

Veepro dairy management



The width of the cubicle is 1.15 meters

Layout and cow comfort

Peace and comfort in the cubicle house are essential for a cow. These factors increase productivity and health. Therefore when planning the cowshed it is important to think of cow comfort. This concerns the cubicle, the choice of feed rack, floor and bedding.

The better the cowshed matches the natural environment, the better the cow feels.

You can learn from the behaviour of the cows if they find the cowhouse a comfortable place. The better the cowshed matches the natural environment, the better the cow feels. In the wild, a field for instance, there is 'hierarchy' and 'herd behaviour'. Cows graze together and they lie down to ruminate together. In order to make this possible in the

cowshed each animal needs a stall to lie down and a place to feed. This implies that overcrowding is not desirable. However, how comfortable the cowshed may be, inside herd behaviour is different from outside behaviour. In a freestall with feed available all day, the animals are rarely all feeding at once, or all lying down. There is no good explanation for this. It might

be the social rank within the herd which plays a role. Or it might be that the limited area of a shed, even though this space in itself is clear enough, causes a different behaviour. The fact that the cows of a herd have differences in dominance, requires attention for the dimensions in the shed and by the feed racks. Free stalls should provide sufficient space to allow cows to rise

and lie down easily. A cow rising naturally from a lying position lunges forward about sixty to seventy centimeters in transferring most of her weight forward to help raise her hind quarter. Good bedding systems and materials are essential for cow comfort. They contribute to better udder health and help to prevent leg injuries and that the cow likes to lie down.

Cubicles



Cow stands up and lunges forward



Cow tilts her hind quarter



Cow stands with neck to movable shoulder rail. The hind legs need to stand on the passage way

A cow lies down to ruminate 8 to 12 times per day. Each time for about forty-five minutes. She prefers to chew the cud while lying down. If she stands up to ruminate, usually with the fore-quarters in the cubicle, there is something wrong. Peace and comfort during the process of chewing the cud are very important needs of a (productive) cow.

Just comfortable bedding is not enough. Getting-up and lying-down movements must be without pain or discomfort. When a cow suffers pain or discomfort this may be a barrier the next time she wants to lie down.

Causes

Lack of comfort in the cubicle is mostly caused by:

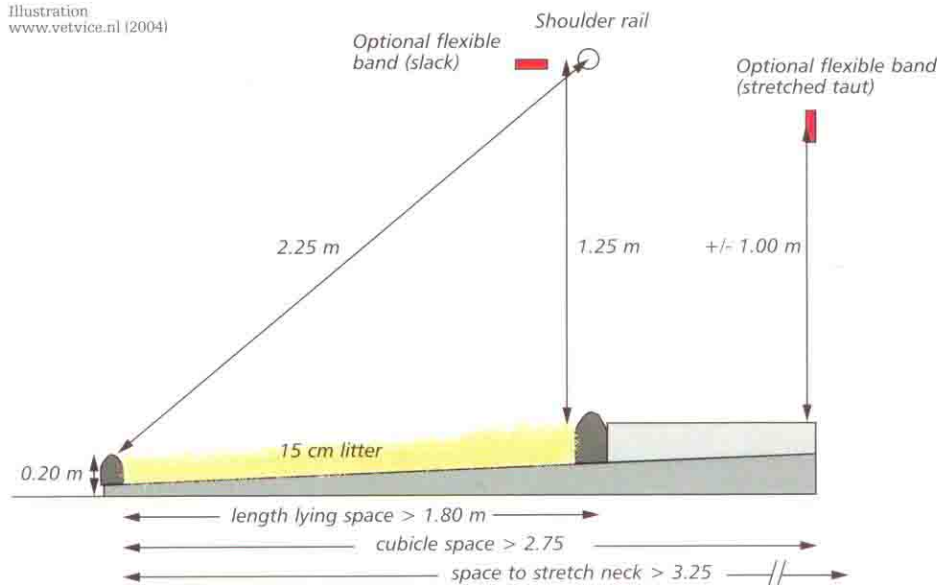
- Adjustment of shoulder rail
- Hard floor
- Design of the partitions (pipes pressing into bony parts, such as the backbone, ribs or hipbone when lying down)
- Little space for the head
- Slippery rear edge.

The position of the animals in their cubicles or stalls must be correct, i.e. enough

backwards to prevent pollution of the cubicle. A knee rail is more comfortable than a shoulder rail. Instead of a shoulder rail a flexible cubicle band can be used. Because of their constructive strength shoulder rails are necessary for most cubicle partitions. The ideal width of a cubicle for cows of 700kg is about 1.15 meters.

Cross section cubicle

Illustration:
www.vetvice.nl (2004)



A drawing of an ideal cubicle for a 700kg HF cow. The cubicle is cleaned every three days and the litter is replaced once a week. The dry litter bedding (15 cm deep) is shut in between a knee rail and an edge at the back on a concrete surface with a fall of 3 to 5%. This bedding offers plenty of head space to go forward to get up. In addition, there must be no obstacles within about 3.25 m. from the back edge. Shoulder rail and head rail consist of a flexible band. This prevents animals from painful bumps when lying down and getting up. The function of the shoulder rail in the drawing is purely structural.



Inflammation at pressure point



A rising cow will easily bump her crutch

Prevent a painful blow in the neck



Bedding

There are different types of bedding systems. The choice is often an economical one, depending on the price of litter. Instead of litter mats mattresses are also used, but always some litter is needed as well. Animals require a clean, dry and comfortable environment. In hot countries they want a cool environment as well. Then mattresses and mats are no option, as they are not cool. Nice warm beds have the disadvantage that they cause cows to become milk leakers. If it is warm animals go and find a wet place to lie down. As a result, they are more prone to diseases. From the point of hygiene a wet place is a bad place to lie down.

Dimensions

For comfort of lying down the size is very important. A cubicle offers the cow protection in the cow house. On the other hand, the cow is also forced into a position that is the least labour-intensive for the farmer. Many animals on few square meters and stalls that are kept clean with a minimum of work. In the initial development of the cubicle the attention for the animal aspect was limited. Measurements with respect to the animal were not introduced until the past decade.

Lying down/getting up

With most types of cubicle partitions a cow in a lying position can put her belly flank in the next cubicle. The spine of animals in lying position is often pressed into the curved tube sections of the partition. This is usually painful. In particular, lean animals are prone to getting infections at the pressure points. Correct adjusting and a proper choice of the partition in relation to the development of the cows can prevent much suffering.



Deep litter with sawdust

A flexible shoulder band at the top of the cubicle or shoulder rail which can move up and down can be used. Especially during getting-up movements this may prevent a painful blow in the neck and an injury or

inflammation. Yet the band is effective enough to keep the animals in the correct position. A rising cow (lifting hind quarters first then fore-quarters) will easily bump her crutch or backbone into the rear tube of the partition.

When standing up, the cow will lunge forward and raise and tilt her hind quarters in one movement. Painful experiences in the past are often the reason why animals do not dare to lie down and are anxious when getting up.

Bedding with sand and tires to keep the sand

Costs

	yearly costs	investment
Sand	€ 1,120	€ 0
Straw	€ 2,930	€ 0
Sawdust	€ 3,300	€ 0
Rubber mats	€ 1,670	€ 4,550
Mattress (recycle)	€ 1,820	€ 6,000
Mattress (new)	€ 2,120	€ 7,570
Waterbed	€ 2,600	€ 10,650

Calculation Research Centre Lelystad, Lowcost farm 2001

Advantages and disadvantages bedding

	minuses	plusses
deep litter (sawdust or straw)	- much litter required - expensive - cleaning is labour-intensive - much dust	+ comfortable + low investment + ventilating (warm and cool)
rubber mats	- significant initial investment - less comfort	+ relatively cheap
mattress/waterbed	- high investment - limited life - some cows leak milk - insulating (too) warm	+ high lying comfort + insulating (in cold conditions)
sand	- labour-intensive - polluting/filling up pits - high wear on slurry pump system	+ hygienic + comfortable

This diagram shows the strengths and weaknesses of the different types of bedding

Passageways

Wide alleyways are of great importance. They provide peace in the herd. They offer sufficient escape routes and alternatives for cows of low social status that are to give room to cows higher in the rankings. A passageway between two rows of cubicles must be at least 2.50 m. In newly constructed housing a width of 3 m. is not unusual.

The space required behind a feed rack is even larger: at least 3.30 m. The cow feeding at the gate needs about 1.70 m. Behind her back, two cows must be able to pass each other, which takes 2 x 80 cm. In newly constructed accommodation farmers nowadays take 3.50 to 4 m. Especially with the "open sides" of the cubicles facing

the feed rack plenty of room is essential.

Floor and claws

Passage floors in the cowshed are very decisive for comfort. In straw or sand yards where floors are springy there are few incidents of claw lesions. In cowhouses with concrete (slatted) floors a surface that is sufficiently rough is of

great importance. Claws, hips and udders of lame animals, animals in heat and newly-freshened animals may suffer. Slipping occurs too, with serious consequences. Today the use of a rubber surface is a good opportunity to increase comfort. This type of surface is also popular in milking parlours, where animals have to take sharp turns.



Passageway covered with rubber surface. Cubicles covered with mattress. The back edge keeps the sawdust



Passageway between two rows at least 2.5 meter



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