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Cultivar Semanal ®

New viral isolates against *Spodoptera*

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Viral isolates expand biological control against fall armyworm

Research reveals genetic and lethal differences between SfMNPV strains

24.04.2025 | 10:45 (UTC -3)

Cultivar Magazine

The use of baculovirus Spodoptera frugiperda multiple nucleopolyhedrovirus (SfMNPV) in the control of the fall armyworm (Spodoptera frugiperda) takes on new contours. A study by the United States Department of Agriculture (USDA) evaluated different isolates of the virus and identified strains that were more lethal and faster in combating the two lineages of the insect pest: the corn and rice strains. The research also details the genomic variations between the isolates, paving the way for the development of more effective and sustainable bioinsecticides.

Larvae from the corn strain showed variable responses to the viruses tested. Some strains, such as 459 (Colombia) and 1197 (Georgia, USA), killed more quickly — in less than 56 hours after infection.

Others, such as 281 (also from Georgia), required lower concentrations to cause 50% mortality, although they acted more slowly.

The larvae of the rice lineage responded with less variation between the isolates, demonstrating more uniform behavior.

The difference in the mean lethality time (LT50) led to the classification of the isolates into two groups: fast-acting and slow-acting. The most lethal, such as 459 and 3AP2 (Missouri), caused high mortality in less time, an attribute valued in biological control for reducing damage to crops.

Genetic analyses revealed a high degree of similarity between the genomes of the isolates — above 99% —, although with

specific variations, such as insertions, deletions and horizontal gene transfers.

SfMNPV isolate	Abbreviation	Source	Reference	Genome size, bp (coverage)	Annotated ORFs	*hrs*	GenBank ID
3AP2 (exemplar isolate)	SfMNPV-3AP2	Missouri, USA	Harrison et al. (2008)	131,331 (16.2X)	143	8	EF035042
19	SfMNPV-19	Paraná, Brazil	Wolff et al. (2008)	132,565	141 (143[a])	8	EU258200
Nicaraguan(B genotype)	SfMNPV-B	Nicaragua	Simón et al. (2011)	132,954 (4 – 8X)	145	8	HM595733
Nicaraguan(G genotype)	SfMNPV-G	Nicaragua	Simón et al. (2012)	128,034 (4 – 8X)	140	7	JF899325
Colombian (A genotype)	SfMNPV-ColA	Colombia	Barrera et al. (2015)	134,239 (64X)	145	7	KF891883
281	SfMNPV-281	Georgia, USA	This study	132,793 (45.8X)	143	8	MK503923
459	SfMNPV-459	Medellin, Colombia	This study	134,237 (59.2X)	145	7	MK503924
1197	SfMNPV-1197	Georgia, USA	This study	132,801 (62.4X)	142	8	MK503925

Isolated from *Spodoptera frugiperda multiple nucleopolyhedrovirus* with completely sequenced genomes

Isolate 459, for example, presents unique genes also found in a previous Colombian strain (ColA), possibly inherited from another baculovirus of the species *Spodoptera litura*. The presence of these

genes was confirmed in other isolates, including from the USA, indicating a greater geographic distribution than initially supposed.

Experiments with mixtures of isolates showed no significant gains in lethal concentration (LC50) or time to kill. The mixture of 25% 459 and 75% 3AP2 resulted in the lowest lethal concentration, but without significant impact on mean time to lethality. This suggests that the combination of viruses may not be advantageous compared to the individual use of the most effective strains.

The genomes of strains 459 and 1197 did not show deletions in the egt gene, which is known to accelerate death in baculoviruses. Strain 3AP2, which is more

lethal, carries this mutation, which may explain its efficiency. Among the genes under positive evolutionary pressure, pif-3 stood out. It participates in the oral infection of the host and exhibits coding variation among isolates.

The research also indicates that the caterpillar's migratory behavior and limited reproducibility among its lineages may have slowed down a more pronounced viral differentiation. Even so, the study indicates that there is potential to select strains that are better adapted to the insect's distinct lineages.

With the advancement of caterpillar resistance to chemical insecticides and Bt transgenics, baculoviruses are reemerging as a viable alternative. The 3AP2 isolate is

already part of commercial formulations in the USA and Brazil. Now, the new data reinforce the need to register other promising strains, such as 459 and 1197.

More information can be found at

doi.org/10.1016/j.jip.2021.107561

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AGCO begins remanufacturing transmissions in Brazil

New operation in Jundiaí promises more agility, savings for the producer and environmental gains

25.04.2025 | 14:30 (UTC -3)

Cultivar Magazine, based on information from Flavia Amarante

AGCO managers celebrate the start of production - Photo: Tiago Lima

AGCO Corporation has begun remanufacturing mechanical transmissions in Brazil. The operation takes place at the new Reman Transmission Center of Excellence, located in Jundiaí. With an investment of R$19 million, the initiative reinforces the company's operations in the country and its commitment to innovation and efficiency in the agricultural machinery sector.

The center has 1.750 square meters and an initial capacity to remanufacture 100 transmissions per year. The focus is on Massey Ferguson and Valtra tractors. The professionals received intensive technical training in Finland to perform the process with global quality standards.

Local production will reduce lead times, make the supply chain more efficient and offer manufacturers up to 30% cheaper parts. Remanufactured transmissions come with a one-year factory warranty and can be delivered in as little as two days. Installation is quick and easy, reducing machine downtime.

In addition to saving money, the solution contributes to sustainability in agriculture. Remanufacturing reduces emissions, saves natural resources and extends the life cycle of parts. The operation is part of AGCO's circular economy model, which includes returning the core of the used part for reuse.

According to AGCO, the new center expands the company's autonomy in Brazil and helps it meet the demands of the field

more efficiently. The company intends to continue investing in the local production of strategic parts to strengthen its position in the market and support rural producers with affordable and sustainable solutions.

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CampoLimpio exceeds 18,5 million kilos of packaging recovered in Argentina

System advances in the central region, strengthens partnerships and already operates in 22 provinces of the country

25.04.2025 | 11:33 (UTC -3)

Cultivar Magazine, based on information from Lucas Tagliani

The CampoLimpio program has surpassed the mark of 18,5 million kilos of empty pesticide containers recovered in Argentina. In the first quarter of 2025 alone, there was a 33% increase compared to the same period of the previous year.

The progress is due to territorial expansion and joint work with the public and private sectors, as provided for in National Law 27.279. The system has 93 Temporary Storage Centers (CATs) and itinerant collection actions.

The province of Chubut has joined the initiative, becoming the 22nd to officially adopt the system. In the coming months, the region is expected to hold local packaging collection days.

In the core zone — responsible for 55% of the country's grain production and 70% of the dairy industry — new CATs were opened in Armstrong and Pilar (Santa Fe) and General Cabrera (Córdoba). Together, Santa Fe and Córdoba exceeded 350 tons of packaging recovered in 2025 alone.

Entre Ríos has maintained its focus on inspection and training. One of the recent actions involved provincial police officers, who were trained to reinforce product control on roads and rural areas. Buenos Aires will soon have a new collection center.

CampoLimpio seeks to consolidate a circular economy model. The partnership with governments and producers aims to expand the reach and ensure the environmentally correct disposal of

agricultural waste.

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Agritechnica 2025 focuses on agricultural machinery dealers

Trade fair in Germany presents new tools to connect resellers and exhibitors

25.04.2025 | 11:06 (UTC -3)

Cultivar Magazine, based on information from Malene Conlong

Agritechnica 2025 will have an unprecedented focus on dealerships, with an emphasis on digitalization as a pillar of efficiency and competitiveness. This year's edition introduces the “Business Matchmaking” format, which brings dealerships and manufacturers closer together. The International Dealer Center returns as a meeting point for the global machinery trade. Registered dealers gain visibility on the event's official website and app.

The sector faces economic and climate uncertainties. Geopolitical crises are putting pressure on prices. High interest rates and unstable policies are hindering investment decisions. Agricultural income fluctuates. Machinery purchases remain cautious.

Even so, investment expectations in Germany have grown. A survey by Rentenbank shows that 64% of farmers plan to invest in 2025. The business climate has improved compared to 2024.

Digitalization, however, poses internal challenges for dealerships. Technologies advance rapidly. Equipment and software require constant training. “Teams need to master digital solutions and present them safely,” says Ralph Königs, segment manager at Agritechnica.

The rural public is increasingly connected. Salespeople and technicians must keep up with this pace. When there is alignment between product and system, sales flow better.

The “Workshop Live 2.0” program is part of the Agribusiness Days and covers topics such as robotics, artificial intelligence and precision agriculture. Young talents are also targeted, with actions aimed at technical training.

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Danish Skov acquires Dutch Sercom

Business strengthens the company's presence in the agricultural sector

25.04.2025 | 08:55 (UTC -3)

Cultivar Magazine, based on information from Ruud Swart

Danish company Skov A/S has announced the acquisition of shares in Dutch company Sercom Regeltechniek BV. The

transaction is part of a new phase of strategic growth.

Sercom, headquartered in Lisse and with over 40 years of experience, develops electronic and automation systems for horticulture and crop storage.

The acquisition reinforces Skov’s strategy of entering the horticultural sector. The company sees the segment as a key market for the future. For Sercom, the transaction creates conditions to accelerate long-term projects and expand its technological reach.

The two companies emphasize that the transaction does not change the service provided to customers and resellers. Technical support, services and partnerships will continue in the same

format. The integration takes advantage of the synergy between the specializations: Sercom's expertise in horticulture and Skov's international presence in farm systems.

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Bayer bets on the strength of its agricultural division to resume growth

In the pharmaceuticals division, the pace of innovation has accelerated

25.04.2025 | 07:22 (UTC -3)

Cultivar Magazine

Bayer entered 2025 under pressure, but with clear goals. The company is banking

on innovation, internal cuts and greater efficiency to overcome the accumulated challenges. During the annual general shareholders' meeting, CEO Bill Anderson detailed the measures adopted and reaffirmed the company's commitment to restoring profitability.

The agricultural division has taken center stage in the strategic plan. The profitability of Crop Science has become a priority. Bayer aims to grow above the industry average, with more than €3,5 billion in additional sales from innovations.

The goal is to achieve an EBITDA margin of over 2029% by 25, excluding special items. The plan includes a portfolio review and full use of the product pipeline. The company will release details on May 13.

The agricultural sector is also at the center of the legal battle in the United States. Bayer is facing thousands of lawsuits related to glyphosate. The company says the litigation threatens the continued existence of the product in the American market. The defense includes lawsuits and political lobbying. The goal is to drastically reduce litigation by the end of 2026.

To maintain room for maneuver in the face of the lawsuits, Bayer is seeking authorization for a possible capital increase of up to 35%, while preserving shareholders' rights. According to Anderson, this authorization is preventive and will only be used if other forms of financing prove unfeasible.

The proposed dividend for 2024 remains at the legal minimum: €0,11 per share. Debt

reduction is also a focus. Net debt fell to €32,6 billion in 2024, but the company intends to continue cutting this figure.

Bayer has carried out administrative restructuring. In two years, it eliminated around 10 positions and reduced the internal hierarchy from 12 to six or seven levels, according to information released. The number of managers has been cut in half. Today, each leader supervises more employees. The goal is to save €800 million by 2025. The savings are part of a larger plan, which seeks to reduce costs by €2 billion by 2026.

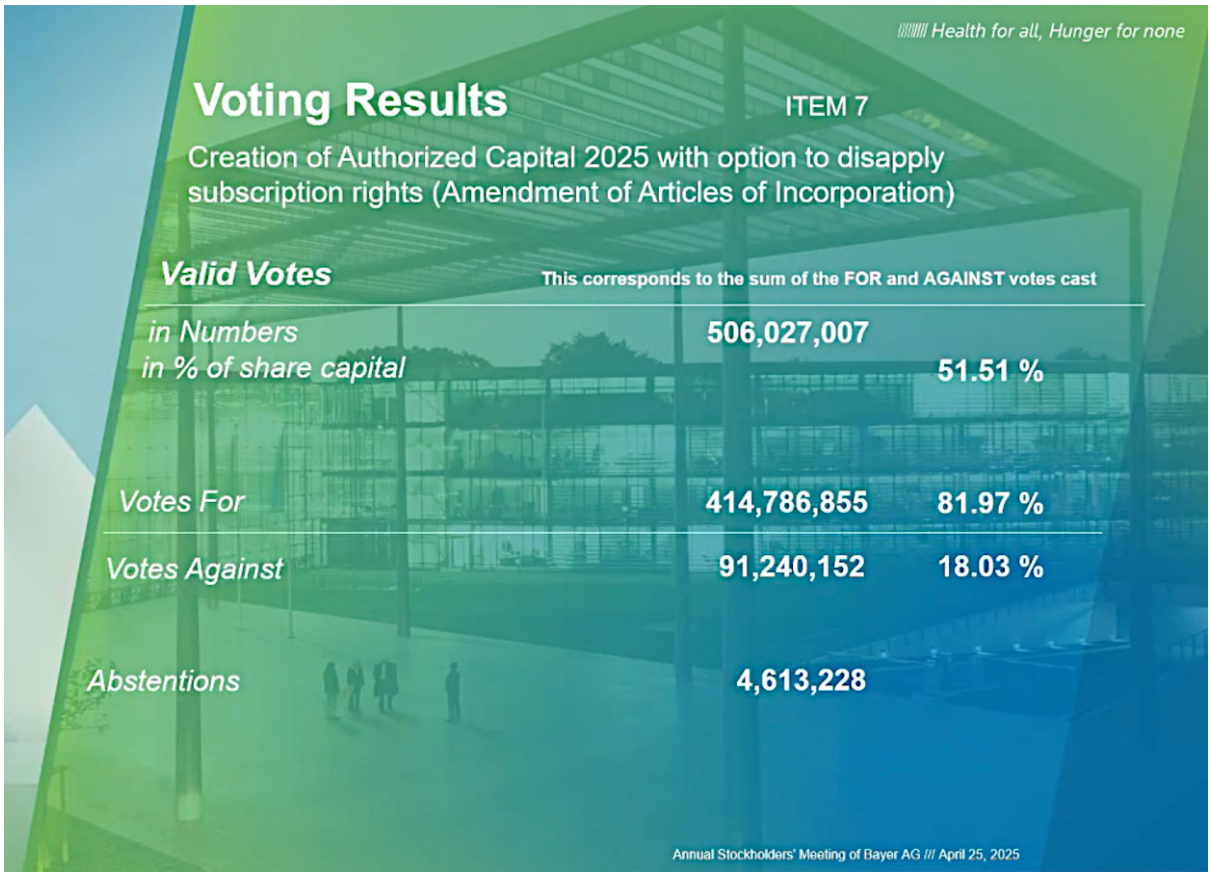
Adjusted sales in 2024 reached €46,6 billion, up 1%. Earnings per share were €5,05, down 21%. Free cash flow amounted to €3,1 billion. For 2025, Bayer expects stable revenues but lower profits and cash. The improvement is projected to start in 2026.

In the pharmaceuticals division, the pace of innovation has accelerated. In less than two years, Bayer has advanced or completed more than 25 clinical trials. Since November 2023, nine phase III studies have shown positive results. The company is launching two new molecules and two new indications in 2024. The intention is to mitigate the loss of revenue due to the expiration of the Xarelto patent, which is expected to impact sales by up to €1,5 billion in 2025. The division is expected to return to growth in 2027.

Anderson expressed optimism about research into cell and gene therapies, especially in the treatment of Parkinson's. He said that no other company has made such great strides in this field. Still, the market for these therapies remains distant.

* * *

UPDATE (25-04-2025, at 12:03 pm): the shareholders authorized the capital increase proposed by the members of the board of directors.



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Anfavea creates tax and foreign trade department

Tax lawyer Andrea Serra will be responsible for the new board

24.04.2025 | 16:25 (UTC -3)

Anfavea, Cultivar Magazine edition

The National Association of Automotive Vehicle Manufacturers (Anfavea)

announced the creation of the Tax and Foreign Trade Directorate, which will be led by Andrea Serra (pictured), a tax lawyer with over 25 years of experience in the private sector, including 15 years at General Motors do Brasil.

With a degree in Law from PUC Campinas and a postgraduate degree from FAAP, Andrea is the first woman to take on a management position in the history of the entity, which is celebrating its 69th anniversary.

According to the president of Anfavea, Igor Calvet, the creation of the new board meets a demand from associated companies for greater attention to tax and customs issues in light of the challenges of the current scenario.

For Andrea, the new position represents an important challenge in strategic areas for the automotive sector, including the light and heavy vehicle segments and agricultural and road machinery.

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CNH expands logistics center in Cuiabá

New warehouse triples storage area and should reduce parts delivery time by up to 50%

24.04.2025 | 15:34 (UTC -3)

Cultivar Magazine, based on information from Renato Parisi Fonseca

CNH has announced the expansion of its distribution center in Cuiabá. The goal is to

speed up the shipment of spare parts and strengthen service to agribusiness in the Central-West region. The new structure, scheduled for delivery in the second half of the year, promises to cut the current delivery time for components in the region in half.

The new center will occupy a space of 8 thousand square meters, almost three times larger than the current one, allowing a significant increase in storage capacity.

With this, the company expands its available inventory and increases the variety of parts, directly benefiting producers in Mato Grosso and Rondônia. The latter region will become part of the company's logistics network, reinforcing its presence in areas of high agricultural

relevance.

“The expansion guarantees greater efficiency, safety and quality in serving producers in this location, which is essential for Brazilian agribusiness,” said Fernando Gaya, executive responsible for the commercial and parts operations area at CNH for Latin America.

The operation will have a specialized logistics partner, responsible for the administration of the center and for storage and distribution routines. The partnership seeks to ensure fluidity in deliveries and modernize the supply system for the Case IH and New Holland brands, both from CNH.

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Cargill launches rail route to import agricultural inputs via Santos

Operation takes fertilizers and pesticides to Mato Grosso and uses the return to export cotton

24.04.2025 | 13:28 (UTC -3)

Cultivar Magazine, based on information from André Guerra

Cargill has launched a rail transport operation between the Port of Santos (SP) and the state of Mato Grosso. The initiative, carried out in partnership with Brado Logística, combines the shipment of agricultural inputs to the interior of the country with the return of containers loaded with cotton for export.

The first shipment took place in March. The operation is expected to be weekly and may increase in volume in the coming months. The company seeks to serve producers more efficiently, especially in regions where access to fertilizers and pesticides is more challenging. By optimizing logistics flows, Cargill offers products at more competitive prices and reduces carbon emissions during transportation.

According to Rafael Felicissimo, responsible for the container trade lane area at Cargill Brazil, the strategy takes advantage of idle containers used to export commodities to transport inputs on the return route. The measure reduces freight costs, avoids waste and contributes to the sustainability of the agricultural chain.

The operation combines rail transport and multimodal infrastructure. Brado, a partner in the project, contributes its expertise in the sector. According to Marcus Nascimento, executive in the company's agricultural inputs area, the solution offers greater predictability, safety and economic efficiency. “We integrate fertilizers and pesticides into operations, with less environmental impact,” he says.

Danilo Rezende, who leads Cargill's crop protection & seeds division, explains that innovative logistics delivers direct benefits to producers. “We offer inputs at more affordable prices, generating savings for our customers,” he says.

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Repsol and Bunge bet on camelina and safflower for biofuels in Europe

Partnership between companies transforms intermediate crops into raw material for fuels with up to 90% lower emissions

24.04.2025 | 07:38 (UTC -3)

Cultivar Magazine, based on information from Bunge

Camelina and safflower are now part of the renewable fuels production chain in Europe. Repsol and Bunge have announced the use of these intermediate crops to generate low-carbon oils, raw materials for HVO (hydrotreated vegetable oil) and SAF (sustainable aviation fuel).

According to the companies, the initiative offers a viable alternative to conventional diesel. The new inputs reduce up to 90% of life cycle emissions. Repsol will apply advanced technology in refineries to process vegetable oils and transform them into fuel. The change is part of the company's strategic plan to eliminate its net emissions by 2050.

The incorporation of non-traditional crops increases the supply of raw materials with

a low carbon footprint. Camelina and safflower grow on fallow land, without competing with food crops. Local farmers earn additional income without compromising food production. Agricultural systems benefit from greater biodiversity and soil recovery.

Julio Garros, co-president of Bunge’s Agribusiness division, highlighted the search for innovative solutions with support for producers. “We invested in plants with greater processing capacity to increase the global availability of sustainable inputs,” he said.

Juan Abascal, Repsol’s executive director of Industrial Transformation and Circular Economy, said that intermediate crops ensure a continuous supply of renewable

raw materials. He pointed to Bunge as a strategic ally, “a world leader in the production of vegetable oils,” in the mission to offer low-emission fuels for transportation and industry.

The camelina (*camelina sativa*) belongs to the cruciferous family. It adapts to poor soils and arid climates. It has a short cycle and high oil content. Safflower (*Carthamus tinctorius*), traditionally used for dyes and edible oil, offers relevant productivity even in semi-arid regions. Both represent resilient alternatives in the face of climate change.

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Brazilian agriculture seeks leadership position at COP30

Sector articulates unified position to demonstrate potential to mitigate the impacts of climate change

23.04.2025 | 15:50 (UTC -3)

Noemi Oliveira

Photo: Gerardo Lazzari

COP 30 could be an opportunity for a constructive vision of agriculture in the climate agenda, as a solution to mitigate this global challenge. In this sense, the sector must continue with its mission of meeting the growing global demand for food, producing more efficiently and sustainably, reducing its carbon footprint.

“How many sectors can appropriate this narrative?” asked Ambassador Roberto Azevêdo, consultant for Abag - Brazilian Agribusiness Association and former Director General of the World Trade Organization (WTO), during the Forum “Towards COP30: Agribusiness and Climate Change”, held this Wednesday (23/4) by Abag. He added that this narrative will only be sustainable if there are two factors: facts and a harmonious

message between the government and the private sector.

The panel featured assessments by Aloisio Lopes, National Secretary for Climate Change at the Ministry of Environment and Climate Change, Alessandro Cruvinel, Director of Support for Agricultural Innovation at the Ministry of Agriculture (Mapa), Felipe Albuquerque, Head of Sustainability Latam at Bayer, Liège Vergili Correia, Director of Sustainability at JBS Brazil, and Regina Teixeira, Senior Director of Government Relations and Corporate Affairs at Pepsico, on other important points for the sector, such as innovation, technology and sustainable practices, connectivity, deforestation and biomethane emissions.

For experts, it is essential to have a participatory agricultural sector that presents what has been done in recent years and its potential for exporting production technology to other countries. In addition, there must be convergence between sectors, government and all players to have an intersectoral coalition, building scalable recommendations based on innovation and technology for the technical and ecological transformation of agriculture to the consumer, thus supporting sustainable development.

“For COP30, it is necessary to have a positive message about agriculture in the climate agenda, that is, how the sector is contributing to the sustainability agenda, presenting innovations to make a

difference. If we do not have this narrative, we will miss the opportunity. It is true that Brazilian agribusiness is a solution for the climate agenda, but this will not be assimilated if it is not well told," he concluded.

opening ceremony

During the opening ceremony, the president of Abag, Luiz Carlos Corrêa Carvalho (pictured above), stated that agribusiness is constantly exposed to the consequences of climate change and, therefore, it is important to seek the sector's position on the issue. "Our mission is to align the entities that make up the Brazilian agribusiness sector, which is a global player in agro-industrial chains,

emphasizing that Brazil can stand out for its biocapacity, since we are living in the century of the bioeconomy. Our sector is part of the solution to mitigate climate change and this position needs to be defended," he emphasized.

André Correa do Lago, president of COP30 and Secretary of Climate, Energy and Environment of Itamaraty, participated remotely, stating that agriculture will be a topic that Brazil wants to emphasize during COP30, with regard to global negotiations, the sector has been treated as a victim of climate change, while in the action agenda, because there will be more flexibility, agriculture can appear as one of the main elements that can contribute significantly to combating climate change.

The ceremony also featured speeches by former Minister Roberto Rodrigues, Professor Emeritus at Fundação Getulio Vargas, Aloisio Lopes, National Secretary for Climate Change at the Ministry of Environment and Climate Change, Guilherme Piai, Secretary of Agriculture for the State of São Paulo, Silvia Massruhá, president of Embrapa, Muni Lourenço Silva Junior, president of the National Environmental Commission of the CNA and president of FAEA, federal deputy Arnaldo Jardim and Dan Ioschpe, Climate High Leve Champion of COP30.

Abag supports new FGV study

The Getulio Vargas Foundation (FGV) will launch a new study with the support of Abag, the Brazilian Rural Society (SRB) and the Equilíbrio Institute, using data that is relevant to reality, feasible scenarios and robust analysis tools, to answer the question: “What is the potential for productive sustainability in agriculture?” The first step, according to Talita Priscila Pinto, coordinator of the FGV Bioeconomy Observatory, was the development of an economic model with the most important information related to the sector.

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Chinese beetle demonstrates effectiveness in controlling fall armyworm

Study confirms that Calosoma chinense may contain populations of Spodoptera frugiperda

23.04.2025 | 15:19 (UTC -3)

Cultivar Magazine

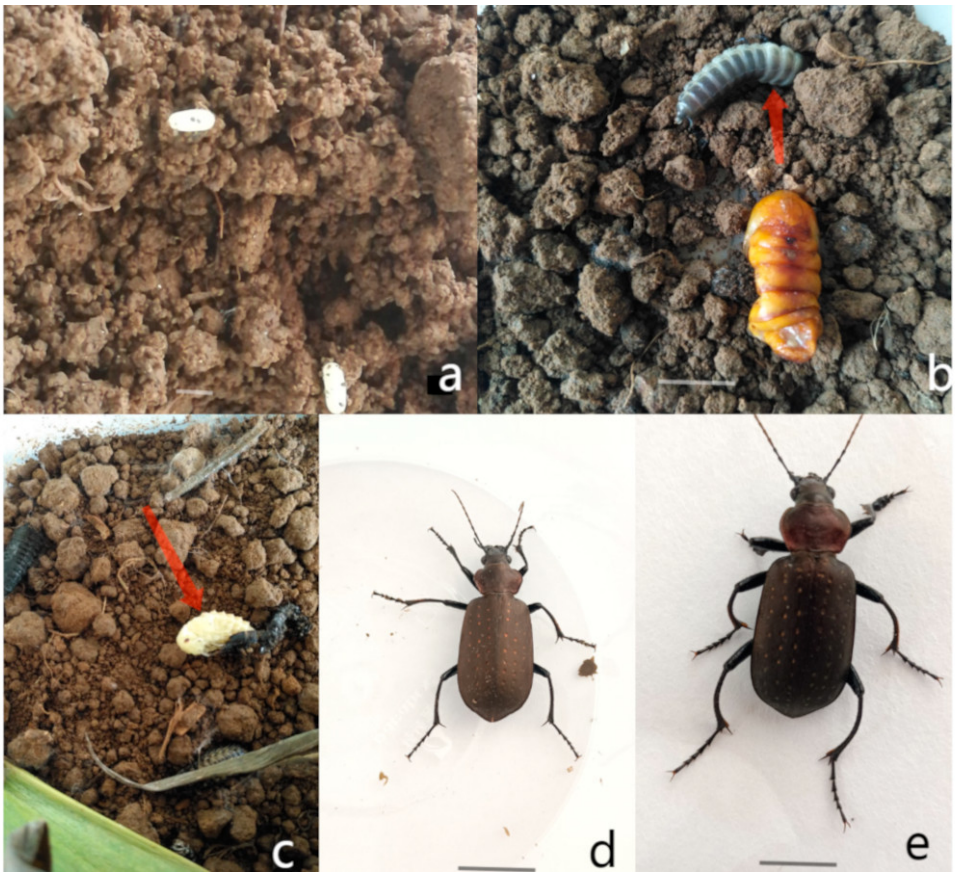
The predatory beetle *Calosoma chinense*, known in China as the “King of Appetite”, has demonstrated a high ability to control Spodoptera frugiperda, popularly called the fall armyworm.

The study, conducted by researchers from the Plant Protection Institute of the Henan Academy of Agricultural Sciences, evaluated the insect's predatory behavior in the laboratory. The results revealed that both larvae and adults of *C. chinense* attack different stages of the invasive caterpillar, including larval and adult forms.

Since the introduction of *S. frugiperda* in China in 2019, the pest expanded to the northern and southern producing regions, threatening the country's food security. Growing resistance to insecticides has

aggravated the situation. The use of local natural enemies has come to be considered a priority strategy for sustainable pest management.

In the experiment, adult females of *C. chinense* consumed up to 38,9 first-instar caterpillars per day, the highest number among all stages tested. Third-instar larvae also exhibited expressive performance, especially against young larvae of *S. frugiperda*. The predator's food preference fell on the initial stages of the pest, with a negative tendency for more advanced instars and adults.



Morphological characteristics of *Calosoma chinense*: **(a)** eggs; **(B)** second stage larva; **(C)** pupa; **(D)** adult female; **(E)** adult male. Scale bar = 1 mm

The study identified that the *C. chinense* maintains active hunting behavior, using its upper jaw to capture and consume prey. Tests have shown that even small beetle larvae can subdue larger caterpillars. The attack follows a pattern: search, approach, attack, piercing of the tegument and extraction of body fluid. Hard remains,

such as the head capsule, often remain after predation.

Researchers validated the identity of the predator using morphological methods and sequencing of the mitochondrial COI gene, confirming that it was *Calosoma chinense*. This beetle occurs in several Chinese provinces and adapts well to the agroecological conditions of the corn-producing zone in the Huang-Huai-Hai belt.

In addition to the strong predatory capacity, *C. chinense* demonstrated defensive behavior. When attacked by larger prey or after reaching satiety, it expels white secretions with an unpleasant odor. This chemical defense, typical of Carabidae, indicates an effective survival

mechanism.

The type II functional response model described in the study showed that as prey density increases, the consumption rate increases until a saturation point. This pattern suggests that *C. chinense* can reduce populations of *S. frugiperda* even at low initial densities, a desirable characteristic in biological control agents.

The comparative analysis between males, females and larvae of the predator indicated that adult females surpass the others in predatory efficiency, followed by males and third instar larvae. However, no significant difference was observed between these three groups regarding predation of more developed prey.

Third instar larvae and adult females and males of *Calosoma chinense* preyed on the larvae of *Spodoptera frugiperda*: **(a)** third instar larva of *C. chinense* attaching itself to a fifth instar larva of *S. frugiperda*; **(B)** after attachment, the third instar larva of *C. chinense* feeding on the fifth instar larva of *S. frugiperda*; **(C)** adult female of *C. chinense* feeding on third instar larvae of *S. frugiperda*; **(D)** adult male of *C. chinense* feeding on third instar larvae of *S. frugiperda*; **(E)** adult female of *C. chinense* feeding on fifth instar larvae of *S. frugiperda*; **(f)** adult male of *C. chinense* preying on fifth instar larvae *S. frugiperda*.

Although the laboratory results are promising, the authors caution that factors such as temperature, humidity, habitat structure and the presence of alternative prey may affect the predator's performance in the field. Additional testing in real-world

conditions is recommended to validate the potential of *C. chinense* in agricultural areas.

The predator also has advantages over parasitoid natural enemies, as it quickly eliminates its prey, preventing them from continuing to feed on the plants. This can reduce direct damage to the crop, especially in the most critical stages of corn development.

Besides *S. frugiperda*, *C. chinense* preys on other pests of agricultural importance, such as *Mythimna separates*, *Spodoptera litura* e *Pieris rapae*. This expanded food spectrum can make it a key part of integrated pest management (IPM) programs.

There are records of *Calosoma chinense* in China, Korea, Japan and Russia. There are no records of this insect in Brazil.

More information can be found at

doi.org/10.3390/insects16050437

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BASF announces Eduardo Gradiz Filho as head of business operations

Executive assumes strategic position and brings experience in agritech, private equity and finance

23.04.2025 | 10:02 (UTC -3)

Cultivar Magazine, based on information from Vitorya Paulo

Eduardo Gradiz Jr.

BASF Agricultural Solutions announced Eduardo Gradiz Filho as the new head of business operations in Brazil. He holds a degree in Economics from FAAP and has worked at Insper, IESE Business School and Harvard Business School.

Gradiz has 12 years of experience in multinational companies. He founded a marketplace platform focused on agriculture and an investment holding company focused on FMCG and agribusiness. He worked in the private equity sector, deepening his skills in investment structuring and strategic analysis.

At BASF, he will lead the areas of controlling, finance, structured operations, barter and internal processes. According to

him, the focus will be on agility and producer orientation.

“I want to increasingly bring entrepreneurial culture into BASF,” he says. The goal: to accelerate the company’s transformation into a flexible platform, adapted to the new demands of the agricultural market.

The timing of the executive's arrival coincides with the consolidation of financing alternatives in the sector. Modalities such as "barter", FIDC and Fiagro are gaining ground. In 2024, 43% of BASF's sales in Brazil will be made through these means.

Marcelo Batistela, vice president of BASF Agricultural Solutions, highlights the importance of the choice. “We have a solid

foundation. Now, we are looking to increase the level of sophistication," he explains. Batistela is banking on Gradiz's experience in trading, finance and new business models as a competitive advantage.

Jose Roberto Louzado Junior

The change also reflects the company's internal repositioning. José Roberto Louzado Junior, who led business operations, takes over as sales director in Mato Grosso. He worked for the company

for 18 years, working in areas such as commodities, sales and marketing.

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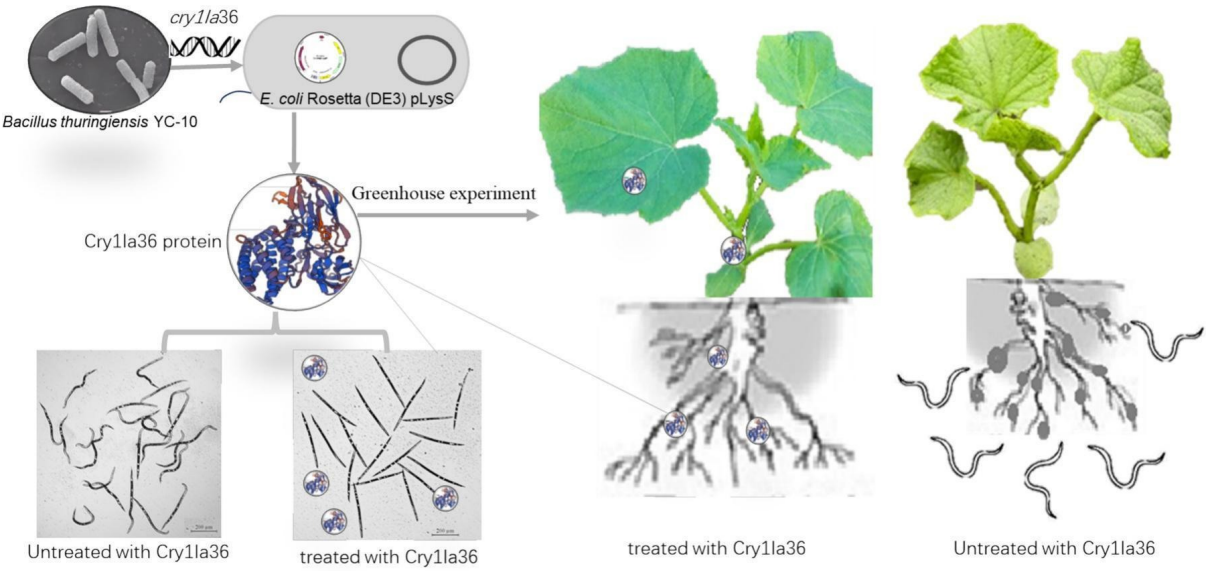
Cry1Ia36 protein shows unprecedented efficacy against root-knot nematodes

According to researchers, protein controls Meloidogyne incognita with efficiency comparable to chemical nematicides

23.04.2025 | 09:26 (UTC -3)

Cultivar Magazine



The Cry1Ia36 protein, produced by the bacteria Bacillus thuringiensis (Bt), showed effective nematicidal activity against Meloidogyne incognita. The discovery was made by a group of researchers from the Hunan Academy of Agricultural Sciences in China.

Expressed in *Escherichia coli*, Cry1Ia36 caused the death of 50% of the second stage juveniles (J2) of the nematode at a concentration of 12,79 mg/L after 96 hours. In greenhouse experiments, the treatment reduced the formation of galls in cucumber roots by up to 76,95%, a performance comparable to that of the nematicide avermectin.

The data obtained indicate that the protein can cross the nematode's stylet, reach the

digestive tract and undergo changes in its molecular mass after ingestion. The reduction in size suggests an activation process similar to that which occurs in insects, which raises hypotheses about a mechanism of action conserved among distinct taxa.

Genetically modified tomato plants to express Cry1Ia36 confirmed the protein's potential. The transgenic plants showed 49,26% efficacy in controlling the nematode. Furthermore, they did not show adverse effects on growth, indicating the absence of phytotoxicity.

Transcriptome analyses revealed significant alterations in the genes of nematodes exposed to the protein. The affected pathways involve translation,

ribosomal structure, post-translational modification, energy metabolism and stress response. These data reinforce the systemic impact of Cry1Ia36 on the parasite.

Furthermore, protein-protein interaction tests identified a protein of *M. unexplained*, called Mi-P, which binds to Cry1Ia36. Silencing of the Mi-P gene reduced the susceptibility of nematodes to the protein, suggesting that this interaction plays an essential role in the toxic effect.

According to scientists, Cry1Ia36, originating from the YC-10 strain of Bt, represents a previously undocumented variant with action against nematodes. Its gene has 2160 base pairs and encodes an 81 kDa protein, divided into three

functional domains. The 99,9% similarity with other existing Cry1Ia and a single amino acid substitution indicate specific potential for action.

More information can be found at

doi.org/10.1016/j.pestbp.2025.106419

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Yellow rust on wheat surprises in the UK

Unexpected attacks on resistant varieties intrigue producers and researchers

23.04.2025 | 07:43 (UTC -3)

Cultivar Magazine

Photo: Niab

Yellow rust has been causing concern in the UK, with a high incidence of wheat varieties such as KWS Dawsum, Typhoon and Champion, which have an official resistance rating of 8 or 9 at the mature stage. These cultivars have been affected in Niab's experimental fields in the North East of England, according to Kostya Kanyuka, head of pathology at the institution.

The UK Cereal Pathogen Virulence Survey (UKCPVS) has recorded a significant increase in yellow rust samples from these varieties. Researchers are investigating whether the outbreak is the result of a new incursion of the pathogen from outside the UK, or whether a local landrace has evolved to overcome resistance genes such as Yr15, which is responsible for so-

called all-stage resistance (ASR). The full analysis will be published by AHDB.

While the breakdown of ASR genes could compromise resistance in adult stages, Kanyuka points out that some varieties may have additional adult plant resistance (APR) genes that could manifest later in the season.

Because breeders do not routinely disclose the genetic makeup of cultivars, the presence of these genes is still uncertain, but offers hope for crop protection.

So far, the fungicide tebuconazole has proven effective as an eradicant against this race of yellow rust. However, the virulence of the pathogen, especially the speed at which new generations of spores

are produced, is still under study.

To protect crops, T1 and T2 spray programs should combine eradicant and protectant properties, with application intervals no longer than three or four weeks, as recommended.

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Goiás registers new suspected cases of greening in citrus

Agrodefesa has been working to prevent the quarantine pest from spreading in the region

22.04.2025 | 17:19 (UTC -3)

Fernando Dantas

The Goiana Agricultural Defense Agency (Agrodefesa) identified plants with

symptoms of HLB (Greening) in ponkan tangerine orchards in the municipality of Anápolis (GO). The samples were sent to the Federal Agricultural Defense Laboratory (LFDA-GO) for confirmation.

The detection is part of a phytosanitary survey carried out from October 2024 to February 2025, which covered 2.563 hectares of commercial citrus in Goiás. The action aims to maintain the state's phytosanitary status against quarantine pests, such as HLB and Citrus Canker.

According to Agrodefesa, immediate containment measures were adopted, including guidance to producers, control of the transmitting psyllid and continuous monitoring. In addition to Anápolis, HLB had already been detected in Campo

Limpo de Goiás and Quirinópolis.

The Agency reinforces the importance of using certified seedlings and reporting illegal trade in citrus seedlings. According to the president of Agrodefesa, José Ricardo Caixeta Ramos, constant monitoring and collaboration between the public sector and producers are essential to protect citrus farming in Goiás and maintain its competitiveness.

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Brazilian fruits see a 24,7% increase in export volume

Strong international demand and weather conditions favored growth in the first quarter of 2025

22.04.2025 | 15:58 (UTC -3)

Telma Tuesdays

The Brazilian fruit sector had an impressive performance in the first quarter

of 2025. According to data from the Brazilian Association of Fruit Producers and Exporters (Abrafrutas), through the AgroStat platform of the Ministry of Agriculture (Mapa), total fruit exports totaled around US$ 280 million, which represents an increase of 1,47% in value and 24,78% in volume, compared to the same period in 2024.

Highlights of the period include melon (US$ 70,9 million and 93,2 thousand tons), with growth of 22,68% in value and 24,55% in volume; watermelon (US$ 32,1 million and 52,9 thousand tons), with an increase of 90,88% in value and 90,15% in volume; lemon/lime (US$ 40,2 million and 47,6 thousand tons), with an increase of 7% in value and 20,38% in volume; and banana (US$ 5,8 million and 15 thousand

tons), which grew 74,26% in value and 131,22% in volume.

The good performance of these fruits is attributed to the heated international demand, the sector's investments in quality, technology and logistics, the opening of new markets and also the favorable weather conditions during the 2024/2025 harvest, which contributed to the quality standard required by the foreign market.

Apples also showed a strong recovery, with growth of 93,64% in value and 85,63% in volume, a direct result of a more regular harvest, after losses caused by climate events in the previous season in the main producing regions in the South of the country.

Despite the positive scenario in the quarter, some fruits showed a drop in exports. Mangoes had a 48,94% drop in value and 13,01% in volume, while grapes fell 23,13% in value and 9,37% in volume. The result in both crops can be attributed mainly to the heated domestic market with competitive prices in relation to exports.

For Abrafrutas president Guilherme Coelho, the numbers are encouraging. “These results reflect the efforts of the production sector, the investment in quality and logistics, and the opening of new markets. This growth shows that we are on the right track to consolidate Brazil as a global reference in tropical fruits. Even with occasional drops in some fruits, the balance is very positive.”

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Igor Calvet takes over as President of Anfavea and Sinfavea

Calvet succeeds Márcio de Lima Leite, who presided over Anfavea in the three-year period 2022 – 2025

22.04.2025 | 14:57 (UTC -3)

Anfavea

The National Association of Automotive Vehicle Manufacturers (Anfavea) will be

chaired today by Igor Calvet (pictured), the 21st president of the organization founded in 1956, and the first in its history without any connection to one of the associated manufacturers, in an unprecedented change to the governance system. Calvet succeeds Márcio de Lima Leite, who chaired Anfavea for the three-year period 2022-2025. Leite joins 30 other Vice-Presidents on the Association's new Board of Directors, all of whom represent one of the 26 associated companies.

Igor Calvet, 40, has experience at Anfavea, an entity of which he was Executive Director for the past 18 months. Previously, he served as Secretary at the Ministry of Development, Industry, Commerce and Services (MDIC), Special Secretary at the Ministry of Economy and

as President of the Brazilian Agency for Industrial Development (ABDI), accumulating strategic knowledge about the sector.

Calvet holds a degree in International Relations from the University of Brasília (UnB), and a master's degree in Political Science from the same institution. His career combines experience in the public sector and institutional articulation, fundamental attributes to strengthen Anfavea's representation and contribute to the sustainable development of the automotive industry in Brazil.

“Anfavea plays an essential role in Brazil, representing a sector that accounts for 20% of the industrial GDP and generates 1,3 million direct and indirect jobs. Our

commitment to the automotive industry and its broad transformation, with a focus on local production, competitiveness, new technologies and sustainability, continues to be our priority, in addition to expanding our operations in other markets. Together with our stakeholders from the public and private sectors, especially our suppliers and distributors, we will continue to build the success story of this sector in Brazil," said Calvet during the Board of Directors transition ceremony at the headquarters of the Federation of Industries of the State of São Paulo (FIESP).

Calvet also becomes President of the entity's union arm, the National Union of the Tractor, Truck, Automobile and Similar Vehicle Industry (Sinfavea).

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Flavio Centola takes over as FMC's marketing director for Latin America

He has a degree in agronomy from USP and an MBA from The Wharton School.

22.04.2025 | 14:01 (UTC -3)

Cultivar Magazine

Flavio Centola has been appointed Marketing Director for Latin America at FMC. With over 20 years of experience in the sector, he takes on the challenge of driving communication and innovation strategies.

The executive worked for many years at FMC itself. He started as a technical assistant in 2005. He left in 2018, when he was working as the herbicide portfolio manager for North America.

From 2018 to 2025, he worked at Adama, a company where he led the herbicides sector globally. His last position was as head of the Asia commercial unit.

He has a degree in agronomy from USP and an MBA from The Wharton School.

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Case IH has a new marketing director for Latin America

Leandro Faruoli, who took on the role, has worked at the CNH group for several years

22.04.2025 | 10:28 (UTC -3)

Cultivar Magazine

Leandro Conde Faruoli has taken on the role of Marketing and Communications Director for Latin America at Case IH. He has over 15 years of experience in marketing and people management.

Before joining Case IH, he worked in other areas of the CNH group. His academic background includes a degree in marketing and postgraduate degrees.

At CNH, Leandro held leadership positions in marketing and communications. He was responsible for branding strategies, institutional communications and product marketing.

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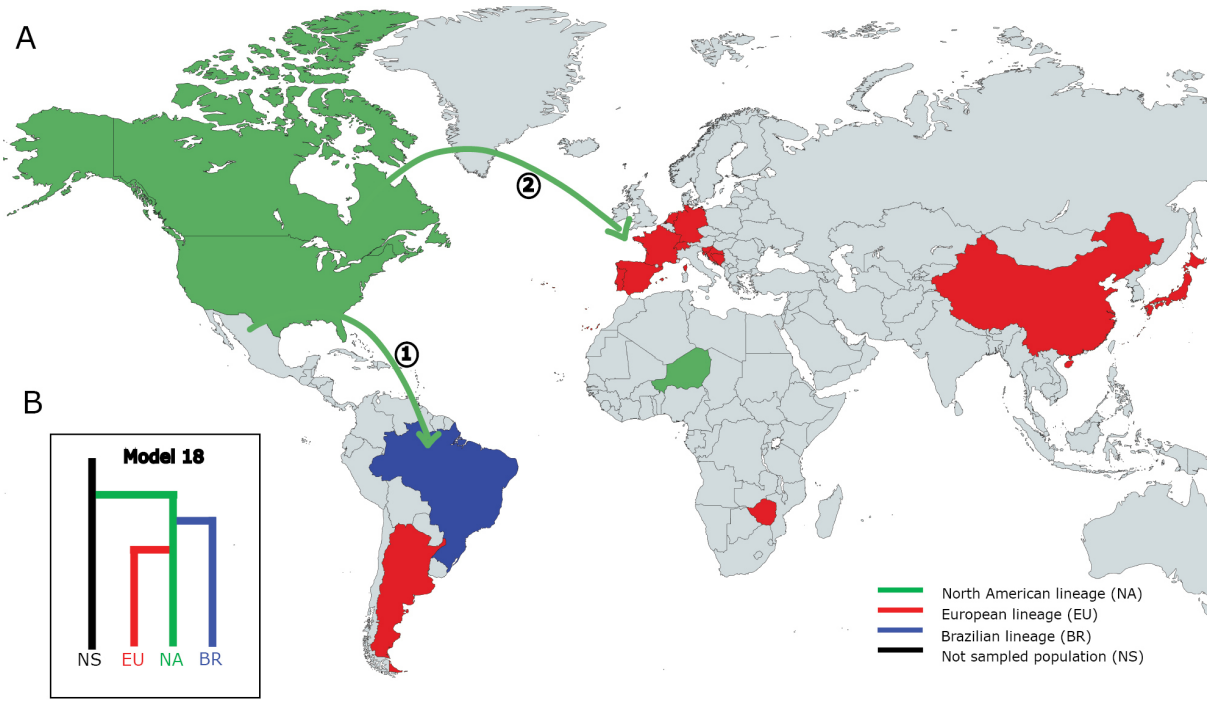
Corn anthracnose fungus has Mesoamerican origins

Genetic analysis of the fungus revealed three lineages: North American, Brazilian and European

22.04.2025 | 09:04 (UTC -3)

Cultivar Magazine, based on information from Cristina Tordin



(A) Map showing a likely colonization route of *C. graminicola* reconstructed by Approximate Bayesian Computation (ABC) using 208 isolates from 17 countries. Different colors indicate distinct lineages and arrows indicate divergence events: (1) first divergence event from North America to South Africa; (2) second divergence event from North America to Europe. **(B)** demographic model with the greatest support was selected based on random voting of the forest population.

Researchers from 17 countries have identified that the fungus Colletotrichum graminicola, responsible for corn anthracnose, has three genetically distinct lineages, with a likely origin in Mesoamerica. The global spread of the pathogen, driven by natural factors and the exchange of contaminated seeds, raises concerns about new outbreaks, especially in Europe, where the most virulent lineage has been detected.

The research, which involved 212 isolates from five continents, concluded that the exchange of contaminated seeds played a crucial role in the spread of the pathogen.

Genetic analysis of the fungus revealed three lineages: North American, Brazilian and European. The North American

lineage was identified as the oldest, while the European lineage proved to be more virulent, which worries experts due to the risk of new outbreaks of the disease.

Produção mundial de milho e principais doenças

País	Produção anual (milhões/toneladas)	Principal doença
Estados Unidos	380	Ferrugem Comum (*Puccinia sorghi*)
China	280	Mancha Branca (*Phaeosphaeria maydis*)
Brasil	120	Antracnose (*Colletotrichum graminicola*)
Argentina	50	Podridão de Colmo (*Fusarium* spp.)
Ucrânia	40	Mancha de Ascochyta (*Ascochyta* spp.)

World production and main diseases of corn - Source: Embrapa

According to researcher Flávia Rogério, from the University of Salamanca and the University of Florida, the European lineage could bring new challenges to controlling the disease, with the possibility of outbreaks like those that devastated crops

in the United States in the 1970s, resulting in losses of up to 100% in plantations.

The migration of the fungus was also analyzed, identifying genetic exchange between Argentina and Europe. The research suggests that the use of contaminated seeds in winter nurseries in South America facilitated this process.

The fungus' ability to adapt and migrate globally has been driven by genetic recombination, a phenomenon that increases the pathogen's diversity and can alter its virulence.

The researchers also observed that geographic distance influences the fungus' genetic variation. The analysis revealed that up to 35,8% of this variation can be explained by the geography of populations,

highlighting the fungus' mobility, which is fueled by both natural processes and human intervention.

Furthermore, it was observed that 80% of the isolates analyzed show signs of genetic mixing, which increases the complexity of developing anthracnose-resistant corn varieties.

More information can be found at
doi.org/10.3897/imafungus.16.138888

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Bacteria use chemical strategy to escape plant defenses

Plants typically detect invaders through molecular patterns associated with pathogens

22.04.2025 | 07:48 (UTC -3)

Cultivar Magazine

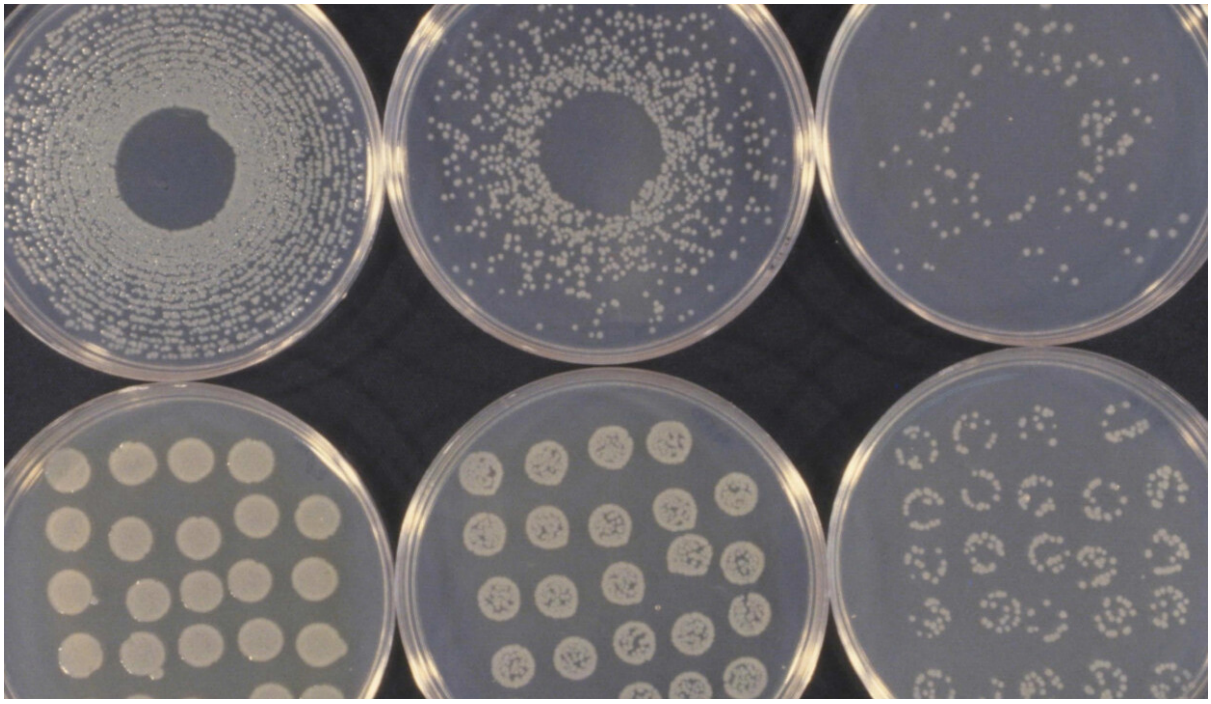

Photo: Howard F. Schwartz

A study has revealed that pathogenic bacteria use a clever chemical strategy to

bypass the plant immune system, producing a molecule called glycosirin that masks their presence and weakens the crop's defenses. This discovery could pave the way for the development of more resistant plants.

The work shows bacteria *Pseudomonas syringae* using glucosirin to trick plants.

Plants typically detect invaders through pathogen-associated molecular patterns (PAMPs), such as flagellin, a protein found in bacterial flagella. Plants remove the sugar coatings from flagellin with enzymes, exposing the bacteria and triggering immune responses.

However, glycosirin blocks these enzymes, keeping flagellin hidden and allowing bacteria to multiply undetected.

“This strategy not only prevents plants from recognizing bacterial invaders, but also interferes with other aspects of plant defense,” explains Frank Schroeder of the Boyce Thompson Institute.

The molecule alters sugar patterns in plant proteins and causes sugary compounds to build up, creating an environment that favors bacterial growth while suppressing plant immunity.

This tactic is widely used, with glycosirin-producing genes found in several plant pathogens.

The findings have significant implications for agriculture, as understanding this chemical warfare could lead to the development of genetically modified crops with greater resistance to bacterial

diseases.

Furthermore, the unique structure of glucosirin may inspire new pharmaceutical applications, similar to imino sugars used in the treatment of conditions such as type II diabetes.

More information can be found at

doi.org/10.1126/science.adx0288

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ICL acquires majority of Lavie Bio activities

Lavie Bio’s existing agreements with its current partners will not be transferred to ICL

21.04.2025 | 15:41 (UTC -3)

Cultivar Magazine, based on information from Evogene

Evogene Ltd. announced the signing of an agreement under which ICL has acquired

a majority stake in Lavie Bio Ltd., its subsidiary specializing in agricultural biologicals. The agreement includes the acquisition of Evogene’s MicroBoost AI for AG platform. The transaction is expected to close in the second quarter of 2025, subject to satisfaction of customary closing conditions.

The assets transferred to ICL include Lavie Bio's core team, BDD technology platform, microbial bank, company data, most of the company's development programs and commercial products.

On the other hand, Lavie Bio's existing agreements with its current partners will not be transferred to ICL, which could generate future revenues for Lavie Bio shareholders.

“Today marks a significant milestone in Lavie Bio’s journey,” said Amit Noam, CEO of Lavie Bio.

“By combining our capabilities with ICL’s expertise, we will be able to further accelerate the development of innovative ag-biological products, offering solutions to farmers around the world,” explained Noam.

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*The **Cultivar Semanal** magazine is a technical and scientific publication focused on agriculture in Brazil.*
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revistacultivar.com

CONTACT
editor@grupocultivar.com
comercial@grupocultivar.com