

## Press release

### KRONE SILOKING smaXtec Best Practise Project

Spelle / Tittmoning / Graz, 28.02.2025

## Small CO<sub>2</sub> footprint for the milk

**Krone, Siloking and smaXtec demonstrate in a joint project how milk production can be optimised using innovative technologies while taking the carbon footprint into consideration.**

Spelle/Tittmoning/Graz, February 2025: Practice makes perfect. True to this motto, Krone, Siloking and smaXtec began a joint best practise test in April 2024 on the Jünck dairy farm in Velen, Westphalia ([www.hof-jünck.de](http://www.hof-jünck.de)). The goal was to optimise the entire chain of milk production from grass in the field through to its utilisation by the cow in terms of efficiency and CO<sub>2</sub> emissions. A number of positive effects were evident in this regard in the respective interfaces of the partners involved in the test – providing optimum grass silage (Krone), precise mixing and distribution of the forage (Siloking) and optimization of the use of forage by means of sensor technology (smaXtec).

### Best forage with highly efficient technology

Thanks to Krone's powerful harvesting technology, which was optimally adapted to the field structures in terms of working width, it was possible to harvest very high-quality basic forage from a good 30 ha of catch crop grass in little time and with low fuel consumption. The work was carried out in accordance with "good professional practise" with documentation of the machine settings, drying processes, yields, forage composition and fuel consumption as well as the resulting CO<sub>2</sub> emissions. Within two days, grass with the targeted dry matter content of 32 % to 35 % and a chop length between 8 and 12 mm was then ensiled. With a total yield of 723 t and diesel consumption of 1574 litres, the CO<sub>2</sub> emission was calculated at 5.77 kg/t of forage. These CO<sub>2</sub> emissions, which are classified as low, are distributed over the entire harvesting technology chain as follows: Mowing 20 %, turning 6 %, swathing 8 %, chopping 32 %, crop transport logistics 25 % and rolling vehicles 9 %.

### Perfectly mixed and presented

The forage analyses carried out after an 8-week silage process attested an extremely high forage value for the grass silage. Its total milk production value (kg of milk per tonne of forage) was a good 4 % higher than for the grass silages examined throughout Germany for the first cutting of 2024. The NDF (neutral detergent

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fibre) digestibility after 30 hours (NDFd30) was well above the average at approx. 67 % (+11 %). Based on the results of the analysis, the basic forage was optimised with additional components to a need and performance-related total mixed ration. This was transferred via the "Siloking Feeding Management" feeding program directly to the machine and fed to the 250 cows. The load deviation of the self-propelled Siloking feed mixing wagon with a capacity of 19 m<sup>3</sup> was impressively low at less than 2.4 %. A high level of mixing accuracy was also demonstrated over the entire feeding time based on the data of the smaXtec pH Bolus. The pH amplitude of the animals in early lactation was consistently just 0.7 and thus in the optimum range. With average fuel consumption of 1.05 l/t TMR, the machine was also confirmed to be not only very economical, but also very environmentally friendly due to the low CO<sub>2</sub> emission.

### Optimum feeding thanks to critical sensor data

Use of smaXtec's unique Bolus technology made it possible to accurately track the effect of the forage on digestion and the health of the animals. The sensors inserted in the reticulum of the cows recorded important parameters such as the internal body temperature, rumination, pH values and characteristics of fermentation. Based on these decisive insights, feeding efficiency can be validated and selective adjustments can be made. This closed circuit ensures that all feedback flows directly into the next optimisation step, thereby ensuring continuous improvement of the feeding strategy. Special attention was paid to monitoring the pH value in the rumen, as it significantly affects fermentation conditions and hence plays a key role in methane formation. Optimisation of grass silage and improvement of digestibility of NDF (cellulose substances, plant-based carbohydrates) at the Jünck operation led to promising results. The average pH value there during the performance phase was reduced from 6.4–6.5 to a constant 6.1. This made it possible to increase the high production level of the dairy farm over the entire feeding phase with a consistent milk quality (3.95 % fat, 3.45 % protein) by up to 9 %.

### Successful pioneering work

The Best Practise Project at the Jünck operation shows impressively how a high quality of grass silage improves fermentation and rumination, which in turn increases forage efficiency and significantly reduces CO<sub>2</sub> pollution per litre of milk.

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This is a model example of how innovative technologies pave the way to more sustainable, efficient and profitable milk production. The crucial factor is that the entire production chain, from harvest to forage and on to digestion, is examined on the basis of data. This gives farmers practical tools with which they can reduce CO<sub>2</sub> emission per kg of milk, which is already today being recognised with a bonus by some dairies.

### Positive feedback from practical experience

Michael Jünck's assessment is accordingly positive: "I'm impressed! I never would have thought that such a short chop length and the precise monitoring could produce such impressive results. The grass silage is aromatic, high-quality – and the cows love it!" he reports. "The findings of the test motivated me to align my entire harvest fleet, the silage process and feeding consistently to the optimum values for my operation. The result has been tangible improvements in our production numbers."

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#### About KRONE

Bernard Krone GmbH & Co. KG, with headquarters in Spelle, Germany, is a leading manufacturer of agricultural technology. Located in the Emsland district of Lower Saxony, the family-owned enterprise specialises in the development and production of innovative machines for basic forage harvesting. Core products include mowers, rotor rakes, tedders, bale and pelleting presses and loading and forage transport wagons. The company's flagships are two self-propelled machines, the BiG M mower conditioner and the BiG X forage harvester.

#### About SILOKING

SILOKING Mayer Maschinenbau GmbH is a leading manufacturer worldwide of innovative feeding technology. With headquarters in Tittmoning, Germany, the company develops and produces high-quality agricultural machines "Made in Germany". The product line includes trailed, self-propelled, electrically driven forage mixer wagons, stationary mixing and dosing systems for livestock farms as well as biogas plants and silage removal and distribution equipment.

#### About smaXtec

smaXtec animal care GmbH with headquarters in Graz, Austria offers innovative solutions for monitoring dairy cows. The latest smaXtec innovation is the Digital Assistant and TruAdvice™, a technology based on artificial intelligence that provides reports on suspected diseases. The interaction of high-precision data measured using the revolutionary Bolus technology inside the dairy cow together with the latest AI makes it possible for farmers to improve animal welfare by means of the information that is collected, optimise forage consumption and detect diseases at an early stage.

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Fig. 1: KSS-Projekt\_01

Feeder rack in the dairy cattle shed with self-propelled feed mixing wagon



Fig. 2: KSS-Projekt\_02

Check of the data recorded by the Bolus sensor (small picture) via smartphone with the smaXtec app

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Fig. 3: KSS-Projekt\_03  
Mowing the field grass with a triple mower



Fig. 4: KSS-Projekt\_04  
Sampling after the grass is cut

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Fig. 5: KSS-Projekt\_07  
Grass harvesting with the BiG X forage harvester

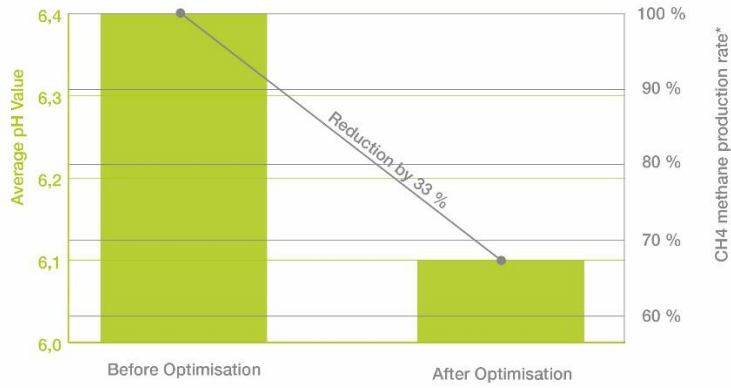


Fig. 6: KSS-Projekt\_09  
Jünck dairy farmstead

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Influence of silage quality on feed efficiency and methane production rate in the total ration



\* It is assumed that 1 kg of milk produces 1.1 kg of CH4 methane under standard conditions. The focus is on the influence of pH on the methane production rate (Source: J.S. Van Kessel, J.B. Russell, FEMS Microbiology Ecology 20, 1996, pp. 205-210).