May 9, 26

N º 78

Cultivar Semanal

Sound impacts *Spodoptera*

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Sound reduces the performance of the fall armyworm

Study shows effects of noise, bird song, and music on behavior, development, and gene expression of Spodoptera frugiperda

08.05.2026 | 13:24 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Natalie Hummel, Louisiana State University

Audible sounds have altered the behavior, development, survival, reproduction, and gene transcription of Spodoptera frugiperda in laboratory tests. Chinese scientists evaluated music, sparrow song, and noise at different intensities, and found that noise at 120 dB had the greatest negative impact. The results indicate potential for acoustic management strategies for the fall armyworm, but the researchers emphasize the need for field validation.

The study was based on the hypothesis that audible sound stimuli could affect larvae and adults of the insect. The team also assessed whether persistent exposure could compromise survival and reproduction for three generations.

The authors used three types of sound: piano music, sparrow song, and noise produced by the friction of a ceramic basin against a concrete floor. The treatments involved ranges of 80 dB and 120 dB. In the behavioral tests, fourth instar larvae and adults received the stimuli during the scotophase.

Sound and intensity

The effect varied according to the type of sound and intensity. In larvae, birdsong and noise at 120 dB reduced the number of crawling events. Music, birdsong, and noise at 120 dB also reduced the distance traveled. Conversely, birdsong and noise at 80 dB increased the distance traveled by the larvae. Noise at 80 dB also

increased the number of crawling events.

In adults, exposure reduced activity in almost all treatments. Music at 120 dB, birdsong at 80 dB and 120 dB, and noise at 80 dB and 120 dB decreased the duration of initial activity and activity after mechanical stimulation. Music at 80 dB did not have a significant effect on these parameters.

In long-term trials, researchers exposed eggs, larvae, pupae, and adults to sounds for three successive generations. Treatments occurred during either the light or dark cycle, for ten hours daily. The response maintained a similar pattern across all three generations.

Development and survival

Birdsong and noise negatively impacted development and survival parameters. These sounds significantly reduced the weight of larvae and pupae in most cases. Noise at 120 dB had the strongest effect. This treatment also reduced the development period of larvae and pupae in all tests.

Birdsong at 80 dB and noise at 80 dB prolonged the development period in most of the evaluations. Music at 80 dB did not generate a significant effect in most cases. In some parameters, it showed a positive effect, especially on pupal weight.

The pupation of larvae and the emergence of adults were also impacted. Birdsong at 80 dB reduced the pupation rate in several situations. Noise at 120 dB reduced pupation and emergence in all cases evaluated. Music at 80 dB did not alter these rates, according to the authors.

Number of eggs

In reproduction, all sound treatments increased the number of eggs compared to the control. However, birdsong and noise reduced the number of offspring and the egg hatching rate. Thus, increased oviposition did not result in greater reproductive success. Music maintained a relatively higher number of offspring, with no statistically significant difference in any

of the cases.

Transcriptomic analysis reinforced the physiological effect of sounds. Researchers identified 71 to 235 differentially expressed genes between the treatments and the control. Music at 80 dB generated 71 differentially expressed genes. Birdsong at 80 dB generated 220. Noise at 80 dB generated 199. Noise at 120 dB generated 235.

The patterns also differed between treatments. Music and birdsong showed a predominance of repressed genes. In the groups subjected to noise, there was a higher proportion of induced genes. At 80 dB noise, all genes related to the cuticle appeared induced. At 120 dB noise, 53,2% of the genes linked to the cuticle were

induced.

Cuticle remodeling

Scientists interpret this pattern as possible stress-induced cuticle remodeling. They also observed repression of genes linked to metabolism, immunity, development, and reproduction. Functional enrichment analysis identified terms and pathways associated with cellular components, cuticle, metabolism, sensory perception, and longevity.

In the 80 dB noise treatment, induced genes were concentrated in terms related to the cuticle, sensory perception, metabolism, and longevity regulation. Repressed genes appeared associated

with metabolism and pathways related to human diseases, according to the classification used in the KEGG analysis.

Hearing sensitivity

The researchers emphasize that the results broaden our understanding of auditory sensitivity *Spodoptera frugiperda* to audible sounds. Adult lepidopterans have tympanic organs, which are more sensitive to ultrasound. Larvae and pupae do not have specialized tympanic organs, but they can perceive acoustic signals through unspecialized sensilla. The study indicates that larvae and adults responded to audible frequencies used in the tests.

Scientists consider the findings a basis for developing acoustic control strategies. However, they do not propose direct use in crops. The study points to the need for field exposure mapping, risk assessment to non-target organisms, and dose-response modeling before any practical application.

Further information at doi.org/10.3390/insects17050467

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Black soybean weevil advances in central Argentina

Soybean pest left the NOA and reached productive areas of Córdoba and Santa Fe

06.05.2026 | 08:00 (UTC -3)

Peter Schubert, Cultivar Magazine, based on information from INTA.

Photo: INTA

The black soybean weevil (Rhyssomatus subtilis) has advanced into central Argentina in recent harvests. For two decades, it remained concentrated in northwestern Argentina. Now, records from the National Institute of Agricultural Technology (INTA) and the National Service of Agrifood Health and Quality of Argentina (Senasa) indicate its presence in soybean-growing areas of Córdoba and Santa Fe. Experts link the expansion to the movement of machinery and vehicles between productive regions.

The presence of the insect was first recorded in Argentina during the 2005/2006 growing season in Santiago del Estero. Afterwards, its spread was slow in northwestern Argentina (NOA), with

records in Tucumán, Catamarca, and Salta. Between 2022 and 2025, it expanded to new productive areas in northeastern Santiago del Estero. In January 2026, the pest appeared in the southeastern part of the province. In Chaco, the record occurred in the Almirante Brown department.

High alert

The biggest alert came at the end of the 2024/2025 harvest, with detection in north-central Córdoba. In the 2025/2026 harvest, INTA technicians confirmed its presence in the departments of Río Primero, Santa María, and Río Segundo. There was also confirmation in Ceres, in the province of Santa Fe.

According to María Guillermina Socías, from INTA Salta, the geographical shift does not follow a natural pattern of dispersal. The technical hypothesis points to an association with the movement of machinery and vehicles.

The insect has an annual life cycle and accompanies soybeans throughout the crop's development. Adults attack new shoots and can reduce plant growth. The larvae cause the main damage, as they feed on the grains inside the pods. The perforations also facilitate the entry of water and pathogens.

Management requires prevention. Experts recommend crop rotation with grasses and other non-host species. This practice should encompass affected areas and neighboring crops. They also recommend

thorough cleaning of machinery and vehicles before moving between production zones. Monitoring should begin early, with inspection of pods, punctures, perforations, larvae, and grain damage.

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Agricultural Market - May 8, 2026

Planting in the US progresses; oil and conflict in Iran amplify fluctuations in grain prices.

08.05.2026 | 09:28 (UTC -3)

Vlamir Brandalizze - @brandalizzeconsulting

Brazilian soybean shipments reached a record high for April. The Secex (Secretariat of Foreign Trade) reported

16,746 million tons exported during the month. Year-to-date shipments reached 40,3 million tons. Soybean meal also saw an increase, with accumulated volumes totaling 8,3 million tons, compared to 7,6 million tons in the same period last year.

Soybean sales in April reached US$8,105 billion. The product maintains its leading position in Brazilian exports. The market continues with 62% of the crop already sold. Last year, the figure exceeded 65%. The average also surpasses 65%. For the new crop, sales have reached 12,5%, compared to 18% the previous year and 20% of the average.

In the international market, grain prices are closely following planting in the United States and negotiations related to the

conflict in Iran. US soybean planting is already close to 40% complete, compared to an average below 30%. Corn planting exceeds 45%, compared to an average of less than 40%. In Iowa, corn planting is nearing 60%.

Corn situation

In Brazil, corn exports reached 473,9 tons in April. In the same month last year, the figure was 178,4 tons. The year-to-date total is 7,3 million tons, compared to 6,1 million tons in the previous period. Domestically, business remains slow. Buyers are awaiting the first harvests of the second corn crop (safrinha).

Producers report potential losses in Goiás, Minas Gerais, parts of Mato Grosso, Paraná, and São Paulo. The lack of rain is affecting corn crops planted in early March, outside the optimal planting window. Sorghum also needs rain in southern Goiás, Minas Gerais, and parts of Bahia. The Brazilian area affected could reach 2,2 million hectares. Production could approach 8 million tons.

Wheat situation

Wheat is trading calmly in the domestic market. In Rio Grande do Sul, prices range from R$ 1.240 to R$ 1.280. In Paraná, they are between R$ 1.310 and R$ 1.350. Mills report slow sales of flour and

derivatives. Producers also indicate a reduction in planted area. Planting may fall below 2 million hectares, compared to 2,5 million in the last harvest.

Rice and beans

In the rice harvest, the harvest is entering its final stretch. Brazilian production is expected to be close to 11 million tons, down from 12,8 million tons last year. For beans, the supply of grade 9 carioca beans remains scarce. Prices range from R$ 385 to R$ 415. Black beans show slight upward pressure, with nominal values ??between R$ 170 and R$ 200.

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Surfactin activates defense in Arabidopsis via a non-canonical pathway

Study indicates role of sphingolipids and mechanosensitive channels in lipopeptide-induced resistance

08.05.2026 | 08:04 (UTC -3)

Schubert Peter, Cultivar Magazine

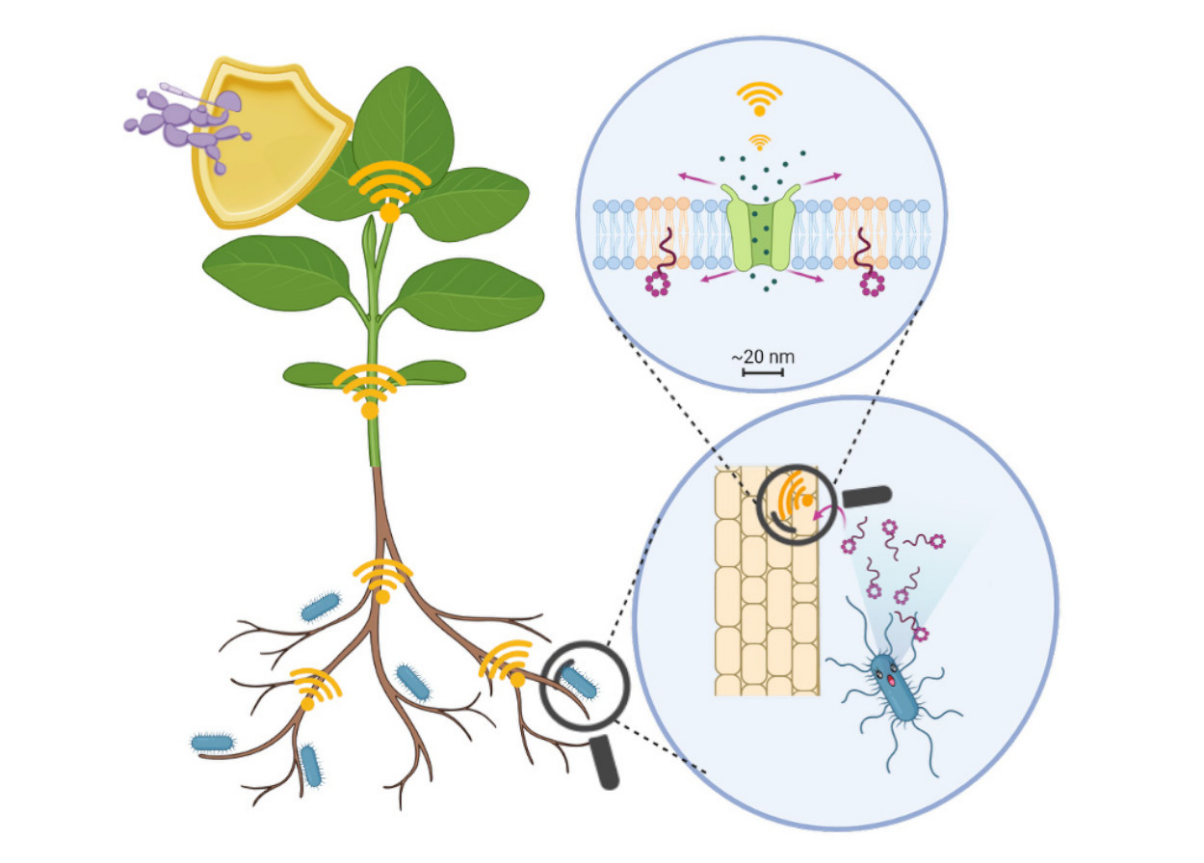

Image: Deleu, M. (2026)

Surfactin, a cyclic lipopeptide produced by beneficial bacteria of the genus Bacillus, activates defense responses in *Arabidopsis thaliana* through remodeling of the plasma membrane of root cells. The mechanism involves interaction with sphingolipids, increased lateral membrane tension, and activation of mechanosensitive ion channels. The process resulted in induced systemic resistance against Botrytis cinerea, a necrotrophic fungus that causes gray mold.

Scientists investigated how bacterial lipopeptides act on the plant cell surface. They used surfactin as a model. The molecule is already among the most studied bacterial compounds in inducing resistance against phytopathogens.

In the trials, root treatment with 10 micrometers of surfactin reduced foliar infection by B. cinerea. Treated plants accumulated more camalexin in infected leaves. This compound acts as a phytoalexin in *Arabidopsis*. The role of camalexin in disease control appeared in the pad3 mutant, which is deficient in its synthesis. In this material, surfactin-induced resistance did not occur.

Aerial part

Surfactin also prepared the aerial parts for stronger immune responses. Leaves of plants treated at the roots showed a greater apoplastic burst of reactive oxygen species after the detection of chitooligosaccharide CO8, used as a

fungal standard. A similar response occurred with flg22, a bacterial standard.

The study showed differences between the response to surfactin and immunity triggered by classical pattern recognition receptors. Surfactin did not generate the typical apoplastic burst of reactive oxygen species in roots. Instead, it promoted an increase in reactive oxygen species inside cells. It also induced a calcium response, alkalinization of the medium, depolarization of the plasma membrane, and transient ionic currents.

RNAseq analysis indicated a limited transcriptional response. Researchers recorded 246 differentially expressed genes after surfactin elicitation. This number was lower than the values

??observed in treatments with flg22 and chitin, which are associated with thousands of genes. According to the study, genes typical of initial immune signaling or defense mechanisms did not undergo extensive alteration after treatment.

Tests with mutants

Scientists tested mutants of *Arabidopsis* with alterations in known components of immunity by patterns. Surfactin maintained activity in materials without receptors, co-receptors, or cytoplasmic kinases related to the classical perception of MAMPs. This result indicates distinct perception of the canonical PTI pathway.

The central step involved the interaction of surfactin with plasma membrane lipids. Assays with biomimetic liposomes indicated a greater affinity of the molecule for membranes containing glucosylceramides, a type of sphingolipid. Molecular dynamics simulations indicated a preferential approach of surfactin to these molecules, especially the glucose moiety.

The role of glucosylceramides also appeared in mutant plants. In the loh1 mutant, deficient in complex sphingolipids, the intracellular response to reactive oxygen species decreased. The same material showed less systemic immune activation and less resistance to B. cinerea. The moca1 mutant, with altered

GIPCs but without reduced glucosylceramides, maintained a response to surfactin.

Measurements with probes

The insertion of surfactin into the membrane resulted in bilayer thinning, lateral redistribution of lipid components, and increased rigidity in the polar head region. Measurements with probes indicated increased lateral membrane tension in root protoplasts and root epidermal cells. This effect decreased in the loh1 mutant, reinforcing the involvement of glucosylceramides.

The study linked this remodeling to the activation of mechanosensitive ion channels. The blocker GsMTX-4 reduced calcium and reactive oxygen species responses induced by surfactin. msl4/5/6/9/10 and mca1/2 mutants, linked to mechanosensitive channels in the plasma membrane, also showed a reduced response to the lipopeptide. Membrane depolarization almost disappeared in these genotypes.

These mutants also lost some of their ability to mount systemic resistance and systemic immune activation after root canal treatment with surfactin. The data support the interpretation that mechanosensitive channels residing in the plasma membrane participate in the transduction of the signal generated by the

insertion of the lipopeptide.

More information at

doi.org/10.1038/s41477-026-02270-3

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Fruit fly infestation threatens orchards in the Federal District

Embrapa research identifies new aggressive pests

07.05.2026 | 17:43 (UTC -3)

Deva Heberle

The Federal District is experiencing a phytosanitary paradox that could hinder one of the most promising and current frontiers of Brazilian fruit growing. While

rigorous surveillance confirms that the Federal District is a "free zone" for dreaded quarantine pests, such as the carambola fruit fly, local orchards are facing a population explosion of native species and the arrival of a new aggressive invasive species, the *Drosophila suzukii*.

The situation is critical for sensitive, high-value-added crops like blueberries, which risk becoming economically unviable in the region even before consolidating their recent expansion in the Brazilian Cerrado.

The alert is the result of a research and monitoring project initiated in 2023 by researchers Elisângela Fidelis and Marcelo Lopes, from Embrapa Genetic Resources and Biotechnology, in strategic

partnership with the Secretariat of Agriculture, Supply and Rural Development of the Federal District (Seagri), with funding from the Foundation for Research Support of the Federal District (FAPDF).

The data collected by Fidelis and Lopes reveal that the current infestation is six times higher than the tolerable limit for the commercial market, creating an invisible barrier to exports and losses for the producer.

- Fruit fly infestation in the Federal District has reached levels exceeding what is tolerated for satisfactory quality production.
- The arrival of the plague *Drosophila suzukii* The Cerrado biome threatens

crops with thin skin, such as blueberries, by piercing still-healthy fruits.

- The Federal District (DF) is an area free of international quarantine pests, but there are risks of introduction due to urban transport.
- The overpopulation of insects would prevent the export of local fruits to countries such as the United States, China, and Japan.
- Experts argue that implementing management practices and sanitary education are the only ways to break the cycle of increasing fruit fly populations.

Science uses a rigorous metric to measure the danger in orchards: the Fly/Trap/Day

(MAD) index. This is a technical indicator that determines the exact moment when the producer needs to intervene. For a crop to be considered safe, profitable, and of high quality, the index must remain below 0,5 flies captured per day in each trap.

However, a survey conducted by Embrapa Genetic Resources and Biotechnology on guava crops in the Federal District found alarming numbers, reaching 2,5 to 3,0 flies captured per day in each trap. "The diversity of species has not increased drastically since the 1990s, but the number of individuals has grown significantly," says Marcelo Lopes.

This population surplus generates a vicious cycle of destruction. The females

lay their eggs inside the fruit, the larvae grow, consuming the pulp and causing premature crop failure. "If the producer leaves the fruit on the ground, he is maintaining a breeding ground for the pest. The fruit falls, the larva emerges from it, enters the soil to pupate, and then emerges as a new fly ready to attack the rest of the plantation," explains Lopes.

International barriers and the "free zone"

Besides the direct damage to the harvest, the overpopulation of flies is the main obstacle to local production reaching markets outside the Federal District, including for larger producers who intend

to reach buyers outside of Brazil. This is because countries in the European Union, the United States, China, and Japan impose severe restrictions on the import of fruits from areas with high infestation. These countries fear that the fruits may carry "hidden" larvae that, upon reaching their destination, could infest their own territories.

Despite this internal challenge, researcher Elisângela Fidelis points to a positive and strategic piece of data for the country: the Federal District remains free of quarantine pests, such as the carambola fruit fly (*Bactrocera carambolae*) and the oriental fruit fly (*Bactrocera dorsalis*). Currently, the carambola fruit fly is restricted to northern states such as Amapá, Amazonas, Pará, and Roraima, under a strict eradication

program by the Ministry of Agriculture (Mapa).

"The movement of people and goods in urban areas is the greatest risk for the introduction of these pests into the Federal District," warns Elisângela. She explains that the informal transport of fruit in travelers' luggage is the main route of dispersal. A single infested fruit brought back from a trip can destroy the sanitary status of an entire producing region in a few days.

The big bad news for fruit farming in the Cerrado region is the detection of *Drosophila suzukii*. Unlike common fruit flies, which generally attack already damaged, rotten, or fallen fruit, this species has a devastating characteristic: it

can pierce the skin of intact, thin-skinned fruits while they are still on the tree.

For blueberries, which require an impeccable visual standard for the premium market, this pest represents a risk. "Unlike other flies we know, the suzukii fly can pierce the skin of perfectly healthy fruits," explains researcher Marcelo Lopes. According to him, the introduction of this species requires a drastic change in approach. "If we want to increase production and introduce new fruit tree species like blueberries, monitoring and management are vital, or production will not be economically viable," warns Marcelo Lopes.

Marcelo Lopes shares Elisangela Fidelis' concern. Both observe that blueberries

and strawberries are diversification options for small and medium-sized producers in the Federal District and surrounding areas. They emphasize that, without rigorous control, the commercial value of these fruits can be reduced to zero, since the presence of a single larva makes sales to large retail chains and foreign markets unfeasible.

To keep monitoring up-to-date and ensure early detection of any invasive species, researchers installed traps at strategic circulation points, such as wholesale markets (Ceasa), permanent fairs, and rural properties. These traps (like the one in the photo shown by Marcelo Lopes) contain parapheromones such as methyl-eugenol, a substance that attracts males of the species to a sticky base, allowing

scientists to quickly identify what is circulating in the environment.

"The goal is to transform the scientific knowledge generated in the laboratories of the Embrapa Plant Germplasm Quarantine Station into everyday practices for farmers," says Marcelo Lopes (photo on the side). This includes intensive training for rural extension technicians and agricultural inspectors in the Federal District.

Entomologist Elisângela Fidelis observes that technology alone does not solve the problem. Because the larvae grow protected inside the fruit, the isolated use of chemical pesticides is often ineffective. The real solution lies in health education and the creation of a "protection network"

that integrates the countryside and the city.

Elisangela Fidelis and Marcelo Lopes are emphatic: the consolidation of data collected in the fruit fly monitoring project serves as a warning to authorities, producers, and society itself. According to the researchers, it is possible to reduce infestation rates so that the fruit-growing hub of the Federal District is not only productive but also globally competitive.

The viability of profitable crops, such as blueberries, now depends on this collective awareness, notes Marcelo Lopes. The success of orchards doesn't end with the harvest, but begins with orchard management and the responsibility of each farmer and citizen not to transport fruit from one region to another. Protecting the

country's agricultural heritage, as Lopes and Fidelis advocate, is a task that requires research and rigorous discipline in the field.

With the correct application of management techniques and constant vigilance, the Federal District has the potential to overcome the fruit fly crisis and become a benchmark in the production of fine fruits for Brazil and the world.

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FMC sells its commercial operation in India for US$252 million

The deal with Crystal Crop is part of the company's global reorganization strategy

07.05.2026 | 16:59 (UTC -3)

Cultivar Magazine, based on information from FMC

Pierre Brondeau and Ankur Aggarwal

FMC Corporation announced the sale of its business operations in India to Crystal

Crop Protection Limited for US$252 million, subject to customary adjustments for cash, debt, and working capital. The transaction is part of FMC's strategy to reorganize its operations in the Indian market and focus investments in regions considered priorities for global growth.

The closing of the deal is expected to occur by the end of 2026, subject to regulatory approvals and other customary conditions. According to the company, the proceeds will be used to reduce debt.

With this transaction, Crystal Crop Protection Limited will assume FMC's commercial crop protection business in India, including a license to use the company's trademarks in the country. The agreement also provides for preferential

supply of certain active ingredients and formulated products, as well as priority access to FMC's technology portfolio for the Indian market.

“Crystal is well positioned to serve Indian farmers with FMC’s portfolio of innovative technologies,” said Pierre Brondeau, Chairman and CEO of FMC. He also highlighted that the company will continue to maintain global research, development and manufacturing activities in India.

According to Ankur Aggarwal, president and CEO of Crystal Crop Protection Limited, the acquisition should strengthen the supply of chemical and biological technologies to the country's farmers.

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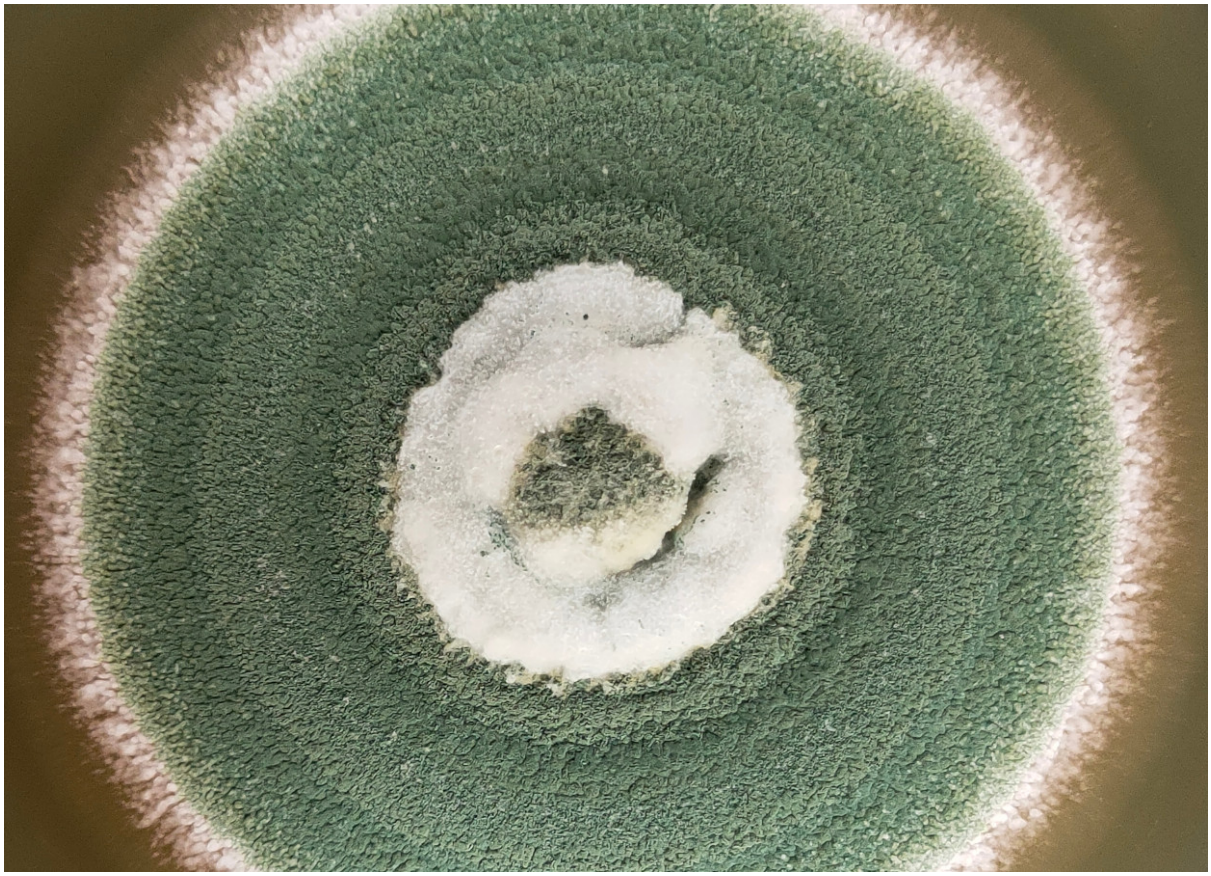
Metarhizium anisopliae increases virulence against Opisina arenosella

A study using LC-MS shows alterations in the cuticular metabolism of larvae after appressorium formation

07.05.2026 | 16:47 (UTC -3)

Schubert Peter, Cultivar Magazine



The formation of appressoria increased the pathogenicity of *Metarhikum anisopliae* against larvae of *Opisina arenosella*. The study showed a positive correlation between the rate of formation of this infective structure and insect mortality. With greater appressorium formation, Metarhizium anisopliae killed more larvae and reduced lethal time. LC-MS analysis also identified changes in the cuticle metabolism of *Opisina arenosella* after the formation of the appressorium. This conclusion comes from a study by Chinese researchers.

The appressorium acts as a specialized infection control structure. It allows the *Metarhikum anisopliae* break the cuticle of *Opisina arenosella* through mechanical pressure and enzymatic action. In the

experiment, the researchers used sulforaphane to reduce the formation of appressoria in *Metarhikum anisopliae*The concentrations tested included 0,00 mg/mL, 0,01 mg/mL, 0,02 mg/mL, 0,05 mg/mL, and 0,08 mg/mL. Increasing the concentration reduced conidia germination and appressorium formation.

In the treatment without sulforaphane, the appressorium formation rate reached 66,60% after 72 hours. This value exceeded the other treatments. Under the same conditions, the cumulative corrected mortality of larvae of *Opisina arenosella* the mortality rate reached 82,76% in seven days. The LT50 was 4,82 days. In the treatment with 0,08 mg/mL of sulforaphane, the cumulative corrected mortality reached 25,29% in seven days.

The LT50 increased to 8,74 days.

The scientists also evaluated the toxicity of the YEMDT medium with sulforaphane. The treatment showed no significant difference compared to the control. This result indicates an absence of direct toxicity of the mixture on the larvae of *Opisina arenosella*. Thus, the reduction in mortality was related to the lower formation of appressoria by *Metarhikum anisopliae*.

Conidia germination

The infection dynamics showed the beginning of conidia germination 10 hours after inoculation. The germination rate reached 90,40% at 38 hours and then stabilized. Appressorium formation began

at 20 hours. Between 22 and 30 hours, the process accelerated. At 48 hours, the rate reached 65,40% and also stabilized. Based on these data, the authors defined 18 hours as the point before appressorium formation and 48 hours as the point after.

Metabolomics revealed alterations in the cuticle of larvae of *Opisina arenosella* before and after the formation of the infective structure. Before appressorium formation, the study detected 410 differential cuticular metabolites compared to the control. Of this total, 349 were reduced and 61 were increased. The authors associated these changes mainly with pathways linked to caffeine metabolism and porphyrin metabolism.

After appressorium formation, the number of differential metabolites dropped to 151. Among them, 91 increased and 60 decreased. Comparison between the two time points showed 102 compounds exclusive to the phase after appressorium formation. These compounds included benzenes and substituted derivatives, amino acids and derivatives, as well as heterocyclic compounds.

Among the compounds that increased after appressorium formation, the study cites L-sorbitol, sparfloxacin, N-acetyl-D-glucosamine, L-aspartic acid, and 2,6-dihydroxybenzoic acid. Benzenes and substituted derivatives accounted for 24,7% of the increased compounds. Among the reduced compounds, the

authors identified lincomycin, D-gulono-1,4-lactone, luteolin, manghaslin, and 4,5-dihydroxyterephthalic acid. Fatty acids accounted for 20,7% of the reduced compounds.

Metabolic defense pathways

KEGG enrichment analysis indicated activation of metabolic defense pathways in *Opisina arenosella*. Before appressorium formation, 152 pathways were recorded. Of these, 25 showed significant differences and nine showed highly significant differences. The most prominent pathways included biosynthesis of tropane, piperidine, and pyridine

alkaloids, biosynthesis of phenylpropanoids, and biosynthesis of flavonoids.

After appressorium formation, 101 metabolic pathways were recorded. Fifteen showed significant differences. The main pathways affected involved tyrosine metabolism, histidine metabolism, and flavonoid degradation. According to the authors, these processes indicate a response of Opisina arenosella through immune defense, antifungal defense, and toxin degradation.

The researchers concluded that the cuticle of *Opisina arenosella* does not act merely as a physical barrier. It responds to infection by *Metarhikum anisopliae* through metabolic reprogramming. The interaction

between *Metarhikum anisopliae* and the body wall of *Opisina arenosella* involves mechanical pressure, enzymatic hydrolysis, chemical signals, and metabolic changes.

More information at doi.org/10.3390/insects17050476

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Adama announces new executives for strategic areas

The company is strengthening its global production and Brazilian operations with appointments starting in May.

07.05.2026 | 15:59 (UTC -3)

Cultivar Magazine

Hongsheng Liu and João Aleixo

Adama announced a restructuring of its global leadership, with the appointment of Hongsheng Liu as Executive Vice

President (EVP) of Active Ingredient (AI) Production and João Aleixo as Executive Vice President for Brazil. The appointments will take effect in May 2026 and reinforce the company's strategy of strengthening areas considered strategic for production and regional growth.

Hongsheng Liu assumed the position of Executive Vice President of AI Production on May 1st. Prior to his new role, he served as Special Advisor to the CEO for Operations at Adama. He holds leadership positions at Sinochem and the Syngenta China Group, where he served as CEO of Sinochem International Corporation, President of the Chemicals Business Unit of the Sinochem Group, and President of the Syngenta China Group. He currently also sits on the board of directors of

Adama Ltd.

According to the company, Hongsheng arrives at the new position focused on leading the next stage of the company's industrial and manufacturing transformation, supported by his accumulated experience in the chemical sector and his direct involvement in Adama's global operations.

João Aleixo assumed the executive vice-presidency of the Brazilian operation on May 4, 2026. The executive joins Adama after a stint at DVA Agro, where he served as global general manager, responsible for the company's operations and results in more than 50 countries.

The company emphasizes that Aleixo brings experience in the Brazilian crop

protection market, as well as knowledge of global supply chains and the generic pesticide segment.

“These appointments reinforce the value we place on proven experience and deep industry knowledge to drive our business,” said Gael Hili, President and CEO of Adama. “I am confident that Hongsheng and João will play key roles in advancing operational excellence and supporting the company’s sustainable growth,” he concluded.

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Viruses and endosymbionts alter the fitness of aphids

Study shows combined effects on reproduction, dispersal, and feeding of virus vectors in plants

07.05.2026 | 09:12 (UTC -3)

Schubert Peter, Cultivar Magazine

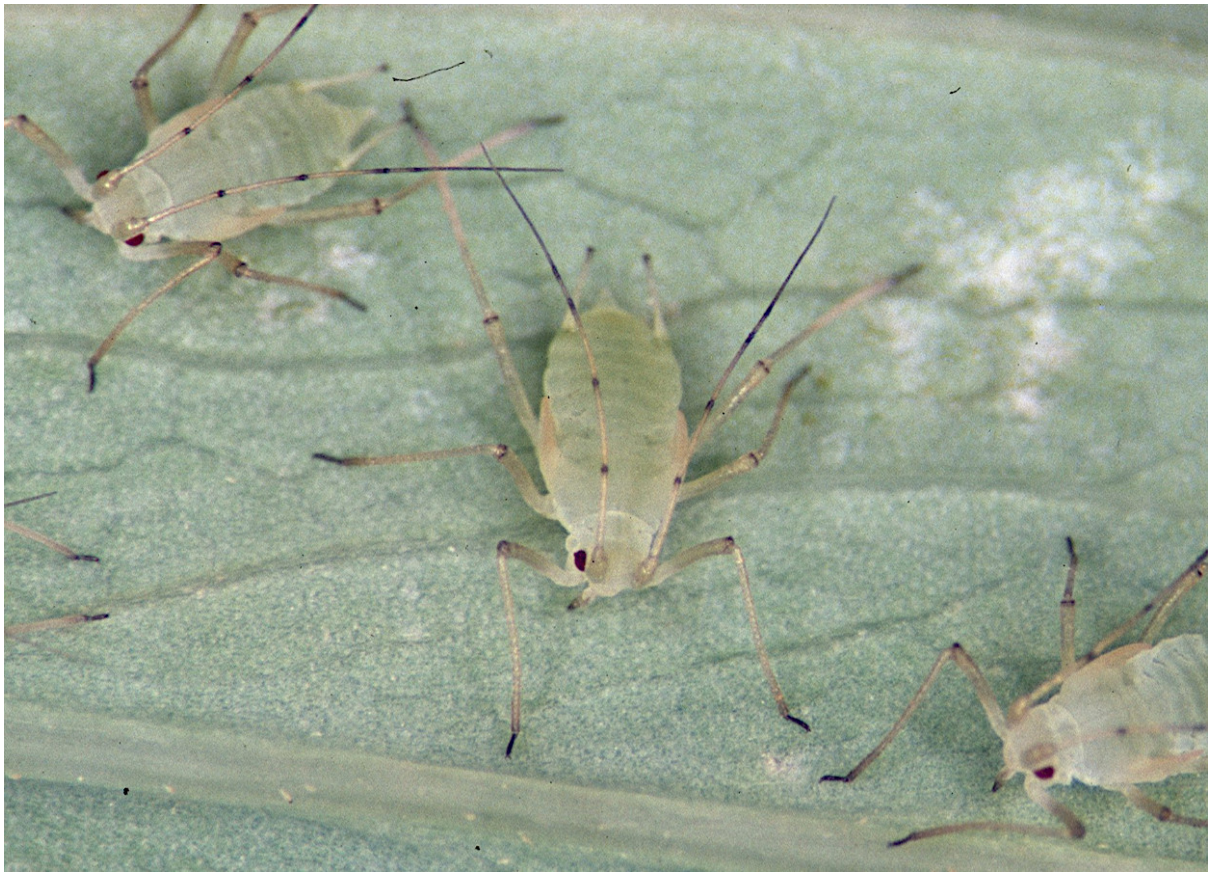

Photo: Whitney Cranshaw, Colorado State University

Aphids with different virus isolates and facultative endosymbionts showed changes in fitness, dispersal, and feeding behavior. This study evaluated aphid populations and viral isolates to measure the interactive effects of the presence of the virus, the viral isolate, and facultative endosymbiotic bacteria.

Aphids act as efficient vectors for many plant viruses. They also maintain associations with endosymbiotic bacteria. One of these has an obligate character. Other facultative species do not guarantee the insect's survival, but can generate phenotypic benefits for the host.

The research focused on a persistently transmitted virus, its main vector, and a defensive facultative endosymbiont. The

results indicated effects dependent on the viral isolate on the production of winged aphids, reproductive fitness, and insect dispersal.

Endosymbiotic infection primarily influenced feeding behavior. Infected aphids began probing plant tissues earlier. They also increased their phloem intake.

The study identified interactions between viral isolates and endosymbiont infection on initial population growth rates. The effect of the endosymbiont varied depending on the viral isolate present.

Scientists point to the diversity within the species as an important factor in understanding aphids as vectors of agriculturally relevant viruses. Future pest and disease control strategies need to

consider this complexity to increase the effectiveness of management measures.

Further information can be found at https://doi.org/10.1111/een.70099

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Root cells can help bean plants under drought and low fertility conditions

Study describes “hooked hairs”, single-celled structures linked to initial nutrient absorption and water retention

07.05.2026 | 08:56 (UTC -3)

Schubert Peter, Cultivar Magazine

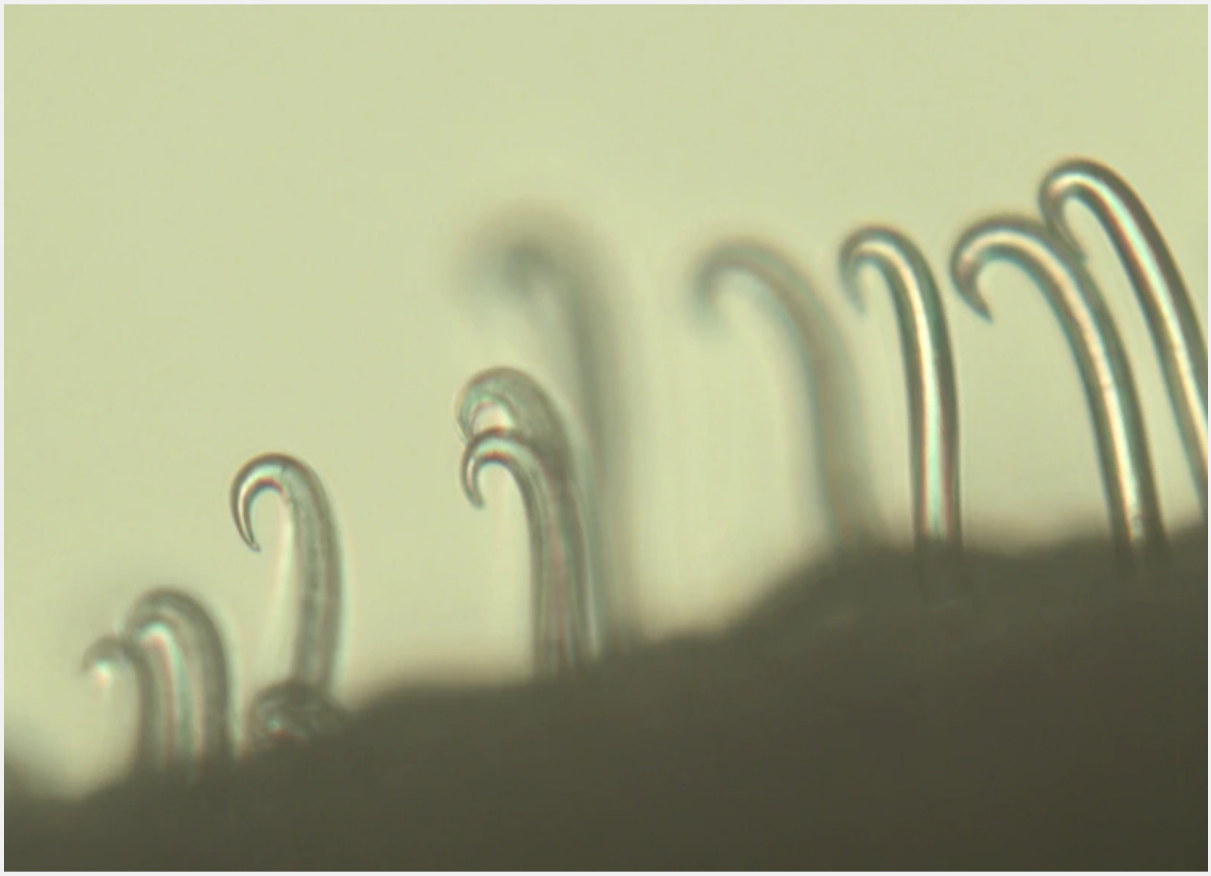

Photo: University of Arizona

Researchers have identified a previously unknown cell type in the roots of the common bean. The structure has been named "hooked hair." It appears in the first few days after germination and may help seedlings survive in soils with low nutrient availability and under water deficit.

"Hooked hairs" form small, pointed structures in the underground region of the seedling. They appear before traditional root hairs. In common beans, root hairs emerge between five and ten days after germination. Hooked hairs, on the other hand, emerge within the first three days of development.

The study indicates a relevant function in the initial phase of cultivation. During this period, the seedling has not yet developed

a mature root system. The structure can contribute to the acquisition of phosphorus and nitrogen. It can also help regulate water in the root tissues.

Phenotypic response

The team observed a phenotypic response of "hooked hairs" under phosphorus and nitrogen limitation. In controlled growth systems, the structures increased in length under deficiency of these nutrients. Phosphorus deficiency also increased the area of ??"hooked hairs" compared to the control.

The researchers used image phenotyping, microscopy, and single-cell sequencing. This approach allowed them to compare

"hooked hairs" with root hairs and trichomes. Transcriptomic analysis showed distinct profiles between these epidermal microstructures. The result supported the classification of "hooked hairs" as a distinct cell type.

The study also identified gene signatures linked to nutrient transport and suberin biosynthesis. Suberin forms a protective barrier in plant tissues. In the study, it appears to be associated with the regulation of cell permeability, water retention, and protection against environmental stresses.

The team confirmed phosphatase activity in the "hooked hairs" using fluorescence microscopy. This activity appeared from the initial stage of structure formation to

maturity. The result reinforces the hypothesis of its involvement in phosphate absorption during the first days of growth.

Nitrate limitation

Under nitrate restriction, researchers observed the production of reactive oxygen species. The article interprets this result as indirect evidence of signaling and active uptake of nitrate. The data also indicate suberin deposition in the “hooked hairs,” visualized with Fluorol Yellow 088 dye.

The discovery has agronomic relevance because the establishment phase defines part of the crop's performance. According to Alexander Bucksch, senior author of the

study and professor at the University of Arizona, young plants suffer from drought, pests, and nutritional deficiencies during establishment. He also states that losses of 5% to 20% of seedlings occur frequently and represent an economic cost for producers.

The common bean plant includes varieties consumed as fresh pods and dried beans, including pinto, black, and red beans. The species is important for its nutritional value, providing vegetable protein, iron, and fiber. In 2024, global production of dried beans reached approximately 28,9 million metric tons.

The team developed and applied an image analysis tool called DIRT/?, an acronym for Digital Imaging of Root Traits at

Microscale. The software detects and quantifies subtle variations in the development of single-celled appendages. The researchers also created an analytical routine to measure differences in the outline of "hooked hairs".

The study points to a possible additional defense function. The hook-like morphology may act against harmful organisms in the soil. Bucksch states that the team suspects these underground structures have the ability to trap and kill harmful nematodes. This hypothesis will still undergo testing.

Further information can be found at doi.org/10.1126/sciadv.adz6873

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Baits reduce damage from Sphenophorus levis on fishing rods

Study tested imidacloprid and Beauveria bassiana in a commercial area in the interior of São Paulo state

06.05.2026 | 16:04 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Paulo Lanzetta

Solid artificial lures treated with imidacloprid or beauveria bassiana reduced damage caused by *Sphenophorus levis* in sugarcane. The effect appeared 30 days after the start of the bi-weekly distribution. At 60 days, the best results occurred with imidacloprid at 50 and 200 baits per hectare and with *beauveria bassiana* between 100 and 200 baits per hectare.

These conclusions stem from a study in a commercial sugarcane area in Mineiros do Tietê, in the state of São Paulo. The area had a history of infestation by *Sphenophorus levis*. The experiment used randomized blocks, with six treatments and five replications. Each plot had 10 rows of sugarcane, spaced 1,5 meters apart, with a length of 250 meters.

The researchers evaluated imidacloprid-based baits at concentrations of 50, 100, and 200 baits per hectare. They also evaluated baits with *beauveria bassiana*. The treatment consisted of 100 and 200 baits per hectare. A treatment without application served as a control. The baits were distributed manually on the soil surface, along the sugarcane rows.

Assessment dates

Assessments were conducted at 7, 15, 30, 45, and 60 days. The main variable was the percentage of damaged stem bases. The study also recorded larvae, pupae, and adults per linear meter at 60 days.

At the beginning of the experiment, all treatments had more than 20% of damaged stem bases. Up to 15 days, the treatments did not show consistent differences compared to the control. At 30 days, the baits with *beauveria bassiana* with 100 and 200 baits per hectare and imidacloprid with 200 baits per hectare resulted in lower average damage.

At 60 days, the differences became more evident. The control group showed a higher percentage of damaged bases. The treatment with imidacloprid in 100 baits per hectare showed greater variation and did not differ consistently from the control.

Larval, pupal, and adult counts remained low throughout the study. Therefore, damage assessment better indicated the

effect of the treatments. According to the authors, solid baits represent an operational alternative for integrated pest management *Sphenophorus levis* in commercial sugarcane fields.

The work was developed by Alexandre de S. Pinto, Murilo M. da Silva, Matheus G. Berti, and Matheus B. Oliva.

More information at doi.org/10.37486/1809-8460.ba21004

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Gian Garcia is promoted to national manager at Biotrop

Executive assumes leadership of Sugarcane Sales in Brazil and biological solutions

06.05.2026 | 15:20 (UTC -3)

Cultivar Magazine

Biotrop has promoted Gian Garcia to the position of Sugarcane Sales Manager for Brazil. With over six years of experience at the company, the executive previously

held the position of Regional Sales Manager for Sugarcane in the South, focusing on the states of São Paulo, Paraná, and Mato Grosso do Sul.

In his new position, Garcia will lead the company's commercial strategy focused on biological solutions for the sugar and ethanol sector nationwide.

An agricultural engineer with a degree in Accounting, he holds an MBA in Agribusiness and Leadership, as well as a specialization in Strategic Sales Management. Before joining Biotrop, he gained experience at Bayer Crop Science, where he worked for two years in the sugarcane sector, and at Cia. Agrícola Santa Amélia, a supplier to Raízen, in Maracaí (SP).

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Sipcam Nichino defines strategic guidelines for 2026 and 2027

At a meeting held in Uberlândia, the company announced team expansions, a new customer service structure, and new product launches

06.05.2026 | 14:57 (UTC -3)

Fernanda Campos, Cultivar Magazine edition

Sipcam Nichino held a meeting in Uberlândia (MG), attended by leaders and employees of the Brazilian unit, to define

new strategic commercial guidelines in the country. During the meeting, teams were also reconfigured to serve clients in key agribusiness regions, such as Mato Grosso, Mato Grosso do Sul, Mapitoba, the Central-South region, and the fruit-growing hub of Petrolina, in Pernambuco.

According to Alexandre Gobbi, CEO of Sipcam Nichino Brasil, the company will continue investing in expanding its technology portfolio by launching inputs that meet the specific demands of producers, including herbicides, insecticides, fungicides, and biostimulants. Gobbi highlighted that at least two new items will reach the national market this semester.

“In Brazil, we adopted a strategy focused on efficiency, commercial repositioning, and enhancing our specialties,” he stated. “We reorganized our channel structure, strengthened our presence in the South and East regions, and created conditions for a closer and more trusting relationship with traditional distributors,” the CEO added.

Leandro Martins, the company's marketing and strategic planning director, added that the expectation is to introduce seven new products to the market by the beginning of 2027. Eric Ono, product and crop portfolio manager, emphasized that the investments will primarily target crops such as soybeans, sugarcane, corn, cotton, and wheat.

According to Martins, the crop protection sector is undergoing a period of structural transformations, regulatory challenges, climate change, high competitiveness, and shifts in market behavior. "These variables demand a new strategic perspective with a view to the sector's future," he summarized.

The company should accelerate investments in the coming years, especially in the areas of seed treatment, pre-emergent soybean herbicides, biostimulants, and multi-site fungicides. According to Sipcam Nichino, the Brazilian portfolio includes more than 45 inputs, including fungicides, herbicides, ripeners, insecticides, acaricides, biostimulants, and seed treatment solutions.

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Bayer and bp move forward with camelina for biofuels

Alliance seeks to expand soybean cultivation in North America for renewable diesel

06.05.2026 | 09:39 (UTC -3)

Cultivar Magazine, based on information from Kyel Richard

Photo: Bayer

Bayer and bp announced a long-term strategic alliance in the United States to expand camelina cultivation under the newgold brand for the production of renewable diesel and sustainable aviation fuel (SAF). The initiative begins in North America and seeks to structure a market for intermediate oilseeds to meet the demand for biodiesel, renewable diesel, and SAF.

BP brings its expertise in fuels and refining to the partnership. Bayer contributes seed technology and its agricultural customer base. The companies are targeting a biofuels market with demand estimated to be almost three times greater by 2040, reaching a volume of 40 billion gallons.

Bayer reported that trials with long-cycle and short-cycle biotypes are ongoing. The company has already introduced camelina newgold to the Northern Plains in the United States and to regions of southern Saskatchewan and Alberta in Canada. The announcement follows Bayer's acquisition of camelina assets at the end of 2024.

According to the company, camelina can be used as an intercrop, rotation crop, or alternative for idle, fallow, or underutilized areas. This oilseed offers flexibility in cultivation during spring and winter. It also requires less input.

Bayer cites drought tolerance, cold resistance, and resistance to silique opening among the crop's agronomic characteristics. The goal of the newgold brand is to offer producers an additional

income option without increasing competition with food production.

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PotatoEurope will showcase technologies for potato farming in 2026

An event in Germany will feature machinery in the field, demonstration areas, technical discussions, and a parallel program on sugar beet

06.05.2026 | 07:33 (UTC -3)

Cultivar Magazine, based on information from Malene Conlong

Photo: DLG

PotatoEurope 2026 will showcase technologies and innovations for potato cultivation on September 9th and 10th. The event will take place at the Rittergut Gestorf 1 farm, near Hanover, Germany. The fair will feature machinery in operation in the field, demonstration areas, and a technical program focused on agricultural production.

The outdoor exhibition will cover the entire potato supply chain. Content will range from genetics to processing. Companies specializing in breeding, crop protection, digitalization, agricultural machinery, and processing will present recent solutions and developments. Demonstration plots will showcase new varieties and the effects of pesticides and fertilizers.

The event will bring together producers, processors, and marketers from Germany and other countries. Visitors will be able to learn about research, technological trends, and best practices adopted on farms. There will also be direct contact with experts and companies in the sector.

Technical programming

The technical program will include demonstrations of machines in real-world operating conditions. The equipment will be used in the field for activities such as planting, harvesting, loading, and crop protection technologies.

The DLG Spotlight “Agricultural Logistics” will address logistics in potato and beet

production. The space will showcase tractors, specialized trailers, moving floors, conveyors, potato crates, covering systems, and logistics software. The topic will also include legal and economic aspects. Martin Vaupel, from the Lower Saxony Chamber of Agriculture, will be available to answer visitors' questions.

The DLG Spotlight FarmRobotix will bring together DKE-Data and DLG to showcase robotics, automation, and artificial intelligence in crop production. The program will feature live demonstrations, hands-on guidance, and discussions with experts on autonomous machines and digital systems.

The DLG Expert Stage, at the experimental field, booth VG15, will feature

presentations and discussions on potatoes and sugar beets. The program will run from 10:30 AM to 16:30 PM. Experts will address specific topics related to these crops and issues common to agricultural production.

In parallel, the SugarBeet Expo will take place. The fair will address field technology and trends in sugar beet cultivation. Interested companies can still register as exhibitors.

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Oxidative stress varies in bees depending on the landscape

Study compares honeybees and Ceratina calcarata in organic, conventional, and roadside areas

05.05.2026 | 08:30 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Alberto Marsaro Júnior

Bees collected from roadsides showed higher levels of oxidative damage in lipids, while samples from organic areas recorded the lowest values. This information comes from a North American study that evaluated honeybees (*Apis mellifera*) and small carpenter bees (*Ceratina calcarata*) in three types of landscape in central Ohio: conventional farmland, organic farmland, and habitats near highways.

The study measured markers of oxidative stress in adults and larvae. Scientists also analyzed pesticide residues in pollen using gas chromatography and liquid chromatography coupled with mass spectrometry. The comparison indicated an association between the residue profile

in the landscapes and different physiological responses in bees.

Honeybees

In adult honeybees, the average lipid damage reached 1,67 nmol/mg in roadside areas. This value was higher than those recorded in organic areas (1,17 nmol/mg) and conventional areas (0,96 nmol/mg). The difference was statistically significant. The same pattern appeared in *Ceratina calcarata*. In this species, the average lipid damage reached 1,84 nmol/mg on roadsides, compared to 1,20 nmol/mg in organic areas and 1,65 nmol/mg in conventional areas.

Apis mellifera larvae also responded to the landscape. Samples collected from roadsides had an average of 1,05 nmol/mg for lipid damage. In conventional areas, the value reached 0,85 nmol/mg. In organic areas, it dropped to 0,57 nmol/mg. The authors observed significant differences between the organic areas and the other two environments.

Protein carbonylation

The study also evaluated protein carbonylation, another indicator of oxidative damage. In adult honeybees, the average reached 20,49 nmol/mg in conventional landscapes, 18,48 nmol/mg on roadsides, and 15,12 nmol/mg in organic areas. The difference between

conventional and organic crops was significant. In *Ceratina calcarata* the average values ??were similar across the three landscapes, with no statistically significant difference.

Residue analysis showed higher total concentration and greater diversity of pesticides in pollen collected from conventional farms. Organic areas and roadside habitats showed lower concentrations.

The study also highlights the complexity of physiological responses in the field. Farm size, floral diversity, forage availability, pollen nutritional quality, microclimate, management intensity, and vehicular pollutants can all influence oxidative stress. The researchers treat the results as

associations between landscape and physiological response, not as proof of direct causality.

Further information can be found at doi.org/10.1111/phen.70046

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Fungi use ancient proteins to attack plants and microbiomes

A study led by the University of Cologne shows the antimicrobial origin of effectors used in plant infection

04.05.2026 | 15:49 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Penn State University

Phytopathogenic fungi use ancient antimicrobial proteins to manipulate host plants and alter their microbiomes during infection. This conclusion comes from a study led by Professor Bart Thomma of the Institute of Plant Sciences at the University of Cologne, in collaboration with the MiBiNet Collaborative Research Center and the Ceplas Cluster of Excellence.

The team identified an unexpected evolutionary origin for effector proteins secreted by fungi. These molecules participate in infection by weakening the host's defenses. According to the study, some of them derive from ancient antimicrobial proteins, used by fungi to compete with other microorganisms before the emergence of pathogenic interactions with terrestrial plants.

The result broadens the understanding of fungal disease in plants. The authors indicate a dual strategy. The fungus attacks the plant's immune system and, at the same time, interferes with the microbiota associated with the host. This microbiota includes bacteria, fungi, and other microorganisms. Part of it contributes to protection against diseases.

Vd424Y Effector

The study analyzed the Vd424Y effector, produced by Verticillium dahliae. This pathogen causes vascular wilt in various host plants, including agricultural crops. Researchers have shown that Vd424Y alters the composition of the microbiota during infection and contributes to the

development of the disease.

The team also found that mutations gave this effector the ability to penetrate plant cells, reach the cell nucleus, and influence plant immune reactions and other cellular processes. Thus, Vd424Y performs two functions: it manipulates plant immunity and favors the fungus in competition against other microorganisms.

To track proteins with antimicrobial activity, the authors developed a machine learning-based tool called Amapec. The system predicts antimicrobial activity in fungal effector candidates. The tool classified proteins secreted by fungi and indicated a wide presence of antimicrobial candidates in the analyzed secretomes.

Three fungi

The analysis included three fungi with distinct lifestyles: *Rhizophagus irregularis*, associated with arbuscular mycorrhiza; *Coprinopsis cinerea*, soil saprophyte; and *Verticillium dahliae*, phytopathogen. The study indicated that between one-third and half of the secretomes evaluated, after excluding CAZymes and transmembrane proteins, contained proteins with possible antimicrobial activity.

The researchers also analyzed 150 genomes of fungi associated with soil and plants. The set covered three phyla, nine classes, and 24 orders. Many families of secreted proteins with greater conservation throughout evolution showed

predictive antimicrobial activity. For the authors, this pattern indicates an ancient origin for these proteins, predating the divergence between fungal phyla.

The study also evaluated effectors already known to modulate plant immunity. Five proteins were selected for experimental validation: Ecp6, of *Cladosporium fulvum* AGLIP1, from Rhizoctonia solani; AVR-Pita, of *magnaporthe oryzae*; and Vd424Y and VdCP1, of *Verticillium dahliae*. All of them showed in vitro antimicrobial activity against plant-associated microorganisms, with distinct spectra of action.

Trials with tomato plants

In tomato trials, the contribution of Vd424Y to the virulence of *Verticillium dahliae* depended on the presence of host-associated microbiota. Deletion of the Vd424Y gene reduced disease development in the presence of microorganisms, but did not show the same effect in their absence. This result supports the effector's role in manipulating the microbiota during infection.

The bacterial composition of plants infected by *Verticillium dahliae* wild-type composition differed from that observed in plants infected with the mutant lacking Vd424Y. The authors identified bacterial genera with reduced relative abundance in the presence of the gene, among them *Pseudoxanthomonas*, *Comomonas*, *Brachybacterium* and *Sphingobium*.

The research also suggests an impact beyond phytopathology. According to the authors, similar mechanisms may occur in fungi capable of infecting animals and humans, as these interactions also involve host-associated microbiota and the immune system.

More information at doi.org/10.1126/sciadv.aec1406

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Ana Repezza assumes presidency of CropLife Brazil

Executive begins management focused on strategic dialogue, regulatory advancement, and international projection of agribusiness

04.05.2026 | 15:13 (UTC -3)

Danilo Lysei

CropLife Brasil (CLB) has appointed Ana Repezza as its new president. The executive assumes the position with a

commitment to expanding institutional dialogue, advancing priority regulatory agendas, and projecting the sector in international debates on agricultural innovation. At the head of the association, her mission will be to articulate the interests of the four sectors represented – chemical and biological pesticides, seeds, and biotechnology.

With a solid track record in foreign trade, institutional coordination, and attracting investment, Repezza has a proven track record in building consensus in complex environments—both in Brazil and in global forums. His diplomatic profile will strengthen the competitiveness of Brazilian agribusiness on the international stage.

"I want to further strengthen the productive dialogue that CropLife already maintains with the government, both in the Executive and Legislative branches. This year we face challenges with economic impacts on the input sector. These are issues that directly affect research and the legal security of the sector," says Ana Repezza.

In Repezza's view, Brazil has unique conditions to expand its global relevance — not only as a major food exporter, but also as a leader in applied science in tropical agriculture.

In this context, the administration will prioritize encouraging the adoption of sustainable technologies in the field, promoting good agricultural practices, and strengthening Brazil's role in international

debates on food security and innovation in agriculture. "I want to put my experience at the service of the sector and contribute to Brazil continuing to advance as a protagonist in global agricultural innovation," said the new president.

Repezza was selected by the CLB Board of Directors through a structured process focused on strengthening the entity's strategic performance. During the transition, activities were conducted in a collegial manner, under the governance of the Board.

The executive has over 25 years of experience.

Ana Paula LA Repezza holds a Master's degree in International Management from the University of London (England), as well as an MBA in International Business and Foreign Trade from the Getúlio Vargas Foundation (FGV). She has a specialization in Globalization and Socioeconomic Development from the World Trade Institute at the University of Bern (Switzerland). Her initial training is in Business Administration from the Federal University of Minas Gerais (UFMG).

With over 25 years of experience, Ana has built a solid track record in articulating trade policies, government and institutional relations, attracting investments, and developing ESG initiatives for strategic sectors such as agribusiness, biofuels, and mining. In her most recent role, as Head of

Business at ApexBrasil, she led more than 50 international trade missions in Latin America, Africa, and Asia.

Her career also includes a notable stint as Executive Secretary of the Foreign Trade Chamber – Camex, where she was able to focus on proposing and developing trade policies, in coordination with various ministries, with an emphasis on tariffs and regulation of agricultural and industrial goods.

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Corteva names its seed business Vylor

The planned separation is still scheduled for the fourth quarter of 2026

04.05.2026 | 14:38 (UTC -3)

Cultivar Magazine, based on information from Corteva

Corteva has announced the name Vylor for the company formed from its current advanced seeds and genetics business. The unit previously had the provisional designation “SpinCo”. The planned separation is still scheduled for the fourth

quarter of 2026.

According to a company statement, the name derives from the word "value." This refers to the new company's stance, focused on competing for opportunities.

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Claas enhances automation and comfort in the Xerion 12

Tractor gains Autodroop, VCU for supervised operation, and improvements to Terra Trac

04.05.2026 | 14:32 (UTC -3)

Cultivar Magazine, based on information from Claas

Claas has announced a series of technical updates for its Xerion 12 tractors, focusing

on operator comfort, reduced workload, process automation, and lower operating costs. The updates include new CMATIC transmission management, the introduction of the Vehicle Control Unit (VCU) in partnership with AgXeed starting in the second half of 2026, improvements to the Terra Trac track system, and new cab features.

The Xerion 12 now features Autodroop mode for managing engine speed drop. This feature is in addition to Eco and Power modes. The system adjusts the engine speed drop automatically and adaptively, according to the usage conditions. The aim is to maintain a balance between power and efficiency, especially in operations with frequent operator changes or seasonal labor.

Claas has also improved the drive controller for its continuously variable transmission (CMATIC). According to the manufacturer, the system responds better in situations with intense load variations. The change affects soil preparation and seeding operations, as well as headland maneuvers with implement coupling. The transmission accelerates faster to the target speed and improves response to abrupt changes in demand.

Tractor power

The company reports power outputs of up to 653 hp in the Xerion 12. According to Johannes Weisbrodt, senior vice president of system tractors at Claas, the continuously variable all-wheel drive

concept allows for operational efficiency gains. He also states that Autodroop and the new CMATIC controller make it easier for less experienced operators to use the machine's maximum performance.

The Terra Trac tracks have also received changes for the 2026 season. The focus is on durability, self-cleaning, and reduced operating costs. Claas redesigned the cast structure and increased the distance between components. This improves dirt removal and eliminates the need for scrapers. Improved scrapers can be fitted to Xerion 12 Terra Trac units already in operation.

Changes in the cabin

In the cabin, Claas has incorporated a compressed air connection as a standard item. A blower with a two-meter coiled hose can be fitted to the machine as an option. This feature allows for cleaning of the controls and the cabin floor. The machine already has two external compressed air connections, one at the front and one at the rear.

The interior received new storage compartments in the right B-pillar, behind the operator's seat and in front of the steering column. The cabin also gained a storage net on the rear wall. Non-slip surfaces allow for the placement of tablets used to monitor work orders or during work breaks.

The operator's seat has also changed. The new option features an integrated compressor. The seat maintains a rotation of up to 40 degrees to the right and 10 degrees to the left. The solution aims to improve posture during work and facilitate entry and exit from the cab. A plastic guard between the steering column and the windshield allows the use of the footrests with work boots, without soiling the glass.

Starting with the 2026 model year, the cabin will offer a 6,75-inch touchscreen, Apple CarPlay, Android Auto, DAB+ radio receiver, and Bluetooth. Since April 2025, the hood has featured power opening and closing, operated from the ground by a button. Non-slip steps on the front fenders and a redesigned platform facilitate access to the air filter and windshield cleaning.

Automation is gaining ground with the VCU developed in collaboration with AgXeed. The system will be available from mid-2026. The unit allows pre-programmed work orders to be executed automatically, under the supervision of the operator in the cab. The VCU connects to the Xerion 12's Isobus and uses the TIM protocol for tractor-implement management.

Work orders can include field and machine data, marked obstacles, and row planning. They are transferred from Claas Connect to the AgXeed TraXwise platform via the cloud. The orders appear on a tablet in the cab and can be started with a touch. The tractor and implement perform the work automatically, with steering, maneuvering, headland management, and variable rate control according to the application map.

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Partnership with AGCO should expand Biojet's market

The homologation of the BJ 1000L engine for the Momentum planter unlocks access to a network of over 400 dealerships in Brazil

04.05.2026 | 14:18 (UTC -3)

Virgílio Amaral, Cultivar Magazine edition

Biojet, an agricultural equipment manufacturer that is part of the Cogny biological ecosystem, has just closed a

partnership with AGCO for the homologation of one of the main products in its portfolio: the BJ 1000L furrow sprayer. The equipment has been approved for operation mounted on the Momentum planter, a model that became a benchmark by inaugurating the market for self-transportable planters in Brazil. With the technical validation, more than 400 AGCO dealerships in Brazil will be able to recommend Biojet's solution to farmers throughout the country.

The manufacturer's engineering certification attests to the sprayer's mechanical, hydraulic, and electronic compatibility, reducing adaptation risks and increasing operational safety for those seeking greater efficiency in applying inputs during planting. The partnership

should open a new sales expansion front for Biojet at a time of increasing use of biological products in the field, pressure on fertilizer prices, and the prospect of agricultural fleet renewal in the coming years. The partnership will be formalized during Agrishow 2026 in Ribeirão Preto (SP).

According to Jair A. Swarowsky (pictured), Chief Commercial Officer (CCO) of Cogny, the move is strategic for Biojet because it occurs within the context of structural change in Brazilian agribusiness, marked by international geopolitical tensions that have been impacting the price of imported solutions for the field, such as fertilizers. “Exposure to international volatility has led producers to seek more sustainable

alternatives and solutions. In this environment, bio-inputs are gaining ground as a management alternative to fertilizers, creating new demand for application efficiency.”

Bio-inputs and fleet renewal: drivers of growth.

Data from CropLife Brasil, presented in the report "Panorama of Bioinputs in Brazil 2025," based on the 2024/25 crop season, shows that the country has already surpassed 150 million hectares treated with biological solutions, in a market estimated at R$ 4,35 billion per year. Technical analyses by Embrapa indicate

ample room for expansion of biologicals, especially in extensive crops such as soybeans, corn, and cotton. In the planting furrow, directly in the sowing line, microorganisms find more favorable conditions to act from the beginning of the cycle, increasing agronomic efficiency.

Another relevant factor is the prospect of renewing the agricultural fleet in the coming years. A survey by Kynetec, based on the studies "Brazil Farm Machinery Market – Planters & Seeders Insights 2024", estimates that Brazil has between 200 and 300 planters in operation, with a significant portion of these machines being more than a decade old.

“The gradual replacement of this fleet tends to favor more technologically

advanced machines compatible with solutions that offer greater operational efficiency, while simultaneously increasing the demand for complementary equipment capable of enhancing the performance of planters. In this scenario, recommendations through dealerships gain relevance as a channel for technological dissemination," says Bruno Copetti de Barros, operations director at Biojet.

Developed from over a decade of experience in the microbiological market of companies within the Cogny ecosystem – such as Simbiose, Bioma, and Briagro – Biojet's solution was designed to ensure the correct application of these inputs in planters, overcoming a historical gap in the sector marked by adapted equipment.

"There was a recurring problem of incompatibility that compromised both machine performance and application efficiency. The goal was to develop a technically integrated solution," says the executive.

In addition to the validated solution for the Momentum planter, Biojet's portfolio includes technologies with different capabilities, geared towards distinct operating profiles. The partnership with AGCO paves the way for the gradual expansion of these solutions within the manufacturer's dealer network, consolidating the company's position in an expanding market.

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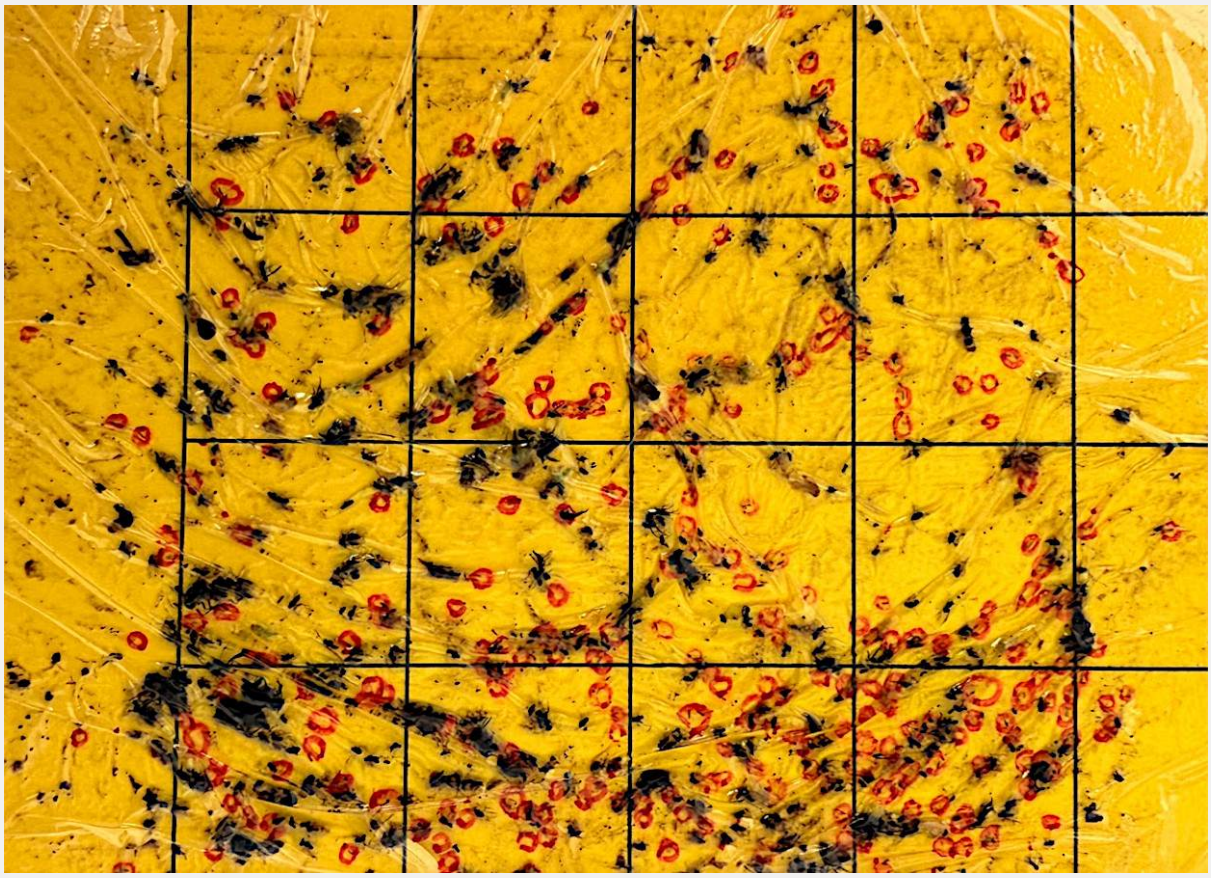
Artificial intelligence anticipates thrips outbreaks

Machine learning models predicted Frankliniella occidentalis populations in open fields

04.05.2026 | 07:40 (UTC -3)

Schubert Peter, Cultivar Magazine



Researchers used yellow sticky traps to capture thrips (each red circle). They monitored the pest population and applied the counts and other parameters to advanced models to predict population patterns - Photo: Kiran Gadhave - Texas A&M AgriLife

Researchers at Texas A&M AgriLife Research have developed artificial intelligence models to predict population growth in thrips (Frankliniella occidentalis) in tomato and pepper production systems. Their study showed an accuracy of 87,7% in open fields and 84,9% in high tunnels. The tool can anticipate the risk of outbreaks and support management decisions before crop damage occurs.

The research evaluated machine learning models in two contrasting productive environments. Random Forest showed the best performance in open fields. XGBoost achieved the highest accuracy in high tunnels. The authors also tested Gradient Boosting Machine, or GBM. All three algorithms analyzed environmental and

biological variables related to insect dynamics.

Data used

The study used data from 1.686 yellow sticky traps installed weekly in tomato and pepper fields at the Texas A&M AgriLife research station in Bushland, Texas. Of these, 903 traps came from tall tunnels and 783 from adjacent open fields. After standardization, the researchers worked with 2.254 modeling units.

The researchers combined thrips counts with meteorological variables. The list included average, maximum, and minimum temperature, relative humidity, precipitation, wind speed, and wind

direction. The study also included the population recorded 14 days prior to collection. This interval corresponds to the approximate development time of the insect, from egg to adult, under the evaluated conditions.

The previous insect population, referred to in the study as the "parent population," emerged as the main predictor of severity in both environments. Temperature followed. Humidity and wind had secondary effects. In open fields, the combination of a high previous population and higher relative humidity contributed to high severity levels. In high tunnels, wind had a greater impact on predicting high severity.

Difference between environments

The difference between the environments was decisive. Models trained in one system failed to predict the population in the other. Accuracy was 44,13% when the high tunnel model was applied to the field. The field model reached 38,22% when applied to the high tunnels. The authors concluded that open field and high tunnel function as distinct microecosystems, even when they are side by side.

This finding reinforces the importance of microclimate in pest management. According to the authors, high tunnels and open fields differ in thermal stability,

humidity, wind, and exposure. These conditions alter the development, dispersal, and transmission potential of *Frankliniella occidentalis* viruses. The study indicates that forecasting tools need to consider these differences in order to generate useful alerts for the producer.

Change in management

Anticipating risk can change the logic of management. According to Kiran Gadhave, an entomologist at AgriLife Research and assistant professor in the Department of Entomology at Texas A&M, identifying risk a week in advance shifts control from a response to damage to a preventative strategy.

The results also point to limitations. The authors report that the models do not yet incorporate biological regulators, such as natural enemies and interspecific competition. The study also used meteorological data from an open-field station. For tall tunnels, sensors installed inside the structures can improve spatial resolution and the ecological interpretation of the relationships between climate and thrips.

More information at doi.org/10.1016/j.ecoinf.2026.103690

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SugarBeet Expo 2026 details technical program

Field fair in Germany will feature discussions and demonstrations about sugar beet.

04.05.2026 | 07:20 (UTC -3)

Cultivar Magazine, based on information from Malene Conlong

The SugarBeet Expo 2026 will take place on September 9th and 10th in Springe,

Germany. The event will be an open-air exhibition and will run parallel to PotatoEurope, a well-established trade fair in the potato sector. The program combines machinery demonstrations, technical discussions, specialized forums, and presentations of solutions for modern cultivation.

The program places beet cultivation at the center of discussions about technology, digitalization, and sustainability. The organization presents the fair as a new international platform for producers, service providers, companies, research institutions, and industry representatives. The objective is to create an environment for technical exchange and closer ties between agents in the production chain.

The technical program was given the motto "Make your business grow." It brings together topics such as soil health, robotics, technological trends, and applied research. The structure includes forums, expert lectures, and discussion formats with a practical focus. The activities address current challenges in beet production and applicable solutions for crop management.

Machine demonstrations

Machine demonstrations will play a central role in the exhibition. Visitors will be able to observe equipment in operation under real field conditions. The presentations will

cover seeding, harvesting, loading, logistics, and row crop protection technologies. According to the organizers, the demonstrations aim to show how new technologies support workflows and contribute to efficiency, precision, and sustainability.

Agricultural logistics will also have its own dedicated space in the program. The DLG Spotlight “Agricultural Logistics” will showcase tractors, specialized trailers, moving floor systems, conveyor belts, beet crates, covering systems, and logistics software. The topic has gained prominence due to the importance of truck transport in potato and beet production. The program also includes information on the legal and economic aspects of logistics

operations.

Agricultural robotics

Agricultural robotics will be featured in the DLG Spotlight “FarmRobotix,” presented jointly by DKE-Data and DLG. The space will showcase advancements in robotics, automation, and artificial intelligence for crop production. Live demonstrations, hands-on guidance, and discussions with experts will address the use of autonomous machines and digital systems in agriculture.

The DLG Expert Stage, located in the trial field at booth VG15, will feature presentations and discussions on current topics in beet and potato production. The program will run from 10:30 AM to 16:30

PM. The organizers report the participation of experts in specific crop approaches and in cross-cutting themes between the two supply chains.

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New Holland receives Red Dot certification for its T7 Standard Wheelbase tractor

The jury highlighted the redesign, ergonomics, embedded technology, and efficiency in the 180 to 225 hp segment

04.05.2026 | 07:12 (UTC -3)

Cultivar Magazine, based on information from Alice Brignani

New Holland received the Red Dot Design Award for its T7 Standard Wheelbase tractor. The award recognized the model's design in the 180 to 225 hp segment. The jury highlighted the tractor's complete redesign, with its integration of style, functionality, and technology.

The T7 Standard Wheelbase features a new design language. According to the manufacturer, the design reflects the brand's strategy of using design as a differentiator and value factor for customers. The model combines compact proportions, a more dynamic stance, and integrated functional elements.

These solutions have a direct impact on visibility, maneuverability, and operator comfort. The package also reinforces a

modern visual identity for the line. The T7 Standard Wheelbase debuts the Dynamic Blue color, a new shade from New Holland. The brand intends to introduce this color into its portfolio progressively, as part of a more consistent visual language.

The design includes a new hood shape, integrated cab access, LED lighting, and a refined rear. These elements combine aesthetics with practical benefits for daily use in the field.

Beyond the visual aspect, the T7 Standard Wheelbase received performance-focused solutions. The model incorporates a new front axle, developed to improve ride comfort and reduce the turning radius. The tractor also received the redesigned Horizon cab, with SideWinder armrest. The

set aims to facilitate control of functions by the operator.

The transmissions are also an integral part of the model's offering. According to New Holland, they deliver benchmark efficiency in their category. Among the versions, the T7.225 Dynamic Command achieved a milestone in efficiency in the DLG PowerMix test, with results classified as best in class for fuel consumption.

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