

## Elevated pen system for breeding and growing rabbits



### Introduction

In October 2023, the EURCAW Poultry-SFA visited an intensive rabbit farm with elevated pen system. The farm is part of an integrated company which is driving the adoption of such system, along with increased technological innovation, to improve the welfare of rabbits. In particular, farmers who decide to renew their equipment by acquiring these new technologies can be included in the company's labelling program that allows them to have economic benefits based on welfare and production parameters.

The farm houses about 2,000 breeding rabbits and 8,000 growing rabbits. The animals are raised in two separate insulated sheds (Figure 1), which are used alternately for breeding and growing phases (dual band); this allows for an all-in all-out approach and to respect a sanitary empty period of about one week between flocks of growing rabbits. Before the entrance to the barn, it is required to wear protective clothing (coveralls, footwear) and to disinfect the footwear (Figure 1).

- When temperatures reach or exceed 30 degrees, the cooling system is activated to mitigate heat stress.
- The feeding system is automatic, and feed consumption is monitored daily. Animal growth is monitored through an automatic weighing system in some of the pens that also allows for adjustment of ventilation (calculated in kg meat/m<sup>3</sup>/h) and the amount and type of feed. Each rabbit category has its own specific type of feed.
- An alarm system activates, alerting the farmer via cell phone, in case the automatic systems (i.e., the ventilation system or the feeding system) do not function properly. In the case of lack of general electric supply, a back-up electrical generator is available. Most of the energy comes from the solar panels placed on the roof of the farm.
- Mortality is around: 2-3%. Moreover, outbreaks of disease are very uncommon, which allows for extremely reduced antibiotic use, including cycles completely antibiotic-free.
- Droppings are removed through automatic scrapers once or twice a day.



Figure 1. Outside the barn and disinfection procedures before entrance

### General characteristics of the farm

- Natural light is provided.
- Forced ventilation equipped with a cooling system is provided (Figure 2 and 3).
- Environmental detectors for monitoring gases (CO<sub>2</sub> and NH<sub>3</sub>), temperature and humidity are positioned in each barn (Figure 4).
- Ventilation is set according to the weight and number of the animals; its intensity is adjusted in order to avoid drafts and to allow ventilation of even the lowest areas of the cages at the same time. The temperature is set to be maintained around 21-25 degrees.



Figure 3. Forced ventilation fans



Figure 2. Cooling system



Figure 4. Air quality and ventilation parameter control panel



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## The elevated pen system

The elevated pen system is a modular open-top system, which can be used for both breeding and growing rabbits.

Specifically, it is used for the housing of one reproducing doe from a few days before kindling until the end of lactation of her litter and then, after removal of some items and after joining four single modules, for group-housing of growing rabbits (Figure 5):

- For the **breeding phase**, the system allows the single litter to be reared in single module, measuring 1050 cm x 685 cm, and a platform measuring 415 cm x 685 cm.
- For the **fattening phase**, four modules are joined to raise four litters in a group, resulting in a 1050 cm x 2145 cm park and a platform area of 415 cm x 2145 cm.

Each module is equipped with a semicircular feeder and two nipple-sized drinkers. The floor and the platform are made of slatted plastic, the latter removable for easy cleaning.

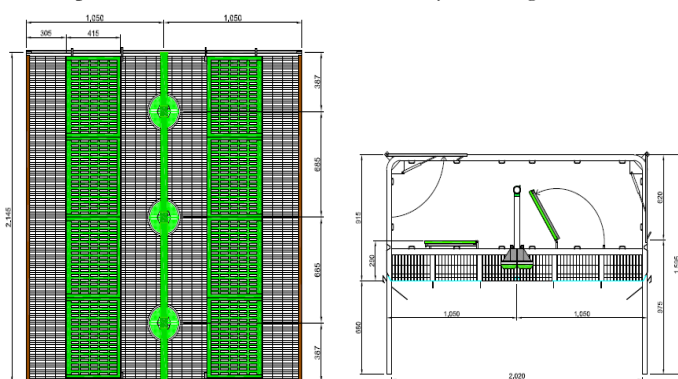


Figure 5. Dimensions of the elevated pen system used by the Italian farm (source: Meneghin)

## Breeding barn

During the breeding phase, individual modules are used and equipped with a removable nest containing wood shavings. However, at the time of the visit it could not be seen as it had been removed. An example of a nest without nesting material is showed in Figure 6. The rabbits are inspected at least once a day and handled to get them accustomed to humans.

A 42-day cycle is used in this farm: Females are inseminated at about 11 days postpartum, and parturition occurs on days 30-31. During the first two days after kindling, cross-fostering is applied to have an equal litter of up to 9 individuals. In this farm, the number of kits per doe is sufficiently low for the breeder to avoid culling a surplus of kits. Controlled lactation is performed in the first 15 days postpartum by means of a movable wall that allows the nest to be closed and opened to let the doe nurse her kits once a day for not less than one hour (Figure 6).

Weaning takes place at 30 days post-partum. During our visit, the kits were about 20 days old, and they just started to move freely and use the platform (Figure 7). They moved well and did not slide inside the splits in the plastic flooring (Figure 7 and 8). None of the does inspected had pododermatitis. The perforated side wire walls allow the does to have visual and tactile contact with each other through the netting (Figure 8). The observed rabbits were clean, calm, curious and bright-eyed (Figure 9). The cages and the environment were clean.



Figure 6. Plastic nest (marked with a red line) with a movable wall to allow controlled lactation. When in use, wood shavings are used as bedding material.



Figure 7. 20-day-old kits on the platform



Figure 8. Kits drinking from the nipple drinker (under the platform)



Figure 9. Doe on the platform, curious and interacting with humans



# Elevated pen system for breeding and growing rabbits

## Fattening barn

The growing rabbits are raised in the park system from 30 to 66-70 days of age. During this period, four consecutive breeding modules are combined into a park, allowing four litters of up to nine weaned kits to be raised. Each park therefore possesses a long platform that runs along its entire length, three feeding points and six watering points (Figure 10, 12). The stocking density is kept at about 32 kg/m<sup>2</sup> at the end of the fattening period. The greater space available and the reduced risk of diseases result in faster growth, shortening the slaughter age, and thus also the risk of aggression which normally increases with age, is reduced.

Various **enrichment elements** are provided in each pen (Figure 11):

- one stick made of non-resinous wood
- one metal cage with cubes of alfalfa hay (Figure 12)
- one hiding area (replacing the nest)

During our visit, we observed that the animals were clean and had no visible injuries despite being near the end of their cycle (about 60 days old); they were very active, they could run, stand up, jump on the platform and make at least 3 consecutive jumps, they were curious and not afraid of humans (Video – QR code).

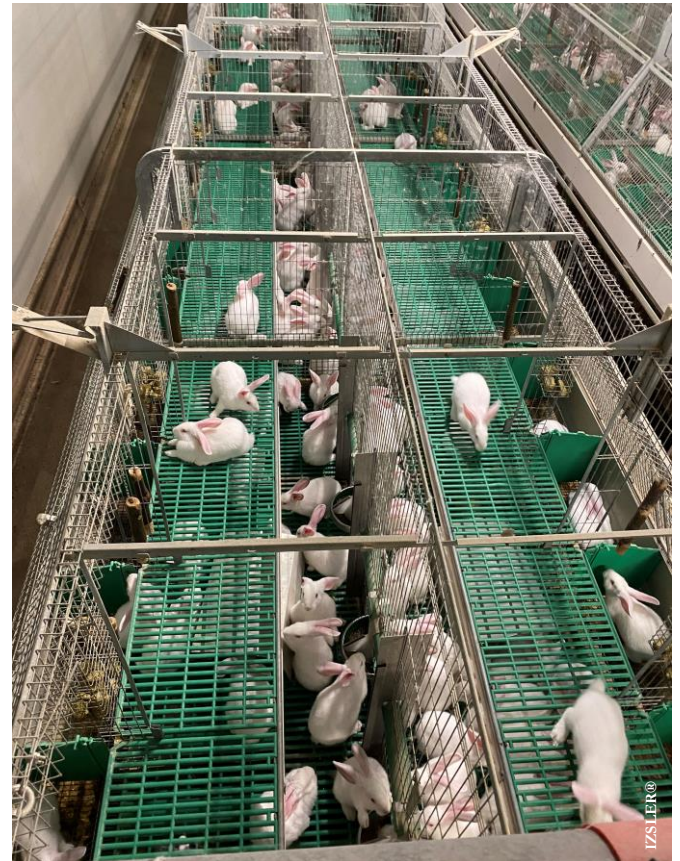


Figure 10. View of two elevated pens divided by a wire mesh wall



Figure 12. Elevated pen for growing rabbits – metal cage with cubes of alfalfa hay highlighted in red

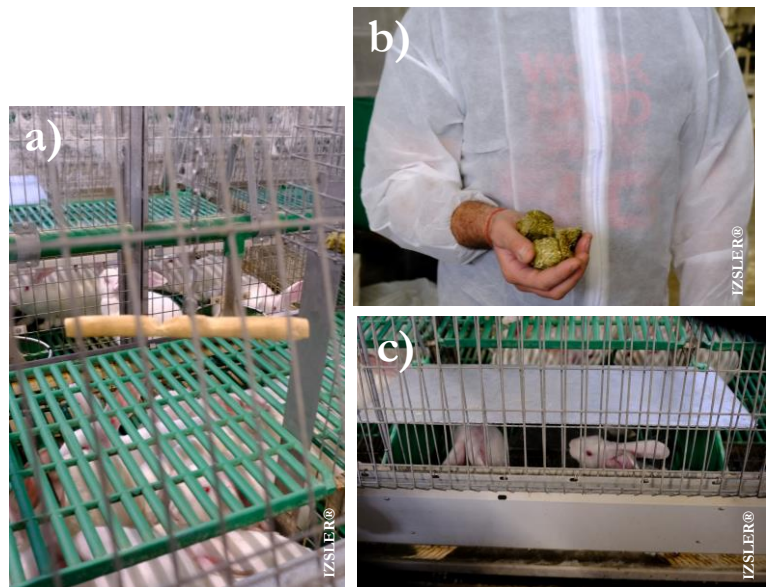


Figure 11. Enrichments provided in each pen: a) Wooden stick; b) cubes of alfalfa hay; c) hiding area.