



Get your groove on

Well designed and placed concrete grooving can make a significant improvement to cow health, welfare and reproductive performance. So what should producers consider?

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Flooring in and around cow housing must be durable, hygienic and cost effective, as well as providing ease of cleaning, good slip resistance, and encouraging good locomotion. Cows spend a significant amount of time standing and walking on concrete surfaces, which means that the condition of these floors has a direct impact on hoof health, cow behaviour, and ultimately, herd productivity. But cows need grip underfoot to move safely, particularly when rising from a standing start. The science behind this is known as the coefficient of friction – a measure of how easily one surface slides across another.

"Dairy cows require a coefficient of friction between 0.4 and 0.7 to walk confidently," says Kingshay's Sarah Bolt. "A standard concrete floor, however, typically offers just 0.35. That may not sound like a big difference, but it's enough to make cows hesitant, unsteady, and more prone to slips and falls. On smooth concrete they can tend to creep along hesitantly with their heads down, looking where they are placing their feet. But once grooves are in place cows

walk with confidence, and producers will also see more bulling behaviour. Grip underfoot is absolutely key to cow welfare and reproductive performance," she adds

Hidden impacts

The dangers of smooth concrete, particularly when wet or contaminated with slurry, go far beyond obvious slips. Visible effects of poor flooring include: reduced feeding and dry matter intakes, because cows may avoid crossing slick surfaces to access feed; a decline in fertility and oestrus activity, due to a fear of slipping; altered gait and hoof wear because cows shorten their stride and splay their feet to gain balance, which puts pressure on the inside claw horn and increases the risk of lesions; and injuries. "White line disease, sole bruising, thin soles and even upper leg injuries can all be linked to poor flooring," explains Ms Bolt.

"Some studies have shown that 10% of cows display no bulling signs at all on slippery floors," she adds. "Research has also shown that cow activity can drop by up to 15% on smooth concrete. That inactivity translates directly into lost milk production and reduced reproductive performance."

Grooving is one of the most effective ways to improve concrete flooring for dairy cows. Properly placed grooves help to channel moisture away from the surface and, most importantly, provide the traction cows need to move safely and confidently.

There are two main methods: stamped grooves, which are formed when the concrete is wet; and cut grooves created after the concrete has cured, usually made using

diamond-blade saws. "While it may be cheaper and more convenient to form or stamp grooves into wet concrete using a V-shaped float, cut grooves create a sharper edge and last far longer," says Ms Bolt. "Stamped grooves 'round off' quickly with slurry scraping and that crucial grip is reduced. A good set of cut grooves will persist for years before resurfacing is needed."

Resurfacing floors

Even the best flooring wears down with time and use. Routine manure scraping, sand bedding, and automatic scrapers all gradually polish the concrete surface. Most dairy units will need to resurface floors every six to eight years, depending on traffic and bedding type.

"Regular inspection is vital," stresses Ms Bolt. "If you notice cows slipping more often, becoming hesitant in collecting yards, or grooves are wearing smooth then it's time to act."

The effectiveness of grooving depends heavily on getting the size, shape and pattern right. Penn State Extension recommends 1.2cm x 1.2cm with 10cm on centre. But it does acknowledge that increasing the width to 2cm may be beneficial for easier cleaning and for herds using organic bedding.

Groove pattern will depend on the area. Straight grooves are standard but in high-risk areas, such as cross-alleys or near water troughs, diagonal grooves can be added with spacing of between 10cm and 13cm to create a diamond pattern. "This improves grip where cows often turn

sharply," says Ms Bolt. "But this pattern should not be used across entire pens because it can lead to excessive hoof wear."

Shape matters too and vertical-edged grooves are preferred to V-shapes. The latter can twist the hoof wall and result in claw injuries.

Producers should also know that not all grooving is equal. "As with many investments, you get what you pay for," stresses Ms Bolt.

"Never cut corners on flooring. It's the surface that cows spend a significant proportion of their lives walking and standing on. So good grooving is an investment in herd health and farm profitability." |

Grooving tips

- Match the groove to the risk: straight grooves for low-risk areas and diamond patterns for high-risk areas
- Avoid over-grooving: 'excessively aggressive' surfaces increase sole wear and risk ulcers. Balance is key
- Plan for drainage: good groove design also channels slurry away, keeping surfaces cleaner
- Maintain regularly: re-groove before the surface becomes dangerously smooth
- Consider cow flow: where do cows hesitate or bunch? Grooving pressure points can reduce stress and injuries

Sarah Bolt:
"Cow activity can drop by up to 15% on smooth concrete"



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