

GOVERNMENT OF A.H. CERTAERMARY DEPARTMENT



A MANUAL ON RABBIT FARMING

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INTRODUCTION

Meghalaya is primarily an agrarian state where different types of livestock farming are established and rabbit farming is one of them. At present the state has one rabbit breeding farm at upper Shillong which is around 10 kms from the city. The agroclimatic condition of the state is very well suited for propagation of rabbit farming.

Despite the fact that the farm is almost three decades old, rabbit farming in rural areas is yet to take off. Recently rabbit rearing is gaining popularity for its meat. The health consciousness of the consumers preferring low fat/cholesterol animal protein is making rabbit meat the preferred choice especially for heart and hypertensive patients.

The low investment, quick returns and small recurring cost is becoming a boon for rural backyard farming. It is one of the most suitable means of producing high quality animal protein that could make significant contribution towards bridging the gap between local production and demand of animal protein.

Rabbit farming enhances additional income to the poor and marginal farmers who need not spend much time and energy in this farming activity.

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1.	Description: -	Scientific name -	Oryctolagos caniculus		
		Availability -	Global		

Rabbits have a small body size, short generation interval, rapid growth rate, ability to utilize forage and agricultural by-products, and adaptability to a wide range of ecological environments.

It can be raised on roughage diet solely without affecting productive and reproductive performance this indicates that it cannot compete with human beings for food grains like pig and bird. Its reproductive potentiality is very high i.e. rabbit can be bred around the year and gives at least four crops with five litters in each time, altogether 20 litters per doe per year. Lifespan of Rabbit is 8- 10 years with a reproductive lifespan of 6 years. It can adapt in wide range of climatic condition and resistant to diseases. Weaners can be marketed at 45 days and above and slaughtering age is 180 days and above. Rabbit meat is wholesome; tasty which is rich in protein, certain minerals and vitamins but low in fat and cholesterol.

2. <u>Purpose of Rabbit farming</u>.

Apart from being a good source of white meat which is "Pearly White" and low in fat and cholesterol which can be consumed by heart patients, it also provide useful wool (fur), skins, manure, toys and novelties. The rabbit is the only farm animal which produces meat 10-15 times or more of its own weight in a year through progenies. Being such a prolific multiplier, it is expected to ease the demand of pressure on chicken and mutton. Rabbit farming in a commercial scale can provide jobs and livelihood to individuals and entrepreneurs. It can also help bring about additional source of income for the poor and marginal farmers by way of rural backyard farming. This can belp bring about substantial economic upliftment of the rural populace of the state.

3. Advantages of Rabbit farming:

- a. Investment on housing and management is less.
- b. An efficient producer of meat, feed efficiency is high.
- c. Rabbits breed fast (31 days is the average gestation period) and achieve rapid weight gains around 2kg at 180 days of age
- d. They are commonly fed on leafy plants and vegetables with relatively little concentrated feed.
- e. Rabbits produce high class protein characterised as lean meat and excellent fur.
- f. Rabbit does not have any religious prohibitions, unlike pig and cow meat.

4. Site selection:

Several factors may be considered before selecting a site for construction of rabbit house. A shaded and elevated area is preferred for easy drainage of unused water from rabbit farm. Shaded area is preferred to reduce the heat stress on the rabbit as it is very sensitive to high temperature. In case of high wind and cold areas shed should be well insulated. The area must be connected with road so that there would not be any problem to bring feed or sell products, the location should be free from excessive moisture, smoke, fume, dust and other pollutants. There should be easy access of electricity and water. Area should be protected from predators i.e dog, fox, cat etc.

5. HOUSING SYSTEM

(a) INDOOR

<u>Sheds</u>: Atmospheric temperature, ventilation, humidity and lighting are the important points to be taken care of, while constructing the rabbit shed. A shed with 4.2 m central height, 3.0 m side height is most ideal one in hot climates whereas a central height and side height of 3.2 m and 3 m respectively in cold climates.

The ventilation system is to be arranged as to remove stale air from the shed and replace it with fresh air. Cross ventilation for easy air flow is essential. Though rabbits can thrive at temperature between -2°C to 30°C, the ideal temperature is 15° to 20°C. Higher ambient temperature reduces breeding efficiency, litter size, litter weight and reduces feed intake. The ideal humidity for indoor rabbitry is about 75% at a temperature of 16°C. The relative humidity should not be higher than that of outside air by more than 5% and the temperature should not differ from outside by 10°C. Central vent where ceiling are used needs to be arranged.



Central Vent in a Rabbit Shed

(b) Outdoor:

Hutch System

Hutches are made out of wood , bamboo, asbestos, thach grass , CGI sheats, welded wire mesh or with any locally available materials.



Outdoor Hutch Design

The hutch is constructed with the following specifications, 2.5 ft height front 1.5 ft back, Length – 3 ft, Breadth - 2ft, kindling cage Height - 6 inch, Width - 2ft Length -10 inch x 6 which can accommodate around 15 nos.

CAGES:

Cages are usually made up of wire nettings and can be placed either in a single row or in tiers system. The materials must be galvanized to prevent corrosive effect of urine.



Kindling Cage

Kindling cage size can be of 76x45 cm (lxb) with 35cm height. Whereas the Nestbox can be 35x25 cm (lxb) with 15cm height.



Buck Cage

Buck cage size can be of 94cm x 55 cm (lxb) with 48 cm height. This buck cage can accommodate 1 buck with ample space for mating.



Weaner Cage

Weaner cage size can be of 155cm x 96 cm (lxb) with 51cm height. It can hold upto around 20 weaner rabbits with a floor space of 0.85 sqft per animal

After Weaning, colony pens may be used to rear rabbits till marketing. A space of 35x35 cm is the minimum allowance per young rabbit.



Nest Box

6. BREEDS OF

RABBITS

There are many breeds of rabbits in the world which differ in many ways from area to area particularly in their size, breeding ability and adjustment to various conditions.

Breed	Fur Color	Adult weight	Country of origin	
		(kg)		
New Zealand White	White	4.5	U.K	
Grey Giant	Greyish Brown	3.5	Russia	
White Giant	White	4.0	Russia	
Soviet Chinchilla	Steel grey	3.5	Russia	
Angora	Usually White	2.5-3.0	Europe	

The New Zealand White is an example of meat breed. They are large rabbits with meaty haunches and wide, deep shoulders. An adult buck weighs 4- 5kg, and an adult doe weighs 4.5-5.5 kg. They have white fur. This is the most popular breed in commercial rabbitries and is also widely used in tropical backyard units.



New Zealand White

Soviet Chinchilla

Cross Bred

Soviet Chinchilla

They are blue grey in color with a white belly. It has a characteristic "raff" or "dewlap" and was evolved in erstwhile USSR. Adults weigh 4.5 to 5 kg. Though this breed is reared for meat its fur is a fancy in fur crafts.

Grey Giant

It is a native of erstwhile USSR. Adults weigh 4.5 to 5 kg. Due to the resemblance of its fur with that of hare, it is often mistaken as hare. It is also reared for meat and fur skin.

White Giant

It also originated in the erstwhile Soviet Union. It is almost similar in appearance to New Zealand White. Colour of the fur is white while that of the eyes and skin is red. The length of hind limbs as well as body size is larger than that of New Zealand White

ANGORA

They originated in Europe. Angora is a very ancient breed of small rabbit weighing around 3 kilograms. It is a wool type rabbit with white fur. Annual wool yield recorded is between 300-1000g in 3 to 4 clippings.

CROSS BRED

Crosses between the above mentioned breeds and local types have been produced. They are found to be highly adaptive. The adult weighs 4 to 4.5 kg and breeds all through the year. Colour of fur is not uniform.

7. RABBIT FARM MANAGEMENT:

Management involves all the plans and procedures necessary for the efficient and economic production of rabbits. It involves housing management, feeding management, breeding management, health management and general management.

(a) FEEDING AND WATERING

An optimum amount of high-quality grass, green fodder, vegetables, concentrate mash or pellet feed is an ideal diet for a rabbit. Water is the most important nutrient

for rabbits and should be fresh and readily available. Rabbit can thrive on a wide variety of unconventional feed stuff without any adverse effect thus lowering feed cost. However, level of incorporation and toxic principles are to be considered before selecting any unconventional feed in the diet of rabbit. Unconventional feedstuff includes agricultural crop residue eg cow pea hulm, peanut hulm; oil cake eg

sunflower cake, neem seed meal, cottonseed meal; fruit



industry byproduct eg apple pomace, citrus pulp; forest by product eg mulberry leaves, tapioca leaves, subabool leaf; aquatic plant eg azolla

Regular time-table for feeding is advisable so that rabbits do not feel any stress due to changes in their daily routine. The concentrated feed can be given twice, i.e. once in the morning and in the afternoon while greens can be given in the evening. Pellets of 3-4 mm diameter and 10-15 mm length are preferable to grounded feed.



The feeders are attached to the cages so that feed can be added from outside. The feeder should be 5-8 cm high so as to minimize contamination of feed by faeces, urine or water. An adequate supply of fresh and clean water is essential for good rabbit production. Earthen and aluminum bowls are cheapest and best.

Green feeds including cabbage, oats, etc and pasture plants like white clover, Lucerne, berseen, hemata, paragrass, sebania leaves are best suited to feed rabbits in summer. Lucerne and hemata are considered best pasture plants for feeding rabbits.

It is preferable to make water available round the clock particularly to lactating does. Concentrate feed ingredients includes Maize, Wheat Bran, Mustard Oil Cake, Mineral Mixture and Common salt, which is added to about 50 % of the whole diet. The nutrient requirement of rabbit of different physiological status is given below:

Nutrients	Maintenance	Grower/Pregnancy/ Lactation
Digestable energy (K. cal)	2100	2500
Crude Fiber (%)	14	10-12
Fat (%)	2	2
Crude Protein (%)	17	21



Composition of the concentrate feed for weaner and finisher rabbit.

Ingredients	Weaner (%)	Finisher (%)		
Maize crush	32	39		

Wheat bran	25	24
Rice polish	15	15
Groundnut Cake	15	10
Soya bean meal	10	10
Mineral mixture & vitamins	2.5	1.5
Common salt	0.5	0.5

(b) <u>Handling</u>: Rabbits should be handled gently and carefully so that it is not frightened. Grasp the skin over the shoulders to lift rabbits. Ear alone must never be held, but ears should be included along with skin over the shoulders. One hand should be placed below the hindquarters for additional support. Young rabbits may be lifted and held by grasping with the hand over the lower portion of loin just forward of the rear legs.



8. Reproduction Management

(a) Buck: The male rabbit is known as buck. A buck develops its breeding capabilities at the age of 8 months. An ideal buck should continue to maintain its reproductive ability at least for 3 years. A young buck may be allowed to mate one doe at an interval of 3 to 4 days. But from 12 months of age onwards it may mate 4 - 6 does in 7 days. A buck beyond 6 years of age should be culled since semen quality declines. In order to keep the buck healthy additional protein, vitamin and minerals are to be supplemented in diet. Two breeding bucks should not be kept in same place as they will fight each other and cause injury.

- (b) Doe: The female rabbit is known as doe. A doe becomes capable to reproduce based on breed, nutritional status and seasons. The smaller breeds attain sexual maturity earlier than larger breeds. A small breed may accept mating at 6 months of age whereas the larger breed may accept mating at 7 months of age.
- (c) Heat detection: Heat detection of the doe is generally done early morning by physical monitoring of the vulva although rabbits are known to be induced ovulators, yet detection is a must and it is characterised by the reddening of the vulva which signifies that animal is in heat and ready for breeding.
- (d) Mating: The doe in heat is taken to buck cages after verifying the pedigree of the animal for the buck and the doe to prevent inbreeding. Once the doe in heat is in the buck cage mating starts immediately and on successful mating the buck makes a typical sound and falls towards the side. This shows the breeding is complete and the doe can be removed from the buck cage.
- (e) Pregnancy: The gestation (pregnancy) period in rabbit ranges from 28 - 32 days (approximately 30 days). The nest box is to be kept within the cage to facilitate the doe for preparing bedding for the new born.



(f) Preparation of kindling: The nest is to be provided at least 5 - 6 days before parturition. The nest box should contain nesting materials like straw, grass, wood savings etc. Saw dust should not be used as bedding material. A doe may pullout some of her own hairs to make nest for litters. Adequate measures should be taken concerning feeding and management during pregnancy period. Once the female is mated it is desirable to know whether she has conceived or not to reduce inter kindling period. If positive, proper care and management be given for safe kindling and obtaining higher litter size.



(g) Kindling (Parturition): Process of giving birth of new baby of rabbit is known as kindling. It is a natural physiological phenomenon. The parturition very often takes place at late night or early morning. It may not require any interference by the keeper. The process usually completes within 7 - 30 mins. Sometime all the litters may not be born on succession. Some may born after several hours or a day. Following parturition the does used to lick the young and may eat the placenta. The baby rabbits will try to suckle the mother. If the number of litter is eight, all may be able to suckle since doe has eight teats. The baby rabbits those will be unable to

suckle may turn weak and susceptible to diseases. Many of them may even die prematurely. The does should not be disturbed during this time and be fed ad lilbitum. Adequate food and water should be provided so that optimum amount of milk is available to the baby rabbits. Rabbit used to nurse her young usually at night or early morning only for once. 6 - 12 baby kits may be born from a single kindling.



9. Care of young ones

The kits are born hairless with their eyes closed; usually 6 to 12 kits born in a single kindling. They open their eyes by around 10-14 days. The nest box is removed after 3rd week of kindling, when the kits start coming outside the box and try to consume some feed/hay. The doe should not be disturbed frequently. During this period, the doe should be fed ad libitum. Adequate feeding and watering is essential to prevent the doe from crushing and eating the kits. Rabbits nurse their young only once daily, usually at night or early in the morning.

10. <u>Weaning</u>: Weaning is a stressful period and requires careful handling. The weaning is done between 4th and 6th week. The earlier done the better. The doe should be removed from the cage and the litter allowed remaining behind together for the next 3 to 4 weeks. Sex of the young rabbit can be determined one week after kindling by an experienced person.

11. Identification:

Identification of rabbits is very essential for keeping records. Since rabbit have got small generation interval proper identification of different generation e.g F1,F2,F3 etc. is needed to avoid in breeding in the farm. Identification can be done by tattoing ink in the ear or by metal identification tags.

12. Sanitation: Strict sanitation practices help in disease control. Buildings should be

well ventilated and adequately lighted to reduce ammonia and moisture level in the sheds. The shed may be disinfected with phenyl 1.2% or Formaline 1% or sodium hydroxide 2 to 4% or Ammonia 10% solution. Bio security around the farm should be maintained strictly and footbath on entry and exit points.



13.Record Keeping:

- The only way to know how well you are doing in the rabbit business is to keep good records. If you keep good records then you can make sound management and business decisions. Good records let you know if you are making a profit, and they are necessary for income tax purposes.
- Keep only necessary records. You can easily overburden yourself with record keeping. Decide what records you need and then keep them daily. Listed below are some basic records you need to keep:
- Breeding Register
- Kits Register
- Treatment Register
- Herd Register
- Feed Register
- Sales Register

BREEDING REGISTER

ANNEXURE-I

SI.N o	Date of service	Dam no	Sire's No.	Expected Date of kindling	Date of kindlin g	Litter Size	Remarks
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# KITS REGISTER

# ANNEXURE-II

SI.N o	Dam No.	Sire No	Date of birth	Litter Size	Date & No. of Death	No.weane d	Date of Transfer

# HERD REGISTER

# ANNEXURE-III

Sl.No.	Identification No.	Date of Birth	Dam's No.	Sire's No.	Transfer/Disposal/Death

#### FEED REGISTER

#### ANNEXURE-IV

Date	Kits	Weaner	Young	Fryer	Adult	Pregnant	Lactating	Remarks

#### SALE REGISTER

#### ANNEXURE-V

Date	Identifi	Bree	Sex	Categor	Quantit	Rate	Amoun	Challan	Bill No.	Rema
	cation	d		у	У		t	No.&	& Date	rks
	No.							Date		

#### 13. Diseases and Health Management of Rabbit:

The different types of diseases encountered in rabbits and their management are as follows:

#### **Digestive Disorder (Enteritis):**

The symptoms are decrease in feed intake and growth. Next, diarrhoea appears which soil the animal's hindquarters. Death can occur at this stage, sometimes even before the appearance of diarrhoea. Skin dehydration also appears at this time. Rabbits must have clean water available at all times. Mouldy feed: (pellets, domestic waste, bread, vegetable peels) can very quickly cause diarrhoea even in a healthy rabbit. E. coli occur systematically in very large numbers in rabbits with diarrhoea or even with coccidiosis. Coccidia are the major specific agents of diarrhoea in the rabbit. The main symptoms are diarrhoea, weight loss, low intake of feed and water and death.

#### Ear canker:

Ear canker is very common. It is a parasitic disease caused by a mite complicated by bacterial infection. The symptoms are external otitis and yellow or brown scabs in the ear canal. Treatment can be effective if the disease is diagnosed in the very early stages, butox may be applied locally in the ear for three to four occasions depending on the condition. Ivermectin is the drug of choice; two 200 mg injections per kilogram of live weight twice daily provides a spectacular cure.

# Skin mange:

Skin mange, a parasitic disease caused by a mite. Tip of the nostril, abdominal area, extremities are generally affected. Clinical symptoms are loss of hair followed by wound, if it is a aggravated by bacterial infestation and not treated in the initial stage. Butox may be applied locally for three to four occasions depending on the condition

# Aflatoxicosis:

It is a fungal disease caused due to intake of mouldy feed contaminated with Aspergilus flavus. The clinical symptoms are loss of appetite, dull and depressed, distended abdomen, when rabbit is shaken distinct gurgling sound is heard. There is no sign of diarrhoea or high rise of temperature. Even in case of pregnant rabbit abortion may occur. So as a precautionary measure immediately the feed is to be replaced by fresh feed. Feed should not store for a long period, particularly in high humidity and high rainfall area. More vegetables, grass and fodder may be given. Treatment consists of broad spectrum antibiotic parenteraly to the sick animals for three to five days and antibiotic powder may be mixed with water or feed and fed to the good animals for three to five days. Multivitamin may be mixed with feed and liver extract may be mixed with water and fed to all the rabbits for a week.

# 14. Slaughtering Process:

- a) Slaughtering and dressing of rabbit is done by dislocation of the neck followed by bleeding.
- b) The rabbit is held firmly by the rear leg and head stretching it to full length. The head is then bent backwards with a hard sharp pull to dislocate the neck. After the dislocation the head is severed to allow complete bleeding by hanging the rabbit upside down. The forefeet are then removed.
- c) The next is to cut the skin around the hock joints of the legs and then to cut between these points across the lower part of the body. The tail is cut away and the skin is then free to be pulled down and forward over the body.
- d) This operation should be done with care to avoid mutilation, knife marks, grease (which oxidizes and burns the skin) or bloodstains. All these defects reduce the value of the pelt, especially when the coat is originally of good quality.
- e) The skin thus removed is sundried immediately to prevent its spoilage and proceed thereafter.

f) After the head, forefeet and skin are removed the carcass is opened to remove the viscera. A cut is made on the lower part of the abdomen and straight cut is made to the chest cavity. The elementary tract and lungs are normally removed as inedible offal.

Extreme care has to be taken to ensure that no portion of the alimentary tract is cut or punctured as the contents of these organs contain lot of microorganisms that can contaminate the clean carcass. In order to prevent such cross contamination, it is advisable that the area where skining and evisceration is carried out be compartmentalized from the areas where the relatively clean carcass.

Liver, kidney and heart may remain with the carcass or conversely may be removed and disposed off. The carcass thus remaining is then cut into requisite pieces. Normally for commercial purposes the rabbit carcass are cut into six major portions.



# DIFFERENT RABBIT CUTS





- SHOULDER
- SADDLE
- LOIN
- HIND LEG
- SHANK
- FRONT
- RIB

# NUTRITIVE VALUE:

- Calories: 147
- Total Fat: 3g 4%
- Saturated fat:: 0.9 g 4%
- Polyunsaturated Fat: 0.6g
- Monosaturated Fat : 0.8g
- Cholesterol: 105 mg 35%
- Sodium: 38 g 1%
- Potassium: 292 mg 8%
- Total Carbohydrates: 0 g 0%
- Dietary Fibre: 0 g 0%
- Sugar:0 g 0%
- Protein: 28 g 56%
- Vitamin A: 0%
- Calcium: 1%
- Vitamin D: 0%
- Vitamin D: 0%
- Cobalamin: 91%
- Iron: 22%
- Vitamin B 6: 15%
- Magnesium: 6%



# 18. Economics Parameters of Rabbit Production

Following assumptions were made for calculation of economics: -

- (a) One male :4 female
- (b) Breeding age: 6months above
- (c) Produce 4 crops per year(5 litters per crop) 20 kits per year
- (d) Mortality:10%
- (e) Conception rate: 80%
- (f) Weaner Marketing age: 45 days above
- (g) Adult slaughtering age: 180 days above
- (h) Dressing percentage:65%
- (i) Concentrate feed to roughages ratio: 20:80
- (j) Labour (Man animal ratio): 1:100 in cages system.

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