

Welfare of Breeding Rabbits

Breeding rabbits (i.e. reproducing does and bucks) are most commonly kept in individual cages. They experience poor welfare due to barren cage housing, social isolation, disease and injury. This information sheet outlines the main welfare issues and describes potential solutions to address these.

Individual housing systems

Barren cages

Almost all breeding rabbits are kept in individual cages. These are normally small and barren, originally intended to reduce disease and prevent aggression between breeding females (does) or males (bucks). There are no legal minimum requirements, but barren cages are typically 34–48cm wide and 60–65cm long. EFSA (2005) recommends a minimum length of 65–75cm and width of 38cm, excluding the nest box, so that does can lie stretched out, and for does to be given enrichment and visual contact with other does. However, this still deprives does of many of their behavioural needs. The space required by does increases during lactation as the young (kits) grow, so that they all have space to lie stretched out and exercise. A doe is housed with her kits until they are 3–4 weeks old. Does are usually provided with some bedding material for nest building and will use their own fur too.

Enriched cages

Enriched cages house one doe with her litter. A nest box is fitted to the front, which provides bedding and shelter for the kits, accessed by a pop-hole so the doe can move between compartments. Nest boxes reduce the space available for the doe. At weaning they are removed, which provides more space. Enriched cages provide a wooden gnawing block and a platform, allowing the doe to escape her kits as they get older. Typically a section of plastic floor covering is provided, but most of the flooring is wire and the section provided is not enough to reduce hair loss and calluses (Bujis *et al.* 2014a). Enriched cages are still very restrictive for space and enrichment, and do not meet the welfare needs of breeding rabbits.

Semi- underground systems

Semi-underground systems are used in countries such as Italy. Does are kept individually with a concrete box built into the ground with a nest and enclosed space, connected to an open-air cage via a tube (which they use for resting). The outdoor cage has plastic flooring, natural light and ventilation, and can be used to escape the kits while they are young. There is no platform and while there is more comfort than barren and enriched cages, space becomes limited as the kits grow older and there may be insufficient enrichment.

Free range and Organic

Outdoor mobile systems are used with one doe and her litter until weaning. An indoor section provides a nest, where straw may be provided in the winter for thermal comfort. Does are housed individually between litters, lacking social contact. Organic production remains very niche and the welfare standards vary widely between EU countries. Organic breeding rabbits can be kept in cages in Italy; whereas in countries such as France, standard indoor cages are prohibited in organic production and does are kept in large mobile outdoor grass-based cages.

Group Housing

Natural Behaviour

Keeping does in groups allows them positive social interactions, such as allogrooming and lying together; but also involves agonistic interactions to defend their litter, territory or position in the social hierarchy (EFSA 2005). Rabbits are social animals, naturally living in stable groups of usually two to nine adult females, one to three adult males and their offspring. Serious aggression is rare once a stable hierarchy has been established, and strong relationships develop between individuals, who remain near each other and rest together. Aggression is defused because does can escape or display submissive behaviour (Hawkins *et al.* 2008). Does can be particularly aggressive when lactating, but keeping them in pairs (or small groups) when they are not lactating may reduce stereotypies and social isolation distress (EFSA 2005). In farming systems, low ranking does need to be able to escape dominant does and withdraw from social contact. This can be achieved by providing adequate space, refuges and partitions (Held *et al.* 2001, Hawkins *et al.* 2008). Aggression levels are higher when does are first grouped – when they should be closely monitored - but can settle if these provisions are met. Stable grouping is also very important and re-mixing should be avoided when possible.

Current status

Growing rabbits are often housed in pairs or groups, but breeding does and bucks are usually kept in individual cages, denying them the opportunity for social interaction and leading to stereotypic behaviour. Currently there is no widely-used housing system which successfully keeps does in groups. From 2021 in Belgium, all does must be housed in groups, provided research into such systems has a positive outcome. It is often stated that the costs of group housing outweigh the benefits (Szendro *et al.* 2012), therefore does continue to be housed individually. Mortality of new born kits is usually higher when does are kept in groups, as does are aggressive and can kill other does' kits (infanticide) if given access to other nests (EFSA 2005). Doe aggression is also a cause of culling (EFSA 2005).

Trialled systems

Research has demonstrated that breeding rabbits can be housed successfully in groups if they are given sufficient space and adequate nesting facilities to avoid problems with aggression. Different types of group housing system have been trialled by scientific researchers and in commercial practice. One example comprised: an individual nest box for each doe's litter, accessed using an electronic ear tag; a communal group area, an elevated platform and a creep area for kits (Ruis *et al.* 2006, Rommers *et al.* 2009, Szendro *et al.* 2012). However, the birth and weaning rates were low and injury due to aggression was still high. Current research in Belgium and the Netherlands is investigating whether semi-group housing (grouping does only when not lactating) is more effective; and the design of housing and hiding places to reduce doe aggression.

Preliminary research has revealed that does can be grouped in park systems designed for growing rabbits. A study which compared keeping does in the enriched cage with does in park systems at two farms found predominantly mild (score 1) skin lesions, in 35-38% of does. Deeper lesions (score 2) were observed in a small number of individuals, and wounds (score 3) were not found. Mixing does and kits around 18 to 21 days showed no substantial problems, and when the housing was adequate to determine a social order among does without causing considerable damage (Rommers *et al.* 2014). Buijs *et al.* (2014a) trialled semi-group housing pens in Belgium, where does were housed communally for 21 days (to provide space for locomotion and social contact), and individually for the other 21 days of the reproductive cycle (to minimize doe-doe and doe-kit aggression). Bone quality was improved in semi-group housing, whilst hair loss and callus formations were worse in does kept on wire than plastic flooring (65-68 vs. 5%). There was no effect of housing on spinal deformation, though does seemed more active in semi-group housing systems. In a different trial, Buijs *et al.* (2014b), it was found that rearing rabbits communally as kits with other does and their litters changed their

behaviour when they were regrouped as adults – reducing the time spent near conspecifics and increasing attraction to their home unit. Whether early communal rearing can reduce aggression among adult does requires further study: the rate of inter-doe aggression in this study was 1.7% in the first 24h after mixing and 0.6% in the second 24h.

Important elements for group housing does:

- Housing in small groups, ideally stable from birth through to slaughter
- Providing ample space and hiding spaces to escape aggression, e.g. platforms, tubes, wooden boards
- Separating does around kindling, regrouping them with known individuals
- Keeping a buck with the group can reduce aggression
- Offering does the choice to be alone too – e.g. with individual enclosures adjoining a communal space

More research work needs to be done in this area to find a successful solution for group housing does. Optimal housing is likely to include keeping does in small stable groups, with a choice to be alone when they prefer.

Enrichment

Housing which lacks sufficient enrichment leads to abnormal stereotypic behaviours; these include bar biting, over grooming, redirected digging and head swaying (Podberscheck *et al.* 1991, Gunn & Morton 1995).

Maternal behaviour may be prevented if does are denied free access to the nest; conversely they may be unable to escape their kits as they grow older (Hawkins *et al.* 2008). Natural light is important for does, as nursing behaviour is triggered by changes at dawn and dusk (Seitz *et al.* 1998, Hoy and Seltzer 2002). Naturally does feed their kits for only 2-3 minutes per day, leaving them for the rest of the day to avoid attracting attention to them – this is still seen in farmed rabbits. The provision of enrichment for does should be the same as given for growing rabbits, and includes platforms, a hay or straw rack, and wooden gnawing objects.

Disease and Injury

Respiratory and enteric diseases cause acute pain, whilst chronic conditions such as ulcerated feet and hocks, mastitis, mange, ringworm and abscesses cause prolonged suffering. Breeding rabbits kept for long periods on wire floors commonly develop painful sores on their footpads and hocks; which are so severe they are the third highest cause of culling (EFSA 2005). Breeding does also suffer from loss of body condition and metabolic diseases due to their intensive reproductive cycle. The average lifespan of a doe is five to six litters. Mortality is very high, typically 100% of does die or are culled and replaced every year. The main causes of mortality are enteric and respiratory diseases and the main reasons for culling is reproductive failure, due to infertility or mastitis.

Breeding males

Most of the rabbit industry now uses artificial insemination, and bucks are kept for semen collection either at the fattening farm itself or at a breeding farm. Breeding males have been selectively bred for increased growth rate, which can lead to chronic lameness. Bucks are kept in individual cages from maturity around 12 weeks of age, to prevent fighting. They experience many of the same welfare issues as for does, including feet and hock injuries from the wire flooring. Occasionally smaller farms practice natural mating, keeping one buck with a group of up to 8 females including their litter pre-weaning.

References

- Buijs *et al.* (2014a) – Effects of semi-group housing and floor type on pododermatitis, spinal deformation and bone quality in rabbit does. *Animal*, 8, 1728-34.
- Buijs, S., Maertens, L., Tuytens, F.A.M. (2014b) Communal rearing of rabbits affects space use and behaviour upon regrouping as adults. Proceedings of the 48th Congress of the International Society for Applied Ethology, 29 July – 02 August, Vitoria-Gasteiz, Spain.
- EFSA (2005) European Food Safety Authority, Scientific Panel on Animal Health and Welfare. The Impact of the current housing and husbandry systems on the health and welfare of farmed domestic rabbits. *The EFSA Journal*, 267, 1-31.
- Hawkins, P., Hubrecht, R., Buckwell, E., Cubitt, S., Howard, B., Jackson, A., Poirier, G.M. (2008) Refining rabbit care. A resource for those working with rabbits in research. RSPCA, West Sussex and UFAW, Hertfordshire.
- Held, S.D.E., Turner, R.J., Wootton, R.J. (2001) The behavioural repertoire of non-breeding group-housed female laboratory rabbits (*Oryctolagus cuniculus*). *Animal Welfare*, 10, 437–443.
- Hoy, S., Selzer D. (2002) Frequency and time of nursing in wild and domestic rabbits housed outdoors in free range. *World Rabbit Science*, 10, 77-84.
- Hoy, S., Verga, M. (2006) Group Housing of breeding does. In: Maertens, L., Coudert, P. (Eds.) Recent advances in Rabbit Science. IVLO, Melle, Belgium, 99-105.
- Gunn, D., Morton, D.B. (1995) Inventory of the behavior of New Zealand white rabbits in laboratory cages. *Applied Animal Behaviour Science*, 45, 277-292.
- Podberscheck, A.L., Blackshaw, J.K., Beattie, A.W. (1991) The behavior of group penned and individually caged laboratory rabbits. *Applied Animal Behaviour Science*, 28, 365-373.
- Rommers, J., de Jong, I., Reuvekamp, B., de Greef, K. 2014. Wageningen UR Livestock Research, Rapport 749.
- Ruis, M. (2006) Group Housing of breeding does. In: Maertens, L., Coudert, P. (Eds.) Recent advances in Rabbit Science. IVLO, Melle, Belgium, 99-105.
- Seitz, K., Hoy, St., Lange, K. (1998) Studies on the influence of various factors on sucking behavior in domestic rabbits. *Berlin and München Veterinary Weekly*, 111, 48-52.
- Szendro, Z., McNittt, J.I. (2012) Housing of rabbit does: Group and individual systems: A review. *Livestock Science*, 150, 1-10.