

Definition of common terms

- ***Buck***: Is a male capable of breeding.
- ***Doe***: An adult female rabbit.
- ***Doe in kindle***: A pregnant doe.

Breeding of rabbits

• **Successful Breeding of**

1-Select the right rabbits are one of the keys to a good breeding program.

2-Only use healthy rabbits.

- Check rabbits for vent disease prior to breeding.
- Make sure the overall condition of the rabbits is good.
- Check for loose droppings near the rabbits cages.
- If you suspect any illness in either rabbit, wait until they are healthy.
- Avoid using rabbits with genetic defects. Such rabbits will often pass those defects to their offspring.

3- select breed

Rabbit breeds in Egypt

- **1-Baladi**



بلدى أحمر



بلدى أسود

- **2- Mountain**

Foreign Breed	Use
Angora Beaver Chinchilla Flemish	Fur production
White-Newzeland- California (large) Silver Fox (medium)	Meat production

- **When to Breed Rabbits**
- **5- Select rabbit at breeding age and weight.**

Breeds	Examples	Age of breeding
Small	Duch- Polish	4-5 months
Medium	Newzeland- California	5-6 months
Large	Flemish	6-7 months

Breeding systems

	Extensive	Semi-intensive	intensive
Rebreeding after kindling	After weaning	10-20 days after kindling	Just after kindling
weaning	5-6 weeks	4-5 weeks	26-28 days after weaning

- **One male for 10-20 females**
- **Culling of so thin or fat females, that give low litter size(less than 6), that cannablize her offspring or poor nursing and nest box building.**
- **Culling of male of poor mating cabability or give little number of offspring ; low growth rate.**

- **The Act of Breeding of Rabbits(Video)**

Management during breeding

- **1. Feeding of rabbits play an important role in right breeding, fertilization, pregnancy, parturition and litters nursing addition to assist disease control. Pregnant does should be provided with a good supply of well-balanced ration beside fresh grasses.**
- **2. Feeding troughs, water troughs should be thoroughly washed and disinfected.**
- **3. Clean water should be offered successively several times a day in clean water troughs.**
- **4. Breeding cages should be warm, dry and have a relative humidity of 45-55%.**
- **5. House and floors should be washed with water, soap and disinfectant once per weeks.**
- **Seasonal changes and high temperature reduce production.**

Pregnancy diagnosis

- **Palpation of the abdomen.... 12-14th day of pregnancy.....video**
- **2-Test mating is not usually successful**
- **3-Increase in thickness of the mammary gland at day 24th of pregnancy**
- **4-Radiographic confirmation at 11th day of pregnancy**

Pseudopregnancy:

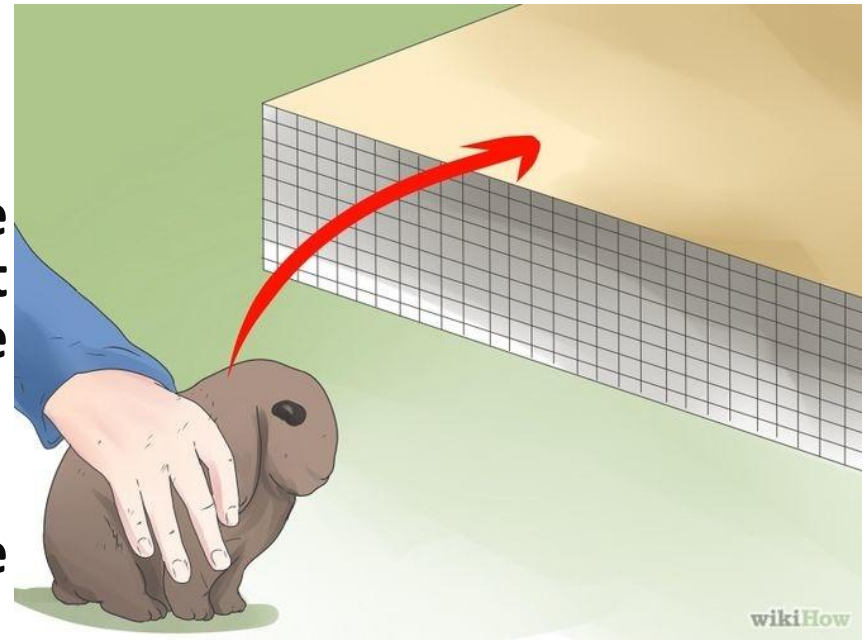
- **False pregnancy may be caused by an infertile mating, or sexual excitement caused by one doe mounting.**
- **Pseudopregnancy lasts 16-17 days during which, she makes a nest and the mammary gland may even secrete some milk**

Management of pregnant doe

The gestation period is 29-35 days. Larger litters are carried a shorter time than small-sized litters.

After mating, the doe should be **returned to the hutch** which will occupy until at least after her litter are weaned.

- There will be no change in the management during the first part of pregnancy, although she **should not be roughly handled.**
- At the end of the third week, the hutch :
 - thoroughly cleaned**
 - good supply of bedding**
 - nest box.**



Kindling

breeder

- Presence of breeder should be avoided
- After kindling remove the dead young



Parturition usually occurs during the early morning hours. Kindling requires less than 30 minutes

Environment

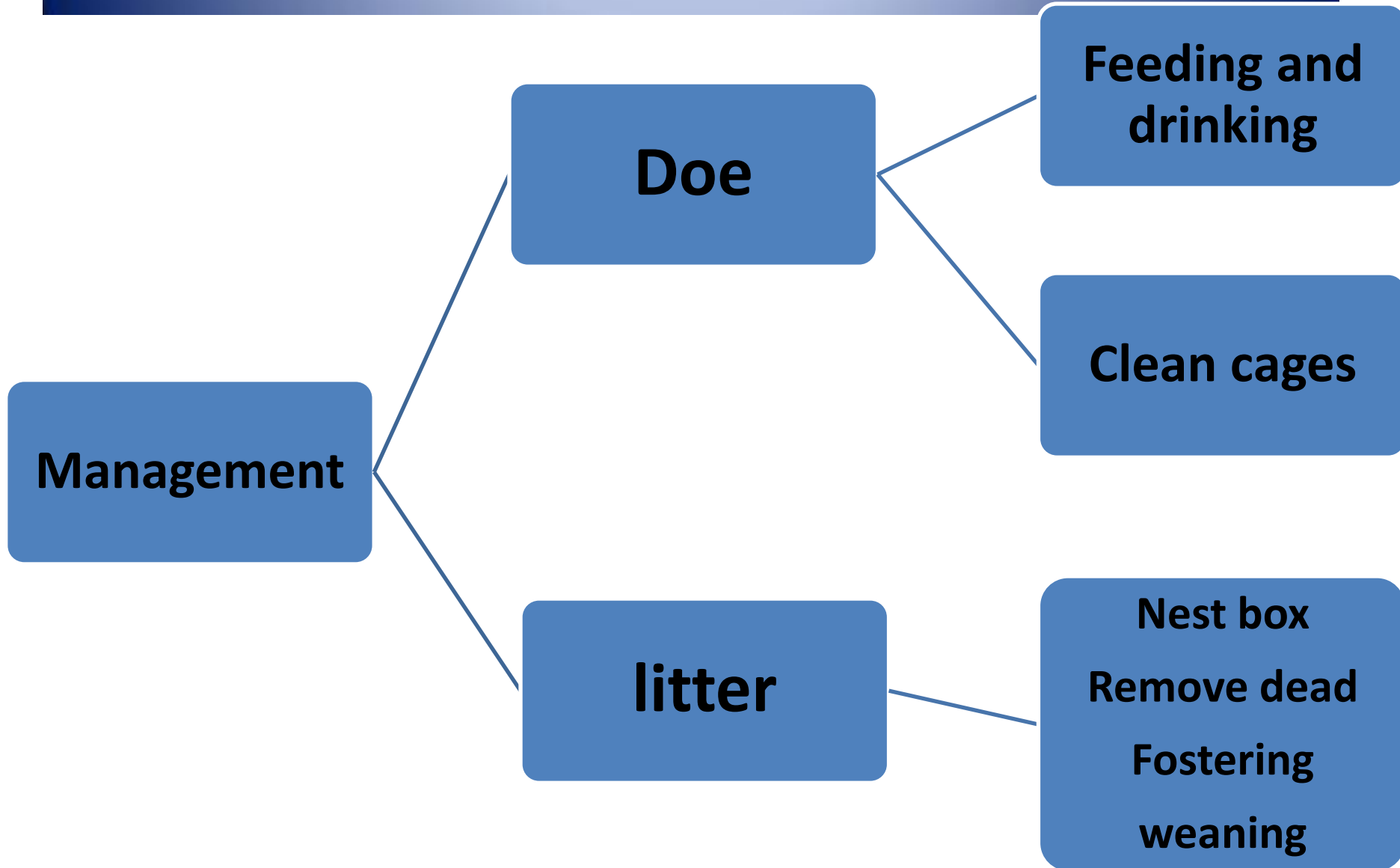
- quiet, hygienic
- some does which abort their young or scatter them at birth or eat them and it is sometimes said that this is due to disturbance



Nursing doe

- A nursing doe needs considerable nutrition and from the time of parturition she should be fed ad lib.
- Drinking-water is very important

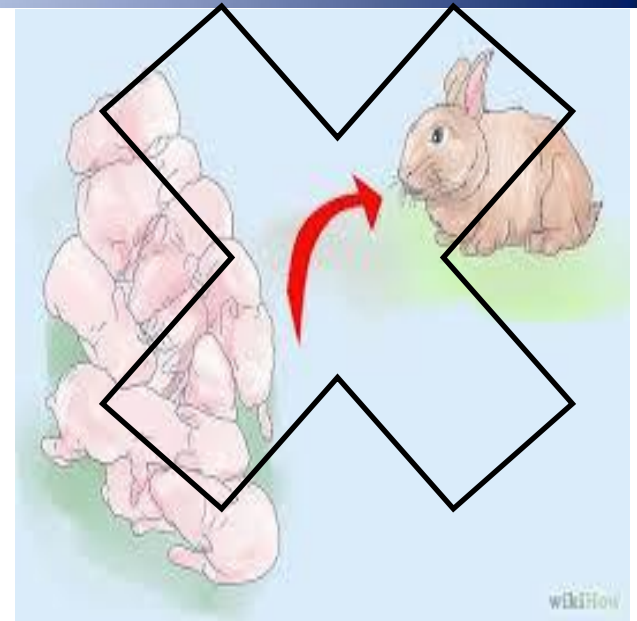
Management of doe and litter after kindling



Fostering

breeder may decide it is necessary to eliminate excess newborn rabbits in a large litter, or they may be fostered to a smaller litter, **if necessary certain rules are respected:**

- no more than three or four young rabbits should be given to a foster mother;
- the maximum age difference between the foster doe's litter and the fostered young should be 48 hours;



Weaning

1-Before weaning period

The young rabbits begin to eat solid feed at 18 to 20 days



During weaning

reduces postweaning stress
for the young

breeder checks the health
of the young rabbits,
culling any that are
undersized or sick.



litter are withdrawn at the same time and
placed six to eight per cage in the area set
aside for fattening.

Post weaning

- The cages must be very clean
- **Same-age cages (maximum age difference one week)** with all rabbits put in the cage the same day.
- -Rabbits soon establish a social hierarchy in the cage and any new introduction is a source of conflict.
- During the transfer operation the **breeder checks the health** of the young rabbits, culling any that are undersized or sick.



Housing and equipment

- **BIOLOGICAL CONSIDERATIONS**
- **The design of rabbit housing is governed by the behavioural characteristics of the animals and their reactions to environmental temperature and humidity.**





Rabbit behavior

- 1-Territorial behaviour
- Rabbits mark their territory, their fellows and their offspring with the aid of a **gland found in hair follicles under the chin.**
- The rabbits **dig burrows** in which they take shelter and for parturition
- Any new and sudden change (noise, smell) will make the first rabbit in the group to notice the disquieting novelty thump his hind foot to warn his fellows of danger.

Rabbit behavior

2-Feeding behaviour

- Laboratory research has shown that rabbits will **drink and eat at any time** in the 24 hours, although they tend to feed nocturnally.
- Feed and water should therefore be available over periods of several hours, whether feed is rationed or ad lib.
- From the age of **three weeks young rabbits** begin to eat the same feed as the doe.



Rabbit behavior

Coprophagy

- The normal healthy rabbits form two kinds of fecal matters. One type is that normally seen on the floor of the hutch. The other type is never normally seen because it is taken directly from the anus by the rabbit and swallowed whole. Thus, it is some times referred as pseudorumination
- The coprophagous matters contain
- **3.5 times as much crude protein** as the normal pellets, but only **a third of the fiber** and contain
- **considerable amounts of B complex vitamins**
- Rabbits **begin** the practice of coprophagy when they start eating solid feed at about **3-4 weeks**

Rabbit behavior

3-Maternal behavior

Nest box behavior:

Several days prior to parturition, the doe will collect the hay, straw, or similar materials provided her and carries it to the nest box. With this material, a nest is constructed. Fur from her body is plucked out and interwoven with nesting material.

Management???????????

Nursing

During lactation, the time the doe spend with her young range from 2.7-4.5 minutes and is ended when the doe moves away from the young. Nursing generally takes place during the early morning.

Retrieving:

Retrieving, while common among most mammals, does not occur among rabbits

Nest building





Curious



Alert



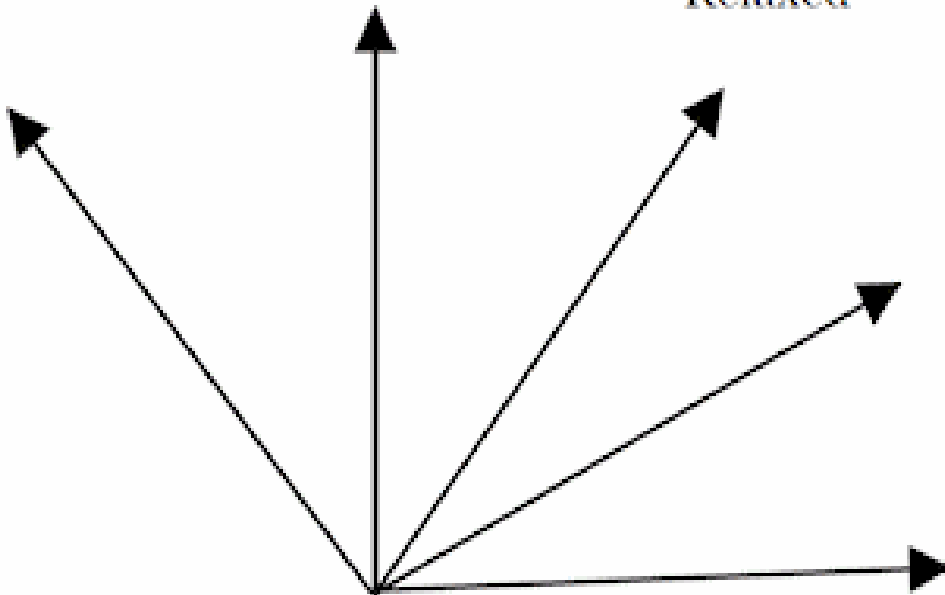
Relaxed



Nervous/
Aggressive



Relaxed/
Sleepy



Abnormal behavior of Rabbit

Vices:

1) Fur chewing:

Occasionally groups of young rabbits will chew one another's fur, overcrowding may be a predisposing cause, but a shortage of **fiber** is likely to be the exciting cause.



2) Cannibalism in breeding does:

Some does will kill and eat some of their young, usually shortly after birth. When whole litters are killed and eaten, it is generally because the doe was **frightened** or **disturbed**, although it has been suggested that a **shortage of protein during pregnancy or drinking water at the time of parturition** may also be a cause.



- **Viciousness in rabbits:**

Viciousness is usually the result of rough hand. Some does are very temporarily vicious, either to the breeder or to their young towards the end of weaning, but this can be eliminated by putting her to the buck.

- There are several **causes** for this abnormal behavior in the doe:

1-Some of the cases are due to **deficiencies in rations.**

2- **Inadequate moist food**, either in the form of green food or water.

Environment

Temperature

□ If the temperature is high (above 25° to 30° C)

- The animals stretch out so they can lose as much heat as possible by radiation and convection

(management defects)



- Raise their ear temperature.

Environment factors

Temperature

- These systems work between **0 and 30° C** but when ambient temperatures reach (and mainly when they exceed) **35° C** rabbits can no longer regulate their internal temperature and hyperthermia sets in.
- At birth, **young rabbits cannot modify their body** shape by curling up.
- In fact, if ambient temperature varies during the day the young rabbits will **move apart** when the temperature is high and **huddle back together** when it goes down.
- But a sudden temperature drop may well exhaust their thermoregulation potential before they can get back in the huddle and they can die



1

- Ventilation

- The rabbitry must have a certain minimum of ventilation to evacuate the harmful gases given off by the rabbits (CO₂), to renew the oxygen and get rid of excess humidity and excess heat given off by the rabbits.

Environment

Humidity

- Rabbits are sensitive to very low humidity (below 55 percent) but not to very high humidity.
- When the temperature is too high (close to the rabbit's body temperature) and humidity is also high, **not much latent heat** can be exported as water vapor through evaporation.

Environment

Lighting

❑ **Duration:** Twenty-four hour light trials caused reproduction disturbances in rabbits. It therefore seems best **to limit the duration to 16 hours.**

❑ **Intensity:** at least **30 to 40 lux**. A much weaker light (5 to 10 lux) can be used for young rabbits

- Very young rabbits do not really need light, but 15 to 16 hours per day do no harm.

- Twenty-four-hour lighting, however, can cause disturbances, such as diarrhoea unrelated to changes in the rate of **caecotrophy???????**.

• General points of management :

- 1- Feeding of rabbits play an important role in right breeding, fertilization, pregnancy , parturition and litters nursing addition to assist disease control. Pregnant does should be provided with a good supply of well balanced ration beside fresh grasses.
2. Clean water should be offered successively several times a day in clean water troughs.
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Number of mammary glands in laboratory animals:

Rabbits: 8-10.

Guinea pigs: 2.

Hamster: 12-14.

Mouse: 10.

Rats: 12.