TechGraze

NEWSLETTER

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Ole David Haavardsholm and Kjersti Vaaland Kalberg are collecting grass samples at Klepp. Grass samples, in addition to drone and satellite images were gathered at both Klepp and Tjøtta.

Dear reader,

Welcome to the first TechGraze newsletter! This summer we completed the project's first season of animal trials. Despite challenging weather conditions, successful virtual fencing trials with sheep, extensive sensor-based data collection, and drone and satellite monitoring have provided a foundation for the next phase of the project.

In this newsletter, you can read about the experiences and results from this year's field work at Tjøtta (Nordland) and Klepp (Rogaland). Insights and photos were shared by Grete Jørgensen, Shelemia Nyamuryekung'e, Adrian Enoksen Hansen, Hassan Jalal and Junxiang Peng.

We look forward to sharing more results from TechGraze and hope you will continue to follow the project. Our next newsletter will be published in spring 2027. Until then, happy reading!

TechGraze in a nutshell

TechGraze aims to make dairy and sheep grazing more sustainable in Norway by combining virtual fencing and remote sensing technologies. The project will help farmers make better use of grassland resources, improve grazing management and animal welfare, and assess the costs and benefits of these innovative tools.

Project partners:
NIBIO, Norwegian Agricultural Advisory Service (NLR), Monil AS, Felleskjøpet Rogaland Agder, Norsk sau og geit, Nofence, Tine SA

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Training sheep to use virtual fences

The grazing season at Tjøtta was very wet, which caused extra work in terms of more shelters and better bedding around the shelter. However, data were collected from a 2-week training period and two periods of 4-week rotational grazing with sheep. The trial included 15 nursing and 15 non-nursing ewes who were first trained to navigate the cues of the virtual fence systems in a fenced area. The non-nursing ewes were then moved to a pasture for free grazing within a physical fence, the virtual fence collars collecting positions and accelerometer data. The nursing ewes started rotational grazing using virtual fence borders in different shaped paddocks. After four weeks the two groups of sheep switched locations and the non-nursing ewes started rotational grazing for four weeks.



Training heifers

At Klepp, a delayed start of the trial meant that the heifers wore virtual-fence collars during the grazing period solely to assess pressure marks and record accelerometer and location data. Full use of the virtual fence collars will be implemented next year.





Drone photo of the virtual fence training area for the ewes at Tjøtta.

What did we learn?

Preliminary results indicate that both nursing and non-nursing ewes gradually learned to respond to virtual fence boundaries in the arena. Their increasing response to auditory cues suggests a growing understanding of the system. The nursing group tested the boundary more frequently during training, pointing to group-specific behavioural differences that warrant further investigation.

The nursing group tested virtual fence boundaries more frequently, suggesting **distinct behavioural responses**.









TechGraze staff during field work summer 2026. The photos highlight activities from the sheep experiment at Tjøtta and the heifer experiment at Klepp.

From fieldwork to findings

Over the summer, the project collected data which are combining animal behaviour, virtual fencing, remote sensing, and pasture measurements. In the coming years, we will analyse these data to gain insights into how digital technologies can improve grazing management, pasture use, and the sustainability of livestock production.

We thank all technicians, researchers, interns, farmers, and other contributors to the project for your great efforts during this year's field season!



Questions?
Contact researcher Grete Jørgensen: Grete.Jorgensen@nibio.no

Want to learn more?
Visit nibio.no/en/projects/techgraze

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