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Government of India
Ministry of Rural Development
Department of Rural Development
(Rural Livelihoods Division)

7th floor, NDCC Building - II,
Jai Singh Road, New Delhi - 1
Dated 1st Feb., 2021`

To,

The SMD/CEO,
All States

Subject: Guidelines on promotion of backyard pig rearing under DAY-NRLM

Madam/Sir,

I am directed to share the guidelines on promotion of backyard pig rearing under DAY-NRLM for your perusal and guidance. You all are requested to initiate the promotion of backyard pig rearing based on the circulated guidelines in your state

Yours faithfully

Enclose:- As above.

(H.R. Meena)
Deputy Secretary to the Govt of India

# Guideline for promotion of backyard piggery under DAY-NRLM

Contents

**GUIDELINE FOR PROMOTION OF BACKYARD PIGGERY UNDER DAY-NRLM**

## 2. Background

Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM), is a flagship programme of the Ministry of Rural Development, Government of India. It has been working towards improving social status and economic capabilities of rural women through formation of collectives, intensifying and expanding their existing livelihoods, bringing in new farm, non-farm and other economic opportunities by accesses and linkages through their collectives.

Since its inception, DAY-NRLM has made significant progress in mobilizing rural poor and vulnerable women into their institutions in various tiers. DAY-NRLM has also supported these women SHGs through provisioning of Revolving Fund (RF) and Community Investment Fund (CIF) to take up livelihood activities, additional credit need has been arranged through linking the SHGs with the banks.

Livestock based livelihoods is one of the important sources for SHG women from small, marginal, landless households and forest dwellers. Promotion of improved practices to reduce the mortality and morbidity in ruminants, non-ruminants and poultry through improved feed and breed management, preventive healthcare, ethno-veterinary practices, better housing, improved management practices are the essential livestock interventions under DAY-NRLM. Promotion of piggery with small and manageable herd size in their backyard has huge potential in the tribal pockets of central and north-eastern India. For improving this backyard piggery based livelihoods, systematic promotion and establishing linkages, a comprehensive implementation guideline is felt to be developed to help SRLMs to engage with this activity.

In this context, the following guideline has been developed in consultation with some of the SRLMs where similar intervention has been initiated.

## 3. Introduction

Backyard piggery has been an age-old practice among the communities in north-eastern India and socio-economically weaker sections of the society in the rest of the country as well. It has great potential to contribute to faster economic return to the rearers, due to its high fecundity, better-feed conversion efficiency, early maturity and short generation interval. Pig can convert so called wastes into a high quality edible protein in its body.

Backyard pig rearing with small herd size contributes in many ways to improve the livelihood of poor. Pork and other pig products provide for high value animal protein, the meat is easy to dress and has superior curing and storage qualities. The low costs and small investments are recovered fairly quickly as slaughter can take place at about six to eight months from farrowing (birth), depending on breed and feed availability. Additionally, pig husbandry can be easily integrated with a series of other farming activities (agriculture, fishery) within the agricultural and aquaculture sectors. All these advantages make the livelihood activity of pig production a valuable diversification optior in small-scale production systems.

## 4. Composition of pork

A 3.5-ounce (100-gram) serving of cooked, ground pork provides the following nutrients

| **Food values** | **Value / 100 g of pork** |
|---|---|
| Calories | 297 |
| Water | 53 % |
| Protein | 25.7 g |
| Fat | 20.8 g |
| Carbs | 0 |
| Fibre | 0 |
| Sugar | 0 |

## 5. Recommended Pig breeds for different regions of India

Instead of importing pure exotic breeds, crossbred pigs developed in different States utilizing local and exotic breeds is recommended for different regions:

| **States of India** | **Recommended breed** |
|---|---|
| Northern India | • Large White Yorkshire<br>• Large White Yorkshire cross<br>• Landrace cross |
| North-eastern India | • Large white Yorkshire specifically for Mizoram and Tripura<br>• Triple cross with Duroc as terminal sire<br>• Large Black cross |

| | |
|---|---|
| Eastern India | • Hampshire cross<br>• Tamworth cross (specifically Jharkhand) |
| Central India | • Landrace cross<br>• Large white Yorkshire cross |
| Southern India | • Large white Yorkshire cross<br>• Triple cross with Duroc as terminal sire |
| Western India | • Large white Yorkshire cross |

*Source: National Guidelines for formulation of State Pig Breeding Policy*

Good quality breeding stock may be purchased from Government pig Farm, ICAR-AICRP Projects, State agricultural university farms, Progressive pig farms recommended by University, SHGs, Livestock farm co-operative Society.

## 6. Different pig rearing systems in India

The typical production system consists of a simple pigsty and feeding comprises of locally available grains, vegetables and agricultural by-products along with kitchen waste.

**Free range/ scavenging:** These traditional systems predominate in large areas, especially in the rural villages of central and northern India with local undescriptive varieties. Productivity of these village pigs is generally low. The potential of these basic production systems for wealth creation is limited, but makes a significant contribution to the livelihoods of resource of poor people.

**Semi-intensive (confined within a large area):** The semi-intensive system (confined within a large area) is found in suburban areas or with communities specialized in fattening local pigs. In this system, the farmer provides housing for the animals and allows them to move out to feed on natural vegetation. The farmer provides paddocks around the housing, which he has fenced. Wallow pits and shades are also provided within the farm. Moreover, the farmer allows animals to move about thereby, exercising themselves to prevent fat build-up in the body. Groups concerned about ethical standards in livestock farming would approve this model. The system needs less capital investment but the labour requirements, disease incidence and parasite infestations are high. Concentrate feeds are also provided.

**Intensive (confined to a pig pen):** This system is adapted by farmers with a sense for improved pig production. This system is generally adopted for commercial production. This system for pig rearing is from birth to weaning and for lactating and weaned sow can hold large number of pigs. It is generally managed in all-in all- out basis.

**Integrated pig and fish farming:** This system is adapted by farmers which have access to fish pond in the villa ges. Pig sty are built in the bank of the pond. The pig manure contributes to fish feed and encourages growth of algae in the pond and in turn ensures faster growth of fish. Extremely resource poor households may find it difficult to adopt the technology, as this requires the pigs to be penned up. In small scale rural farms, pigs are typically permitted to roam and scavenge for their feed as this avoids the investment and effort of penning and then providing feed.

## 7. The main Challenges of backyard piggery in India are

The main challenges of backyard piggery in India are summarised as follows:

i. Lack of access to quality piglets in required number.
ii. High cost of quality piglets.
iii. In-breeding causing deteriorating breed quality.
iv. Lack of supply and mechanism to execute timely vaccination – Swain fever, FMD etc.

ii. Lack of technical know-how on improved pig rearing among rural areas.
iii. Lack of access to vet-care services
iv. Unavailability of hygienic pork production, slaughter and processing facilities across the country.
v. Availability of credit for purchase of piglets.
vi. Socio-religio-cultural disadvantages of pork

## 8. Strategies under DAY-NRLM for backyard pig intervention

The broader strategy for promotion of backyard piggery among the SHG members can be presented below:

Backyard piggery intervention under DAY-NRLM consists of the following:

**(a) Maintaining proper ratio (fattener, boar keeper, breeder):** Under this intervention a village has been taken as a unit of intervention. The number of individual fatteners, pig breeders and breeding boar ke epers to be maintained so that the ratio of 9:1:1 is attained. This ratio will help in producing required piglets for the fatteners.

**(b) Boar exchange**: At cluster level, in regular interval the breeding boar to be exchanged among the bre-keepers of that cluster to avoid in-breeding.

**(c) Promotion of fatteners**: Income from backyard pig fattening depends on the reduction in cost of feed. Thus at household level, the size of herd to be determined by the volume of agricultural / household wastes generated so that bulk of the feed for the pigs are generated at household level or within the village (herbs, forest produces etc) excpet need based vitamine and mineral mixture.

**(d) Promotion of pig-breeders**: Promotion of backyard pig breeder farmers and maintaining a proper ratio of different pig farmers and boar exchange will ensure availability of quality piglets at an affordable price to all pig fatteners. The Pashu Sakhi may be promoted to pig-breeding entrepreneurs.

**(e ) Promotion of breeding boar-keeper:** High quality, locally adopted breeding boar rearing at household level will be promoted for breeding purpose. After one or two years such boar will be exchanged or castrated to convert into fattening pigs. This will ensure continue supply of quality piglets without in-breeding. Pashu Sakhi may be promoted as boar-keeper entrepreneur.

**(f) Credit linkage:** During purchase of piglet the SHG women needs credit, timely availability of such credit through MCP will ensure access to such fund for purchase of piglets.

**(g) Mini Slaughter House**: At cluster level, such facilities may be promoted as individual enterprise. Selection of such entrepreneur may be dome through the CLF.

**(i) Pig Rearers Group (Producers Group):** All the pig rearers (fatteners, boar keepers and breeders) of a cluster of adjoining vilages may be organised around a Pig Rearers Group. This is an informal group for sharing of experiences, cross-learning, boar exchange, collective marketing of piglets, pigs, Mini slaughter house etc. This may act as Pashu Pathshala also.

**(j) Pig Rearers Enterprise (PE):** All the pig rearers group of a block / district may be federated into a Producers Enterprise (PE) primarily for aggregated supply of inputs (vaccine, vet-medicine, mineral mixture, vitamines etc), vet services (through qualified vet-doctors), slaughter house, processing of pork, packaging, branding and marketing.

**(k) Training and capacity building:** The training and capacity building for all the different types of pig rearers can be done through:

- National Resource Persons (NRPs) / State Resource Person (SRPs)
- In convergence with Department of Animal Husbandry
- Hand holding can be done by CRP rounds by the experienced CRPs/PRPs / entrepreneurs of some pioneer states.
- TSP and SCSP programmes of ICAR institutes and SAUs.
- ICAR-National Research centre on Pig and their units in different ICAR institutes and SAUs can also be roped in for training, capacity building and bring in new technologies.

## 9. Income potential at household level:

**Income from pig breeding**: With a herd size of 3 female piglets, a SHG women needs to invest Rs 25.600 for construction of pigsty, female piglets etc. The piglets will be purchased when they are 3 months of age and around 15 kgs of wt. This investment will bring an annual income of about Rs 23,830 in the first year (excluding incidental expenses). Similarly in the second year onwards the income will become Rs 68,364 per year. The details of the calculation / economics has been annexed in annexure-1.

**Income from pig fattening:** With a herd size of 3 castrated pig rearing which are 2.5 – 3 months old and weighing around 10 kgs , initial investment in the form of construction of pig-sty and other accessories comes as Rs 10,500. It will generate an annual income of Rs 32,560 in the first year after deduction of all investment and expenses. Similarly in the second year yearly income will increase to Rs 43,060. The details of calculation is presented as Annexure-2.

**Income of a boar keeper:** Keeping five locally adopted, high quality, cross-breed boar(male pig) for breeding purpose needs Rs investment including cost on construction of pig-sty, purchase of quality boar, transportation etc. The income from 2$^{nd}$ year onwards is expected around Rs. 90,000. The details of calculation is mentioned in Annexure-3

**Income from Mini Slaughter House:** Initial investment in a Mini Slaughter House is in the tune of Rs 4,20,000. Details of the income is presented in annexure as Annexure-4.

## 10. Funding sources:

The following may be the different sources of fund for backyard piggery:

| **Particulars** | **Possible sources of fund** |
|---|---|
| Pig-sty | Self-contribution, SHG loan, MGNREGS |
| Piglet purchase | SHG loan, Self-contribution. |
| Promotion of entrepreneur, breeding unit and pig induction | In convergence with Department of Animal husbandry scheme on 'Sub-mission on piggery breed improvement and entrepreneurship development" |
| Slaughter house | In convergence with Animal husbandry department through "Animal husbandry infrastructure development fund" |
| Pork processing unit | In convergence with Animal husbandry department through "Animal husbandry infrastructure development fund" |

## 11. Convergence opportunities:

There is ample scope for convergence with the department of animal husbandry for the animal vaccination, vet-medicine, and subsidies for piglets, animal feeds and support of vet-doctors. Under the Individual Beneficiary Scheme (IBS) of MGNREGA, pig shed, and under common livelihood assets of MGNREGA, infrastructure for Pig PE can be constructed. Besides, local KVK may be roped in for the training of pig rearers, pig breeding and pig fattening entrepreneurs and Pashu Sakhi. SRLM may utilize training of Pashu Mitra (entrepreneurs) / pig farming entrepreneurs through recently approved training courses of agri-preneurs.

## 12. Technology and its extension:

The details on improved rearing practices has been presented in **annexure-5**.

For extension services two models may be thought of, (a) training to individual farmers through trained Pashu Sakhi and CRPs in villages, (b) through pig entrepreneurs tied up with the rearers who have purchased piglets from her. Following are the topics for extension services:

| | |
|---|---|
| ○ Awareness on improved pig rearing and hygienic pork production<br>○ Provide input in good practices of pig rearing.<br>○ Formulation of balanced pig feed with locally available materials, farm wastes and agricultural wastes.<br>○ Maintenance of hygiene<br>○ Timely Weight check up to get the weight gain or loss | ○ Protect from ecto and endo parasites<br>○ Deworming of pigs – twice in a year( before rainy and after rainy season)<br>○ Timely Vaccination (Swine fever and FMD) of pigs.<br>○ Insurance Service<br>○ Maintain pure and true to breed boar and avoid inbreeding |

## 13. Role of SHG:

SHG will play a key role in channelizing all loans for the different types of pig rearers.

14. Community Insurance:

Pashu Sakhi / Pig entrepreneurs will work as facilitator in insurance of piggery initiative and would help in filling the insurance form for the insurer SHG member. It would also support in estimating the rate of the pig for the insurance purpose.

**Annexure-1**

| **Particulars** | **Unit cost (Rs)** | **No of units** | **Cost (Rs)** |
|---|---|---|---|
| **A. Fixed cost** | | | |
| A1. Cost of piglets (15 KG) | 4500 | 3 | 13500 |
| A2. Transport | 200 | 3 | 600 |
| A3. Feeding manger, Waterer | 500 | 3 | 1500 |

| | | | |
|---|---|---|---|
| A4. Housing (Thatched roof, pucca floor with ventilation) | 10000 | 1 | 10000 |
| **Total A** | | | **25600** |
| **B. Recurring cost (first year)** | | | |
| B1. Feeding cost of piglets @ 150 kg per year at 25 Rs/Kg - concentrate (50% concentrate + 50% agri-byproducts) | 3 | 3750 | 11250 |
| B2. Health care cost | 200 | 3 | 600 |
| B3. Minerals and supplements | 200 | 3 | 600 |
| B4. Insurance | 270 | 3 | 1620 |
| B5. Consumables /Repair & maintenance | 500 | 2 | 1000 |
| **Total B** | | | **15,070** |
| **C. Investment required (A+B) First year** | | | **40,670** |
| **D. Receipts (first year) Piglets** | 7 | 3 | 21 |
| D1. Sale of 2.5 Month old piglets | 3000 | 21 | 63,000 |
| D2. Sale of manure | 03 | 500 | 1500 |
| **Gross Receipts (first year) – total of D** | | | **64,500** |
| **Income First year (D-C)** | | | **23,830** |
| **E. Recurring cost (Second year)** | | | |
| E1. Feeding cost of 3 adult pigs @ 1.25 kg per day at 25 Rs/Kg - concentrate (50% concentrate + 50% agri- byproducts) | 3 | 11406 | 34,218 |
| E2. Health care cost | 300 | 3 | 900 |
| E3. Minerals and supplements | 300 | 3 | 900 |
| E4. Insurance | 600 | 3 | 1800 |
| E5. Consumables /Repair & maintenance | 1000 | 1 | 1000 |
| **Investment required (Total E)** | | | **38,818** |
| **F. Receipts (Second year onward) Piglets (2 farrowing per year)** | 16 | 3 | **48** |
| F1. Sale of 2.5 Month old piglets | 3000 | 48 | 1,44,000 |
| F2. Sale of manure | 03 | 1000 | 3000 |
| **Gross Receipts (second year)-Total of F** | | | **1,47,000** |
| **Net receipt (F-E)** | | | **1,08,182** |
| **Income 2nd year** | | | **69,364** |
| ***Value of parent stock (available with farmer as insurance against natural disasters and hard times).*** | ***03*** | ***15000*** | ***45,000*** |

*Source: ICAR-Mega Seed Project on Pig*

*Note: Common Breeding Boars (05) will be maintained by Pashu Sakhi/ entrepreneur and will be rotated village wise on annual basis to prevent inbreeding.*

**Annexure-2**

**Income of a pig fattener (3 castrated piglets)**

| **Particulars** | **Unit cost (Rs)** | **No of units** | **Cost (Rs)** |
|---|---|---|---|
| **A. Investment** | | | |
| A1. Feeding manger, Waterer | 500 | 1 | 500 |
| A2. Housing (Thatched roof, pucca floor with ventilation) | 10000 | 1 | 10000 |
| **Total A** | | | **10,500** |
| **B. Recurring cost** | | | |
| B1. Cost of piglets (10 KG) | 3000 | 3 | 9000 |
| B2. Transport | 100 | 3 | 300 |
| B3. Feeding cost @ 150 kg per piglet per year at 20 Rs/Kg - concentrate (50% concentrate + 50% agri- byproducts) | 3 | 3000 | 9000 |
| B4. Health care cost | 100 | 3 | 300 |
| B5. Minerals and supplements | 100 | 3 | 300 |
| B6. Insurance | 180 | 3 | 540 |
| B7. Consumables /Repair & maintenance | 500 | 1 | 500 |
| **Total B** | | | **19,940** |
| **C. Receipts** | | | |
| C1. Sale of 12 Month old pigs (100 kg) @ Rs 200/kg | 20,000 | 3 | 60,000 |
| C2. Sale of manure | 3 | 1000 | 3000 |
| **Total receipts (total C)** | | | **63,000** |
| **Income in the first year (C-B-A)** | | | **32,560** |
| **Income from second year (C-B)** | | | **43,060** |

*Source: ICAR-Mega Seed Project on Pig*

**Annexure III. Economics of keeping boar (05) for breeding purpose:**

| Particulars | Unit cost (Rs) | No of units | Cost (Rs) |
|---|---|---|---|
| **A. Fixed cost** | | | |
| A1. Cost of Boar (15 KG) 3 months age | 4500 | 5 | 22500 |
| A2. Transport | 200 | 5 | 1000 |
| A3. Feeding manger, Waterer | 500 | 5 | 2500 |
| A4. Housing (Thatched roof, pucca floor with ventilation) | 10000 | 1 | 10000 |
| **Total A** | | | **36000** |
| **B. Recurring cost (first year)** | | | |
| B1. Feeding cost of piglets @ 150 kg per year at 25 Rs/Kg - concentrate (50% concentrate + 50% agri-byproducts) | 5 | 3750 | 18750 |
| B2. Health care cost | 200 | 5 | 1000 |
| B3. Minerals and supplements | 200 | 5 | 1000 |
| B4. Insurance | 270 | 5 | 1350 |
| B5. Consumables /Repair & maintenance | 500 | 2 | 1000 |
| **Total B** | | | **23100** |
| **C. Investment required (A+B) First year** | | | **59,100** |
| **D. Receipts (first year)** | 7 | 3 | 21 |
| D1. Three month Breeding (after 12 months of age) @ two mating per boar per week ie. 120 mating @ Rs. 300 per mating | 300 | 120 | 36,000 |
| D2. Sale of manure | 05 | 1000 | 5000 |
| **Gross Receipts (first year)** | | | **41,000** |
| **Net receipt first year (D-B)** | | | **17900** |
| **E. Recurring cost (Second year)** | | | |
| E1. Feeding cost of 5 adult Boars @ 1.25 kg per day at 25 Rs/Kg - concentrate (50% concentrate + 50% | 5 | 11406 | 57,030 |

| | | | |
|---|---|---|---|
| agri- byproducts) | | | |
| E2. Health care cost | 300 | 5 | 1500 |
| E3. Minerals and supplements | 300 | 5 | 1500 |
| E4. Insurance | 600 | 5 | 3000 |
| E5. Consumables /Repair & maintenance | 500 | 2 | 1000 |
| **Investment required (Total E)** | | | **64,030** |
| **F. Receipts (Second year onward)** | | | |
| F1. Twelve month Breeding @ two mating per boar per week ie. 100 mating per boar per year @ Rs. 300 per mating | 300 | 500 | 150,000 |
| F2. Sale of manure | 05 | 2000 | 10,000 |
| **Gross Receipts (second year onward)** | | | **1,60,000** |
| **Net receipt (E-F) excluding housing and equipment cost** | | | **95,970** |
| **Net Monthly income 2nd year onward** | | | **7998** |
| ***Value of parent stock (available with farmer as insurance against natural disasters and hard times).*** | ***05*** | ***15000*** | ***75,000*** |

Source: ICAR-Mega Seed Project on Pig

*Note: Common Breeding Boars (05) will be maintained by Pashu Sakhi.*

## Annexure-4

## Economics of Mini Slaughter house

| **Particulars** | | | |
|---|---|---|---|
| | **Unit cost (Rs)** | **No of units** | **Cost (Rs)** |

| | | | |
|---|---|---|---|
| **A. Fixed cost** | | | |
| A1. Establishment cost, infra for slaughter house | 4 ,00,000 | 01 | 4,00,000 |
| A3. Formation of shed for pigs to keep overnight | 04 | 5000 | 20,000 |
| **Total A** | | | **4,20,000** |
| **B. Recurring cost (one month)** | | | |
| B1. Fattened pigs will be purchased from the cluster @ 5 pigs per day ie. 150 per month | 15,000 | 150 | 22,50,000 |
| B2. Feeding cost @ 2 kg per pig per year at 20 Rs/Kg - concentrate (50% concentrate + 50% agri- byproducts) for 2 days | 300 | 20 | 6000 |
| B3. Packaging cost | | | 5000 |
| A4. Electricity and Misc. cost | | | 1000 |
| **Total B** | | | **22,62,000** |
| **C. Investment required** | | | **26,82,000** |
| **D. Receipts** | | | |
| D1. Sale of slaughtered pork among consumers of nearby market (100 kg) @ Rs 200/kg, 5 pigs per day and 150 pigs per month | 20,000 | 150 | 30,00,000 |
| **Gross Receipts** | | | 30,00,000 |
| **Net receipt(C-B) excluding establishment and housing cost** | | | **7',38,000** |
| **Monthly income** | | | **61,500** |

ANNEXURE 5

**Housing and related equipment:** While selecting the site for pig farm, it must be near to town/city to avoid transportation cost of feed or other requirements and to avail marketing facilities. Housing is required for the animals to protect them from rain, wind, storm, and sunlight, cold and extreme climate. The pigsty may be constructed with locally available materials like wooden plunks, jungle post, bamboo and thatch grasses or the houses may be of brick wall, RCC post and with Corrugated Galvanized Iron/asbestos sheet roofing. Floor should be cemented for easy cleaning and hygienic point of view. Pig can be kept under two systems and indoor system. A combination of both may be followed. It is easy to manage animals in indoor system compared to open air system. Each animal of different categories requires a minimum floor space for housing. Before construction of pen following assumption must be followed:

1. Construct shed on dry and properly raised ground.'
2. Avoid water-logging, marshy and heavy rainfall areas.
3. The side walls of the sheds should be 4-5 ft. high and remaining height should be fitted with GI pipes or wooden poles.
4. The walls should be plastered to make them damp proof.
5. The roof should be at least 8-10 ft. high.
6. The pig stys should be well ventilated.
7. The floor should be pucca/hard, even, non-slippery, impervious, well sloped (3 cm per metre) and properly drained to remain dry and clean.
8. A feed trough space of 6-12 inches per pig should be provided.
9. The corners of feed troughs, drains and walls should be rounded for easy cleaning.
10. Provide adequate open space for each animal i.e. double the covered area
11. Provide proper shade and cool drinking water in summer.
12. Dispose of dung and urine properly.
13. Individual pens for boars/lactating sows should be constructed.
14. The dry sows / fatteners can be housed in group pens.
15. Give adequate space for the animals.

Constructed of shed may be done through MANEREGA scheme at cheaper cost. Locally available materials like stones, bamboo, bricks, kachha house, renovation of old existing shed may be utilized for rearing of pigs.

## FEED AND FEED SOURCES

The growth and mortality of pigs largely depend on their feeding regime. Pig is the most efficient animal in converting feed to meat. About 70 - 75 per cent of the total production cost of the pig farm is due to the feed cost. Generally farmers want to rear pigs with zero inputs like kitchen waste as well as vegetable waste mixed with rice polish/ wheat bran only. However, with this feed it is not possible to get desired body weight and other production norms. It is therefore, very much important to feed the animals with economical but balanced feed which will contain all the nutrient requirements for growth and to support the life. Generally two types of feeding are practiced. They are:

1. Concentrated feed computed with different feed ingredients
2. Concentrated feed mixed with other locally available agro-industrial by-products, tuber crops like sweet potato, tapioca, colocasia, vegetables and kitchen waste etc .

**Feed formula for different categories of pigs**

| Ingredients | Weaner (18-20%) protein | Growers (15-17%) Protein | | Gilt/sow/boar(14-16%)protein |
|---|---|---|---|---|
| | | 12th Weeks | 9-12 | |

| | | to Market age | Months | |
|---|---|---|---|---|
| **Maize** | 55 | 58 | 60 | 15 |
| **Ground Nut Cake** | 17 | 15 | 8 | 30 |
| **Wheat Bran** | 20 | 20 | 25 | 20 |
| **Rice Polish** | - | - | - | 10 |
| **Fish Meal/soya Meal** | 6 | 5 | 5 | 5 |
| **Mineral Mixture** | 1.5 | 1.5 | 1.5 | 1.5 |
| **Salt** | 0.5 | 0.5 | 0.5 | 0.5 |
| **Total** | 100 | 100 | 100 | 100 |

The poor and marginal farmers in the villages who can not afford to provide the above feed, can feed their pigs with sweat potato (6 0%), protein source, vitamins and minerals. Besides the above the pigs can also be maintained with vegetables waste and kitchen waste consisting of cooked rice, vegetables etc. and also with brewery waste and other feed waste. A good feed ration should contain the required nutrient in right proportion as per the need of body weight along with adequate drinking water.

**Flushing**

It is the method of increased feeding to sows and gilts before breeding to enhance litter size. A good grower ration fed to pigs for seven to ten days before breeding to increase ovulation rate in them. After breeding animals should be fed a limited but well balanced ration until the last six weeks of pregnancy and then full feeding should be resumed to avoid pregnancy complications Following points to be followed before feeding to pigs:

1. Feed the animals with best feeds.
2. Give adequate concentrates in the ration.
3. Provide adequate vitamins and minerals.
4. Provide adequate clean water.
5. Give adequate exercise to the animals.
6. The feeding of the piglets is more critical and high quality and more fortified diets are needed for feeding them.
7. Feeding of the sows during pregnancy is utmost important for increased litter size.
8. The feed requirements of lactating sow varies with the size of the litter, weight, size and age of sow.
9. Commercial pig farming should aim at the exploitation of nonconventional feed resources viz., waste from Kitchen/hotel/ cold

storage/warehouses, in replacing the balanced rations to minimize the cost of production.

10. The feeding regime adopted should take care of all the nutrient requirements of various categories of pigs.
11. 25-50% concentrate feed will be recommended for feeding to pigs depending on the locally available feed ingredients/byproduct.

**REPRODUCTIVE MANAGEMENT:**

Indigenous pigs normally reared by farmers are bred indiscriminately without much choice of male. Moreover, during the process of scavenging, there is no control over breeding. Reproduction is the main component limiting the productive efficiency of pig industry. Successful reproduction is the outcome of a series of closely linked events. The gilt must grow rapidly to attain sexual maturity, initiate estrous cycle, ovulate and be mated by a fertile boar or inseminated with fertile semen. The female pig becomes sexually mature between 8 - 10 months depending on the breed and nutrition level. But the local pig attains maturity at 5 - 6 months. The length of the estrous cycle averages approximately 21days (18 - 24 days). Signs of heat are restlessness, loss of appetite, increased vocalization, frequent urination, red swollen vulva, riding other females, elevation of tail, arched back etc. If the female is in heat she will remain stand still when pressure is applied on the loin region with the palms of both hands (standing reflex). It is always better to leave one or two estrous cycle in case of the gilt and breeding may be done during the third cycle depending on the physical condition of the gilt. If the female does not conceive, it will repeat its heat symptoms after 21 days. Those who do not repeat are presumed to be pregnant which, however, needs to be confirmed/ diagnosed with the help of a veterinarian.

**Care during pregnancy and farrowing**

After breeding, the sow should be kept in dry clean and hygienic enclosure in comfortable place. It should be closely observed for estrus symptoms around 20 days after breeding to assure the non - return of estrus and expect the conception. Pregnant sow should be shifted to a clean farrowing house before 3 weeks of farrowing. Clean and dry bedding material preferably of dry paddy straw/hay has to be provided in the pen. The pregnant animal should be fed individually. In most of the cases no assistance is required during farrowing. New born piglets are active and within two minutes each piglet reaches a teat and attempt to suck milk. Sometimes respiration is delayed in newborn piglets. To stimulate the respiratory activity of the piglet the mucous should be removed from nose and mouth. The weaker piglets should be assisted to the teat so that they can suckle the first milk (colostrums). The placenta may be expelled during the phase of delivery as single mass after the birth of last piglet. Care should be taken to avoid crushing of newborn piglets during and after farrowing.

**Care and management of piglets from birth to weaning:**

Piglets begin to explore his environment within a few minutes after birth and soon find his way to nipple and begin to suckle. It is essential that the pen environment should be clean to minimize chance of exposure to disease and

parasite. Allow the piglets to suckle just after birth without disturbing the sow. Following points to be followed to avoid piglet mortality:
i. Clean all the piglets and make their body dry.
ii. Allow piglet to suckle milk from mother sow for 8-10 Times in days.
iii. To prevent 'naval ill' the naval card should be tied off to prevent loss of blood and it should be cut 3-5 cm distal to the legation and this portion should be dipped in a solution of 2% iodine or 70% ethyl alcohol.
iv. The 'needle teeth' should be clipped within 24 hrs. Side cutting pliers are suitable for this purpose. It is important to avoid loosening of the base of the tooth or leaving jagged edges or causing injury to gum.
v. The piglets should be ear-tattooed immediately after birth and the same animal ear punched/ ear notch at 6 weeks of age.
vi. Male piglets not required for breeding are generally castrated as this operation generally facilitates easy of management and prevent indiscriminate breeding. This operation should be done after 3 – 6 weeks of birth.
vii. Tramping of piglets by sow should be preventing during first two weeks by providing guard rail.
viii. Creep area provide to piglets for protected from crushing, overlying by sow and separate creep ration.
ix. Creep feeding - concentrate feeding starts at 2-3 weeks when piglets are separated from mother.

**Breeding care**

1. Pigs are highly prolific in nature and two farrowing's in a year should be planned by adopting optimal management conditions
2. For every 10 sows one boar must be maintained for maximum fertility.
3. Breed the animals when it is in peak heat period (i.e. 12 to 24 hours of heat).

**Care during Pregnancy**

Give special attention to pregnant sows one week before farrowing by providing adequate space, feed, water, etc. The sows as well as farrowing pens should be disinfected 3-4 days before the expected date of farrowing and the sows should be placed in the farrowing pen after bedding it properly.

**HEALTH CARE AND PROTECTION AGAINST DISEASES**

Health care measure to be followed in a pig farm is one of the most important factors and if not followed properly, farmer may incur a heavy loss. The pigs can be infected with a number of internal parasites, skin infections and other bacterial and viral diseases, which in turn will result in poor growth and even death of pig. In general, illness in pig is characterized by dullness, 8 loss of appetite, declination to move or sluggish movement, rough body coat, constipation or diarrhoea, dull eyes, dull skin and hair, separates itself from the rest etc. The piglet should be dewormed once in three months. Worms from pigs may infect human being also. Most commonly found parasitic disease are Ascariasis, Coccidiosis and mange mite infection. Drugs like albendazole/fenbendazole @7.5 mg/kg b.wt in feed and water (Single dose) or

Ivermectin @0.3mg/kg b.wt (s/c) are useful against parasitic infection in pig. The pregnant sow should be treated before farrowing.

Another commonly occurring ailment in pig is the skin infection which may be caused by ticks , mites and lice. Mange caused by mites may occur around the head, ears, legs and tails which subsequently spread all over the body. Tick and lice feed on the skin and irritate the pigs which will scratch its body. The skin infection caused by the external parasites can be treated by spraying. Dipping or painting with Butox - 1% solution spray or dipping or painting or Deltamethrin @50 - 75ppm (two application at 1 0 days interval or Ivermectin @0.3mg/kg b.wt (s/c) should be done regularly. Other diseases like piglet diarrhoea, salmonellosis, mastitis etc can be treated when it occurs in consultation with the veterinarian.

**The important infectious diseases of pigs**

- **Classical swine fever or Hog cholera** is one of the most important and devastating viral diseases of pigs. The disease affects both domesticated and wild pigs under natural conditions. It is characterized by fever, multiple generalized petechial and ecchymotic hemorrhages giving rise to visceral and skin lesion. Symptoms of tremor, in coordination and paralysis and occasionally peracute death without any signs may also be observed. Farmers should be advised to vaccinate the animals against swine fever about 20 - 30 days before breeding.
- **Foot and Mouth disease (FMD):** This disease can **affect** all **pigs**. The key clinical signs include lameness vesicles and blisters; salivating **pigs**. There is no specific treatment for FMD. In endemic countries antibiotic therapy may be used to control secondary bacterial **infection** of ulcers but recovery takes several weeks to months. Vaccination is best way to prevent.
- **Respiratory disorder/ Pneumonia:** it is frequently caused by Pasteurella, it is considered to be an important disease of pigs. Symptoms like affected pigs are apathetic, anorexia, high fever, coughing and sneezing, difficulty in breathing, red eyes with discharge. The treatment is more effective if appropriate antibiotic is used based on the drug sensitivity of the isolated bacteria.
- **Colibacillosis (piglet diarrhoea):** It is caused by pathogenic strains of Escherichia coli and i s a disease primarily of the newborn or young pigs. The disease may be manifested by diarrhea, respiratory distress and arthritis. Thorough sanitation, adequate feeding of colostrums and milk during the first few hours after birth is important to reduce the problem. Oral rehydration therapy along with specific antibiotics is useful for the treatment of the affected piglets. Occurrence of most of the diseases can be prevented by following strict hygienic measure and by timely vaccination of pigs. A separate house should be there to keep the animals suffering from contagious diseases.
- PRRS: Porcine Reproductive and Respiratory Syndrome (PRRS) is a viral disease infecting sows and pigs leading to reproductive failure (abortions, weak and stillborn piglets, infertility), and causes

pneumonia and increased mortality in young animals. There is no specific treatment for PRRS. Broad-spectrum antibiotics may be useful in controlling secondary infections. Presently PRRS vaccine is not available in India. However, it may be prevented by following strict biosecurity measure.

- African Swine fever: African swine fever (ASF) is a highly contagious haemorrhagic viral disease of domestic and wild pigs, which is responsible for serious economic and production losses. Presently ASF vaccine is not available in India. However during outbreak it may be prevented by following strict biosecurity measure.
- Piglet anaemia: It is Nutritional anaemia in suckling pigs. It's a highly fatal disease of suckling pigs caused by marked decrease in Hb and fatty degeneration of liver. It is due to lack of Copper salts and Iron in sows kept in indoor, or on concrete floor and limited milk diet from sow. Piglets of 3-6 weeks age mainly affected. It may be prevented by

  1) Add small amount of Fe and Cu in pigs diet at the rate of 25mg of Fe, 5mg of Cu/day/pig.

  2) Paint the udder of the sow daily with following mixtures. FeSO4 - 500gm CuSO4 - 70gm Sugar - 500gm Water - 10 litres.

  4) Allow piglets to free access runs with fresh soil.

  5) Iron injection of Dextran 1 ml (Deep I/M) – 4th & 14th day of age

- Important tips to prevent keep herd free from disease:

1. Be on the alert for signs of illness such as reduced feed intake, fever, abnormal discharge or unusual behaviour.
2. Consult the nearest veterinary aid centre for help if illness is suspected.
3. Protect the animals against common diseases.
4. In case of outbreak of contagious diseases, immediately segregate the sick and the healthy animals and take necessary disease control measures.
5. Deworm the animals regularly.
6. Examine the faeces of adult animals to detect eggs of internal parasites and treat the animals with suitable drugs.
7. Wash the animals from time to time to promote sanitation.
8. Strictly follow the recommended vaccine schedule.

Vaccinate the pigs on regular basis with the following vaccine:

| **Name of disease** | **Vaccine** | **Dose/ route** | **Revaccination** |
|---|---|---|---|
| **Swine fever** | Swine fever vaccine | 1 ml, S/C | Annual |
| **FMD** | FMD vaccine | 2ml, IM | Every 6 months |

**OTHER MANAGEMENTAL PRACTICES**

- **Culling of animals:** Unproductive with very less litter size or with very high interfarrowing period, repeat breeders, aged animals, unproductive b oars etc. are to be culled and sold out for meat purpose.
- **Castration of piglets:** Male piglets which are unwanted and not fit for breeding purpose are to be castrated just after weaning and may be kept in the farm as fattener animal which later on may be sold for meat purpose.
- **Segregation of diseased animal:** A separate house should be there to keep the animals suffering from contagious diseases.
- **Record Keeping:** The ultimate profit or loss in a farm can only be found out by keeping proper records in the farm which includes data sheet of individual animal, total stock of animals, feed register, expenditure statement etc.

**Source:** *Central Agricultural University, Imphal*

## MARKETS AND MARKET DEMAND

There is huge gap between demand and production of pigs. It reflects there is no any problem of marketing of fattening pigs and piglets either locally or in bulk. The marketable products of the pig farms include the piglets as breeding stock, piglets as fatteners, marketable fatteners and culls. Our pig entrepreneurs will be advised to sale their pigs in local market at small scale. Pig SHGs will supply the piglets to government schemes, NGOs, KVKs etc. The marketing avenues for the above products are like satellite fattening farms / breeding cum rearing farms and pork consumption centres. In order to promote the consumption of pork it should be supplied to the consumers in an attractive form. Therefore availability of slaughtering facilities has to be ensured to convert the fatteners into wholesome pork and their products. The sale of piglets at 2-3 months of age will yield quick returns and enables the pig farmer to concentrate their efforts on maximizing the productivity of breeder stock. The other marketing strategy can be rearing of piglets up to marketing age for their sale as fatteners. Based on the market demand appropriate marketing strategy must be adopted in consultation with the local animal husbandry department officials.