4.Oct.2025

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Cultivar Semanal

Discovery that could change control

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New detection of Amaranthus palmeri in North Dakota

Invasive species has appeared in Adams County and is causing concern due to its rapid spread.

03.10.2025 | 10:35 (UTC -3)

Cultivar Magazine, based on information from NDSU

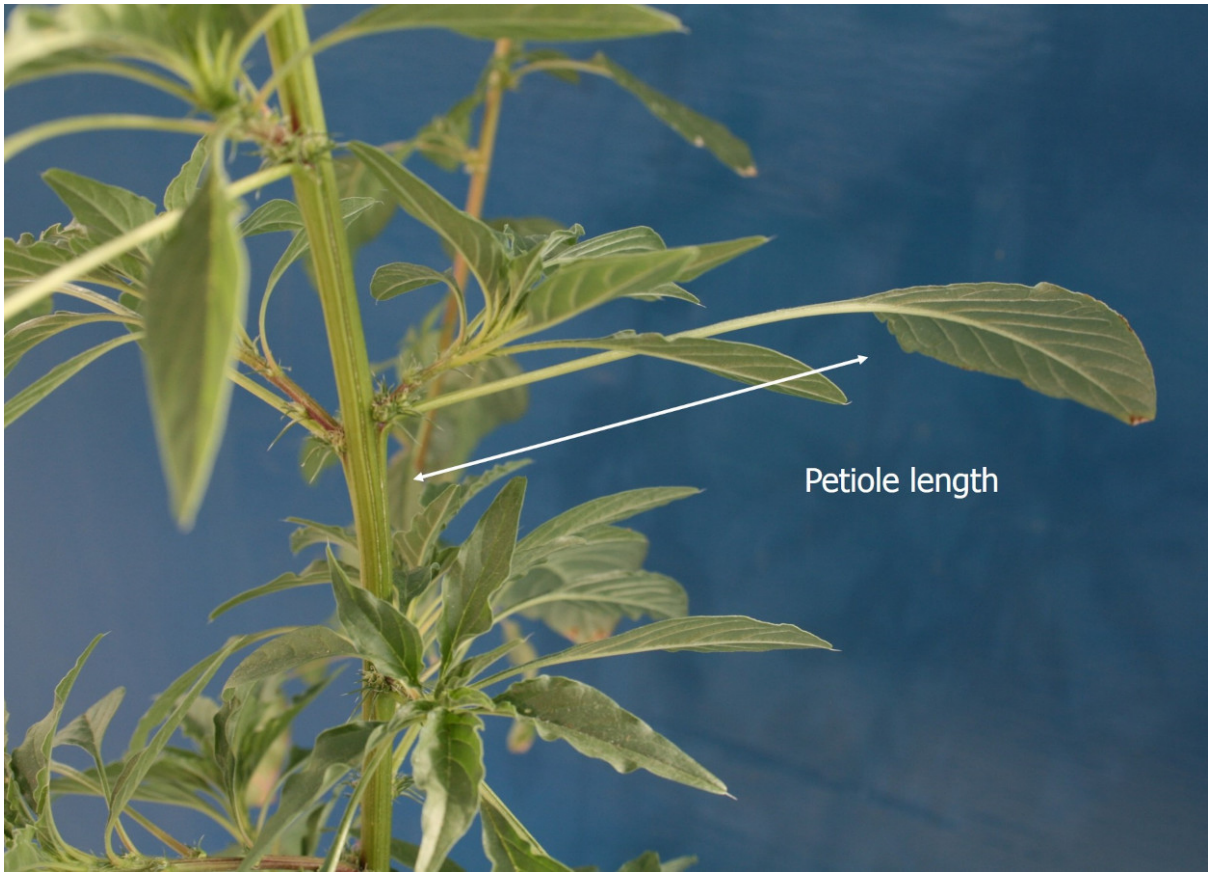

Photo: NDSU

The invader *Amaranthus palmeri* was confirmed in Adams County, North Dakota, United States. A local farmer found suspicious plants while mowing vegetation along the edges of a field and contacted an expert from North Dakota State University (NDSU). Samples were analyzed by the National Agricultural Genotyping Center, which confirmed the presence of the invasive species.

The plant is considered one of the most aggressive weeds. In the United States, it can grow up to 5 cm per day and produce up to 500 seeds per individual. It develops resistance to several herbicides and can disrupt corn, soybean, sorghum, and cotton crops.

Dispersal occurs through contaminated seeds, agricultural equipment, animal feed, livestock bedding, manure, and even wildlife. The species causes significant damage in states such as Nebraska, South Dakota, and Minnesota. It is now threatening to expand into western North Dakota.

Agriculture Commissioner Doug Goehring asked for public cooperation. Producers should contact county weed inspectors and report any suspicious plants. Monitoring and immediate containment are crucial to prevent the infestation from spreading.

other reports

In this year 2025, there were also reports of *Amaranthus palmeri* in Turner County, South Dakota. This brings the total number of affected counties in the state to 18. The plant has been present in areas such as Brookings, Charles Mix, and Hyde since previous years.

In Hill County, Montana, an isolated plant was found in August near a grain silo, marking the fourth confirmed instance in the state.

In Minnesota, there have been five reports of suspected new sites, but none have yet been confirmed. Four active sites from previous years remain under management.

In other states, such as Oregon, efforts focus on controlling existing infestations.

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Male substance attracts female corn leafhopper

Researchers discover evidence of volatile-mediated sexual chemical communication in Dalbulus maidis

02.10.2025 | 07:02 (UTC -3)

Cultivar Magazine

Photo: Mauricio Paulo Batistella Pasini

Males of the corn leafhopper (*Dalbulus maidis*) emit volatile compounds that

attract females. This behavior was identified by researchers from Embrapa and the University of Brasília. They explain that this is the first evidence of volatile-mediated sexual chemical communication in D. maidis. It is also the first record of its kind in the entire superfamily Membracoidea, to which the species belongs.

The experiment showed that females actively seek out odors emitted by males, both live and collected volatile extracts. Males, on the other hand, avoid odors emitted by stressed females, suggesting the emission of an alarm pheromone.

Behavior tests

Behavioral tests were conducted using bioassays using a Y-shaped olfactometer. In the experiment, one insect at a time was exposed to a choice between two odor sources. Dwell time and first choice indicated behavioral preference.

Females demonstrated significant attraction to males and extracts obtained from male aeration, compared to clean air and solvent control. They also approached the mixture of males and females. On the other hand, they showed no preference between females and clean air.

Photo: Charles Martins de Oliveira, Embrapa

Males showed no interest in the scents of other males or in extracts from females. They avoided the scent of females not acclimated to the experimental environment, suggesting rejection due to possible chemical signals of stress or threat.

Chemical analysis

Chemical analysis of the compounds identified 30 volatile substances in the extracts from both sexes, with no qualitative distinction between males and females. The composition included aldehydes, linear hydrocarbons, and monoterpenes such as alpha-pinene, beta-pinene, limonene, and linalool. Plant-derived compounds such as DMNT and cyclosativene, associated with corn, were also identified. The analyses were performed using gas chromatography coupled with mass spectrometry.

It was not possible to determine precisely which specific substance acts as a sex pheromone. The absence of compounds

exclusive to males raises the hypothesis that the active volatiles are produced in extremely low quantities, below the detection limit of the equipment. Even so, the behavioral response of females indicates a likely sexual attraction function.

Selection of males for testing

The males used had been in the colony for at least two generations. They were randomly selected without controlling for age or mating history. Some individuals had already mated. Even so, they remained attractive to females. This suggests continued emission of volatiles after mating, a behavior already recorded

in other species.

Photo: Charles Martins de Oliveira, Embrapa

Female leafhoppers mate only once in their lifetime, while males copulate multiple times. The continued emission of chemical signals after mating may indicate an evolutionary advantage and the relevance of pheromones as an attraction tool. This finding expands the potential use of these

compounds in pest management.

Volatile collection was performed using glass chambers with a continuous flow of filtered air and adsorption of compounds in tubes with a specific polymer. The insects remained in the chambers for 24 hours. When kept without food for longer periods, mortality increased. The restriction on the time without food was necessary to avoid interference from compounds emitted by the plants or the substrate.

Other studies with bedbugs show that lack of food can affect the emission of sex pheromones. *Euschistus heros*, for example, pheromone production ceases after 24 hours without feeding. In the case of the corn leafhopper, the insects were fed until the beginning of the experiments,

which may have allowed them to maintain their ability to emit chemical signals during the collection period.

Chemical communication

Chemical communication via sex pheromones is rarely described between leafhoppers and their close relatives. Until about a decade ago, there was no confirmed record of sex pheromone in the suborder Auchenorrhyncha. The first sign came with the identification of an aggregation pheromone in Callitettix versicolor. Subsequent studies with *philaenus spumarius* e *Lycorma delicatula* indicated attraction between the sexes

mediated by bodily or volatile extracts, but without structural identification of the substances involved.

The discovery of similar behavior in *D. maidis* opens up potential applications in pest control. Pheromone-baited traps can enable population monitoring. Furthermore, the use of the substance in sexual confusion or attract-and-kill techniques has already shown promising results in other agricultural pests.

Similar systems are employed in the control of *Tuta absoluta* (tomato moth), *Euschistus heros* (brown stink bug) and *Mole Grapholite* (Oriental apple moth). In all cases, the pheromone helps reduce insecticide use and optimize integrated management.

Volatile compounds

In the corn leafhopper, the lack of a defined population threshold for initiating control makes the use of behavior-based technologies especially relevant. The insect transmits pathogens even at low population densities. Any strategy that reduces contact between the insect vector and the host plant can minimize the impact of associated diseases.

The use of volatile compounds may also help explain the aggregation behavior observed in the field. As with aphids and leafhoppers of other species, individuals of *D. maidis* tend to concentrate on certain plants. This can occur through the emission of chemical attraction signals,

such as with aggregation pheromones.

Furthermore, the avoidance behavior observed in males toward stressed females suggests possible alarm pheromone emission. This hypothesis reinforces the complexity of the species' chemical communication system.

The research was conducted by Mateus Souza Sanches, Miguel Borges, Raul Alberto Laumann, Charles Martins Oliveira, Marina Regina Frizzas and Maria Carolina Blassioli-Moraes.

Further information at doi.org/10.3390/insects16101021

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Case IH launches new Optum tractor series

Official presentation takes place at Agritechnica 2025, in Germany

01.10.2025 | 13:23 (UTC -3)

Cultivar Magazine, based on information from Silvia Kaltofen

Case IH announced the launch of the new Optum tractor series with three models: 360, 390, and 440. The machines offer up

to 435 hp, a new Cursor 9 engine, and integrated precision technology. The manufacturer promises increased productivity with fewer downtimes, greater fuel economy, and extended maintenance intervals.

The new line's highlight is permanent connectivity with no subscription fees. All models include telemetry, Isobus (ISO 11783) compatibility, and Intelligent Implement Management (TIM). The technology package also includes FieldOps, a platform for remote control of agronomic and machine data.

With a 6,1-meter turning radius and transport speeds of up to 60 km/h, these tractors offer agility in the field and on the road. The central tire inflation system allows for quick pressure adjustments when changing terrain. Independent suspension on the front axle and improvements to the brakes, transmission,

and hydraulics increase control and power.

Cabin comfort

The cabin's comfort has also been improved. Operators benefit from wider access steps, an integrated toolbox, and a water reservoir for hand hygiene. The cabin has new suspension options and ergonomic reinforcements.

The new 4x2 CVXDrive transmission improves power transfer to the ground. The models also feature an updated power take-off (PTO) and a new hydraulic system with dual pumps, ready for high demands. The third rear point has increased lifting capacity, and changing implements has been simplified with new weights and

blocks up to 2.000 kg.

The series will be officially presented at Agritechnica 2025, from November 9th to 15th, in Hanover, Germany. Prices and sale dates have not yet been announced.

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Corteva Announces Spin-Off: Seeds and Crop Protection

Company will split operations into two independent companies by 2026

01.10.2025 | 08:37 (UTC -3)

Cultivar Magazine, based on information from Bethany Shively

Corteva announced on Tuesday (October 1) the separation of its operations into two independent, publicly traded companies. The decision, unanimously approved by

the board of directors, will result in the creation of "New Corteva," focused on crop protection, and "SpinCo," specializing in seeds.

The transaction will be completed through a tax-exempt spinoff in the United States. Completion is expected in the second half of 2026. The company is still awaiting final board approval, a legal opinion on tax aspects, and registration with the U.S. Securities and Exchange Commission (SEC).

With the separation, Greg Page, Corteva's current chairman, will assume the same role at "New Corteva." Chuck Magro, the current CEO, will lead "SpinCo." The full board composition will be announced later.

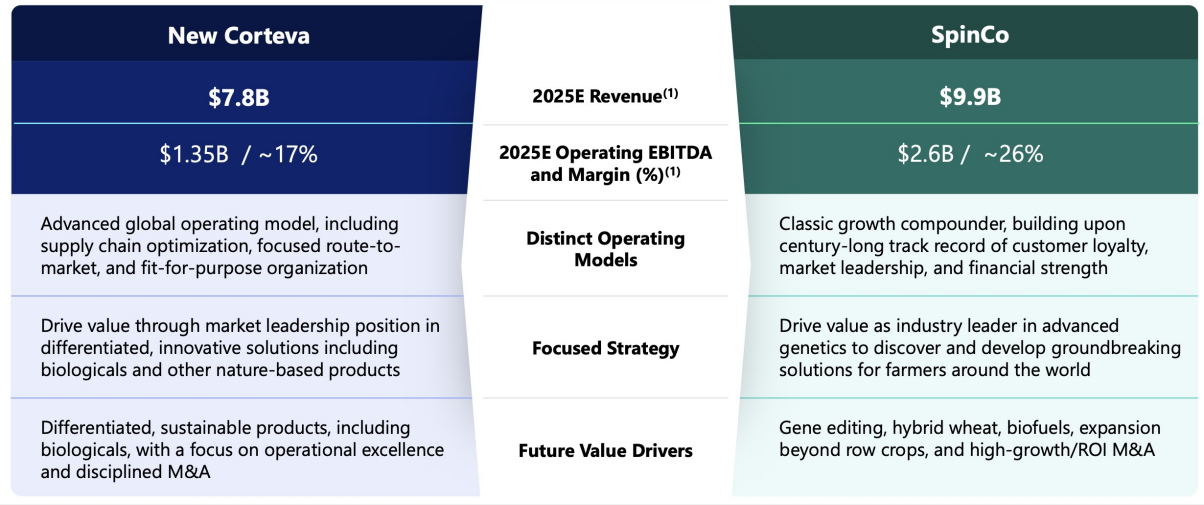
It was also reported that historical liabilities will be the responsibility of "New Corteva" (the reference was made to the DuPont pension fund; and to perfluoroalkyl and polyfluoroalkyl substances - PFAS).

According to Magro, the decision aims to strengthen Corteva's leadership position in two distinct markets. "The opportunities for seeds and crop protection have begun to diverge. Now is the right time to act in a more focused manner," he stated.

New Corteva will bring together the company's crop protection portfolio. With

estimated revenue of US$7,8 billion in 2025, the company will represent 44% of Corteva's total sales. The new company will maintain its focus on differentiated solutions, an efficient supply chain, and sustainable technologies. Biological products, the industry's fastest-growing segment, will be prioritized for investment.

SpinCo will own the seed business, including the Pioneer brand. Its sales are expected to reach US$9,9 billion by 2025, or 56% of Corteva's current revenue. The company will invest in advanced genetics, biofuels, gene editing, and new crops, such as hybrid wheat. It will also seek growth through licensing and strategic acquisitions.



New Corteva		SpinCo
$7.8B	2025E Revenue[1]	$9.9B
$1.35B / ~17%	2025E Operating EBITDA and Margin (%)[1]	$2.6B / ~26%
Advanced global operating model, including supply chain optimization, focused route-to-market, and fit-for-purpose organization	Distinct Operating Models	Classic growth compounder, building upon century-long track record of customer loyalty, market leadership, and financial strength
Drive value through market leadership position in differentiated, innovative solutions including biologicals and other nature-based products	Focused Strategy	Drive value as industry leader in advanced genetics to discover and develop groundbreaking solutions for farmers around the world
Differentiated, sustainable products, including biologicals, with a focus on operational excellence and disciplined M&A	Future Value Drivers	Gene editing, hybrid wheat, biofuels, expansion beyond row crops, and high-growth/ROI M&A

Both companies plan to achieve investment grade and will have the freedom to direct capital towards their own organic and inorganic growth initiatives.

Corteva reinforced that it may withdraw or modify the terms of the transaction until its conclusion.

The possibility of the operation had been reported by Revista Cultivar in: Corteva evaluates separation of seed and pesticide businesses

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Pesticide Victrato registered for 20 crops in Brazil

Syngenta product combines nematicidal and fungicidal action for seed treatment

30.09.2025 | 09:21 (UTC -3)

Cultivar Magazine

The Ministry of Agriculture and Livestock (MAPA) has approved the registration request for Syngenta's pesticide Victrato. The application was published in the

Official Gazette of the Union this Tuesday, September 30.

Victrate combines fungicidal and nematicidal action. Its formulation is based on the active ingredient cyclobutrifluram (brand name Tymirium), classified as a phenethylarylamide. It acts through contact and ingestion, with systemic activity. The product is intended for seed treatment.

The package insert authorizes use in 20 crops: cotton, garlic, peanuts, oats, beets, onions, carrots, rye, peas, broad beans, beans, cowpeas, sunflowers, chickpeas, lentils, millet, corn, soybeans, sorghum, wheat and triticale.

Victrato acts against nematodes such as *Meloidogyne incognita*, *Pratylenchus brachyurus* e *Rotylenchulus reniformis*. It

also controls fungi such as *Fusarium* spp., *Corynespora cassiicola*, *Cercospora kikuchii*, *Sclerotinia sclerotiorum*, *Ramularia areola* e *Bipolaris* spp..

The product was classified as Category 5 for toxicity, indicating a low probability of causing acute harm. Environmentally, it was classified as Class III.

Its formulation is a concentrated suspension for seed treatment. The label recommends a single application per crop cycle. Doses vary depending on the biological target and the crop.

The package insert indicates that, although the product controls diseases in the initial phase, additional fungicides may be necessary at other stages of the crop. The recommendation is to adopt integrated

pest management practices.

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Biological Product Safety Gets Reinforcement at Syngenta

Karim Piacentini takes over leadership for Brazil and Latin America

03.10.2025 | 13:53 (UTC -3)

Cultivar Magazine

Syngenta has appointed **Karim Cristina Piacentini** (pictured) as the new Product

Safety Project Leader for Brazil and Latin America, focusing on biological solutions. She has worked at Syngenta since 2020, where she has held positions as a junior researcher, senior analyst, and technical specialist in food risk assessment and MRLs in Latin America.

In his new position, he will be responsible for leading projects focused on the safety of biological products in the region, reinforcing the company's commitment to innovation, sustainability, and food safety.

With a PhD in Biotechnology from the University of São Paulo (USP) and a Master's in Food Science and Technology from the Federal University of Santa Catarina (UFSC), Piacentini has extensive experience in consumer safety, pesticide risk assessment and phytosanitary product

registration.

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Agricultural Market - October 3, 2025

Negotiations between the US and China encourage the market and boost soybean prices

03.10.2025 | 11:07 (UTC -3)

Vlamir Brandalizze - @brandalizzeconsulting

The possibility of a meeting between US and Chinese officials at the end of October brought relief to international agricultural

markets. Soybean prices in Chicago rose as much as 20 points, supported by expectations of progress in trade negotiations. The market reacted to the news released by former President Donald Trump about a meeting with the Chinese during a summit in Asia.

Even without official confirmation from China, the simple fact that there was no denial reinforced optimism. A possible resumption of Chinese purchases of American soybeans could further drive up the prices of the oilseed and other grains.

In the US, the government shutdown threatens the release of USDA reports. Without budget approval, non-essential employees have been laid off. The lack of new data is affecting the market's trading

pace. The soybean harvest is progressing: about 26% of the crop has been harvested, slightly below the average of 27%. Most of the production will be harvested in October. The USDA forecast points to 117 million tons.

In Brazil, sales of the 2024 harvest are progressing. 125,7 million tons of soybeans have already been sold, representing 73,3% of the total harvest. Producers still have 45,8 million tons in their hands. Sales of the new harvest are slow: 20% have been sold, compared to an average of 28%. The risk is that price pressure will increase at the beginning of the harvest, with many producers forced to sell.

An agreement between the US and China is expected to lead to American soybean shipments being loaded onto ships between November and March. This could reduce logistical availability for Brazilian exports between March and May. SECEX is expected to report record exports in September, with 6,8 million tons of soybeans and up to US$3,8 billion in foreign currency.

Planting of the new crop in Brazil remains slow due to a lack of rain, especially from the center to the north of the country. In the South, there is excessive rainfall, especially in Rio Grande do Sul, which is hindering the work.

Corn situation

In the Brazilian second corn crop, 112 million tons were harvested. Approximately 65 million tons have already been sold. The total harvest totals 140 million tons, with 55 million still in the hands of producers. The American harvest is also progressing within the average range. The market is trying to maintain prices between R$65 and R$67 at ports, but faces limited export flows.

Wheat situation

Wheat reacts positively to the news from Chicago and the possibility of restrictions on Russian exports. Harvesting continues in southern Brazil, but excessive rainfall is worrying producers in Rio Grande do Sul.

The projected harvest is 7,5 million tons, despite the reduction in planted area.

Cotton situation

Cotton prices are rising slightly, with the international market weakened by the lack of news. The harvest in Brazil is practically over.

Sorghum situation

Sorghum had a record harvest of over 6,1 million tons. Demand for seeds for the new season is increasing, with producers seeking high-potential cultivars.

Rice situation

Rice prices remain stagnant. Prices paid to producers in Rio Grande do Sul are between R$55 and R$56. Planting is difficult due to excessive rainfall. Approximately 5,9 million tons remain in the hands of producers. Retail prices range from R$15 to R$32 for a 5 kg package.

Bean situation

In the bean market, sellers expect an improvement with the start of the month. Noble carioca beans range from R$245 to R$280. ??Black beans, on the other hand, show nominal prices between R$135 and R$170. Sellers project prices as high as R$200, driven by reduced supply.

By **Vlamir Brandalizze** -

@brandalizzeconsulting

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Cibus validates new generation of herbicide-tolerant canola in the field

Positive US test results pave the way for commercial partnerships

03.10.2025 | 09:13 (UTC -3)

Cultivar Magazine, based on information from Colin Sanford

Cibus has completed field trials of its second-generation herbicide-tolerant

canola (HT2). The technology demonstrated effective performance under real-world conditions during the 2025 growing season in the United States. The HT2 trait will now be offered to licensed partners for inclusion in commercial seeds.

HT2 canola had already shown good results in greenhouse tests. The new trials confirmed its performance in crops, validating the plant's ability to withstand multiple herbicide applications.

According to the company, the HT2 trait can be combined with other resistance genes, increasing farmers' flexibility in managing resistant weeds and contributing to yield protection.

The result also marks a breakthrough in the use of Cibus's RTDS (Rapid Trait

Development System). It allows for faster, lower-cost gene editing compared to traditional genetic improvement methods or transgenic techniques.

The North American company operates as a developer and licensor of genetic traits focused on productivity and sustainability. Its platform aims to accelerate the delivery of solutions for major crops, addressing challenges such as pests and diseases that cause billions in losses to global agriculture.

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Corteva expands registration of HighNoon herbicide in the United States

Product can now be used nationwide to control more than 140 weed species

03.10.2025 | 08:24 (UTC -3)

Cultivar Magazine

Corteva Agriscience announced the expansion of the registration of the

herbicide HighNoon for national use in the United States.

HighNoon combines the active ingredients aminopyralid e benzyl florpyrauxifen (florpyrauxifen-benzyl; trademark of the molecule: Rinskor).

According to the company, it offers selective action against more than 140 species of broadleaf weeds and annual grasses. The product can also be tank-mixed with other herbicides to control woody species.

The herbicide has a low-odor liquid formulation. According to the manufacturer, the product poses no risk to desirable grasses and forages. There are no restrictions on grazing after application.

HighNoon can be used in permanent pastures, conservation areas (CRP), and non-agricultural areas such as pipelines, railways, industrial areas, and nature reserves. It is also recommended for controlling invasive vegetation in parks, trails, and wildlife management areas.

The product is effective against problematic species. Application should be made post-emergence with a minimum interval of 30 days between reapplications. The dose ranges from 12 to 20 fl oz/acre, and can reach 40 fl oz/acre for localized treatments.

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Gowan Company Announces Acquisition of Ceradis

Acquisition boosts portfolio with bio-mineral technologies

03.10.2025 | 07:59 (UTC -3)

Cultivar Magazine

Gowan Company announced the acquisition of Ceradis. The deal strengthens Gowan's presence in Europe and the Americas, while also expanding its research portfolio.

Ceradis, headquartered in Wageningen, the Netherlands, offers unique technologies based on biomineral solutions. These technologies integrate disease management programs by combining conventional pesticides with natural compounds, promoting the durability of active ingredients and meeting sustainability requirements.

According to Rob Plaice, Gowan's global director of research and development, the acquisition reinforces the company's long-term strategy of uniting science and innovation for sustainable agriculture. Ceradis' multi-action products help maintain pesticide efficacy and expand the range of alternatives available to farmers.

Willem-Jan Meulemeesters, CEO of Ceradis, emphasized that the merger expands the global reach of biological technologies and encourages the adoption of more sustainable agricultural practices. The transaction ensures continuity for customers, creates opportunities for employees, and reaffirms the company's commitment to food safety and regulatory standards.

Ceradis will continue to operate from its headquarters, now integrated into Gowan's global network.

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Brazil-China academic partnership boosts innovation in the field

By Sebastián Giraldo Montoya (UFV), Zhang Min (NAU-China) and Manuela Maria Cavalcante Granja (Microvet)

02.10.2025 | 15:20 (UTC -3)

The global scenario poses growing challenges to agriculture: producing more with fewer resources, reducing environmental impacts, and responding to

consumer market pressures for traceability and sustainability. In this context, international scientific cooperation emerges as a strategic tool. The relationship between Brazil and China, two powerhouses in agribusiness and applied science, stands out for the complementarity of their expertise and the potential to generate innovations with a direct impact on production.

Brazil has consolidated its leadership in agribusiness thanks to tropical agriculture. The accumulated experience in managing low-fertility soils, adapting cultivars to different soil and climate conditions, and advances in integrated production systems, such as Integrated Crop-Livestock-Forestry (ICLF), have resulted in globally recognized productivity and

sustainability gains. Universities like the Federal University of Vitoria (UFV) and institutions like Embrapa are key players in this process, with significant contributions in plant physiology, soil management, and the use of bioinputs.

China, for its part, faces the challenge of feeding a population of over 1,4 billion people in a territory with limited arable land. This reality has led the country to invest heavily in biotechnology, mechanization, digital agriculture, and precision irrigation. Chinese universities and research centers are at the forefront of applying artificial intelligence to agriculture, using big data for crop forecasting, and developing remote monitoring technologies.

Academic cooperation between Brazil and China involves, among other institutions, the Center for American Studies at Nanjing Agricultural University (NAU) and the Departments of Agronomy, Soils, and Agricultural Engineering at the Federal University of Viçosa (UFV). This collaboration encompasses joint projects in soil management and conservation, adaptation of production systems to climate change, and the development of efficient irrigation technologies. In addition to the exchange of researchers, the partnership includes joint scientific publications and knowledge transfer with potential for direct application on agricultural properties in Brazil and China.

The synergistic effect of cooperation between the two countries highlights the

strong complementarity that exists. While Brazil offers consolidated expertise in tropical agriculture and solutions tested in conditions of high climate variability, China brings advanced technological tools and the ability to scale innovations in large markets. This integration can result in new management practices, more rational use of water and inputs, and the development of more resilient production systems.

To maximize results, it is necessary to establish governance and intellectual property mechanisms that ensure reciprocity and mutual benefits. Human resource development should be a priority, with postgraduate programs and technical internships that prepare professionals capable of meeting the challenges of sustainable agricultural production.

The future of agribusiness will increasingly depend on the combination of productive efficiency, technological innovation, and social and environmental responsibility. Academic cooperation between Brazil and China, exemplified by the partnership between renowned research centers from both countries, points to a promising path for transforming scientific research into concrete solutions for the field. More than just increasing competitiveness, this strategy can position both countries as global leaders in building a low-carbon agriculture system, adapted to the new demands of the market and society.

Per* **Sebastian Giraldo Montoya*, professor of fruit growing in the area of ??temperate climate plants at the Federal University of Viçosa (UFV),* **Zhang Min***,*

Executive Director of the Center for American Studies at Nanjing Agricultural University - China, and **Manuela Maria Cavalcante Granja**, *biotechnology researcher at Microvet*

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Sustainable Agro Solutions acquires Aqua do Brasil

Spanish company advances in the agricultural biosolutions market

02.10.2025 | 14:28 (UTC -3)

Cultivar Magazine, based on information from Patricia Cristiane Ribeiro

Sustainable Agro Solutions (SAS), a Spanish company specializing in

agricultural biosolutions, announced the acquisition of a majority stake in Aqua do Brasil. The transaction marks SAS's international entry and consolidates its presence in Latin America. The buyer is part of the portfolio of Stirling Square Capital Partners, a European private equity firm.

Aqua do Brasil, headquartered in Salto, manufactures specialty fertilizers, biostimulants, resistance promoters, and soil conditioners from plant extracts and essential oils. The company serves more than 20 states and exports to Latin American countries, focusing on the fruit and vegetable segment. Founder Luciano Gasparini will continue to lead operations in Brazil.

Greater capacity

The acquisition's value was not disclosed. According to Eduard Vallverdú, CEO of SAS, the purchase expands the company's production capacity and commercial reach in Brazil and the region. Vallverdú highlighted Aqua's portfolio, production structure, and customer base as strategic assets.

Luciano Gasparini stated that the integration with SAS represents a new phase of accelerated growth and innovation. He founded Aqua in 2010 with a focus on sustainability and natural solutions for agriculture.

The transaction is part of Stirling Square's strategy of organic growth and

acquisitions. Since 2021, the asset manager has supported SAS in initiatives such as the acquisition of Biovert and the carve-out of Pevesa Agroscience. In 2024, SAS began investing more than €20 million to expand its plant in Lleida, Spain.

Enrico Biale, partner at Stirling Square, stated that the acquisition strengthens SAS's ability to meet local demand and expands its platform in Latin America. The asset manager manages over €3 billion and has invested in more than 30 companies and 100 acquisitions worldwide.

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Intensive agricultural practices accelerate soil degradation

Study identifies key risks to farmland resilience

02.10.2025 | 14:18 (UTC -3)

Cultivar Magazine

Soil health faces increasing threats due to conventional agricultural practices that

reduce its ability to withstand climatic and socioeconomic disruptions. A study led by scientists at Rothamsted Research reviewed scientific evidence on how management techniques impact soil resilience.

According to the study, practices such as frequent plowing, excessive use of fertilizers, and intensive irrigation increase productivity in the short term, but trigger degradation processes that reduce the soil's ability to recover from extreme events such as droughts, floods, and political crises.

The basis of production at risk

Soils support 95% of the planet's food production and store more carbon than all forests combined. Yet these vital functions are in decline.

The study identifies that conventional agricultural management compromises so-called feedback loops (natural mechanisms that balance ecosystems). When disrupted, these cycles can trigger cascading effects, resulting in irreversible agricultural losses.

Erosion emerges as the most critical threat. Practices such as deforestation, overgrazing, and excessive plowing remove the fertile topsoil, which takes centuries to form. Salinization in irrigated areas, compaction caused by intensive pastures, and contamination from

pesticides and plastic waste are also among the main risk factors.

Vicious cycles and loss of resilience

The concept of soil resilience refers to an agricultural system's ability to absorb shocks without collapse. By repeatedly adopting intensive practices, farmers enter into positive feedback loops that reduce fertility and increase dependence on external inputs.

Photo: Jack Dykinga

For example, the constant use of nitrogen fertilizers can acidify the soil, requiring even more chemical amendments. The same is true of continuous plowing, which destroys soil structure and beneficial organisms such as earthworms and mycorrhizal fungi. Plastics used as

agricultural mulch accumulate over time and affect subterranean biodiversity.

Alternatives and their challenges

Although soil degradation is a growing problem, the study highlights solutions. Practices such as no-till farming, integrated pest management, the use of organic fertilizers, and crop rotation can restore some of the lost resilience. The liming technique (lime application) has shown positive results in correcting soil acidity and preserving productivity.

However, each alternative presents challenges. Eliminating plowing, for example, can increase weed growth. The

use of organic fertilizers depends on variable availability and composition. The success of these techniques also depends on local conditions, such as climate, soil texture, and access to technology.

Global risk, local impact

According to the study, one-third of the world's soils are already degraded. The situation is especially worrying in rapidly growing population regions such as Sub-Saharan Africa, South America, and Southeast Asia, where food demand continues to rise.

The study emphasizes that ignoring soil resilience can lead to tipping points, where

agricultural productivity suddenly and irreversibly collapses. This scenario would impact not only farmers but also global trade networks, political stability, and food security.

For the study's lead author, scientist Alison Carswell of Rothamsted Research, the moment calls for a profound reassessment of agricultural practices.

"Healthy and resilient soils don't just support food production. They are essential for biodiversity and climate stability. Today's decisions shape soils' ability to sustain life for decades to come," he states.

Further information at doi.org/10.1038/s44264-025-00098-6

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Researchers detect nanoplastic in wheat roots

Study reveals that cereal plants can absorb plastic particles invisible to the naked eye

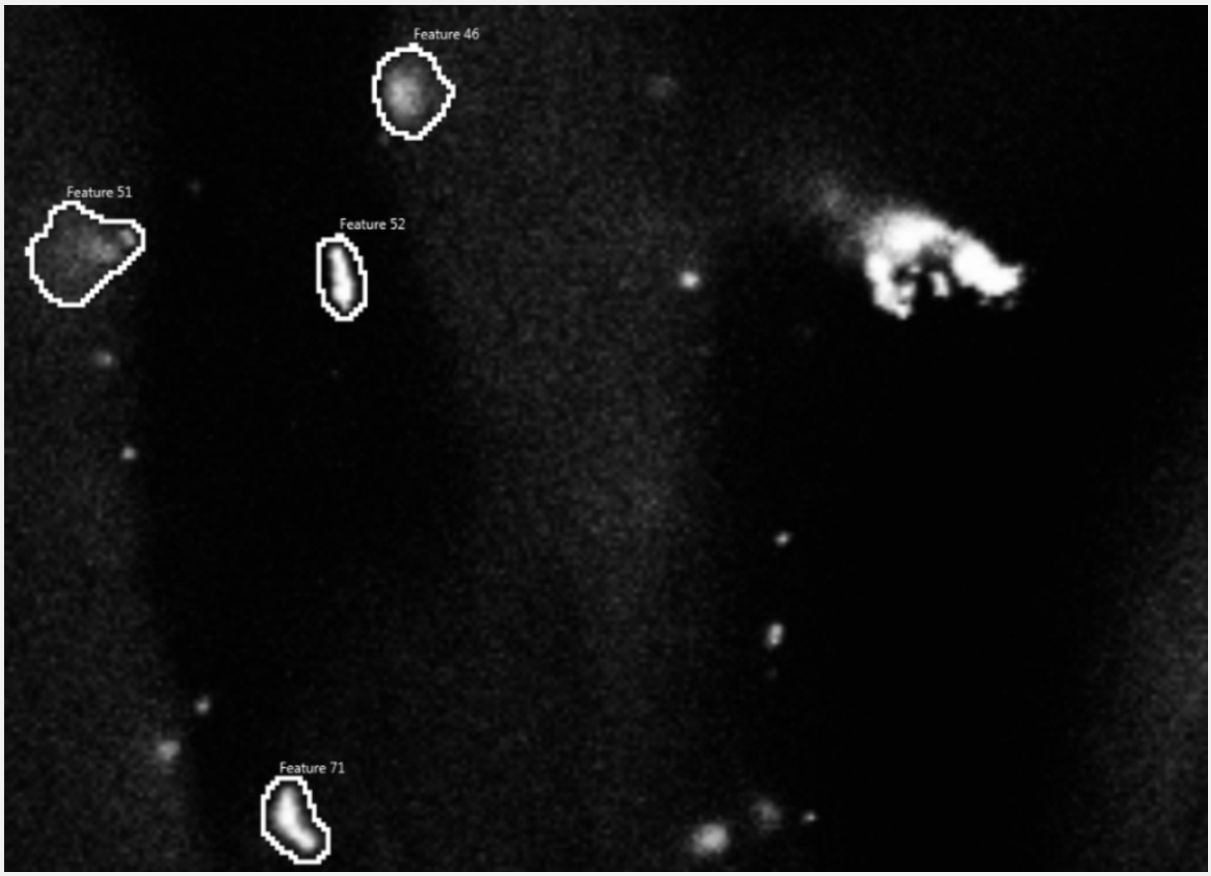
02.10.2025 | 13:48 (UTC -3)

Cultivar Magazine

Wheat plants with microplastics and nanoplastics in a seed tray - Photo: FELMI-ZFE

Researchers at Graz University of Technology (TU Graz) in Austria report that wheat plants absorb nanoplastics through their roots. The experiment used a gold-tagging method to track plastic particles inside the plants.

The plastic particles were encapsulated with gold nanoparticles, allowing clear visualization under an electron microscope. The gold does not come into contact with the soil or the plant, preventing interference. The technique was applied in tests with winter wheat, grown in trays of artificially contaminated soil. After a few weeks, scientists found plastics in the roots of the young plants.



Analytical scanning electron microscope image of gold-labeled nanoplastic particles in the root of a wheat plant - Photo: FELMI-ZFE

Nanoplastics in agricultural soils

The presence of nanoplastics in agricultural soils is a growing concern. Until now, it was difficult to identify these particles inside plants due to their similarity

to natural components. The new approach, led by Johannes Rattenberger, paves the way for understanding how crops absorb plastics and how far these particles reach.

Field research is already underway to assess whether nanoplastics reach grains after harvest. The investigation is supported by Austrian Cooperative Research (ACR), in addition to collaboration with the Grain Processing Center and the Institute for Food Analysis. The group is also analyzing potential impacts on flour quality and plans to develop recommendations to reduce contamination.

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Syngenta launches Envita Dry in Canada

Product uses bacteria to supply nitrogen directly to plants

02.10.2025 | 07:44 (UTC -3)

Cultivar Magazine

Syngenta Canada announced the launch of Envita Dry, a dry biological inoculant that fixes nitrogen directly in plant leaf cells. The product contains the bacteria *Gluconacetobacter diazotrophicus* (Gd).

According to the company, Envita Dry increases nutrient efficiency by providing nitrogen at the time and place where the plant needs it most. The product doesn't replace traditional fertilization, but it can be used to complement existing programs. The dry formulation has a two-year shelf life and requires a low dosage: each 200-gram package treats up to 40 acres (approximately 16 hectares).

The product is registered in Canada for use on corn, soybeans, potatoes, canola, cereals, legumes, and forages. Recommended use is soil, with the addition of a nonionic surfactant. It can be tank-mixed with pesticides, as long as they are compatible. *Gluconacetobacter diazotrophicus*. Syngenta warns that some

formulations, including certain herbicides based on glyphosate, can harm the bacteria after one hour of mixing.

Product application

Application should occur at a relative humidity level above 80%, between 10°C and 30°C. At lower humidity levels, the ideal temperature range is between 10°C and 25°C. It is recommended to apply early in the morning or late in the afternoon, avoiding periods of intense heat or humid nights.

The company offers a performance guarantee. If the minimum productivity increase is not achieved, Azotic Technologies is committed to replenishing the product used in the area. Expected

increases vary depending on the crop: 2,5 bushels per acre for corn, 2 cwt for potatoes, and up to 2,0 bushels per acre for wheat.

Crop	Crop stage	Application timing	Rate[1] Water volume	WALES mixing order
Canola (Oilseed)	2 leaf – end of flowering (BBCH 12-69)	Apply either first thing in the morning when stomata are open but before drying time is accelerated, or later in the afternoon after the heat of the day has passed. Avoid evening applications when the stomata are closed. When relative humidity is above 80%, apply between 10-30°C When relative humidity is below 80%, apply between 10-25°C Rainfast in 2 hours	5 g/ac (40 ac/pouch) At least 10-15 gal/ac (100-150 L/ha)	L Put Envita Dry last in the tank. Water ➔ Pesticide ➔ Envita Dry ➔ Spray adjuvants (if applicable)
Cereals	3 leaf – flowering (BBCH 13-69)			
Corn	V2 – VT (BBCH 12-59)			
Forage	5–10 cm of regrowth (BBCH 12-59)			
Potatoes	2 leaf – end of flowering (BBCH 12-69)			
Pulses	3 node – flowering			
Soybeans	2 leaf – R1 (flowering) (BBCH 12-60)			

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BASF advances its “Winning Ways” strategy and projects growth

Company confirms financial targets and prepares partial IPO of agricultural business

02.10.2025 | 07:03 (UTC -3)

Cultivar Magazine, based on information from Jens Fey

BASF reaffirmed its financial targets for 2028 and detailed progress on its "Winning

Ways" strategy, launched in September 2024. The update was presented this Thursday (October 2) in Antwerp, Belgium, during a meeting with capital market participants. The company projects adjusted EBITDA between €10 billion and €12 billion, free cash flow of over €12 billion between 2025 and 2028, and return on capital employed (ROCE) of around 10%.

The Agricultural Solutions division, with €9,8 billion in sales in 2024, is heading toward a partial IPO (Initial Public Offering) scheduled for 2027. BASF has completed the legal separation of the unit and implemented a management system specifically for the sector. The company is betting on a minority listing as a way to unlock value in the business and finance

growth while maintaining control of the operation.

The company announced that it will maintain its Environmental Catalyst and Metal Solutions (ECMS) unit, which generated €7 billion in sales last year. It expects €4 billion in accumulated cash flow by 2030. In its battery materials division, which generated €0,6 billion in revenue, BASF reduced fixed costs and investments. It has reached agreements with strategic customers, such as China's CATL, to utilize its installed capacity and is seeking new partnerships across the value chain.

The decorative paints business in Brazil was sold to Sherwin-Williams for US$1,15 billion. The company is also evaluating

strategic options for its automotive refinish, surface treatment, and OEM coatings segments, which together generated €3,8 billion in revenue in 2024. The decision is expected to be announced in the fourth quarter of 2025.

Dividend expectation

The company promises to distribute at least €2,25 per share between 2025 and 2028, totaling approximately €8 billion. It also plans to buy back shares worth at least €4 billion between 2027 and 2028, with the possibility of bringing the program forward depending on the outcome of the coatings transaction. CFO Dirk Elvermann emphasized that recent asset sales in the decorative paints and nutritional

ingredients sector have already generated cash. BASF is considering monetizing oil and gas assets.

In terms of capital expenditures, the company reduced its total budget for fixed and intangible assets from €17 billion to €16 billion for the period 2025 to 2028. The Zhanjiang Integrated Complex (Verbund) in China remains on schedule and under

budget, with total investment reduced by €1,3 billion to €8,7 billion. Most of the plants are expected to be operational by the end of 2025.

Core Businesses

BASF's core businesses (which include the Chemicals, Materials, Industrial Solutions, and Nutrition & Care segments) generated revenues of €40,3 billion in 2024. These segments operate with long, integrated value chains, such as ethylene oxide and polyurethanes, selling products across all stages of the process, ensuring scale, competitiveness, and a lower carbon footprint.

The company estimates that operational improvements and the closure of unprofitable plants should generate an increase of €400 million in profits in these segments by 2028. Among the actions are the closure of polyamide and plastic additives units, as well as investments in innovation and capacity expansion in strategic areas.

BASF aims to generate sustainable value and maintain its global competitiveness, particularly in its European operations. The company also reports progress in its cost-saving program, with a target of €2,1 billion by 2026, and continues to streamline its organizational structure, cutting 3.000 jobs since 2024.

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Agriculture Committee approves change to Cultivar Protection Law

Text provides for the collection of royalties on seeds reserved for personal use

01.10.2025 | 15:21 (UTC -3)

Cultivar Magazine

The Agriculture Committee of the Chamber of Deputies approved, this Wednesday (1/10), the final text of the Bill (PL 1702/19). The proposal amends the

Cultivar Protection Law (Law 9.456/1997).

Among other points, the approved text extends the term of protection for cultivars in general from 18 to 20 years, and from 18 to 25 years in the case of long-cycle species, such as vines, fruit trees, ornamentals, sugarcane and potatoes.

The approved text also provides for the charging of royalties on seeds reserved for personal use (saved seeds).

The proposal now goes to the Economic Development and Constitution and Justice Committees for analysis.

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The soybean crisis in RS in a changing climate

By Rogério de S. Nóia-Júnior (Inrae) and Bruno Fardim Christo (Veriees)

01.10.2025 | 14:49 (UTC -3)

Rogério de S. Nóia-Júnior and Bruno Fardim Christo

In recent years, farmers in southern Brazil have faced a series of unprecedented challenges. Severe droughts during the soybean harvest, such as those of 2020,

2022, 2023, and 2025, have been interspersed with devastating floods, such as the one in May 2024, when more than 500 mm of rain fell in just a few days. These climate anomalies have caused significant losses in grain production, affecting not only farmers' incomes but also the region's economic stability.

The state of Rio Grande do Sul, a traditional grain producer, accounts for approximately 13% of national production and approximately 5% of global soybean exports. However, this strategic position is threatened by climate change, which has altered the frequency and intensity of extreme events.

Recurring losses in production and finances

Over the past six years, four soybean harvests—in 2020, 2022, 2023, and 2025—revealed yields below or close to 2.000 kg/ha (Figure 1c). This is an alarming level, considering the historical average of 2.700 kg/ha since 1997. Scientific studies indicate that the state has an average production potential, in rainfed systems, of over 3.200 kg/ha. Even with the expansion of cultivated area, which reached 6,8 million hectares in 2025, state production has been equivalent to that recorded in the 2000s, when the area was less than half that.

Production costs soared, rising from R$2.870/ha in 2020 to R$8.282/ha in 2022, putting further pressure on producers' margins (Figure 1a). For example, until 2020, a producer in Rio Grande do Sul needed, on average, to harvest around 2.138 kg/ha to cover total costs. This figure fell to 1.182 kg/ha in 2021, due to the high price of soybeans, close to R$170 per bag, even though they are still grown at low costs. Since 2022, the minimum required to cover costs has averaged 2.750 kg/ha (Figure 1c).

Even with record prices recorded in recent harvests on the international market (Figure 1b), costs rose more rapidly, resulting in net losses. Since 2022, Rio Grande do Sul farmers have faced growing deficits. They totaled R$23 billion in 2022,

R$17 billion in 2023, R$4,7 billion in 2024, and R$1,5 billion in 2025. This economic crisis is pushing thousands of producers to the brink of insolvency.

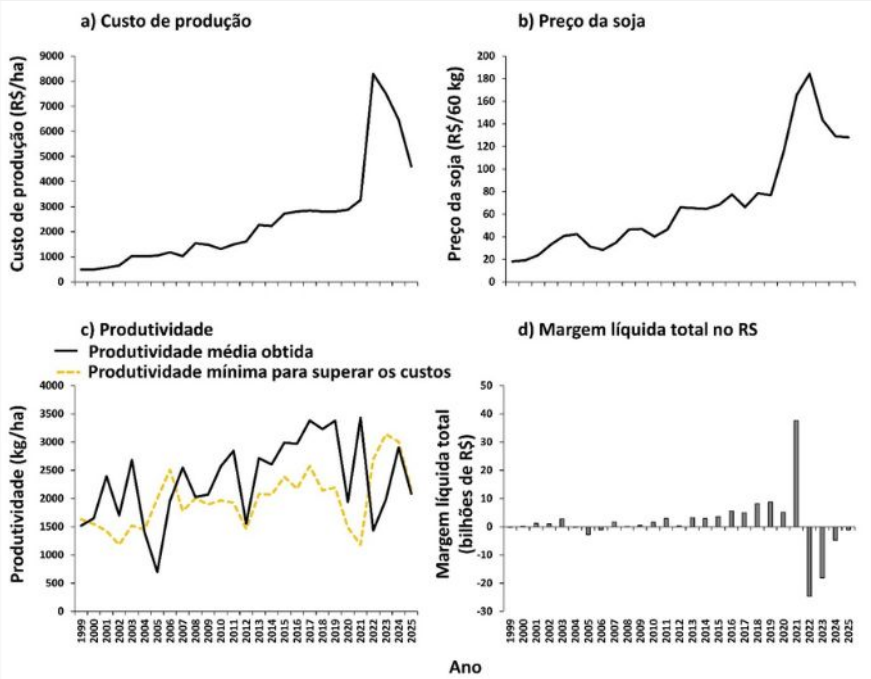

Figure 1: Economic and productive indicators of soybeans in Rio Grande do Sul between 1999 and 2025; (a) Production cost (R$/ha); (b) Soybean price (R$/60 kg); (c) Average productivity obtained (solid black line) and minimum productivity necessary to cover costs (dashed yellow line), expressed in kg/ha; (d) Total annual net margin estimated for the state (in billions of reais), calculated based on the difference between revenue and total production cost

The climate is changing, and this is

just the beginning

Historical data shows that the average temperature between October and May in Rio Grande do Sul was 21,3 degrees Celsius, with an average of 1.187 millimeters of rainfall during the soybean growing season. However, since 2018, temperatures have consistently exceeded this average, while rainfall volumes have dropped dramatically. In 2023, for example, precipitation was 510 millimeters below normal, representing a nearly 50% deficit.

Future projections indicate that, by 2100, average temperatures could rise by up to 3 degrees Celsius. Precipitation variability is also expected to increase. This means we

can expect drier, hotter years, and, at the same time, more frequent episodes of extreme rainfall, such as those that already devastated wheat production in 2023 and soybean production in 2024.

Rising temperatures increase evapotranspiration, hindering soil water storage, and making crops more vulnerable to combined stresses. These stresses include heat, drought, excess water, and diseases such as wheat blast, which are likely to intensify with global warming.

We are approaching a point of no return

In the climate system, so-called tipping points are moments when changes become irreversible. Something similar is happening to farmers in Rio Grande do Sul. When production revenues fail to cover costs for several years in a row, the producer reaches his own tipping point. He loses investment capacity, becomes indebted, and may eventually abandon the activity.

This is what's happening in Rio Grande do Sul. The continuation of this sequence of climate disasters, without adaptation measures, could lead to the collapse of agriculture in the region. If no action is taken, this scenario is likely to be repeated in other regions of Brazil in the coming decades.

There's no single solution to avoid collapse. A set of measures can help build a more resilient agricultural system:

• Affordable agricultural insurance. Expanding access to agricultural insurance is essential to cover extreme events and enable farmers to recover financially from poor harvests.

• Rural credit with reduced interest rates. Low-interest or subsidized financing lines are essential for recovery, even if they do not represent a sufficient solution in the medium term.

• Rural training and extension. Promoting training on sustainable practices, soil and water management, crop diversification, biological control, and crop rotation can strengthen the resilience of production

systems.

• Rural infrastructure. Improvements in grain storage strengthen producers' bargaining power. Investments in roads and, within the limits of sustainable water use, in irrigation and drainage systems can reduce losses and increase production efficiency.

• Technology in the field. The use of remote sensors, drones, and monitoring software can optimize inputs, reduce waste, and improve decision-making.

• Genetic improvement. It is necessary to invest in the development of cultivars that are more resistant to drought, heat, and disease, capable of withstanding new climatic conditions.

• Rethink the system. Research into new crops better adapted to these conditions, as well as in fully controlled environments, although still very costly, has shown potential to increase grain productivity. These alternatives should be strategically considered by public policymakers and researchers.

These actions must be accompanied by public policies aimed at mitigating climate change. These include reducing deforestation, increasing vegetation cover, preserving soil organic matter, and reducing greenhouse gas emissions.

Agriculture in southern Brazil is facing one of its greatest challenges. Severe droughts, floods, and rising costs are weakening producers economically and

jeopardizing food security. These events can no longer be treated as exceptions. They are already part of a new climate reality. The response must bring together farmers, technicians, researchers, governments, and businesses. With planning, innovation, and effective public policies, it is still possible to avoid collapse and ensure a sustainable future for Brazilian agriculture.

Per* **Roger of S. Nóia-Junior *(Inrae) and* **Bruno Fardim Christo** *(Veries)*

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Law establishes the National Program to Strengthen Family Farming

The idea is to strengthen rural credit and encourage agroecological practices.

01.10.2025 | 14:11 (UTC -3)

Cultivar Magazine

Law No. 15.223/2025 was published in today's Official Gazette of the Union, creating the National Program for Strengthening Family Farming (Pronaf) and establishing the Harvest Plan exclusively for this segment.

Pronaf becomes a permanent credit instrument for family farming activities. The measure expands access to rural financing for historically marginalized groups, such as agrarian reform settlers, Indigenous peoples, and quilombolas.

The new program aims to boost rural development with a focus on equality, social inclusion, and ecological transition. It encourages the reduction of chemical inputs, the rational use of water, and the appreciation of biodiversity.

The Ministry of Agrarian Development and Family Farming will be responsible for coordinating Pronaf. The ministry will be supported by the newly created National Council for Sustainable Rural Development (Condraf). The body will have equal participation between the government and representatives of family farming and rural workers.

The new law amends Law No. 8.171/1991 to provide for a Harvest Plan exclusively for family farming. The annual plan will define scheduled credit amounts, production priorities, and incentives for organic and agroecological farming. It will also create mechanisms to reduce regional inequalities in access to credit.

Pronaf operations will have more advantageous fees and terms than other

rural credit lines. The goal is to ensure the viability of family farmers' production bases.

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Study reveals that fungi emerged more than 1,4 billion years ago

Analysis combines fossils, horizontal gene transfer, and molecular clocks to reconstruct evolutionary history

01.10.2025 | 13:54 (UTC -3)

Cultivar Magazine

The evolutionary tree of fungi began branching between 1,401 and 896 million years ago, long before the emergence of land plants. This estimate was obtained by an international group of researchers by combining fossils, genomic data, and horizontal gene transfer events into a new molecular chronology of fungi. Their study proposes a new timeline for the diversification of the Fungi Kingdom, providing a temporal framework for future investigations into the coevolution of fungi and plants.

The research analyzed 110 fungal species, selected to provide a balanced representation of all major groups within the kingdom. The authors also included 43 species of other eukaryotes to calibrate the

broader evolutionary context. They used 225 phylogenetic proteins as markers, resulting in a matrix with over 95 amino acid positions.

Fossil scarcity

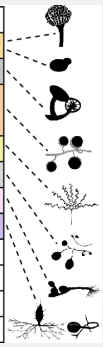
The initial challenge was the scarcity of fossils reliably attributable to specific fungal groups. To overcome this limitation, the researchers also included 17 relative time constraints derived from horizontal gene transfer events between fungal lineages. The technique allows them to infer which group evolved first based on the direction of gene transfer.

The reconstruction of the phylogenetic tree adopted modeling methods that account

for heterogeneity in amino acid site composition, a common problem in deep phylogenies. The approach used combines Bayesian inference tools and specialized algorithms to construct trees with increased resolution even in distant lineages poorly represented in the fossil record.

The next step was to date the tree nodes. The Mcmcdate program allowed for relaxed molecular clock analyses based on pre-prepared phylograms, with reduced computational time. Four data sets were used: a primary data set, with 27 absolute calibration points and 17 relative constraints, and three additional data sets based on hypotheses about the origin and expansion of specific pectin-degrading enzymes.

Group	Preferred habitat	Feeding strategy	Septate hyphae	Spitzenkörper	Fruiting bodies	Flagellum
Ascomycota (Dikarya)	Terrestrial	Osmotrophy	Yes	Yes	Yes	No
Basidiomycota (Dikarya)	Terrestrial	Osmotrophy	Yes	Yes	Yes	No
Mucoromycota (including Glomeromycotina)	Terrestrial	Osmotrophy	Rare	No	Rare	No
Zoopagomycota	Terrestrial	Osmotrophy	Rare	Rare	No	No
Olpidium	Aquatic and terrestrial	Osmotrophy	No	No	No	Yes
Blastocladiomycota	Aquatic	Osmotrophy	Rare	Rare	No	Yes
Chytridiomycota	Aquatic	Osmotrophy	Rare	No	No	Yes
Aphelida	Aquatic	Endobiotic phagotrophy	No	No	No	Yes
Rozellida	Aquatic	Endobiotic phagotrophy	No	No	No	Yes
Microsporidia	Aquatic and terrestrial	Intracellular parasite	No	No	No	No
Nucleariidea	Aquatic	Phagotrophy	No	No	No	No



doi.org/10.1038/s41559-025-02851-z

Specific enzymes

Pectins are components of plant cell walls, present not only in embryophytes but also in strepitophytic algae (ancestors of land plants). The detection of specific enzymes for the degradation of these molecules in non-dicary fungi has led to the inference that the interaction between fungi and algae, precursors of modern plants, occurred between 1.253 and 797 million years ago.

This interaction predates the emergence of modern land plants by hundreds of millions of years, estimated at between 612 and 431 million years. The presence of pectin-degrading genes in ancestors of terrestrial fungi suggests that these organisms already played important ecological roles long before the effective colonization of the terrestrial environment by plants.

Evolution of fungi

The study also provides dates for important divergences in fungal evolution. The split between the main groups, such as Chytridiomycota and Blastocladiomycota, would have occurred between 1.374 and 877 million years ago. The divergence between Olpidiomycota

(aquatic group with flagella) and non-flagellated terrestrial fungi occurred between 1.303 and 831 million years ago.

Within terrestrial fungi, Mucoromycota and Zoopagomycota have similar ages of origin, between 1.252–796 Ma and 1.213–678 Ma, respectively. These groups precede the Dikarya—a clade that includes the best-known filamentous fungi and yeasts—whose origin dates back to 1.114–701 Ma.

Main groups

The analysis also estimated the ages of two major groups of macroscopic fungi: Pezizomycotina and Agaricomycotina. Both would have emerged between 706

and 409 million years ago, coinciding with the Neoproterozoic era and the glacial event known as Snowball Earth. This suggests that complex multicellularity in fungi may have emerged in parallel with extreme environmental pressures.

To validate their estimates, the researchers tested three different scenarios based on the evolution of pectinolytic enzymes. In one scenario, the presence of these enzymes was restricted to more recent fungi, implying that their ages should be later than the emergence of pectin-producing strepitophytes. This hypothesis resulted in adjustments to the estimates, but the age of the origin of the Fungi Kingdom remained above 1 billion years in 88,5% of the simulations.

The approach used in the study overcame limitations of previous models, such as overreliance on a few fossils and underrepresentation of non-dicarian groups. Furthermore, the authors demonstrated that, even with a reduced number of amino acid positions (10 instead of the 95 in the full matrix), date estimates remain consistent. This indicates that future analyses can be optimized without significant loss of accuracy.

Time for diversification

The results suggest that fungi began to diversify during a still poorly understood period in the history of life, between the Mesoproterozoic and Neoproterozoic. This interval, often referred to as the "boring

billion," is now being reevaluated as a period of biological diversification and innovation. In this context, the Fungi Kingdom plays a central role not only in the formation of primitive soils but also as a possible catalyst for the transition of algae to terrestrial environments.

The identification of ancient interactions between fungi and strepitophytes also raises hypotheses about the existence of pre-embryophyte symbioses. Despite the lack of direct fossils of such associations, inferences based on genetics and chronology suggest a long period of ecological coexistence before the formation of complex associations such as mycorrhizae.

Even fungal fossils dated to over 1 billion years ago, found in recent studies, were not used as calibration points in the work. The authors considered them plausible but preferred to adopt a conservative approach to avoid speculative inferences. Still, the dates obtained are consistent with these fossil finds, reinforcing their possible fungal affiliation.

The chronological reconstruction presented offers a new tool for investigating the origin of symbiotic systems, such as lichens and mycorrhizae, in addition to providing a more precise timeline for the emergence of macroscopic fungi, decomposers, symbionts, and plant pathogens.

The study also allows us to explore in greater detail the ecology of transitional environments where the first interactions between algae and fungi may have occurred. Communities similar to modern soil crusts—composed of microorganisms, algae, and fungi—may have been the first ecologically complex habitats in the terrestrial environment.

Further information at doi.org/10.1038/s41559-025-02851-z

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EPA Releases Evaluations of Bicyclopyrone and Benzovindiflupyr

Measure meets requirements of the Endangered Species Act (ESA)

01.10.2025 | 08:04 (UTC -3)

Cultivar Magazine, based on information from the EPA

The U.S. Environmental Protection Agency (EPA) has released the final biological evaluations of pesticides bicyclopyrone e

benzovindiflupyr (benzovindiflupyr)The documents analyze the effects of these products on endangered species and critical habitats protected by federal law. The measure complies with the Endangered Species Act (ESA).

The herbicide bicyclopyrone is used to control weeds in crops such as corn, wheat, barley, and other minor crops, including lemongrass and rosemary. The fungicide benzovindiflupyr is used in canola, cereals, cotton, and ornamental plants.

Based on public comments received after the publication of the drafts, the EPA revised its findings. The final assessment indicates that bicyclopyrone:

- It has no effect on 477 protected species (27%) and 443 critical habitats (47%).
- Probably does not affect 300 species (17%) and 105 habitats (11%).
- It probably affects 803 species (46%) and 330 habitats (35%), but without causing significant threat or adverse modification.
- Probably affects and causes threat/adverse modification in 155 species (9%) and 73 habitats (8%).

In turn, benzovindiflupir:

- It has no effect on 994 species (57%) and 550 habitats (58%).
- Probably does not affect 259 species (15%) and 135 habitats (14%).

- Probably affects 441 species (26%) and 252 habitats (26%), without significant risk.
- Probably affects and poses risk/adverse modification to 41 species (2%) and 14 habitats (2%).

Based on the results, the EPA will begin formal consultation with environmental agencies responsible for wildlife in the US. This step will allow specialized services to issue technical opinions, indicating possible mitigation measures. If necessary, the agency will amend product registrations or labels.

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AGCO completes sale of stake in Tafe for US$260 million

Transaction ends trade disputes and transfers exclusive use of the Massey Ferguson brand to Tafe in India, Nepal and Bhutan

30.09.2025 | 17:38 (UTC -3)

Cultivar Magazine, based on information from Rachel Potts

AGCO Corporation announced on Tuesday, September 30, the completion of the sale of its stake in Tractors and Farm Equipment Limited (Tafe). The transaction

value reached US$260 million. After taxes, the U.S. company reported that it will receive approximately US$230 million.

The deal concludes a process that began in July, when the two companies signed agreements that resolved commercial and governance disputes. The terms included the termination of all commercial contracts between AGCO and Tafe, with transition clauses. It was agreed that Tafe will have exclusive ownership of the Massey Ferguson brand in India, Nepal, and Bhutan. Furthermore, all ongoing legal proceedings were dismissed.

Tafe also committed to participating in future AGCO share buyback programs, maintaining its stake at 16,3%. It was also agreed that the Indian company will no

longer have the right to appoint a representative to AGCO's board of directors, while AGCO's seat on Tafe's board was discontinued.

According to AGCO, the agreements include non-disparagement clauses and limit Tafe's involvement in corporate activism issues. AGCO CEO Eric Hansotia emphasized that the resolution allows full focus on the "Farmer-First" strategy, which focuses on results for farmers, operational efficiency, and shareholder returns.

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National Cydia pomonella Prevention Plan comes into effect

Guidelines recommend the installation and monitoring of pheromone traps in risk areas

30.09.2025 | 16:31 (UTC -3)

Secretariat of Agriculture

Photo: Fernando Dias

The Ministry of Agriculture and Livestock (Mapa) published Ordinance SDA/Mapa No. 1.369/25, which establishes the

National Plan for the Prevention and Surveillance of *Cydia pomonella*, better known as the apple moth.

The measure aims to reinforce prevention, monitoring and phytosanitary surveillance actions, ensuring that Brazil maintains its pest-free status, internationally recognized since 2014.

Cydia pomonella is considered one of the main threats to apple and pear production worldwide, potentially causing significant economic losses if introduced into Brazil. The Ministry of Agriculture, Livestock and Food Supply (MAPA) and state plant protection agencies have been monitoring this pest at entry points and in production areas.

The Secretariat of Agriculture, Livestock, Sustainable Production and Irrigation of Rio Grande do Sul (Seapi-RS) reported that it has more than 100 traps installed to monitor the pest in the municipalities of Vacaria, Caxias do Sul, Bom Jesus, Arvorezinha and Anta Gorda.

“The eradication of *Cydia pomonella* "It was an example of cooperation between producers, companies, the public and private sectors, Mapa, and the states of Rio Grande do Sul, Santa Catarina, and Paraná, which enabled the first eradication of an insect worldwide. And today, we have this phytosanitary protection against the pest, which has boosted apple and pear exports to several countries," highlights Ricardo Felicetti, director of the

Plant Protection Department at Seapi.

PNPV-Cydia Guidelines

The plan's guidelines include the installation and monitoring of pheromone traps in high-risk areas, inspection and traffic control at points of entry for plant products, health education activities, technical training for inspectors and agricultural defense agents, and the definition of emergency containment and eradication procedures in the event of potential detections.

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Corteva Appoints New Global Seed Marketing Leader

Based in the US, Lucas de Melo will be responsible for branding, pricing and integration of global marketing practices.

30.09.2025 | 13:57 (UTC -3)

Cultivar Magazine

Corteva Agriscience has appointed **Lucas Silvestre de Melo** (pictured) as the global "leader" of Marketing Excellence for the

Seed Business, a position he has held since August 2025. Based in Johnston, Iowa (USA), the executive is responsible for global seed pricing, branding and marketing strategies, promoting consistency and excellence in all regions where the company operates.

With nearly 15 years at Corteva, Lucas has built a career in various areas of agribusiness, holding leadership roles in Brazil, Mexico, and on projects across Latin America. His responsibilities include developing brands for pipeline launches, fostering a value-based pricing culture, and integrating marketing practices across global markets.

With a degree in Agricultural Engineering from the Federal University of Uberlândia (UFU), an MBA in Marketing from FGV

and a master's degree in Behavioral Economics from ESPM, the executive has experience in commercial campaigns, team management, strategic planning and market development.

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Case IH launches three-meter gauge Optum tractor in Australia

Model complies with controlled traffic system and offers factory warranty, power of up to 340 hp and integrated technology

30.09.2025 | 07:48 (UTC -3)

Cultivar Magazine, based on information from Amy Webb

Case IH unveiled its new three-meter gauge configuration for its Optum tractor line at Henty Machinery Field Days. The launch is aimed at farmers adopting the Controlled Traffic System (CTF), a growing practice in Australia.

This new feature allows tractors to operate on fixed rows, reducing soil compaction, promoting water infiltration, and increasing productivity. The configuration comes with full warranty support from the factory.

According to Seamus McCarthy, product manager for medium-duty tractors at Case IH in Australia and New Zealand, the change responds to demand from cotton and fruit and vegetable growers for solutions compatible with precision agriculture systems.

"The market is moving toward more accurate systems. With this new gauge, farmers can operate safely without sacrificing power or technology," he stated.

The Optum line offers up to 340 hp of power. The tractor features an ergonomic cab and onboard technologies such as FieldOps, which allows for remote

monitoring and machine management. Production is carried out at the St. Valentin, Austria, plant.

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Ministry of Agriculture creates system to audit pest control

AudiFito will evaluate federal and state plant health actions with technical audits and indicator monitoring.

29.09.2025 | 15:14 (UTC -3)

Cultivar Magazine

Photo: Johnny N Dell, Bugwood

The Ministry of Agriculture and Livestock (Mapa) established the System for Assessing the Quality and Improvement of Official Pest Prevention and Control Programs, called AudiFito. The measure was published through Ordinance SDA/MAPA No. 1.373, of September 22, 2025, in the Official Gazette of the Union this Monday (29).

AudiFito will monitor and audit plant health programs nationwide. The Secretariat of Agricultural Defense will be responsible for coordinating the system, through the Department of Plant Health and Agricultural Inputs. The goal is to ensure the quality and continuous improvement of official pest control measures.

The system will be implemented in public and private institutions that implement or provide services related to phytosanitary control programs, at the federal and state levels. These institutions will be evaluated as audited units, based on indicators and periodic audits.

Audits will be conducted in-person or remotely. Criteria evaluated include human resources, infrastructure, technical and operational capacity, coordination with relevant sectors, and compliance with legal guidelines. The assessment will be conducted by teams of federal agricultural tax auditors, consisting of at least three professionals with agronomy degrees.

Audits will be prioritized on the assigned auditors' agenda. They may be conducted

simultaneously by multiple teams, depending on the complexity of the assessment. Experts from other sectors may also be invited to monitor the work.

The Plant Health Department will determine the duration and itinerary of the audits. Factors such as logistics, territorial extent, and technical complexity will be considered. After the visit, auditors will have up to thirty days to prepare a preliminary report. This document will undergo technical review and be forwarded to the audited unit, which may provide any comments.

The final report will be published on the Ministry of Agriculture's website. The audited units must develop corrective action plans for the problems identified.

The Federal Superintendence of Agriculture will evaluate the plans and conduct a new audit to verify the implementation of the corrections.

Each state will have an AudiFito focal point, appointed by the local superintendence. This auditor will be responsible for monitoring quality data, supporting audits, guiding action plans, and keeping the Department of Plant Health informed.

The manual with methodologies and procedures will be published on the ministry's website. The annual audit schedule will be published by the end of November each year.

The ordinance came into force on the date of publication.

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Trichoderma hamatum activates volatile compounds against fungi

Study identifies molecule with fungicidal action on multiple pathogens

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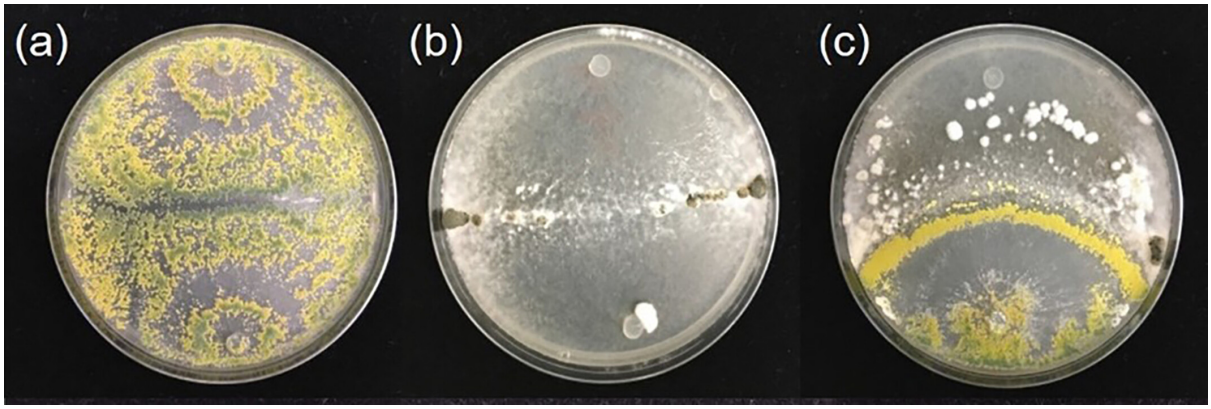

Dual Culture Confrontation Essays **(a)** self-challenged strain of *Trichoderma hamatum* GD12; **(B)** *Sclerotinia sclerotiorum* self-challenged **(C)** coculture of *S. sclerotiorum* (above) and *T. hamatum* GD12 (below) - doi.org/10.1111/1758-2229.70192

UK researchers have identified volatile compounds produced by the beneficial fungus *Trichoderma hamatum* GD12 with strong antifungal action against *Sclerotinia*

sclerotiorum.

The study reveals that the production of these compounds is activated when *Trichoderma* comes into contact with the pathogen, suggesting an induced chemical defense mechanism. The discovery could lead to the development of more effective bioinputs for disease control in economically relevant crops.

Trichoderma as biocontrol

The gender *Trichoderma* It is widely studied for its ability to suppress phytopathogens, stimulate plant growth and activate plant defenses.

The GD12 strain of *T. hamatum* had already shown suppressive activity against *S. sclerotiorum* in previous experiments with peat substrate. The new study focuses on the role of volatile organic compounds (VOCs) emitted during fungal interactions.

Induced production of compounds

In the confrontation tests, *T. hamatum* GD12 and *S. sclerotiorum* were grown together on agar plates for seven days. VOC analysis revealed significant changes in the chemical composition of the environment, with 22 compounds unique to the co-inoculation. Maximum production of

these compounds was observed on the 17th day after the start of co-cultivation.

Among the VOCs identified, ketones, furans, and sesquiterpenes stand out. The substance 6-pentyl-2H-pyran-2-one (6-PAP) was the most abundant, but did not show direct antifungal action in the tests. On the other hand, the compound 1-octen-3-one was shown to completely inhibit the growth of *S. sclerotiorum*, even at very low concentrations.

Fungicidal action

1-octen-3-one also inhibited the growth of other important pathogens: *Botrytis cinerea*, *Pyrenopeziza brassicae* e *Gaeumannomyces tritici*. Its chemical

structure includes a ketone conjugated with a double bond, suggesting an inhibition mechanism similar to that of fungicides of the strobilurin class.

The fungicidal effect was confirmed by exposing *S. sclerotiorum* to the compound without direct physical contact. After 72 hours, the pathogen did not recover, even when removed from the treated environment. The molecule was active at concentrations up to 100 times lower than the initial dose of 45,5 ?M.

Potential for agricultural application

Despite promising in vitro performance, the authors caution that testing under

agricultural conditions is needed. 1-octen-3-one has previously been associated with growth inhibition. *Arabidopsis thaliana*, which indicates the need to study possible phytotoxic effects on commercial crops.

Another compound with potential is 2-pentylfuran, which in addition to its demonstrated antifungal activity against *S. sclerotiorum*, has plant growth-stimulating properties. The combination of effects may favor the use of this VOC as a substitute for chemical inputs in sustainable systems.

Further information at doi.org/10.1111/1758-2229.70192

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