

Artificial grass increases dairy cows' walking speed

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Introduction

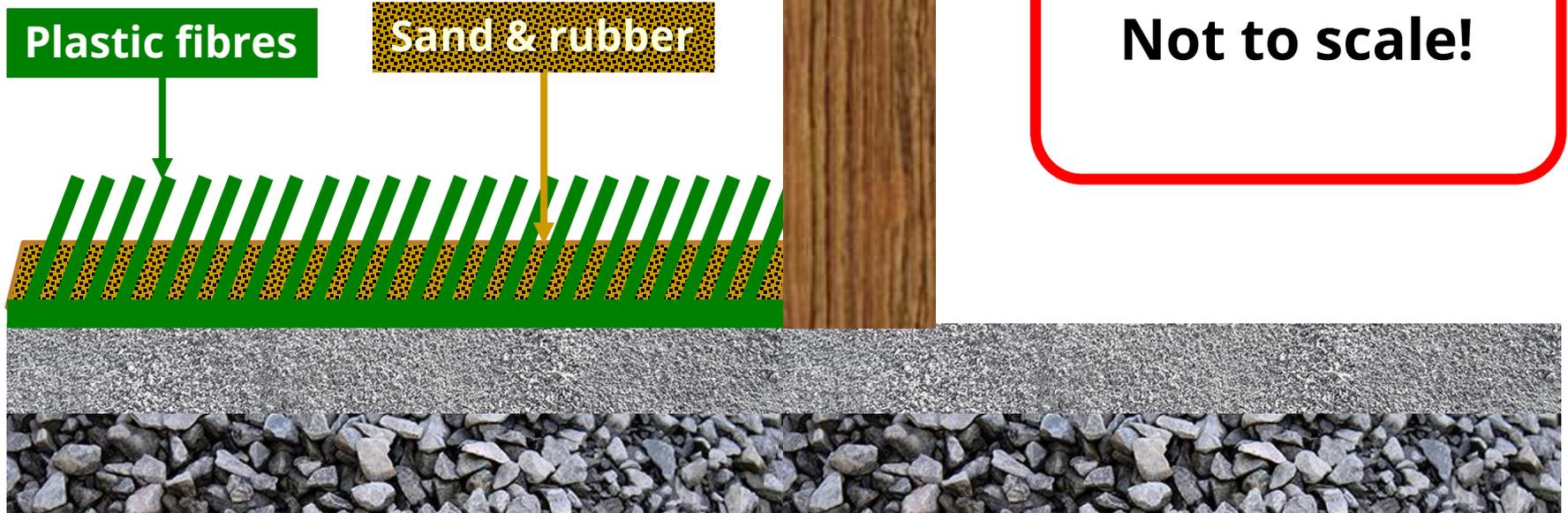
- Dairy cows walk long distances between parlour and pasture
- ↑ walking speed = more time for grazing
- ↑ walking speed & ↑ stride length = more comfortable surface (barn floors)
- Differences in use and materials

Hypothesis

Dairy cows walk faster & with longer strides, on a softer laneway (artificial grass) than on a standard laneway (stonedust over rubble)

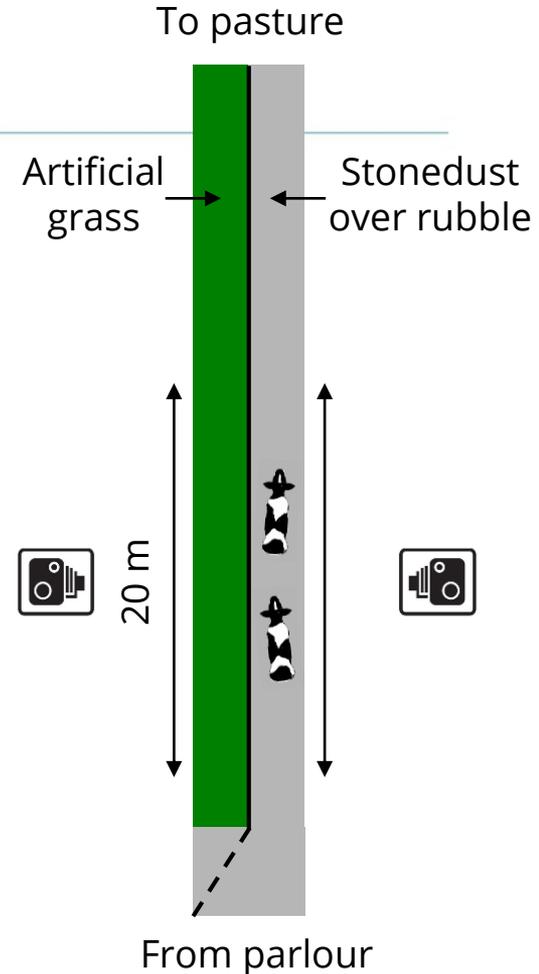


Laneway surface types

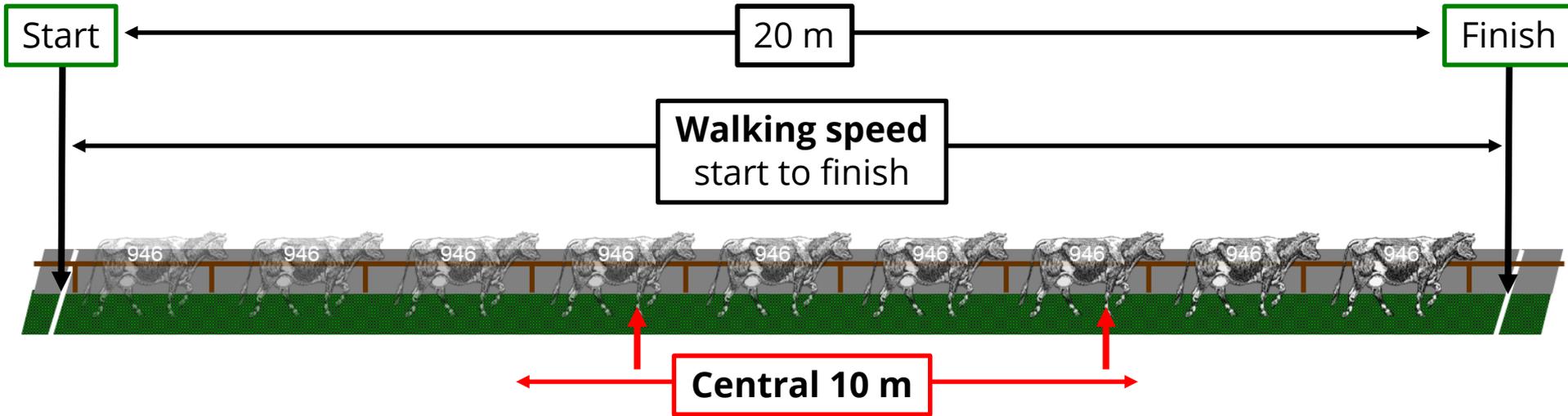


Methods

- >200 dairy cows
- Filmed whilst walking down two-sided laneway after morning milking (3 days x 2 replicates)
- Obtain a video of each individual on each surface type (each cow used as own control)
- Minimal interference: let out in pairs, cows determined order
- Swing gate switched after 10 pairs (→ other surface)
- Selection of 2 videos per individual
 - Walking at head of pair, sufficient distance from previous pair
- 69 individuals included in total



Methods – Video analysis

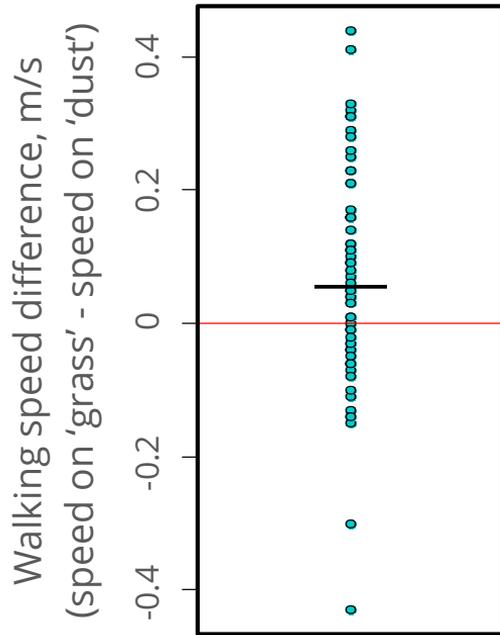


Stride length

distance between first and last placement of front leg / nr. of steps

(Kinovea software)

Results



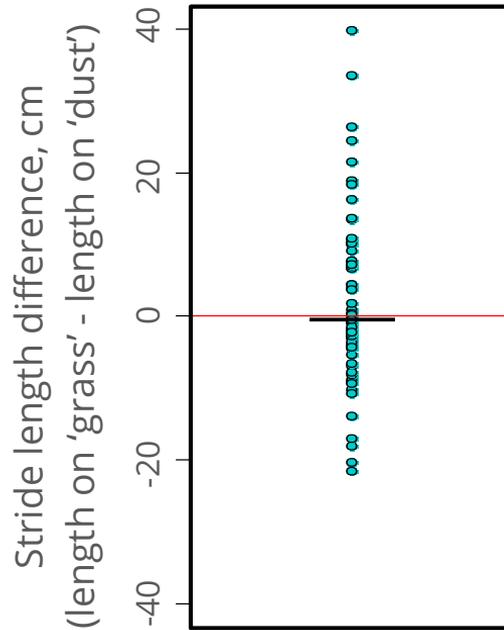
Median walking speed

Stonedust: 5.0 km/h (1.40 m/s)

Artificial grass: 5.3 km/h (1.46 m/s)

Wilcoxon signed rank: $P < 0.001$

Results



Median stride length

Stonedust: 155 cm

Artificial grass: 158 cm

Wilcoxon signed rank: $P=0.45$

Discussion

- Sig. walking speed difference 0.06 m/s
≈ rubber vs. concrete floors
(Flower et al. 2007, Chapinal et al. 2011, Telezhenko et al. 2017)
- No sig. stride length difference (numerically 3 cm)
20-50% of rubber vs. concrete floors
(Flower et al. 2007, Franco-Gendron et al. 2016, Telezhenko et al. 2017)
- Difference in materials, or difference in setting?
Moved indoors by handler vs. out on laneway towards feed as part of normal routine



Conclusion

- Higher walking speed suggests that artificial grass is more comfortable
- Preference trial
- Long term effects?
 - Prevention / alleviation of lameness
 - Willingness to return for robotic milking



Thank you for your attention

