



terra *HORSCH*

22 | 2021

Shaping **THE FUTURE**

With the world in mind

Tested and approved
The Maestro SX

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Vodka production in France

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A unique kind of seminar

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Dear readers



This issue of terraHORSCH will take you once again to different continents and you will meet farmers with creative ideas.

Magazines can report and inform, but what is still missing are their own observations, the direct exchange, the questions and answers and the experience of something new. In the past months we learned the hard way what this means that we cannot meet in person.

After eight months of lockdown everyone is looking forward to the lifting of the regulations and the direct contact. The HORSCH Le Café is open again and a lot of employees return to the office from their home-working place. They take the opportunity to finally meet the colleagues from their own but also from other departments in person.

On-site trainings start again at last, and farmers can come to attend events at Sitzenhof, in Landau or Kněžmost. Our life goes back to normal.

We learned a lot during this time. We use digital media like we never did before, and we will surely re-position ourselves from an organisational point of view. Covid-19 will take a back seat and we can focus again on interesting topics like climate, environment, healthy soil and plants, animal welfare, healthy food and supply chain act.

Enjoy reading this issue of terraHORSCH. Have a good harvest.

I hope to see you soon!

Cordially

Cornelia Horsch

Tested and approved

The new HORSCH Maestros are available with two different metering systems. While the AirVac system has already passed its baptism of fire, 2021 is the first serial year for the AirSpeed metering unit. terraHORSCH summarises the impressions.

Fast, precise, versatile – this is how HORSCH describes the main advantages of the new Maestro single grain seed drills. They can be equipped with two different metering units. The design of the AirVac and AirSpeed system is quite similar, and they work according to the same metering principle. The AirVac system singulates by means of a vacuum, the seed is sucked to a perforated disc. The AirSpeed system, however, works according to the overpressure system and the grains are pressed to the perforated disc. The big difference is the transfer of the seed from the metering unit into the soil: with the AirVac system the grains are led into the bottom of the furrow by means of a fall tube and, if necessary, pressed by the catching roller. With the AirSpeed system the singulated grains are captured by an air current, accelerated, and shot into the ground via the shoot pipe. The catching roller is an inherent part of the machine and embeds the seed.

Machines with the AirVac metering unit as a standard equipment were already working last season. The first Maestros SX with the AirSpeed shoot system metering unit were delivered to the customers this spring.

One Maestro 16 SX was delivered to the north-east of the Ukraine, to the Chernihiv. The Itshnanske farm practices arable farming on 12,500 ha. The main crops are winter wheat, spring barley, sunflower, maize and soybeans. They mainly work with John Deere tractors and Claas combines. The farm uses two Tiger 4 MT with mounted fertiliser hopper, two Maestro 24 SW and the new Maestro 16 SX from HORSCH. Moreover, they have a 16-502 direct seed drill, a disc harrow and two ploughs.

The main reason for purchasing the Maestro SX was the enormous efficiency combined with a safe embedding of the grains.

Farm manager Mykola Kopyl details that folding in and out can be carried out very fast. So fast and easily that it does not disturb the processes and that he even did not bother to count the time for the process. And he also praises the handling: “The service technician only explained and showed once how everything works and then we managed perfectly well on our own.” In the shoot pipe the grains pass a sensor that counts the grains, identifies the distance between the grains and thus provides information about double spots and gaps. These values are displayed clearly at the terminal of the machine. As the metering units are driven electrically, each row can be controlled individually. This allows for an individual row switch-off, SectionControl, VariableRate and tramline control. In addition to VariableRate via the whole working width it is

also possible, with a corresponding high-resolution application map, to control the seed quantity within the working width related to the individual rows. With regard to the tramline control a percentage addition to the sowing density in the rows at the left and at the right side of the tramline can be adjusted individually.

Mykola Kopyl is also satisfied with the handling of the “hardware”: “Placement depth, closing wheels, trash wheels – everything is adjusted in no time at all. The control elements are easily accessible.”

“The metering discs can be changed very fast”, the farm manager says. “We know how long it took with our previous system. The precision and the placement accuracy for different crops is excellent, too. Our agronomist told me that it was the best grain distribution he has seen so far – even with bad, unequal sized seed. With the Maestro SW metering unit, we sometimes had some problems with small and thin sunflower seed. The AirSpeed metering unit, however, dealt with it extremely well. We kept the automatic coulter pressure regulation turned on continuously and the placement depth was always excellent.

We have one little point of criticism with regard to the hopper size and the coverage: for maize the fertiliser and seed quantity was enough for 30 ha, for microgranular compound we could cover only 20 ha. The tank, thus, could be a little bit larger for our application rate which admittedly in our case is very high.”

But let’s talk about an essential factor on a large farm: efficiency. In the Ukraine we had the experience that the 16-row Maestro SX effected the same performance as a Maestro 24 SW: 200–220 ha in 24 hours. The operational speed ranged from 16 to 17 km/h for maize and from 14 to 15 km/h for sunflowers.

Thomas Murr from the Sales Support Planting at HORSCH is very happy about these values: “They absolutely conform to our data. We officially confirm a maximum operational speed of 15 km/h. But we know about farmers who drove up to 18 km/h. But you always have to keep in mind: the higher the speed, the better the influencing factors have to match. And at 15 km/h everything has to be optimum. This is especially true for the seedbed – the best would be a finely crumbled as well as sufficiently consolidated and very level seedbed. Thus, possible vibrations at the seed row can be avoided. The machine has to run smoothly to make sure that singulation and grain placement still work precisely even at these high speeds. At the Kernel farm in the Ukraine a Maestro 24 SX achieved a top speed of 17 to 18 km/h in black soil. Working in shifts

Efficiency is the key factor: depending on the crop and the conditions the Maestro 16 SX sowed with an operational speed of up to 17 km/h in the Ukraine.



The Kernel farm sowed with a top speed between 17 and 18 km/h with a Maestro 24 SX. Working in shifts, they thus managed to sow 400 to 450 ha in 24 hours.



Farm manager Mykola Kopyl is more than satisfied with the performance of the Maestro 16 SX and among others emphasises the simple handling, the precision and the placement accuracy.

they, thus, were able to sow 400 to 450 ha in 24 hours. It is almost unbelievable, even for us!"

Such a performance, however, requires a corresponding tractive power. "400 hp are not too much for 24 rows", Thomas Murr confirms according to his experience. "500 hp with a large hydraulic pump sometimes are better. On large farms this often is no problem as the large tillage tractors are not used in spring anyway. The reason is the relatively high oil requirement for the pneumatic system, for at this high speed we need more air than for the vacuum system. In fact, not for the seed, but particularly for the fertiliser as quite a lot of material has to be transported. We equipped the pneumatic system with the largest and the most solid components that are available at the market. Normally the oil is completely provided from the tractor. We offer an on-board hydraulic system via a pto shaft. But in general, the capacities of the tractors are sufficient.

With an increasing speed the requirements for durability and wear resistance of the machine increase, too. The quality of our basic components like parallelograms, basic frame and row bodies is excellent. Large pivot points with bushings, stable bearing and folding and pivot points provide enough

reserves for the increasing load. Good care and maintenance of the Maestro SV/SX guarantee operational reliability and high total outputs. For the wear parts fertiliser and seed disc, however, the old principle applies, double speed – quadruple wear. Especially large farms still put up with this anyway. They want to make optimum use of the short windows for sowing.

Although it is the first serial year for the Maestro SX, we already could gather quite a lot of experience with the machine", Thomas Murr says. "We tested and demonstrated. Some customers even trusted us without a demonstration and bought a machine with the AirSpeed metering – even though the metering system has not been very common so far. A lot of machines were delivered to Eastern Europe, but the machine can be used all over the world including Central Europe. It is interesting that we apparently met the requirements of the different markets well – the sales figures for all working widths and machine categories are very solid." 

Mechanical sowing technology pushed by innovation

Especially in small-structured regions mechanical sowing technology is quite common. With the Versa KR HORSCH offers an appropriate product in this sector. terraHORSCH talked to Kai-Christian Schramm from the product marketing and Maximilian Kandlbinder from the product management.



Kai-Christian Schramm (right) and Maximilian Kandlbinder (left)

a lot of farmers. A Versa KR for example is used at a mixed farm with a focus on livestock farming where arable farming is rather used to produce fodder components. In this case, a seed drill has to be simple, efficient and intuitive. The same is true for farms whose strategy to achieve a high marginal return is based on diversification. This is why they need a lot of flexibility, for example the possibility to work with different row spacings. And we must not forget that all farms constantly develop further regardless of the farm size. The typical markets are situated in Central and Eastern Europe. In general farmers attach major importance to work quality. For finally this is what guarantees the yield."

The core of the seed drill is the electrically driven metering system called SmartClip on the counter shaft. The metering devices are controlled individually. Thus, tramlines can be adjusted individually – without any tools. "With regard to row spacings, we are very flexible due to SmartClip. This is extraordinary in this machine category. 15, 30 or 45 cm are no problem at all, neither are 12.5, 25 and 37.5 cm", Kai-Christian Schramm explains. The same is true for the tramline rhythm. This flexibility is particularly important for machine co-operatives or if the seed drill is rented out.

"The metering itself – depending on the seed – is adjusted by means of a stop valve between spacing wheel and cam wheel", Maximilian Kandlbinder explains. "The metering wheel can be removed individually and without tools

The name Versa is Latin and means "reverse". It alludes to the fact that since the foundation of the company HORSCH exclusively relied on pneumatic metering systems. Just a quick reminder: HORSCH was the first company to build a pneumatic drill (PD 12). The seed drill range is now expanded to offer an optimum solution for the most different farm sizes and site conditions.

The rotary harrow is nothing fundamentally new, for on heavy or extremely changing sites it has its advantages due to a very regulated adaption of the seedbed preparation intensity when sowing.

"Especially in Southern Germany, where we actually come from, a lot of farms demand a lighter 3 meter seed drill

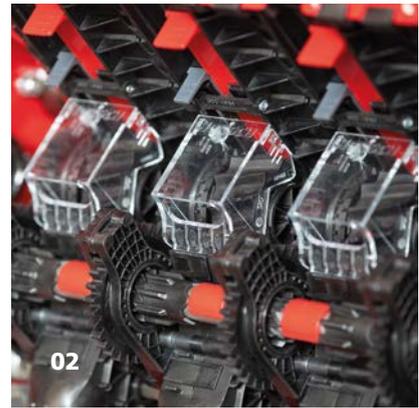
below the Express 3 KR", Kai-Christian Schramm from the HORSCH product marketing says. "But if we enter a segment that is new to us, we want to be particularly innovative", his colleague Maximilian Kandlbinder adds. "The Versa KR definitely isn't a low-budget machine but is to set standards in the mechanical seed drill sector."

WORKING QUALITY COUNTS

So first of all, HORSCH took its time to examine the requirements of the farmers closely. Kai-Christian Schramm explains: "The customers all have similar requirements on precision when sowing. We noticed this when we worked with the pre-series machines. I can already tell you this much: We managed to convince



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if it has to be checked or replaced. The Versa KR can handle the most different seeds and crops, especially rape, wheat, barley and legumes. The seed quantities so far range from 1.5 to 250 kg/ha. Lower and higher seed quantities for special crops or extremely high seed quantities are to follow next year."

The Versa KR is ISOBUS-compatible as a standard. It is operated via the tractor terminal or the HORSCH Touch 800 terminal and allows for an individual setting of the display options. The view in the terminal for example can be customised. It is possible to sow by means of application maps with VariableRate over the whole or half of the working width. SectionControl is an important topic in our target market and even gets more and more important. Hardware and software are the latest generation from HORSCH. The I-Manager is only used in the Versa KR this way. The other machines will be equipped with it only step by step."

The machine is completely operated from the left side of the machine. Sowing depth and coulters pressure can be adjusted quickly and easily with a monkey wrench.

WELL-PROVEN BASIS

The second core are the DuoDisc seed coulters. The double disc coulters that was specifically developed for the Versa line is based on the well-proven components of the TurboDisc seed coulters. "Thus, we achieve a precise and even seed placement, a perfect emergence and finally populations that are more than satisfying", Kai-Christian Schramm says. "According to our experience, with our double disc coulters emergence is significantly more even than with a drag coulters."

The capacity of the seed hopper amounts to 900 l. Optional attachments

are available to expand the capacity to 1,200 l or 1,500 l. This guarantees efficiency.

The Versa 3 KR is based on the well-known rotary harrow Kredo. The 3-metre machine is equipped with ten rotors. There are two different packers: the tooth packer roller with a diameter of 64 cm is ideal for universal use. The load-bearing capacity is high what is favourable for the horsepower requirement and thus also for the fuel consumption. The trapeze ring packer has a diameter of 50 cm for heavy soils with a high punctual consolidation performance or of 60 cm for changing soils with high requirements on the load-bearing capacity. When choosing the tractor, it should be taken into account that the packers influence the weight of the whole machine significantly. The machine has been designed for tractors from 160 hp upwards which can handle a 3 tonne seed combination.

The rotary harrow can, of course, also be used solo. In this case the seed unit is uncoupled via four fixing points. Parking supports are part of the standard delivery.

"With regard to the equipment options we are not yet finished by far", Maximilian Kandlbinder informs. "There soon will be some more options. After all we have gathered enough experiences with large technology which we can also use in this sector to stand out from our competitors. One example is the use of two components for undersown crops or underground fertilisation. I could perfectly imagine these fields of application for the Versa KR. Or also the sector of seed flow monitoring."

The mechanical seed drill is available as of this season. However, the first machines were sold out very quickly. Moreover, a lot of dealers bought demonstra-

01 Versa 3 KR sowing winter wheat

02 The electrically driven metering system is the core of the Versa.

03 The individually depth controlled double disc coulters DuoDisc was specifically designed for the Versa line.

tion machines for the autumn season 2021. Like the Express and the Kredo, the Versa is built in Ronneburg.

Kai-Christian Schramm is happy about the enormous interest in the Versa KR. "We introduced the Versa KR on the occasion of our online trainings in spring", he says. "The Versa KR attracted a great deal of attention in many markets. And even the markets where rotary harrow combinations have not played a major role so far asked about the machine at the end of the training. The Versa KR really is technology of tomorrow."



Band application in sugar beet at an early stage after sowing with a HORSCH Leeb LT

BAND SPRAYING WITH A CROP CARE SPRAYER

This spring HORSCH together with the Julius-Kühn-Institute for Application Technology in the Crop Care Sector, the Institute for Sugar Beet Research (ifz) in Göttingen and the Hentschel System GmbH started a project which is funded by the Federal Department of Agriculture that is to push a method that combines chemical-mechanical and mechanical weed control.

One of HORSCH's central tasks in this project is the development of an automatic row control for our crop care technology. This control will guide the nozzle and thus the application band automatically above the row. Other topics of the project are the choice of the correct nozzle with regard to the transverse distribution within the band and the optimum width of the spray band for a safe effect in interaction with mechanical weed control between the rows. Moreover, they examine possibilities to realise different row width with a 25 cm nozzle layout in this method. This project is of major interest to us to push the developments together with our partners and to make them reliable and safe to use in practice.

The first tests to apply sugar beet in a band with a sprayer started at the beginning of 2018. In the following years selected HORSCH customers tested and optimised this method on their farms. The challenge is the exact position of each drill bout when sowing. If the row width between the drill widths differ from the row width of the seed drill, the system does no longer work. All row spacings have to be absolutely identical. Farmers again and again show us impressively how precise a RTK-supported sowing method can be with regard to tracking. The identification of the tracks

is either made when sowing track to track or by means of pre-planned tracks. For this method, previous tracking provides an additional plus with regard to precision. A GPS receiver on the sowing respectively planting technology might be advantageous for steering with this band spraying method.

When applying herbicides in a band the row width and the number of crop rows below the machine between the tramline tracks play an essential role. The two criteria determine the active nozzles in the boom. A 50 cm row can be realised very well with our 25 cm nozzle layout. For the common 75 cm row width, too, we are currently testing solutions on farms and in the R & D departments of the project partners with the objective to provide a practical retrofit solution as quickly as possible. Band spraying in maize can normally carried out with the existing technology. On most farms, mechanical weed control is carried out with a hoe between the bands/rows.

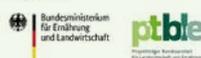
With the current framework conditions band spraying with a crop care sprayer is especially interesting for sugar beet and potatoes. But this method can also be used for other row crops.

We will keep you informed about the experiences and the new insights we gain from this project band spraying with a crop care sprayer that will last for three years.

The project partners:



Gefördert durch:



aufgrund eines Beschlusses des Deutschen Bundestages

He stepped into big footsteps

After 27 years, 20 of them as a managing director, Horst Keller leaves HORSCH. terraHORSCH looks back on the milestones of his activities in the company.

It all began in 1994 when Horst Keller (born in 1963) started to work for the company and together with co-founder Walter Horsch took over the commercial management. About one and a half years later he also became head of the departments purchasing, HR and IT. Already in 1997, the managing directors Michael and Walter Horsch gave him full power of attorney and thus the permission to represent HORSCH officially. In January 2001, Walter Horsch retired from the management and Horst Keller was appointed managing director of the HORSCH Maschinen GmbH together with Michael Horsch.

OWN PRODUCTION SITE

Two years later Mr Keller became head of sales in Germany, Austria and Great Britain on an interim basis as Cornelia Horsch took care of the establishment of HORSCH France in France. Horst Keller always was ready and flexible enough to deal with sectors that were not necessarily a direct part of his tasks. Like all the other family members his opinion was: I will get involved wherever I am

needed and will roll up my sleeves! He considered this as a challenge but also as a chance to grow personally. He often said: "Such experiences help me to mature and broaden my mind."

He was also co-responsible for one of the perhaps most important decisions in the company's history: the opening of the first own production site away from the company headquarters in Schwandorf: the site in Ronneburg. Already before the official opening in 2007 he, in 2005, had started to look for an appropriate site, a difficult and complex search.

Other important decisions Horst Keller actively pushed were the foundation of an own sales company HORSCH UK in the United Kingdom in 2010 and of a HORSCH subsidiary in the US, the HORSCH LLC, in 2013. An own large site in the United States including production and R & D was established in Mapleton, North Dakota. At the same time Horst Keller regularly commuted to Landau. For he himself and his team introduced a completely new financial and accounting software on site at HORSCH LEEB.

FROM NINE TO 450 MILLION

Due to the increasing globalisation and internationalisation of HORSCH with own sales subsidiaries and a lot of international sales partners customs topics marked the last years of his activity.

During Horst Keller's time as a co-managing director HORSCH's sales increased from nine million Euro in 1994 to more than 450 million Euro in 2020.

Being the responsible managing director of the financial sector Horst Keller always attached great importance to working independently as well as to fair salary structures, the reward of performance and commitment, human co-operation as well as clear and reliable structures which make the employees feel safe.

A highlight of his career also were the numerous economy awards HORSCH won under his responsibility. Among them "Bavaria's Best 50" and the "Award for Medium-sized Companies".

We would like to thank Horst Keller for his long high and dedicated commitment!



On 27th of June 2021 the families Horsch, Leeb and Eyer bid farewell to Horst Keller (3. from the right) and his wife Elisabeth (4. from the right) with a garden party.

FROM AN IDEA TO A PRODUCT



The direct contact to the practical experts is very important for HORSCH. For this is the only way to understand the requirements and the problems. The results are products that are custom-tailored to the respective characteristics of the region – also on an international scale. One example is the HORSCH Evo, a machine for the application of granulated fertiliser. terraHORSCH talked to a customer in Brazil who was involved in the development.

terraHORSCH: Mr Bizzi, would you please introduce yourself to our readers?

Luciano Bizzi: My name is Luciano Bizzi. I have been working at SLC Agrícola, a listed agricultural company, for 15 years. I am the mechanisation manager, i.e. I manage the machinery of the whole group. I am responsible for purchasing, maintenance and service, but also for the introduction of new methods.

Please tell us about the company?

Our headquarters is in Porto Alegre in the state Rio Grande do Sul. But we produce at 16 sites which are distributed strategically in six Brazilian states. In business year 2019/2020 we cultivated a total area of 448,568 ha: 125,462 ha cotton, 235,444 ha soybeans, 82,392 ha cereals and 5,270 ha other crops.

When did you get to know HORSCH and especially Michael Horsch?

Our first contact with HORSCH was at the Agritechnica 2013. We were impressed by the multitude of machines, but particularly by the quality. I met Michael Horsch in 2015, also at the Agritechnica.

At that time, you had a quite specific request. How was your idea received at HORSCH?

We wanted to develop a special fertilising system to improve the application quality. We had already seen something similar at HORSCH. At first our idea was to adapt the existing technology accordingly. But Michael suggested to develop a completely new machine. And that's what we did during a visit at the HORSCH headquarters in Schwandorf.

How did this take place?

At first, I couldn't believe how much time HORSCH invested. I thought that I would be asked some questions and that's it. But we spent a whole day with Michael. He fired questions at us, the machine took more and more shape and at the end of the day the project was defined. But what impressed me most was not the development of the project, but Michael's vast knowledge about the soil and tillage.

The project led to a concrete result. Does the machine convince you?

This was indeed a very critical point. I know a lot of examples of imported machines which did not work very well and had to be adapted to our conditions. But when I asked Michael if it would be possible to pay for the machine only after it did the desired job the way we wanted, he said: If the machine did not work properly, he personally would come to return the money to me. This was what finally convinced me. Another point that put my mind at ease was that at the project meeting in Schwandorf we had already fixed an enormous amount of details.

What was your first experience with the machine like?

The machine arrived and we used it immediately. The quality of the components and the parts were more than convincing – we had not seen anything like this before. But above all the performance we achieved with the Evo even exceeded our expectations.

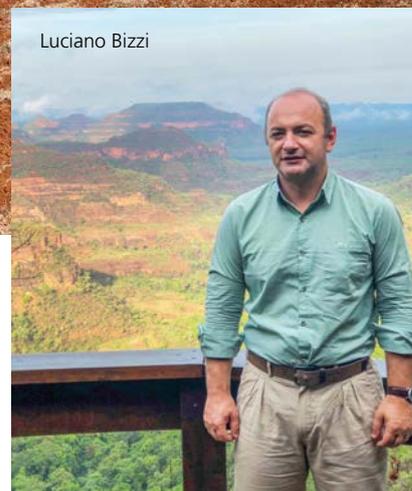
How many hectares has the machine worked so far?

We have been working with the Evo for four harvest periods and we worked on more than 20,000 ha with one and the same machine. We only had to replace some wear parts. Thus, the maintenance costs are very low, too.





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Luciano Bizzi

When did you realise that SLC Agrícola would purchase several of these machines?

We tested the machine for two years. We very quickly realised that the Evo is ideal when it comes to applying fertiliser in the row. As of 2019, we more and more converted our system to this kind of fertilisation. Since that time all of the SLC Agrícola sites have been using this type of machine.

Are we still talking about machines of the first generation or have there already been some improvements?

Of course, some things have been adapted in the meantime, e.g. the cutting disc system. It now works with a hydraulic control that is used for adjusting the setting angle of the coulters.

01 The sites of SLC Agrícola are distributed strategically in six Brazilian states.

02 Michael Horsch (left), Rodrigo Duck, managing director of HORSCH do Brasil (middle) and Stefan Vorwerk, head of production of HORSCH do Brasil (right) during a visit at SLC Agrícola.

03 By now, the Evo CS works at all sites of the SLC Agrícola group.



Evo

In Brazil, the HORSCH Evo is used for deep soil loosening. Fertiliser can be placed simultaneously. The two tine rows of the Evo CS can loosen with a row spacing of 45 cm, 50cm and 30 inch and at a maximum working depth of up to 35 cm – depending on the requirements of the customer. The fertiliser is placed at almost the complete working depth. Thus, fresh nutrients (especially phosphor and potash) can be applied into the soil in a targeted way. The Evo CS is equipped with a packer system and creates an excellent surface quality. The attached seed wagon SW 12000 can meter two different components with a tine spacing of 45 cm or 30 inches very exactly and transfer them to the tine system. The total capacity of 12000 litres guarantees a high hectare output and a wide range.

In Brazil, today the Evo CS is not used as a standard tool, but rather for upgrading fields that are usually cultivated with a direct seed system.

Let's talk a little bit about the product itself. In your opinion, what are the advantages of the Evo CS?

There are quite a lot: First of all, the accuracy of the fertiliser distribution and the fact that we can apply on two levels – with the option to change the respective metering. Then there is the large fertiliser tank, the possibility to loosen the soil while fertilising and, of course, the quality of the components I have already mentioned before.

You obviously are very satisfied with the Evo CS. What did surprise you most about the machine?

I don't have to think twice: the durability and the simple handling.

You always point out the quality aspect. Why?

It simply is outstanding for this machine! We are more than satisfied. By the way, we have already bought nine other Evos for the next harvest.

Healthy soil – healthy plants

Joe Wecker runs a 9,000-acres farm in Canada. He does not only work according to the principles of organic farming, but also uses companion crops and inter-crops and improves soil health by applying plant auxiliaries. He talked to terraHORSCH about his experiences.

Companion crops and inter-crops, auxiliaries, soil health and a varied rotation – these were the topics Joel Williams, an independent plant and soil health educator, wrote about in the last two issues of terraHORSCH. Joe Wecker, a farmer with German roots from Regina Plains in the south-east of the province Saskatchewan, Canada, uses these principles in practice. The family farm which he runs together with his father and two permanent employees is situated between Winnipeg and Calgary just over 100 km north of the US American border. The region is extremely flat, there are no windbreaks. The average annual rainfall amounts to 380 mm, though in the past four years there was significantly less rain – a total of 50 mm per year. However, this season it finally rained some more. Winters in Regina Plains are very cold, the summers are warm.

Wecker Farms are located on a main road. On the one side there are two residential buildings as well as the farm buildings including an impressive silo installation with drying and cleaning. More about why the latter is important later. Only some metres away on the other side of the road are further silos. The farm and the inventory are very well kept. Tractors and combines mainly are from John Deere. The farm uses a 9560 RT, a 8370 RT, a 6215 R as well as a Fendt 1050 Vario, two combines with 14m cutter bar and two swathers with 12 m working width. They sow with an 18m machine with liquid fertiliser system. Moreover, they use a fine cultivator for tillage in spring, harrows and hoes as well as a roller-type harrow. The harvest is transported from the combine with an auger wagon and from the field boundaries with three trailer trucks.

They farm more than 3,500 ha, 2,500 organically, the remainder is in transition to organic farming. “But everything is farmed in a nutritional farming system”, Joe Wecker says. This is why the farmer considers his machine park to be rather large. In his opinion, nutritional farming on the one hand means diversity of crops, cover crops, inter-crops and green manure. Moreover, he relies on the specific use of plant auxiliaries. He grows: durum, HRS wheat, oats, flax, alfalfa seed, khorasan wheat, spelt, emmer, peas, lentils and chickpeas.

He flexibly uses different companion crops depending on the rotation. For example: cereals/cereals-clover, cereals-alfalfa, chickpeas-flax, pea-mustard, pea-oats or barley, lentil-oats, lentil-brassica as well as brassica-pea-clover.

LESS RISK

But why does he do this? „Intercropping, i.e. the cultivation of companion crops and inter-crops, means more bio diversity”, the farmer is convinced. “The result are very positive consequences for soil fertility, for beneficial insects, for the encouragement of mykorrhiza and for nutrient exchange – this is particularly apparent for peas as a companion crop, as well as for a synergistic growth. There is no competition, less fertility inputs are needed. There are higher residues for ground cover, less weeds and harvest residues decompose faster. And: risk reduction, especially in very dry years.

My experiences for example with oats in combination with peas were very good. Their root structure and its function, too, are completely different. There are different pH values in the different areas and nutrients, too, are released differently. If you dig up the plants, you can perfectly see the rhizobia that fix the nitrogen. Another example is the combination of brassica and maple peas. We grow them together because the peas often get lodged before the harvest. But the brassica supports them so there are hardly any problems when threshing. It works excellently. For maple peas really are rather difficult to grow. Thus, we get a high price for them, and brassica is a great help”, the farmer explains.

For organic flax with chickpeas. “We cultivated these crops two years in a row”, Joe Wecker says. “Normally chickpeas have to be treated with fungicides five to six times. But being a certified organic farm that’s no option for us. With the combination we had the experience that we don’t need any fungicides at all. There are some processes, probably in the soil, which make them unnecessary. You can clearly see it.

Another combination we like to use is organic Eurasian wheat with clover as an under sown crop. I attach major importance to one thing: For me, intercropping does not only mean to grow mixed crops where both partners are used. In my opinion, it also includes companion crops where only one crop from the combination is harvested. I like to use this for cereals, for example for oats and peas. This actually is one of my most favourite combinations. It is always striking how healthy the leaves are. Another example is oats with marrowfat peas. The latter poses quite some challenges for the farmer. In combination with oats it is much easier. Especially the weed pressure is lower.”



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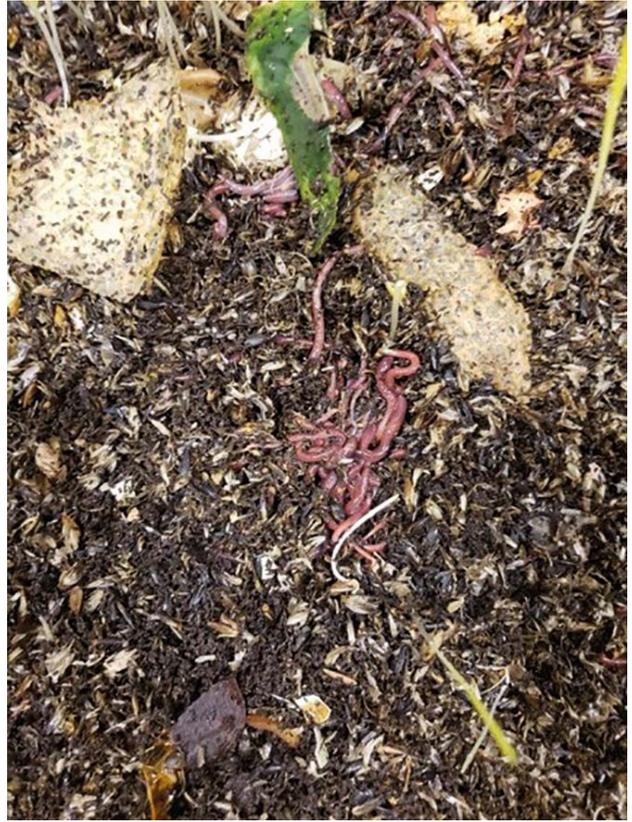
01 The region around Wecker Farms is extremely flat with low rainfall.

02 Joe Wecker's focus is on soil health and on what you can do to improve it.

03 Wheat has already been laid on the swath. Despite the low rainfall, alfalfa completely covers the soil, the field is green when winter starts.

04 + 05 You can clearly see how well the two crops are interwoven and how the mustard keeps the peas up.





The breeding facility for earthworms consists of ten containers. The resulting substrate is used to treat the seed. It encourages rhizobial nodulation for example for peas.

POSITIVE EFFECTS

Joe Wecker describes another possibility: HRS with alfalfa as an under sown crop. Especially when producing alfalfa seed there again and again are volunteer plants in the following years. Although, in this case, he specifically uses them as a companion crop, he has to see to it that the alfalfa share does not get too high. The cereals then have a better chance to pass the alfalfa. The positive effect Joe Wecker noticed are 1.5 to 2 % more protein in the wheat. And all that without any yield losses. Using an underseed with alfalfa, thus, is ideal if you want to achieve an increased protein content for wheat. According to his experience, brassica with maple peas also work very well together. Threshing can be carried out without any problems by simply changing a few settings at the machine.

According to Joe Wecker you immediately see the effects of intercrop-

ping. Right in the first year he did no longer have to use any fungicides for the combinations flax-chickpeas and flax lentils. With regard to soil health, it takes a little longer. Over a period of three years, step by step we reduced the fertilising intensity and now the quantity is only half as high compared to the time he started. During this time the biological activity of the soil improved – with stable yields. The plants in total, benefit from not being filled up with nitrogen to such an extent. The pressure of fungi and animal pests decreases significantly.



Joe Wecker attaches great importance to soil and nutrient analysis. "I focus on the correlation of what is in the soil and what is in the plant", he says. "Or rather: What is in the soil and what is not in the plant. For you cannot take it for granted that everything from the soil is available to the plant. You need an intact biological activity of the soil. This is why we do not only carry out soil analysis, but also tissue test of the plants. If we notice any peculiarities, we know that we have to do something for a good biological activity of the soil. In addition to our inter-crops and companion crops which also have a positive effect on it.

No matter if organic or conventional – we apply stimulants on all our fields to encourage the activity of the soil especially in the root area. It thus gets a boost so that the plant can dispose of some nutrients that so far have not been available."

REGULAR ANALYSIS

At Wecker Farms, the tissue tests are carried out at least once a year. Joe Wecker compares them to the soil analysis and if he notices that nutrients are not available to the plant he spreads them.

It usually is boron that is applied together with kelp and fulvic acid. It is not expensive. And it does not do any damage, Joe Wecker says. But he achieves this little boost for the soil activity.

But back to the soil and plant analysis. Joe Wecker describes the results of an analysis of the fields that are still farmed conventionally. "The crop is flax. I did not apply any phosphor. The analysis showed only half as much nitrogen as there actually should be. But I did not worry about that at all. And the population really develops excellently. Before our objective always was how to achieve the highest possible yield with a high effort. Today we do the opposite: we focus on how little effort is necessary to not lose yields.

During the vegetation period we always have the refractometer at hand. We, thus, can find out very quickly on site how healthy the plants are. By means of the sugar content we notice if there are any shortcomings. If so, we immediately carry out a laboratory test to get exact data. If for example we apply boron, we mix in fulvic acid, kelp and a little bit of sugar. Sugar is good for beneficial organisms."

CONSEQUENT ACTION

The conversion of the farm to organic farming started five years ago. Asked about his reasons the farmer answers: "On the one hand, we ourselves have been eating organic food for quite some time. On the other hand, we noticed soil degradations on the farm. This is why we started to think about intercropping. We also questioned a lot and tried to detect correlations. You often do not notice small things until the problems get bigger. And then you start to think.

With regard to the yields, the losses are really minimal compared to my neighbours. However, it depends on the crop. For barley and flax for example it is hardly noticeable, for wheat we talk about 10 to 15 %. In this case it is very important which variety you chose: Modern wheat only achieves good yields if the nutrient supply is optimum. Therefore, we prefer older varieties which usually are still on the market. If not there often are some remaining stocks. Barley in turn is less sensitive according to our experience.

But yields are not everything. I often discuss with the mills I supply directly. This is the reason why the cereals are thoroughly cleaned and dried. My customers often tell me: We love your cereals. Our bread tastes a lot better with it. As I already said before: In the future, our customers will no longer only pay for the quantity, but also for other things. For example also for chickpeas what are produced completely without using fungicides.

I wanted to farm in a regenerative-organic way for quite some time. My focus has always been on soil health and especially on what we can do to improve it. This is behind everything we do. For a healthy soil guarantees healthy plants. The same is true for insects. We attach major importance to that the fact that our fields provide a good living environment for bees and other beneficial organisms. In this respect, intercropping is ideal, for we automatically create areas where insects can thrive in an optimum way.

And last but not least, I am convinced that our customers expect more from us than just always going on like before. This will not only be an important reason for them to co-operate with us. They will also reward it." 

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You cannot take it for granted that everything from the soil is available to the plant. You need an intact biological activity of the soil.
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JOE WECKER

The 3,000 m² building and the 14-hectare area have already been designed for further growth.



FROM AN OFFICE CONTAINER TO A PROFESSIONAL SITE

The history of HORSCH Ukraine is impressive and due to a large team, it has developed at a tearing pace – very successfully and with a new company site which was inaugurated at the end of July.

On the 1st of June 2009 everything started rather moderate, not to say small, with the foundation of the Ukrainian HORSCH daughter in Polkownitsche. Of course, HORSCH had already been present in the Ukraine before with its partner Agro Soyuz, but at that time there was a clear focus on direct seed drills with tines like HORSCH sells them very successfully for example in Kazakhstan. In 2009, HORSCH started at full speed in the Ukraine – for since that time a product range that is adapted to the respective region is sold.

The Ukraine is divided into several agronomic zones: from the high yield sites with stable rainfall in the west to the poor steppe in the east.

Adapted equipment and top quality of the machines is crucial – in fact across all farm sizes and also across all engine-power classes of the tractors. For in the Ukraine a certain engine-power class that optimally matches the HORSCH machines dominates among all arable farms. It starts with the Belarus class (80 to 120 hp) which, however, is decreasing via the main class with 300 to 350 hp to the premium class with around 600 hp. “For us as a manufacturer this helps a lot as we can easily plan a certain demand for standard working

widths. For example, a Joker with 8 metres or a Tiger with four metres for 350 hp for tillage, eight or twelve metre working width for seed drills and all of them with pre-configured equipment options”, Johannes Kluth, managing director of HORSCH Ukraine, says. The typical customer in the Ukraine farms between 1,000 and 5,000 hectares. These farms are mainly run by individuals. Smaller holdings own between 10,000 and 50,000 hectares and the large holdings up to 600,000 hectares (see the article about Kernel in terraHORSCH 21/2020).

“One secret of our success in the Ukraine, however, is the service”, Johannes Kluth points out. “Half of our approximate 33 employees are practice-oriented sales and especially service specialists. Moreover, there are five colleagues in the warehouse/logistics department who guarantee a fast spare parts supply and, of course, the colleagues from marketing, accounting and HR. But it is our excellent service that made us well-known all over the Ukraine. Just one example: We had some problems at a machine because of oxidised plug connections. Even though this problem only occurred after three years, we replaced these plugs at all machines as a gesture of goodwill. Word got around and thus our service surely is one



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01 During the official opening at the end of June the hall was used for speeches and discussions. Soon it will be used for training the sales and service employees of the Ukrainian sales partners.

02 The team of HORSCH Ukraine with Philipp (right) and Michael Horsch (left)



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of the reasons why in the meantime we have become one of the market leaders in the country.”

In the Ukraine, technology “Made in Germany” is highly respected and a guarantor of quality. For with the extreme farm sizes an eight metres compact disc harrow might work up to 10,000 hectares per year if a farm manager uses it in shifts all year round. A Maestro 24 works more than 3,000 hectares during the few weeks in the season. But the HORSCH team alone would not be able to support the whole country at the same time. This is why HORSCH for many years has been co-operating very successfully with four large sales partners: Poletehnika mainly is in charge of the eastern part of the country and selected nationally active large farms, Zolochiv TH is responsible for the western part and Ropa as well as Astra take care of Central Ukraine.

It is the sales partners who pass on their knowledge about service and the use of the machines to the farms. Especially in large holdings this is a crucial factor of success. A Maestro can only work more than 3,000 hectares in a few days if the driver of the machine is perfectly trained with regard to handling the machine and in case of an error message knows immediately what to do. “Only by an intensive theoretical and practical training of the engineers and drivers we can guarantee a smooth use of the machines”, Johannes Kluth adds. “The drivers of the machines even get certificates. With HorschConnect we want to make the service even more efficient and sort of put it to the next level by detecting and resolving possible problems or wrong settings earlier.”

To make sure the sales partner can build up this knowledge they are trained every year by the HORSCH product and service experts. And with the new company headquarters at Veliki Soltanivka this sector will become even more professional. “The new company site is optimal for our purposes”, Johannes Kluth explains. “The location – about 30 km south of the capital Kiev and conveniently located directly at the motorway to Odessa – offers numerous advantages. And our sites can also easily be accessed via the two airports at Kiev.” The area of

the new building amounts to approx. 3,000 m² and is divided into four parts: a central spare parts warehouse, a repair shop with gantry cranes, a soundproof training hall which is accessible for vehicles and offices. One special feature is that you can see the machines already from the training rooms and there is a direct access from the training room into the machine hall for an optimum mix of theory and practice. A total of about 4.5 million Euro was invested into the new site. The infrastructure (gas, power, water, ...) on the 14-hectare area has already been designed for a further growth in the years to come. “If you consider the number of rows sold in the single grain sector, we already are the market leader in the Ukraine with the Maestro. And with the new site we want to extend this lead even further”, Johannes Kluth proudly states.

The Maestro single grain seed drill is one of the most popular products in the Ukraine. The main crops of the country are maize, wheat, sunflower and rape. “This is where the Maestro shows its strengths. But the seed drill Pronto NT, too, is a success story “Made in Ukraine” and was developed in a very close co-operation with the sales partner Poletehnika. The company founder and managing director Alexander Mistyuk himself owns several arable farms with about 45,000 hectares where mainly wheat and sunflowers are grown. For sunflowers he, of course, relies on the Maestro. For sowing maize, the Pronto NT was developed which has been perfectly adapted to the agronomic requirements and the infrastructure of the farms in the south-eastern region where minimum tillage prevails. Already about five years ago Alexander Mistyuk emphasised in a terraHORSCH interview: “The Horsch brothers are farmers themselves. They know the requirements and the problems, and they act accordingly. At the same time, HORSCH is not only a European company, but a global player. Already today they think about what will happen tomorrow. And they are passionate about what they do. And as the same is true for me, we get along so well.” Mistyuk was able to calculate in detail the market potential a machine like the Pronto NT could have in the Ukraine. Unlike the Pronto DC the narrow wavy discs of the NT only open a small gap in the soil where the TurboDisc coulters then place the seed in the wet soil. In addition to the Maestro, the Tiger MT and the Joker RT, the Pronto NT is one the mainstay of sales in the Ukraine.

With **HorschConnect** digitalisation finds its way into the sector of mounted implements. The focus is on the flexible control of selected machine functions via the smartphone by means of the MobileControl app as well as the transmission of machine and telemetry data into the HorschConnect Telematics Portal. This allows for a central insight into as well as the administration and documentation of all relevant machine data.

HORSCH worldwide – strategy for market penetration

The current market situation keeps a lot of companies busy. In the interview, Philipp Horsch explains how HORSCH supports its customers, how the company prepares for the years to come, why the company continues to grow to such an extent and how company culture helps to tackle things.

terraHORSCH: How does HORSCH experience this pandemic?

Philipp Horsch: When the pandemic started last year in March, there was a lot of uncertainty. We of course wondered what consequences it might have on our sites and the company in total. At that time, we were right in the middle of the spring season which was very difficult as we had a lot of orders and it was not foreseeable if there would be cancel-

lations. We did not know if we could manage to support our service colleagues in the different foreign markets from our headquarters in Schwandorf appropriately. But it soon became clear that our subsidiaries on site were well prepared and managed everything more or less independently. In the course of the past year, the concerns at the beginning of the Covid-19 pandemic gave way to a continuously increasing growth trend.

What do you think led to the stable and strong development of the company in the past years?

That's hard to say, but I believe that for example the stable cereal prices as well as a certain pent-up investment which was obvious in some markets contributed considerably. I think that the uncertainty of the pandemic also played a major role. It probably was for this very reason that farmers invested to an increasing degree



Philipp Horsch



HORSCH do Brasil Ltda., an aerial view of the site in Curitiba, Brazil. This is where the new plant is going to be built.

to safeguard assets. And this additionally pushed our growth. The growth dynamics even increased this year compared to the year before. We noticed that with regard to production capacities we reached our limits faster than we expected, especially in the sectors purchasing and production we are currently facing a bottleneck. This is why it is important to set the right course for the different regions based on these dynamics.

Are there individual regions that stand out from this growth dynamics?

The current growth dynamics concerns all our markets, however some definitely stand out. Russia for example is growing strongly, Australia develops positively and in Brazil and the US, too, the markets are stable and develop very positively. There is no region that stagnates. This is almost a unique situation.

May that lead to an overheating in some countries and regions?

Despite all the euphoria we are, of course, careful and we prepare for growth as well as for a possible slow-down and for having to react at short notice if required. It is difficult to predict what will happen. On the one hand the price situation for cereals is very stable worldwide that is very positive for the farmers. On the other hand almost all governments inject huge amounts of money into the systems which, of course, have to be spent. There are different effects that do not only bear on

our sector but also on industrial production in total. The consequence is that for example the prices increase massively and therefore, inflation is fuelled. From today's point of view, we cannot yet assess how this price increase spiral will affect our production costs. We try to handle this as considerably as possible and to dampen the situation to the best possible extent. Back to the question of a possible overheating: Despite the different special influences I mentioned we do not yet see the danger. We are carefully planning with a further growth in the years to come.

In the company's history there have already been big leaps in growth. How did you deal with them at that time? Are there big differences today?

Compared to previous years with the same percentage boosts to growth the current boost, of course, nominally is much bigger. One difference for example is that it becomes more and more difficult to provide the required capacity in the production department as soon as the real nominal boost achieves a certain size. In this case, the individual boost to growth for example of one year even corresponds to the turnover of one site – so you suddenly sort of need one more site and that's a real challenge! A boost to growth normally arrives first in the production department, but we, of course, feel it in all other sectors of the company, too. So you have to keep at it and react in due time. So far, we have

managed really well – all our employees always pull together and flexibly adapt to new conditions every time.

Regarding these dynamics – which limits does the company reach at the moment?

This year we are facing special challenges, for on the one hand the boost to growth is considerably more pronounced compared to the previous years. On the other hand, we are confronted with considerable supply problems in the commodity market. Almost every day we hear bad news with regard to missing parts and the purchasing as well as the production department always have to react flexibly to this situation. I would not be surprised if we had a severe supply problem this year that cannot be solved quickly – so far this fortunately has not happened. But the supply situation will have an effect on us and our customers after all: This year we, too, have been struggling with occasional delays in delivery. We are doing our best and so far, we have almost always been able to solve the problem together with our sales partners and customers.

What we now see for the whole delivery chain – is this the consequence of the pandemic?

Definitely yes! After a hard stop of the global industrial production in the middle of last year, business has been booming again extremely fast in almost all industrial sectors since the first quarter of this year, with regard to the demand



01 + 02 The HORSCH Rus GmbH in Rostchinski, Russia

03 The company headquarters of the HORSCH Maschinen GmbH in Sitzzenhof, Schwandorf



partly beyond the pre-pandemic level! In some key sectors starting again is considerably more difficult and slower than braking – we notice this for quite a lot of things! If in such a situation material is getting scarce and at the same time more expensive, the result are hoarding effects which in turn lead to even more shortages etc. ... A vicious circle that takes quite some time to calm down. We are not yet past it!

How are you working, is there a long-term master plan?

If you take a look at the DNA of our family business you will see that we always have been working agilely and flexibly. First and foremost, we are interested in global agronomic topics. As a result, we again and again re-define our strategic objectives at short intervals. It is part of our company culture to simply try out ideas and to realise them agilely. We have realigned the structure of our company accordingly and now distribute the tasks on more heads than before in a unit structure. This structural change and the distribution on more people are to help us to become even more agile and thus to manage the challenges of the future even better. To get back to your question about our way of planning: We perceive ourselves as an organisation that drives by sight rather than an organisation that follows a precise, long-term plan.

What do mean by driving by sight?

We do not work according to a traditional five-year plan but look ahead to the different questions always focusing on what makes sense. This is what we mean by driving by sight. For example, we do not build a new production site because it is scheduled in some long-term plan, but because we notice that we will need this site for capacity reasons within the next few years. We only look ahead as long as the construction time for the site. In this case, we surely proceed differently from other companies. But we have never acted according to plans. It is by sight that we fix objectives and take decisions for different time horizons. Thus, we can always adapt very flexibly to changing conditions. For traditional product and marketing topics, too, we work on a short-term and agile basis. However, there are individual elements where you have to look further ahead. Some product topics take a lead time of several years with regard to the basic development. Others can be pushed and completed for serial production in a very short time. In autumn 2020 for example we virtually within a few minutes took the decision to expand the site in Ronneburg/Thuringia as during the weeks before it had become apparent that the capacity limits in our German sites would be reached faster than we originally thought. I observe that organ-

isations that work with long-term plans to a disproportionate extent are busy revising these plans constantly and this is why we advocate as few long-term planning routines as possible. It would simply take up too much time which we want to use better. At the same time, for decades we have always been pushing the skill to take decisions fast. The journey is the reward, not the plan or the reward itself. It often is better if you don't think things through until the end, but simply get started. This is where our family culture takes over and what makes us tick.

So what is your "sight" worldwide with regard to the development of the sites and investments?

We have been working in a decentralised way for years, i.e. we do not only rely on one site. We produce at six sites all over the world that are distributed over the important continents. We want to continue to produce on these continents – as close to the market and as flexibly as possible. In practice, we are going to expand the site in Ronneburg until the middle of 2022 as I have already mentioned. With this step we achieve a doubling of the capacity. At the same time, also until the end of 2022, we want to build a new paint site in Schwandorf. You have to interlink the assembly capacities with the paint capacities. In Landau we want to take the next steps in the



crop care sector: We will expand the assembly capacities at short notice and the production capacities and the paint site, too, in the long run. Thus, all three sites in Germany are going to grow. In Brazil, there is a greenfield project: we are planning a new site at a new location in Curitiba. Brazil is a growing market for us. Our good market position is also due to the committed young team on site that perfectly puts our company DNA into practice. In Russia, too, we are going to expand our production capacities. The measures are already in full swing. In total, we are going to almost double our production capacities with these worldwide investment projects within the next two to three years.

What are the factors that make you decide where to build a site?

Quite a lot of topics are important for this decision. Among others the accessibility of the sites, if there is supplying industry in the surroundings or which industry culture prevails in the region, e. g. if there is mechanical engineering industry or rather dissimilar industries like clothing industry etc. What does not attract us at all are subsidies, incentives or tax rates. First and foremost, we orient ourselves towards long-term issues, especially towards human beings and the customers. Furthermore, we check which regions we want to deliver from the site, for the way to our customers should be as short as possible.

How do you convey the production know-how and the company culture to the new sites?

We try to recruit especially the executive staff of a site at an early stage and train them as long as possible in Schwandorf – half a year or even a whole year. Thus, the executive staff gets to know our company culture and the way we work right from the start. Another advantage is that there already is a network between the parent and the subsidiary company. This facilitates communication enormously. At sites where we succeeded with this strategy our experiences and the consequences were excellent.

How about product developments?

Our objective is the global interlinking of the product development and the product strategy. At the moment, we have four R & D sites: two in Germany, one in Brazil and one in the US. The interlinking of the sites is quite a challenge. On the one hand, each site wants to be independent, on the other hand we want to interlink them with each other and with the parent company. This starts with the IT infrastructure like CAD, ERP and PLM systems. And of course, all other sectors, like service, marketing or sales, also have to be interlinked. Our structural change towards a more agile ProductUnit structure is going to help in this respect. As we all know the product development predefines a lot of things, so it is our

objective to develop according to the same standards all over the world. Not compulsively, but in a reasonable way, with the objective to assemble machines flexibly around the globe and to shift production quickly – as and when required. We, thus, want to meet the growing risk of currency fluctuations. The latter are a continuously increasing commercial risk. Especially last year they had a significant negative impact on the operating results.

In your opinion, what is at the bottom of the positive development of the company?

It's the HORSCH style, the DNA of our company, in short: the way we work. For decades we have been orienting ourselves strategically according to the passion of our company. We want an intensive exchange with the arable farmers all over the world and we want to advance together. We take pleasure in all agricultural topics, in the changes in agriculture and in all the challenges involved. Topics that others might consider as a threat motivate us. Green Deal, topics like climate protection, nature protection or plant protection, any restrictions or the food and health discussions – we see them as a chance. We tackle these issues proactively together with our customers. We love this way of working. And it works extremely well in our company. Though everything is not always perfect, we work with passion and achieve good results. 🌐

HORSCH pushes different aspects of autonomous driving systems

In five short statements Michael and Philipp Horsch describe what they understand by autonomous driving systems, which technical requirements are necessary, how the topic developed in the HORSCH company and what will be required in the future.

Michael Horsch: Our first steps towards an autonomous driving system must have taken place in the early 2000s when we bought the first AutoFarm GPS steering system for HNG. At that time, it was the first RTK system from the US which allowed for driving within the range of a centimetre. When it worked, we thought: If something like this works, we should be able to drive autonomously. But at that time the project came to nothing. When we bought our test farm AgroVation in the Czech Republic, we had the chance to focus on CTF and track planning. We originally started with an agronomic point of view, but we soon realised that CTF first and foremost is about planning. This was another step towards autonomous driving systems.

Philipp Horsch: I would rather call many things which today are associated with the term autonomous automation. Let's take the example of a tractor that drives with GPS and can reverse on its own – for a start this only is an automation step, there is still somebody sitting on the machine who controls it. Autonomous means that there really is no driver. And we are talking about different vehicles, i. e. without a cabin on it. And what is extremely important: Automation comes before autonomous driving. It definitely is the first step. As automation has been an important topic for years, we have been making good progress. However, there still are quite some hurdles to clear until we reach complete autonomy.

Philipp Horsch: To be able to work in a partially autonomous way today, three things are required: First of all, the track planning system. Then you need geofencing, i.e. a digital fence. And the third point is the safety topic. Today we solve it by placing a "driver" with a remote control in the field whose task it is to monitor everything and to intervene in case of emergency. The remote control is authorised for a range of 500 m. These three aspects are important to make sure that we soon can work in the field in a partially autonomous way and be safe. The next step logically is the sensor system so that the machine can be monitored, e.g. a clogging detection etc. From a technical point of view, we are working on different concepts, for at the moment we still do not know what will stand the test and in which conditions. What we know is that we have to take the different concepts into the field, exercise respectively, learn and develop further. In any case, our approach is free from any bias.



Michael and Philipp Horsch talk about autonomous driving systems.



Gather experiences in the field – the robot with a mounted Maestro 24 SV.



Michael Horsch: The current legal situation is another important issue. At the moment, from a legal point of view, the legislator does not separate between road and field, but treats them as equal. But on the road, you drive significantly faster and there is opposing traffic. The need for a re-definition and the public pressure to finally create appropriate framework conditions is enormous. If we separated road and field, we could get started in the field much faster. Another point is the possibility of the homologation of the safety concept, i.e. camera systems, radar and lidar systems. We hope that in the next few years the safety systems will have developed in such a way that they can be homologised, for from a technical point of view we are ready. All this is perfectly sufficient for a test farm, for this is where we want to gather experiences, test machines and integrate them into the farm processes.



The HORSCH robot

Michael Horsch: The time of the generation – that by the way I also belong to – that is into fully air-conditioned cabins and a showy bonnet is coming to an end. The next generation is already waiting in the wings, is 14 to 18 years old and digitally native. The ability to deal with touchscreens, smartphones and tablets is almost innate. These young people control everything that moves completely intuitively and without ever having read a user manual. The users are already there. We have to meet the requirements.



Watch the HORSCH robot during a test in the field.

Crop care on all continents

Theo Leeb, the managing director of the HORSCH LEEB Application Systems GmbH, talks about the objectives the company pursues with its crop care technology, how the markets are going to develop and where the focus for self-propelled sprayers in the market is on.



terraHORSCH: Which developments do you observe in the international market with regard to crop care technology?

Theodor Leeb: In the past two years the topic tank capacity was increasingly discussed in the export markets. So far there normally has been a demand for a capacity of max. 5,000 litres. In the meantime, there have been changes and the need for larger tanks increases. We are already offering tanks with a capacity from 6,000 to 8,000 litres for export. This customer demand among others originates from the idea of efficiency. It makes sense to have more water respectively more liquid with you in the field to ease water logistics. However, with a growing capacity we also had to consider the total weight of the machine. Due to a newly developed concept with a front cabin and a 50:50 weight distribution we can now build a machine with a capacity of 6,000 or 8,000 litres which does not weigh more than a competitor machine with a 4,000 litres tank. The weight distribution for machines with a middle cabin however is 70:30. These machines are very heavy at the rear because of the axle load and thus the tank content is limited. Another development is the increasing demand for larger boom width beyond today's usual 30 to 36 metres. We rather know this from markets like the Netherlands. The reasons are topological. There are a lot of irrigation ditches which are laid out for 50 metres. In France, the situation is similar. In total, in the export markets the demand for larger working widths increases. We are talking about widths of partly up to 50 metres.

terraHORSCH: Why does the water application rate in the markets tend to increase?

The farmers in the US partly have adsorption problems because of little water, high speeds and wind. In combination with suboptimal wetting efficiency decreases. The problem increases exponentially. More water normally improves the wetting performance. The topic of water application rate was driven by the idea to achieve a high output with little sprayers to increase efficiency. In this respect the pendulum might have swung extremely in one direction, but in the meantime, this has been corrected. If you regard the history of the low water application rates, you will notice that it was driven by the traditional self-propelled sprayers with a tank capacity of 2,000 to 4,000 litres and which had to be used as efficiently as possible on many hectares. In this case the most important lever for area output was and still is the applied quantity of water per hectare.

terraHORSCH: What are the major differences in the different markets?

In the export markets we sell a lot of self-propelled sprayers. Especially in the Ukraine, in Russia, Kazakhstan or in North

America respectively Canada. Brazil is added to the list right now and in Australia we plan to launch the sprayers this summer. In North America there are a lot of farmers where the owners themselves drive the machine, especially in family-run farms. This is why they have very high requirements with regard to ease of use and driving comfort. In other arable farming regions, however, the focus is on a simple, solid handling as due to the sizes of the farms the machines are driven by external staff. In this case we have to meet the challenge that the machines are also driven by people who are less technophile. In the meantime, we can offer good approaches to solve this problem. With regard to the basics like work quality, performance and reliability the requirements are the same – whether in North America, Brazil, Russia etc. The basic elements have to fulfil the requirements. As I already said: the differences are in the comfort topics and the handling features. In this respect the demands of the Western markets like US and Canada are considerably higher. It may happen that they express special wishes which other farms do not attach great importance to – for example with regard

to cupholder or leather seats. One is prepared to spend more money on such things, the other does not care too much about it. It's similar to buying a car.

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„Finally, it is about making the performance of the machine less dependent on the user and to identify performance reserves. This is the objective we pursue with automation.“

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THEODOR LEEB

terraHORSCH: How important is the focus on the driver when a machine is developed?

We have different equipment options with regard to the handling of the machines. Here, too, we notice global differences. While some markets attach great importance to performance, reliability and a good application quality, other markets additionally demand a higher degree of automation, comfort features and want to achieve the optimum with regard to spraying quality. This is why we offer a wide

range of sprayers. We want to be flexible to meet the customers' requirements. I also notice that the customers more and more require highly automated work flows and even complete autonomy. With a high degree of automation decisions how to do what and when can be taken in advance. Our objective is that the driver only carries out monitoring tasks. Decision processes are to be documented and traceable afterwards. These requirements mainly come from large farms with a lot of employees. These often are farms in Russia, Brazil or the Ukraine who have to meet the management challenge with regard to the vehicle fleet and staff. Finally, it is about making the performance of the machine less dependent on the user and to identify performance reserves. This is the objective we pursue with automation. In my opinion, this finally is the preliminary stage respectively the prerequisite for autonomy. In this context we take the whole work flow into account – i.e. from track planning to logistic topics. These machines will, of



Terraces in Brazil – a challenge for any machine, in the picture a Maestro 36.50 SW. As of autumn the boom control system BoomControl will show its strength in these condition.

course, be connected with the internet via HorschConnect. This way, we can see exactly when and why the driver has to intervene during the work process because for example he has to avoid an obstacle in the field or a nozzle is blocked. Based on this information, we can continuously optimise and develop our system further. It also serves as an indicator of how far we still are away from a completely autonomous solution.

terraHORSCH: Why is such a wide range of self-propelled sprayers necessary?

Theodor Leeb: I see two driving factors for this variance. On the one hand, depending on the arable farming region there are different crops which in turn make special demands on track width and clearance. On the other hand, the homologation restrictions for road service provide different frame conditions. They are not uniform for Europe, much less on a global scale. Machines that are approved in France for example must not exceed an outside width of 2.55 metres to be allowed to go at 40 km/h on the road. The US, Russia and Brazil are less restrictive by far. The admissible outside width, of course, essentially influences the design of the machine. You can see this in the different frame concepts, but also in the different boom designs. In Europe, for example, we have to take quite a lot of technical effort to fold wide booms to a width below 2.55 metres. For the export markets we make full use of the available space and fold to an outside width of 3.2 metres. Thus, the cross section of the individual boom segments is larger, what in turn means more stability. This

makes sense for the export markets as the operational speeds partly are beyond 30 km/h and as for example in Brazil due to two harvests the sprayer is used almost the whole year round. The hectare output, thus, cannot be compared to European farms. Owing to the different agronomic and regulatory requirement it makes sense to cover the whole sector with several types of sprayers.

In Brazil, in some regions there is an intensive formation of terraces. With large working widths is this an issue with regard to the boom control?

The fields in Brazil are very rough and often are uneven. Among other the result of deliberately laid terraces and direct seed over many years. This, of course, is a challenge for the chassis and the suspension. But with our newly developed wheel suspension we are optimally prepared. In Brazil the terraces rather are ridges which were laid to guide the water. In North America the challenge are artificial water ditches which were deliberately cut into the fields for irrigation. On principle, our boom control system BoomControl is ideal to guide the boom perfectly above the population even in extreme conditions. But there is one point I would like to improve: driving over terraces or driving through irrigation ditches. Imagine the vehicle drives into a ditch. The machine tilts towards the front, the boom at the rear goes up. BoomControl realises this and regulates the boom downwards again. In the next moment the rear axle drives into the ditch. Because of the simultaneous downward movement of the boom and the machine,

the boom might get very close to the population. Our idea to avoid this is as follows: If the self-propelled sprayer drives into a hollow or down from a terrace, the chassis performs a rotary movement to the front or to the rear. We take it up with a gyroscope and immediately control the boom actively to avoid a double downward movement. This guarantees safety without the driver having to intervene. But we are still in a very early development stage so I cannot make a statement with regard to availability.

Do you plan to build self-propelled sprayers in Brazil on site? And if yes, what is your time frame?

Brazil is an important market for us which is growing continuously, and we want to break into this market. This is why we expand our site in Brazil to be able to manufacture our machines on site. Another advantage of a production on site are local content or customs topics. The first prototype is to be built this year. A realistic date for serial production will be as of 2023.

The clearance of the first “long-legged” self-propelled HORSCH sprayer was 1.6 metres – isn’t it enough?

Our experiences with the PT 350 showed that especially for sunflowers a clearance of 1.6 metres is a compromise. It might work in some years, but there are also years when the sunflowers grow to a height of more than 1.8 metres. As the head is the sensitive part, there might be damages. This is why for our new models VL and VN we offer a height adjustment for a clearance of two metres as an option. But the experiences with the PT 350 also showed that for maize in the majority of cases a clearance of 1.6 metres is enough. Therefore, the standard version of the VL and VN comes with a clearance of 1.6 metres.

How about the topic nozzles and nozzle control? In Europe pulsing is pushed enormously – what is it like on other continents?

The awareness and the interest of our customers grow considerably. In North America where the first PWM systems were launched about 25 years ago, it has become standard almost everywhere. For the large fields in Brazil, Russia, Ukraine etc. I do not see such a great demand as due to the field structures the main advantage of pulsing, CurveCompensation, usually is not used to such an extent as the headlands are laid out rather straight and there are almost no obstacles in the field that have to be avoided. In this case, our well-proven AutoSelect is completely sufficient. It can also be used to realise different application rates and operational speeds.

What are the developments with regard to the emission standard for self-propelled sprayers? Are there discussions about a global equalisation?

To remain competitive in the different markets, the emission values, of course, have to be ok. In Europe, emission level 5 applies at the moment, in South America, Russia and the Ukraine level 3 is sufficient. As meanwhile the exhaust after-treatment system represents an essential part of the costs of an engine, we offer both emission levels. I do not see an equalisation in the medium term. The export markets might perhaps catch up slowly and reduce the distance to Europe. However, because of the current discussion about the diesel motor even more stricter limit values might be required in Europe in the future. But we hope that this will not come true.

From a global point of view the self-propelled sprayer is a very interesting tool in the crop care sector. What is your market expectation?

Every year about 9,000 self-propelled sprayers are built worldwide. The distribution, however, is rather unequal. The main markets definitely are North and South America. Europe is relatively constant. In my opinion, the biggest growth potential for self-propelled sprayers is in Eastern Europe. Our objective is clear: We want to achieve a significant market share in all markets. But I am realistic, and I know that this will happen at a different speed depending on the respective country. We already have acquired a top-ranking position in many European countries.

Beyond Europe I notice that the demand for our machines in the Eastern European countries, i.e. countries with a high import share of spraying technology, is very high. On the one hand, this is due to our excellent sales and service team, but on the other hand to the openness of the customers for European technology. In the traditional self-propelled sprayer markets North and South America, it is a little bit different. In these countries you have to set yourself apart from the top dogs from a technical point of view. The first feedback and the sales, however, show that we offer exactly the technical developments the farmers are waiting for. This is why I am very confident. In Australia where we will launch our sprayers this summer. The launch was delayed because of Covid-19 as we were not allowed to travel. In this market, too, we see quite a lot of potential for our machines.

Another important point is the ISOBUS and GPS steering systems complex. Especially with our global orientation it is extremely important to be open to a large number of different systems and providers. I notice that depending on the region there is a preference for different manufacturers of terminals and steering systems. This is the reason why we, of course, offer a standard ISOBUS interface for the application terminals

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 „Because of the current discussion about the diesel motor even more stricter limit values might be required in Europe in the future. But we hope that this will not come true.“

THEODOR LEEB



A powerful team – three self-propelled sprayers for any requirements.

and an intelligent universal interface for the steering systems. Moreover, we have a camera system which can be used to steer automatically in row crops.

Where are the markets that focus on trailed technology?

The farmers openly discuss if an expensive self-propelled sprayer is profitable for them or if a cheaper trailed machine combined with a comfortable tractor which they for example already use for sowing maize is sufficient. With regard to comfort or application options there is not much difference compared to self-propelled sprayers. The same technologies are used in both. In the North of Canada for example less maize is grown. So you do not need high clearance and you could perfectly manage with trailed machines. For large farms a combination of self-propelled sprayer and trailed technology in my opinion is the most reasonable solution from an economical point of view. The farmers are already ready for this, but the appropriate technology is still not available in these countries. This is why we are going to extend the Leeb AX line with an export version with a larger barrel capacity and a spraying boom that will be adapted to the conditions.

How do the 3-point sprayers fit into your global strategy?

There is a stable market for 3-point machines, mainly Germany and France. In France, the terrain is very hilly, especially in the South. It is difficult to work with a trailed sprayer in such conditions. Self-propelled sprayers are not in line with the farm sizes. This is where a combination of 3-point machines with a front barrel is ideal. A small self-propelled sprayer with good

traction and weight distribution – this makes sense and will not change significantly in the years to come. In our opinion, the same is true for Great Britain. For very small farms in Poland or the Czech Republic we do not just yet have the perfect technology. For the 3-point machines we partly use the same technology as for the self-propelled sprayers with regard to the boom control system, nozzle control and cleaning. The Leeb CS, that's the name of the new sprayer line, will be equipped with the well-known systems BoomControl, CCS Pro and AutoSelect. If we take a look at the crop care sector, our many innovative solutions set new standards in Europe. The next step now is to make the advantages of our application technology available to the farmers to the full extent. This is a wonderful challenge which I am really looking forward to. We continuously work on us and on our products and want to offer the farmers the best possible solutions – we then have a good chance to become a market-leading company in our sector worldwide. 

Among the best

By Štefan Ščecina, AGROMAGAZÍN

The south-east of Slovakia once was one of the country's strongholds of the agriculture industry. However, the societal upheaval of 1989 also resulted in the collapse of numerous farms and companies in this sector. Despite the unbalanced playing field some farmers managed to be successful in the market and even in a national comparison.

REGULAR AWARDS

At that time local farmers were forced to ship their products to processors hundreds of kilometres away. The result was reflected in purchase prices which were sometimes up to 20 € per ton lower than, for example, in western Slovakia. Of course, when looking at production costs, fertiliser prices, chemicals, diesel fuel and the like, it is now "fairly" balanced.

The results of the work of the Szaxon family are regularly recognised by awards in national competitions. For example, in 2019 they for the first time won the Top Agro competition by a clear margin. This competition assesses agricultural companies on an annual basis based on their economic indicators. In previous years, the Szaxon family had already ranked in top positions. František Szaxon, the patriarch of the family, was recently nominated for the TOP agricultural manager of the year in Slovakia. The awards ceremony for this competition

was delayed by the coronavirus pandemic, so the results are likely to be announced in September.

Family means a lot to the Szaxons. František Szaxon always makes sure to point out that all the success they have achieved are the result of working together with his wife Terézia, their sons František, Peter, Tomáš and daughter Annabella, as well as their own families.

František Szaxon has worked in agriculture his entire life. He started at the local cooperative farm in Zátín, where he worked until the farm went bankrupt. He spent his days working at the farm, but in the afternoon and his free time during the season he focused on raising fast-growing vegetables on 42 hectares of land. He sold the products at the markets in the northern regions of Slovakia. Already at that time his children were a tremendous help, working in plastic greenhouses behind the house at a time when their peers were having fun somewhere by the water or in the sports ground.



František Szaxon (middle) with his sons František, Tomáš and Peter (from left to right) together with Oto Bize (right), the HORSCH area sales manager for Slovakia.



THE OWN FARM

The Szaxon's began to establish their family farm in 2002, shortly after the collapse of the local co-operative. The farm gradually expanded to its current 2,300 hectares of agricultural land, 480 hectares of which are classified as permanent grassland, including nearly 300 hectares of natural habitats in the Latorica Protected Landscape Area.

These meadows, which are officially classified as an ecological area, provide the fodder for their 220 Limousin beef cattle. Last year, getting that fodder was not a simple process at all. In May, they managed to mow and bale 120 hectares of hay in the area between the levies, but the Latorica river overflowed overnight, and all the degraded hay remained in the water for almost a month. If the Latorica reaches a flood state, the water level is very slow to return to a normal level.

Deep soil loosening is typically used on arable land to improve the water management. Unfortunately, this did not help completely last autumn when the heavy soils were unable to absorb the extreme amounts of precipitation and waterlogged areas appeared in multiple fields. At least the local children enjoyed themselves as they discovered they could skate on them during the winter. As a basic principle, this area is easier to farm in drier years, as the heavy soils are better able to hold soil moisture. Of course, this does not apply to very dry years.

CROP ROTATION WITH 6 CROPS

Last year, the harvest in Zatin was one of the most difficult in recent years because of the frequent rainfall and the unstable weather that lasted nearly a month from 8th of July to 3rd of August. The Szaxons normally manage to harvest their crops within two weeks using two of their own Claas Lexion harvesters and another three subcontracted harvesters. Harvest yields were pleasing, especially for the most cultivated crop, winter wheat, for which they recorded an average yield of 6.15 t/ha from an area of 682 hectares, while better fields achieved yields of 8 t/ha. Many farmers had quality problems last year, but that did not apply to the local wheat production. Overall, the crop met elite agricultural parameters, with NL values of 14 to 15% and an average of 33% gluten.

Spring barley which was damaged by heavy rains and a windstorm turned out to be less successful. Subsequently, this crop did not meet the prescribed malting parameters and was used as feed barley. A total of 650 tonnes was affected. The farm is able to store up to 5,000 tonnes of commodities in 3 hangar-type storage buildings.

For rape, they achieved a much better result. The average yield amounted to 4.17 t/ha on 206 hectares. If the two less-productive fields, where there had been a problem with the plant development right from the beginning, were not included, the average yield would have been 4.5 t/ha. And the result of the best 50 hectares? A more than respectable 4.8 t/ha. The Szaxons know that it is important to include rape in their crop rotation. They certainly are not planning to cut back on these crops and even want to increase their current cultivation area to more than 300 hectares.

Mr Szaxon mentions another important benefit: "We had a contract for 650 tonnes with a specific company that is very reliable with regard to financing the purchased commodi-

ties. Once the rape was picked up and invoiced, we had the funds on our account within 14 days. There are, of course, examples where we have to wait much longer for the money."

WEATHER FLUCTUATIONS

In June 2019, a strong hailstorm swept across the area around Zatin damaging maize, wheat, barley, sunflower and soybeans significantly. Maize was the most affected crop and suffered the most significant reductions in yield. However, on the undamaged and best plots the grain maize yield amounted to 14.5 t/ha. Last year, too, they also recorded a decent maize yield. This is why, this year, they increased the cultivation area from 280 ha to more than 400 ha.

Soybeans are another crop that thrives in the vicinity of Zatin, and they are grown on more than 150 ha. The cultivation of sunflowers has been decreasing recently. One of the main reasons is the soybean cultivation where sunflowers can remain as a weed for years while chemical agents simply are not up to dealing with this problem. The ragweed, which is extremely difficult to eradicate, is also a significant problem. And it does not seem that chemical plant protection will become easier in the near future. Complications are caused by restrictions of active substances, especially in the sector of systemic pesticides.

Because of the unfavourable weather in autumn less wheat was sown. The plan was to sow around 700 hectares, but the Szaxon family ended up with 200 hectares less. In recent years, the herbicidal treatment of cereals in autumn has proved to be successful, and the plants started better in the spring – without competition from weeds. Last year, this was simply impossible as the weather was so adverse.

SUCCESS FACTOR QUALITY

The Szaxon family is very satisfied with machinery – especially with regard to quality and performance. Weather fluctuations and a time window for an optimum cultivation that is getting shorter and shorter force them to lay more stress on individual sectors. This was the reason for purchasing a new HORSCH Leeb sprayer with a tractor and a Claas Lexion harvester last year.

Shallow stubble cultivation is carried out as soon as possible after the harvest. Until recently, the Szaxons mainly used a disc tool with „X“ formation. But the discs of this machine of an unnamed brand wore unevenly and the machine left an uneven field. A hill formed in the middle, with grooves on the sides. Three years ago, they decided to purchase a HORSCH Joker 6 HD with a working width of 6 metres. František Szaxon Jr., an agronomist and the equipment specialist of the farm, is more than happy: "Working with the Joker is incomparably better. We use it to prepare the soil prior to sowing, especially for the crops that are sown in autumn."

HORSCH machines also fit well into the tillage system of the farm where ploughing still plays an important role. Approximately 50% of the area is ploughed annually and the Joker is used, for example, to level the rough furrows before sowing rape.



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One of the most widely used machines on the Szaxon farm is the cultivator Terrano 5 FX. It is used for preparing the field, typically at a working depth of 20 cm, prior to sowing their most cultivated crop – wheat (almost 700 ha). The Terrano also did an excellent job during last year’s extremely humid autumn. It was practically impossible to work with several other machines as the working elements clogged quickly. The HORSCH Terrano has a SteelDisc packer in the rear, equipped with scrapers, which guarantees an excellent performance even in wet and adhesive soils. Based on their experience the Szaxons would welcome the same packer in the Joker which is equipped with a double RollPack packer. However, this packer works very well if it is not extremely wet.

SOLID BOOM

Most farmers no longer use sprayers just to spray chemicals; they also use them to apply foliar nutrients. This is mainly due to the dry periods which in recent year almost have become typical for the spring season. Once spread, solid fertilisers have to wait for rain, and if the waiting time is too long, the plants do not receive the nutrients at the right time and a certain amount of the fertiliser evaporates into the air. The Szaxons try to give the crops everything they need and to a greater extent have come to rely on foliar nutrients.

Given the need to treat and fertilise large areas, they purchased another trailed sprayer in addition to their self-propelled sprayer. Ing. Peter Szaxon comments on their decision: “Before purchasing, we visited the production plant in Germany. We saw first-hand the professionalism of their work – from the development to the assembly of the machine.” This is another reason why they bought a new HORSCH Leeb 4 AX with a boom width of 24 metres before the last season started. “If I had to choose just one advantage of this sprayer, it would definitely be the boom control system. Most recently we sprayed wheat that had been sown in late autumn into a soil that because of excessive rainfall had not been prepared optimally. Therefore, the surface was quite bumpy, but the boom remained unbelievably stable at the defined height, almost as if the sprayer was moving over a flat surface,” Ing. Peter Szaxon adds.

The sprayer is equipped with a 3800 l tank and an additional tank with a capacity of 200 l in case the spray liquid



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01 At the farm in Zatín, the HORSCH Joker performs excellently with regard to shallow stubble cultivation and seedbed preparation. The machine is equipped with discs with a diameter of 62 cm and a double Rollpack packer at the rear.

02 This new rig was purchased last year: a John Deere tractor and HORSCH Leeb 4 AX sprayer with 24 m working width.

03 The Szaxons have been using the HORSCH Terrano 5 FX for four years. During this period, it has proven itself in a variety of soil and weather conditions – including the extremely wet autumn of 2020.

foams up. At the moment, the farm uses the whole 4000 l without any problems.

And what might be the next addition to the Szaxon family’s machinery made by HORSCH? Maybe a Maestro single grain seed drill which they tested this spring.

A NEW SPIRIT

Pauline and Paul-Henri Leluc originally come from the commercial and journalistic sector. 14 years ago, however, they switched back to farming. They did not only go for complex but also for rather particular products. For example vodka. terraHORSCH talked to the two dreamers who cannot be dissuaded from their adventure.

The family history, the continuity of the farm and the desire to give their children a fulfilled life – these were the reasons why, in 2007, Paul-Henri Leluc took over his grandfather's farm in the region Beauce in France. "For me, the return to Faronville is the return to a way of life which gets us closer to our roots again. And it allows for giving our children what we want most for them: live on a farm, have a fulfilling job, do something useful, but first and foremost create something that will last – not only in our fields, but also among society. Our farm is more than just a professional project. It is about holistic thinking and global balance."

Paul-Henri Leluc attaches great importance to interpersonal relationships – with his employees and apprentices and with his customers. Moreover, his curiosity pushes him and motivates him to develop things further.

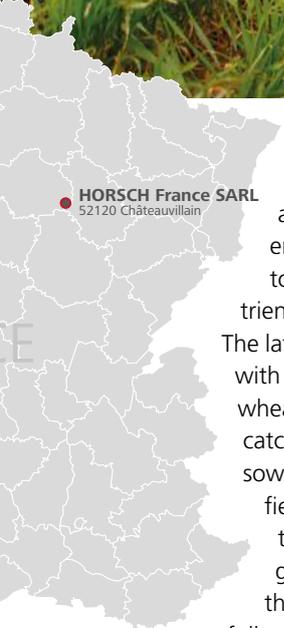
Extension of the rotation

For many years rotation had been very tight. It consisted of wheat, sugarbeet and spring barley. The main crop were beets. They were cultivated every three years, sometimes even every two years. Diseases developed and, moreover, yields decreased significantly. Click beetles respectively wireworms and rhizoctonia caused serious damages. In addition, they had problems with lamb's quarters so they had to make five passes with herbicides to fight them. But they still did not manage to keep the fields clean. When the sugarbeet quota finished, Paul-Henri Leluc finally realised that it was time for a new strategy for the future: "The basic conditions for farming are changing constantly and we have to adapt."



The Lelucs worked long and intensely on the recipe of the Faronville vodka.

On Paul-Henri Leluc's farm cereals are sown directly with an Avatar 12 SD.



HORSCH France SARL
52120 Châteauvillain

So he started to introduce another rotation and at the same time to reduce tillage. "I had several objectives: to reduce weed and pest pressure, to save costs, to restructure my soils, to supply nutrients and to abandon the cultivation of sugarbeets. The latter because there were too many risks. I started with a rotation consisting of wheat, barley, potatoes, wheat, wheat, barley and maize. I always integrated catch crops. To stimulate the formation of humus I sowed a mixture of phacelia, mustard, sunflowers, field beans and radish after each harvest. This mixture digests the straw, due to the multiple roots guarantees a better structure of the soil and after the straw has been turned supplies the soil and the following crop with nutrients. The advantage are the low costs that amount to about 55 €/ha.

My approach is geared to the highest possible benefit but also depends heavily on the weather forecast. The objective always is to optimise yields and the nutrient management. For example I would never sow wheat after wheat if the catch crop did not develop properly."

Appropriate machines

"Our Avatar 12 SD is optimally in line with our strategy of conservation tillage. This seed drill is less expensive per meter working width than the 8 meter version, it can sow at a row width of 25 cm and the sowing density can be reduced to 300–350 grains/m² to lower the disease pressure for hard wheat. It even is more manoeuvrable than the 8 meters machine. If my calculation does not add up, the resale value is safe anyway. I finally do not take any risk when buying this



Pauline Leluc is responsible for the marketing and all administrative tasks.

machine: If it works, I keep it. If it doesn't work, I can sell it without a significant loss in value.

As the disc and the tine direct seed drills complement each other, we also use a HORSCH Sprinter 8 CO with narrow points for sowing catch crops into straw in spring. These seed drills are an important part of our strategy to save time. They also help to increase the cultivation quality in the potato fields and for the production of the spirits. Though the contribution margin for potatoes is higher than for wheat, the risk of conservation farming is too high. The contact of the straw with the skin causes diseases." Maize is sown with the StripTill method.

Fundamental changes

Paul-Henri Leluc worked conventionally for one year, but he quickly realised that he only went round in circles. He started to push the sale of potatoes. "A neighbour offered me a hectare contract, but I declined. I preferred to produce my potatoes myself and then resell them." One year later, when he had understood how the system worked he invested in a building for storage and processing and started to market his products. First in Rungis, the largest wholesale market in France, Then in Italy, Spain and Portugal. To generate more margin, he sorts the potatoes. "This way I make sure that 95 % of the delivered



Paul-Henri Leluc bought a copper distillator.

goods are paid for – without losses because of adhering soil or non-conforme size.”

Business was good, but Paul-Henri Leluc needed a new challenge. “I always need new projects. I love when there is real action on a farm. I always had the picture in mind of farms or vineyards full of hustle and bustle.”

The trigger finally was a trip to Finland organised by Valtra. The group visited a distillery and took part in a vodka tasting. “I have always been a fan of Scotch whisky. I had never been particularly interested in vodka so far. But it changed completely. I saw the potential for our farm. Vodka based on potatoes was perfectly in line with our model.”

The end of the sugarbeet quota would have required a payment of 140,000 € for the production rights. But why pay when profitability was plummeting anyway? The money could be invested better in other, more profitable projects. So Paul-Henri Leluc took the risk. He set up a business plan based on his enthusiasm for spirits and the bank supported his bold plan. He bought a distillator and set it up at the farm in Faronville. “It was an investment into the future: Vodka is not really part of the drinking culture in France and the market is in the hands of some few producers. It is a closed circle and you have to figure out everything yourself.”

But Paul-Henri Leluc’s knowledge does not come from a handbook of chemistry: “I took courses at the distillery

Ergaster in Noyon in the department Oise. The method to liquefy the potatoes is essential. And, of course, you have to find the ideal variety with regard to taste and consistency. I made a lot of tests regarding filtration. Yeast virtually is the magic ingredient that turns sugar into alcohol. Depending on whether the transformation process proceeds more or less fast, the taste is completely different. Maturation and the storage in the bottle also influence quality considerably.”

Beyond the production process quite a lot of steps were necessary with the authorities – with customs and with the competition, consumer protection and anti-fraud office. The production of alcohol is rigorously controlled. “This is what brought me back down to earth”, Paul-Henri Leluc admits. “But from the moment I bought the distillator there was no turning back.”

Another spirit

Because of the price volatility for cereals and the high costs for purchasing land many farmers try to increase their margins by reducing production costs. Paul-Henri Leluc does not agree: “In terms of reduction of expenses we have already reached the floor. We could perhaps save another 25 to 30 €, but in the future we want to focus on increasing the turnover per hectare”, he explains. “Today our turnover amounts to 1.5 million € for our 260 hectares.”

The potatoe variety, the maturation in barrels and in the bottle influence the taste of the vodka.



So the innovations – considering all business sectors – are quite profitable. But it still is difficult to put them all into practice. “I talk to other farmer about conservation farming and about the reduction of plant protection agents, but not about the most innovative part of my project, the distillery. Everyone keeps his cards close to his chest as I am a competitor. I read a lot and I intensely dealt with a lot of topics. But first and foremost I believed in myself and in my project. With this project I can self-actualise. And it confirms my decision to farm differently. Of course, it hurts if you do not get any support or if you realise that others have doubts about what you yourself are so convinced of. But the satisfaction and the pride you feel make up for it.”

Marketing is important

In farming, too, marketing is very important. Paul-Henri’s wife Pauline is in charge of this sector – as well as of sales and all administrative issues: “I understand marketing as a communication tool which conveys authenticity to the customer. Beautiful pictures and the staging of everyday life does not contradict honesty. Every farmer can make honest marketing. He doesn’t sell illusions, but reality! This is why we want to advertise the hashtag #venezvérifier (= “come and see for yourself”) in the social networks.

The stories we tell show that we are happy to welcome the consumers on our premises. This is the most significant feeling you can convey! You must never lie. This is why we also talk about plant protection agents. 50 % of our customers ask about them anyway. So we notice that it is a very important topic for them.”

Farmers work in the primary sector and it took some time till the Lelucs were familiar with the median Instagram. Le Monde, L’Express and Le Point got to know the farm via the social networks. So you should not underestimate them! These connections lead to contacts that can develop into friendships and then to opening up to others.

Beyond the staging of the life of a farmer respectively producer, they also had to think about the packaging and

about how to present the products and the work on the farms in pictures: to inspire to dream and not be dissuaded from these dreams. “For us it is important to create an authentic marketing to last and thus to create a real history. I decided to give our product and our farm a soul. If eventually in 200 years there is photo of us in the distillery and our umpteenth grandchild runs the farm, I would be incredibly proud.”

Last but not least

Paul-Henri and Pauline Leluc are farmers, producers and they are inventive. Although their world does not exclusively revolve around the farm. Their economic activities are centred about what is most important for them: their children. “We want to show them that a global balance is possible: job and family, financial success and farming, creation of jobs and living in the country, environment and productivity. With regard to the last point, we carried out a lot of tests and are involved in Global G.A.P., a worldwide association for encouraging Good Agricultural Practice (G.A.P.), and the label HVE (Haute Valeur Environnementale = high ecological value).

Finally Paul-Henri Leluc points out: “What I want to pass on to the readers of terraHORSCH is: You must not limit yourself to one way and cling to it at all costs. Every mistake is a chance to develop further. Listen to the consumers, watch what the neighbours do, get inspiration from professional colleagues from abroad – this is important to keep an open mind. The agricultural world changes to such an extent that it would be unrealistic to believe that you will be able to work with the same methods the rest of your life. I am also open to organic farming and I will continue to pull out different stops to make my farming strategies successful.”



Patty and Peter Jack in front of Queensland facility

Muddy River Agricultural Pty. Ltd. Perth

HORSCH AUSTRALIA – THE BETTER WAY

by Andrea Mayes

The key to successful modern farming is science and technological development: understanding the soils and conditions, choosing the best farming techniques to optimise productivity sustainably. And what is science without the dreamers? The ones who see the way things might be, could be, if only...

The story of HORSCH Australia came from the meeting of two such minds, two Ag men a world apart, who believed passionately there was a better way. Michael Horsch and Peter Jack.

Muddy River Agricultural Pty Ltd

Peter Jack established Muddy River Agricultural in Australia, in 1992.

His training in agribusiness and strategic planning, together with years of experience in seeding and cultivation technology, led him to secure exclusive distribution rights to some of the world's best brands of shortline farm machinery.

"I understood the increasing challenges Australian farmers face," Peter said. "I knew technologies were being developed overseas that could provide synergies with farming practices here, saving time and labour, reducing costs, significantly increasing productivity.

"With many Australian distributors and dealers tied to big brand offerings, I saw the chance to introduce the latest and

HORSCH

MUDDY RIVER



Muddy River staff outside Victorian facility

best in shortline farm machinery, but I also knew these machines had to be well suited to Australian conditions.”

Immediately impressed by the build, brilliant design and innovative technology coming out of the HORSCH factory in Germany, Peter approached Michael Horsch about Australian distribution rights for HORSCH seeding and cultivation machinery.

But Michael Horsch declined. At that stage, given their incredible growth, he didn't think HORSCH in Germany could adequately look after Australian farmers. Working in different conditions on the other side of the world requires changes to suit regional nuances. Peter said, back then, he didn't fully understand that for Michael Horsch, for the entire Horsch family, it wasn't just about sales.

“They see it as crucial to their way of working that they offer only the best solutions to farmers. But for me, it felt like I'd stepped up and asked someone to dance and been refused,” he said, laughing. “Eventually, after a visit from Traugott Horsch, I persuaded them it could be done. Years of research and trials followed whilst HORSCH studied Australian regional conditions and worked to configure and adapt their precision designs to our needs.”

Farmers talk

“Farmers talk,” Peter said. “They talk about yields, costs, rain, drought – and machinery. They can sometimes be slow to change their ways, slow to spend hard earned cash on new technology. We know they look beyond the claims of the big

brands. They want to see on-field proof. Horsch is a farming family producing machinery for farmers, with farmers. A company that is continually developing, trialling and improving farming technology.

And they're big farmers, big fields, high speeds, tough conditions, and building equipment post 1989 (and the fall of the Berlin wall) for the Eastern bloc, they were inadvertently building equipment that would suit our tough conditions here in Australia.

“I was excited by their passion for farming and the beautiful simplicity of their designs. I knew if I could show Australian farmers what they could achieve with HORSCH machines, they'd see it too,” he said.

Gradually, the results emerged, proving the many benefits of HORSCH machines in the field. Customer testimonials began to flow because farmers talk, and Peter, and his team had given them something great to talk about.

The story of Muddy River Agricultural has become the story of HORSCH in Australia and it has proved to be a much bigger story than anyone – even Peter Jack – anticipated.

Australia, the big picture

Australia, home to Muddy River Agricultural and HORSCH Australia, is one of the driest places in the world. It is also a major agricultural producer and exporter with a mix of irrigation and dryland farming.

Cereals, oilseeds and legumes are grown extensively, and wheat is the cereal with the greatest production in terms of area and value to the economy.

Peter Jack speaking with local growers at Sprinter NT demonstration day



Michael and Cornelia Horsch officially open new Queensland facility.

Beef is the largest agricultural industry across all States and territories with some properties in the north carrying herds of more than 200,000 cattle. Smaller mixed farming, dairy and grazing properties can be found around the country.

Agricultural success, against the odds, has left many areas with depleted soils and degraded land. Scientific research on climate change is forecasting decreased precipitation over much of the country. With water availability and quality already a challenge, farming practices that repair damage, improve soil balance and build moisture retention are seen as crucial.

While the Horsch family researched Australian requirements, Peter began to expand and strengthen dealer and training networks that would support HORSCH customers the length and breadth of the continent.

The vision and the plan

Peter understood long ago how the integration of sound scientific and technological practices was the only way for-

ward for modern agriculture. He had the foresight to place HORSCH machines in field right at the time the Australian farming industry was beginning to intensify its search for long term solutions.

Wary of the idea of simply offloading products into a new market, Michael, along with his wife Cornelia, and brother Philipp, had taken the time to ensure the products that carried their family name would be successful in Australia, improving productivity for the long term.

Through Muddy River Agricultural, Peter Jack began to offer HORSCH seeding and cultivation machinery for trials and demonstrations across Australia. He, along with his wife Patty also took farmers, contractors and dealers to meet the Horsch family in Germany to experience the family's farming passion, their culture, and tour the design and manufacturing hubs.

"Those trips proved to be really important and ag people from both sides of the world were so eager to share knowledge with each other. We hope to be able to continue them when international travel opens up again," Peter said. "When we got HORSCH machines into Australia, it quickly became obvious that precision ag engineering is more appreciated than ever before as farmers look to increase efficiencies sustainably. The first thing they comment on is the quality of the HORSCH build, designed for a long and productive life. Farmers appreciate the efficiency of the design and the low maintenance factors, but most of all they like the results. We've brought them the technology to improve soil biota, improve germination and yields. No one else is offering this quality of engineering here in Australia. We're seeing significant efficiency gains from new technologies and farm management practices that are contributing to the overall success of Australian agriculture," he said.

The team

At the apex of the Muddy River Agricultural team is the customer, the end user, whose feedback informs the whole system and whose results are there for all to see.

At the base level is the full breadth of knowledge and experience of Muddy River Agricultural and HORSCH in Schwandorf, Germany.

“It’s a big country but we’ve got it covered,” Peter said. “MRA has an extensive national network of HORSCH dealers all supported by experienced HORSCH -trained Territory Managers and Service Techs, all able to provide expert advice, before and after sales. In addition to our Toowoomba headquarters in Queensland, Muddy River Agricultural has two other distribution and assembly bases at Mooroopna in Victoria, and Perth in Western Australia. With specialised parts and assembly depots in the east, south and west of the continent, we are well placed to provide fast efficient service to dealers right across the country. It hasn’t always been an easy run. It’s taken a long, long time and an incredible amount of hard work from the whole team. Our people are phenomenal. Everyone pulls in the right direction. They do an amazing job,” he said.

Results

Peter said sales of the HORSCH range of tillage and seeding equipment began to rise steadily as word spread. By early 2020, seven years after he first approached HORSCH, sales had really taken off.

“It was incredible, how busy we were! And then Covid-19 arrived. We had State border closures, flight bans, lockdowns. But despite everything that 2020 threw at us, HORSCH sales kept climbing. We’d already done the groundwork. Our people worked tirelessly, and the machinery is field proven and creating its own momentum now. Covid-19 restrictions affected our ability to look after some things and run demonstrations, but we found ways to keep it all moving,” Peter said. “Farmers are always talking about their HORSCH machines. These are the guys who are doing the selling for us now,” Peter said.

The future

HORSCH products appeal to farmers and contractors with an eye on the future, and there’s also been growing interest from corporate groups looking to invest in multiple sales for long term benefits. Peter Jack feels this all augurs well for the future of HORSCH Australia.

“As Philipp Horsch always told me, the best designs in the world come from nature. The main arm on the Avatar for instance looks like a femur. It’s so simple and strong with clean lines. And people look at the Sprinter and say: how can it be so simple and so functional! It’s really robust and gives absolute accuracy with seed placement and depth. It’s a really simple, leading edge, extremely low maintenance product that just does a tremendous job,” he said.

HORSCH machinery has more than lived up to its early promise, delivering brilliant results across the continent. HORSCH’s persistence in adapting the machines to suit conditions in different Australian regions, and the company’s ongoing focus on engineering R & D has been well worthwhile.

New products are coming. There is a lot of interest in the HORSCH Leeb self-propelled and trailing sprayers about to make their mark here in Australia.

“If all goes well, the first HORSCH Leeb sprayer will be here in July,” Peter said. “We’ve had plenty of farmers and



Sprinter NT assembly

contractors asking how soon they can get one. There’s a lot of excitement about this line of sprayers. It’s another world class product.”

The people factor

Peter acknowledged how many people have contributed to the success of HORSCH in Australia.

“It’s hard to single out one person when you consider our success, but I have played a small part relative to others in our group,” he said. “Every person working here at Muddy River Agricultural is a key person. And right now, when things are really busy, you see what these guys are made of. My wife Patty plays an enormous part in the business, involved in all aspects of finance and senior management. Her influence is one of the reasons we’ve come this far. Like Cornelia Horsch, Michael’s wife, she often brings a different and vital perspective to what we do. There are other people along the way who have believed in me, given me a hand up when I most needed it, my late friend, Brad Nelson, a manufacturer, yet a mentor, and Bill Orthman, another supplier, played a big part in my business life – the relationships have been so powerful and continue to influence the way I think and work. You become so emotionally connected to the products and the people you deal with. Every one of us genuinely cares about what we do. And the Horsch family with their amazing passion for farming. We just feel so incredibly fortunate to be a part of it all. We embraced the culture, that’s the key”.

CONSEQUENCES OF RAW MATERIAL SCARCITY

The current tense market and purchasing situation is influenced by different factors and is not only caused by Covid-19 but also by changing delivery times, price increases for raw materials and freights, an increased demand as well as low capacities in the market. This is particularly true for the engineering and automotive manufacturing sector. The current situation also affects the HORSCH Maschinen GmbH.



Cornelia Horsch (right) and Dr. Johann Neidl (left) always keep an eye on the current market and purchasing situation and its consequences.

The steel price per ton has almost doubled. There are supply bottlenecks, some steel grades are even sold out. Empty warehouses add to the increasing costs. “We thought the peak would be reached in February or March. But the situation still is critical”, Dr. Johann Neidl, Purchasing and Digitalization, comments. There were similar price increases in 2008. However, the situation improved after five to six months.

Supply difficulties of other countries affect the whole delivery chain. If, in addition, production sites have to be shut down because of the weather or, as in Taiwan or China, because of fires, it upsets the whole market and affects the delivery times. “When before the delivery time was 10 to 15

weeks, it now partly is 30 weeks. And we unfortunately pass this on in the chain”, Neidl says.

Other commodity groups are affected, too. Copper and aluminium prices also doubled, wood prices even tripled. At the same time, these groups, too, suffer from supply problems. Electronic components and plastics are becoming scarce. It partly is the primary material that is missing, but the supply lags behind the demand. There also are kind of hoarding purchases despite the high prices. This increases the demand and thus the costs. To attenuate the existence-threatening situation for the suppliers, HORSCH tries to counteract with long-term contracts, long-term partnerships and bundle purchases. “We take a close look at each supplier and try to define how we can support him respectively how we can grant price concessions to manage the partnership and the balance”, Neidl explains.

To be able to meet delivery times, complete and deliver machines, the company reorganised the employees in the production department. Hiring temporary worker is to ease the situation even more. This caused new challenges for the employees, e. g. language barriers among the colleagues. But the problem could always be solved as the employees supported each other. “We had to make sure that the new colleagues were trained as quickly as possible. This was an additional burden for the employees and the HR department which was responsible for the recruitment. Another problem was that we did not know if our Czech employees were allowed to cross the frontier. Still all employees were working tirelessly. Although the time was rather challenging for everyone, they all pulled together to find a solution”, Cornelia Horsch, managing director at HORSCH, comments.

Increasing boom in Asia

One aspect of the current supply deficit is the increasing boom in Asia. In the first quarter of 2021 they achieved a two-digit economic growth. Due to the high domestic requirements only small amounts of steel is delivered from Asia to Europe.

Another problem is that production had been reduced for two to three months before economy restarted in a disproportionate way. The situation also affects the freight charges. The average prices for containers or air freight flights have quadrupled. To guarantee the security of supply, air freight is still used to a great extent.

Despite the continuing difficult market situation, the turnover of the manufacturers in Europe has reached the same level as before the pandemic. Especially due to the increased demand in Asia. Governmental subsidy programs provide money which is spent and increases consumption. "Economy is doing well across all sectors. In most countries Corona did not have a strong impact as the negative effects were compensated for by high subsidies in many sectors", Neidl says. At HORSCH the employees significantly contributed to the growth of the company during the pandemic. "As you can see, it worked very well and we are proud to have employees who are this committed, contribute new ideas and are ready to take unusual paths", Cornelia Horsch points out.

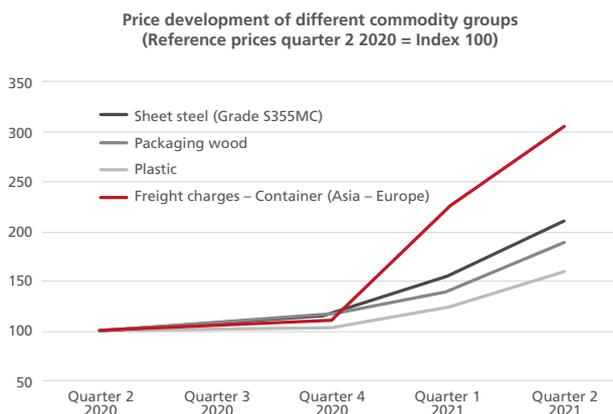
Mobile workplaces

Right at the beginning of the pandemic HORSCH set up mobile workplaces so that the employees would be more flexible with regard to their place of work. This also was an enormous effort. "Not all the existing workplaces were equipped accordingly. This tied up capacity in our IT department. But we wanted to react fast as the child-care facilities were closed and a lot of parents had to work from home. For our IT department it was a matter of course to invest quite some additional work and to provide digital solutions and the necessary equipment to quickly make mobile working possible", Cornelia Horsch says. It was an additional burden that some employees were trained to carry out Corona tests. "We decided quite early that we wanted to offer our employees the possibility to get tested on the premises to protect the safety and the health of every single one", she explains. The test stations were set up at the different sites at the beginning of the year. The marketing and sales department, too, were reorganised. But for Cornelia Horsch this had a positive effect: "We restructured our marketing strategy and now we are working with a lot of media that we had not used to such an extent before." "It pushed digitalisation. We work online a lot, the way of exchange has changed, but has become more flexible", Michael Braun, Sales Support, adds. The employees actively supported the changes within the company by flexibly adapting and helping to shape the new communication channels. "Precisely because our employees were this open and supported the changes in such a committed way, these new media today are a natural part

of our everyday working life. And we are very happy about it", Cornelia Horsch says.

Due to a very good increase in sales HORSCH was able to raise the salaries and recruit new employees. "We still have not reduced the number of temporary workers as we have not yet been able to catch up due to the leap in growth. We hope that we will soon be able to compensate that", Cornelia Horsch says. The company also tries to keep the prices for the customers within reasonable limits. "The price increase for 2021 we fixed last autumn was only moderate as we assumed that the prices for components would not increase dramatically. However, we had to react in spring and adjust the prices upwards", Cornelia Horsch explains. "In the environment described above we tried to keep the costs and the prices for our customers within reasonable limits", Neidl says.

How the situation will develop depends on different circumstances, among others on how the pandemic will change. The company expects that the current situation will continue to be on this level, with a tendency to soften a little bit. "But we are very sure that together we will get through this time. We notice an even greater team spirit than before. We have great, motivated and loyal employees who were ready to do extra work and thus, of course, also accepted more stress. We, the managing directors, definitely notice this and we are very grateful. For we know that it has not always been easy and meant quite a lot of effort for everyone", Cornelia Horsch emphasises.



Price development of different commodity groups (Quarter 2 2020 defined as reference base)					
Commodity group	Quarter 2 2020	Quarter 3 2020	Quarter 4 2020	Quarter 1 2021	Quarter 2 2021
Sheet steel (Grade S355MC)	100	105	118	155	210
Packaging wood	100	108	117	141	189
Plastic	100	100	105	125	160
Freight charges - Container (Asia - Europe)	100	105	110	225	305

„Destiny led me to HORSCH“

Amir Ali Sabiri is only 23 years old, but the things he experienced could fill a whole novel. After he had managed to escape from Afghanistan and Iran, he finally found a new home in Germany. And now he passed the final exams for his apprenticeship at HORSCH with an outstanding result.

But it was a long way before he got his excellent diploma as an industrial mechanic in Schwandorf – and it started about 4,700 km away in the afghan province Samangan. This is where Amir Ali Sabiri was born.

When he was two years old, his family fled the Iran and found a new home in Isfahan, about 250 km south of the capital Teheran. His mother, his two brothers and three sisters still live there. His father died when Amir Ali was 13 years old. He had to leave school and work to support his family. At the age of 16 he met his first love, a girl of afghan descent like him. But her brothers did not agree to this relationship and threatened to kill him.

THE HOUSE OF THE GOOD SHEPHERD

This was the reason why his mother and his uncle decided that Amir Ali had to leave the country in order not to be killed. As he could not go back to Afghanistan, he was to go to Scandinavia. For quite a lot of Afghans live in Sweden and Denmark

In a cloak and dagger operation he left Isfahan. This was the start of an odyssey that took more than five months and took him from Iran over Turkey, Romania, Hungary and Austria via Passau to Munich and from there finally to Schwandorf. At the end of this long journey he and other adolescent unaccompanied refugees found shelter in the „House of the Good Shepherd“ (a vocational preparation centre for adolescents) in Ettmannsdorf. At that time, he was not even 17 years old and had been on the run for more than five months non-stop.

The House of the Good Shepherd organised a visit to the vocational training centre in Schwandorf where they started to teach the young people German. For the language is the key if you want to gain a foothold in a foreign country and in a foreign culture.

When asked how he communicated on his flight through all the different countries, Amir Ali answers: „I knew a little English. In Iran I watched a lot of films in English with Persian subtitles. This is how I learned some English.“

After three months in the 10th grade Amir Ali was allowed to move to the 12th grade as he was doing so well. In this grade the pupils had the opportunity to take an internship in regional companies and test their skills and talents. He had already carried out internships as a metal worker in two companies when he finally joined HORSCH for a short-term internship. He performed so well that HORSCH offered him a

training contract to become a „specialist for metals technology“. Without hesitation Amir Ali accepted. „I was grateful that I had finally found my place and by performing well I wanted to say thank you“, he said.

The training for a specialist for metals technology is a two-year, officially recognised vocation training with an emphasis on practice and less theory. At that time, HORSCH created these apprentice positions in addition to those that had already been planned.

AWARDED

One the biggest challenges for Amir Ali was the technical language. In everyday life he was able to communicate quite well. However, he had to learn the numerous technical terms he now was bombarded with.

With a lot of hard work and perseverance he managed to finish the training after two years as one of the best with a mark of 1.3.

Amir Ali then worked in the production department as a skilled employee but after a short time his ambition aroused again. He decided to add another training to the one he had already finished and to invest another one and a half years to become an industrial mechanic. While working in the production and logistic department he realised that there still was a lot to learn.

He finished this second vocational training, too, as one of the best apprentices in Bavaria with a mark of 1.3. Moreover, the Chamber of Commerce Regensburg/District Upper Palatinat/Kelheim honoured him as the best apprentice of his line of training. „Now I will do my best here in Schwandorf. I found a lot of friends and only if I work hard and do a good job I will get the residence permit to stay. I also want to earn money to be able to visit my mother in Iran.“ After all the time of his escape he had visited her in 2020 using the money he had saved so far. And he wants to return some of the money they had put aside for this escape to his family.

At the end of the interview he says: „I hope that I will be allowed to stay. If I am deported to Afghanistan I will come to a country I don't know and I don't remember. My home is now here in Germany.“



01

01 Cornelia Horsch (left) and training supervisor Christian Graf (right) presented Amir Ali Saberi with the certificate of approval of the Chamber of Commerce and congratulated him on his excellent performance.

02 Motivated and enthusiastic at work: For Amir Ali Saberi it goes without saying that he does his best.



02

The apprentice team from Ronneburg won the drift bike challenge.



Cornelia Horsch (2. from the right) and Steffen Besserer (right) talked to the ZDF team about the positive experiences with the new network structure.

INSPIRING APPRENTICE PROJECTS

It was a special day at the end of May at the HORSCH headquarters in Schwandorf when the apprentices of the sites Schwandorf, Ronneburg and Landau finally presented the drift bikes they built within the scope of an apprentice project. Even a film crew of the ZDF (a German public-service television broadcaster) was present at the big finale.

In January the project Drift Bike was advertised and those apprentices who wanted could take part. Only some framework conditions were prescribed, otherwise there were no limits on creativity. All three sites built great, completely different bikes. The idea of the project was to offer the young apprentices the opportunity to organise themselves and to plan and carry out a project completely on their own. "This is very important today. We do no longer want old structures where the apprentices work to rule. With these projects they learn how they can push themselves and their project further, to help each other if problems occur and they establish new contacts throughout the company. This will be very helpful later in their job.", Steffen Besserer, Corporate Culture, explains. The drift bikes had to be built in approx. three months. However, the apprentices faced some problems right at the beginning as some spare parts were delivered later than scheduled. "Thirty years ago, apprenticeship was only about providing job-specific knowledge. Today our approach is completely different. We want our apprentices to develop and to learn to solve problems on their own. In this respect, a merely job-specific knowledge is no longer enough. Due to the project they got to know the processes that are behind building a bike. They learned how to coordinate things, to purchase parts, to calculate etc", Anton Grauvogl, head of vocational training, explains. Among others, the look of the bikes, driving a through a course as well as the longest drift were part of the evaluation.

The management, too, was impressed and insisted on taking a ride on the bikes.

Another project also shows the social commitment of the apprentices from Schwandorf. Under the motto HORSCHhelps they equipped a container for the children of the Forrest Kindergarten nearby. The apprentices built small tables and benches. They now want to pursue this idea and equip further containers for children from poorer regions, not only in Germany.

Such a commitment even attracted a film crew from the ZDF. They came to Schwandorf for the finale of the competition and filmed for the series "Working life today". Thus, HORSCH was able to show how well the network structure that was introduced last year works within the company and also across all sites. When the program is broadcasted in autumn you can see what the HORSCH apprentices got going. 

The children of the Forrest Kindergarten watched when the tables and chairs for the container were delivered.



HORSCH

LIVE

A unique kind of seminar

Because of the Covid-19 pandemic HORSCH offered an alternative to a seminar on site in Schwandorf: a live event with numerous speeches and guest speakers about various topics, among others the future of diesel or the marketing of organic products and organic cereals.

Another Covid-19 lockdown" many participants might have thought when February approached and thus also the time for the traditional HORSCH seminar at Sitzenhof in Schwandorf. In 2020, too, the seminar had to be cancelled because of the pandemic.

After the very successful field day in autumn 2020 it quickly became clear that this year's seminar, too, should take place online. However, in a completely new style. A seminar format the whole sector of agricultural engineering has never seen before. The idea of HORSCH Live was born. The speeches with speakers from different countries were spread over three days. In addition to the traditional speeches there also were interesting panel discussions with many professional experts.

Anyone could attend quite simply via YouTube, Facebook or the HORSCH website. The chat forum could be used to communicate with other participants or to discuss. Michael Braun (Sales Support) presented the German part of the event as well as the German Q & A sessions. Johannes Hottenbacher (Regional Sales Manager) presented the English speeches and panel discussions.

To prevent technical problems or connection losses many speeches were recorded in advance. Moreover, the internet connection and the online systems were tested with all speakers to guarantee a smooth course of the live discussions and Q & A sessions. A team built a HORSCH Live studio in the great exhibition hall in Schwandorf where normally the Seminar takes place.

And it was well worth the effort. From 23rd till 25th of February, 2830 people watched the event live and until end of May HORSCH Live had reached a total of 500,000 people!

You will find a more detailed summary of the discussion panels "Will diesel remain the key player in the field?" and "Marketing of organic cereals/organic products now and in the future. What are the chances and risks of a significant increase of the land for organic farming?" in this article.

A WIDE RANGE OF TOPICS – SOMETHING FOR EVERYONE

On the evening of the 23rd of February 2021 HORSCH Live started with an interesting panel discussion about the EU Green Deal. Guido Höner (editor in charge of Germany's leading agricultural monthly magazine TopAgrar) together with Michael and Philipp Horsch as well as Theo Leeb answered Michael Braun's questions. It quickly became clear that decisions that are taken in the EU and its member states will also have an influence on the international agricultural markets and that the regulations in many sectors can also be a chance for the farmers.



You can still watch all speeches and discussions. Use the QR code or go to www.horsch.com/live.



Michael Horsch discusses with Stefanie Strebl (KS Agrar GmbH) and Christof Mross (Food Lidl Germany) who attended via video conference.

STORAGE OF CO₂ IN THE SOIL, DIRECT SEED AND CROP CARE WITH MICROORGANISMS AND BACTERIA

The second day of HORSCH Live started with the currently much-discussed process of CO₂ storage in the soil. In this respect, microbial carbonisation as a composting method and tillage systems for carbon storage were presented.

After that two no-till experts shared their experiences. The first one was Ulrich Zink who talked about the experiences with direct seed of cereals and rape in Central Germany he has been collecting for 20 years. He was followed by the first international speaker Julien Senez. The French farmer also relies on no-till farming and based on real figures from his farm illustrated how the system pays off.

Next came three speeches from the HORSCH portfolio about the topics "Trends in crop care", "Top quality for wear parts" and "New technology for mechanical population management".

The second afternoon of the seminar took the audience to Brazil. Farmer Gregory Sanders talked about biological crop care at the farms of Grupo Progresso. He explained the long history of the use of bacteria and microorganisms in Brazil and the enormous progress that has been achieved especially in the past few years. He demonstrated that by using these bio-control measures he saved almost 1 million Dollars per year compared to conventional plant protection measures on his approx. 50,000 hectares in two harvests. The next speaker was Gustavo Hermann from Koppert Biological Systems. His company produces a lot of these bio-control agents and also

bio-stimulants as a fertiliser replacement. He showed what will be possible in the future and he provided some insights into the research centres in Brazil which in the meantime focus exclusively on this topic. His company supports measures not only in the soya sector but also for cotton and coffee to make the production process more transparent to show for example when goods are imported how the imported agricultural products were produced – keyword GMO free – not genetically modified.

HOEING CEREALS, CULTIVATING SOYBEANS AND INTERCROPPING

Moritz Lampe (co-founder of the Weser Bio GbR) was the first speaker of the third HORSCH Live day and gave some tips with regard to hoeing cereals with a row spacing of 25 cm. He stated that in his opinion in certain situations the hoe even is a "term life insurance" for the farmer. He recommends to equip the hoe with the maximally possible technology, especially for working very precisely, and to adapt it to the seed drill at all costs, ideally to only one seed drill.

The motto of the contribution about the quality management at HORSCH was "It's only steel". It was followed by a speech about the topic Intelligence – a term HORSCH uses to bundle its digital and automated technologies like the new Connect platform which includes for example the analysis, data transfer or service topics for machines.

The managing director of N.U. Agrar, Ferenc Kornis, showed the position of Germany compared to the rest of Europe with regard to the cultivation of soya. He explained

what farmers in Germany have to pay attention to regarding soya and under which conditions good and competitive yields can be achieved. For especially for GMO free soya there is a considerable demand for domestic products.

The next two speakers were from Canada. Joel Williams talked about his experiences with intercropping in Canada. Intercropping means that two crops are cultivated and harvested together in one field. Joe Wecker described which crops he uses on his farm for intercropping and what has to be taken into account from sowing over fertilisation and population management till the harvest. Read more about it in the article on page 12 of this issue.

Constantin Horsch was the final speaker of the third day and, thus, of the HORSCH Live event. Together with his brother Lucas he manages the farm AgroVation in Kněžmost in the Czech Republic. He took the audience on a journey from the beginnings of the farm, over its development as a HORSCH research farm to the current state where already part of the fields has been converted to organic farming.

ALTERNATIVES TO DIESEL?

Michael talked to Werner Kübler from MAN Engines, an expert with a long-time experience in the sector of the construction of heavy-duty industry engines, about the topic "Will diesel remain the key player in the field?"

These motors and engines can be found in different market segments and products, among others in truck, buses and railway appliances, in boats and ships, but also in industry and in biogas plants in the agricultural sector. In total, the company produces about 10,000 engines per year, the engine-power class ranging from 50 to more than 2,000 hp. Especially in the agricultural sector, the focus is on the customer and his requirement for the highest possible performance combined with the lowest possible fuel consumption.

Since 1995, diesel engines have been subject to stricter and stricter international emission regulations and have been divided into the regulatory categories Tier 1 to currently Tier 4. In the engine development sector, in addition to the general efficiency, emission reduction plays a major role. The reduction of the NOx nitrogen oxide emissions alone has been amounting to 96 % since 1995. The requirements until Tier 3 were met by a highly improved injection technology and optimisations in the combustion chamber. But already the first approaches for Tier 3 and finally Tier 4 made cleaning catalytic converters obligatory. Almost the same is true for the limited value for particles. In this sector, too, a reduction of approx. 96 % was realised and only emission standard Tier 4 made the use of particle filters necessary. "With regard to the values the emission level we already have today can roughly be compared to Euro 6 for trucks", Kübler explains. Thus, the engines currently already are quite clean.

What will come after Tier 4? Kübler emphasises that however Europe and the US follow slightly different ways, the objective basically is the same. Farmer have to provide proof for the emission values when practically working in the field.

Even at the highest performance peaks all limit values have to be complied with. Yet all modifications the engineers made

at the machines served the power density and the reduced consumption, even if it was triggered by stricter and stricter emission standards, Kübler says.

Already at this time the audience sent questions especially with regard to the efficiency of the new engines with exhaust after-treatment. The farmers and tractor drivers get less power – despite an increased performance on paper – when they step on the accelerator.

Kübler's explanation is that before 1995 the accelerator was connected directly with the engine and thus reacted promptly. Today, a digital, regulating electronic system which did not exist as such before is installed to reduce emission peaks. This can convey the impression of a certain regulation delay. "Every engine is inspected and tested by the acceptance authority and thus has to effect the indicated performance", Kübler affirms. The customer also feels the power by the traction via the wheel or at the pto-shaft which could also be a factor for a perceived loss of efficiency.

"It is clear that the engine disposes of the indicated power. But in our perception this power is not the same as that of an old tractor that was not regulated", Michael Horsch confirms.

When asked about future drive forms, Kübler showed an illustration with different engine and fuel solutions for tractors. The example was a tractor with 139 kW that carries out intensive tillage for 3.5 hours. Among others he compared diesel, liquefied gas (LNG), two different hydrogen systems and an electric motor.

This comparison shows how important the respective weight of the tank together with fuel respectively battery is, but also the required space and the costs for tank, battery and fuel/power themselves.

A pressure tank for gas takes up a lot of room in the installation space. Only the costs for liquid gas are slightly higher than the – comparatively – low costs of the diesel drive. With hydrogen the weight of the tank is three times as high, the capacity is considerably higher, and the tank system is significantly more expensive. For electro drives the battery costs for one day of standard work in the field amount to about 144,000 Euro. In addition, there is a capacity that corresponds to approx. 2400 litres of diesel and a weight of 2.8 tons, Kübler explains. Thus, it is obvious for Michael Horsch: "In the farming sector we won't get around diesel or a diesel-like fuel."

Simply replacing diesel by bio diesel is very complex as it first of all has to be esterified to burn up cleanly and efficiently in the engine, Kübler says. If you take the objective of CO₂ reduction seriously, you have to rely more and more on renewable energy resp. power from the sun, wind or biomass.

When talking about sustainability you end up with synthetic fuel. Synthetic fuel is generated by using power from sun or wind energy to produce hydrogen by means of an electrolysis process. In combination with CO₂ a lot of fuels can be produced from it.

But the problem is the quantity. For the production you need large-scale plants that can produce such fuels at a reasonable price as well as enough power from sun and wind. And there still is the problem of the large-scale supply of the fuel. A completely new filling station network would have to



The HORSCH Live studio could easily compete with some large TV studio. The picture shows the panel discussion about the marketing of organic cereals.

be set up for a start, Kübler says. The turn towards the electric motor shows how difficult this is. "If you think about synthetic fuel [...], you actually have to produce a fuel that corresponds to today's standard. That is a fuel that tomorrow can be used in any diesel vehicle", Kübler explains.

One question in the live chat was about why MAN and Daimler presented trucks with electric motors. Kübler answered that in this case the legal situation plays an important role.

The manufacturer has to take account of the entire fleet to meet the emission targets and to avoid penalties. At the moment this can only be achieved with electric motors as in this case production is not taken into account and battery-driven vehicles are assessed as zero CO₂ emitters. This is why it makes sense to also include e-drives in the fleet to achieve the fleet value respectively to get below the prescribed CO₂ limit of the fleet.

Europe and Germany are good at quickly developing and advancing innovations and technology. However, it takes considerably longer to develop an infrastructure and, thus, it will cost money and take time to achieve the climate target, Kübler finished his speech.

MORE BIO IN THE COVID-19 PANDEMIC – BUT HOW WILL IT GO ON?

The topic of the second HORSCH Live evening was "Marketing of organic cereals/organic products now and in the future.

Which chances and risks does a considerable increase of the crop area for organic farming involve?" Michael Horsch discussed with Stefanie Strebel (founder and managing director of KS Agrar GmbH and Ceresal GmbH), Klaus Bergmann (managing director of Bergmann GmbH), Jörg Große-Lochtmann (managing director of Bio Kontor GmbH, Öko Service GmbH as well as chairman of market association of the Naturland farmers) and Christof Mross (managing director of Food Lidl Germany).

In Germany, the attendant circumstances of the Covid-19 pandemic resulted in more and more people questioning their food habits and their buying behaviour. The analysis of the Federal Ministry of Agriculture and Food showed that people consume more ecologically. Factors like environment and climate protection as well as adequate animal housing play a major role. The sales figures of the organic food shops also are a proof for this development. The increase amounts to about 30 %, Michael Horsch says. The trend towards a more sustainable consumption has already begun to show before the Covid-19, Jörg Große-Lochtmann confirms. However, the pandemic has intensified the trend.

The reason why people despite the insecure situation buy more expensive organic products in Klaus Bergmann's opinion mainly is because people cannot eat out: "People are forced to cook at home. So they have more money left." He hopes that this trend will remain after the pandemic or will even increase. According to Stefanie Strebel the increasing trend



for organic products also has to do with health prevention during the pandemic. This is why she thinks that this trend will remain beyond the time of the pandemic.

Christof Mross even added some figures on the part of Lidl to these statistics which show this development in a difficult light. Customers whose purchase behaviour already had been price-conscious before the pandemic, now buy in an even more price-conscious way. Customers who purchased ecologically increasingly did so during the pandemic. Consumption habits intensified and increased exponentially. "The gap increased significantly. If you want to transfer this to society a considerable separation has become evident", Mross says. However, he is convinced that due to the pandemic people pay more attention to what and how they consume and that the trend is here to stay in the long run. This is also proven by the highly frequented farm shops.

Michael Horsch pointed out that a balanced diet also meant a certain abstinence from meat and at the same time asked if this also was another trend. The share of flexitarians – those who eat meat but also consume a lot of vegetarian or vegan products – will continue to increase according to Große-Lochtmann. Not only animals will benefit from this but also the organic farming sector, nature and man. "The German society for food would say: If someone spends all the money a German spends on meat on organic meat, he has eaten exactly the right quantity of meat", Große-Lochtmann describes his understanding of a healthy flexitarianism. Meat consumption in

total will continue to decrease. This is also proven by the rising demand for plant-based meat substitutes. But dairy products and fish, too, are more and more replaced by vegetable alternatives. "The food industry really changes everything to plant-based", Stefanie Strebel adds. This confirms the wish of society for more sustainable and healthier food as well as for more animal welfare.

With regard to the question if it is reasonable for a farmer to convert to organic farming Stefanie Strebel points out that it is particularly important to consider the global market, too. The EU bio label can be found on every organic product in food retailing. But this is not very conclusive for the consumer as organic products can also be imported from Eastern Europe. Thus, the goods can come from anywhere in the world as long as they were produced according to the EU standards for organic products. So there are a lot of competitors as farmers outside the EU because of various factors can produce considerably cheaper. In Strebel's opinion, the consumer has to get a clearer information about where the food really comes from by for example disclosing a CO₂ balance on the products and thus giving the consumer the chance to buy goods from his region.

Though a correct disclosure of the delivery chain and the produced CO₂ may be transparent, it implies a lot of effort, says Christof Mross. To arouse the motivation of the consumer for local (organic) food is much easier than disclosing the delivery chain. This is why Lidl's objective is to replace more



There was a lively discussion between Werner Kübler (MAN Engines, left) and Michael Horsch about the future of diesel and the alternatives.

and more imported EU organic goods by regional Bioland products. "It does not work to educate the customer and to prescribe what he has to buy", Mross states. You can only make an offer and let the customer decide. Lidl prefers to motivate the customer than to educate them. In this respect, information is extremely important.

Another objective is to make local organic production more economic without the organic farmer becoming dependent on the governmental subsidies. "There are two options. On the one hand, inform the consumer to make him prefer local organic products and on the other hand, increase our land productivity to make local organic products competitive on an international scale", Stephanie Strebel explains.

If it still makes sense today to convert to organic farming finally depends on the respective farm, the fields, soils, livestock and also on the regional marketability of the products. According to Jörg Große-Lochtmann the following will happen with the prices if the share of organic products and the yield increase: trade, processors and producer will have to co-operate more closely. If the production quantity in organic farming increases, the trade has to continue to guarantee long-term delivery contracts with good conditions. When some years ago the high demand for spelt was high, even the price for conventional spelt would have increased as there were organic spelt shortages, says Jörg Große-Lochtmann. The price is defined by supply and demand. "In the ecological or in the organic sector the market is different, but it also follows the rules of supply and demand", Mross adds.

At the end of the entertaining and interesting panel discussion Michael Horsch gave a positive summary. Organic farming definitely has a future and will also be lucrative in the long run beside conventional farming. With regard to climate the whole sector will be accompanied by political guidelines which, however, have to set the same standards for everyone – industry, retailers or farmers. Today, farming offers a lot of innovations and developments. "I think it is very important that we stop setting conventional off against organic farming. The systems have to meet in the middle", Bergmann says. This is the only way to find a common consensus which will result in a healthier consumption. 

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