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TRAINING MANUAL ON PIG PRODUCTION

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Piggery farming

INDEX

Objective : To provide information and awareness among the farmers for improving their methods and practices of pig rearing by covering all aspects of scientific pig rearing .

I : Existing housing system of piggery, advantages and disadvantages and their improvement

I. a Objective:

Advantages and disadvantages of different housing system
Suitable housing system for a pig farm

I.b Training methods

Understanding the existing housing system through participatory discussion
Visual representation of different type of housing.

I. c Contents

I.c.a : Housing system in northeast India

I.c.a.a Tethering

In this system the pigs are tied with a rope along the chest and kept outdoor secured properly to a wooden pole. The animal is fed with required water and feed. The pigs are restrained this way day and night.

Fig a: Tethering

The pigs are allowed to scavenge for food by letting loose throughout the day and night. They mostly scavenge on food available from various sources like road side, waste lands,pasture land, homestead etc. However this system is discontinued in many parts of the country owing to scarcity of grazing area and destruction of crops and properties by the pigs.

Fig b . Free ranging system

I.c.a.c Open enclosure

This system of housing is normally built of locally available materials and may or may not have a roof. Feeding of water and food is generally provided inside the enclosure . The floor is usually the earth surface.

Fig c. Open enclosure

I.c.a.d Scientific housing system

This system is widely practised in organised private or government farms following all aspects of pig housing as per standard prescribed. Hygiene is well maintained with proper drainage system. There is a closed and open area, the floors are cemented and proper roofing is done. Feed is provided within the enclosure.

Fig d. Concrete Pig sty

Housing system	**Advantages**	**Disadvantages**
Tethering	No cost on housing Prevention of damage to crops due to restriction of animal movement.	Odour emission due to excretion in a enclosed area. Injury to the animal due to tying. Exposure to inclement weather Poor growth rate
Free ranging	No cost on feeding or housing	Not suitable for rearing

	Less labour involved	of superior breeds Exposure to inclement weather High mortality and disease incidence Poor growth rate Destruction of crops and properties
Open enclosure	Low cost of construction No damage to crops and properties Can be shifted from one place to another	No protection against inclement weather The floor remains muddy and incidence of diseases is high Temporary in nature
Scientific housing	Higher productive performance Incidence of diseases is low or marginal Protection against inclement weather and predators Maintenance of proper hygiene and sanitation Proper record keeping is possible	High labour cost High capital investment Cost of feeding and management is high.

Table 1. advantages and disadvantages of different housing system

I.c.b Criteria for construction of pig sty

I.c.b.a Location

- ✓ The shed must be located on an elevated area to prevent water logging during the rainy season.
- ✓ The site must be far from human resident favourably 30-50 metre away downwind.
- ✓ Accessibility to well connected roads.
- ✓ Provision of manure disposal and connected to reliable water and electricity sources.

I.c.b.b Orientation

The shed must receive sufficient sunlight during morning and noon and should be directed longitudinally in the north-south direction with proper ventilation . Proper ventilation and sunlight to the shed will help keep it dry and reduce the incidence of diseases.

I.c.b.c Flooring

- ✓ In concrete type of floor , caution should be taken to make the surface rough to prevent slipping of pigs which may cause permanent damage to the limbs.
- ✓ The floor should be raised 60 cm above the ground.
- ✓ If wooden planks are used as flooring material small gap between planks should be provided to facilitate easy cleaning of waste materials but small enough to prevent slipping of limbs through the gap.
- ✓ In cold areas, floor covered in saw dust, paddy straw etc is favourable as pigs have difficulty in regulating their body temperature.

I.c.b.d Drainage system

- ✓ Manure pits should be constructed for disposal of farm waste and for conversion into manure. Atleast 2 nos of such pits to be constructed so that when one pit gets filled, the other can be used .

- ✓ The drain from the farm should be connected to a manure pit. It should have a width of about 1 feet and a depth of ½ feet.
- ✓ A holding tank/pit should be constructed in case of integrated farming system to allow only required quantity to be released to the ponds/crops at regular intervals.

I.c.b.d Wall

The walls should be constructed strong enough to protect the animals from inclement weather. In warm areas the height of the shed is constructed higher than in cold areas to allow free circulation of air whereas in cold area the height is lowered to protect the animals from the cold wind. Normally about 3.5 feet of wall is constructed from the floor and the remaining is covered with wire mesh, bamboo to prevent entry of predators.

I.c.b.e Types of pig house

There are two types of housing system viz: single and double row. In small farms single rows are constructed whereas in commercial or government farms double row (facing each other) with a central corridor for passage of farm attendant is constructed .

Fig e. Double row pen house

The roofs are also designed according to the row types . Shed types is generally for single row pen house and gable type for double row pen house.

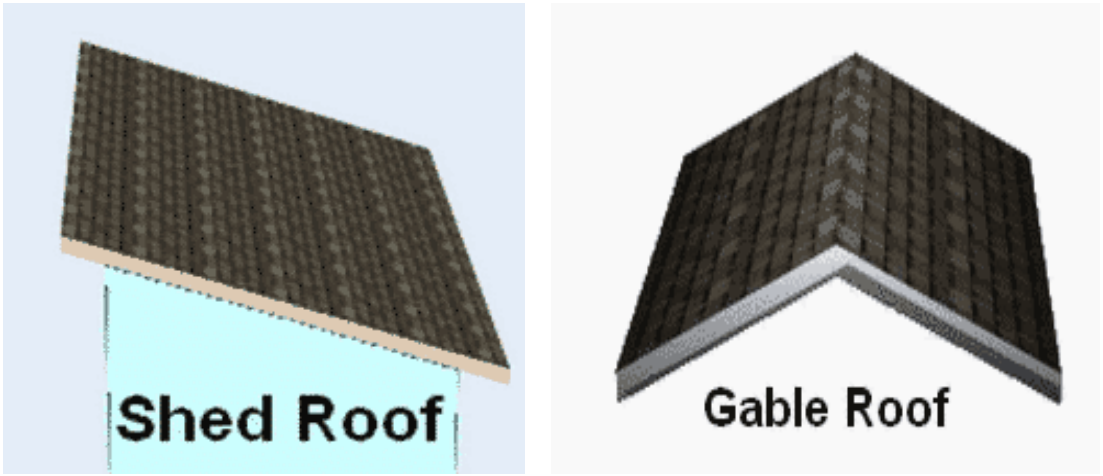

Fig f. Types of roof

I.c.c Floor space requirement for pigs

The pig sty consists of two area i.e open and closed area. The closed area is the portion of the shed covered with roof and side walls for feeding,watering ,resting etc whereas the open area(paddock) is the portion without roof where the pigs normally exercise.

Category	Covered area/pig (Sq.ft)	Open area/pig (Sq.ft)
Weaner (2-3 months)	10-15	15-20
Grower (3-8 months)	12-20	20-30
Dry sow/gilt (mother)	20-30	30-50
Lactating sow (with piglets)	70-100	70-100
Boar	35-50	50-70

Table 2. Floor space requirement

II: Breeds of pigs and their selection method.

II.a. Contents

II.a.a Breeds of pig available in Northeast India

II.a.a.a Hampshire

This is a native breed of northern England and Scotland. It is characterised by erect ears, black body with white band around the middle extending to the fore limbs. This breed of pigs are well muscled and rapid growers . They produce good litter size and shows good mothering ability. Hampshires are docile and suitable for cross breeding.

II.a.a.b T&D (Tamworth & Desi)

This is a breed developed by Ranchi Veterinary college by crossing Tamworth breed with indigenous breed. It is characterised by long body, elongated snout , mostly black in colour, dropping ears and medium sized. The variety can gain approximately 80 kg body weight at slaughter age of 8-10 months. It can produce 8-12 piglets in each farrowing with two farrowing each year.

II.a.a.c Large White Yorkshire

It is pink coloured skin , ears are pointed upward and forward and are long. An adult boar weights about 300 to 400 kg and female sow weights about 230 to 320 kg. It is suitable for cross breeding with excellent result.

II.a.a.d Ghungroo

Native to West Bengal. Highly prolific breeder and having litter size of 12-17 nos of piglets. The skins are folded and have a bull dog like appearance.

II.a.a.e Lum sniang

Developed by ICAR, Umiam. This variety is a cross between Hampshire and khasi local. It has the characteristic white marking over the entire shoulder as in Hampshire but have a longer pointy snout resembling the khasi local. The pig variety attained higher body weight of 80-100 kg at 12 months of age, besides higher litter size at weaning 8 nos Vs 5 nos of piglets as compared to local non-descriptive pigs in the low input tribal production system.

II.a.a.f Large Black

It is black in colour with broad dropping ears. The neck and face is long and possesses good mothering and milking ability . It is a fast grower and suitable for cross breeding with local

pigs. Attains a body weight of 65 kg at 7 months of age and Avg. litter size of 8 nos per farrowing.

II.b.a Criteria for selection of pigs/piglets

II.b.a.a Selection of breeds

- ✓ Easily availability of the breed
- ✓ Purchase of healthy piglets
- ✓ Observing the conditions of the pigs for any sign of illness for the first two week before mixing with other animals.
- ✓ According to the climatic conditions of the area, performance potential and incidence of diseases , piglets from that area are to be reared.
- ✓ Cross or exotic breed should be reared for commercial purpose to attain maximum profit.
- ✓ Good record history of the parents pig should be selected
- ✓ A sow after 10-12 farrowings should be culled for economics of the farm.

II.b.a.b Selection of piglets

- ✓ A minimum of 2 months old piglet is suitable for rearing . Do not purchase younger piglets as they require more care and susceptible to diseases.
- ✓ A minimum of 6 pairs of teats should be uniformly distributed on both sides in female pigs and in male testicles should be uniformly developed.
- ✓ The hair coat should be glossy and not dense. The physical features should be more or less similar to the preferred breed.
- ✓ The piglets should be active, healthy bearing a minimum weight of 8 kg . It should be free from any physical deformities or skin diseases.

III: Transportation of pigs/piglets

III.a. Contents

III.a.a Factors to be considered while transportation of pigs/piglets:

- ✓ Bedding materials should be placed to provide cushioning during transportation. Normally 1 inch of sand bed is used as bedding during summer and in winter straw is placed on top of it.
- ✓ The carrier vehicle should be properly disinfected. Minimum size requirement during transportation is mentioned below.

Small Pigs				Market Swine		Winter (cold weather)		Summer (hot weather)	
Weight Kg	Lbs.	m^2	ft^2	Weight Kg	Lbs.	m^2	ft^2	m^2	ft^2
4.54	10	0.06	0.70	45	100	0.22	2.4	0.30	3.0
9.07	20	0.084	0.90	91	200	0.32	3.5	0.37	4.0
13.60	30	0.093	1.00	114	250	0.40	4.3	0.46	5.0
22.70	50	0.139	1.50	136	300	0.46	5.0	0.55	6.0
31.20	70	0.167	1.80	182	400	0.61	6.6	0.65	7.0
36.30	80	0.177	1.90						
40.80	90	0.195	2.10						

Table 3: Minimum Space requirement while transporting animals

***An increase of about 15 to 20 percent in the space if the journey exceeds more than 3 hours.**

- ✓ Sick or unhealthy pigs should not be transported until condition improves.
- ✓ Provision of clean drinking water and withdrawal of feed atleast 12 hours before loading as to avoid excess defecation making the surface slippery.
- ✓ Slowing down on turns and bumpy roads will prevent unnecessary injury or discomfort to the animals.
- ✓ Spraying with water during breaks will help cool the animals during hot weather.
- ✓ Different age groups should be partitioned differently.
- ✓ Avoid under-loading as this is as dangerous as over-loading.
- ✓ Provision of shade in the form of tarpaulin is beneficial to protect the animal from rain and heat.
- ✓ Sharp objects from the vehicle should be removed.
- ✓ Organise halting time properly so that the animals are not stressed
- ✓ Do not drop pigs on the ground as it may cause fracture or internal injuries.

IV: Breeding practices and selection of breeding animals

IV.a. Contents

IV.a.a Critera for selection of breeding boars :

- ✓ Should be an offspring from superior sows and gilts.
- ✓ The boar must be free from physical abnormalities.
- ✓ A boar that produces more chopping noise has higher chance of mating as the noise seems to attract sows.
- ✓ It should be active and alert, have strong legs,back and neck.
- ✓ The boar should be free from any form of diseases .
- ✓ A minimum of 8 months old boar should be use for breeding purpose and not below that .1 to 2 years old is preferred.
- ✓ The boar must be stress free at the time of breeding.
- ✓ It shouldn't be overweight or underweight.
- ✓ The boar should be sexually active.

IV.a.b Critera for selection of breeding sows/gilts :

- ✓ Gilts/sows must be selected from parent sows having a history of good litter size and healthy piglets, mothering ability and a minimum of 9-10 nos of piglets at the time of weaning.
- ✓ It should not be overweight or underweight.
- ✓ Should be free from diseases . The physical appearance should be true to its characteristics.
- ✓ A minimum of 12 functional teats should be present.
- ✓ Should be minimum 8 months of age for breeding purpose.
- ✓ Sows/gilts with inverted teats or fat deposition at the base of the teats shouldn't be selected.

IV.a.c Factors influencing successful breeding:

- ✓ Repeat breeding 12 hours after 1st service is required.
- ✓ Increase in feeding quantity for 10-14 days before breeding and return to normal feeding after breeding.

- ✓ It is recommended that sows be fed 0.5 to 0.9 kg extra feed from day 100 of gestation and reduce one week before farrowing.
- ✓ A maximum of 1 boar for every 15 sow is required.

V: Feeding management of different categories of pigs

V.a. Contents

V.a.a Feed requirement of different age groups of pig

Age of Pig (Weeks)	Day	Weight (kg)	Daily Liveweight Gain (g/day)	Food Consumption (g)
4	28	7	215	280
6	42	12.5	395	500
8	56	21.3	630	852
10	70	30.5	660	1220
12	84	40.5	715	1620
14	98	51.5	800	2100
16	112	65	965	2600
18	126	80	1000	3200
20	140	95	1100	3800
22	154	110	1100	4000

Table 4: Feed requirement

Note:
A pig eats approximately 4% of its body weight per day.

V.a.b Local feed preparation

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
Others	5	5	5

Table 5: Pig ration

V.a.c Water requirement for different category of pig

Age group/Age (weeks)	Water Requirements (litres)
8	3
20	7
28	8
Pregnant pig	
First 3 months	12
Last 3 months	15
Lactating Sow with 5-8 Piglets	25
Lactating Sow with 10-	30

12 Piglets	
Boar	20

V.a.d Points to be followed in feeding management

- ✓ Clean drinking water should be provided to prevent water-borne diseases.
- ✓ Mouldy feeds should be avoided to prevent food poising particularly in piglets.

VI: Care and management of pregnant and lactating sows, new born piglets and growing/finishing pigs

VI.a. Contents

VI.a.a Care and management of new born piglets

- ✓ Cutting of umbilical cord with a sterilized blade 5 cm from the navel and smearing it with tincture of iodine.
- ✓ Assist in cleaning the mucous from the mouth and nostril to facilitate breathing if necessary.
- ✓ Clean/dry bedding materials should be provided to keep the piglets warm .
- ✓ Assist weaker piglets to suckle the teats to obtain colostrums as soon as possible.
- ✓ Needle teeth should be clipped as soon as possible to avoid injury to the sows teats.
- ✓ A creep area for resting and feeding of piglets should be provided to prevent crushing of piglets by the sow.
- ✓ Administration of iron injection on the 4^{th} and 14^{th} day to prevent piglet anaemia
- ✓ Castration to be done as early as 4 weeks old to prevent boar odour and less temperamental.
- ✓ In case if the sow does not produce sufficient milk , introduce to another sow which farrowed three days before because the teats which are not used are dried off after 3 days.
- ✓ Deworming should be followed after weaning. Do not deworm during diseased condition or stress.

VI.a.b Care and management of Pregnant and lactating sows

- ✓ Pregnant sow should be kept separately to avoid in fighting and injury to the developing foetus.
- ✓ Sufficient feed should be provided with adequate nutrients during the pregnancy period.
- ✓ The pregnant sow should have access to open space for exercise to keep itself active and fit, to prevent stiffness of the limbs and to reduce difficulties during farrowing.
- ✓ The farrowing pen should be properly disinfected with antiseptics like phenyls , potassium permanganate etc. atleast 20 days before farrowing.
- ✓ Proper bedding materials should be provided after 90 days of pregnancy.
- ✓ No feed to be provided 12 hours before and after farrowing . However plenty of clean drinking water to be provided.
- ✓ The pen should be well covered and warm especially during cold weather or in cold areas.
- ✓ To prevent transmission of external parasites to the new born piglets, the sow must be bath with soap and water.

- ✓ Feed should be provided in less amount and to be increased gradually . Normal quantity to be provided after one week from the day of farrowing.
- ✓ Teats should be checked for infection, lack of milk or any other abnormalities.
- ✓ Oxytoxin injection can be administered if the sow does not yield sufficient milk. Also vitamin supplements and mineral mixture can be provided.
- ✓ It is recommended that sows be fed 0.5 to 0.9 kg extra feed from day 100 of gestation and reduce one week before farrowing.

VI.a.c Care and management of growing/finishing pig

- ✓ Culling of poor or unhealthy pigs.
- ✓ Adequate provision of feed and water is required for proper growth.
- ✓ Deworming to be followed every once in six months interval. In case of areas with high incidence of parasitic diseases, deworming can be done once in every three months.
- ✓ Proper vaccination against infectious and deadly diseases is important.
- ✓ To prevent stress newly weaned piglet should be in groups.
- ✓ Proper cleaning of sty is required once very day.
- ✓ Castration to be done as early as 3 weeks to prevent foul smell to the meat.

VII . Diseases of pigs and their prevention

VII.a. Contents

VII.a.a Diseases of pigs

It is important to identify diseased animals from the healthy ones to prevent spread of infection. Some signs to identify sick from healthy ones is stated below:

- ✓ **Discharge:** in healthy pigs no abnormal discharge from any part of the body whereas in sick ones there is abnormal discharge.
- ✓ **Body condition:** In healthy pigs, the skin are smooth and hair is glossy. The body is round and fleshy whereas in diseased pigs the skin is rough,dull and the stomach is pot bellied.
- ✓ **Tail:** Neatly curled Vs hangs straight.
- ✓ **Breathing:** Consistent and relaxed Vs inconsistent and rapid breathing.
- ✓ **Mucous membrance:** Pink Vs pale
- ✓ **Stool:** Normal Vs diarrhoea or constipated.
- ✓ **Appetite:** Normal Vs reduced or absence of feeding
- ✓ **Temperature:** Normal (102 F) Vs Above
- ✓ **Activity:** active Vs cuddling most of the time.

Prevailing diseases of pigs :

Disease	Symptoms	Preventions
1. swine fever	1. Vomittion and foul smelling diarrhoea 2. Loss of appetite and recumbent position 3. High temperature (105-107 F) 4. Nervine symptoms like convulsions, tremors . 5. Discharges and	1. vaccination against the disease. 2. Proper cleaning of the pig shed. 3. Isolation of newly purchased pigs/piglets for atleast 1 week. 4. separation of infected pigs from healthy ones. 5. Immediate treatment for higher chances of recovery .

	conjunctivitis.	
2. Piglet anaemia	1. pale mucous membrane and the piglets are very weak. 2. rough or wrinkled skin. 3. Scour, sloppy diarrhoea. 4. rapid breathing.	1. administration of iron injection on the 4^{th} and 14^{th} days of age . 2. smearing of ferrous sulphate solution to the sows teats so that the piglets obtain iron during suckling. 3. access of piglets to soil for obtaining iron .
3. swine erysipelas	1. Diamond shaped lesion on the skin 2. inappetance and rubbing of infected part of the body against objects. 3. Joint infections . 4. High temperature (105-107 F)	1. Medicate the feed with 200g/tonne of phenoxymethyl penicillin for 10-14 days. This is a very effective method of prevention, and can be used in major outbreaks of disease. 2. If a boar is ill with a temperature and shows skin lesions, treat immediately and do not use for mating for a minimum period of four weeks. 3. Isolation of infected pigs from healthy ones. 4. proper sanitation of pens.
4. swine dysentery	1. Sloppy light brown faeces with or without mucous or blood. 2. Twitching of the tail. 3. Dehydration 4. In later stages, stool becomes dark and tarry.	1. Control flies, they can transmit the organism from one group of pigs to another. 2. Do not overcrowd pigs and endeavour to keep a dry environment, the organism will die out quickly on drying. Poor sanitation and wet pens enhance the disease.