

XtraBlatt

NATURE & ENVIRONMENT

Farmers are a key part of the solution

COMBINED POWERS

The next step in
automation



SWITZERLAND
Diversity in Aargau

Krone is making good progress on its latest major construction site – a state-of-the-art parts warehouse and a logistics centre which are being built on a 7.5ha site at the village entrance. If all goes to plan, the new facility will take up operation at the end of 2023 and is an investment worth €40 million.



EDITORIAL



DEAR READERS

The war in Ukraine, the Corona pandemic, soaring inflation, energy crisis and a global economy thrown out of kilter – seldom in recent decades have we been confronted by so many fundamental upheavals as today. These events affect us all enormously and permeate both our personal and professional lives. Yet satisfactory answers cannot necessarily be found to all these issues, as you, our customers and trading partners, have also noticed. I'm all too aware that delivery delays and regrettably unavoidable price rises are creating understandable frustration. But rest assured that our team are doing everything in their power to support you as best they can!













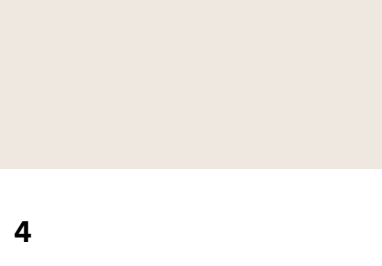


What became clear during the pandemic has been further crystallised by the fact that Ukraine is no longer one of the “bread baskets” of the world: our domestic agricultural industry is not only an essential sector – it is the bedrock of our lives and well-being. Appreciation for our food has reached unimaginable heights, and even energy farmers are now more relevant than ever before. So it seems all the more incomprehensible to me that the responsible ministers in Berlin are stubbornly refusing to address this issue. There is no other explanation for the continuing insistence on set-aside, the end of biodiesel blending or the systematic phasing out of large biogas resources in Germany. There is urgent need for a fundamental rethink of local policy.

Productive farming and comprehensive nature conservation are not mutually exclusive and a fact-based roadmap to set us on the right course is now more important than ever.

The same applies to the climate policy mentioned at the start. In public debate and media coverage, agriculture is often portrayed as one of the major emitters, the nation's bogeyman, so to speak – which is absolutely preposterous! Without doubt there are still many aspects in the farming industry that can be improved for the better, but we have long been working tirelessly to redress these shortcomings. However, it is high time that the general public and the policymakers realise that farmers are not the cause of the problem but a key part of the solution! And to send a clear signal, we have chosen this very concept as the title theme for this edition of our XtraBlatt. I urge you to remain upbeat despite these turbulent times and unpredictable conditions – agricultural was, is, and will remain vital for us all.

Bernard Krone

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BIOGAS:

“WE NEED TO TAKE THE BRAKES OFF.”

The war in Ukraine is causing upheaval on energy markets. Biogas offers a good chance for greater independence and for greater value creation for farmers in the short term, too, Horst Seide, the President of the German Biogas Association (Fachverband Biogas), stresses. In an interview, he explains how these opportunities can be seized and the extent to which this could happen.



Horst Seide sells around half of his biogas at his own CNG filling stations.

The association estimates that Germany alone will need an estimated additional 5000 or so biogas plants to capitalise on its biogas potential.



XtraBlatt: In early March, the European Commission unveiled a target for the EU to produce 35 billion m³ of biomethane by 2030 as part of its REPowerEU plan. Do you think that's realistic and feasible?

Horst Seide: Yes, provided the necessary conditions are put in place, especially on the legislative front. But the biogas production goal that the Commission has set will pose tremendous challenges to all of Europe. After all, we're talking about increasing production tenfold in the span of eight years.

XtraBlatt: But Germany is bound to be a pioneer, isn't it?

Horst Seide: That might be the case. No, actually, Germany has to lead the way. At the end of the day, we've already got the largest number of biogas plants in Europe by quite some margin. But if you listen carefully to my words, you'll notice that I'm still not entirely confident that we actually will be trailblazers. For instance, there was a great deal of agreement at a meeting of the European Council where ministers from the different member states were supposed to comment on the topic of biogas. Just one country raised concerns...

XtraBlatt: Germany?

Horst Seide: Yes, and we were the only country to do so. The fact that Germany is now holding up the expansion of biogas is pretty annoying. The previous government

has been taking this approach for years now, and we had pinned our hopes on the new German Government. But, at least as things stand in spring, we haven't seen much change for the better on this front. The EU strategy has been approved nonetheless. In the future, this may mean that the EU is actually spurring Germany to take action. And not for the first time. After all, these decisions define the goals that Germany will have to meet. It would be wiser and better for all of us to actively leverage the opportunities, resources and structures that exist. The biogas sector can make a huge contribution toward energy independence.

THE FACT THAT GERMANY IS NOW HOLDING UP THE EXPANSION OF BIOGAS IS PRETTY ANNOYING.

HORST SEIDE,
PRESIDENT OF THE GERMAN
BIOGAS ASSOCIATION

XtraBlatt: What scale do you think it might reach?

Horst Seide: At a rough estimate, biogas plants in Germany produce approximately 100 terawatt-hours (TWh) of raw gas. Some 99% of this is used to generate electricity and much of it is harnessed indirectly to produce heat. Around 1% of biogas serves as fuel. The biogas sector wants to maintain its current

electricity output, even in 2030 or 2035. But production will certainly look quite different then to the way it does now. Flexible supply and selling through electricity exchanges will be key. What's more, I think there is tremendous potential to produce biogas that can be fed directly into the gas network. Including all the substrate sources that are still largely untapped today, I estimate that energy output from biogas could easily be doubled to reach around 220TWh.

XtraBlatt: Such claims will likely sound the alarm bells for many critics given that more fields would have to be dedicated to maize to make this happen...

Horst Seide: We don't really want any more maize. But we can't scale back production in the current crisis, either. The bulk of the substrate that we would need to ramp up gas production would come from other places. To give a few examples: According to calculations from the German Biogas Association, drawing simply on all available slurry and solid manure resources would drum up an additional 20TWh or so. Substrate from previously unused grasslands and straw could provide another 40TWh. And we could round up another 60TWh if politicians allowed us to plant and harvest crops that meet environmental criteria and that are an equally good fuel for digesters on just half of the set-aside land and flower pastures required by the EU. We shouldn't forget the need to include recovery crops to our rotations as we extend our cropping

systems and reduce pesticide use. These crops are also a good fit for biogas production. So, as you can see, domestic energy production and protecting nature are easily compatible without planting more maize and with a bit more creativity. Politicians just have to finally want to see this happen and chart a course in that direction. In the current situation, we don't need opinionated people insisting that certain approaches are off the table or politicians wearing blinders. We need an open and swift dialogue about meaningful alternatives. They should at last give us the opportunity to show what we can do!

XtraBlatt: What kind of a course do you think should be charted?

Horst Seide: Over the past eight years, it would have been easy to gain the impression that politicians are systematically working to put the brakes on biogas as a source of renewable energy – across party lines. So I think it is all the more important to create the necessary framework quickly and fully at long last so that the sector can “step on the gas.” To put it bluntly, we need to take the brakes off. In the context of electricity production, I'm thinking here about maximum limits, for instance. We need to get rid of anything that hinders flexible electricity production, such as the flexible electricity cap.

XtraBlatt: What do you mean by that?

Horst Seide: The bulk of plants in Germany still work in accordance with old German renewable legislation and are paid an average of €0.20/kWh. Today, some of them already have the ability to feed power into the grid in a flexible manner, in other words at the times of day when electricity prices are the highest on electricity exchanges. And another group already has the technical capabilities for flexible feed-in, but isn't making use of it yet because prices will stay low up until the autumn. Still, the amount of electricity that a plant can feed into the grid is limited. This cap is redundant. More and more operators

want to switch to this flexible model. It's something that would be really in consumers' interest, too, as a way of interrupting price peaks on exchanges. Plant operators with around 1000MW of capacity currently take this approach. It cuts peak prices by around €0.15-0.20/kWh. So power from biogas is already reducing the burden on consumers.

XtraBlatt: Would this be similar when feeding gas into the network?

Horst Seide: It's something that's plausible at least. Completely new pricing mechanisms will be developed for this in the future. And it's already clear that the first major industrial consumers want to enter into fixed

DOMESTIC ENERGY PRODUCTION AND PROTECTING NATURE ARE EASILY COMPATIBLE WITHOUT GROWING MORE MAIZE AND WITH A BIT MORE CREATIVITY.

HORST SEIDE,
PRESIDENT OF THE GERMAN
BIOGAS ASSOCIATION



The Seide farm now operates the first tractor running on CNG as fuel.

contracts with companies feeding gas into the network. Freight forwarders and hauliers are another fast-growing customer group at the moment. But it's important not to forget the current political situation when we're talking about gas: We need to quickly reduce our dependence on Russia. That's why it is so important to remove all caps in the gas sector, too. It doesn't cost any money, but makes sure that Germany could produce up to 20% more biogas within the year. After all, substrate warehouses are full to the brim thanks to good harvests in 2021. And this extra 20% corresponds to 5% of the amount of gas that we currently import from Russia.

XtraBlatt: But lengthy approval processes likely mean that this growth will be a long time coming, don't they?

Horst Seide: It's true that the endless number of challenging approval processes and rules in Germany are a huge hurdle. But if Elon Musk raises the hot topic of e-vehicles and offers sizeable investments, all concerns and rules are thrown overboard – and it even garners praise from high-ranking politicians. Why can't we do the same for smaller construction projects or even sustainable projects like biogas? In Germany alone, we will need an estimated additional 5000 or so biogas plants to leverage biogas potential – and we can't wait until 2045.

Tesla has shown that if politicians want to move quickly, things can be done. So it's high time that those responsible want to take swift action on biogas...

XtraBlatt: You talked earlier about doubling production to 220TWh. Would that be the ceiling?

Horst Seide: Not at all! In addition to issues relating to substrate and the number of plants, there is sizeable dormant potential in maximising gas yield. As a rule, raw biogas has a methane content of around 50%, with CO₂ making up the other half. This CO₂ could be converted into methane, too, without any technical issues. The technology to do so already exists and is absolutely suitable for mass production, so it can be installed without having to wait long.

XtraBlatt: What might this conversion process look like?

TESLA HAS SHOWN THAT IF POLITICIANS WANT TO MOVE QUICKLY, THINGS CAN BE DONE. SO IT'S HIGH TIME THAT THOSE RESPONSIBLE WANT TO TAKE SWIFT ACTION ON BIOGAS...

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Horst Seide: We don't need any additional expensive infrastructure for hydrogen storage. We turn it straight into methane and feed it directly into the network. What's really exciting: Some of the infrastructure that is needed to make this happen is already in place, such as gas storage facilities and transformers. We would also need

electrolysis units. The result: higher energy density in gas storage facilities. This electrolysis process would add another 220TWh of capacity. If we could make this change at all plants, I estimate the additional amount of energy that could be generated by biogas in Germany each year at 440 to 450TWh. That's about half of Germany's electricity needs and 80% of the natural gas imported from Russia. One thing's clear: We will need large amounts of wind and solar power to make really “green” energy. But gas production is feasible to the degree that I talked about. And it's something that we need urgently.

Advantages of more flexible biogas production concepts: Higher storage capacities lead to higher outputs without increasing the substrate input



Larger storage facilities and more motor capacity help “flexible” biogas plants generate more electricity and heat in the short term. When the sun is shining and the wind is blowing, these plants store gas and don't burn it until energy is needed.

Protecting peatlands and the climate as a farmer is no contraction for Sebastian Petri.



GROWING FORAGE IN PEATLAND

SUCCESS ON DIFFICULT TERRAIN



A tough job for the machine: the dense reedbeds can reach heights of up to 2.5m in some areas.

Farming, climate and peatland protection go together as we could see in regions like the Rhinluch peatlands in the north-west of Berlin where farmer and peatland steward Sebastian Petri and his family produce a special hay for horses.

The first generation starved to death, the second went hungry, the third had bread! This old German adage chronicles the lives of early settlers as they struggled to work the land – in this case, the wetlands

of northern Germany. This marshy land had to be drained before it could be farmed; laborious, backbreaking work that consumed each successive generation. As a result of their efforts, some formerly inaccessible

wetland areas were turned into productive farmland.

But we now know that draining wetlands also has negative consequences. Large quantities of CO₂ stored in the layers of peat over the millennia are released as the wetlands dry out and the peat decomposes, resulting in harmful emissions.

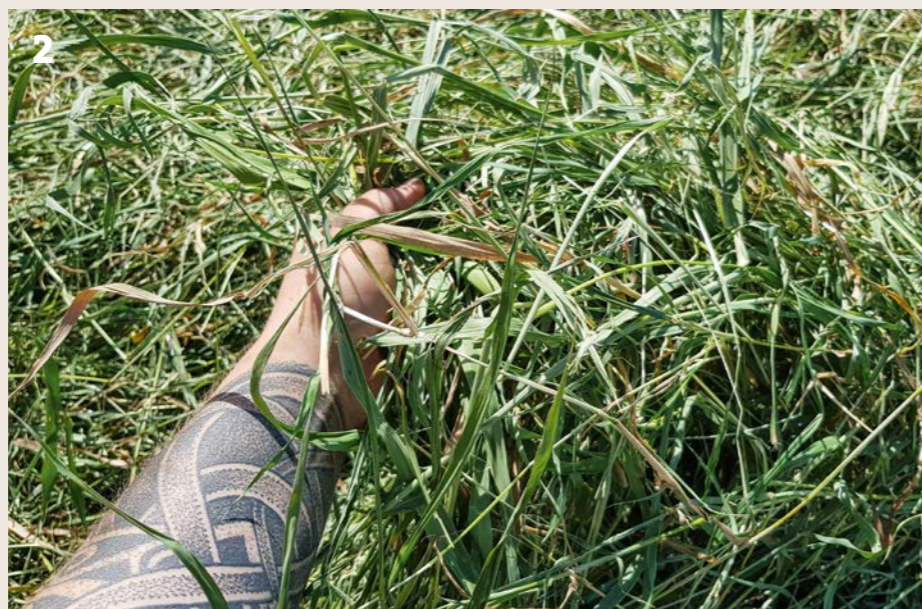
But the tide is turning in many peat-rich regions of Germany. The peatlands are being rewetted. Conflicts with farmers are seemingly inevitable. However, it is possible for people and nature to work in harmony, as demonstrated in the Rhinluch, a vast fenland landscape in the German state of Brandenburg. It lies to the north-west of Berlin and is bisected by the River Rhin. The wetlands were improved for arable farming under the Prussian King Frederick the Great, but apart from serving as grassland and pasture, the boggy land has never been productive. And this hasn't changed.

CATTLE AND WATER BUFFALO

One person who has succeeded in adapting to the unique conditions is Sebastian Petri. Together with his parents, he farms 286ha of grassland in the Upper Rhinluch. The farm in Moorhof near Kremmen, roughly



- 1** Sebastian and Juliane Petri manage a grassland farm in one of Germany's largest wetlands.
- 2** The particularly low-nutrient hay is ideal for horses with metabolic problems and very popular with horse owners in the Berlin area.
- 3** As well as cattle, the Petri family also graze water buffalo because they do well on the soft ground.
- 4** Much of the land is flooded in winter. The water table is lowered again in the spring.



38km north-west of Berlin, was established in the early 90s shortly after German reunification. At that time, his mother had just passed her agricultural exams and set up the farm in the Rhinluch, initially as a suckler farm.

However, the land was poorly suited to producing green forage that supplied the energy content required by cattle. Grazing, too, proved problematic. So they switched to beef cattle and a large herd of water buffalo instead. The hooves of these animals are much better adapted to treading on soft ground. Water buffalo also cope far better with the available forage because

their rumens can digest the coarse sedge grasses.

HIGH-QUALITY HORSE HAY

Thirty-seven-year-old Sebastian Petri first went to agricultural college and then studied agricultural sciences at university. He then returned to the family farm, which has since been split into two businesses. While his parents keep water buffalo and a few cattle, Sebastian and his wife Juliane specialise in hay production. This is a low-nutrient hay which is highly sought-after by horse owners.

"Many horses are fed a particularly clean, fibre-rich hay because of their sensitive stomachs", says Sebastian, who describes himself as a "peatland carbon farmer". He points out that horses with metabolic problems tend not to tolerate energy-rich grasses like ryegrass. In the stables around Berlin, word has spread that Sebastian produces hay based on sedge grasses. "We supply our hay right down to the southern tip of Brandenburg," he says with pride.

But haymaking in the Rhinluch is no easy task. Large wetland areas play an important role in climate protection and key to this is the water level. "In winter we let our hay

fields flood completely. In summer we dam them so that the water is at the highest possible level below the grass sward, ideally just 10cm below it," Sebastian explains. This flood management regime is done in close consultation with the local nature conservation agency. The water level must be lowered enough to allow the grass sward to dry out by the time the farmer drives onto the land for the first time in the spring.

The first and only cut is generally taken in late June at the earliest. This benefits the numerous ground-nesting birds living in the region, such as skylarks, lapwings and mallards. "We don't cut until the birds have finished breeding and their young have fledged," Sebastian is keen to stress. Harvesting later in the season also gives endangered plant species such as saw-wort enough time to set seed. Sebastian keeps track of the flowering time of other grasses as well, since optimal seed distribution largely depends on mowing at just the right time.

There are several points to bear in mind when mowing sensitive sites. "We generally set the cut height to around 15cm," explains Sebastian. This prevents damage to the sward by the mower. The integrity of the grass sward largely determines the load-bearing capacity of sensitive soils.

MAXIMUM SOIL PROTECTION

Although the equipment costs are high, some of the cost of maintaining and managing the land in accordance with ecological criteria is covered by ha-relative premium payments. "We use specially converted snow-grooming equipment for our maintenance and harvesting operations," says Sebastian. These vehicles have long, wide crawler tracks which spread the weight over a large area. This prevents the vehicle getting bogged down in the very soft soil and avoids damaging the grass sward: "The latter is particularly important for us because protecting the peatlands lies at the heart of our haymaking operations."

Sebastian Petri uses special tracked vehicles designed for peatland terrain for all interventions to give the soil the best possible protection. The long and wide tracks reduce the overall ground pressure of the machine and its attachments to around 120g/cm². He bought their first tracked vehicle second-hand and converted it himself for mowing the wetlands. "But the machine is showing its age, so we only use it for draught work now", he tells us.

For the past two years, the main work has been done by a custom-built machine that

was modified to his specifications. "This one also started out as a second-hand snowcat," he explains. The machine has been fitted with a Krone front mower for hay-making on the wetlands. It can also cut the reeds, which is an extremely tough job for any machine. The dense reedbeds can reach heights of up to 2.5m in some areas and produce stems of corresponding thickness.

Having specialised in the environmentally friendly management of wetlands, the graduate farmer now provides a consultancy service to other farms in his capacity as a peatland carbon farmer. The state of Brandenburg alone has wetland areas three times the size of Berlin. His commitment to managing the sensitive wetlands earned Sebastian Petri first prize in the "Committed People" category in the German Landscape Conservation Awards 2020. In the judges' words: "The young farmer manages peatland that was previously drained but where the water table has been raised to 10cm to 30cm below ground level to protect peat soils in the Rhinluch wetlands in Brandenburg. He manages the wetlands using innovative equipment, some of which he has converted himself." «

GRASSLAND AS A CARBON SINK

VALUABLE CLIMATE PRO- TECTOR



The author Tammo Peters is grassland advisor at the Schleswig-Holstein Chamber of Agriculture.



Humus consists of around 58% organic carbon – and as long as this carbon remains in the soil, it cannot be released to the atmosphere in the form of climate-damaging carbon dioxide (CO₂). For this reason, humus-rich grassland soils play a particularly important role in climate protection.



Grassland plays an important role in climate protection, because they present a major natural carbon sink.

Globally, soils store roughly four times as much carbon dioxide as aboveground vegetation and more than double that in the atmosphere. Thus the sequestration of organic carbon in the soil is regarded as a highly effective and affordable emissions technology for achieving international climate protection targets – with added benefits for agricultural production, because humus promotes soil fertility, provides the basis for microbial life, supplies nutrients for plant growth, ensures good soil structure and aggregate stability, and improves the soil's ability to absorb and store water.

EMISSIONS FROM PEATLAND SOILS

The organic carbon content of soil largely depends on soil characteristics such as texture, pH level, and water and oxygen content, which means it can vary significantly from one site to another. Peatlands used predominantly as grassland occupy a unique position. Although peatlands cover only 3% to 4% of the Earth's land surface, they store 26% to 44% of global soil carbon. Peatlands in Germany hold on average 1024t/ha of organic carbon in the top 2m and are at least 2m deep. When peatlands are drained in preparation of intensive farming, the water saturated peat shrinks and becomes extremely compacted releasing large amounts of greenhouse gases, especially CO₂, as the peat is being destructed by microorganism activity.

For this reason, farmed peatlands account for a substantial proportion of greenhouse gas emissions from land use

and have increasingly become the focus of political efforts to mitigate climate change. Raising the water table to a natural level (re-wetting) can almost entirely eliminate emissions from peatland while at the same time increasing biodiversity and protecting bodies of water from nutrient inputs. However, since this would mark the end of the drainage-based grassland use that we know today, alternative forms of use and concepts for restoring wet peatlands are currently being explored in numerous research and modelling projects.

TOP PRIORITY ON GRASSLAND MANAGEMENT

We need to consider how mineral soils are used too, since farming practices have a major impact on carbon (C) storage. For instance, there are significant differences in the carbon content of arable and grassland soils. Year-round vegetation cover, intensive root penetration and the regular use of organic fertilisers means that grassland soils store more organic carbon than arable soils. This has been confirmed by several scientific studies and by the results of the soil status survey in Germany. Surveying mineral soils in arable land, the measurements produced an average of 96 tonnes of organic C per hectare at a depth of 1 metre. This compares to 135t/ha on grassland, an increase of 31%.

Accounting for around 4.7 million hectares and 30% of the agricultural land, grassland is a defining landscape element in Germany. Overall, it is safe to assume that grassland cultivation on mineral soils results in a net carbon sequestration. Increasing amounts of carbon are stored in grassland over time until the point of saturation is reached after several decades. By comparison, mechanical intervention (e.g. cultivating or ploughing) can cause the soil carbon that has accumulated over several years to be released far more rapidly than it was sequestered.

Against this background, it should be the top priority to preserve the grass sward in the long-term by applying grassland management practices that are adapted to local conditions, such as harrowing and overseeding in order to avoid ploughing and resowing. Another primary political focus is the retention of areas under permanent grassland and the ban on ploughing environmentally sensitive permanent grassland, for example in water conservation areas or areas at risk of water or wind erosion. Yet not only is the retention of permanent grassland important for sequestered carbon levels in agricultural land, the type of land management can also be important for the sequestration of carbon.



BALANCING USE INTENSITY

Intensively managed grasslands play an important role in the sequestration of carbon. This is because they fix high rates of carbon in the form of abundant aboveground biomass, which can also have a positive impact on belowground root growth. After all, a branching root system can store enormous quantities of carbon. Furthermore, increasing the yield level or the cutting frequency can have a favourable effect on root growth and thus on carbon fixation. Similarly,



locally adapted intensive grazing regimes increase shoot density, which in turn can have positive impacts on root growth. However, it is worth bearing in mind that stepping up the intensity of use can have a negative impact on other key parameters such as biodiversity and soil compaction.

It is also important to understand that increasing carbon sequestration by intensifying the use often brings climate trade-offs. For instance, higher yields translate into higher demands for nutrients, most of which are provided in the form of mineral fertiliser. Higher fertiliser application rates mean higher CO₂ emissions in fertiliser production (energy-intensive Haber-Bosch process for nitrogen production). After an application, there is also the risk of increased releases of soil-borne greenhouse gas emissions such as nitrous oxide (N₂O). This highlights the importance of increasing the amount of legumes in the grass mix (white clover, red clover) to fix atmospheric nitrogen. In view of the current high cost of nitrogen fertilisers, it makes sense to establish legumes, if only in pursuit of a more resilient grassland management strategy.

BENEFITS OF GRASS LEYS

Integrating grass leys into arable crop rotations is another means of increasing the grassland area and the amount of



- 1** Mechanical interference in the soil, such as by a rotavator, may lead to a rapid release of carbon that was sequestered over long periods of time.
- 2** Intensively managed grass stands play an important role in the sequestration of carbon.

carbon stored in the soil. Especially in intensive cropping systems, long-term grass leys have enormous potential to improve soil fertility and increase the amount of organic matter in the soil. By providing year-round vegetation, they can reduce nitrogen losses through leaching as well as the risk of soil erosion, especially in regions with high autumn rainfall and high fertiliser inputs. Furthermore, grass-legume leys have an outstanding pre-crop value and their inclusion in the crop rotation can suppress weeds such as black grass.

In conclusion, grassland soils – mainly peaty but also mineral soils – are important “natural” carbon sinks. This is because deep cultivation doesn’t normally take place in grassland. Consequently, we find less humus depletion than in intensive cropping systems. Thus researchers and policymakers focus on arable soils as a potential carbon sink or carbon source. This said, grass leys play a key role in intensive crop rotations. Whether in arable farming or permanent pasture, grassland plays an important role in climate protection – and at the same time it can provide high-quality forage for livestock.

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Tammo Peters,
Schleswig-Holstein Chamber of Agriculture

UNITED STATES OF AMERICA

BIG, BIGGER, USA?



Huge fields and large machines – that’s our image of the American way of farming. How, then, does Krone enjoy such success selling small mowers, tedders and rakes here? We asked Marvin Brüggemann, Division Sales Manager for the US market.



XtraBlatt: How is dairy farming organised in the USA?

Marvin Brüggemann: In the west we find the huge farms that shape our image of American agriculture: huge fields and dairy farms keeping up on 20,000-head herds. But there are also different and much smaller dairy farms in the US with less than 50 cows, and they can be found in the east of the country. The average American dairy farm milks around 250 cows. This shows that there are not just huge dairy farms.

XtraBlatt: How many dairy farms are there in total in the US?

Marvin Brüggemann: In 1990, there were 130,000 licensed dairy farms. Today there are around 30,000. This illustrates the structural change that has taken place in dairy farming over the past 30 years in the US. On average, around 5% of farms actually close down each year. However, this does not mean that less animals are being milked. Herd numbers are increasing and overall, milk production is also increasing slightly. If we take a look at the structural change in dairy farming, we see that the really big farms in particular are merging into even bigger farms. The smaller family farms, which are partly run as side businesses, are still in production. And it is

exactly these customers who buy smaller machines, from the 3m mower and the rotor rake to the straightforward round baler.

XtraBlatt: How important is the US as an export market for Krone?

THE US IS A VERY LUCRATIVE MARKET FOR SMALL MOWERS, TEDDERS AND RAKES.

MARVIN BRÜGGEMANN,
DIVISION SALES MANAGER USA

Marvin Brüggemann: In terms of sales figures, the US is our second-biggest market, right after Germany. In 2021, we generated turnover of more than 150 million USD, and that is set to increase in future. Taking the current crisis in Eastern Europe and Russia into account, our goal is to continue to grow on the American market. There is still great potential for us here.

XtraBlatt: What percentage of machinery is shipped to the US?

Marvin Brüggemann: 87% of the equipment sold in the US are mowers, tedders and rakes. These make up 46% of our sales in the US. For example, we export one third of all our Active Mow machines to the US. The Active Mow is our straightforward, rear-mounted disc mower with 2m to 3.6m working widths.

XtraBlatt: How is Krone organised in the US?

Marvin Brüggemann: Our subsidiary Krone North America was set up in 1973. Today, we have 150 employees, with around 50 of them working at our main office in Olive Branch near Memphis. This is a completely new office that was built from scratch and first opened in January 2020. This is where the machines are prepared for shipping, orders are dealt with and all local business is managed. Travelling sales and service staff account for another 50 employees. The remaining 50 work at our six company-owned commercial centres, with workshops for servicing.

XtraBlatt: There was no shortage in grass-land equipment in the US market before Krone arrived. How do you convince American farmers to buy German-built machines?

» CHARLES LEED, DAIRY FARMER IN LEXINGTON, VIRGINIA

“KRONE MACHINERY IS BETTER AND MORE THOROUGHLY DEVELOPED.”

The Leed family has been working the same land in Virginia since the end of the seventeenth century. Initially, it was a cattle farm, and later they turned to tillage. Since 1967, it has been a dairy farm. Today, the Leeds farm around 730ha and milk 340 cows with state-of-the-art milking robots. Quality is important for Charles Leed, not least when it comes to the equipment to harvest his forage. He uses two tedders and a Fortima round baler from Krone, among other equipment. “The Krone tedder is better and more thoroughly developed.” He is also very happy with the service provided by the manufacturer: “I think it’s great that Krone has their own service staff who support our dealers in all respects.”



- 1** Most people have the following image of agriculture in the US: Vast fields and huge machines to go with, such as this forage harvester in California.
- 2** 87% of the Krone sales in the US are mowers, tedders and rakes.
- 3** Krone's trailed 4-rotor tedder KW 5.52 T is one of the most popular machines sold in the US.



Marvin Brüggemann: Our customers are full of praise for our sturdy and well-conceived machines. Once we convinced them to buy one of our machines, they remain loyal customers. This is surely also down to our employees who are highly motivated, as well as the agri dealerships that our sales people work with. Selling a machine isn't the end of the story even for smaller machines, because in our opinion the kind of aftersales service we offer makes all the difference. We guarantee support should there be any issues with our products. We are delighted to have such a solid Krone team operating in the States who stand behind the brand one hundred percent, even though the parent

company is thousands of kilometres away.

XtraBlatt: How many American sales outlets are there for Krone equipment?

Marvin Brüggemann: In total, we supply around 200 dealers in the US. These range from very small local dealers with workshops to big commercial centres. After almost 50 years in the US, we are well represented in those regions where our equipment matters.

XtraBlatt: It's a long, long way from the Krone headquarters in north-west Germany to the US. How long does it take to ship the machines and how much lead-time

is involved from the moment of sealing a deal until the machine is delivered to the customer?

Marvin Brüggemann: Naturally enough, we make sure that the machines and equipment are at the point of sale at the beginning of the season. Transport by sea takes between three and ten weeks, depending on whether we are delivering to the east or west coast. From the ports, the equipment is then shipped on land.

XtraBlatt: Has Krone ever thought about a production and assembly plant in the US to save time on transport?

» RANDALL ELLER, TILLAGE AND LIVESTOCK FARMER IN JEFFERSON, NORTH CAROLINA

“I THINK THAT KRONE OFFERS THE BEST TECHNOLOGY FOR FOR-AGE HARVESTING.”

The Eller family looks after 3000 suckler cows, sells beef cattle and grows around 2000ha of maize. They also have 1200ha of grassland. The family use Krone hay-making equipment, including a disc mower, a rotary rake and the new VariPack belt round baler.

“Krone machines are mature and well-engineered. The company has been in business for a long time and the machines have proven themselves time and again,” Randall Eller explains. He is also very happy with his Krone sales rep: “He knows what he’s at. I can just pick up the phone and ring him whenever I need him. And if he happens to be in the area, he often just calls in to see how things are going.”



market is the biggest market for this particular model. Yet, our semi-mounted single-rotary rakes, too, are very much in demand in the US – unlike in Germany and Europe where we sell only a few models.

XtraBlatt: What's the reason behind this?

Marvin Brüggemann: In the US, farmers use their pick-ups a lot more for doing actual jobs. They hitch the rake to the pick-up and transport it long distances, for example. Once the equipment arrives in the field, it is coupled to a small tractor and work begins. The semi-mounted attachment means the machine doesn't need a lot of tractor power or lifting force.

XtraBlatt: What are the differences between harvesting silage in the US and in Germany?

Marvin Brüggemann: It depends on the size of the farm. If we take the large farms in California, Texas or Idaho, they use powerful, self-propelled mowers and have contractors chop the grass and store it in large silage pits.

The smaller family farms in the east of the US, on the other hand, usually make their own silage with their own machines. They often use mounted mowers, which is reflected by our sales figures for 2 to 3m mowers. These farms are in regions where hay is made, meaning that lots of round

bales are also made and wrapped here. Milk yields per cow are usually not the top priority of these farms. Rather, their aim is to produce milk at reasonable input costs and achieve a good margin. «

» MARVIN BRÜGGEMANN

Marvin Brüggemann followed a dual programme of university courses and internships between 2013 and 2016. He spent two-thirds of that time working in sales. He worked in the sales back office from 2016, where he was responsible for the North and South American as well as the Turkish markets. During his time at the sales office, he completed his master's degree programme qualifying as a sales manager. He became Division Sales Manager for the Netherlands in 2019 and since 2021 he has also been Division Sales Manager for the US.



COMBINED POWERS

THE TRAILBLAZER

Krone and Lemken presented their joint concept study of an autonomous machine in March this year. XtraBlatt spoke to Krone R&D head Jan Horstmann about the background and aims of the project and its impact on future machines.



Admittedly, the term “process unit”, or PU for short, does not sound very exciting at first. Indeed, it sounds a little boring. Similarly, the term “Combined Powers”, CP for short, does not trigger any sort of great enthusiasm, rather it sounds like a working title. However, once we explain the technology associated with these names, you will look at things a little differently. CP is an autonomous drive unit which can be used with very different types of agricultural equipment. And if that didn't whet your appetite, then seeing the technology in use will.

The process unit has been in development since 2017 as a joint project between Lemken and Krone, and that's where the name Combined Powers comes from. The process unit was officially presented at a press event in March this year and a demo took place at a press workshop mid-May. “This unique technology is still at a very early stage of development, and that's why it doesn't have a proper name yet. Therefore, we see it as a concept study, rather than a product ready for market,” explains Jan Horstmann, managing director of RD at the Krone Agricultural Machinery division.

PROCESS OPTIMISATION

What makes the technology so unique? Krone and Lemken are, after all, not the first to research into autonomous vehicles. “The fundamental difference is that we're not developing an autonomous host vehicle that will operate our brand equipment. This would be the same as developing a tractor and then the equipment to be mounted to it. With Combined Powers, we start by looking at the task at hand, and then gear the entire development of the process unit towards this task. That's why we also don't view this technology as a carrier vehicle. For us, the power unit, meaning the engine and the drive, is only a means to an end for operating attachments in the best way possible. The focus is always on the task at hand, for example mowing, tedding, raking, ploughing, cultivating and sowing. Optimising field processes is most definitely the focal point,” Jan Horstmann explains.



He says there are two key aspects when it comes to the main motivation and aims in developing the process unit: Firstly, the autonomous technology, which is halfway to being ready for series production, will help counter the foreseeable lack of skilled labour in agriculture. The managing director states that this is not about having complex tasks carried out by less qualified operators. "This is of secondary importance. What's more important is that skilled staff can cover more hectares and achieve a better quality of work when operating autonomous technology. This means that one person operates two or three autonomous units while still doing other farm work, for example operating a regular tractor-implement combination. If needs be, they can carry out several jobs at once," Jan Horstmann explains.

The second key aspect is related to the actual quality of work – namely achieving a consistently high level throughout the day, something that even seasoned operators won't usually achieve consistently in Jan's experience. "As manufacturers specialising in harvesting equipment, we want to do everything we can to make ensure the highest level of performance for our machines to produce the highest quality fodder. That's why we are pursuing a different approach in developing our equipment, an approach based on the process itself. After all, the initial idea of the TIM tractor-implement management which sees the machine dictating the tractor what to do still doesn't work particularly well. The software programs and interfaces between tractor and equipment manufacturers aren't yet as compatible as they need to be. Not all processes we would like to automate can be automated; and not all interfaces are as compatible as the equipment requires them to be. That's why, at the end of the day, the data management does not work properly," Jan Horstmann explains the strategy of the CP partners. "That's why this project is also a statement: We strive for the optimal use of a machine by a powerful, mobile and self-sufficient source of energy. The key lies with the attached equipment not with the drive unit. It's not our aim to re-invent the wheel, figuratively speaking, rather we focus our development work on the right aspects."

DIESEL-ELECTRIC

Based on the idea of optimising processes, an interested observer might ask himself how a specialist manufacturer in forage harvesting and a specialist manufacturer in tillage and sowing implements can accommodate their very different requirements in a single solution such as the process unit. The managing director quickly puts paid to



these concerns: "This is why we made sure we could use our regular attachments – both arable and grassland – in their high-output versions. We paid close attention to this from the very beginning."

The approximate specifications of the process unit include a weight of between 7.5t and 8t depending on weights fitted and application, four 38-inch wheels, all-wheel drive, pulling and pushing action, a width of 2.7m, height of 2.6m and a diesel-electric engine with 170kW/230hp. The process unit can easily carry out the six tasks defined for the initial phase, which include ploughing, cultivating, sowing, mowing, tedding and raking, and it does so at the level desired with very good results in terms of traction as well as soil protection and speed. "The combination of these very different tasks ensures that the unit is utilised well throughout the year," Jan Horstmann continues.

In his opinion, one of the mainstays of the concept is the diesel-electric engine. This concept allows to cut the engine speed from that of the attachment and have the engine run in the most economical range for the work in hand. That explains why the pto shaft is driven electrically. The design is reckoned to make combined powers a particularly fuel-efficient unit.

PUT TO THE TEST

What are the essential areas that will be researched into in the practical field trials this year? After all, there will be three

units that will be put through their paces by farmers and contractors. Jan Horstmann states that there are two main research areas: autonomous driving and autonomous application control. With regards to the actual driving itself, they will explore the appropriate field size and structure for running one process unit productively or even several simultaneously. What autonomous driving concepts are there to increase work efficiency? And what are the data and data transfer requirements for this? The legal framework for autonomous driving and the necessary solutions for recognising the environment also play an important role. The role of the tractor driver should also not be forgotten. Up until now, his or her role has mainly been operating a tractor and attached equipment, whereas in future the focus will be on monitoring several autonomous units.

The second research areas of autonomous machine set-up and control looks at the development of sensors. Jan Horstmann explains that sensors will help to continually optimise things. One example he gives is maintaining an optimal work height, for example the famous 7cm when cutting grass. He states that in this regard, the traditional

tractor-implement combos could definitely be optimised, be it in terms of the settings or height control. "Autonomous control solutions could tangibly improve the quality of work," Jan states of his expectations of the technology. And this applies not only to the fully autonomous units: "The developments will also be of benefit for our production machines," he says, meaning that the process unit is actually playing a pivotal role in all future development work.

STEEP LEARNING CURVE

Apart from optimising the working height, he also envisages significantly improved driving and mowing strategies. Using corresponding software via the tractor's operating panel, these could really help the driver. He is convinced that there is further significant potential in terms of efficiency and quality when it comes to the best way to work fields – and the best way may well be different from how things have been done in the past.

“OPTIMISING THE PROCESSES IN THE FIELD IS MOST DEFINITELY THE FOCAL POINT.”

JAN HORSTMANN,
MANAGING DIRECTOR OF
KRONE RESEARCH AND DEVELOPMENT



The R&D head emphatically dismisses any worries about equipment bristling with sensors in the future: "We already know today that we'll need only a few more sensors if we install them in the right place and have them collect the right data. It is clear, however, that it's not just the sensors, but also the attachments themselves that have to become more robust and intelligent. There is still a lot of untapped potential here that we want to research into that during the next few years." To this end, there are two process units 2.0 available this year, which have been developed based on last year's experience with the first test unit. "Our concept is still at the very early stage of an extensive development process and we will continue working on this for years to come. But we've already kicked things off and what we've seen and learned so far is very exciting. Combined Powers PU is pioneering us into in a new generation of machines," Jan Horstmann summaries, and his enthusiasm is infectious. «

FERTILISING GRASSLAND

WITH COMPETENCE AND PRECISION

Contractors are more than just service providers. Alongside their machines, they also bring their expertise to the table. This is especially appreciated when it comes to effective application of slurry on grassland.

Grassland as far as the eye can see. Agricultural land on the German-Dutch border is littered with dairy cattle, and this has of course an effect on the services contractors offer in the region. Their daily work is dominated by spreading slurry and forage harvesting. Oudehinkel contractors in Emlichheim on the Dutch border specialise in these services. Tillage, sowing and the grain and rapeseed harvest naturally play a role as well, since the rural district of Grafschaft Bentheim, where Emlichheim is situated, is also well known for its animal husbandry and tillage. The diverse agricultural landscape of the region is reflected in Oudehinkel's machinery. Berend-Johann Oudehinkel set up the contracting business in 1958. Five forage harvesters, one Big M high performance mower conditioner, a powerful rotary rake and slurry equipment, among other machines, are housed in the machine sheds.

Spreading slurry has become even more valuable this year. The energy crises and the shortage of mineral fertiliser that goes with it means that simply "getting rid" of slurry is no longer an option, rather the focus is on using its constituents in the most effective way for nutrient supply. "Spreading slurry on grassland plays a very important role for us in the region," Fritz Oudehinkel states.

He has been in charge of the contracting company since 1998, when he took over from his father. The third generation has already entered the company- his son Patrick successfully completed his master craftsman exams in 2011 in agri service.

20% of the slurry they spread every year is spread on grassland. The first application is at the beginning of the growing season. After each cut, they spread more slurry until they reach the permitted limit. According to Fritz Oudehinkel, the rising prices for mineral fertiliser have so far not affected fertiliser costs for grassland in the region, because there is plenty of slurry available there. In fact, there is so much that in the winter months in particular some slurry is separated and taken away.

MANAGING, FERTILISING AND CUTTING GRASSLAND

Grassland management is a core business in this region. Grass silage, maize and roughage make up amongst the basic rations. The weather dictates the date when the grass and maize are cut, but there is some leeway as to when applying fertiliser after the cut. This however becomes less and less when rain is forecast. "Then every customer

Patrick (l.) and Fritz Oudehinkel provide a broad range of agricultural contracting services. Grassland is one of their key businesses.





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- 1 The self-propelled slurry spreader and the tractor-pulled slurry tankers are supplied by the HGV and a tractor fleet.
- 2 Offering precision, effectiveness and traceability by using advanced technology, contractors offer many advantages for farmers, Patrick Oudehinkel is convinced.
- 3 The trailing shoe is currently the benchmark in slurry spreading in the region, in particular in grassland and maize stands.

wants us to spread slurry right before it starts raining," says Fritz Oudehinkel whose grassland services also include harrowing and reseeding.

Each grassland job is commissioned individually. It is difficult to calculate contracts, Fritz explains. After all, yields differ in every cut so harvesting takes more or less time. Slurry is spread before sowing maize and cereal crops. While traditional slurry tankers with trailing shoe applicators are used on grassland, Oudehinkel use a self-propelled slurry tanker to go into cropland. This is their flagship in the slurry fleet. The three-wheeled vehicle is not only efficient, but thanks to its wide tyres and tyre pressure

control system it does not put too much pressure on the ground. "This is an important reason why some of our customers book exactly this machine," Fritz states. The slurry is worked into cropland with the help of 6m compact discs. They also use an 8.7m slurry injector on grassland.

SEPARATION ON THE INCREASE

To be and remain successful as a contractor for more than half a century, you not only need agricultural expertise, but also entrepreneurial vision. "As a rule, investments are decisions that must be viable for years to come," Fritz explains. This is especially true for slurry equipment, whereby it's not just customers' preferences that have to be considered but also ever stricter legislation. This refers to the precision of application and the timely manner in which the slurry is applied after the cut. In addition, there are the "red zones", where special conditions apply. "We have a few of these in our service area, too," Fritz underlines. "So, it's also on us, the contractors, to support our customers in their efforts of spreading slurry in line with the law."

Among the farmers in Fritz's service area, the trailing shoe system is currently the

measure of all things; however, this has not always been the case. Up until a few years ago, many farmers in the region were sceptical about this technology. The thick sausages of slurry applied to the ground contaminated the forage rather than fertilised the fields. This has fundamentally changed thanks to slurry separation. Fritz explains that the liquid that makes it to the field today is so thin now that the trailing shoe applicator can ensure that the nutrients actually reach the roots.

Fritz and his son Patrick have naturally thought long and hard about providing also a slurry separation service, but in the end they decided against it. One reason is that many farmers have meanwhile invested in separation technology themselves, another is the fact that mobile slurry separation is now being offered as a contract service. Given these facts, it would not make sense for us to invest in the technology. At the same time, the widespread use of slurry separation has led to a certain drop in slurry spreading contracts in the region.

EFFECTIVE LOGISTICS

This said, farmers continue to appreciate the services of professional contractors, especially the efficiency and precision they



The Hydro-Trike injects the slurry directly into arable fields.

get from them. "Spreading slurry themselves is only cost effective for farmers if the fields are in close vicinity to the farm," Fritz explains. By comparison, distances of three, four or more kilometres require logistic concepts that, in Fritz's opinion, only a contractor can provide. This is what Fritz can indeed provide – the necessary machine fleet and the experience in running the logistics.

Alongside the self-propelled slurry tanker, the fleet also boasts two slurry tankers with trailing shoe systems. A transport fleet consisting of four tractor-drawn tankers plus two HGV trailers supply the self-propelled machine and the tankers. Distances

of just a few kilometres are covered by the tractor-drawn tankers and the HGVs. "When distances are more than 8km, we find an HGV offers significant advantages in terms of speed," Patrick Oudehinkel says.

For a few years, the contractors also used two containers that were parked up on the edge of the field. "However, we don't do this anymore," Fritz explains. The reasons for this were that it was difficult to move the containers whenever they were not completely emptied and the extra effort didn't really pay off. "Within our business radius, we can set up slurry chains that minimise downtime yet without relying on stores," Patrick summarises.

NIR sensors are playing an increasingly important role in slurry spreading. The Oudehinkel contractors have already familiarised themselves with this technology, however they have not yet invested in it. "The cost-benefit ratio is not yet in our favour," Fritz explains. This, he continues, could change quickly, if for example the measurement results from the sensors are officially recognised by the authorities in the federal state of Lower Saxony. Then they would use NIR technology replacement of manual slurry sampling. "In such a case, the demand would increase and we would promptly invest in the costly technology," Fritz states. Slurry technology remains a challenge for contractors like Fritz and Patrick Oudehinkel. Challenges that they have up until now mastered with the necessary entrepreneurial vision, and challenges they will continue to master. «

CONTRACTOR SASKIA THUN, OLDENHÜTTEN, NORTH GERMANY

RESPONSIBILITY BORN OF PASSION



Thun contractors are located in Oldenhütten in the north of Germany.



As of July 2022, Saskia Thun and her brother Philip will take over their parents' contracting business in Oldenhütten in the very north of Germany. We spoke to Saskia about her work as a contractor, her activity in the association for young contractors and current issues in the sector.

XtraBlatt: You were a founding member of the Junge BLU (Federal Association for Young Contractors), which has been in existence since 2013. The association represents the interests of contractors, trainee agricultural service engineers and employees between 16 and 35 years of age. You didn't run as a candidate in the last election a few weeks ago – why not?

Saskia Thun: I've always said that positions on committees should not be held for too long by the same person. It is important to bring in some fresh blood. I have been president for nine years now. It's time to give someone else a chance. I will, however, remain a regular member until I turn 35. We don't have a successor yet, but it will probably be another woman.

XtraBlatt: This year, you also joined the committee of the Federal Association of Contractors in Schleswig-Holstein, where you live in northern Germany. How did the Federal Association for Young Contractors prepare you for this committee work?

Saskia Thun: The Federal Association for Young Contractors helped me take on responsibility and be forward-looking with planning. It also helped me practice public speaking. Also, I learned to deal with many different people, and that is different from the day-to-day work in our own business. Compromises are the order of the day when you work in any association.

XtraBlatt: Has working in the association helped you in your own business?

Saskia Thun: Definitely! We hosted several seminars on various topics that are very beneficial for our business. Apart from that, working in the association means a lot of networking, and the contacts I've made are very useful for our day-to-day business. If I have a question, such as on a cooperation or a new business field – I just pick up the phone to ask the company in question. It's definitely an advantage if you already know them. This is particularly important for me since I am mainly responsible for administration, organisation and accounting, whereas my brother looks after the workshop and daily operations.

A WOMAN SHOULDN'T BE TREATED DIFFERENTLY.

SASKIA THUN,
CONTRACTOR

XtraBlatt: What's your greatest motivation to work in the association?

Saskia Thun: As I just said – to make contacts! I love meeting new people, and we have a lot of fun together. That's not to say that I don't speak my mind. I hope that in this way I can be of benefit to others, maybe as a role model, a point of contact or a source

of motivation, especially as a young woman running a contracting business. We can do it.

XtraBlatt: It seems it isn't all too easy working in a contracting business as a woman, especially when you run the show. How do you deal with conflict and what advice would you give other women in a similar position?

Saskia Thun: I've learned not to let it get to me. 99% of our 40 or so employees accept me as a person and my wishes or instructions. Of course when we have new employees, there's always one or two who want to test me, especially my command of the machines. But my brother and I stand together and that works wonders! I think every woman holds all the aces herself: For example, I can operate all of our machines, I turn up every day in workwear and I'm not afraid of getting my hands dirty. The biggest problem for others seems to be that I'm a very structured person who likes things to be tidy and who expects this from others, too. I think that's more of a problem than being a woman. I also believe that a woman shouldn't be treated differently. That's why I have never attended any seminars specially for women. Working as a contractor, whether a man or a woman – it's just a job like any other!

XtraBlatt: Your job currently faces many challenges: rising diesel prices, long wait times for replacement parts, rising energy costs, just to mention a few – all caused



The contracting business focuses on agricultural work mainly for dairy farmers and on civil engineering projects.

As of July 2022, Saskia and Philip Thun will take over their parents' contracting business in Oldenhütten in the very north of Germany.

by the Corona pandemic and the war in Ukraine. How do you deal with all this as a business?

Saskia Thun: Every year on 1st March we adjust our prices in line with rising inflation. Our customers know and accept this. In agriculture, diesel costs are billed at current prices in agriculture whereas in civil engineering they are included in the quote. This is a boon for us in the currently difficult business climate. At least the prices are slowly settling down here, and luckily, we haven't had any supply bottlenecks with diesel or AdBlue. But we have noticed that we have to wait quite a while for replacement parts and that quotes are only valid for a short space of time, meaning we have to act quickly. I also hear from some dealers that they simply cannot deliver a part, and that's it. I would like to see more effort put into finding a solution nevertheless, because a contracting business has to be flexible, and that doesn't just apply to the weather.

XtraBlatt: How flexible do you have to be?

Saskia Thun: When the weather is good, we focus on our farmer customers wherever possible. If the weather is bad, we have to reschedule things at short notice and we fo-

cus more so on civil engineering projects. We recently started installing and maintaining septic tanks. I see the most potential for us in civil engineering at the moment. Farmers expect more and more efficiency in less and less time. It's a huge challenge to meet this need, especially since the investment required does not fully pay off. For example, in 2021 we effectively had only five days for chopping the first cut as opposed to the two weeks we usually get. We have to make up for such losses because financially we want to and have to employ our team all year round.

XtraBlatt: Given the current shortage of mineral fertiliser, are your customers asking for slurry to be spread?

Saskia Thun: No, our customers mostly spread their own slurry. Spreading slurry isn't particularly relevant for us. I do, however, think it's good to see slurry increasing in value and losing its image as a waste product.

XtraBlatt: Do you see any opportunities in the current situation?

Saskia Thun: Yes, I do. For example, I'm currently trying to employ some Ukrainians. Depending on their qualifications, they could

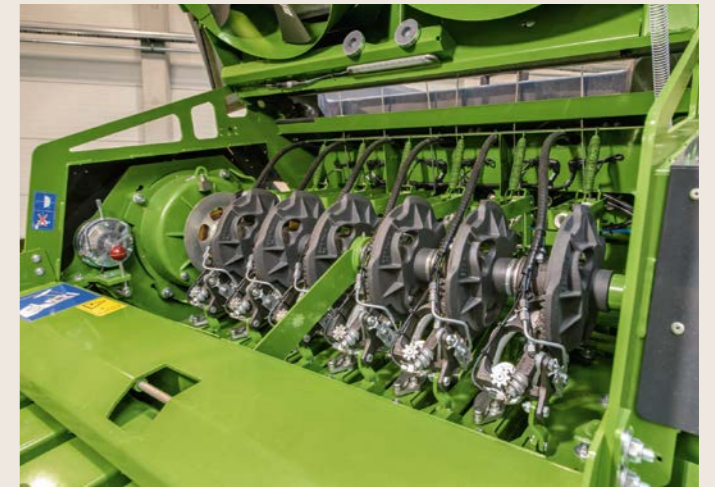
work in any area of the business. This would be a win-win situation for all of us: Refugees would have a chance to get a good job and we could offset the shortage of skilled labour. Unfortunately, the authorities don't make it easy for employers, since no one seems to feel responsible for the refugees. But I'm working on it! We always need good staff.

XtraBlatt: To what extent do farmers have to change how they work in future?

Saskia Thun: I think that many farmers are being forced to act more and more as businessmen. Our customers are already well set up in this respect. Most of them are dairy farmers with on average 100-head herds, and most of them are family-run. Many of them have external feed consultants, for example, who help them develop new strategies for the future. But I'm convinced that as a contracting business, we can offer farmers a significant advantage in terms of efficiency, quality and cost reduction. In my opinion, it rarely makes economic sense for farmers to invest in their own machinery. This is where contractors can contribute a lot to the industry. «

V-KNOTTER TYING BALES WITHOUT PRODUCING OFFCUTS

A new V-knotter has been developed by KRONE for the BiG Pack baler. Available as of autumn, the new design combines the reliability of the double knotter with the technique of the Cormick single knotter which ties the knot without cutting off the tail ends. How you do it: The processes that lead to the formation of the closing knot hardly differ from those in the regular double knotter (Deering system). As the only difference, the electric pedal As the twine disc rotates it pulls the twine through the stationary blade for making the cut. The scraper forms the string knot (Deering knot) on the knotter hook by pulling the knot over the ends. This finishes the bale.



Next, the knot that starts the next bale is tied. The needles go back down to their home position, delivering the upper and under threads to the knotter hook as they do so. As the knotter hook starts turning, it pulls out – assisted by the twine puller – the twine ends which are now retained by the twine retainer. The ends form a loop in the starting knot (loop knot or Cormick knot). The open-base V form of the knotter hook which allows the loop to be easily pulled

down and out of the hook. By combining these two knotter designs, Krone has developed an extremely reliable double knotter that produces no scrap tail ends. Unlike a single knotter, the new double knotter doesn't cut off the ends and is particularly suitable for tying high-density bales. «

EASYCUT TC CONNECT COUPLING FRAME FOR CTF

Krone has developed the special EasyCut TC Connect implement coupling frame for Australian and American farmers who use it to couple two trailed mowers to the same tractor. The new EasyCut TC Connect coupling frame was developed for the Trailed Center EasyCut TC 400 and EasyCut TC 500 mower models. The EasyCut TC 500 cuts at widths of more than 12m when combined with a Krone front mower and is suitable for Controlled Traffic Farming schemes (CTF). CTF is becoming increasingly popular not only in Australia. Controlled traffic means that all machines run in the same wheel marks for better protection of the valuable soil and reduced compaction.

The scheme is particularly beneficial in sensitive crops such as alfalfa. Running in 3m and 6m patterns, the EasyCut TC Connect allows farmers to cut at widths of more than 12m and up to 13.08m. EasyCut TC Connect can couple various machines without affecting their functionality. Australian and American farmers, for example,

often operate the front-mounted EasyCut F 400 CV Fold together with two EasyCut TC 400 rear mowers, producing three identical and voluminous swaths for uniform wilting of the entire crop stand. «





TRAINING CENTRE

EXPERTISE GOING GLOBAL

The best agricultural machinery cannot prove its worth if users and service staff do not know it inside out. This is where the Krone Training Centre comes into play. Here we take a look behind the scenes.

The relief is palpable everywhere: After two years of the Corona pandemic, restrictions are gradually being lifted and it is now possible to meet up in larger groups. This not only applies to us personally, but also professionally, for example training sessions for customers and colleagues in agricultural dealerships can once again take place in person. These training sessions, essential for showing how to optimally use, maintain and repair machines, were heavily restricted since the spring of 2020, at least in terms of in-person training.

“On average, around 4000 people take part in our training sessions each year. For the financial year 2018/2019, we welcomed almost 90% of these participants in person at our Krone training centres in Germany, while the remaining 10% took part in on-site trainings sessions at dealerships and online training. For 2019/2020, on account of the pandemic, we had in-person training for a good 60% of participants, while for 2020/2021 this was down to around 30% – although given the tight restrictions we were very happy with this number,” Jan Holk reports. Jan is in charge of Training and Technical Information Management at Krone. Julia

Kunk joined him in 2021, and she is in charge of the Training Centre at the Spelle headquarters near the Dutch border. This training centre was newly built in 2013. Along with her colleagues, she is responsible for participant management, including catering and booking hotels.

But, as Julia Kunk notes, the training network is by no means restricted to the Spelle training centre. Krone offers training at a total of five locations in Germany, including the two company-owned sites in Bavaria (in tandem with Lemken) and in Baden-Württemberg in the south-west of Germany. Training is also offered on behalf of Krone at the renowned agricultural machinery school in Triesdorf, and at the DEULA adult education training centre in Freren, both near the Dutch border.

PLENTY OF HANDS-ON EXPERIENCE

“We offer courses on our machines for both customers, and sales and service partners at these locations. We have courses on mowers, tedders, rakes, round and square balers as well as transport technology. We offer all of this in Spelle, too. However, we are mainly focused on training sessions on the BiG X and BiG M,” Jan explains. Jan has found that not every customer is willing to undertake the long journey from various parts of Germany to Spelle to learn about the “smaller” machines. “Tailored training is, nevertheless, very important for making the best use of even supposedly simple technology. We often see a light bulb go off for participants when we give them practical tips on maintenance or the perfect settings. As always, hands-on experience is very important in our courses,” Jan says with a wink.

For this reason, he and Julia believe that in future the focus will definitely be on in-person training sessions with plenty of hands-on experience. They have their eyes not only on

new customers, but also in particular on participants from the 65 countries worldwide where Krone sells its machines. Generally speaking, guests stay for at least two days for a training course, and those who have travelled a particularly long distance might even stay for up to a week. “We want to use these visits to pass on our extensive knowledge, but also to show our guests our sense of hospitality, which is a matter of course for Krone. It is equally important for us to strengthen attachment to the brand as well as the links between us, the manufacturer, and the importers, dealers and customers – in other words, we want to build and consolidate a sense of community. Quality and competence are one side of the coin, while the Krone community is the other side,” Jan explains.

It goes without saying that course participants also get to go on an extensive factory tour. Further highlights, especially for guests from abroad, include seasonal outings such as barbeque evenings, bowling and Christmas markets. But even the “standard” lunch on course days can become a special experience, for example if a participant loads up his dinner plate of roast and potatoes with red jelly pudding and vanilla sauce because he has never seen this kind of dessert! “On the other hand, a guest from Japan once brought his own packet soup just to be prepared for all eventualities,” Julia explains, continuing: “But seriously, the diverse nationalities and the time spent together here in the training centre not only make for exciting times, but also help the group bond and ensure that they establish a sustainable network. This is amazing, and something that cannot be replicated with online events.”

ONLINE COURSES ON THE INCREASE

The online aspect of further training, will, however not shrink back in importance to pre-Covid levels, rather it will remain a significant and essential part of the Krone training concept. One thing has become very clear over the past two years, according to Jan and Julia: “Online training allows for complex knowledge transfer, sometimes even more so than with in-person training. But as we already said, this does not replace learning on-site with the actual machines. Yet, efficiency in terms of time is increasingly important to both our customers and dealers. That’s why the acceptance of online training and the positive experience of using it during the pandemic has increased quite noticeably,” Jan explains.



“It is, however, important to offer different online concepts for various levels and training content,” Julia continues. This includes livestreaming courses. To this end, a hall in the training centre was turned into a TV studio with state-of-the-art camera and broadcasting technology. The trainer and the camera person can show the audience everything they need to know live and can also answer questions. “The advantage here is that every participant always has an optimal view of the machine, something that can only be achieved with much smaller groups during in-person training,” she explains.



- 1** The number of online trainings increased significantly during the two years of the pandemic.
- 2** Jan Holk (head of training and technical information management) and Julia Kunk (manager of the Spelle training facility) set the pace in Krone training and education.
- 3** The training events are attended by about 4000 people every year.



Another category is e-training. These sessions are generally between 20 and 30 minutes long and are thematic learning nuggets or smaller units. Video training, on the other hand, is much more comprehensive, lasting up to 4 hours. Video training deals with more complex information divided into chapters. Participants can pause and repeat the video as often as they like. Exams go along with these online courses to assess and confirm the participants’ progress and level of knowledge. Jan and Julia both agree that these types of training modules will continue to gain in significance in the future.

INFORMATION AT YOUR FINGERTIPS

In view of future trends in his field, Jan outlines another subject that the team are currently putting a lot of effort in to: the Technical Information Center, or TIC for short. This is an online portal that will be integrated into mykrone.green. Users can access information on using Krone machines, repairing them or carry out “guided troubleshooting” with the TIC – based on a search very similar to a Google search.

In the background, the team is currently collecting comprehensive material for the portal. “The basic idea here is a media library consisting of blocks of knowledge, rather than huge folders. These folders will, however, also be linked within the mykrone.green system, making them easy to use and extend,” the manager explains. He predicts that this new, innovative offer will be released in the first quarter of 2023. “Finding rather than looking for information will then be our focus more than ever before. We will thus be able to offer dealers as well as customers a more comprehensive, and above all else, easier to use database of knowledge.”

NEWS TICKER

THE LAST EASY-CUT 6210 CV

The last EasyCut 6210 CV series mower rolled off the assembly line a few weeks ago after about 600 units have been built of this trailed rear mower with 6.20m working width and conditioner over the past two decades. Yet today, customers tend to order triple mowers.



CONSTRUCTION WORK COMMENCES

As planned, Krone began construction of the new parts and logistics centre at Spelle this last spring. The new premises will cover approximately 7.5 hectares and are scheduled to go into operation at the end of 2023. The investment amounts to around €40 million.



EXPANDED BOARD

Following the strong growth of the Krone Group in all business segments, Ole Klose was appointed as a new member to the management board where he joins Dr David Frink and Dr Stefan Binnewies as of April 1, 2022.

PHOTOS WANTED

For the 2023 Krone calendar, Krone is once again looking for photos that feature our machines at work in the fields around the world. Anyone who has taken a great shot that showcases a Krone machine in action, please send the photo to agpics@krone.de. The deadline for entries is 31 July 2022.



AUGMENTED REALITY

As part of an international project which was also co-funded by the EU, students from Germany, Finland, Italy, Spain and the Netherlands gathered at the Krone Training Center on "Augmented Reality", i.e. computer-aided reality perception, in the context of Industry 4.0.



A FORAGE WAGON CUSTOMISED FOR WETLAND

Named "Wetland combi", the wagon is a KRONE AX that was given tracks to go into wetland. In fact, the rig was tested right away in various wetlands by its maker contractor van Boxmeer from Helmond.

ANNIVERSARY IN PARAGUAY

The firm Cotripar in Paraguay was founded 25 years ago and has been flying the Krone flag for 10 years. The 10-year anniversary was celebrated by staging a customer event.

SCHOOL-INDUSTRY AWARD

The Agricultural Machinery division too third place in a national competition that honours promising projects that suggest great potential the Krone agricultural machinery division took 3rd place in the "Starter" category. With this award, the SCHOOL-INDUSTRY network honoured the KRONE division for its outstanding commitment in vocational consulting at regional schools.



KRONE GX IS FARM MACHINE 2022

In a large reader voting that was conducted by German agricultural publisher DLV, the KRONE GX general-purpose wagon took first place in the "Logistics" category.

PRESS WORKSHOP

More than 40 trade journalists from 16 European countries recently witnessed the autonomous process unit "Combined Powers" in a field demonstration that was jointly held by Krone and Lemken and discussed the pioneering technology.



PELLETS FOR HORSES

At Equitana, the world's leading trade fair for equestrian sports, Krone showcased recently the Premos 5000. The theme of the KRONE stand was the production of pellets from fibrous materials and their use as bedding and animal feed.



COMPANY PENSION FOR 40 YEARS

Karl Schniederger is the first member in the Krone staff who has been receiving a company pension for 40 years. A qualified locksmith and now aged 101, Karl Schniederger joined the Agricultural Machinery division in March 1951 and retired in February 1982.

STEINBRENNER LANDTECHNIK

SERVICE IS OUR STRENGTH

Willy Waldmann, head of the agricultural machinery division of Steinbrenner in Wörnitz, believes that it is not a specialist dealer's size that matters, but the service they provide. For him, the quality of service is key. He explains to us what he means by this.



There is a well-known saying among agricultural machinery dealerships: the sales department sells the first machine and the service department sells all the rest. In other words, if the customer service and parts department don't provide the right level of support and the repair shop is not properly set up, the seller will find it difficult to pitch successfully to customers in the long-term. "And that's precisely our motto: in the new machine business, expert advice is the name of the game, but long-term customer satisfaction is dependent on the quality of the dealer's service provision," explains Willy Waldmann. He manages the agricultural machinery division of Steinbrenner GmbH in Wörnitz, a town in the Franconian region of Bavaria to the south of the tourist hotspot Rothenburg ob der Tauber. "But we take this guiding principle one step further: our service should be so good that it wins us new customers as well and thus the proverbial first machine," he says with a wink.

And this strategy appears to be working, judging by the number of contractors in his customer base; after all, they expect excep-

tional machine performance and service. "That's entirely logical when you consider the pressure they are under throughout the season and the high machine utilisation rates – take green forage harvesting, for example; if the harvesting chain came to a standstill, costs would soon mount up to €800 or even €1000 per hour," he explains. It's all the more satisfying, then, that he now calls contractors in a radius of 50km, and one even over 100km his customers. "Obviously that's not really ideal because the travel times are so long. But in an emergency we will help out if we can," adds the agricultural machinery dealer.

ROCK-SOLID ENGINEERING

The "we" refers to the 23-strong Steinbrenner team, including owner Werner Steinbrenner and his wife Susanne, his sister Ruth and her husband Willy Waldmann. The next generation in the form of daughters Verena Strachovsky and Nicole Steinbrenner is already actively involved in the business. The company operates in three core areas: car sales employs five people and agricul-

Willy Waldmann is responsible for the company's agricultural machinery sector. Brother-in-law and owner Werner Steinbrenner focuses on car sales along with his daughter Verena Strachovsky (pictured with her daughter Mina).

tural machinery sales employs ten. Each has a dedicated repair shop. Then there is the metal fabrication shop with a workforce of three. Agricultural machinery is by far the strongest sector. "Nevertheless, we are still a traditional family business of modest size. I see this as a strength since size alone is no guarantee of success. Far more important is customer focus, dedication and flexibility – and we are ideally positioned in this respect. And more than anything else, it's the people who make the business," he adds with great conviction. Anyone familiar with Willy Waldmann and the Steinbrenner team knows that this is not just a throwaway remark.

The core agricultural machinery brands include Deutz-Fahr, Krone, Amazone and Berti. Willy Waldmann and his colleague Stefan Sarke, who also manages the repair shop, handle agricultural machinery sales

- 1** Ten of the 23 staff are employed in the agricultural machinery division.
- 2** Krone is one of the main brands at Steinbrenner Landtechnik. The company supplies the full Spelle product range with the exception of forage harvesters.



between them and generate a turnover of around 4 million euros in this sector alone – an impressive figure, considering that Steinbrenner does not sell forage harvesters. “Although forage harvesters are of course part of the Krone range, including this product in our sales range would be untenable for us, because in our region the number of suppliers and the associated price pressure is too high. Furthermore, we need to have a certain number of machines running in the market to be actually able to provide the required standard of service. After all, our engineers need to be trained and the training costs are high,” he says in explaining the reasoning behind their setup. But that does not stop the above-mentioned contractors from calling on the Steinbrenner mechatronic engineers when their forage harvesters break down, even though Steinbrenner doesn't sell those machines. “The lads in our repair shop are fantastic, it's well-known,” says a delighted Willy Waldmann.

HIGH LEVEL OF TRAINING

Even though forage harvesters are not part of our portfolio, our engineers need a very high level of training to fix these specialist machines. Willy Waldmann and his brother-in-law see education and training as the lifeblood of a successful agricultural machinery business. All staff are expected to have a high level of knowledge as standard and the leaders are required to have specialist knowledge in individual brands. For example, two of the ten mechatronic technicians are top-flight Krone specialists, while a further two each are specialised in Deutz-Fahr and Amazone. “Without our proficiency and expertise, it would be impossible to deal with the challenges at peak season and offer rapid solutions – not least because of the ever-increasing number of electrical and electronic components,” says Willy Waldmann. The team is also qualified

and authorised to carry out engine repairs – not something you can take for granted with an agricultural machinery dealer of this size. “We can repair everything in-house, at almost any time of day or night if necessary,” he adds.

However, to keep this “firefighting” role within reasonable limits, preventative maintenance at Wörnitz is “writ large”, both literally and figuratively speaking. All his customers’ BiG Ms as well as a many square and round balers are brought into their repair shop in winter. And if it's too far to travel or the customer wants the maintenance to be carried out in their own workshop, a Steinbrenner engineer is dispatched there in the maintenance vehicle. “Generally, contractors prefer to do it themselves. But we are increasingly being asked to take over which is due to the electronics and the expensive diagnostics tools they require. On top of that, because of their experience our lads know the equipment inside out, so the customer can rest assured that their machine is optimally maintained and will deliver top performance during the season,” reports Willy Waldmann.

And the spin-off is that the master agricultural engineer can make full use of his repair shop team even in winter. “I've explained this very clearly to our customers: a top service is like give and take, otherwise it cannot be maintained. Times are hard enough for farmers and contractors. But our customers recognise quality when they see it. Service is our strength,” says top-notch agricultural engineer Willy Waldmann in conclusion. «

PREMOS

ROADSHOW

How do you introduce customers to a complex machine and a technology that needs quite a bit of explanation? The best way is by live demonstrations. Consequently, the mobile pelletiser Premos was taken on a roadshow through Germany by a team of three Krone colleagues.

Premos has received extensive coverage by now, including in this XtraBlatt. Yet, for those who would like to get an update, let's recap. The KRONE Premos 5000 pro-

duces pellets from straw and other stem crops – either as a mobile pelletiser while harvesting the straw in the field or as a stationary unit on the farm. The straw

pellets are high quality and have a bulk density of 600-700kg/m³. Structure pellets differ significantly from so-called DIN pellets. They are much larger and measure



One of the highlights of the tour was this hall which stacked with 140 tonnes of clover grass bales ready for pelletising.



16mm in diameter and are made from unchopped material. Offering an excellent liquid absorbing capacity, being absolutely dust-free and forming a soft but grippy mat, they make excellent bedding also for horses. They also fix ammonia from the air and they serve as roughage in animal feeds or as manipulable material that keeps pigs occupied. Also, they offer an enormous potential as a renewable energy and absorb 3.5 times less storage space than HDP straw bales.

These are the facts. Yet, how do you bring these selling points home to farmers and contractors? Niklas Beindorf, André Wobbe and Dennis Meyer from the Krone product marketing teamed up to develop a strategy. "Premos is a machine that requires explanation. Our goal was to demonstrate the production processes to potential customers on their farms," explains Niklas Beindorf. Looking back, he adds: "But it wasn't all about hardware and machine functions. In fact, we also wanted to turn the spotlight on the end product. We wanted to give customers an idea of what they can do with pellets, point out their market potential and

discuss the materials that are suitable for pelletising."

TIGHT SCHEDULE

No sooner said than done. The Premos Roadshow started in September 2020. The initial plan was to conduct two demonstrations per week. "Yet pretty quickly it became clear that this plan was too ambitious. After all, the machine travelled on its own axle through Germany. Road travel, preparations, the introduction to the machine, the demonstration itself, packing up – all that

took more time than anticipated. So quite quickly we switched to one demonstration per week," André Wobbe tells.

The machine was moved and demonstrated by a team of two persons, one travelling ahead in a car to scout the route and ensure the tractor press combination would not encounter any unpleasant surprises. The other colleague would follow, driving the tractor with the pellet machine in tow. "Initially we used a 400hp Massey Ferguson that delivered a good performance. says André Wobbe and adds: "Yet, when we



André Wobbe and Dennis Meyer spent a whole week on this farm.

pelletised materials like hay, it would start struggling. In those cases we would hitch the machine to a Xerion 5000. This is an excellent machine for pelletising, because on the one hand it's got the right punch and on the other the swivel cab gives you an excellent view of the machine during stationary pelletising. Riding a systems tractor on public roads however is not as much fun than a regular tractor, because the systems tractor is a chunky piece of kit and its ride comfort can't compare to that of wheel tractor.

Whenever we arrived at a farm, we would instantly start preparing the machine. "This took about 10 minutes. We just had to find a suitable spot in the yard and fold out the components hydraulically. Then we were set and ready to go," says Dennis Meyer.

pellets in one hour. "Everybody who is familiar with pelletising is surprised at this output. Yet those customers who are new to the technology and who are used to baling 70 tonnes of straw per hour do need some background information on the efficiency of our Premos," explains Niklas Beindorf and continues: "In Germany, Premos is nearly exclusively used as a stationary machine.

After all, the harvest window for straw is rather small in these climate zones and mobile pelletising would take too much time. The bale feeding table is an option which also shreds the bale, turning Premos into a stationary pelletiser within no time. In this set-up it can operate throughout the winter. Its power input is significantly smaller than that of comparable industrial plants.

60 °C during the pelletising process. Consequently, the energy inside the straw is exploited more effectively," explains André Wobbe.

When Dennis Meyer locks back, he says: "We found that background knowledge on the Premos varied significantly among the customers. Some people had put their heads into the machine before it actually pulled into the yard. They had everything set up and ready to go. One example is an organic farm in northern Germany. When we arrived, the farmer took us to a hall where he stored 140 tonnes of clover grass hay baled into big bales. Within five days we turned these masses into pellets for bedding for greenhouses and brassica trial fields,"

tells André and continues that some customers take no interest in the machine itself but only its product. "So, I need to think about what they can do with the pellets and how they can market them. Before they make the purchase decision, they need to have their buyers lined up." As a nice spin-off effect of the tour, some customers decided to invest in a Premos after they had watched the demo on their farm. "We don't sell Premos as yet but only lease them," explains Niklas Beindorf. "After all, we need to gather more long-term experience in the field." «



Niklas Beindorf set up the Premos Tour together with André Wobbe and Dennis Meyer (from left to right).

What is important is that you maintain a constant stream of material into the pellet press. "The operator who is in charge of the material feed must ensure a constant supply," explains André Wobbe.

5 TONNES PER HOUR

Depending on which material was available, Premos would produce up to 5 tonnes of

INSIGHTS FROM THE ROADSHOW

The tour brought new and valuable insights for the Krone staff, too. "For example, one customer told us that his digester yielded up to 50% more gas when fuelled with pelleted rather than chopped straw. The explanation for this is that the lignin in the stems is broken down by the high pressure and the high temperatures of more than

Where do we go from here? "All in all, we carried out 49 demonstrations in Germany, Belgium and Denmark. says Niklas Beindorf and goes on: "The project turned out to be a great success. Although on-farm demonstrations are very time-consuming to plan and carry out, it was important for us to go out, because we want to get ahead with marketing the product and convince our customers that pelletising is a lucrative business." This technology is best demonstrated in the field at the customer."

RECKE RENEWABLE ENERGIES:

ENERGY TRANSITION AT LOCAL LEVEL



A regional energy source: The Recke biogas plant delivers heat and power and will also provide Bio-LNG in the future – a climate-neutral fuel.



We need to reduce our use of fossil energy sources if we are to cut CO₂ emissions. And there is a political desire to become less dependent on Russian energy. So we need short-term alternatives. The biogas plant in Recke, a small town in western Germany, is an example of what this might look like.

Steffen Berkemeyer manoeuvres the heavy wheel loader around the premises of the Recke biogas plant with a seasoned hand. The plant manager fills one of two feeding systems with fresh biomass – maize silage and farmyard manure. Each of the feeding systems supplies three fermenters. Even in spring, there was still plenty of maize silage on hand. “We actually bought too much last spring,” says Franz Lührmann. As things stand today, it was the right decision since biomass prices will likely soar too as a result of the current energy crisis.

Franz Lührmann serves as managing director of Ökoenergie-Recke GmbH & Co. KG. And he is one of 24 farmers from the region who banded together in the early 2000s to build a biogas plant. With a capacity of 1MW, this plant was connected to the grid in 2002. It was overhauled in 2008 in a project that doubled its capacity to 2MW. The addition of more co-generation units boosted the plant’s total capacity to 3.5MW, making flexible production a possibility now. In other words, electricity is generated when it’s needed the most. The biogas gen-

Its own gas network: The biogas generated by the plant is distributed to various co-generation units in the district of Recke.

erated by the plant is distributed to various co-generation units in the district by its own pipeline network. In turn, they heat buildings, stables and the school and sports centre in Recke. The Steinbeck sulphur spa with its sauna, physio and massage practice are another customer using heat from the plant. The electricity that is generated is fed into the grid.

FUTURE-PROOFING ENERGY SUPPLY

Despite fluctuations in feedstock prices, plants had been guaranteed to run cost-effectively, not least thanks to tariffs ensured under German renewables legislation. But, almost 20 years after the biogas plant boom began, many of the 9,600 or so installations in Germany are facing a turning point. With feed-in bonuses coming to an end, these plants will have to work out how to be profitable on their own.



Plant manager Steffen Berkemeyer is responsible for technical operations at the biogas plant.



Plenty of throughput: The biogas plant has an operating permit that allows it to ferment 45,000t of biomass.



From farmer to renewable energy specialist: Franz Lührmann, managing director of Ökoenergie-Recke.

This situation is complicated by the fact that a whole new landscape is emerging for biogas production at the moment. Lührmann anticipates that the recent rise in prices for grain maize will mean that less maize is available to produce biogas. This will make it harder and, above all, more expensive for operators to buy biomass to run their fermenters.

With this in mind, the partners in Ökoenergie-Recke had to consider how to set the plant up for future success. After lively discussion, a pilot project on bio-LNG production was launched last year (LNG stands for liquefied natural gas). Natural gas of fossil origin generates much lower emissions than fuels based on crude oil as it is being burned. Making biogas-based LNG even creates a largely climate-neutral fuel. Bio-LNG can also be used as fuel for heavy traffic by virtue of its very high energy density. Many freight forwarders and hauliers in Germany already opt for this clean drivetrain technology, too. A few HGV manufacturers are already offering the required vehicles which are also suitable for long-haul transport. The volume of natural gas in its liquid state is about 600 times smaller than its volume in its gaseous state. Driving around 1,500km is easily conceivable with the right tank capacity.

The partners involved in the pilot project,

which include Krone Holding, feel that as a climate-neutral fuel, Bio-LNG is also the most affordable option for advancing climate goals, reducing CO₂ emissions and supporting the transport industry on its journey to climate neutrality. This innovative approach could also offer interesting opportunities for many biogas plant operators in Germany. In comments made when presenting the project during a visit by the German Federal Minister for Education and Research, Anja Karliczek, Bernard Krone, chairman of Krone Holding's supervisory board, stressed: "Bio-LNG is a smart, sustainable and future-proof business model for taking existing biogas plants to the next level – and, as such, it's an intriguing issue for many farmers. Of course, that was a compelling reason for us to get involved in this project, too."

EMISSIONS TRADING

But it's not just the growing demand for LNG that made producing this climate-friendly fuel appealing to the biogas plant operators from Recke. "As a producer of biogas-based LNG, we generate climate-friendly energy and receive CO₂ certificates that we can sell to companies with a negative emissions footprint," explains Franz Lührmann. This lucrative business has a positive impact on the income side of a biogas plant's balance

sheet. The fact that Recke's fermenters are fed with both plant-based raw materials and manure offers a welcome additional effect. The more these waste products are used to generate biogas, the higher the number of emissions certificates the plants can give out.

The operator is currently working with the project partners to find a technical solution to liquefy biogas. The first step is to clean it. Then it is cooled to -160 °C, changing its physical state. It's then stored in special cryo storage tanks under pressure (ca. 3–16 bar) to keep it in liquid state. Lorries fitted with LNG technology also have cryo tanks that maintain low temperatures and pressure. An LNG drivetrain for agricultural vehicles is also imaginable.

ALL KINDS OF BIOMASS

Franz Lührmann is currently exploring the technologies available to produce Bio-LNG. "For one thing, we have a variety of methods to liquefy biomass. For another, we have very little experience with operating these plants at the scale that we need," he said, describing the challenges of technical rollout.

The demand for biomass is vast. The plant in Recke has an operating permit that allows it

to consume 45,000t of biomass. Around half is delivered by the plant's partners; the other half is bought from other sources. Roughly 35% of the biomass is solid manure from a poultry farm, with the remainder made up of maize and a little silphie. This latter crop grows to a height of around 2 metres and can be gathered using harvesters. "We chose silphie so that we can use less maize in the future. With strong price volatility, the high amount of maize we use at the moment is making overall costing hard. But it's not realistic to replace maize altogether as things stand," stressed Franz Lührmann.

That being said, he is confident that the Bio-LNG project will be a building block for success in the history of Ökoenergie-Recke. Another community project involving farmers and landowners from Recke and nearby Hopsten is a community-owned windfarm with a total capacity of 25MW. «

In the final stages: this year, Ökoenergie-Recke will connect the Hopsten-Recke community-owned wind farm, its own wind farm with five turbines and a total capacity of 25.2MW, to the grid.



PROTECTING YOUNG WILDLIFE

THE RIGHT WAY TO SAVE WILDLIFE



Conny Eilers from Lengerich in north-west Germany is a passionate hunter and has been helping save wildlife for many years now as a volunteer.

Extra care should be taken with the first cut of grass and rye grass each year, because mowers can be life threatening to young wildlife and ground-nesting birds. It is very important that farmers, hunters and contractors work closely together to protect the animals, and that they observe a few ground rules.

Although efficiency and effectiveness are essential for producing good silage, with the first cut in spring, a large number of young wild animals are in danger if they cannot escape or find safety from the mowers that approach very quickly and often have a wide working width of up to 10m. “Most people focus on fawns when it comes to animal deaths caused by mowers, but hares, rabbits and ground-nesting birds are just as much at risk,” reports Conny Eilers from Lengerich in north-west Germany. He is a huntsman and, for the past four years, a drone enthusiast with an eye on wildlife protection.

How does he protect wildlife? One important aspect is to search the area with dogs, which is best done the evening before mowing. “The bad scent scares off the does, who then ideally round up their fawn from the grass. But you can by no means rely on this method alone”, the experienced and passionate gamekeeper explains. Firstly, it often happens that the animals go back to their spot in the grass. Secondly, the dog might not be of any use in finding the fawns, as they do not give off any scent in

the first few days. “That’s why searching with a drone is the preferred method,” Conny continues.

This is a very professional, and thus expensive, solution also used by police and rescue services, and the drone features a very sensitive thermal imaging camera. It detects thermal differences of as little as 30 millikelvin, in other words 0.03 degrees Celsius. He adds that to reliably identify an animal in the field, the drone should be used early in the morning, because once the temperature rises, a sensitive thermal camera is no longer of any use, and temperatures can rise even before noon. In May 2020, temperatures were sometimes above 20 degrees in the morning, meaning a search with a drone and thermal imaging camera made little sense. By way of contrast, in spring 2021 there was quite a lot of rain and low morning temperatures, at least in Emsland in north-west Germany, meaning that every fawn showed up on the camera as a bright dot in the grass. “But even if you can reliably find all furry animals, it only works to a very limited degree with birds.” If you find an animal and need to take it out of

the grass that is about to be cut, huntsman Conny advises you do not touch the animal with your bare hands as otherwise it could lose its natural protection against predators, i.e. its odourlessness. It is fine to pick up the animal if you wear gloves and/or to pick it up using a tuft of grass. Experience shows that the young animals lie along the edges of meadows. Conny therefore explains that it makes most sense to put the animals in a protected area outside the meadow so the mother can then find them later on.

CAREFUL COORDINATION IS KEY

Conny notes, however, that farmers, hunters and contractors need to work together very closely and coordinate their time precisely for their search to be successful. There should not be more than 30 minutes between finding the animals and mowing, so that does and fawns do not wander back into the field. This requires all those involved to communicate and be willing to stick to the aforementioned timing. For example, Conny warns that changing the sequence of fields to be mowed at short notice puts paid to any previous success of finding and moving animals.

However, he is very satisfied at how well this cooperation works in Emsland in north-west Germany. In the meantime, he has provided dozens of hunting communities, clubs, associations and private individuals with support not only in his home region, but also across Germany, advising them how to save animals and to invest in drones. Grants and incentives are very helpful in this regard, and he strongly recommends people make use of them. Training on how to use drones is also very important for success, he adds. “It’s certainly not enough to just look at a tutorial on the internet. To find wild animals, you need actual experience flying a drone,” he emphasises.

Although a drone purchase is required and volunteers usually do the work, there are

» VIDEO “MOWING STRATEGY TO PROTECT WILDLIFE”



Via <https://kurzelinks.de/Wildschutz> or the QR code, you can view the current Krone video on the recommended mowing strategy to protect wildlife.

- 1 Farmers, hunters, drone flyers and contractors should coordinate their work to best protect wildlife.
- 2 Drones are the most effective technology for finding young animals. Given the costs, people should by all means make use of grants.



1

which can happen when animals are injured or even killed during mowing. The animal population would be protected, and from the point of view of the public, who are constantly worried about animal protection, carefully checking fields would safeguard the farmer.”

MOWING FROM THE INSIDE OUT

Searching fields for animals is not the only way to protect wildlife, and Peter Schultze adds that there are many other possibilities. He works at Krone and is responsible for Product Marketing for mowers, tedders and rakes. This means that he also is heavily involved in animal protection when mowing. He recommends “Hubertus” as an effective method to scare off animals. “Hubertus” is an acoustic siren system for saving animals. It is made by an Austrian manufacturer, and Krone offers it at reasonable rates in its price list, for example it can be installed on a front mower. In addition, the agricultural machinery manufacturer is currently taking part in a fundamental research project at the Institute for Terrestrial and Aquatic Wildlife Research (ITAW) at the University of

Veterinary Medicine Hannover. The project looks at acoustic methods of scaring off wildlife to protect them from entanglement with mowers. “However, scaring the animals with acoustic signals does not work with young animals because of their reflex to duck down in the grass,” he adds.

In addition to searching a field for animals, given this ducking reflex, he also urgently advises contractors to mow from the middle of the field outwards, rather than as is often the case, from the outer edges inwards. This would give animals a chance to escape. For safety reasons, there is an optical signal in the start display of the ISOBUS terminal in Krone mowers, reminding contractors to mow in the “right” direction. Peter Schultze states that in any case the driver is well advised to pay careful attention to the area he is mowing and to interpret any signs properly: “In spring, deer trying to escape and yet stand at a certain distance looking around, and birds flying up into the air are an unmistakable indication that there are young animals in the grass. But it cannot be said often enough: What is most important is that farmers, hunters and contractors coordinate their work and search the area for wildlife. That’s still the best way to protect the animals.”

«

» CHECKLIST FOR THE FIRST CUT

- Farmers, hunters and contractors coordinate the time of mowing
- Search the field for wildlife and clutches (using dogs and drones)
- Use the Hubertus wildlife warning system
- Select the correct mowing strategy



2

also running costs to be considered when searching for animals, be it replacing a drone battery or the extra work involved for contractors when scheduling their work. “If farmers, huntsmen and contractors invested €1 per hectare of land that the drone flies over and gave this money to those flying the drones, that would help everyone,” he explains. “This would always pay off, because the grass would not be contaminated, for example with botulism,

BALECOLLECT

THE CLEVERER WAY OF COLLECTING

Big bales need to be loaded to truck as quickly as possible. This procedure is now much easier and more convenient courtesy of a GPS auto feature on the Krone BaleCollect bale accumulator. This allows the accumulator to deposit the bales automatically and at right angles to the direction of travel along virtual lines that freely programmable. As a first step, the combination travels the perimeter of the field recording up to five A-B lines along which BaleCollect will deposit the bales during harvest. The single big advantage of this technology is that the bales are deposited with their long sides across the direction of travel for efficient bale handling and collecting.

Courtesy of the GPS-controlled depositing feature, the haulage chain can work more time- and cost efficiently, such as by reducing the number tractor hours, fuel consumption and working hours. Another factor that should not be neglected is work safety, because thanks to the exact points in the field operators can work more efficiently in awkward patches and on the headland. At the



same time, bales can no longer be overlooked and left in the field. Last but not least, the new system clearly reduces the number of passes for gentler soil treatment, better field management and higher yields. «

SPLITCUT ON ZX MODELS

OPTIMISING PRECISION CUTS

The Krone ZX forage wagons received a major update that optimises the pick-up and the crop feed into the machine. The revision leads to even more precise cuts and reduces the machine’s power input while ensuring gentle handling of the crop. The new welding technology that has been adopted for these assemblies enables us to reduce tolerances on the feeder prongs and the feeding drum. Another new detail on the ZX models is the option of reducing the rotor speed – a detail that is very useful when operating the wagon with tractors of less than 250hp or when picking up very small swaths.

A brand-new innovation is Krone SplitCut: This edge cutting system consists of partitions that cut the outboard star completely off the cargo space, ensuring that no uncut material is gathered into the machine. The material flow is split on the first blade and is then fed again over the feed tines to the front end. Two deflector plates guide it to the middle of the rotor where it is cut and fed into the load area. The new ZX cutting system also convinces in terms of



gentle treatment of the material. This is ensured by optimising the long top plates of the feed tines thereby increasing the total feed area by 50% for an exemplary crop flow. «

VISITOR CENTRE

SPRUCE-UP FOR THE BEST ROOM IN THE HOUSE



The "Krone Customer Centre" has been the first port of call for thousands of visitors touring the Spelle factory since it opened in 2001. Following its recent makeover – new name, bigger shop, updated look – it deserves more than ever to be called the Agricultural Machinery division's "best room in the house".

BIGGER SHOP

The shop has also had an upgrade, as Simone Hartke-Klöpper explains. She has been responsible for factory tours since 2021 and was a valuable member of the refit team. Among the major changes, the size of the shop has increased by one third to 55 m². New shelving has been fitted and the room is altogether brighter and more appealing. "The shop is now a really fantastic showcase for the Customer Centre," she says delightedly.

Now that the interior refurbishment is complete, all that remains is to freshen up the exterior facade. This will reflect the new colour scheme for agricultural machinery – featuring anthracite as well as green and beige. And last but not least, the new name "Krone Customer Centre", Luise Brüggemann says in conclusion. "We are very much looking forward to welcoming guests to our refurbished visitor centre after the two-year corona restrictions, and we are superbly well-prepared." «

Everyone will be familiar with this situation from home: After a few years, you just feel like a change – new wallpaper, new flooring, new colour scheme, new furniture. In short, a complete makeover. And that's exactly what happened with the people responsible for the Krone Agricultural Machinery division. Since the Customer Centre opened 21 years ago under the name "Drive & Train", it has served as a multifunctional venue for visitors and employees attending training courses, events and meetings. In 2019, the last pre-corona year, some 12,000 guests passed through its doors. However, visitor numbers crashed at the start of the corona pandemic and since the roof also needed replacing following exceptionally heavy snowfall in February 2021, the time had come for a refit. Apart from anything else, the last 20 years of use had left their mark.

lighting system which can be used to create various different moods to suit the occasion and the event.

In the middle of the room is a new recreational area with cube seating and an LED screen. Here, visitors can view a varied cinema programme of Krone machines in action, or a film from the extensive Krone video collection. "So now we can entertain visitors while they wait. Furthermore, a short intro film always gets a factory tour off to a good start. The lighting concept, sound system and cinema area are a real highlight of the refurbished visitor centre," Luise Brüggemann points out. And it's bound to be an enormous asset for hosts of the large events which are regularly held there.

CINEMA HIGHLIGHT

Twenty years of display machines driving back and forth had taken their toll; so the builders' to-do list included replacing the flooring, as Luise Brüggemann explains. She is in charge of the team of five who run the Customer Centre. Apart from replacing the roof as already mentioned, a new colour scheme and lighting concept were also on the agenda. Striking lighting gantries on the ceiling now support a completely new

Delighted with the refit: Luise Brüggemann (right, Customer Centre team leader) and Simone Hartke-Klöpper (factory tours).



THE SCHWALLER FAMILY, GIPF-OBFRICK (CH)

DISTILLING, FATTENING, HORSE WHISPERING

Switzerland: Tall mountains, wide valleys — just like we imagine them! And yet, the canton of Aargau has more of a low mountain character. The diversified business of the Schwaller family, which includes its own schnaps distillery, is located on the edge of the small city of Gipf-Oberfrick.

Livestock farming, cropping, vegetable growing, and of course orchards consisting mainly of cherry trees — characterise the landscape in this region, which sits at a level of 400 to 600 m above sea level. The Schwaller family business fits perfectly into this picture, as senior partner Viktor Schwaller explained when he greeted us on his farm in early April. He runs the family business along with his wife, Monika, his daughter, Daniela, and his son-in-law, Andres Siegenthaler. “Here, each of us have our own areas of responsibility. Andres primarily takes care of our animals and

the arable work while my wife focuses on the numbers and helps in the distillery. She is also responsible for the marketing. On the side, she often watches our two grandchildren. Daniela works part-time as a vet for large animals and is responsible for the horses,” he adds, going on to explain: “I, on the other hand, work mainly in our distillery and with the green waste processing, which we do in partnership with another farm.” The distillery has been in existence for about 100 years during which it has constantly expanded. Today, fruit is distilled on a contract basis in addition to

distilling farm-grown and purchased fruit. This schnaps is marketed both directly and through local shops.

CONTRACT DISTILLING

The room in which the Schwallers distil the fruit is pleasantly warm and the air inside is a dream come true for schnaps lovers. The fruit is turned into distillate in three copper kettles. “We have the proper licenses both for contract distilling and for selling. Every litre that we distil is carefully documented and must be reported to the relevant authorities,” Viktor Schwaller tells us. The amount distilled can vary widely from year to year, depending on harvest yields. The average annual production is about 30,000 litres, two thirds being made on a contract basis and one third for the Schwaller business. “The fruit that we distil comes from within a radius of 50km,” he explains. “It is usually delivered in barrels. The minimum order volume is 4 litres. We distil the fruit and the clients decide which bottle or container sizes they would like to have filled. We ourselves



fill 1-, 0.7-, 0.5-, and 0.2-litre bottles for our Farm-2-Consumer shop.”

Viktor highlights the fact that each customer who has their fruit distilled really receives the fruit they harvested themselves turned into schnaps. “We are very conscientious about that. There is no blending. It is very important to our clients that they take their own schnaps home and can then give it to others or enjoy it themselves. That means more work for us — but our clients thank us and also pay a somewhat higher price for it.”

The distilling season begins in August after the cherry harvest. “That is also our main business, because cherries predominate in this region,” he says. Depending on the yields, distilling continues until March or into the summer. “We process not only cherries but also fruits that can easily be stored for longer,” Viktor Schwaller explains, regarding their operations. In addition to cherries, throughout the distilling year, plums, prunes, berries, grapes, apples, pears, and quinces are also processed and made into fine schnaps or liqueurs.

AN UNUSUAL APPROACH TO BEEF PRODUCTION

27ha of agricultural land belong to the Schwaller operation, as the farmer tells us on a tour of the farm. The family plants maize and wheat on 10ha and grass for





- 1** There are a total of eight horses in the farm's boxes. Three of them belong to the Schwaller family, and the others are being cared for in the horse boarding programme.
- 2** In addition to cherries, there are plums, prunes, berries, grapes, apples, pears, and quinces processed.
- 3** Currently, Monika and Viktor Schwaller's operation is being handed off to their daughter Daniela and their son-in-law Andres Siegenthaler.
- 4** The company relies on Krone equipment for forage harvesting. The mower, the tedder, and the hay rake are made in the Ems River region in north-western Germany.

The farm-grown forage is fed to 140 to 150 female cattle. "For 40 years, we raised bulls for beef production. One year ago we transitioned to female animals. The main reason for this was the feed," he says, going on to explain: "Bulls are primarily fed maize silage. In Switzerland, however, rotations may include only one crop of maize, which is due to the maize rootworms. So we can't grow enough maize for feeding bulls and so we looked around for alternatives and found a buyer for female beef cattle. Admittedly, these don't gain weight as quickly, of course, but feeding them with our own forage is more economical for us and we don't need to buy as much concentrate. The bulls, by comparison, were fed 3kg of concentrate per day. Now we manage with 2kg."

The animals come to the farm at the age of about 21 days. They are then fed milk from a machine for eight weeks. The cattle reach slaughter age after 14 to 15 months. "The buyer of the cattle is a trader. We produce to the IP Swiss standard, the so-called BTS label which requires a bedded space for lying down, and the RAUS programme which stipulates an open exercise area. Per kilogramme of meat, we earn CHF11 on average, which is about €11," Viktor Schwaller reports.

hay on another 10ha. The remaining 7ha are permanent grassland. The average field size is about 2 to 4ha. "With 800 to 1,000mm of annual rainfall, we are well positioned, although we have seen more distinct summer droughts in recent years," Viktor Schwaller reflects.

SILAGE IN THE SILO

The grassland is cut four to five times a year. This does not include 7% of the permanent grassland which is set aside and cut only after June 15. The mower is a front-mounted 3m Krone EasyCut F 320 Highland. This German-made mower impressed the Swiss farmer: "It is clear that this manufacturer specialises in forage harvesting equipment. The mower is light-weight, delivers a very good cut — and is yet very robust. The EasyCut has already proven itself in our sloping fields." A rear-mounted roller conditions the cut material for faster drying. "We then turn the grass once using a six-rotor Krone tedder which speeds up the drying even more," he explains. Finally, a Krone Swadro 46 is used for raking. "This rotary rake has a large working width of 4.6m, but with the five-wheel chassis we are still able to conform very well to the ground," he says.

The silage is then harvested with a self-loading wagon. It is stored in a Harvestore silo, a preservation process that is very common in Switzerland. "Clamping is not a proper way of ensiling in Switzerland where one cut doesn't yield enough material to fill the clamp sufficiently. The silo, however, is filled from above with each cut being added

from the top. The material is compacted by gravity and the lack of air gives us a stable fermentation curve," the farmer believes. The feed is removed through a door at the bottom using a rotavator and then fed with a mixer feeder. "All in all, it's a clean solution. The metering technology helps us to remove the exact amount of feed," is his praise of this method of preservation. He adds that there is also one limiting drawback: "The last cut is usually too wet for blowing into the silo. We therefore have this material pressed into round bales and wrapped.

PUMPING SLURRY TO THE FIELD

Everything that goes into the livestock must come out sometime. And here, too, the Schwallers have thought of something unusual for getting the organic dung onto the field efficiently: The slurry is pumped directly to the fields through 500m pipes and is applied by a tractor with a drip hose boom. Viktor Schwaller installed the pipes himself: "It works very well for us because most of our plots are located around the farm. Although setting up the pipework was anything but easy, we can now simply pump the slurry to the field and distribute it quickly and efficiently. The hose is 400m

EVERY LITRE THAT WE DISTIL IS CAREFULLY DOCUMENTED AND MUST BE REPORTED TO THE AUTHORITIES.

VIKTOR SCHWALLER



long and eliminates the transport trips." One man takes care of the pump and the agitator in the yard and the other applies the slurry with the tractor.

At the end of our tour of the farm, Viktor Schwaller takes us back to the distillery salesroom. The various schnaps and liqueurs are neatly lined up in rows on the shelves, sorted by bottle size. Yet when distilling his liqueurs, Viktor Schwaller does not like to have anyone peering over his shoulder. "Everyone has their own recipes in that respect, and they are secret recipes," he says with a grin.

Incidentally, the handoff of the farm is currently in full swing: Monika and Viktor Schwaller, as well as Daniela und Andres Siegenthaler, hope to have the transfer behind them by the middle of the year. "And then I will devote myself exclusively to the nice things in life, like distilling schnaps, driving through the fields and woods with my Freiburger horse Harlay and mowing the grass with the Krone EasyCut mower," the soon-to-be pensioner muses with pleasant anticipation. «



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