

PIG HUSBANDRY MANUAL

Ending Hunger and Poverty



Heifer International Tanzania



PIG HUSBANDRY MANUAL

Second Edition

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Foreword

Pig farming in Tanzania has primarily been for a long time of backyard and informal sector producers. However in order to secure both food and nutritional security to rural Tanzania households, there is a need of embracing integrated approaches in livestock farming.



Pig farming in Tanzania is increasingly becoming a profitable and lucrative business. This is because among other reasons pigs can be fed with a wide range of left overs from the catering industry and crop residues. With pigs around there is zero food waste.

For increased profitability management of pigs should be improved along lines of proper housing, disease control, feeding and breeding. This manual elucidates the appropriate pig husbandry techniques.

The contents of this manual have been simplified so as to be assimilated by the rural small scale farmers.

It is my hope that this manual will influence a positive change towards improved pig farming, the benefits of which will be reflected in farmers' increased income and livelihood at large.

Dr. Henry Njakoi
Country Director

Heifer Project International-Tanzania
Pig Husbandry Manual
Heifer International



Introduction

Heifer Project International

June 18th, 1944, 12 days after the D-Day invasion in Europe, another campaign began that would save the lives of millions. On that day, Heifer International launched its first four-footed attack against hunger—a shipment of dairy cattle bound for Puerto Rico. Five years earlier, as a relief worker in the Spanish Civil War, Indiana farmer Dan West had been forced to decide who would receive limited milk rations and who wouldn't—literally, who would live and who would die. Relief aid, West knew, would never be enough. West returned to the United States and formed Heifers for Relief, an organization dedicated to ending hunger permanently by providing families with livestock and training that would allow them to feed and care for themselves. In cooperation with the U.N., the group shipped thousands of cattle to France, Germany and other war-torn areas in the late 1940s.

Today HPI is a non-profit, humanitarian organization that provides livestock, training and related support to assist low-income families to improve food security and family livelihoods and to care for the earth through the sharing of livestock and to help local economies.

It trains people around the world in environmentally sound agricultural practices, integrating crops and animals. But it retains Dan West's spirit and his desire to end world hunger. While in Spain Dan West believed that "It wasn't a cup of milk they wanted but a cow"; He also believed that "If people are changed they can change the world"

Heifer Project International today is implementing livelihood projects in more than 125 countries in the world including 38 States of the United States of America.

HPI made its first entry into Africa and to Tanzania in particular in 1973 when 1000 Holstein Friesians were airlifted from the USA to the alpine grassland and montane forest plateau of DAFCO Kitulo Farm.

From 1981 HIT pioneered work with smallholder farmers, a program which to date has directly, successfully and sustainably supported over 120,000 low income families.

Passing on the gift has been the philosophy of Heifer operations worldwide. Instead of providing poor families in need with non-renewable source of food, Heifer International provides a "living loan" of an animal and the training to take care of it. The family "repays" the living loan by passing on one or more of their gift animal's offspring to another family in need, and the process goes on and on.



Mission Statement:

The Mission of Heifer International Tanzania is to work with communities to end hunger and poverty and care for the earth.

Vision Statement:

In reaching Heifer's global vision, Heifer International Tanzania goal by year 2017 is to be world of communities living together in peace and equitably sharing the resources of healthy planet.

Heifer Tanzania collaborates with the government of Tanzania through the Ministry of Livestock Development and Fisheries and Sub Project Holders to administer the livestock program for alleviating hunger and poverty to resource-limited communities through provision of livestock, training, veterinary services and technical expertise.

The following animal species have been used as project animals by Heifer international Tanzania Program:

- Dairy cows
- Dairy goats
- Chevon goats
- Pigs
- Local chicken
- Donkeys
- Camels
- Bees
- Pond Fish

HPI will continue transforming the lives of small holder families by linking them to commercial markets, for the purpose of creating sustainable incomes and robust value chains that benefit all industry stakeholders.

Heifer Cornerstones for Just and Sustainable Development

PASSING GIFTS

- P = Passing on the Gift
- A = Accountability
- S = Sharing and Caring
- S = Sustainability and self-reliance
- I = Improved Animal/Resource Management
- N = Nutrition, Health and Income
- G = Gender and Family Focus
- G = Genuine need and Justice
- I = Improving the Environment
- F = Full Participation
- T = Training, Education & Communication
- S = Spirituality





1. Passing on the Gift

Passing on the gift embodies HPI's philosophy of practical sharing and caring. Every family who receives an animal signs a contract to pass on the first female offspring to another family in need and also agrees to pass on to others the training and skills that they have acquired. Many groups also choose to "pass back" an additional animal, or else a portion of sales income, to support their projects.



2. Accountability

Groups define their own needs, set goals, and plan appropriate strategies to achieve them. HPI provides guidelines for planning the project (including the pass-on process), screening recipients, monitoring farmers' progress and conducting self-evaluations. Groups are responsible for submitting semi-annual monitoring reports to HPI.



3. Sharing and Caring

HPI believes that global problems can be solved if all people are committed to sharing what they have and caring about others. Though not easily measurable, this is one of our most important cornerstones. Sharing and caring also reflect our commitment to humane treatment of the animals in HPI projects and our shared vision of justice for all people.



4. Sustainability and Self-reliance

Because HPI funds projects for a limited time, project groups must plan to support themselves eventually. HPI has found that self-reliance is most easily achieved when a group has varied activities and generates support from several sources.



5. Improved Animal and Resource Management

Feed, water, shelter, reproductive efficiency, and health care are the essential ingredients in successful livestock management. These must be available so that the livestock provided by HPI can be kept healthy and productive. The animal should be a vital part of the farm activities without causing an extra burden on family members or the farm resources in general. The species and breed chosen must be appropriate for the area.



6. Nutrition, Health and Income

Livestock contribute to human nutrition and well-being in two ways. Directly, they provide high quality protein and fiber and, indirectly, draft power for crops and transportation as well as manure for soil fertility. The livestock should have potential for profitability to provide income for education, health care, housing, and all emergencies. As living savings accounts, livestock also provide long-term economic security.





6. Gender and Family Focus

Gender refers to the socially-defined roles of men and women in each culture. HPI's gender program encourages women and men to share in decision-making, ownership of the HPI animals, labor, and the benefits of projects. Priority for funding is given to projects in which the whole family participates. On-farm employment strengthens rural families and communities by decreasing the need for migration to urban areas in search of employment. In addition to the gender program, HPI's WiLD (Women in Livestock Development) program supports women's projects.



8. Genuine need and Justice

HPI is partner to people who truly need an opportunity to improve the quality of their lives, and who can benefit from modest support. Group members develop their own criteria to determine who will receive animals and related inputs. The poorest in the community should be included in the group membership and receive priority for assistance. Families are eligible regardless of creed or ethnic heritage. Priority is given to groups that have traditionally been neglected.

- Trust and belief with each other and respect others
- Lots of positive changes in the family/community
- Sustainable plan for self-release, self- empowerment/development
- Cooperate with each other and peace social environment
- Sharing and caring with each other
- Pride and ownership feeling
- Improved civilization (brotherhood/sisterhood)
- Self motivation for the transformation



9. Improving the Environment

The introduction of HPI livestock should improve the environment by having a positive impact on one or more of the following: soil erosion, soil fertility, sanitation, forestation, bio diversity, pollution, wildlife, and watershed conditions. In addition, the livestock should not cause or worsen any environmental problems.



10. Full Participation

HPI works with grassroots groups or intermediary organizations representing grassroots groups. A truly effective group has strong leadership and organization and is committed to involving all members in decision-making. Members of the group "own" the project, and the groups have control over all key decisions.





11. Training, Education and Communication

Groups decide their own training needs and local people are involved as trainers. Training includes formal sessions as well as informal (farm visits, demonstrations, model or promoter farmers) and is “hands-on” more than academic. In care of the environment, groups have requested training in diverse topics such as food processing, marketing, group formation and human nutrition.



12. Spirituality

Spirituality is common to all people and groups, regardless of their religion or beliefs. Spirituality is expressed in values, beliefs about the value and meaning of life, a sense of connectedness to the earth, and a shared vision of the future. It often creates a strong bond among group members and gives them faith, hope and a sense of responsibility to work together for a better future.



TOPIC NO. 1: IMPORTANCE AND CHALLENGES OF KEEPING PIGS.

Archeological evidence suggest that pigs were firstly domesticated in China 4900 B.C. In Tanzania domestication of pigs started long time ago in the southern highlands i.e. Mbeya, Rukwa, iringa and Ruvuma Regions), and in the Northern Regions of Tanzania Namely Manyara, Arusha and Kilimanjaro.

Pigs are highly prolific and fast growing animals. Pigs /Sows can farrow twice or thrice a year depending on the level of management. A sow can farrow up to 12 pig lets litter size. Pigs are a source of both household income and food security. Almost all of the pig, can be used as food. Parts of pig can be prepared into different specialties as sausage bacon ham etc.

Pork is considered as white meat alongside poultry and fish. Pork is red when raw and turns white on cooking. This is one attribute that has contributed to increased popularity of pork.

For increased profitability Management of pigs should be improved along the lines of housing disease control feeding and breeding.

ADVANTAGES OF KEEPING PIGS

- Pigs are source of household income when sold as live animals or as pork.
- Pigs are very prolific. A litter size can go up to 12 pig lets.
- Pigs are amenable to intensive system of keeping.
- Pigs under good management attain market weight within 6 months.
- Pigs have a high fed conversion efficiency of feeds into protein.
- Pigs can store a lot of subcutaneous fats which can be used as cooking fat at household level.

CHALLENGES OF KEEPING PIGS.

- Religious affiliations slow down the spread and growth of pig keeping Industry.
- Pigs are omnivorous and hence can compete with human beings for food.
- There are no formal markets for pigs
- Lack of knowledge and skills of keeping pigs.
- Lack of high quality breeding stock.
- Intensive keeping of Pigs calls for a big initial capital outlay.
- High temperatures negatively affect Pigs as they don't have conventional thermoregulatory sweat glands.



TOPIC NO. 2: BREEDS OF PIGS

Pigs kept in Tanzania are mostly of exotic breeds and their crosses
Exotic Breeds of Pigs include:-

i) **Large white**

- The Breed was firstly developed in England.
- This the most prominent breed in the world.
- They have white skins.
- They are large framed
- They have long legs than the other exotic breeds.
- The head is moderately long with a face slightly dished.
- Have good mothering ability
- Sows are very prolific.



*Large
White*

ii) **Landrace**

- The breed was firstly developed in Denmark
- The breed has a white skin
- It is long and lean
- The head is long and narrow and ears are large and heavy and hang towards close to the snout.
- Well-developed ham which is plump but not over fat.
- They are prolific with good mothering ability.



Landrace



iii) Wessex Saddle back

Wessex saddleback is black with a white band about the forepart of the trunk, extending from one fore foot over the shoulder forming a white band resembling a saddle.

- The breed originated in England
- It is docile
- Good mothering ability
- Good forager
- A good dual purpose pig for combined pork and bacon production.



*Wessex
Saddle back*

iv) Hampshire

The Breed is a native of America. It has a black body with a whitish band around the middle covering the front legs.

- The breed has erect ears and is known for being heavy muscled.
- It is well muscled.
- Sows are prolific.
- They possess less back fat.



Hampshire



TOPIC NO 3: SYSTEMS OF PIG KEEPING

There are several management systems of Pig production. Pigs are amenable to such management systems as Extensive / Free range, Semi Intensive and Intensive. The following factors can influence the type of pig production system to be adopted:-

- Available food supply suitable for Pigs.
- Size of initial capital outlay available
- The Ability to deal with manure or other outputs from pig operations.
- Land availability.
- Local beliefs or traditions including Religion.

1. EXTENSIVE/FREE RANGE SYSTEM

Extensive/ Free range denotes a method of farming husbandry where animals for at least part of the day can roam freely outdoors, rather than being confined in an enclosure for twenty four hours each day.

Rarely the pigs are given any supplementation, whether from left overs or Industrial feeds. In some cases night pens or huts are built for night shelter for sows with piglets.

Advantages:

- It is a cheap method of raising Pigs.
- Pig access minerals especially iron with ease.
- The system is not labour intensive.
- Manure collection is not a problem.

Disadvantages:-

- Pigs can easily be stolen or fall prey to predators.
- The system allows an easy spread of diseases.
- Disease control can be difficult.
- Free ranging pigs can trespass to other people's food crops farms.
- The system allows for easy inbreeding as there is little or no controlled breeding.
- Not a conducive system in tropical areas as Pigs can easily succumb to heat stress.
- Stunted growth of Pigs is encountered because sows tend to spend more time fending for food than looking after the piglets.

2. SEMI INTENSIVE

In this system pigs are kept in a fenced area with night pens or sheds. They are left to roam for some hours in the day and are kept in simple semi covered pens constructed of rough timber with thatch roof and floor of concrete.

Wallows can be provided to alleviate heat stress being unable to sweat sufficiently pigs have a natural instinct to wallow.





Advantages:

- Pigs are protected from direct sunlight which cause sunburn and sometimes sunstroke.
- Pigs can be fed supplementary feeds secure from neighboring pigs.
- Some basic measures to control disease and parasites are possible to reduce the often high mortality rate.
- Sows can be bred to selected sires.

Disadvantages:

- Still the system allows for infection and easy spread of disease from infected pigs outside the fenced area.
- Initial capital outlay for pens construction feeds is relatively high.
- It requires labor to look after pigs.

3. INTENSIVE SYSTEM

The Intensive system entails raising pigs in confinement. This system allows for improved feed efficiency and better control of disease and parasites. Thus the intensive system is usually advisable in circumstances where:-

- Good management is available
- High quality pigs are introduced
- Farrowing occur at regular intervals throughout the year.
- Land is scarce and not accessible all the year.
- Balanced rations are available.
- Parasite and disease control is necessary.
- The target is commercial production
- Herd size is reasonably high.

Advantages:-

- It allows for a planned breeding programs.
- It is easy to manage the pigs in terms of feeding, disease control and treatment.
- Pigs grow faster in this system than it is the case with the two systems.
- Pigs are effectively protected from sun stroke.
- The system affords an easy manure collection which can be fed into the bio- digester for biogas production
- A large number of pigs are kept on a relatively small area.

Disadvantages

- Large initial capital outlay.
- Requires good management skills
- In the event there is a disease outbreak then spread it can spread easily through a whole drift.



TOPIC NO. 4: PIG PENS

INTRODUCTION:

A well designed pig pen should protect pigs from adverse weather conditions (sunstroke, heat, coldness, direct rainfall and strong wind) burglar and predators. A good quality pig pen will prevent pigs from trespassing into food crop farms in the neighborhood, more so prevents an easy spread of infectious diseases. Contrary as it may seem, the more pigs you are raising in a pen the less space they need per pig. This is because pigs tend to congregate together. At any given moment in time a large group of pigs in a medium sized pen will tend to use smaller percentage of the pen than a small group of pigs in a small pen. When bedding down for instance pigs will virtually choose to lay next to one another. This is especially true in cool and cold weather conditions but rings true even in hot weather so long as shade and wallow are provided.

- Generally in a pen of any size pigs will have a sleeping area just large enough to accommodate the group.
- An eating area.
- Urinating / defecating area. They mostly do this in one area of a pen naturally.
- The reminder of the pen will be used for exercises.
- Sleeping area.

Site selection for 6 Pigs Pens Construction.

- A pig pen should be easily accessed in terms of feeds, and other amenities.
- It should be built opposite to the frequent wind direction of the locality to avoid foul manure smell to engulf whole homestead.
- Should not be built in water logging places.
- Should not be built near water sources to avoid contamination.
- The pen should not be exposed to direct sunlight.

Parts of the Pig Pen

There is no standard type or system of housing for pigs. However there are certain similar principles and practices in most systems. These originate from the fact that most pig units will contain pigs of different ages and classes. Hence forth parts of the pig pen include the following:

- Farrowing and lactating sows
- Fattening pens/Growing/finishing pigs pen
- Boar pens
- Gestating sows pens.

Farrowing Pen

A farrowing pen should be an integral part of a good pig pen. It should be supplied with a rail (farrowing rail, which reduces the risk of piglets being inadvertently crushed by its mother.

It is advisable that the farrowing pen be of the size between 5-9 square metres. It is advisable to install a heating system into the farrowing pen to protect the piglets from cold stress.



Weaners Pen

The pen should be spacious enough to accommodate all weaners at a time. Weaners spend relatively short time in this pen before being moved into the fattening pens.

Fattening Pens

The weaners whether they come from a farrowing pen or a weaner's pen will at 12 to 14 weeks at age be sufficiently hardened to go to a fattening / finishing pen. Finishing can be accomplished either in one stage in a growing / finishing pen from 25-90kg or in two stages whereby weaners are kept in smaller growing pens until they weigh 50-60kg and they are moved to a larger finishing pen where they remain until they reach marketable weight.

Boar Pen:

It is advisable that a boar pen be of 9.3 square meter size. This space will allow the boar to exercises and of course to afford space during mating. If the mating area is separate then the boar pen should be of 7square meter size. Boars are usually quiet if run with other boars or with pregnant sow, but may develop vicious habits if shut up alone.

Dry Sow Pen.

After weaning a sow will normally come to heat within 5-7 days and then at 3 weeks intervals until successful mating.

The average weaning to conception interval can vary between 8-20 days depending on management. The pen can hold more than 1 sow only that it will be pertinent to adhere to the recommended spaces of 2.5 -3 square meters for each sow. The dry sow pen should not keep more than 10 sows at a time.

Pen Dimensions

Pen dimensions for different categories of pigs differ depending on age, sex and physiological status eg. (Pregnant sows) dimensions for different categories of pigs are here under Illustrated:

Table 1: Pen dimensions for different categories of pigs.

Category	Space recommended/pig (m2)	Recommended space for feeding areas (m2)
Weaners	0.5	0.15
Growers	1.0	0.25
Finishers	2.0	0.30
Boars	10	
Lactating sows	7-10/Depending on the litter size	



Table 2: Pen Building Materials

Building Materials	Diameter Cm	Quantity	Length Cm
Front poles	15	7	270
Middle poles	15	4	250
Rail poles	15	7	240
Roofing rafters		3	810
Timber off cuts		50	400
Hinges 4 inches		6	
Door handles		3	
Corrugated iron sheets		10	300
Feeding and water area			
Front poles	15	4	230
Roofing rafters/timber 3"x2"		3	810
Rear poles		4	180
Concrete blocks		56	
Corrugated iron sheets		5	300
Exercising Area			
Poles	15	10	180
Rafters/timber 3"x2"	15	20	300
Door handles		4	
Hinges 4 inches		8	

Nails:

The recommended quantity of nails is as follows

2.5" – 3 kilograms

3.0" – 3 Kilograms

4.0" – 3 Kilograms

5.0" – 3 Kilograms

Corrugated iron sheets nails 1 kilogram

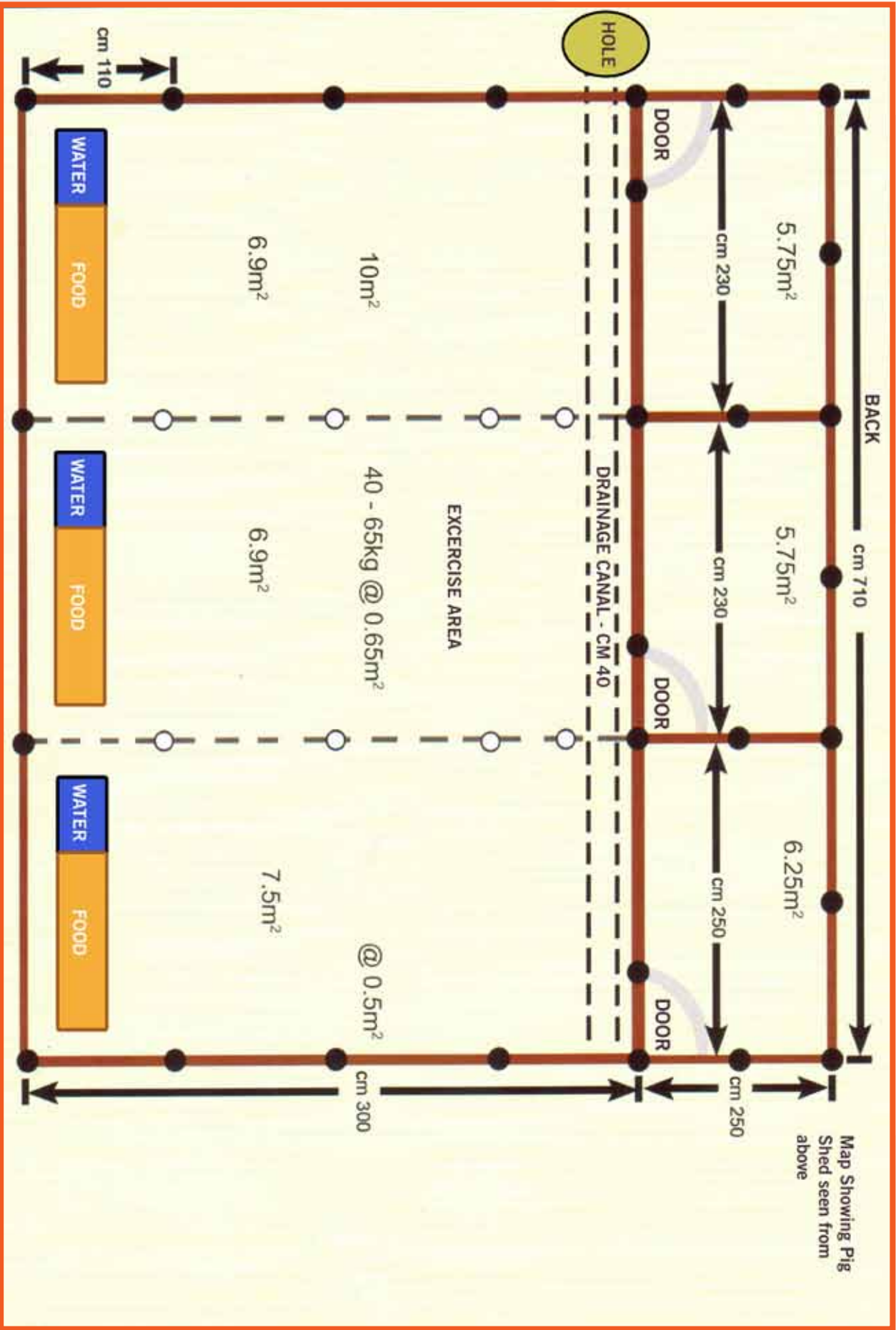
Materials required for 40 square meter pen concrete floor and wallowing well.

- Cement, sand and stone quarry to be mixed at a ratio of 1:2:3 respectively.
- Materials required
- Cement 7 bags
- Basement stones
- Sand 42 Buckets
- Stone quarry 63 buckets

The height of the concrete to be made should be 10cm. It should be watered for 7 days.



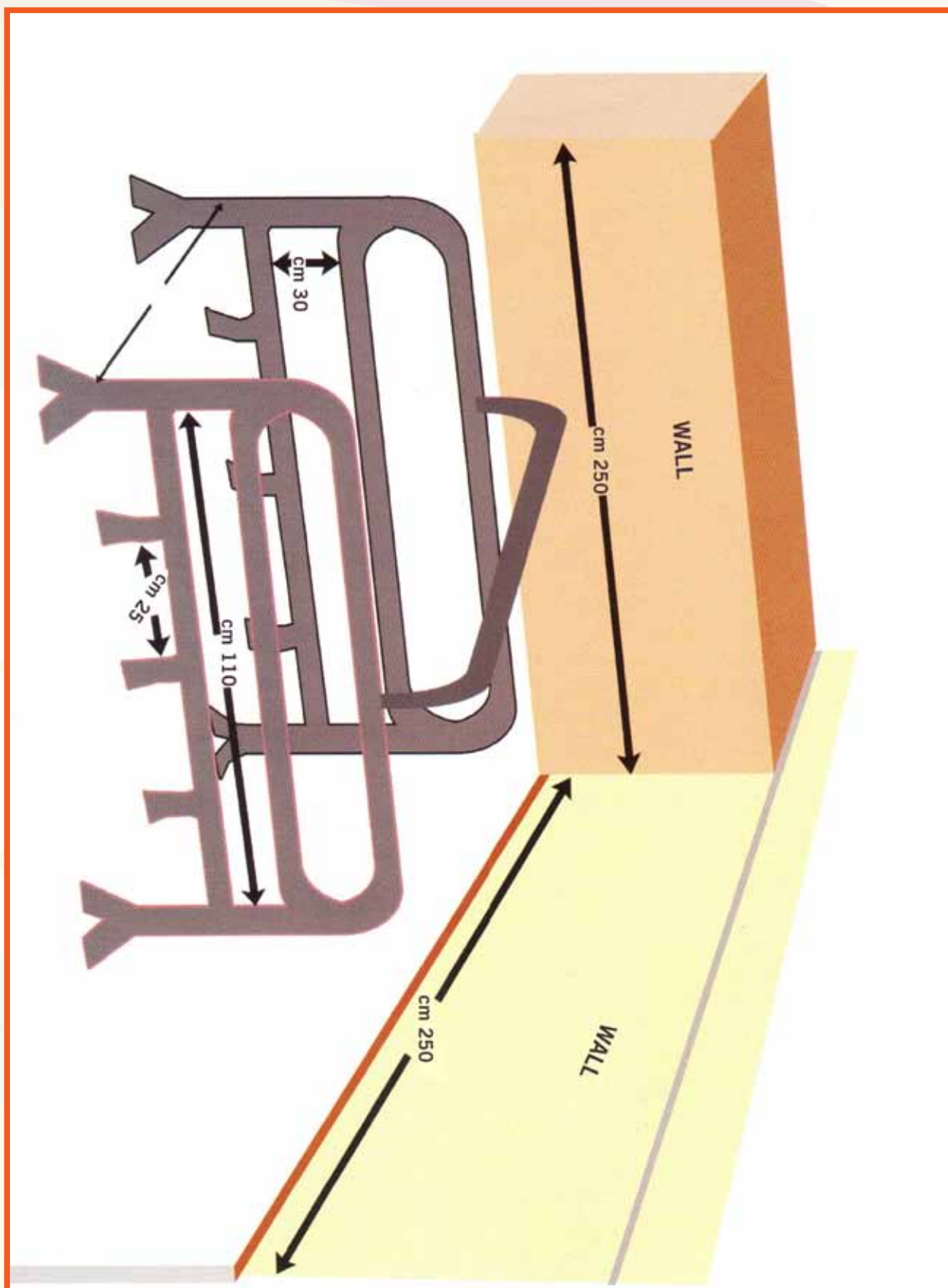
SKETCH NO. 1: PIG SHED PLAN SEEN FROM THE ABOVE



PIG SHED PLAN - SIDE VIEW



**SKETCH NO. 3: PIG SHED PLAN SHOWING
CALF - DOWN AND FEEDING AREA**



TOPIC NO 5: FEEDING OF PIGS:

Pigs are normally fed twice a day. The amount of feed depends on the age and the reproductive state of the pig. A foraging pig will obtain some of its food from natural sources as long as the foraging area is able to provide. It is important to feed pigs with a balanced diet for optimal growth and increase in weight, more so it is an essential part of the pig profit equation. Since feed accounts for 70-80% of total costs, feeding and nutrition can make a huge difference to piggery profits.

There are five main groups of nutrients making a balanced pig feed. These include Water, Starch Protein, Minerals and Vitamins.

Carbohydrates:

Pigs need carbohydrates as a source of energy to live, to grow and reproduce, and to deposit subcutaneous fat. The sources of carbohydrates to pigs include cracked maize, bran (Maize and wheat) sorghum, millet rice polishing, yams, sweet potatoes and remains of the catering process (swill).

Proteins:

Pigs need protein to grow most importantly, to develop muscles tissue. The sources of protein to pigs include such legumes as (Beans, leucana soya etc) seed cake (cotton sunflower, coconuts) and feeds of animal origin eg blood meal, fish meal, meat remains and milk processing by products.

Minerals:

These are inorganic compounds needed for a whole host of regulatory and structural function in the pigs. Minerals are involved in the formation of bones and are essential constituents of body fluids and tissues. Minerals influence libido in a boar and sow conception.

Vitamins:

These are organic compounds needed in small amount for a variety of chemical reactions in the body of pigs. Some vitamins can be produced within this Pigs body in sufficient quantities to meet its needs. Others are present in adequate amounts in ingredients commonly used in swine diets. However several vitamins need to be added to swine diets to obtain optimal performance. Vitamins that should be added to swine diet can be divided into two groups: Fat Soluble – ADEK and water Soluble – B complex.

Water:

Water is the single nutrient required in the greatest quantity by animals. Pigs require water for a variety of reasons including most metabolic functions, adjustment of body temperature, movement of nutrients into the body tissues. 80% of the Newborn piglet and 53% of mature Pig is water.

Pig ration formulation:

When a pig is fed on a proper diet, there are benefits to the pig in terms of its health wellbeing, pig growth rates and better profitability.

Diet formulation is the process of matching the pig's nutrients requirements with the nutrients supplied by available ingredients in the most economical manner possible



Table 3: Pig ration Ingredients

No.	Type of Feed	Ratio in kilograms
1	Starch	71
2	Plant Protein	20
3	Animal Protein	5
4	Minerals Rich Feeds	3
5	Minerals Vitamins Mixture (premix)	0.25
6	Table salt	0.75
		100

Table 4: Feed Ratio for Growing Pigs

No.	Type of Feed	Ratio in kilograms
1	Maize Bran	45
2	Cracked corn	30
3	Seed cake/cotton/sunflower	15
4	Fish meal	5
5	Bone Meal	2
6	Lime	2.5
7	Salt	0.5
		100

Formulated feed ration should be fully utilized within a period of two weeks.

Various classes of swine have particular nutrient requirements. This fact influences the feeding type and regime as follows:

i) Feeding a Breeding Boar

A breeding boar should be given supplemented with a balanced ration which will make it lean and not fat.

During breeding period a breeding boar should be given 2.7 to 3.6 kilograms of feed supplement daily. Outside this period a boar should be supplemented with 2kgs of formulated ration daily. The supplement should be fed twice in two equal parts, with clean water adlib.

ii) Feeding gestating sows

Before breeding a sow should be supplemented with 2.5 to 3.0 kilograms of formulated ration a day with clean water in ad libitum supply.



In the first month of gestation the sow should be given 2-2.5 kilograms of formulated ration. If weak then the amount should be raised to 3kgs for 3 consecutive weeks.

From the 84h day of gestation the sow should be given a 2 kilograms a day. The amount will be increased by $\frac{1}{2}$ a kilo per week until 3 days before farrowing when the ration will be reduced to 2 kilograms, mixed with green fodder to avoid constipation to the sow. On the day of farrowing the sow should only be given water.

iii) Feeding Piglets:

Newly born piglets should be allowed to suckle Colostrum from their sow mother within 5 hours from birth. After this period the ability of the piglets' guts to absorb immune globins from colostrums drastically falls.

In the event the sow dies just after farrowing then the piglets' should be fostered by another sow which has just farrowed. If this is not possible then the piglets can be fed with cow's or goats colostrum. If this is not available, then artificial colostrum should be formulated as follows:

Table 5: Option number 1

Ingredients	Amount
Fresh Cow's milk	2.5 Litres
Cream	150 cc
Glucose	125 grams
Egg	1

Table 6: Option number 2

Ingredients	Amount
Fresh cow's	1 litre
Fish oil	1 spoon
Sesame oil	1 tree spoon
Fresh Egg	$\frac{1}{4}$ - $\frac{1}{2}$ Litres
Lukewarm water	



It is important to give artificial colostrum 5 times a day or even the piglets' can be fed as the suggested regime as follows:

Age	Type	Amount (cc)
2-3 hrs	Colostrum	50
1-5 days	Colostrum	50
5days – 2 weeks	Milk	50
2 weeks – 4 weeks	Milk	100-400
Over 4 weeks		500-750

From the tenth week piglets can be introduced to growers ration mixed with starter ration as shown in Table 7.

Table 7

Age	Starter	Growers
1	3	1
2	2	2
3	1	3
4	0	4

Table: Amount of feed ration to be given to pigs at different stages of growth

Age (weeks)	Amount/day (kilograms)
8-12	1.0
12-18	1.5
18-23	2.0
23-30	3.0

NB. Pig starter or crop feed should have protein content of 18-21%

Table 9: Homemade pig ration ingredients.

Ingredients	Amount in Kilograms
Cracked corn	48
Wheat bran/feed	24
Sunflower cake	18
Fish meal	9



Table 10
Homemade sow and weaner meal ingredients.

Ingredients	Amount in Kilograms
Cracked maize	55
Wheat bran/Feed	27.5
Fish Meal	5.5
Sun flower cake	11.5
Mineral / vitamin mixture	0.5
	100

Table 11: Fattening ration

Ingredients	Amount in Kilograms
Cracked Corn	48.5
Wheat Feed	48.5
Fish Meal	1.5
Sun flower cake	1.0
Mineral / vitamin mixture	0.5
	100



TOPIC NO. 6: MANAGEMENT OF DIFFERENT CATEGORIES OF PIGS.

For a profitable pig farming enterprise it is important to abide by the proper husbandry practices of different categories of pigs, viz piglets, weaners, sows growers and boars.

i) **Boar Management:**

The Boar is the most important animal on the farm and good management is essential to maintain health and maximize normal reproductive function. A good boar should be of a known pedigree with strong legs, should be examined for breeding soundness.

A breeding boar should be selected bearing in mind such factors as :-

- Originating from a specific disease free herd
- All boars that are used for breeding should be seronegative for brucellosis.
- Disease control in other herds is equally important to boars. A box should be dewormed after every three months and should be sprayed by an acaricide at least twice a week to control ticks and mange.

ii) **Sow management**

Sows should be provided enough feed to keep them on a required plane of maintenance. The prevailing nutritional status determines the number of foeti and survival.

It is therefore advised to flush them with supplementary feeds before mating.

iii) **Management of Gestating Sows /Gilts.**

A Sows gestation period is between 114-119 days. Central to managing gestation is the proper care and feeding of sows and gilts. It is important during this period to give sows a chance to exercise, as this will help to facilitate easy farrowing.

It is advisable to deworm gestating sows 21-28 days before farrowing.

Farrowing Preparations

The following can be considered as following tips.

- Prepare farrowing rooms
 - ensure that rooms are warm enough
 - ensure that mats are in place
- Make sure sows are ready to farrow
 - Sows should be supplemented with 2kilograms of sow and weaner meal/day starting from the 112th day of gestation.
- Work to reduce still births, with the realization that these could have been profitable pigs.
- Ensure all piglets receive a good dose of colostrum.
- Evaluate the sow:
 - Make sure the sow is eating.
 - Evaluate for health concerns such as udder edema or retained piglet



Managing Lactating Sows

Ensure that feed allowance the day after farrowing resumes to same amount fed during the last 14 days of gestation. Feed allowances should be at least 4kgs; up to the fourth day. After that the Sow should be given 3kgs and $\frac{1}{3}$ of a kilo in addition per each piglet farrowed. eg if the lactating sow has 12 piglets then the total ration will be $3 + \frac{1}{3} \times 12 = 7$ kilograms.

- After weaning the ration should be reduced to 2.5kgs /day. So as to reduce udder pressure which can be translated into mastitis. Water should be supplied ad libitum.
- The Sow will come on heat 5-10 days after weaning. A farmer is advised to breed the Sow at this period if she is in good health condition.

Management of Piglets

The most critical time in a pig's life is from birth to weaning. After leaving the warmth and safety of the sow's uterus and falling into a cold and alien world, the stresses begin to multiply. When these stresses continue to multiply they finally result in disease or death of a piglet.

Good management and attention to detail can prevent or minimize most stresses and help pigs get through this most important time.

The following are some recommended practices which have proven helpful in getting piglets from birth to weaning.

i) Cleaning of and sanitizing pens:

Physically remove as much of the dirt and organic matter from the pen and Sow as possible. This is usually not necessary to sanitize the Sow beyond washing with good soap.

ii) Bedding:

If bedding is used it should be kept clean and dry during the time the pigs are still with the sow. Several types of bedding are recommended including straw, hay and wood shaving. Saw dust is not recommended since it wicks moisture from the floor to the top of the bedding, and most importantly can wick blood from the navel cord of weak pigs, which might not be able to move from where they were dropped during birthing process.

iii) Temperature

Newly born piglets have almost no insulation in the form of hair and fat and their tiny gut cannot hold enough food to provide adequate heat from the released after digestion energy. Except for the limited amount of warmth they get from laying next to their mothers and each other. Several types of supplemental heat can be used these might include electric heat lamps etc.

iv) Iron Deficiency:

Milk is devoid of iron, so pigs born in the wild or outside get most of the iron they need from rooting in the soil. Those born inside do not have access to soil and this need supplemental iron. This can be given by injection or orally.



Management of Weaners:

Weaning in pigs is done at the age of 8 weeks, it is important that the piglets are left in the sows pen, while the sow is moved to a different pen.

This will help to minimize stress to the piglets of changing their pen abruptly. Newly weaned pigs dehydrate rapidly and must have ready access to drinking.

- To maximize feed intake, weaners must be provided unrestricted access to feed.
- Avail the piglets with such gaming equipment as chains, tyres so as to break idleness and for exercising purposes.
- Pigs attain market weight of 60-90 Kilogram; at an age of 6-8 months.



TOPIC NO. 7: BREEDING OF PIGS.

The Breeding components in pig management is very vital component which should be well managed by the farmer. A successful pig farmer always uses good breeding animals. The Piglets that are produced must grow fast and produce quality carcasses.

Therefore when buying breeding animals, make sure that pigs come from a farm known to have pigs of good quality. When buying pigs for the first time, it is advisable to take someone along who has the necessary knowledge and experience. When forming a breeding stock, it is important to bear in mind the following:-

- Always buy good purebred boars from a reputable farm where records of performance are properly kept.
- When buying gilts for the first time make sure that they come from a Breeder with good pigs and accurate records.
- Wherever possible buy a batch of gilts from the same farm so as to easily report detected anomalies to the source of the stock.

Boar Selection:

The quality of the pig herd is largely influenced by the boar. Hence forth when selecting a breeding boar;

It is important to note the following;

- Select a boar that grows faster than average. A good boar will reach 90kg live weight in 140 days.
- Should have two symmetrical testes.
- Should have 12 vestigial teats symmetrically spaced, 6 on each side of the belly.
- Should not be of the same breedline with the intended for breeding sows.

There are two breeding practices in pig husbandry

- i. Artificial Insemination
- ii. Natural

The most common method used in the natural serving where a boar is made use of:

Important considerations when using a boar:-

- The boar must be at least 8-10 months old
- A boar of 10-18 months of age should be allowed to serve once per week
- A boar of 18-24 months of age should be left to serve 3 times a week.
- A boar of more than 24 months of age should be allowed to serve 4-5 times a week.
- A natural boar should serve 15-20 sows per year.
- It is advised that the effective service span for a boar be limited to 5-6 years before being culled.



- Note:- Very heavy boars should not be allowed to mount young gilts and small size sows as :
They can break the back bones of the latter which cannot with stand the heavy weight.
 - The Boar should be confined in a pen of 10m² to afford space for exercise.

Sow selection

Only the best among the young growing female animals on the farm must be selected and kept for breeding.

Select breeding gilts from sows that produce large litters with above average growth rate.

The following characteristics should be considered when selecting gilts:-

- Should be strong straight legs with large even sized claws.
- Six well prominent teats on each side of the belly. The teats should start well forward and be spaced evenly to allow adequate suckling for the piglets.
- A well-developed ham, good length with light shoulders and head.
- Should be coming from a line of sows with a trait of farrowing large litters
- Gilts are usually selected for breeding at five to six months of age. The gilts selected are reared to weigh between 120 to 130 kg at seven and half to eight months when they are ready to be served by a boar for the first time.
- Gilt should not have any deformity which will impair farrowing.

Sow/Gilt heat detection

Most Gilts will show signs of heat at about six months of age but it is often advisable to leave them for another couple of months before you consider serving them.

As gilts/sows come to heat the following signs are observed:-

- They become vocal and excitable
- Swelling of the vulva and becoming deep red in color. The swelling up and deepening in color does happen in sows which have already had a litter but can be less obvious and more difficult to observe compared to gilts.
- If there is a boar nearby then the female pig will almost certainly show some interest with him.
- When she is ready for serving other signs of heat can include ears being pricked up.

NB: If you have a breed such as a large white where their ears tend to be pricked up any way then their ears will be very upright almost curled over and touching at the top.

Other Breeds which have lopped ears will be less obvious but their ears will often twitch and rise slightly.

- The main way of knowing if the sow/gilt is on heat though, is with standing heat. When a sow is ready for service she will stand rock solid when touched on the back.

NB: The heat period lasts for a period of 2-3 days. The best time of serving the sow is as soon as when she is on standing heat and then every twenty four hours until she goes off heat.



Signs of Farrowing

Farrowing marks the end of the gestation period, in which embryos develop into baby pigs in an average time of 115 days.

- **Signs of farrowing that may be observed include the following:**
 - Nervous restless behavior of the sow which is usually observed along with instinctive nesting behavior.
 - Respiration rate increases
 - The sow's udder becomes more distended and firmer. milk may be stripped from the teats.
 - Expulsion of blood stained fluids from the vulva. When this is happening then it serves as a sign that farrowing will follow shortly.

Farrowing management

The farrowing process can take 3-8 hours and piglets are delivered at every 15-20 minutes but there can be a wide variation. There is often a gap between the first and second piglet of up to three quarters of an hour.

The majority of pigs are born head first, but there are more pigs presented backwards towards the end of the farrowing period. Immediately prior to the presentation of the piglets the sow lays on her side often shivering and lifting the upper hind leg. Twitching of the tails is seen just as a pig is about to be born.

Delivery of the placenta takes place over a period of one to four hours and is an indication that the sow has finished farrowing.

Once the sow has completed the farrowing process there are certain signs that should be observed.

- Is she appearing at peace
- Has the shivering and movement of the top hind leg ceased. If this is still occurring it is likely that the pig is not well. If this one persists call a veterinarian

Post farrowing care

- Ensure that the placenta has been fully discharged. This can be ascertained by equating the number of placental pieces to the number of piglets born. If the number of piglets is higher than that of the placental pieces then that is an indication that there are some pieces still retained. Should this happen call a veterinarian to alleviate this.
- The placenta is expelled 1-4 hours after the delivery of the last piglets.
- Piglets need to be dried by towels this is important as it stimulates breathing of the piglets.
- Induce a smooth breathing to piglets with difficulties by hanging them with heads down, or inflict a shocking effect by pouring cold water on the chest to induce breathing.
- Make sure all piglets are getting suckling colostrum.
- Keep the piglets in a warm environment.
- Dip the navel cord stumps into iodine tincture or solution.
- Make sure the sow does not lie on her litter.
- Supplement piglets with iron injection.



TOPIC NO. 8: OTHER PIG HUSBANDRY TECHNIQUES

Besides the common pig animal husbandry practices which entail housing feeding and disease control, it is important to note that for increased profitability of the enterprise the following husbandry practice are performed:

i) Teeth clipping of piglets.

This is a common husbandry procedure in the rearing of pigs. The clipping of canine teeth is done:-

- To reduce damage to the sows udder.
- To protect the sow from opportunistic diseases following the damage of the udder. Teeth clipping may not be needed in small litters. It is a painful procedure and there is no easy way to eliminate the pain unless it is carried out under general anesthesia by a veterinarian.

ii) Tail docking of piglets

Docking is carried out to prevent tail biting. It is often carried out before 8 days of age by a veterinarian or a Livestock officer. It involves removing one third to one half of the tail using tail clippers.

Tail biting can be reduced by modifying the environment for example by providing straw bedding and more space may reduce the problem. Tail docking is painful and local anesthesia can be used to alleviate the pain.

iii) Castration

Pigs are castrated to remove boar taint, more so to control in breeding in the farm.

- If pigs are slaughtered at lighter weights then castration might not be needed as boar taint sets in at later stages of growth.
- Castration to piglets is painful and pain relief is recommended. It is therefore advised that pigs should be castrated under anesthesia administered by a Veterinarian.

Advantages of castration

- Controls inbreeding
- Removes boar taint
- Castrated boars are docile hence are easy to handle
- Castrated pigs fatten easily

Disadvantages of Castration

- Allows an increased deposit of subcutaneous fats
- Increased subcutaneous fat deposit is done at the expense of muscular development.

Identification in Pigs

For the purpose of keeping proper records it is advisable to identify piglets at the age of 7 days two methods are commonly used in pig identification

- Ear notching
- Ear tattooing



i. Ear notching

Helps to identify a pig litter. Notches are placed in one of the five locations in the pigs right ear to show the litter number and in one of the three location in the left ear to show the individual pig number.

ii. Ear tattooing

Ear tattooing is done using a tattoo plier. A plier has needles which when applied should pierce the pig's ear avoiding veins whenever possible. The needles should be soaked into an ink pad. The technique has to be carried out with painstaking accuracy to ensure the tattoo can be clearly read later.

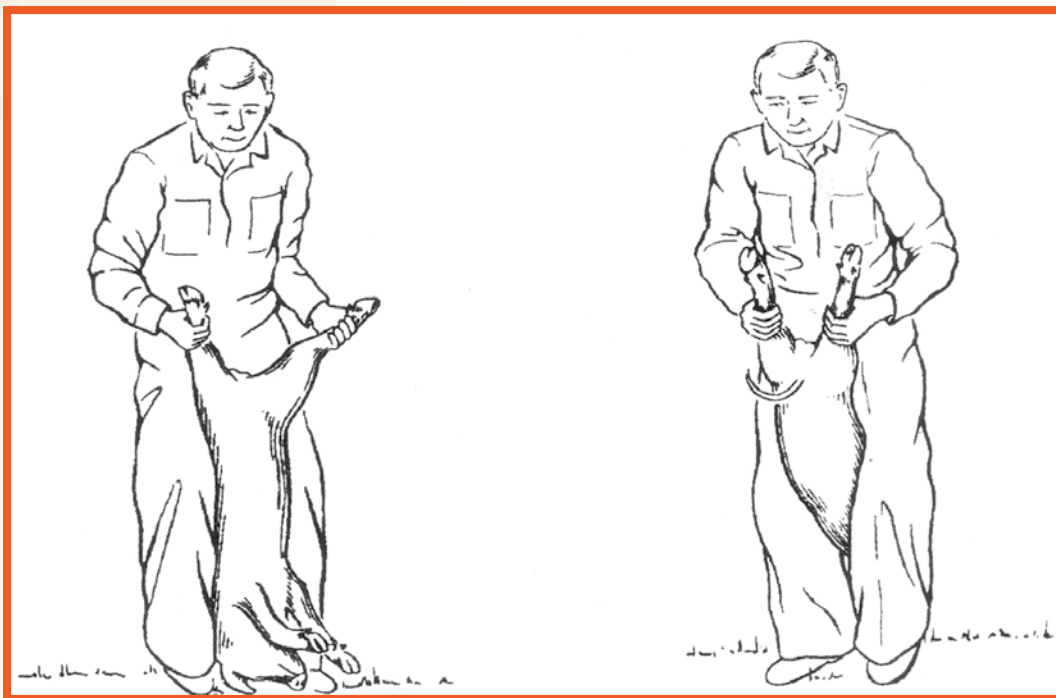
Restraining of Pigs

Pigs are stubborn animals however they are not strong enough when you subject them to rough handling especially the way you do to other farm animals. However pigs are not as gentle either piglets are capable of biting off your fingers if you frighten them. It is therefore important to make pigs as comfortable as possible even under restrain.

There are several methods/techniques of restraining pigs. The techniques are dependent of age and the type of intended to be administered husbandry manipulation.

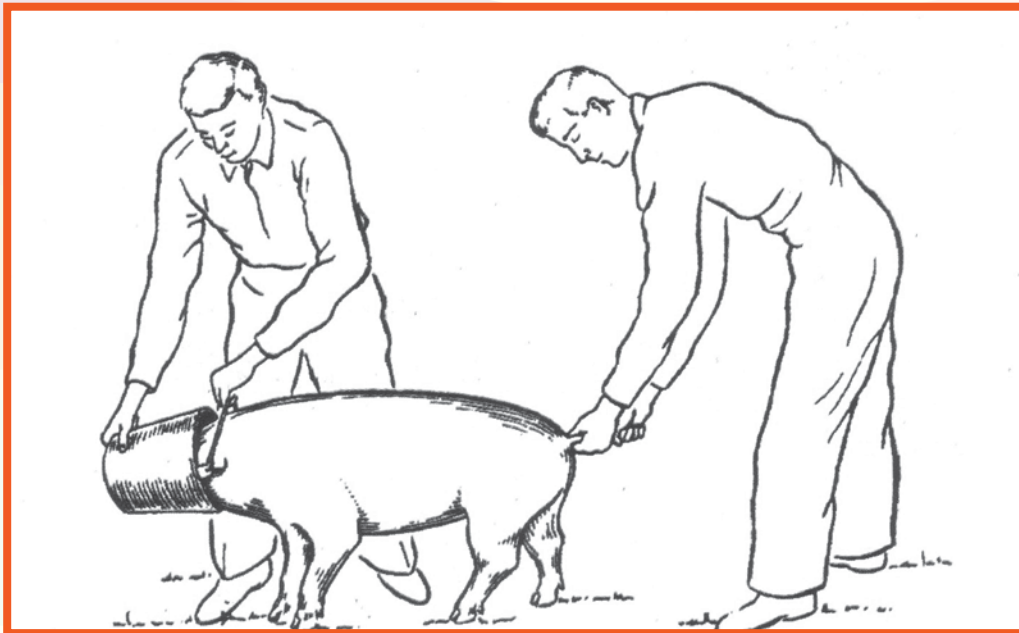
a. Restraining pig lets up to weaners' age group.

- This age group is restrained by lifting the hind legs with head down. Make sure that the head is not touching the ground or floor.



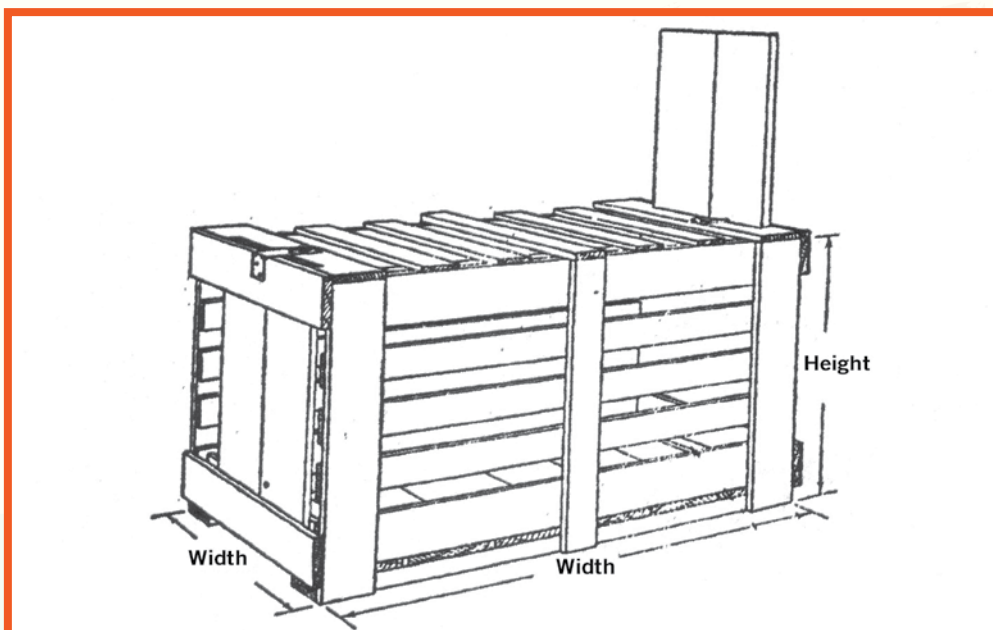
- Before catching them trap them against a solid barrier where their movement will be restricted. At this point it will be easy to catch them.
- It is advisable to remove the sow mother from the area before catching the piglets, as failure to do so, the sow mother will raise to defend her youngs against anybody who is trying to temper with the piglets.





b. Adult Pigs

By using a bucket move a large pig covering its face using a bucket as illustrated in the diagram below.



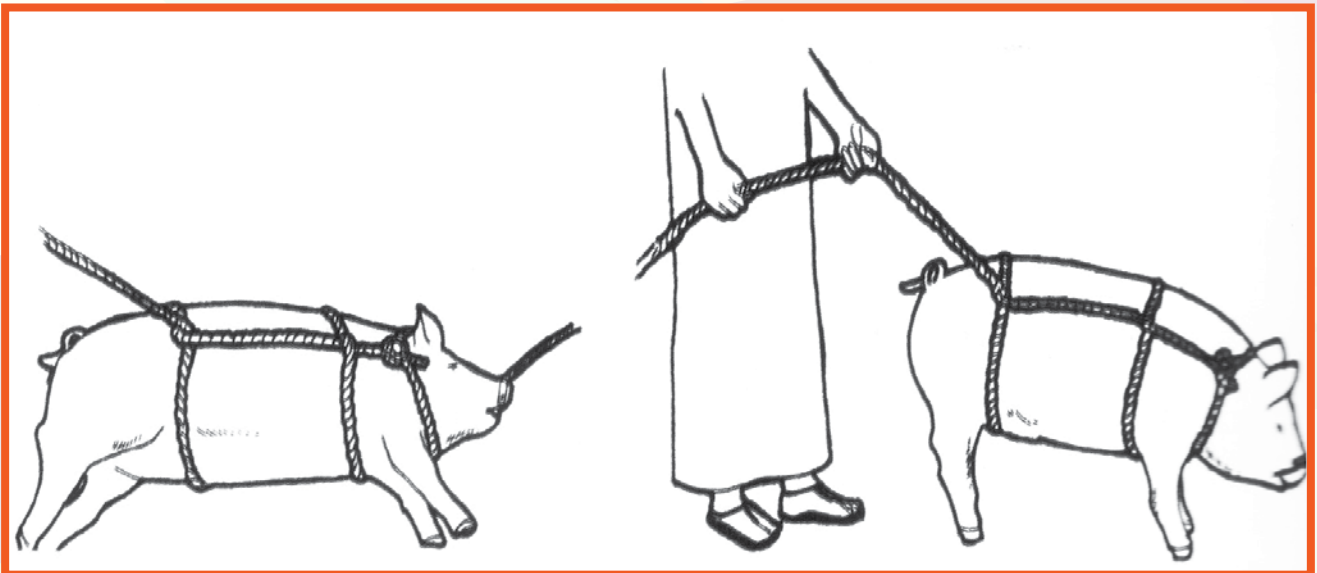
c. Cages

Special cages made of timber are made conforming to the size of the pig these cages are a restraint tool, when transporting pigs over a long distance.

d. By using a Rope

i. Reef method:-

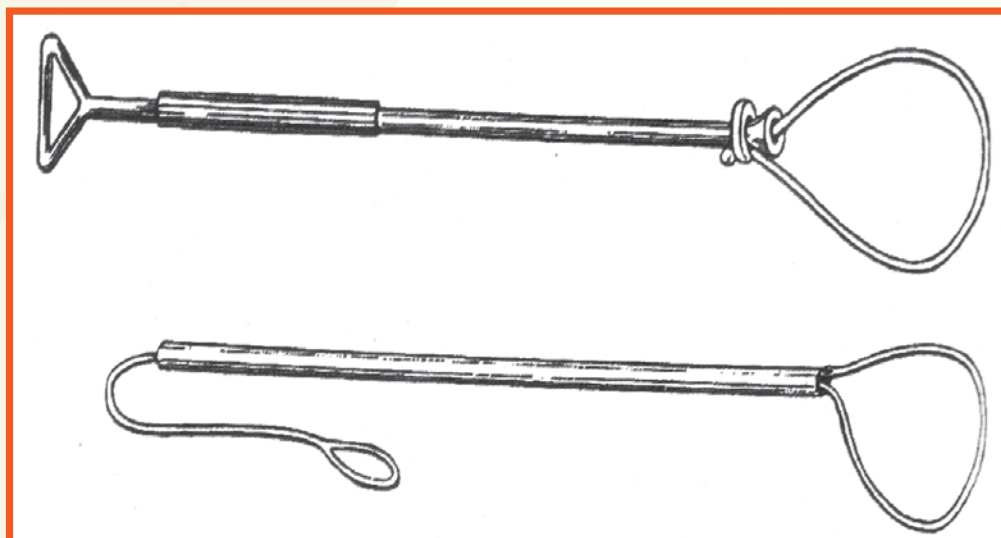
The Rope is tied in the neck at heart girth and finally at the rump. This method is used to cast pigs



ii) Snubbing rope: the rope behind the tusks is snubbed to a post as the pig pulls back

e. Hog snare twitch

The twitch used for pigs is usually made up of a very long pole with a wire loop. Place the twitch over the upper jaw behind the tusks and apply gently enough to prevent resistance or back ward moment.



Weight Estimation in Pigs

There are 3 methods of weighing/weight estimating in pigs:

1) By using calibrated weighing instruments eg. a spring balance or weighing bridge.

2) Calculation using a formula

$$W = \frac{G^2 L}{10,400}$$

Where by: W = Live weight

G = Heart girth

L = Length from between the ears to the tails root

3) Heart girth method



The Chart below shows how to find weight by using heart girth method:

Height (cm)	Weight (Kg)
63	32
65	35
67	37
69	40
71	42
73	45
75	48
77	51
79	54
81	57
83	60
85	64
87	68
89	72
91	76
93	80
95	84
97	88
99	92
101	96
103	100
105	104
107	108
109	112
111	116
113	120
115	125
117	130

TOPIC NO. 9: HEALTH MANAGEMENT

Healthy livestock are not merely those free of disease but those which are healthy enough a condition to provide as much benefit as their potential makes it possible thus disease is defined as derangement of normal function of body system of animal preventing it from being productive.

Therefore in this understanding malnutrition should be regarded as a disease condition four on small holder forms but it is a major cause of other diseases which attack their livestock.

Prevention is better than cure

If we prevent diseases we can reduce the costs of treatment and the losses of productivity and livestock deaths which disease cause. Preventive measures are virtually all cheaper than cures, and cures are not always successful.

However well we try to prevent diseases they sometimes cannot be avoided. The successful livestock keeper is not the one who reduces the incidence of disease.

Signs of diseases

Different diseases in pigs show different clinical signs however some signs are common to an array of pig diseases.

This signs include the following:-

- Loss of appetite
- Shining coat
- Dull Demeanor
- Enlargement of lymph nodes
- Lacrimation and excessive salivation
- Labored breathing
- Abnormal gait

Diseases:-

A reference list is provided here under of pig diseases commonly encountered in Tanzania. It is not intended as an aid for diagnosing pig diseases but is intended to provide basic information about diseases which are likely to be encountered. It is important to consult a veterinarian for diagnosing, treating and controlling.

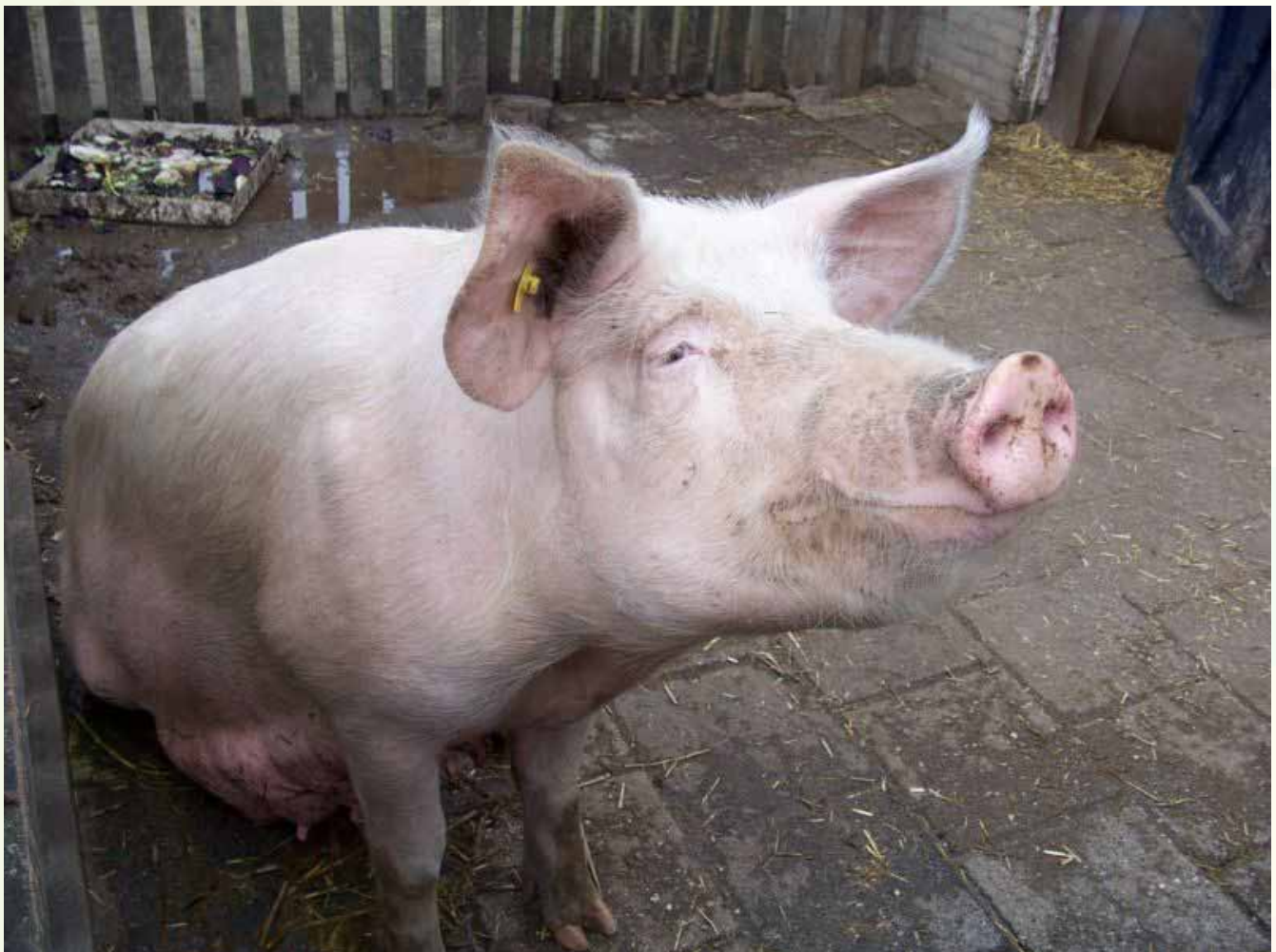
Disease in pig herds. The recognition of disease is extremely important to keep adverse effects on production and economic losses to a minimum.



TABLE 12: Common diseases of swine in Tanzania

Disease	Clinical signs	Treatment	
African swine fever	<ul style="list-style-type: none"> • High fever up to 42C • Respiratory distress • Hyperemia of the skin and ears • Abortion • Bleeding from nose and rectum • Diarrhea 	NO TREATMENT	<ul style="list-style-type: none"> • Slaughter and disposal of infected pigs • Quarantine affected areas • Improve sanitary measures
Mange mites	<ul style="list-style-type: none"> • Ear shaking • Several rubbing of the skin • Exfoliation • Tiny red pimples covering the affected skin • Loss of weight • Loss of appetite 	Ivermectin	<ul style="list-style-type: none"> • Quarantine affected farms and areas • Use antibiotics to treat wounds
Foot and Mouth disease	<ul style="list-style-type: none"> • High fever up to 41C • Vesicles developing on the teats tongue legs and dental pad • Excessive salivation • Abortion • Death of piglets 	Treat lesions using concentrated brine	<ul style="list-style-type: none"> • Vaccination twice year • Quarantine farms and affected areas
Anthrax	<ul style="list-style-type: none"> • High fever 41.5C • Depression • Cardiac/respiration distress • Oozing of non-clotting tar like blood from natural orifices of cadaver. 	Antibiotic Treatment	<ul style="list-style-type: none"> • Vaccination • Quarantine • Burning or burial of confirmed cases of anthrax
Swine Influenza	<ul style="list-style-type: none"> • Sudden onset and rapid spread through the entire herd 1-3 days • Fever 42C • Anorexia • Dyspnea • Coughing 	<ul style="list-style-type: none"> • There is no effective treatment although antimicrobials may reduce secondary infection 	<ul style="list-style-type: none"> • Quarantine • Vaccination
Coccidiosis	<ul style="list-style-type: none"> • Watery and greasy diarrhea • Yellowish foul smelling diarrhea • Piglets appear weak 	<ul style="list-style-type: none"> • Used of coccidiostats • Proper cleaning and keeping pens dry to reduce oocyst numbers 	Dry and clean pens Preventive use of anticoccidials
Trypanosomiasis	<ul style="list-style-type: none"> • Loss of weight • Staring coat • Intermittent fever • Anemia • Loss of weight 	<ul style="list-style-type: none"> • Diminazene aceturate • Homidium chloride 	<ul style="list-style-type: none"> • Vaccination after every 6 months

Disease	Clinical signs	Treatment	
Brucellosis	<ul style="list-style-type: none"> • Abortion • Orchitis • Sterility 	<ul style="list-style-type: none"> • No treatment 	<ul style="list-style-type: none"> • There is no vaccine for Brucellosis in pigs
Scours in Piglets	General body weakness, Chalk white Diarrhea, fever	Use antibiotic Give salt/sugar solutions for rehydration	Cleanliness of pens
Swine Erysipelas (diamond Disease)	Acute form <ul style="list-style-type: none"> • Pigs that succumb to acute form may die suddenly without previous clinical signs however if signs occur then the following will be observed: • Infected pigs are depressed • Febrile 40-42C • Skin discoloration • Skin lesions are almost everywhere may occur as discrete, pink or purple. 	<ul style="list-style-type: none"> • Treat pigs with penicillin 	Vaccination Sanitation Piglets should be vaccinated at an age of 8-10weeks Adults at 6-8 months NB <i>Erysipelas is a zoonotic disease</i>



TOPIC NO 10: FARM RECORDS

INTRODUCTION

Record keeping is often neglected task of the busy farmer who may often fail to recognize the actual profit loss situation without an outside help.

Record keeping should become a natural thing for a successful farmer who wants to know exactly the profitability of each enterprise and each animal, the pedigree information which warrants a higher price for certain offsprings, actions to be taken in a timely way with regard to pig breeding and immunization.

Types of Records

- Number of pigs meant for farrowing
- Lactating sows number
- Number of boars
- Number of gilts
- Feed requirement for each category/pig
- Weekly weight gains for fattening pigs

Example of pig Records

- Breed of pig
- Identification number
- Date of birth
- Number of breed of sire
- Date of farrowing
- Number of piglets farrowed
- Number died
- Number of living piglets
- Weight at birth, after 3weeks after 8 weeks

Record keeping cards:

Sow card

Identification number..... Date breed

Boars Identification number sow's identification

Date of service	Boar's ID Number	Date of farrowing	Number of living	Total weighed	Date of separation	Number separated



Boar's Card

Boar's ID Number Date Breed

Sire's Number Birth

Sow's number

Sows No.	Date of Mounting	Date of Farrowing	Living piglets	Dead piglets	Total	Piglets number	Segregation date	

Vaccination card

Date	Id number	sex	age	Desease vaccination aganst	Deases treatment	remarks

Herd performance records

% Died	Janvary	feb	March	Average after 6mounths	Normal
Number of sows					
Number of piglets					
Number of Boars					
Served sows that farrowed					
Farrowed sows					
Piglets born					
Percentage died					
Litter size /sows					
Fattening pigs which died					
Dead weaners sold					
Number of piglets					
Farrowed from one sow/year					
Sold from one sow per year					



TOPIC NO 15: ENTREPRENEURSHIP

INTRODUCTION

Entrepreneurship is an integral part of the economic growth and development of any country. Entrepreneurs' involvement entails establishing and boldly managing commercial activities aiming at making profit.

Entrepreneurship also includes identifying opportunities, market search and investment planning.

What is entrepreneurship?

Entrepreneurship is the process of starting a business or an organization. The entrepreneur develops a business plan, acquires the human and other required resources, and is fully responsible for its success or failure.

Principles of entrepreneurship

- An entrepreneur checks for facts and learns as much as possible about business issues.
- Learns the stability and sustainability of his/her business.
- Identifies weak areas and takes action for strengthening them.
- Understands customer requirements and makes efforts to avail the in demand products.
- Knows his/her financial situation and how to keep accurate financial statements and records

Type of business ownership

Entrepreneurship has the following types of ownership:

1. Single ownership

- Business owned and operated by one person whereby the property is wholly owned by one person.

2. Ordinary Partnership

- The system that allows business to be owned by at least two people (2) or more.
- Partners collaborate in gain accrued and loss encountered, but resolve issues abiding by the written agreement. Merchants who are in partnership have a legal right to protect one another. Payment for rent for those ventures is paid from shares which includes a tax benefit but no joint ventures.

A general partnership exists when partners divide responsibility for management and liability as well as the shares of profit or loss according to their internal agreement

- #### 3. A co-operative business is that which is owned and run by the members - the people who benefit from the co-operative's services. Co-operatives are a flexible business model. They can be set up in different ways, using different legal structures, depending on what works for the members

Business idea

For a business idea

Before a person starts a business, usually begins to get an idea of what should I do? These ideas are the two main steps:



The first step

Various thoughts flood his head with an example: I do not know how to set up shop, I do not know how to sell the meat, I do not know how to clean.

An idea of this kind is called a crude idea as it is not filtered. Despite this, these idea is pending preliminary investigation to see if they are feasible. If you start a business at this stage, the possibility of collapse is high.

The next step

A crude idea is evaluated, to see if it can be enforceable. I f it turns out to be a perfect one, then the business idea is called appropriate. Despite this, business success depends on the ability of the executor or seeker.

Designing a business idea is essential to an entrepreneur because of the following:

- It is the first step before starting any business.
- It is important to make the business successful.
- Often customers prefer a change of new things to existing ones.
- To match the changes in technology.
- Identifies potential risks likely to face your business.
- It is essential to the success of your business.
- In order to access business opportunities when they appear.

How to establish a business idea

Business establishing ideas are a function of the following factors:

- Experience of the family in question has in doing business.
- Inspiration gained following a visit to trade fairs at district, regional, and even international levels.
- Study visits to other parts of the country outside your own environment to see what others are doing.
- Watching business advertisements on TVs and reading newspapers on the same.
- Joining entrepreneurship groups, communities and even various business clubs.
- Calamities such as floods or other natural disasters.
- Breaking the income poverty loop can be a catalyst for one to start a business enterprise.

Implementation of the business idea

For the business idea to be transformed into business the following has to be done:

1. Order of business idea,

- Type / state of business of your thought
- Who will hold the business - family, partnership, group, etc.
- The type of license required - grocery, alcoholic beverages, restaurant, shop etc.

2. Identify the market for consideration the following factors

- Type of product / service which the business intends to offer to customers?
- Approaches and methods to be used in order to be different from your competitors.
- The best way for distribution and marketing of goods/services.



- The best location and affordable in terms of running costs for your business.
- How to advertise your business.

3. Consider how to organize and run your business

- You will need to identify the suppliers of the goods needed to run your business.
- Do the business premise need a facelift maintenance.
- Where to find raw materials
- How to choose and how to motivate employees of your business.
- Consider how to organize production and marketing of your product.

4. Financial Analysis

- Analyze the cost of production.
- Plan commodity/services prices.
- Estimate profit gains and losses.
- Estimate the cost of investment and working capital.

5. Plans

- Make plans and steps to set the business into motion.
- Align and plan how to appropriately invest funds at hand.
- Plan measures to implement the business idea.
- Identify different ways of earning money through investments.

How to come up with a good business idea

A good idea enables an entrepreneurial merchant to succeed. Therefore, it is good to know how to measure success. Business success is measured by using the following criteria:

- Profit gained
- How smooth is the running of the business.
- The idea should envisage expansion and growth strategies of the business.
- Business should meet the satisfaction of the clients.

PROBLEMS AFFECTING BUSINESS IDEAS

1. Not believing in the viability of the business idea which is caused by:

- Not having faith in the idea.
- Bureaucracy there in for obtaining a business license.
- Lack of management and leadership knowledge and skills.
- Lack of technical / professional knowledge.

2. Problems associated with markets resulting into small volumes of sales. This can be caused by:

- Very few customers coming for your goods/services
- A large number of competitors
- Effectiveness of potential competitors.
- The price of the product / services delivered. Is it too expensive?
- Inferior quality of the products sold.
- Lack of a clear business direction
- Poor or no business advertisements.



3. Problems associated with leadership

- Lack of staff with business skills.
- High prices of raw materials.
- Failure to produce quality products.
- Poor management of funds, raw materials and other supplies.

4. Lack of financial management skills

- Many debtors.
- Many creditors (payable immediately)
- Weak capital base.
- Poor or no bookkeeping at all.

5. Lack of planning

- Lack long-term plans.
- No new investments.
- Ignorance in planning and designing of new business products.

How to Establish a Business

Business analysis and its importance

For a successful business enterprise it is important that a thorough business analysis is made by an entrepreneur. A thorough analysis will give a picture on what to produce, what goods are fast moving, and which ones are profit making. A Business analysis also enables an entrepreneur to know the volume of capital investment needed to start a business and the internal rate of return on investment.

Business Analysis preparation

In order to prepare a business analysis one should focus on the following key areas:

- Personal information of the entrepreneur.
- Type of business to be conducted (service or product)
- Place or area from where the enterprise is intended to operate
- Targeted market
- Get the information of competitors.
- Business analysis should put in place strategies for a successful business.
- Capital investment volume required.
- The source of capital to run a business – Bank loan? Personal savings? partnerships?, etc.

Elements of business analysis

- Explain the type of business you intend to do
- What is the targeted market (customers category?)
- Do you have any strategy of getting hold of these clients?
- How will this strategy be executed?
- How will money be spent to meet business needs?

Advantages of business analysis

Business analysis will help attain the following:

- Find out if your product or service will be purchased.
- Helps knowing your competitors in the business. How are they doing their businesses?



- Helps to establish the price of goods based on the costs involved in acquiring them.
- Helps to project whether the business is making profit or loss.
- Simplifies business implementation.
- Banks see the importance of lending.
- A good business analysis gives you a vision of the direction.

BUSINESS INFORMATION SOURCES

1. Customers

These can provide information on products and services that they would like to acquire from you. Ask customers what they need and also to get their ideas on the strengths and weaknesses they see in your business.

2. Distributors

These also are the most important people in giving account on how you may be prospering in your business and can offer suggestions for improvement.

3. Competitors

Competitors dealing with the same products and services can have common challenges. These can be shared among themselves.

4. Experts

Their work requires them to give business information without asking for payment. eg Banks, Business Advisors, Accountants, Cooperative Officer, Chief Taxation, Land Officer, etc. However such documents as business licenses and bank fees have to be paid for.,

MARKETS

Background

Markets for livestock and agricultural products in particular, milk and dairy products, vegetables and fruits may change from time to time due to the fact these products are perishable. They need appropriate storage facilities. Their prices will be influenced by the market forces of demand and supply.

Market analysis

Market is a business philosophy that says, any business should concentrate on meeting customers 'needs and wishes. An entrepreneur has to give what the customers need on time at the right price and at the right place

Some businesses are market oriented while some are production oriented. Those which are market oriented depend on what can be sold while the ones that are production oriented rely on what is generated.

It is obvious that the businesses that focus on customer requirements have the potential to grow and can attain considerable success.



Market analysis preparation

- Estimate the size of your market
- Volumes of prospective customers with potentiality to expand and grow
- Set clear objectives of the analysis strategy.
- Identify the type of product (model, type, quality) that you intend to take to the market.
- Set clearly the selling price of your products.
- Show how the products will reach your customers.
- Show how you will be getting feedback from customers.

Market monopoly strategies

1. Discover what customers want

- Effectiveness
- Set affordable and reasonable prices
- Accessibility to your business place
- Security of your business place
- Quality of products / services rendered

2. Know when do your customers buy?

- Morning, afternoon or evening
- At the beginning or end of the week
- At the beginning or end of the year

3. Know the type of buyers your customers are?

- How are the volumes of purchase fluctuate according to seasons of the year.
- Are they borrowing type or pay cash upon receiving goods customers?

4. Sales volume per month?

- Do you have competitors
- Do they affect your business?
- Do their prices give you an edge for the market?

5. How do set your prices?

- Do you align them with government set prices?
- Do you align them with those of your competitors??
- Do you set prices on your own?
- Should a need arise will you be able to reduce the prices of your commodities?

6. Understanding your market

- When you enter into a business, it is advisable to assess the situation of the market forces. This will help you know if there is a demand of the products or services you intend to offer.

7. Who are your current customers?

What kind of customers do you have at your disposal? For example, their age, income and education, likes and needs.

- Where do they live, and what do they prefer to buy?



8. Distribution of products / services to your customers

The following elements will help provide the right decision from the realities of your circumstances and financial capacity:

- Will you be delivering goods to your customers' homes?
- Will you use vendors?
- Will customers come to your business place?

INVESTMENT PLANNING

Financial planning and investment in business

Financial planning is important in any business planning. To have a good financial plan you need to answer the following questions:

1. How much capital do you need to invest into the business.
Answer
2. How much capital do you have personally to invest into the business?
Answer
3. What do you expect to buy for investing into this business?
Answer
4. What costs are needed to be incurred to cater for investment preparations?
Answer
5. What and how much do you set aside for emergency expenses?
Answer

Total cost for the components 3+ 4+ 5 = S.

The difference between the figure shown in the answer to question 2 and the figure represented by S will give you the amount of funds needed to start a business enterprise.

Where will the additional funds be gotten from?

Is this your financial plans are considered to use the help of an expert on financial matters?

To assist you in putting effective financial planning considers the following factors:

- Remember to regularly increase the cost of emergency matters.
- Envision to have as much huge investment capital as possible.
- Keep estimates of the things that will add up to your capital.



A. Needs for a long term capital

Activities	Value (Tsh)
Rent, cost of registration	
Cost of new buildings / renovations	
Laboratory Equipment / garage	
Processing machines	
Other equipment	
The initial cost of starting a business	
Cost of advertising	
Payment in advance - rent	
Sub-total	

B. Needs for a short term capital

Activities	Value (Tsh)
Monthly bills (electricity, water, telephones, transport, etc.)	
Frequent purchases	
Cost of business	
Operating expenses	
Sub-total	
Total capital required A + B	

Financial planning

Financial planning gives you an understanding of the amount of money needed to start and run your business. Planning allows you to know from where money for investment will be accrued.

There are many financial institutions in the country and abroad from where funds to start a business can be accessed. Do not be afraid to borrow so long as you are sure that you can pay these loans without delay.

Domestic financial instruments

Value	Value (Tsh)
Private capital	
Cash	
Capital assets (land, buildings etc.)	
Contributions of members	
Construction capital	
Sub-total	





External financial instruments

Activities	Value (Tsh)
Long-term loans	
Bank loans	
Credit insurance	
Loans from relatives	
Loans from non-governmental organizations	
Short-term loans	
Transfer of bank credit	
Sub-total	

Plans for profiting

Sole proprietorship businesses are meant on the fore to foster the economic development of the proprietor himself. The goal of every proprietor should be to source out the means of a sustainable livelihood from the business at the same time allowing the business to grow in volume.

AN EXAMPLE OF A SIX MONTH BUSINESS SALES FORECAST.

Month	January	February	March	April	May	June	Total
Expected sales							
The price of each							
The aim of the sale							

Sales forecast

When forecasting for the volume of sales, two things should be considered:

- Merchandise volume
- The prices at which the merchandise will be sold.

Things to consider when setting prices of goods

- Costs involved in sourcing of and transporting the merchandise to your business point
- Prices set by your competitors
- The purchasing power of your competitors.

Profit estimation

Activities	Value (Tsh)
Sales value	
Total sales	A



Business operating costs

Cost of materials	
Labor costs, electricity, water etc.	
Cost of purchasing and supply	
Administration costs	
Salaries	
Other donations	
Sub-Total	B

Costs of business workplace

Activities	Value (Tsh)
Rent	
Water	
Electricity	
Maintenance	
Su-Total	C

Costs of business workplace

Activities	Value (Tsh)
Road License	
Insurance	
Service and maintenance	
Operation costs	
Revenue and tax	
Sub-Total	D

Costs of business workplace

Activities	Value (Tsh)
Loans interest	
Bank charges	
Tax	
Sub-Total	E
Grand Total: B + C + D + E = F	
Business profit	

Costs of business workplace

Business profit = A - F	
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