25.Oct.2025 N º 53

Cultivar Semanal ®

Silicon attracts *Spodoptera* predators

Table of Contents

Table of Contents

Table of Contents

Table of Contents

MUNDO KUHN

DO PLANTIO À COLHEITA

TECNOLOGIA EM AÇÃO NO CAMPO

Da preparação do solo à colheita, soluções em ação que mostram como elevar a performance da lavoura com tecnologia e eficiência.

KUHN

20 ANOS NO BRASIL

EPA analyzes registration of new fungicide with Priestia megaterium

The process is in the public consultation phase.

23.10.2025 | 16:55 (UTC -3)

Cultivar Magazine, based on information from the EPA

The United States Environmental Protection Agency (EPA) reports that it is reviewing the application for registration of

products with the new active ingredient *Priestia megaterium* strain SYM36613. The biological fungicide has a broad spectrum of action and can be used on vegetables from the brassica family, bulbous vegetables, roots, tubers, grains, corn, cotton, legumes, oilseeds, peanuts, and soybeans.

The substance is a biopesticide derived from a new microbial species. It controls seed and soil diseases. It can meet specific needs, such as crops with pests resistant to chemical pesticides, areas with a high incidence of fungi, or areas requiring lower-risk pesticides due to market demands.

The EPA also released risk assessments for human health and the environment.

The reports identified no significant risks to people or non-target organisms.

The public comment period on the registration proposal ends on November 7, 2025. The process is available under code EPA-HQ-OPP-2023-0621.

Since January 2025, the EPA has approved 15 new biopesticide active ingredients.

RETURN TO INDEX

Silicon attracts natural predators of the fall armyworm

Research proves emission of volatile compound that attracts Doru luteipes

23.10.2025 | 08:04 (UTC -3)

Cultivar Magazine

Photo: International Maize and Wheat Improvement Center, CC BY-NC 4.0

The application of silicon in corn crops can contribute to the sustainable management of fall armyworm (*Spodoptera frugiperda*)A scientific study has shown that the chemical element increases the emission of volatile compounds that make plants more attractive to natural predators, such as earwigs. *Doru luteipes*.

The work was carried out by researchers from the Federal University of Lavras, the Capixaba Research Institute and the Luiz de Queiroz Higher School of Agriculture.

The study evaluated the nocturnal emission of herbivory-induced volatile compounds (HIPVs) in corn plants with and without silicon fertilization. The experiment showed that, after pest attack, the silicon-fertilized plants released a

mixture of compounds that was more attractive to the predator. *D. luteipes*.

An exclusive attraction

Chemical analysis of volatiles revealed that the main difference between fertilized and unfertilized plants was the presence of the terpene neryl acetate, detected exclusively in plants treated with silicon and infested by the caterpillar.

Tests with the synthetic compound confirmed its attractiveness for *D. luteipes*, as long as it is in a concentration equivalent to that naturally emitted by plants.

Photo: John C French Sr - Auburn University

This substance appears to play a central role in attracting predators. Tests have shown that *D. luteipes* preferred emissions from plants with silicon over those that did not receive the treatment. In contrast, healthy plants, with or without silicon, did not provoke a response in the insect's

behavior.

Priming agent

The study indicates that silicon acts as a priming agent, preparing the plant to react more quickly and intensely to herbivore attacks. Rather than inducing defenses before the attack, silicon intensifies the response after infestation. In this case, it promoted an increased release of compounds that attract the pest's natural enemies.

This effect was observed without altering volatile emissions in uninfested plants, which prevents attracting predators without prey. Undue induction could compromise the effectiveness of biological control by

disorienting natural enemies.

Night efficiency

The research focused on compounds emitted at night, the period of greatest predator activity. *D. luteipes*This represents progress, as most previous studies analyzed compounds emitted during the day. The differentiation in chemical composition between daytime and nighttime emissions reinforces the need to evaluate the response of active predators at different times.

Photo: Paulo Lanzetta

No case of *D. luteipes*, the clear preference for fertilized and infested plants indicates that the application of silicon can improve the effectiveness of biological control by making it easier for the predator to locate the prey.

Assistance in pest control

Silicon fertilization appears as a complementary alternative, which strengthens the plant's natural defenses.

Previous studies have shown that silicon increases the physical resistance of leaves, making it difficult for the caterpillar to feed and reducing its survival.

New evidence that silicon also enhances chemical defenses and attracts predators expands the technique's potential for integrated pest management.

Further information at doi.org/10.1002/ps.8768

RETURN TO INDEX

Sumitomo creates global innovation center for biorational solutions

Valent BioSciences, MGK, and Valent North America Combine to Form New Sumitomo Biorational Company

21.10.2025 | 09:01 (UTC -3)

Cultivar Magazine, based on information from Steve Tatum, Emily Stoutenborough and Kris Prentice

Valent BioSciences, MGK, and Valent North America announced they will form a new, unified organization: Sumitomo Biorational Company LLC (SBC). The company will officially launch in April 2026. The group will serve as the Global Center of Excellence for Biorational Innovation for Sumitomo Chemical Company, headquartered in Libertyville, Illinois.

The SBC will bring together resources and expertise to accelerate the development of biorational solutions from natural sources such as microorganisms and botanical extracts. The goal is to serve the agricultural and environmental health markets with sustainable and integrated products.

Executive Shinsuke Shojima will take over as president of the new company. With over 35 years of experience at the Sumitomo Group, Shojima will lead the global operations in agriculture and environmental health, focusing on biorational technologies.

The reorganization will expand capabilities in research, development, and supply chain. It will also enable faster innovation launches and improve the customer experience across distribution channels.

Valent USA will continue to operate independently, focusing on sales and marketing in the US, Canada, and Mexico. Other regional units will maintain their current brands, such as Valent BioSciences' Public Health and Forest

Health businesses in North America and Africa, and Mycorrhizal Applications' biostimulants business in the US.

According to Sumitomo, the strategic integration aims to expand its global leadership in regenerative solutions, as well as strengthen its brand and talent development.

RETURN TO INDEX

Viruses in tomato change the behavior of Bemisia tabaci

ToCV and TYLCV directly interfere with whitefly feeding

24.10.2025 | 14:57 (UTC -3)

Cultivar Magazine

Photo: Sebastian José de Araújo

Chinese researchers have discovered that Tomato chlorosis virus (ToCV) and Tomato yellow leaf curl virus (TYLCV) modify the eating behavior of the whitefly (*Bemisia tabaci*). The study compared the effect of single infections and coinfections on tomato plants and the insect vectors themselves.

Using electrical penetration graph (EPG) technology, the team analyzed the timing and intensity of whitefly probing during feeding.

The results showed that, in both isolated and combined infections, the viruses interfere with the whitefly's ability to feed on phloem sap, an essential part of its nutrition and viral transmission.

Coinfection changes pattern

In the presence of ToCV alone, whiteflies showed a significant reduction in the time they spent ingesting phloem sap. This behavior changed when plants were coinfected with ToCV and TYLCV.

Although intake also decreased, the time to reach the phloem was shorter, indicating an initial stimulus to feeding, followed by early cessation.

This mixed modulation suggests that coinfection favors viral spread. By stimulating the initiation of feeding and, at the same time, reducing residence time, viruses can increase insect movement between plants, which expands the range of infection.

Direct and indirect effects

The research differentiated between direct impacts, observed in viruliferous whiteflies placed on uninfected plants, and indirect effects, seen when healthy insects fed on diseased plants.

Photo: Alice Nagata

Insects infected with ToCV or both viruses demonstrated reduced probing activity between cells. Furthermore, the time between the first probing and access to the phloem was halved in coinfected insects. The total sap ingestion time decreased dramatically in individuals infected with both viruses.

These changes indicate that viruses can modify whitefly behavior not only via the host plant, but also by interacting directly with the insect organism.

Dispersal strategies

The study indicates that infections by semi-persistently transmitted viruses, such as ToCV, favor strategies that shorten

feeding and encourage vector dispersal. Persistent viruses, such as TYLCV, can improve plant conditions to increase the whitefly's persistence.

The combination of the two types of viruses appears to exploit both mechanisms: it accelerates the onset of feeding and reduces its duration, promoting vector mobility.

Host quality

The observed behavioral changes also reflect physiological changes in the plants. ToCV infections reduced attractiveness and palatability to whiteflies. Volatile compounds produced by the infected plant, such as terpenes, were associated

with insect repulsion.

On the other hand, TYLCV appears to suppress genes responsible for the production of these compounds, making the plant attractive again. In coinfection, the two viruses act in opposite directions, creating a more complex and dynamic interaction scenario.

Further information at doi.org/10.3390/insects16111091

RETURN TO INDEX

Agricultural Market - October 24, 2025

Rising oil prices boost commodities and move agricultural markets

24.10.2025 | 12:57 (UTC -3)

Vlamir Brandalizze - @brandalizzeconsulting

The nearly 5% jump in oil prices following new US sanctions against Russia has led to a rise in major agricultural commodities.

Soybeans, corn, and wheat all reacted positively in Chicago. In Brazil, crop movement continues at a rapid pace, despite challenges in marketing and weather.

In the United States, the soybean harvest reached 82%, compared to 67% the previous week. The average for the period is 80%. The July/26 contract is approaching US$11 per bushel. In Brazil, 130 million tons of the current harvest were traded, equivalent to 75,8% of the estimated production of 171,5 million tons. Despite the record in absolute volume, this percentage is below the historical average of 82%.

For the 2025/26 harvest, only 23,2% of soybeans were sold. The average is

30,5%. Planting reached 35%, with Paraná leading (65%), followed by Mato Grosso do Sul (55%) and Goiás (23%).

Soybean exports remain strong. More than 4,2 million tons were shipped in October. Year-to-date, the volume exceeds 98 million tons, with China accounting for almost 80% of the total.

Corn situation

Corn also benefited from rising oil prices. The December contract remained above US$4,20 in Chicago. The American harvest reached 75%, above the historical average of 70%. In Brazil, 65 million tons of second-crop corn were traded, a record. The second-crop harvest was 113,3 million

tons.

There are still approximately 56 million tons of corn left to be sold, including both the second and summer harvests. This volume exceeds Argentina's entire production, estimated at 52 million tons. Planting of the summer crop is 85% complete, with Paraná (98%) and Rio Grande do Sul (over 90%) leading the way.

Corn exports have already shipped 4 million tons in October, compared to 6,4 million in the same month last year. The cumulative total reaches 27,5 million tons.

Wheat situation

In the wheat market, the international boost wasn't enough to contain the pressure in Brazil. Harvesting is progressing in Paraná (85%) and beginning in Rio Grande do Sul. The crop is expected to reach 7,5 million tons, for a consumption of 12 million. Prices remain low, between R$1.100 and R$1.200 per ton. Imports are putting pressure on: 5,5 million tons have already been imported this year, a new record.

Rice situation

Rice production saw the announcement of R$300 million in support from AGF, PEP, and PEPRO. The expected support is 600 tons. However, the volume of rice still

available exceeds 6 million tons. Planting has reached 55% in Brazil. The area could decline by up to 15%, according to producers.

Bean situation

In the bean market, demand is still sluggish, but carioca bean prices have begun to recover. Noble beans are now exceeding R$260 per bag. Black beans are also trying to recover, with prices between R$135 and R$160, after falling below R$130.

Sorghum situation

Sorghum is gaining ground as the rains delay, which is affecting soybean planting.

Demand for seeds is growing, driven by the expected expansion in production and use for ethanol and feed. The last harvest was 6,1 million tons. The forecast for the next harvest is over 7 million tons.

By **Vlamir Brandalizze** - *@brandalizzeconsulting*

RETURN TO INDEX

Study indicates most effective method for monitoring corn leafhoppers

Direct observation outperforms sticky traps and sweep nets

24.10.2025 | 08:47 (UTC -3)

Cultivar Magazine

Photo: Charles Martins de Oliveira

Direct counting on the plant cartridge is the most efficient method for monitoring the plant population. corn leafhopper (*Dalbulus maidis*)This was the conclusion of work by researchers from Embrapa Corn and Sorghum and the Federal University of São João del-Rei.

Their study, conducted between September 2022 and May 2024, compared three sampling techniques and their relationship with climate variables and times of day.

During the period, 11.520 individuals of the pest were captured. Direct counts recorded 5.722 insects. Entomological nets captured 4.841. Yellow sticky traps, on the other hand, captured only 957. Direct observation was six times more

effective than traps and about 18% more effective than nets.

The experiment

The research was conducted in Sete Lagoas, in Embrapa's experimental fields. Staggered plantings ensured the presence of corn in vegetative stages V3 to V9, when the leafhopper is most prevalent.

The methods evaluated included:

- Direct count in the cartridge: observation for 1,5 minutes of 10 plants at three points in the area.
- Sweep net: 10 net strokes over rows of corn at three points.

- Yellow sticky traps: plates placed 1,5 meters high, changed weekly.

Collections took place at two times: morning (approximately 10 am) and afternoon (approximately 16 pm).

Monitoring time

There was no significant variation in the number of insects captured between shifts. The pattern remained the same in both direct counts and net collections. This indicates that monitoring can be done at any time of day, allowing for more flexible management.

Sticky traps, while practical, have shown low effectiveness. They captured about 8% of the insects recorded through direct

counts. Furthermore, their effectiveness decreased during periods of high temperature, high humidity, and increased rainfall.

Climate influences the population

Direct counts revealed a positive correlation between the presence of the leafhopper and three variables: temperature, relative humidity, and rainfall. Nets correlated only with accumulated rainfall. Traps, however, correlated negatively with temperature, humidity, and rainfall.

Strong winds and intense solar radiation reduced the presence of the insect in the

cartridges. This suggests that specific environmental conditions affect both the presence and detection of the leafhopper.

Practical applications

The data indicate that direct counts offer greater accuracy in estimating pest populations. This allows for more accurate integrated pest management (IPM) decisions. Although traps require less labor, their low sensitivity can compromise monitoring and delay interventions.

The similarity between the results of direct and network counts indicates that both active techniques are reliable. However, direct counts require less time and reduce sampling error, which can be crucial in

large areas.

Implications for control

Since leafhopper density doesn't vary between morning and afternoon, insecticide spraying can be done at either time. However, in the late afternoon, higher humidity can encourage the spray to retain on the leaf surface. This can increase application efficiency, especially for biological or chemical products that require direct contact.

The highest populations were recorded between February and March, coinciding with the second corn harvest. Even with continuous planting, these months are the peak months for the pest.

Further information at doi.org/10.1590/1806-9665-RBENT-2025-0044

RETURN TO INDEX

Induced senescence favors aphid attack

Study evaluates artificial aging and feeding of green aphids on young plants

23.10.2025 | 16:24 (UTC -3)

Cultivar Magazine

Photo: David Cappaert, Bugwood

Senescence induction in potato basal leaves increased appetite and olfactory attraction of green aphid (*Myzus persicae*)

in young plants. Natural aging, on the other hand, did not have the same effect on insects.

Researchers tested the feeding and olfactory behavior of aphids on young and mature potato plants. Senescence was triggered by covering the leaves with dark, gas-permeable tissue.

In mature plants, naturally senescent leaves were analyzed. Leaf aging was confirmed by reduced chlorophyll and protein levels.

In young plants, induced senescence increased aphid sap consumption and increased their attraction to the odors emitted. In mature plants, the insects avoided aging leaves, consistently choosing non-senescent apical leaves in

feeding and olfactory tests.

Volatile compound analysis showed that apical leaves of mature plants released more beta-caryophyllene than senescent leaves. This compound may play a role in the greater attractiveness of healthy leaves.

The authors highlight that agricultural practices that avoid the early induction of senescence can help control aphids.

Further information at doi.org/10.1002/ps.70294

RETURN TO INDEX

Study evaluates ledprone against Leptinotarsa ??decemlineata

Applications at the beginning of the infestation control larvae and reduce defoliation.

23.10.2025 | 15:03 (UTC -3)

Cultivar Magazine

Photo: David Cappaert

Researchers evaluated the bioinsecticide ledprone, based on interfering RNA (dsRNA), in the control of *Leptinotarsa ??decemlineata*, the main potato pest in the United States.

The product demonstrated high efficacy in reducing first-generation larvae when applied three to five times, starting with the presence of adults coming from hibernation up to one week after the first eggs hatch.

This early management significantly reduced plant defoliation and yield losses. Late applications, initiated after most eggs had already hatched and with abundant larvae present, even if repeated once or twice, had limited effect.

Further information at
doi.org/10.1002/ps.70294

RETURN TO INDEX

Victor Sonzogno takes over leadership of Rovensa Next in Brazil

Executive has over 20 years of experience to strengthen the company's growth

23.10.2025 | 10:01 (UTC -3)

Cultivar Magazine, based on information from Rovensa Next

Rovensa Next has appointed Victor Sonzogno as its Head of Brazil. The

company aims to accelerate its growth and consolidate its leadership in the agricultural biosolutions sector.

Sonzogno has over 22 years of experience in agribusiness. He has led operations for foreign groups in Brazil and Latin America. He has also worked for companies in the biologicals sector and strategic consulting firms.

In his new role, he will report to Riccardo Vanelli, commercial director of Rovensa Next. The company highlights Sonzogno's ability to align global strategies with local execution.

The executive worked for 11 years at Syngenta Biologicals, as Head of Brazil and Latin America. He also led Valagro in the region. At these companies, he led

restructuring processes, expanded portfolios, and increased market recognition.

Sonzogno founded VEX Consultoria and worked at Ambrosetti, where he advised European companies on strategies for Brazil.

His education includes an MBA in Finance from IBMEC/INSPER, a postgraduate degree in Leadership from MIT/Columbia/Tuck, certification in Project Management (PMBOK) from Poli-USP and a degree in Administration from FEA-USP.

Rovensa Next

Rovensa Next has over 500 employees in Brazil and has plants in Campinas and

Arapongas. The former develops biostimulants and biofertilizers focused on microorganisms. The latter manufactures biocontrol products and adjuvants based on orange essential oil.

The company invests in research and development, with centers of excellence and a pilot plant in Campinas. It operates globally in over 90 countries, with 13 manufacturing plants and 38 research laboratories. It markets a broad portfolio of biosolutions, including bionutrition, biocontrol, and adjuvants.

Rovensa Next emerged from the union of 12 leading biosolutions companies, including Microquimica, MIP Agro, Idai Nature and Tradecorp.

RETURN TO INDEX

Valtra will be the official tractor of Expoagro, in Argentina

The fair will take place from March 10 to 13, 2026, at the San Nicolás racetrack and exhibition center.

23.10.2025 | 09:05 (UTC -3)

Cultivar Magazine, based on information from Corina Tareni

Agricultural machinery manufacturer Valtra will be the Official Tractor of Expoagro for the fourth consecutive year. The fair will take place from March 10 to 13, 2026, at the San Nicolás racetrack and exhibition center in the province of Buenos Aires.

The partnership was formalized at the AGCO plant in General Rodríguez. In attendance were Emiliano Ferrari, senior sales manager at Valtra Hispanoamérica, and Patricio Frydman, commercial manager at Exponenciar, the organizer of Expoagro.

At its last edition, the fair attracted more than 220 visitors and 700 exhibitors. The event generated over US$8 billion in credit applications. Expoagro has established itself as a platform for business and

product launches in the agroindustrial sector.

According to Frydman, Valtra's presence reinforces the innovative nature of the fair and the brand's connection with producers. Ferrari emphasized that the event allows the company to showcase smart and sustainable solutions. For him, participating in the 20th anniversary edition has symbolic value for the entire agroindustrial community.

RETURN TO INDEX

Asta takes the lead in agricultural biotechnology in the US

Association begins representing the sector after BIO's restructuring

23.10.2025 | 08:50 (UTC -3)

Cultivar Magazine, based on information from Asta

The American Seed Trade Association (ASTA) has taken the lead in regulatory advocacy for agricultural biotechnology in the United States. The change follows the

dissolution of the Agriculture and Environment (BIO AE) section of the Biotechnology Innovation Organization (BIO).

BIO decided to focus exclusively on the human health and biopharmaceutical sectors. As a result, a committee was formed to identify a new entity responsible for continuing the work of advocating for agricultural biotechnology. After a rigorous evaluation process, the group unanimously selected Asta.

With the full support of its board, Asta now serves as a leading advocate for plant genetic improvement technologies at the state, federal, and international levels. The organization has developed an integration plan to incorporate new resources and

experts, ensuring continuity in its actions and supporting its members' priorities.

According to Asta President and CEO Andy LaVigne, the organization is prepared to maintain the standards demanded by the industry. "We will continue to promote innovation in plants, as we always have," he stated.

Founded in 1883, Asta represents approximately 700 seed production and breeding companies in North America, including conventional, organic and biotechnology segments.

RETURN TO INDEX

New Holland launches T7 HD tractor with 3-meter track gauge in Australia

New configuration meets the demand of grain and cotton producers

23.10.2025 | 08:28 (UTC -3)

Cultivar Magazine, based on information from Amy Webb

New Holland has launched a new version of its T7 Heavy Duty (HD) tractor in Australia and New Zealand with a 3-meter track width. The model was developed to serve farmers using the Controlled Traffic Farming (CTF) system.

The new product responds to the growing demand from grain, cotton and vegetable farmers who are looking to align their equipment with fixed rails without sacrificing power, comfort or technology.

According to Cameron Jordan, director of McIntosh & Son Dalby, the new model represents a step forward for those operating in regions where CTF requires high precision.

"Most of our customers work with 3-meter fixed gauge. The new version allows us to maintain this configuration while still gaining access to the performance and reliability of the T7 HD line," he explained.

Machine features

The tractor delivers up to 340 horsepower. It comes with the quiet and spacious Horizon Ultra cab, a 12-inch IntelliView monitor, and integration with the New Holland FieldOps system. Maintenance is available every 750 hours.

The 3-meter gauge option keeps the tractor within the permanent tracks, reducing soil compaction, improving water infiltration and increasing productivity over time.

RETURN TO INDEX

Diversity of floral scents attracts pollinators and reduces bacteria

The hypothesis is that flowers with more complex scents receive more visitors, but host fewer microorganisms.

23.10.2025 | 08:05 (UTC -3)

Cultivar Magazine

Rhingia campestris - Photo: Valerius Geng

Flowers with more varied scents attract more pollinators and harbor fewer bacteria. This is the main finding of a study of 39 alpine plant species published by scientists from Germany and Austria. The study proposes a new ecological explanation: the chemical diversity of floral scents acts as a filter against unwanted microorganisms, even when pollinators act as vectors of microbes.

The team collected data from plant communities on Mount Grossglockner in the Austrian Alps. The researchers measured the functional diversity of volatile compounds emitted by flowers and assessed the number of visiting insect species and associated bacteria. The analysis revealed that flowers with greater chemical diversity attract more visitors but

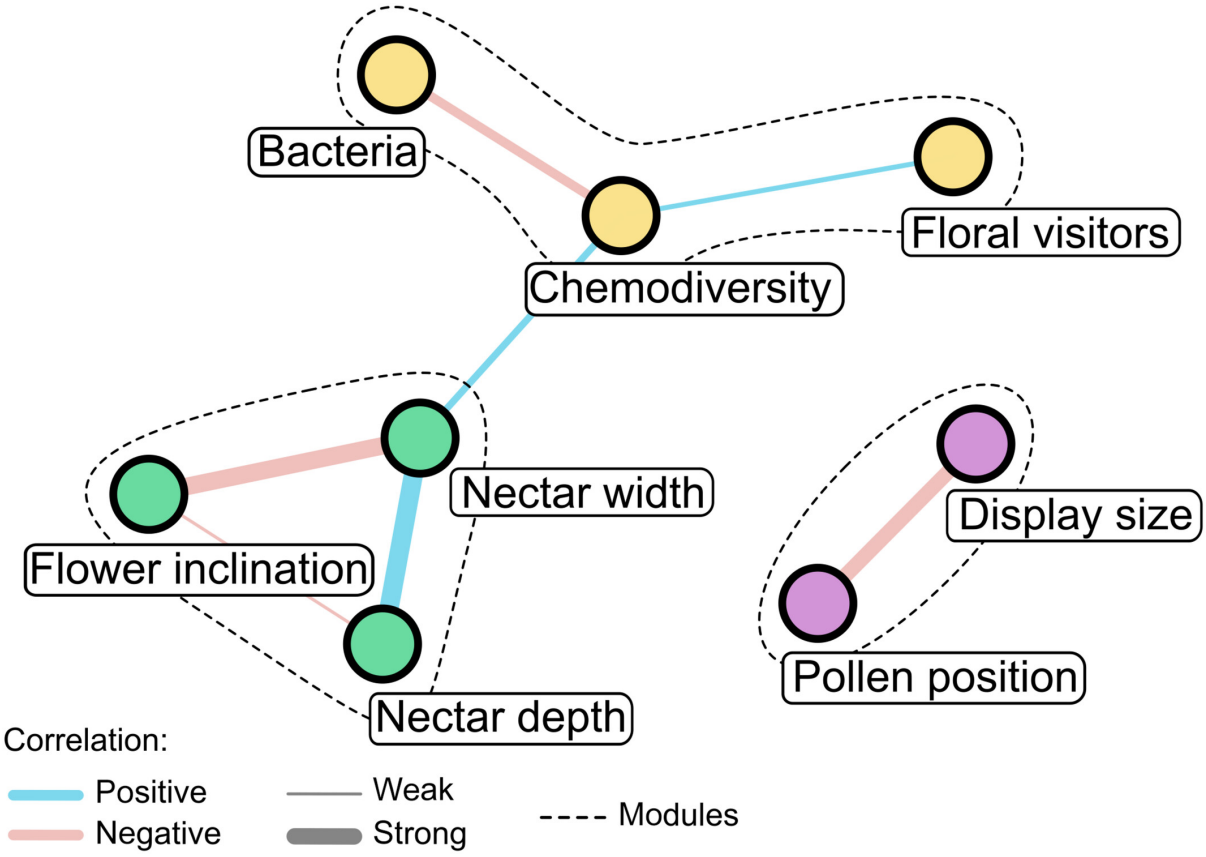
have lower bacterial diversity.

The result was surprising. It's generally believed that plants visited more by pollinators harbor more microorganisms, as insects transport bacteria between flowers. However, the data indicate otherwise. According to the authors, this contradiction can be explained by the role of volatile compounds as antimicrobial agents.

Filthy pollinator hypothesis

Based on this, scientists propose the "Filthy Pollinator Hypothesis." Flowers with more diverse scents attract a wider range of pollinators, which increases the risk of

microbial contamination.



Network of significant pairwise associations between floral morphological traits, floral scent chemodiversity, bacterial richness, and floral visitor richness, based on Spearman's correlation coefficients. Edge color indicates the direction of the correlation (blue = positive, red = negative), and edge thickness represents the strength of the correlation. Node color indicates module membership, as identified by Louvain clustering; dashed lines delineate detected modules - doi.org/10.1111/nph.70600

At the same time, chemical diversity itself acts as a defense, hindering microbial colonization. Aromatic compounds can disrupt bacterial cell walls or interfere with DNA replication and energy production in

these microorganisms.

Bombus terrestris - Photo: Alvesgaspar

Research shows that the chemical diversity of floral aromas plays a dual role: facilitating interactions with animals and regulating microbial communities. This dual function reinforces the importance of chemodiversity as a functional trait of plants.

The analyses also compared the effects of floral morphology with those of chemical diversity. The data showed that flower shape did not significantly influence visitor diversity or microbial composition. Chemodiversity, however, had a direct impact on both groups.

The authors suggest that generalist plants face a dilemma when it comes to pollinators: attracting many visitors can mean a higher risk of contamination. Floral chemical diversity emerges as an adaptive strategy to address this challenge.

Further information at doi.org/10.1111/nph.70600

RETURN TO INDEX

Guilherme Terribili takes on new role at EuroChem

Executive will now be responsible for the commercial and operations department of Cerrado, reinforcing the company's presence in the region

22.10.2025 | 17:39 (UTC -3)

Cultivar Magazine

With a broad track record in the fertilizer sector, **Guilherme Terribili** (pictured) has

taken over as Commercial and Operations Director for the Cerrado Region at EuroChem Brasil. The executive, who has worked at the company since 2024, will now also lead the region's operations department, expanding his responsibilities.

Terribili has over 15 years of experience in agribusiness, having worked at companies such as Yara International and Bunge Brasil, where he held leadership roles in commercial and market development.

He is an agricultural engineer graduated from the Regional University Center of Espírito Santo do Pinhal and has an MBA in Financial Management, Controllership and Auditing from FGV.

RETURN TO INDEX

Syngenta Seeds Announces New Commercial Model in Brazil

Partnership between Golden Harvest and NK expands demand generation and consolidates the brand's presence in the field

22.10.2025 | 09:59 (UTC -3)

Eloísa Rangel

Syngenta Seeds announces its new strategy for accessing the Brazilian market

with Golden Harvest, its licensed soybean seed brand. Beginning with the 2025/2026 harvest, in addition to its traditional licensing representatives, multiplier partners, and distributors, the team will be reinforced for demand generation with franchisees of the NK corn seed brand. With this new product, which was presented at a private event in São Paulo, SP, this Wednesday (October 22), the company expects to increase its sales force in the segment tenfold.

The new business model combines a strengthening of the relationship network and leverages demand generation for soybean seeds. The strategy aims to expand the reach of the brand's solutions and ensure close support for commercial partners. "With this expansion, we

combine the broad coverage and large-scale supply of Golden Harvest multipliers with the demand generation excellence of the NK team, which already enjoys high recognition and trust among farmers. The result will be the joint growth of these partners, combined with maximum productivity in the field," he states. **Carlos Hentschke** (pictured), President of Syngenta Seeds in Brazil.

Clique aqui e veja no Instagram
Click here and watch on Instagram

Furthermore, the change brings farmers even closer to the company's technical team, providing more support and easier access to quality genetics, resulting in

greater profitability and resilience for their businesses. "We develop new technologies and commercial strategies with the same focus: delivering consistent results both inside and outside the farm. This move is essential for producers to quickly receive all the value that Golden Harvest can deliver. This will increase our positioning capacity tenfold, and we will offer many more integrated solutions in the field," says Frederico Barreto, Commercial Director of Syngenta Seeds in Brazil.

Clique aqui e veja no Instagram
Click here and watch on Instagram

New varieties in the wake of launches

Over the past two years, Golden Harvest has launched seven new cultivars into the Brazilian market, tailored to regional conditions and the diverse needs of farmers: 2463I2X, 2459I2X, 2564I2X, and 2566I2X, targeting the South region, and 2473I2X, 2571I2X, and 2581I2X targeting the Central West and North regions. These launches are part of the company's ongoing research and development investments, which annually invest approximately US$2 billion in the segment globally.

"With our investments, compared to the last decade, we are already 50% faster in

developing and launching new solutions. This way, we bring to market a robust and competitive portfolio that adds value to the businesses of our partners and customers," highlights Hentschke.

RETURN TO INDEX

ZF expands portfolio and launches new TRW brake pads

New codes and applications expand vehicle coverage and strengthen the brand's presence in Brazil

21.10.2025 | 14:37 (UTC -3)

Fernanda Giacon, Cultivar Magazine edition

Continuing its expansion strategy in the aftermarket, ZF Aftermarket introduces new TRW brake pads. The launch

expands application coverage and strengthens the brand's presence in Brazil.

According to the company, the new pads can be used in both front and rear braking systems, depending on the manufacturer. They were developed for passenger vehicles and light utility vehicles, which are widely used in the national fleet.

Among the models covered by the new coverage are Fiat's Argo Trekking, Cronos and Pulse, Mitsubishi's Eclipse Cross and Outlander, Chevrolet's Tracker, Ford's Bronco, Honda's HRV, New HR-V, CIVIC and CR-V, Foton's Aumark, various Mercedes-Benz Sprinter versions, among several other models from Fiat, RAM, Ford and Scania.

Coverage Options

With the arrival of the new codes, the TRW line now offers even more coverage options for distributors and repairers, with components designed to ensure precise and safe braking, with consistent performance, greater durability and wear resistance, as well as noise and vibration reduction and compatibility with original factory brake systems.

ZF emphasizes that TRW brake pads are recognized globally for their cutting-edge technology and reliability, ensuring the same quality found in automakers. The expanded portfolio is part of the company's strategy to offer a complete line with broad coverage and solutions that adapt to the evolving Brazilian fleet.

RETURN TO INDEX

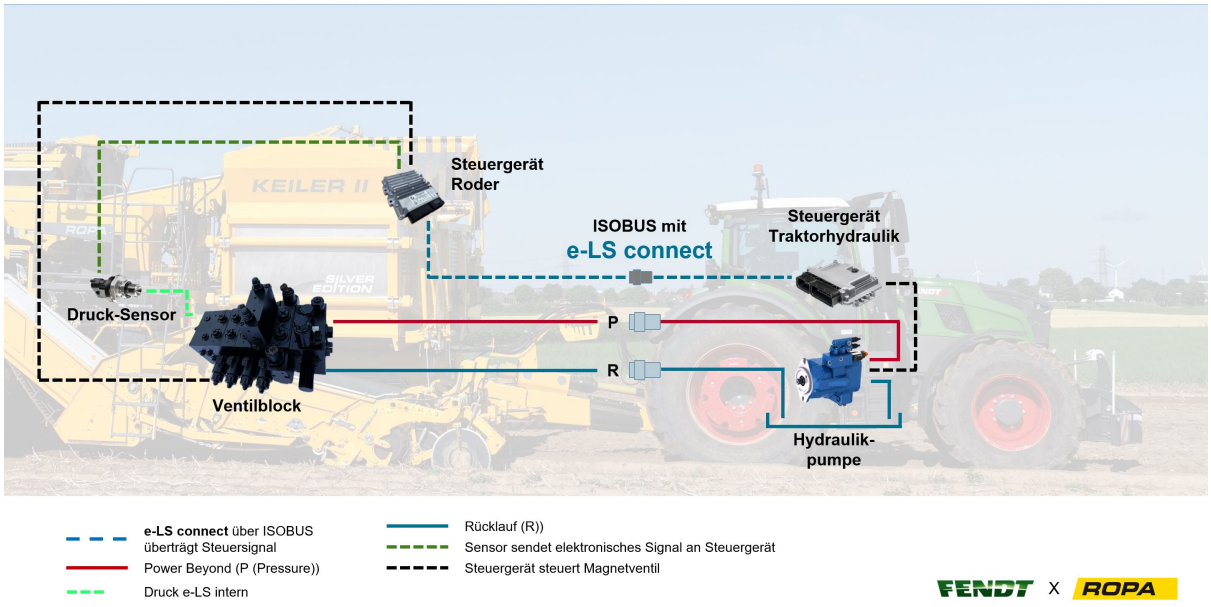
Ropa and Fendt launch e-LS connect system

Technology improves efficiency, reduces consumption and facilitates coupling of implements

21.10.2025 | 13:59 (UTC -3)

Cultivar Magazine, based on information from Luís Marx

e-LS connect



Ropa and Fendt will present e-LS connect at Agritechnica 2025, a system that replaces the Load-Sensing hydraulic line

with electronic communication via ISOBUS. This innovation eliminates the need for components such as pressure regulator valves and sensors. This reduces failures, simplifies operations, and improves safety.

The e-LS connect electronically sends the necessary oil pressure from the implement to the tractor. The hydraulic pump responds with greater precision and agility. The system reduces diesel consumption and improves the unit's efficiency, the companies explain in a statement.

In the field, the system's performance was validated on the Ropa Keiler II RK22 potato harvester. Bunker unloading, for example, is faster and more accurate. Furthermore, the system automatically

adjusts the optimal pressure, eliminating the need for operator intervention.

Technology also promotes sustainability. The elimination of hydraulic connections eliminates oil loss and contamination. The lack of manual adjustments and reduced maintenance increase comfort and reduce downtime.

Fendt tractors from the 500 Vario Gen4, 600 Vario, 700 Vario Gen7/7.1 and 800 Vario Gen5 series will receive the software update from June 2026. The same applies to Ropa Keiler 2 RK22 machines. Other compatible models will be showcased at Agritechnica.

Fendt and Ropa emphasize that e-LS connect represents a step forward in the standardization of digital hydraulics in agriculture. Electronic communication between tractor and implement increases the efficiency of the entire mechanized chain.

RETURN TO INDEX

Cooling the Earth with aerosols is harder than it seems

Columbia University researchers point to challenges in applying solar engineering

21.10.2025 | 13:44 (UTC -3)

Cultivar Magazine

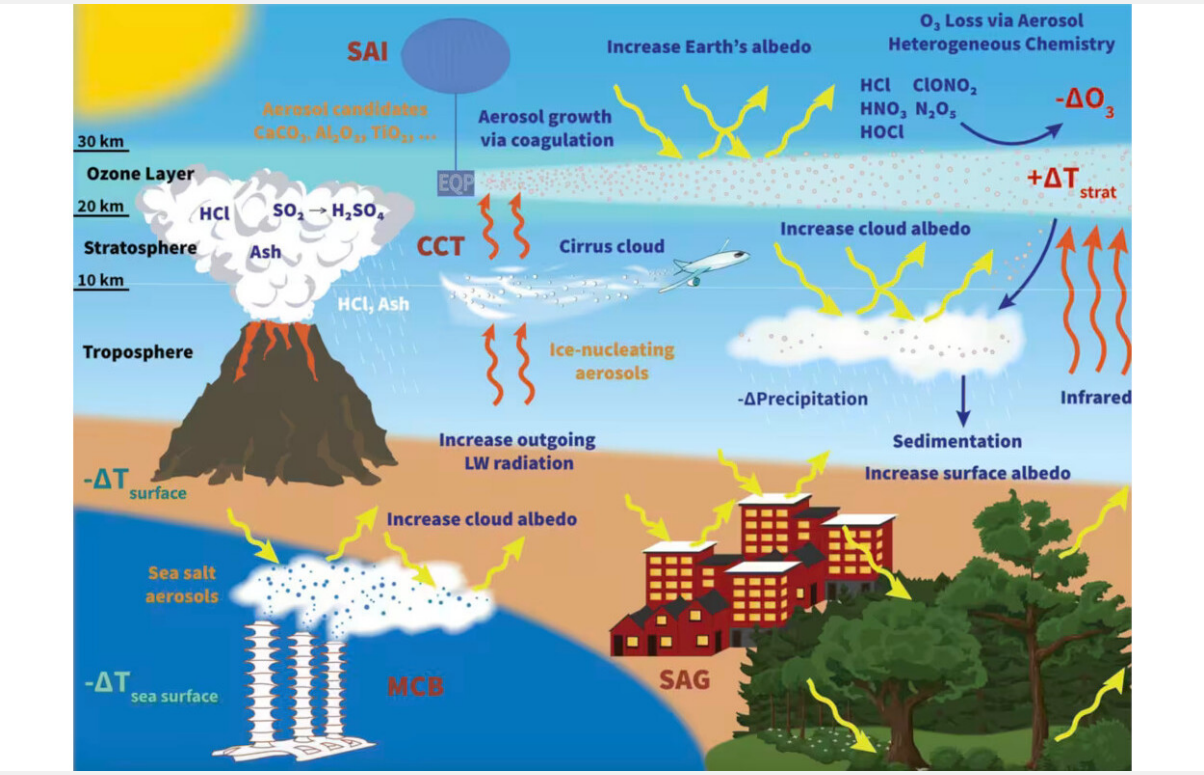


Image: Columbia Climate School

Stratospheric aerosol injection (SAI) has gained traction as a potential way to

temporarily curb global warming. But a recent study published by Columbia University warns that putting this idea into practice involves several risks underestimated by most scientific models.

The strategy is inspired by large volcanic eruptions. The emission of sulfur dioxide (SO2) into the upper atmosphere forms sunlight-reflecting particles, temporarily cooling the planet. Simulations show cooling potential at an estimated cost of US$10 billion per degree Celsius. But outside the computer, obstacles are mounting.

The study highlights that latitude, altitude, season, and even the exact injection point drastically affect aerosol behavior. At polar latitudes, for example, SAI can destabilize

tropical monsoons. In the equatorial region, it can alter atmospheric currents and heat transport between the poles.

According to the authors, decentralized scenarios, with countries or groups acting independently, increase risks. Without international governance, imbalances in aerosol distribution can intensify droughts, alter rainfall patterns, and warm the stratosphere. This was already observed after the eruption of Mount Pinatubo in 1991.

Alternatives to sulfate

The research also evaluates alternatives to sulfate, such as calcium carbonate, cubic zirconia, titania, and diamond. While some

have superior optical properties, the study shows that most present serious logistical challenges. Mass production of ultrafine solid particles, at the submicron scale, still faces technical limitations.

Another problem is particle clumping during transport and dispersion. Aggregate formation reduces dispersion efficiency and requires more material to achieve the same effect. This increases costs and can make some alternatives unviable. Diamond, for example, would be excellent from an optical perspective, but its global supply is negligible compared to the necessary demand.

The study estimates that materials such as calcium carbonate and alumina present a lower risk of shortage. Even so, the

authors warn of the possibility of price inflation if there is high global demand and a lack of elasticity in supply chains.

In terms of dispersion, injecting solids requires complex systems. Devices with high-pressure nozzles and impact mechanisms would be needed to break up the agglomerates. This would reduce the payload of flights and further increase the cost of missions.

The researchers conclude that, despite the theoretical appeal of solid particle SAI, practical limitations and a high degree of uncertainty make sulfate the most viable option in the short term. However, even this alternative poses known environmental risks, such as ozone depletion.

Further information at
doi.org/10.1038/s41598-025-20447-2

RETURN TO INDEX

Phytophthora infestans deactivates plant alarm

Researchers identify how the oomycete circumvents defense mechanisms

21.10.2025 | 10:29 (UTC -3)

Cultivar Magazine

Photo: Howard F Schwartz, Colorado State University

Scientists have revealed how *Phytophthora infestans* bypasses plant defense mechanisms. Their study showed

that this oomycete uses specialized enzymes to deactivate the plants' alarm system before they can initiate any defensive reaction.

The discovery reveals a sophisticated biochemical mechanism and represents a significant advance in understanding the infection strategies of oomycetes.

The team, led by scientists from the University of York, the James Hutton Institute and the Université Libre de Bruxelles, demonstrated that the pathogen secretes oxidase enzymes from the AA7 family, which attack pectin fragments released in the plant cell wall (compounds that act as damage signals and trigger the immune response).

AA7 enzymes oxidize these oligogalacturonides (OGs) at specific points, preventing them from triggering the production of reactive oxygen species (ROS), one of the first signs of plant defense. With the OGs altered, plants don't realize they're under attack.

Alarm cut off

The action of these enzymes is equivalent to cutting the alarm wires before an invasion. *P. infestans* uses the same "molecular language" that the plant uses to control its own alerts. When the genes responsible for AA7 were silenced in laboratory experiments, the pathogen lost much of its ability to infect.

Photo: Elizabeth Bush, Virginia Polytechnic Institute and State University

The enzymes investigated belong to a specific subset of the AA7 family, classified as Clade I. This group exhibits unique structural characteristics, such as the presence of a monocysteinyl bond to the flavin adenine dinucleotide (FAD) cofactor, essential for redox activity. This structure

differs from the typical bicovalent form of AA7s in other organisms and appears to have evolved to specifically recognize and oxidize highly polymerized GOs, particularly those most effective in activating the plant immune system.

Expressed genes

The research demonstrated that the PiAA7A, PiAA7B, and PiAA7C genes are strongly expressed during the early stages of infection, reaching high levels between 6 and 60 hours after contact with host plant leaves. The presence of these proteins was confirmed in strategic infection sites, such as the tips of germ tubes and haustoria (specialized structures that penetrate plant cells and allow nutrient

extraction).

The effect of oxidizing organic compounds was validated through tests with Arabidopsis thaliana and tomato. Unmodified organic compounds induced a typical oxidative burst, while organic compounds previously oxidized by the pathogen's enzymes failed to trigger this response. Furthermore, the combination of native organic compounds with oxidants resulted in suppression of the immune signal, indicating that the modified organic compounds interfere with the detection of native organic compounds.

Genetic silencing

To confirm the central role of enzymes in infection, researchers performed gene silencing in strains of *P. infestans*, eliminating the production of AA7s. The result was a significant reduction in lesion size on inoculated potato leaves.

Photo: Sandra Jensen, Cornell University

Plants infected with silenced strains developed smaller spots, with less

necrosis and mycelium growth, compared to plants exposed to the original pathogen. The degree of silencing was directly correlated with reduced pathogenicity.

The data indicate that AA7s not only suppress the immune response, but do so proactively and locally. Confocal microscopy images revealed that the fluorescently tagged PiAA7A enzyme accumulates at the pathogen's entry points, first at the tip of germ tubes and then around the haustoria.

These observations reinforce the hypothesis that AA7s act precisely at the sites where OGs are released by cell wall degradation. By oxidizing OGs at this critical point, the pathogen prevents the immune response from being triggered

from the onset of invasion.

The action occurs in the apoplast, an extracellular compartment where plants also secrete their own AA7s (called OGOX), which regulate the intensity of the damage response. The structural and functional similarity between the pathogen's and plant's enzymes suggests convergent evolution. Both share a positive charge distribution on the catalytic surface, a preference for long OGs, and a specific action at the reducing end of the polymer chain.

This biochemical convergence points to a refined adaptation of the *P. infestans*The pathogen, unable to produce endogenous OGs—since it lacks pectin—directs its AA7s exclusively against plant fragments.

Natural selection favored versions of the enzyme capable of exploiting the same chemical pathway used by the plant to regulate its defenses, reversing it to the invader's benefit.

Catalytic efficiency

The study also revealed that AA7s oxidize OGs with great efficiency, even under slightly acidic pH conditions, such as those of the apoplast. Kinetic assays showed that catalytic efficiency increases with OG chain length, indicating a preference for more immunologically active substrates.

Different isoforms of the enzyme showed distinct enzymatic behaviors, with modes of regulation that include cooperation

between substrates and inhibition by excess.

Besides *P. infestans*, the research mapped AA7s in other plant-pathogenic oomycetes, indicating that the strategy of deactivating OGs may be widespread among several species. In phylogenetic analyses, the genes of Clade I AA7s appeared expanded in plant pathogens, while clades associated with animal oomycetes show no signs of specialization for this type of substrate.

Further information at doi.org/10.1038/s41467-025-64189-1

RETURN TO INDEX

Syngenta has new leadership in Seedcare and Biologicals marketing

Aimar Pedrini takes over the position with a focus on growing the company's sustainable portfolio.

20.10.2025 | 16:53 (UTC -3)

Cultivar Magazine

With more than two decades of experience at Syngenta, **Aimar Pedrini** (pictured) will

now be responsible for the company's Seedcare and Biologicals Marketing Directorate in Brazil. This new position reinforces the company's strategic focus on expanding its presence in the biological and seed treatment solutions market.

Pedrini will be responsible for leading the marketing and commercial strategy for these areas, with an emphasis on sustainable growth, accelerating innovation, and strengthening go-to-market initiatives.

Throughout his career, the executive held positions such as Director of Technical Market Development, Head of Marketing for the Business Unit and Manager of the Insecticide Portfolio, in addition to working in segments focused on specialized crops

and herbicides.

Graduated in Agronomy from Unesp, Pedrini has a master's degree in Plant Production and an MBA in Business Management from Fundação Dom Cabral, as well as a specialization in Marketing and Sales from Insead.

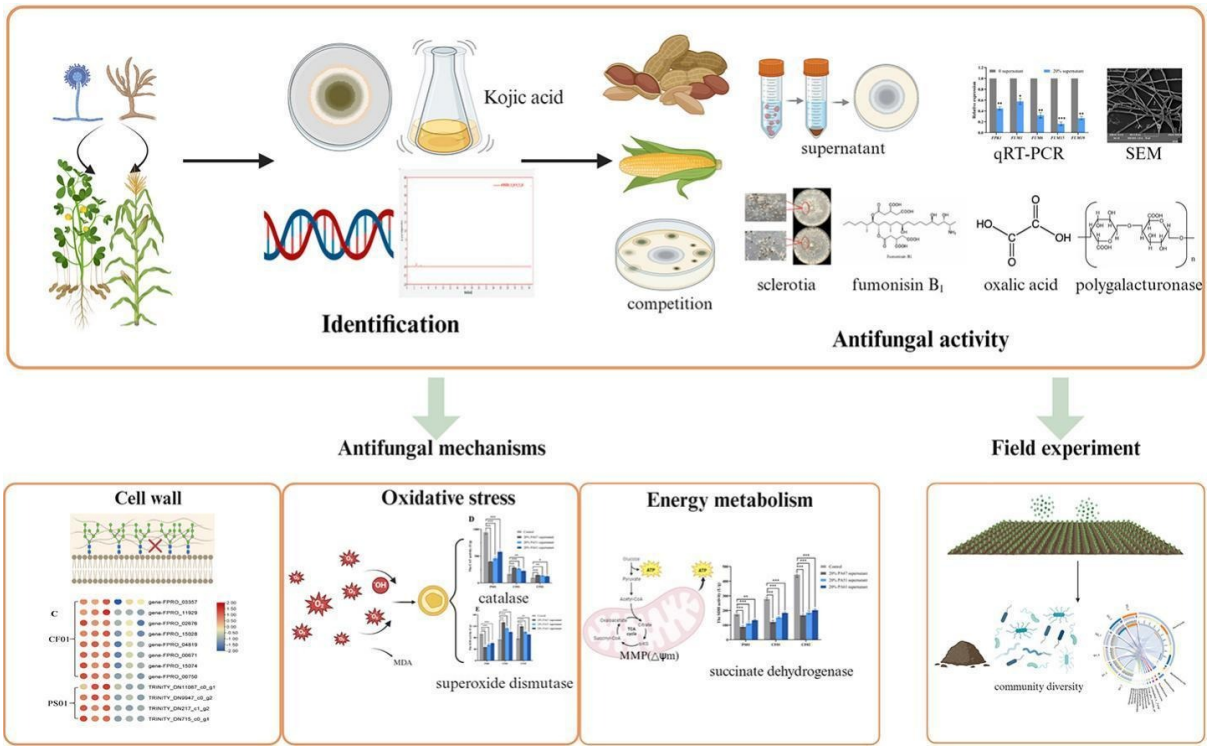
RETURN TO INDEX

Aspergillus flavus strains inhibit toxins and fungi in the field

They reduced mycotoxin production by up to 92%

20.10.2025 | 16:03 (UTC -3)

Cultivar Magazine



Researchers have isolated two strains of *Aspergillus flavus* atoxigenic PA51 and PA61, which effectively inhibit the

production of aflatoxin B1 (AFB1) in peanuts and corn. In tests with contaminated grains, PA51 reduced AFB1 production by up to 92,13% in corn and 85,69% in peanuts. PA61 achieved reductions of 89,21% and 95,77%, respectively.

In addition to controlling *A. flavus* toxic, the atoxigenic strains demonstrated strong antifungal activity against other agricultural pathogens. PA51 inhibited the growth of *Sclerotium rolfsii*; 88,67% of *Fusarium proliferatum* and 90,44% of *Fusarium verticillioides*. PA61 reached 78,52%, 86,59% and 90,59% inhibition, respectively.

The supernatant (liquid culture extract) of the strains also showed antifungal activity.

At a concentration of 20%, the PA51 supernatant reduced the growth of *S. rolfsii* , *F. proliferatum* e *F. verticillioides* by up to 50,84%. PA61 achieved up to 45,75% inhibition. The compounds present in these extracts directly affected the fungi, disrupting essential cellular processes.

No case of *S. rolfsii*, the supernatant blocked sclerotia germination, reduced oxalic acid secretion, and decreased polygalacturonase enzyme activity, all of which are key factors in its infection in plants. In *Fusarium* spp., there was a significant reduction in the production of fumonisin B1 (FB1), a highly toxic mycotoxin. PA51 reduced FB1 production between 44,08% and 78,06%; PA61, between 41,96% and 71,40%.

Molecular and transcriptomic analyses revealed that the active compounds damaged the pathogens' cell wall and membrane, induced oxidative stress, and affected energy metabolism. The fungi exhibited mitochondrial dysfunction, decreased ATP production, and a reduction in enzymes essential for cellular respiration.

Field tests conducted on peanut and corn plantations in Liaocheng, Shandong Province, China, demonstrated the effectiveness of the treatment. Soil application of the biological agent reduced AFB1 and FB1 levels by up to 80% in both grains and soil.

Strains PA51 and PA61 were isolated from local agricultural areas, which increases

their adaptation to the environment and reduces the ecological risk of introducing exotic species. Both belong to the L morphotype of *A. flavus*, characterized by high production of spores and larger sclerotia, which favors its persistence in the field.

Further information at doi.org/10.1016/j.pestbp.2025.106760

RETURN TO INDEX

Used tractor sales grow 13% on OLX in 2025

Equipment leads the increase in sales of agricultural implements, followed by brush cutters and forklifts

20.10.2025 | 15:55 (UTC -3)

Danilo Moreira, Cultivar Magazine edition

The used agricultural machinery market remains buoyant in 2025. According to a survey by OLX, the country's largest online classifieds platform, sales of used tractors

grew 13% between January and August of this year, compared to the same period in 2024.

Tractors were the agricultural implement with the highest sales growth recorded on the platform. Close behind are brush cutters, with a 9% increase in sales, and forklifts, which saw a 2% increase in the period.

The result reflects the growth in the used equipment market, especially in a scenario of tighter credit and high costs for acquiring new machines.

RETURN TO INDEX

BASF strengthens research and development team

Robson Jayme Borges takes on the role of SSO Traits Development Integration Manager

20.10.2025 | 14:34 (UTC -3)

Cultivar Magazine

The agricultural engineer **Robson Jayme Borges** (pictured) has taken on the role of SSO Trait Development Integration Manager for South America at BASF,

expanding his research and biotechnology operations. He takes on the new role after nearly two years as a trait development specialist at the company.

With over ten years of experience in research and innovation, Robson has built a solid career in the sector. Before joining BASF, he spent five years as a trait development researcher at Bayer, leading projects focused on agricultural biotechnology.

With a Master's degree in Bioenergy and Grains from the Federal Institute of Goiás (IFG), Robson has extensive experience in R&D, biotechnology and genetic improvement, focusing on advances in the productivity and sustainability of agricultural crops.

RETURN TO INDEX

Fungicide Axpera wins world award for innovation in biocontrol

Product from French company Amoéba received a gold medal at the Bernard Blum Awards

20.10.2025 | 14:01 (UTC -3)

Cultivar Magazine, based on information from Laetitia Pinto

The biological fungicide Axpera (*Willaertia magna* C2c Maky), from the French company Amoéba, won the top prize at the

Bernard Blum Awards 2025. The product was named biocontrol innovation of the year for its effectiveness against fungal diseases in plants. The technology uses amoebas to control pathogens without negatively impacting human health or the environment.

The Bernard Blum Awards are a global benchmark in the industry. Created in 2015, they evaluate products based on scientific merit, degree of innovation, contribution to sustainable agriculture, and commercial viability. In its tenth edition, the award reviewed 20 entries. Axpera stood out for its approach to combating fungi that cause mildew and powdery mildew.

Amoéba's scientific director, Sandrine Troussieux, says this international

recognition crowns more than a decade of research. The company has been testing the product on a large scale since the beginning of the year, in vineyards and vegetable gardens in Europe and the United States, with the support of its commercial partner Koppert.

Practical tests conducted with cucumber growers in the Netherlands and winegrowers in Burgundy, Bordeaux, and Champagne have proven the solution's effectiveness. Axpera has already received approval from the U.S. Environmental Protection Agency (EPA) for use on high-value crops such as tomatoes, grapes, leafy greens, and legumes, as well as commercial turf and ornamental plants.

In Europe, marketing authorization in nine countries is expected by early 2026. In Brazil, approval is expected by the middle of the same year. The company plans to begin marketing in the grape and vegetable markets.

According to CEO Jean-François Doucet, the award validates Amoéba's strategy. He states that Axpera was created to respond to the environmental and economic challenges faced by farmers and aims to become a global reference in biocontrol.

RETURN TO INDEX

Fendt celebrates 30 years of Vario transmission

With more than 400 units produced, transmission has redefined comfort and efficiency

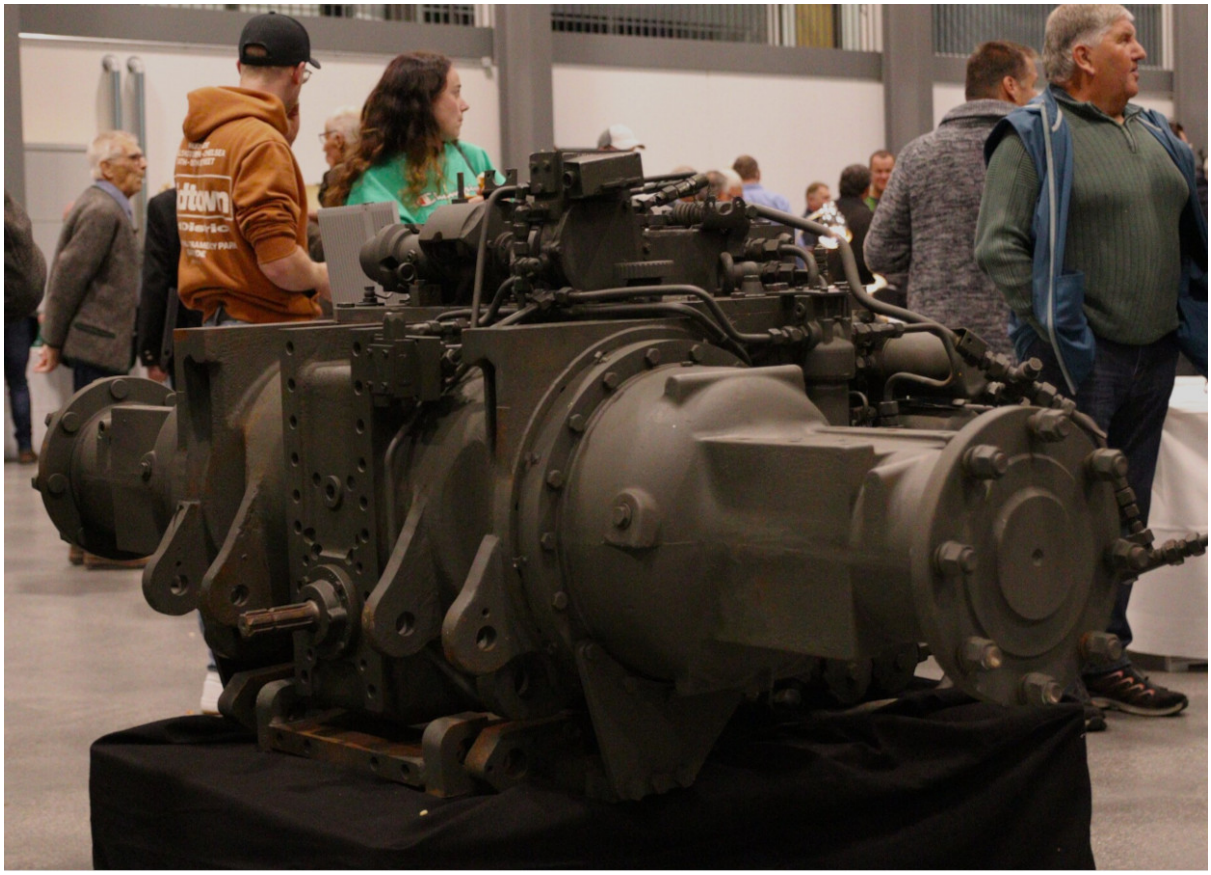
20.10.2025 | 09:31 (UTC -3)

Cultivar Magazine, based on information from Fendt

Fendt celebrated the 30th anniversary of the launch of Variogetriebe, its continuously variable transmission system. The celebration took place during the fourth and largest meeting of the Fendt Classic Club International in Marktoberdorf, with over 300 attendees.

Launched at the 1995 Agritechnica with the Favorit 926 Vario tractor, the Variogetriebe was the first transmission of its kind in a series tractor. The innovation eliminated the need for manual gear shifting. Since 2009, all Fendt tractors have been equipped with this system. In 2025, VarioDrive marks the next generation of the component, debuting in the Fendt 500 Vario series.

Engineer Hans Marschall, a central figure in the technology's development, dedicated more than three decades to the project. In 1981, he created the "Tristat" prototype, which underwent rigorous comparative testing over the following years. Comparisons with conventional tractors demonstrated improvements in comfort and control.

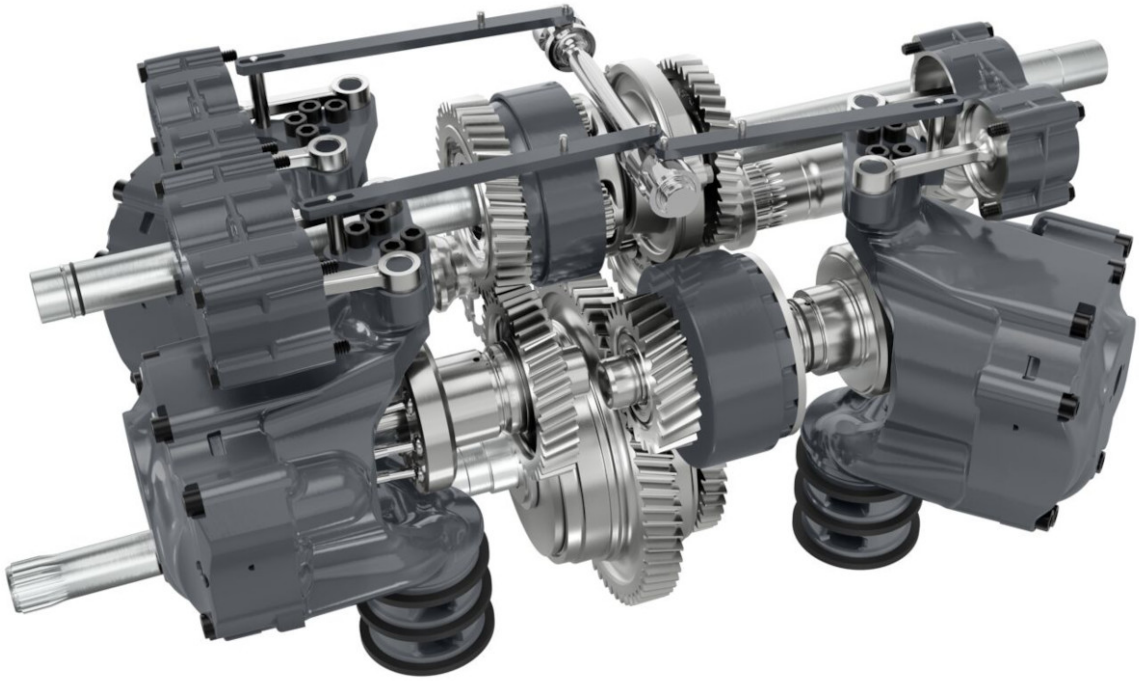


Production required an internal revolution at Fendt. New machining centers, measuring tools, and employee training became essential. Wilhelm Rehm, former production director, recalls the team's mobilization to bring the system to market.

The tractor with Variogetriebe also underwent independent evaluations. During four months of testing by the DLG, the transmission impressed experts with its robustness and efficiency.

The technology also won over farmers due to its reduced diesel consumption. The slogan "Fahren Sie schon oder schalten Sie noch?" (Are you driving or still shifting gears?) helped popularize the new technology. The system is now available

on all of the brand's models, from the compact Fendt 200 V Vario to the powerful Fendt 1167 Vario MT, with 673 hp.



At Agritechnica 2025, Fendt will present five new lines featuring the Variogetriebe: 300, 500, 700 Gen7.1, 800, and 1000 Vario. A model of the historic Favorit 926 Vario will be on display at the Fendt

Classic Club booth, symbolizing the beginning of a technological revolution that shaped the future of agricultural mechanization.

RETURN TO INDEX

FPT Industrial to supply engine for new Lindner tractor

Partnership with Austrian manufacturer strengthens Italian brand's presence in the agricultural segment

20.10.2025 | 07:49 (UTC -3)

Cultivar Magazine, based on information from Carlotta Merlo

FPT Industrial announced a new partnership with tractor manufacturer Lindner. The Austrian company has chosen the Iveco Group brand as the engine supplier for the new Lintrac 160 LDrive, the most powerful model in Lindner's history.

The tractor will be equipped with the N45 engine from FPT Industrial's NEF line. The model delivers up to 129 horsepower and 700 Nm of torque at 1.500 rpm. The N45 combines compact size, high strength, and proven reliability—essential features for agricultural applications in steep terrain and at high altitudes.

The Lintrac 160 LDrive is designed for year-round hay, row crops, contract work, maintenance, and municipal use. The four-

wheel steering system offers superior maneuverability within its horsepower class.

Founded in 1948, Lindner operates in Austria and Europe with tractors designed for challenging conditions. The company values ??quality engineering and sustainable solutions. The choice of the

N45 reflects Lindner's commitment to performance and durability.

FPT Industrial emphasized that the new partnership reinforces its position as a preferred supplier in the agricultural sector. The brand has produced more than two million NEF family engines since 2001, serving markets such as agriculture, construction, transportation, marine, and power generation.

RETURN TO INDEX

Syngenta and Salic sign agreement to boost food security

Partnership includes projects in digital agriculture, soil management and technical training

20.10.2025 | 07:28 (UTC -3)

Cultivar Magazine, based on information from Syngenta

The Saudi Agricultural and Livestock Investment Company (Salic) and Syngenta Crop Protection AG have signed a letter of intent to develop joint projects focused on food security in Saudi Arabia and on a global scale.

The agreement was signed in Switzerland and provides for cooperation in areas such as sustainable agriculture, digital solutions, soil health, and crop protection. The two companies will create working groups to define priorities and initiate actions aligned with Saudi Arabia's objectives to strengthen its food security.

Topics discussed include climate-adapted agricultural practices, water conservation, soil regeneration, producer training, and the creation of centers of excellence for knowledge transfer.

Syngenta will leverage its expertise in agricultural innovation, while Salic will leverage its global presence to implement projects in strategic markets.

RETURN TO INDEX

Bayer has a change in its marketing team for corn in the Cerrado

Henrique Tramontini takes over as manager of the unit after more than three years as regional sales manager

17.10.2025 | 15:42 (UTC -3)

Cultivar Magazine

Bayer has appointed Henrique Tramontini dos Santos (pictured) as the new marketing manager for its Cerrados Corn

business unit, strengthening the company's leadership in the region. He takes over the position after more than three years leading regional sales for the Dekalb brand in Eastern Brazil.

Henrique holds a degree in Agronomy from the University of Passo Fundo (RS), and has over a decade of experience in sales and marketing. He began his career at Monsanto Company, working as a technical sales representative for the Agroceres Seeds brand.

Since then, he has built a solid career within Bayer, with stints in roles such as corn licensing manager and technical sales representative.

RETURN TO INDEX

Trends in crop protection technology - Agritechnica 2025

17.10.2025 | 08:44 (UTC -3)

By Harald Kramer, Münster

Chemical crop protection is increasingly becoming a topic of public debate, both among consumers and politicians.

However, it should not be forgotten that food security is no longer guaranteed without crop protection. Wet years, in particular, have shown that fungal diseases such as downy mildew can lead to significant reductions in yield. Application technology can make a significant contribution in this area of ??conflict. After all, the main goal is to apply the dwindling number of crop protection agents even more precisely, effectively, and environmentally friendly.

Many farmers are undoubtedly wondering whether it's still worth investing in a new crop protection sprayer. However, it will soon become clear that, given the growing global population and the continued decline in agricultural land, the only logical conclusion must be to cultivate the

remaining land even more intensively to ensure the food supply. But where are the key levers in farming systems that can be used to ensure harvests without neglecting aspects such as the environment and sustainability?

In this regard, politicians are presenting farmers with significant challenges, such as the Green Deal and the Farm to Fork Strategy. This means that savings on crop protection agents are necessary while maintaining the same biological effect and good yields. Despite all efforts to save money, crops must be kept healthy to deliver the corresponding yields. In this context, areas such as weeding technology, band spraying, spot spraying, and artificial intelligence, among others, are becoming significantly more important

to achieve these goals. Currently, the agricultural sector is on the verge of making crop protection, which is already very precise, even more precise. This is precisely where the agricultural machinery industry is offering many new or improved ideas to take the already high standard of application precision to new heights.

The combination of mechanical weed control and band spraying technology in row crops has already been adopted by farmers. Spot spraying is currently considered the logical next step and offers vast potential for savings in crop protection agents. Improved forecasting models, closely coupled with application technology with improved sensors, application maps, artificial intelligence, software, and nozzle

technologies, can also help the agricultural sector better and more sustainably prepare for the future. Better or expanded crop sprayer capacity utilization using electronics or liquid fertilizer application also offers farmers many new options to consider when purchasing a new machine. Agritechnica 2025 is certainly the perfect platform to maintain an overview of such diversity and stay up-to-date with the latest developments, as it allows you to determine with certainty whether some systems are merely prototypes or whether the technologies have already reached practical maturity.

Efficiency optimization

Many equipment manufacturers are expanding their portfolios with front-loading tank systems, container volumes, and self-propelled vehicles. No desire goes unfulfilled here. Beyond the sprayer's actual size, however, its filling logistics are also of great importance. This begins with the digital labeling for crop protection agents, expected next year, continues with closed transfer systems (CTS), and quickly culminates with optimal nozzle technology. CTS systems, in particular, are becoming increasingly important, as they prioritize user protection, and the dosing accuracy of crop protection agents is steadily increasing. All areas have one thing in common: optimal technical equipment for the respective regional farm structure,

because simply driving faster doesn't work in most cases.

Reduction in the use of crop protection agents

In particular, political demands for a reduction in crop protection agent use have led to a significant boost in industry research in the recent past. Without this topic, it's certain that not as many people would be involved in band application in combination with various weeding systems, spot spraying, and application maps, etc. Particularly in the case of the hoe, a proven system has been taken to a higher level thanks to new technology. In addition to multiple weeding units, camera

control systems and mobile frames are enabling numerous hoes to operate even more precisely. Such systems can guarantee significant savings in crop protection agents in classic root crops such as sugar beets, corn, and potatoes.

Band application has also become more user-friendly thanks to new nozzles and crop sprayer systems. Here, farmers can choose whether to spray the entire area or perform strip spraying from the cab. However, enthusiasm needs to be tempered somewhat. Besides the problem that the hoe prefers dusty, dry conditions while the sprayer prefers wet ones, heterogeneity in the field also occasionally poses a problem, as seeding technology also needs to be integrated with such a system. It goes without saying that the

entire operation needs to be equipped with RTK guidance systems. Even if band application is performed with a crop sprayer, virtually insoluble problems currently arise in headland areas and on uneven terrain, resulting in the entire area having to be treated. Even row weeding is not as easy as it seems. Farmers, therefore, rely on all the modules and technical solutions to achieve maximum savings under the most diverse conditions.

Taking a step further toward spot application, the high-tech sector has finally caught up. With such systems, it is indeed possible to treat only areas that urgently need crop protection agents. However, one element of the sprayer—the boom—is crucial here. This is because, despite all the precision, nozzle technology, and

precise weed identification, one thing remains indisputable: if the boom is not optimally positioned, talking about spot sizes in the centimeter range is useless. This is where what is called spot spraying comes in, particularly in the retrofit sector. Virtually any existing ISOBUS sprayer can be used for this with corresponding digital activations. The advantage here is certainly the use of 'standard technology' with normal nozzles, because only sections are activated. Although this means that the potential for savings in crop protection agents is not as significant, this approach seems ideal as an introduction to spot application. The reason for this is that there is no need to buy a new sprayer immediately; Instead, previously created application maps can be used to achieve

good control results while achieving savings on crop protection agents.

Alternatives to chemicals or hoes are also slowly gaining attention in agricultural machinery. For example, strip treatment systems that use laser technology to control weeds will also be on display this year. These offer the advantage of getting even closer to the crop, as the work is done without contact. Such systems certainly hold great potential for the future of weed control.

Which nozzle is best?

Under current conditions, it's clear that virtually every manufacturer offers drift-reducing nozzles, which can be

categorized as compact jet nozzles or long jet nozzles. Farmers can choose from a wide range of JKI-approved drift-reducing nozzles to find the ideal nozzle for their needs. However, it's still important to ensure that drift reduction isn't simply optimized and the biological effect is overlooked. This is particularly important to remember when considering decreasing water volumes or increasing driving speeds. The primary goal should be to ensure application quality through sufficient wetting and, if necessary, sufficient crop penetration. Systems such as drop legs add the option of bee-friendly crop protection in oilseed rape and potatoes, for example.

In the area of ??pulse-width modulated nozzles, it's also becoming apparent that

the technology sometimes needs a bit more maturing, even though this topic has been under discussion for several decades. However, systems that operate reliably at frequencies from 20 to 100 Hz are now emerging, making several possibilities a reality. In addition to curve compensation, spot spraying, and application rates that can be varied within the boom, these systems demonstrate vast potential to meet ever-increasing requirements and regulations in practice. Existing, good sprayers can also be upgraded to the latest state-of-the-art with retrofit solutions.

Ultimately, however, success in controlling competing diseases, insects, and weeds will determine acceptance among farmers.

Despite all the talk about economics and the like, one thing shouldn't be overlooked: farmers strive to apply only the amount of crop protection agent absolutely necessary to produce healthy food, something they've been doing for many years.

Autonomous systems

A very high level of activity can be seen in the field of autonomous systems—or, to put it more simply, robots. In addition to well-known companies, numerous startups are also tackling this topic. Several systems are already on the market in the field of weeding technology, while there are very few spraying robots in the fields. The reason for this is that, in addition to numerous legal hurdles, the monitoring

effort required during the application of crop protection agents still appears to be a major obstacle to farmer acceptance. However, attentive visitors to Agritechnica 2025 will find numerous solutions to admire in this area as well. But not everything that is possible is also permitted. The best example of this is drones. There are several providers capable of applying crop protection agents using drones, but their use is restricted by law to steep-slope wine cultivation and forestry in Germany.

By **Harald Kramer**, *Münster*

RETURN TO INDEX

*The **Cultivar Semanal** magazine is a technical and scientific publication focused on agriculture in Brazil.*
It was designed to be read on mobile phones.
It is published on Saturdays.

Grupo Cultivar de Publicações Ltda.

revistacultivar.com

CONTACT
editor@grupocultivar.com
comercial@grupocultivar.com