoning (septicaemia).

Prevention and treatment

- ◆ Increase creep feed before weaning.
- ◆ Avoid stress to piglets by not mixing piglets from different litters.
- ◆ Good hygienic measures include roughage in diet.
- ◆ Use antibiotics as prescribed by a veterinary doctor.

Salmonellosis

Symptoms

- ◆ High fever, dullness, anorexia, weakness, nervous symptoms.
- ◆ Bluish-red coloring of the ears, limbs and the centre of the belly.
- ◆ Bloody spots all over the body.
- ◆ Wasting and persistent grayish diarrhea sometimes mixed with blood and shreds or necrotic material from the gut.

Prevention and treatment

- ◆ Normal hygienic measures pelleted feed, thorough cooking of the swill.
- ◆ Remove feed for two days and provide clean water.
- ◆ Use antibiotics as prescribed by a veterinary doctor.

Swine Dysentery

Known by a number of names, including bloody diarrhoea, hemorrhagic enteritis bloody scours and black scours. It affects pigs of all ages, sometimes causing death.

Symptoms

- ◆ In acute cases wasting and passing of diarrhoea containing varying amounts of mucus, blood and necrotic material.
- ◆ Fever.
- ◆ In chronic cases, pigs have greyish or brownish faeces, rough hair coat and low growth rate.

Prevention

- ◆ Delay reusing the pens of infected animals.
- ◆ Disinfect pens.

Treatment:

- ◆ Some herbal medicines (moringa tree leaves) can be used to relieve the symptoms of diarrhoea and dehydration
- ◆ Use antibiotics as prescribed by a veterinary doctor

Post weaning syndrome (oedema disease)

Symptoms

- ◆ Development of oedema and nervous signs.
- ◆ Paleness peculiar squiaky voice.
- ◆ General incoordination and loss of balance.
- ◆ Sudden death.

Prevention and treatment

- ◆ Affected piglets should be weaned by removal of sow and placed on low-level diet.
- ◆ Avoid stress.
- ◆ Hygiene.
- ◆ Include roughages in diet.
- ◆ Use antibiotics as prescribed by a veterinary doctor

Diseases of the Respiratory Tract

These include Influenza, pseudorabbies, pneumonia, atrophic rhinitis and pasteurellosis.

Influenza

Symptoms

- ◆ Affected animals are apathetic.
- ◆ Anorexia
- ◆ High fever, coughing and sneezing, difficulty in breathing
- ◆ Red eyes with discharge
- ◆ Loss of condition.

Prevention and treatment

- ◆ Good ventilation.
- ◆ Vaccination.
- ◆ No specific treatment. To prevent secondary infection, use antibiotics as prescribed by a veterinary doctor.

Pleural Pneumonia

Symptoms

- ◆ Acute cases show anorexia, high fever, laboured respiration, red or blue colouring of ear-tips, belly, legs and end of tail.
- ◆ Death within 4 - 6 hours of onset of clinical symptoms.
- ◆ Blood stained froth from mouth or nose.
- ◆ Abortion.
- ◆ In chronic cases, anorexia, coughing and depressed growth rate.

Prevention and treatment

- ◆ Vaccines only prevent mortality.
- ◆ Use antibiotics as prescribed by a veterinary doctor.

Atrophic rhinitis (inflammation of the nose)

Symptoms

- ◆ Sneezing in younger pigs
- ◆ Shortening or deviation of upper jaw - poor growth

Prevention and treatment

- ◆ Hygiene
- ◆ Use antibiotics as prescribed by a veterinary doctor



Bleeding from nose caused by atrophic

Pasteurellosis

Symptoms

- ◆ Coughing
- ◆ Breathing through the mouth

Prevention and treatment

- ◆ Hygiene
- ◆ Use antibiotics as prescribed by a veterinary doctor

Porcine Respiratory and Reproductive Syndrome (PRRS)

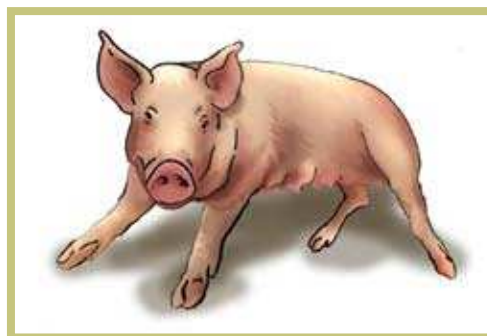
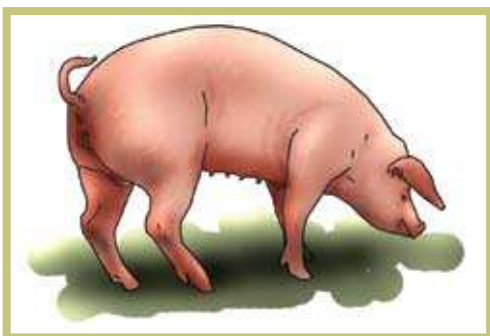
Symptoms

- ◆ Blue ears and forced breathing
- ◆ Lactating sows have rough hair coat.
- ◆ Gilts have problem getting on heat and early abortion.
- ◆ High mortality in weaners
- ◆ In boars, high percentage of ulcerated (shapeless) sperms, low sperm mortality and less libido

Prevention and treatment

- ◆ Use of antibiotics as prescribed by a veterinary doctor.
- ◆ Vaccination helps but it is so expensive that it may not be cost effective.

Disease Causing Problems in Walking



Arthritis

Symptoms

- ◆ Inflammation of joints. Thick soft joints.

Prevention and treatment

- ◆ Use antibiotics as prescribed by a veterinary doctor.

Streptococcal infections

Symptoms

- ◆ Septicaemia (blood poisoning) which may cause immediate death.
- ◆ Young pigs rarely recover
- ◆ Sudden death in older pigs.
- ◆ Fever, nervous signs and arthritis mostly in weaners and fatteners.

Prevention and treatment

- ◆ Proper hygiene. Wash sow before it enters the farrowing pen.
- ◆ Use antibiotics as prescribed by a veterinary doctor.

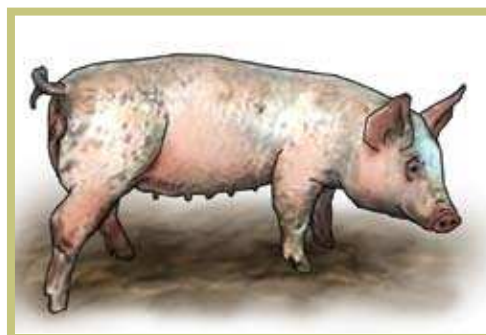
Greasy Pig Disease

Symptoms

- ◆ Brown greasy areas of skin, scales, scabs (no itching), weight loss, death

Prevention and treatment

- ◆ Avoid fighting among pigs by mixing pigs from different pens.
- ◆ Teeth clipping, soft bedding
- ◆ Hygiene. Wash sows before entering farrowing pen.
- ◆ Use antibiotics as prescribed by a veterinary doctor.



Nutritional Disorders

Anaemia

Symptoms

- ◆ Pale skin, weak piglets with high respiratory rate.
- ◆ Jaundice
- ◆ Blood stained faeces.
- ◆ Early death

Control and treatment

- ◆ Provide iron injection or oral iron- paste containing iron

- ◆ 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.

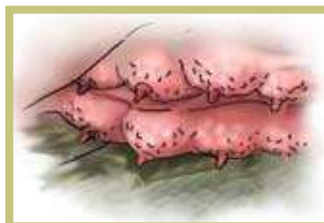
Other Diseases



Lesion; on foot



on tongue



on teats

Foot and mouth disease (FMD)

Foot-and-mouth disease is an acute, highly contagious, viral of animals with hooves, such as cattle, water buffalo, goats and pigs.

Symptoms

- ◆ Sudden onset of severe lameness, fever, formation of vesicles on coronary bands.
- ◆ Blisters can be found on thin-skinned areas like udder, teats, anal area and eyelids. These blisters rupture within one day.
- ◆ There may be frothy saliva, anorexia, sometimes hooves become loose and fall off.
- ◆ Sows may abort.

Prevention and treatment

- ◆ Vaccination
- ◆ Quarantine
- ◆ Proper cooking of swill.
- ◆ Slaughter and burial.

Swine fever/Hog cholera

Symptoms

- ◆ Lesions on the body
- ◆ Fall in temperature before onset of clinical signs.
- ◆ Reddening of skin and ears.
- ◆ Incoordination of hind limbs.

- ◆ Constipation diarrhoea, anorexia.
- ◆ The animal dies the next day after the attack. 95 - 100% mortality.

Prevention and treatment

- ◆ Quarantine.
- ◆ Boiling of swill.
- ◆ Restriction of movement of meat from infected areas
- ◆ Vaccination
- ◆ Disinfection
- ◆ No therapy (treatment)



*A pig with swine fever symptoms
Bluish-purple color and bleeding under the skin*

Anthrax

Rare in pigs and associated with contaminated feed containing meat.

Symptoms

- ◆ Oedema and swelling of the neck region.
- ◆ Dyspnoea (breathing difficulty).
- ◆ Fever, anorexia and passage of bloody faeces.
- ◆ Sudden death.

Prevention and treatment

- ◆ Use antibiotics (penicillin) as prescribed by a veterinary doctor.
- ◆ Thorough disinfection of the farm and burning of carcasses.

Vaccination Schedule for Pigs

Name of disease	Type of vaccine	Time of vaccination	Duration of immunity period	Remarks
Anthrax	Spore vaccine	Once in a year, pre-monsoon vaccination	One season	
Hog Cholera	Crystal Violet vaccine	After weaning	One year	
Foot and mouth disease	Polyvalent tissue culture vaccine	At about six months of age with booster done after 4 months	One season	After vaccine repeat Vaccination every year in October/ November
Swine Erysipelas	Alum treated vaccine	After weaning with a booster dose after 3-4 weeks	About one year	
Tuberculosis	B.C.G vaccine	At about six months of age	One to two years	To be repeated every 2 or 3 years

Warning: Do not administer any medicine and drug within 72 hours of slaughter for food.

References

