

May 30, 2026

Nº 81

Cultivar[®] *Semanal*

**Potential
threat
to Brazil**



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Oriental fruit fly threatens corn and wheat in Brazil

Study identifies areas at risk for *Mythimna separata* in the South and Southeast and provides guidance for phytosanitary surveillance

29.05.2026 | 07:05 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Takahashi

The oriental caterpillar *Mythimna separates*, a quarantine pest absent in Brazil, has found climatically favorable areas in the country and could pose an economic risk to wheat, corn, sugarcane, rice, and sorghum crops. A study mapped the global threat posed by the species and estimated the risk to Brazilian municipalities based on climatic suitability and the economic importance of these crops.

The greatest risk falls on wheat. Among the producing municipalities, 45,8 percent fell into the moderate risk class and 48,9 percent into the high risk class in case of invasion. In sugarcane, 47,1 percent of the municipalities presented moderate risk and 17,0 percent high risk. In rice, the rates reached 28,7 percent and 8,5 percent. In

corn, 29,2 percent of the municipalities were at moderate risk and 5,5 percent at high risk. In sorghum, 15,2 percent presented moderate risk and 0,3 percent high risk.

Researchers Gabriel Dorotel da Silva Ferreira and Cesar Augusto Marchioro, from the Federal University of Santa Catarina, used ecological niche modeling with the MaxEnt algorithm. The model combined records of pest occurrence, climatic variables, altitude, and agricultural production data. The analysis also incorporated a risk matrix with five classes of probability of occurrence and five classes of municipal economic importance.

Risk areas

The study identified areas of risk outside the pest's native distribution. These regions include North America, Central America, South America, Europe, southeastern Australia, and New Zealand. In Brazil, the most susceptible areas are concentrated in the South and Southeast. In these regions, there is an overlap between favorable climate and significant agricultural production.

The variable with the greatest influence on the model was the average annual temperature, accounting for 41,64 percent of the total. Temperature seasonality accounted for 20,96 percent. Altitude accounted for 19,31 percent. Together, these variables explained most of the potential distribution of *Mythimna*

separates. Suitability increased up to about 15 degrees Celsius and decreased at higher temperatures. The model indicated greater suitability at altitudes below 500 meters.

Crop damage

The species causes damage to widely distributed crops such as corn, rice, sorghum, sugarcane, and wheat.

According to researchers, its migratory capacity increases the risk of dispersal after an eventual entry. Radar studies cited by the researchers show movements at altitudes of 50 to 500 meters, with speeds of 4 to 12 meters per second and flights of about ten hours per night. This pattern allows for movements of up to 144

kilometers per night.

Global analysis showed a large exposure of agricultural areas. In rice-growing areas, 35 percent are located in moderately to highly suitable regions. For corn, the rate reaches 39 percent. For wheat, it reaches 46,9 percent. In Brazil, 90,7 percent of rice-growing areas and 36,2 percent of sugarcane-growing areas are located within climatically suitable zones for the pest.

Researchers calculated the Normalized Concentration Index to measure the economic relevance of each crop in the municipalities. For wheat, 36,6 percent of the 1.016 producing municipalities showed moderate to very high dependence. For sugarcane, 22,9 percent of the 3.169

producing municipalities fell into these categories. For corn, 10,0 percent of the 5.110 municipalities showed moderate to high dependence. For rice, the index reached 7,1 percent of the 1.665 municipalities. For sorghum, it reached 6,5 percent of the 644 municipalities.

Priority for surveillance

Economic risk maps indicate priority for phytosanitary surveillance at entry points and municipalities with greater dependence on host crops. The study cites targeted inspection of agricultural products and residues, trap networks in priority municipalities, standardized notification procedures, and contingency plans at the municipal level.

The research compares the situation with invasions already recorded in Brazil.

[Helicoverpa armigera](#) entered the country and already had a wide distribution when it was first registered in 2013. Eradication became unfeasible. In another case, [Cydia pomonella](#) was detected early and underwent a coordinated eradication program, with traps, host removal, and local management.

According to the researchers, municipal-scale maps can guide the allocation of surveillance resources. Integrating climate risk, likely routes of introduction, and the economic value of crops allows for the anticipation of priority areas for prevention against *Mythimna separates*.

Further information at

doi.org/10.1002/ps.70954

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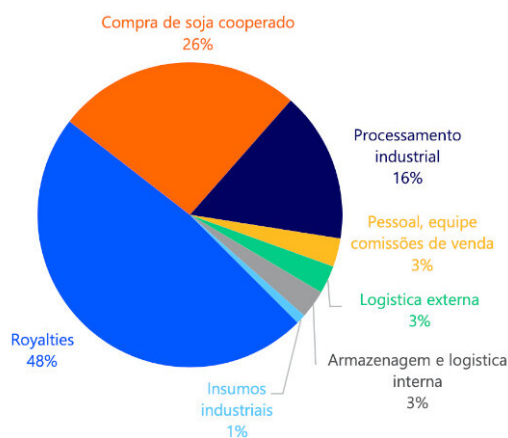
The soybean seed market enters a new cycle in Brazil

Rabobank projects expansion until 2040, driven by regional consolidation, financial pressure, and increased technological competition

28.05.2026 | 15:21 (UTC -3)

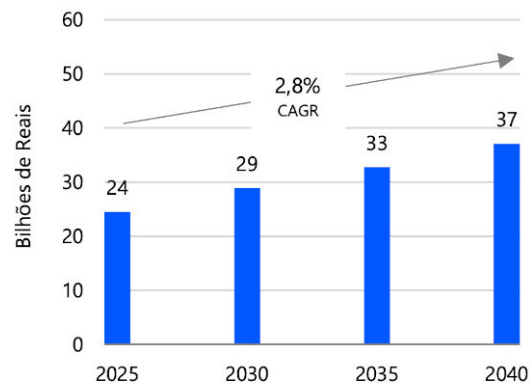
Cultivar Magazine, based on information from Rabobank

Figura 2: Divisão dos principais custos de produção de sementes de soja



Fonte: Rabobank

Figura 3: Total Addressable Market (TAM) de sementes de soja



Fonte: RaboResearch

The Brazilian soybean seed market is expected to continue growing in the coming years, but at a slower pace and

under pressure from high inventories, tight margins, and increased competition among companies. A study by RaboResearch estimates a total addressable market of approximately R\$24,5 billion by the end of the 2024/25 crop season. This value could reach R\$37 billion by 2040, with a compound annual growth rate of 2,8%.

The analysis points to a change in the sector's cycle. The growth in the area planted with soybeans has sustained the expansion of the seed market in recent decades. Between 2000 and 2025, the area dedicated to soybeans in Brazil grew at a compound annual growth rate of 5,1%. For the coming years, RaboResearch projects a slower pace,

closer to 1,5% per year, given the crisis in producers' margins.

Cost of seeds

The cost of seeds is also expected to rise. The study predicts greater incorporation of technology into the seeds used by Brazilian producers. As a result, the cost per hectare should increase by at least 20% by 2040. The share of seeds in operational costs is likely to exceed the historical average of 11%.

The survey attributes part of the growth in Brazilian soybean production to seed improvements. National production increased from 32 million tons in the 1999/00 harvest to just over 170 million

tons in 2024/25. The accumulated increase reached 430% in 25 years. In addition to the expansion of area, the study cites no-till farming, soil management, fertilization, pest and disease control, and genetic improvement as factors contributing to increased productivity.

Highlight in productivity

Brazil also stood out in productivity. Between 2006 and 2025, Brazilian soybean productivity grew at a compound annual growth rate of 2,04%. In the United States, the increase was 1,07% during the same period. According to the study,

varieties better adapted to Brazilian regions allowed for better expression of the genetic potential of the seeds.

Despite this history, the sector faces oversupply. The document points to two main factors. The first involves increased seed production and the entry of new participants between 2020 and 2023, a period marked by high margins. The second involves a change in demand. Many producers began to seek lower-cost seeds, while the market had prepared to sell higher-quality materials at higher prices.

Seed chain

The soybean seed supply chain in Brazil remains fragmented. According to data from the National Seed Production Registry cited in the study, the country has over 900 registrations for soybean seed production and 535 registrations for seed processing. The replication link brings together the largest number of participants, as it presents the lowest barrier to entry. Germplasm and biotechnology remain more concentrated.

The structure includes germplasm companies, responsible for the base genetics; biotechnology companies, responsible for transgenic events; replicators; cooperative members; processors; seed producers; and retailers. Seed producers operate under their own brand and can produce, process, and sell

seeds. They can also hire cooperative members and processors to complete the operation.

A comparison with the United States shows that the Brazilian market is in the initial stages of consolidation. In the United States, the leading company holds close to 30% of the seed market. The four largest companies account for approximately 65%. In Brazil, the largest seed replication and sales company holds less than 10% of the market.

The study, however, suggests that Brazilian consolidation should not follow an immediate national model. Interviews with industry stakeholders indicated a greater likelihood of regional consolidation in the first phase. Efficient companies tend to

gain market share in their areas of operation. A second phase could involve the formation of larger national groups.

Regional knowledge emerges as a decisive factor. The study cites the choice of varieties, producers' preferences, commercial relationships, and differences between local consumer markets. Growth strategies also vary by region. Mato Grosso shows a more aggressive profile among seed producers, in contrast to Bahia and Goiás.

Profitability explains part of the producers' entry into the activity. For cooperative members, the cost of producing soybean seed is close to the cost of soybean grain. The difference involves additional care to reduce grain damage and waste. The

premium paid to cooperative members is usually around 10% above the market price of soybeans.

In the seed industry, the barrier to entry is rising. The activity requires working capital, technology, infrastructure, and feasibility analysis. The study points to royalties as the main cost in soybean seed production, accounting for almost 50% of the total. The purchase of soybeans from cooperative members accounts for 26%. Industrial processing represents 16%. Together, these items account for 90% of the costs.

Historical margins

Historical profit margins for seed companies range between 20% and 25%,

according to RaboResearch. This level, coupled with the search for diversification, has attracted new entrants. This movement has increased fragmentation and raised the supply of seeds on the market.

The report also identifies a dilemma between scale and quality. Companies focused on quality may need to expand their portfolio as they grow. Larger seed companies cannot always deliver only the highest quality seeds. Companies focused on lower prices depend on scale and efficiency, but may need to invest in quality in regions with higher demands.

Germplasm and biotechnology

Germplasm and biotechnology may also undergo changes. The study points to the use of artificial intelligence and gene editing as factors capable of reducing development time and costs. This movement could lower barriers to entry in the medium and long term. Gene editing, however, still requires debate, according to the document.

The sector also faces short-term challenges. Credit management has gained importance. The seed market used to operate primarily on a cash basis. Financial pressure from producers has pushed some seed companies towards

installment sales. This movement creates new risks for companies without a consolidated credit structure.

Seed piracy remains a significant problem. The study cites data from CropLife Brasil, according to which 11% of the national soybean market consists of pirated seeds.

Climate change completes the list of critical points. Companies must adapt varieties to warmer and drier environments without reducing the productivity expected by the producer. The report states that varieties already exist that are more resistant to abiotic stresses caused by lack of rain and high temperatures.

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CNH appoints manager for dealership network

Hilton Francisco de Paula assumes national role related to the group's agricultural brands

29.05.2026 | 13:58 (UTC -3)

Cultivar Magazine



With 14 years of experience at CNH, **Hilton Francisco de Paula** (pictured) has assumed the role of Dealer Development Network Brazil for the Case IH and New Holland brands. Based in Curitiba (PR),

the executive will be responsible for developing the dealership network in the country.

Prior to his new position, Hilton worked in the company's commercial area, where he led the Sales department for eight years. During that time, he was responsible for team management, strategic planning, and strengthening the brands.

Holding a degree in Business Management from Fiat and a technical degree in agriculture, this professional has experience in commercial strategies, indicator management, and territorial expansion.

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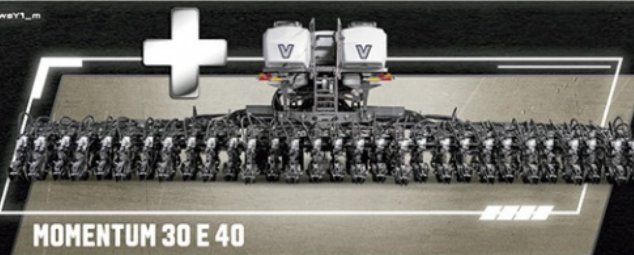
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Agricultural Market - May 29, 2026

Soybeans, corn, and wheat maintain support in the international market

29.05.2026 | 10:37 (UTC -3)

Vlamir Brandalitze - @brandalitzeconsulting



Soybeans held support in Chicago, despite the instability caused by the crisis in Iran and the fluctuating oil prices. The market is

still trading with slight resistance at \$12 per bushel and strong support at \$11,50 per bushel. The lack of confirmation regarding large Chinese purchases limited more robust movements.

In Brazil, prices remained positive, showing improvement compared to previous weeks. The port market attempted to find support, with prices ranging between 133 and 141 reais per sack for positions between July and October. The dollar also influenced trading.

In the United States, soybean planting has reached approximately 85 percent of the planned area. The average for this period is 75 percent. Illinois reached nearly 90 percent, compared to an average of 82

percent. Iowa recorded 93 percent planting. The progress reduced pressure on Chicago, as the market had already expected a rapid pace.

American producers are focused on the weather. There are concerns about the potential influence of El Niño in late June and July. The phenomenon could cause problems for the US harvest.

In Brazil, the sale of the current soybean crop has reached 64,5 percent. During the same period last year, the figure was 67,5 percent. The historical average is 68,5 percent. In terms of volume, sales exceed the historical average for this period.

The new harvest has reached 16 percent of sales. Last year, the rate was 22

percent. The historical average is 25 percent. The delay requires attention from producers.

Corn situation

In corn, Chicago held support at \$4,50 per bushel for the July contract. Longer-term positions, such as July 2027, found support near \$5 per bushel and attempted to hold at a level close to \$5,10 per bushel.

North American corn planting has reached 90 percent of the area. The historical average is 85 percent. Iowa recorded 97 percent, compared to an average of 95 percent. The progress indicates normality in the fields. The weather in July is still a concern, due to the possibility of El Niño

effects on the crops.

In Brazil, the corn market remained sideways. The second corn crop harvest began in isolated areas of Mato Grosso. Buyers in the animal feed and ethanol sectors are awaiting the arrival of the product. The port market fluctuated between 64 and 66 reais per sack.

On the B3 (Brazilian Stock Exchange), the July 2026 futures contract traded slightly above 65 reais per sack. The March 2027 futures contract was above 75 reais per sack. The difference shows a premium of about 10 reais per sack between the short and long term. This reading indicates more positive fundamentals for future positions.

Wheat situation

In wheat, planting has begun in Paraná and some areas of Rio Grande do Sul. In Chicago, the July contract held support near \$6,20 per bushel. Long positions to 2027 traded above \$6,70 per bushel.

The condition of U.S. wheat is worrying the market. Only 26 percent of the crops received a good or excellent rating from the USDA, according to the commentary. The previous week, it was 27 percent. Last year, the index reached 50 percent.

Russia also brings uncertainty. The crop germinated late and is showing uneven development. This situation reinforces expectations of lower global supply. The market is now working with higher prices

for wheat in the medium and long term.

In the domestic market, wheat from Rio Grande do Sul ranged between 1.320 reais and 1.330 reais per ton. In Paraná, prices ranged between 1.350 reais and 1.370 reais per ton. At the farm gate, producers in Rio Grande do Sul received between 65 reais and 67 reais per sack. In Paraná, prices ranged from 70 reais to 78 reais per sack, with some references close to 80 reais in the Ponta Grossa region.

The area planted with wheat in Brazil is expected to decrease. Conab estimates a reduction of 2,2 million to 2,3 million hectares, compared to 2,5 million hectares last year.

Rice situation

In the rice market, activity remained slow. Pepero auctions moved around 130 tons, but did not alter price trends. In the western border region of Rio Grande do Sul, commercial rice with 58 percent whole grains remained close to 54 reais per sack. Parboiled rice fell to 51 reais per sack.

Bean situation

In the bean market, the premium carioca bean lost strength after reaching levels close to 500 reais per sack. Indications ranged between 470 reais and 490 reais per sack. The commercial carioca bean maintained better demand, with prices between 410 reais and 440 reais per sack.

Black beans ranged between 260 reais and 290 reais per sack, but buyers tried to pay less.

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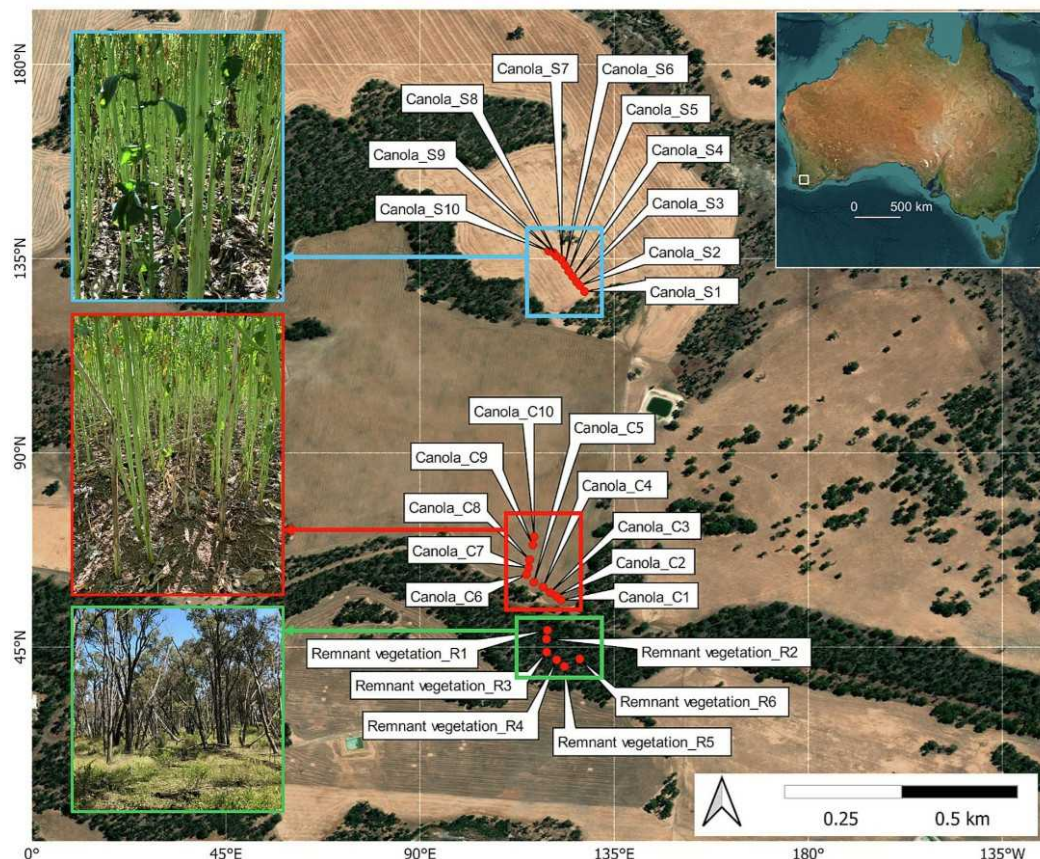
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Soil microbiome inhibits white mold in agricultural crops

Study links suppression of *Sclerotinia sclerotiorum* to microbiome with *Bacillus* and *Streptomyces*

29.05.2026 | 07:43 (UTC -3)

Schubert Peter, Cultivar Magazine



Location of soil sampling study sites in Kojonup, Western Australia, with state boundaries represented as of January 2022 - doi.org/10.1016/j.apsoil.2025.106722

Researchers at Curtin University have identified agricultural soils with a natural capacity to suppress Sclerotinia sclerotiorum, a fungus that causes white mold. The disease causes losses in extensive crops, such as canola and legumes. Their study showed the action of the soil microbiome against plant infection and against the germination of the pathogen's survival structures.

The research compared a suppressive soil with a nearby soil favorable to the disease. Scientists observed differences in the structure of the microbial communities. The suppressive soil showed a greater presence of biocontrol organisms, especially bacteria of the genera *Bacillus* and *Streptomyces*. These microorganisms

acted as antagonists to the pathogen.

Samples collected

The work assessed *Sclerotinia sclerotiorum* in canola, in samples collected near Kojonup, Western Australia. Scientists used samples from a canola area with a history of disease suppression, from a neighboring area conducive to the disease, and from an area of ??remnant vegetation. Collections took place in October 2022, at a depth of zero to ten centimeters.

In bioassays, canola seedlings grown in suppressive soil showed less disease progression. Metabarcoding data from ITS also detected a higher abundance of

Sclerotinia sclerotiorum. In conductive soil, the rate was higher than in suppressive soil. Carpogenic sclerotia germination fell to 29,9 percent in suppressive soil. Conductive soil recorded 59 percent. Remaining vegetation soil recorded 75,7 percent.

Biological origin

The results also indicated a biological origin for the suppression. Heat treatment of the suppressive soil at eighty degrees Celsius for sixty minutes reduced its control capacity. Mixing the suppressive soil with a conductive soil reduced infections in seedlings. Mixing two conductive soils did not produce the same effect.

According to Viet-Cuong Han of the Centre for Crop and Disease Management, the study shows the soil as a living biological system. The researcher stated that the team identified a soil capable of preventing plant infection and inhibiting the germination of the fungus's survival structures.

Microbiome analysis

Microbiome analysis indicated *Bacillus* as a keystone taxon in suppressive soil. The genus had a relative abundance of 28,1 percent in this soil, compared to 20,3 percent in conductive soil and 0,4 percent in remnant vegetation soil. Suppressive soil also had a higher abundance of *Neobacillus*, *Nitrososphaera*, *Candidatus*

Nitrocosmicus and *Geodermatophilus*.

Scientists also found a higher presence of fungal genera associated with biocontrol in suppressive soil, such as *Trichoderma*, *Chaetomium*, *Humicola* and *Coniothyrium minitans*. Among the bacteria and archaea, the phylum Firmicutes showed the greatest abundance in the suppressive soil.

Cultivation and antagonism assays confirmed a higher number of bacteria with biocontrol action. Species of *Bacillus* and *Streptomyces*. They reduced fungal growth and decreased disease in plant tests. The study also identified previously unreported bacteria from Western Australian soils that were effective against the fungus *Sclerotinia sclerotiorum*.

Chemical and physical properties

Chemical and physical properties were also associated with suppression. The data linked higher pH and lower carbon:nitrogen ratio with a greater capacity to suppress the pathogen.

Suppressive soil was also associated with greater water retention capacity and higher total organic carbon in the study analyses.

For the researchers, the results create a basis for microbiome-guided management strategies. Agronomic practices focused on soil health, such as maintaining organic matter and reducing unnecessary disturbances, can favor microbial communities linked to natural suppression.

The work also points to the future use of soil microorganisms as indicators and tools in the management of white mold and other soil diseases.

Further information can be found at doi.org/10.1016/j.apsoil.2025.106722

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Rhizobium genes open pathway for attachment in new bacteria

WSU study transfers symbiotic islands to non-nodulating bacteria and points the way to new inoculants

29.05.2026 | 07:24 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Stephanie Porter, WSU

Researchers at Washington State University transferred a set of genes associated with biological nitrogen fixation from symbiotic rhizobia to bacterial strains previously lacking the ability to form nodules. The study demonstrated, in a proof-of-concept trial, the conversion of non-nodulating bacteria into endosymbionts capable of colonizing host plants. The research points to a route for understanding, and in the future exploring, microorganisms capable of reducing the dependence on nitrogen fertilizers in agricultural crops.

The team of scientists evaluated rhizobia of the genus *Mesorhizobium*, collected from natural environments in the western United States. These bacteria live in the

soil. Some form nodules on the roots of legumes and fix nitrogen. Others do not perform this function.

Island of symbiosis

The researchers focused their analysis on a mobile genetic element called a symbiosis island. This segment carries genes necessary for nodulation and nitrogen fixation. The scientists marked symbiosis islands in donor strains and promoted bacterial crosses with recipient strains lacking the island. Then, they selected transformed bacteria and tested their symbiotic function in host plants.

The results indicated transmission equivalent to eighty percent of the tests.

Transmission occurred in many genotypes. The donor island genotype explained forty-eight percent of the variation in the number of transformed bacteria. The recipient genotype explained twenty-five percent. The donor-recipient interaction explained twenty-six percent.

The acquisition of the symbiotic island allowed the formation of nodules in all the transformed strains evaluated. Before the transfer, these strains did not nodulate. In thirteen of the fifteen strains tested, the researchers recovered colony-forming units from the nodules. This result showed bacterial proliferation within the symbiotic structure.

Functional fixation

Not all nodulation resulted in functional nitrogen fixation. One-third of the transformed strains began acting as mutualists, increasing the nitrogen content in the plants. Two-thirds originated commensal relationships, without detectable cost to the host plant. The study found no evidence of measurable damage to the host in the new endosymbionts evaluated.

The genetic proximity between donors and recipients influenced performance. More closely related lineages generated transformants with greater nitrogen fixation, greater shoot mass, larger nodule diameter, and a greater number of nitrogen-fixing nodules. Donors and recipients originating from the same soil type, serpentine or non-serpentine, also

produced transformants with better symbiotic performance.

The transfer of the genetic element did not show the same phylogenetic limit observed for its function. According to the study, the symbiotic island moved between different genomes. In some cases, it displaced other genomic elements at the insertion point associated with the phenylalanine transfer RNA gene. In a few transformants, partial transfer of the island occurred, with loss of genes linked to efficient nitrogen fixation.

Nitrogen fixation

Stephanie Porter, associate professor of biological sciences at WSU Vancouver,

stated that there is interest in more natural ways to deliver nitrogen to crops.

According to her, the team developed a way to move a large set of genes capable of enabling nitrogen fixation and plant colonization into bacteria that lack these functions.

The long-term goal involves transferring nitrogen-fixing capacity to microorganisms associated with fertilizer-dependent crops. Wheat and corn are examples of crops with high nitrogen demands. Porter also mentions microorganisms associated with corn or soybeans as possible targets for future transfer of this capacity.

Scientists still intend to identify genes and variants that contribute most to the success of the transfer. Agricultural

application depends on this step. The study shows biotechnological potential, but remains in the proof-of-concept phase, with trials in rhizobia and host plants used as an experimental model.

Further information can be found at DOI [10.1016/j.cub.2026.04.071](https://doi.org/10.1016/j.cub.2026.04.071)

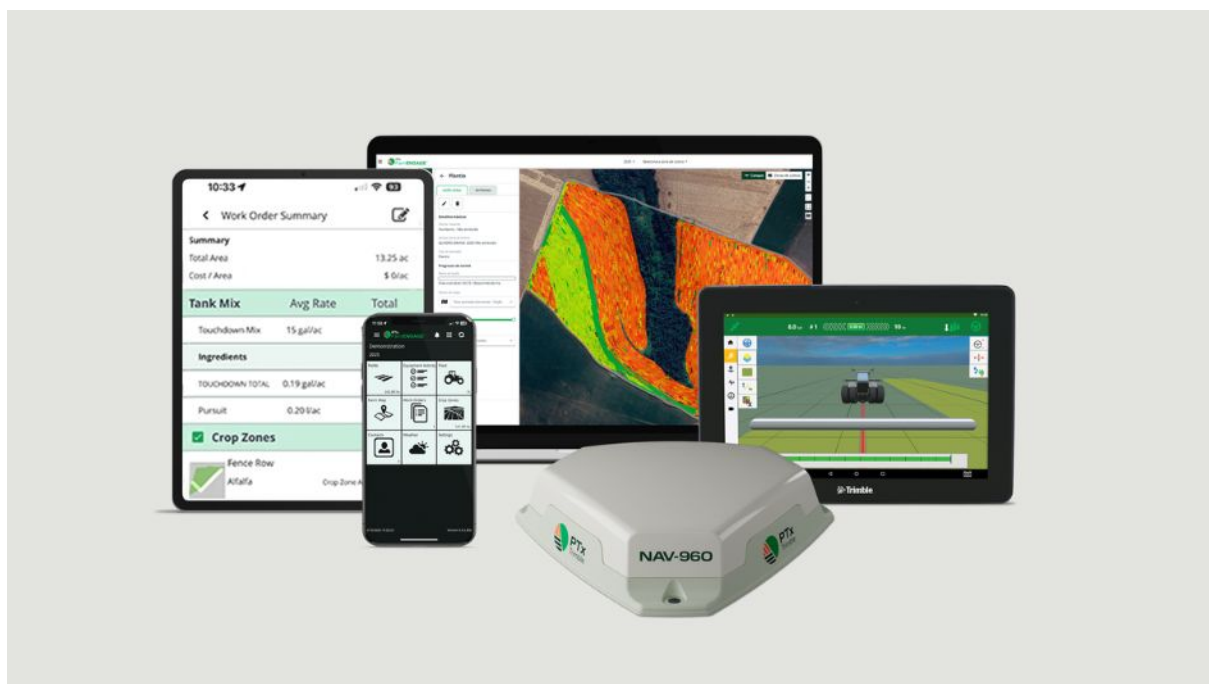
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PTx debuts at Agroactiva 2026 with technological solutions

Company highlights digital platforms and spraying systems in Armstrong, Argentina

28.05.2026 | 15:37 (UTC -3)

Beatriz Voltani



PTx, a brand that combines precision agriculture technologies from Precision Planting and PTx Trimble, is making its debut at another event in Argentina. This

time, the brand will be present with its innovative portfolio at Agroactiva, which takes place between June 3rd and 6th in Armstrong, Santa Fe.

During the fair, PTx will present new products that should soon arrive in the region, such as ArrowTube, a distribution system that provides precise spacing and guides seeds for uniform germination, and Radicle Lab, a solution that automates soil analysis to provide fast, accurate, and laboratory-quality results.

“Our goal at Agroactiva is to show that farmers can access cutting-edge digital agriculture without needing to replace their machinery. Our multi-platform and retrofit solutions deliver an accelerated return on investment. Furthermore, they allow

producers to be in control of their operations, making real-time decisions, regardless of the manufacturer or year of their machinery,” emphasizes José Bueno, Commercial Director of PTx.

Solutions for the entire crop cycle

Among the brand's highlights at Agroactiva are the Panorama digital platform, which provides agronomic data on planting, harvesting, and spraying, and FarmENGAGE, focused on managing agricultural operations, developed to simplify and unify fleets and fieldwork, regardless of the brand, model, and year of the equipment.

Also present at the PTx booth will be solutions already familiar to farmers, such as the WeedSeeker 2 selective spraying system, which allows for savings in herbicide application. Its high-performance optical sensors precisely detect weeds and apply the pesticide only where necessary, without harming the planting and allowing its use even on already emerged crops (green on green). In addition to the savings for the producer, the system has the advantage of being integrated with different sprayers available on the market.

Another solution available to visitors is the Clarity system, which displays and maps flow variability and fertilizer lock metrics, row by row, offering high-definition visibility on pneumatic and box seeders, dry fertilizer applicators, and no-till booms in

real time. As a result, it allows for immediate corrections, preventing nutrient deficiencies once the crop is established.

DrySet is an electrically powered fertilizer granule metering system for planters and seeders, ensuring uniform application regardless of field position. Row-by-row granular rate control allows producers to increase precision in fertilizer application and save on inputs. It also offers curve compensation, variable rate application, and other benefits. When combined with Clarity, producers can visualize the application rate and magnitude, detecting potential blockages in advance.

Aiming to guarantee emergence during planting, the vSet seed meters deposit seeds with precision, resulting in accurate

seeding across the entire field. The vDrive, in turn, is a maintenance-free electric drive system. When combined, these systems provide precise control of seed population and spacing, eliminating skips and doubles in planting, reducing maintenance needs and increasing process efficiency.

DeltaForce, an automated row-by-row control system that measures and adjusts soil pressure whenever there is variability in the field, will also be at the PTx booth at Show Rural Coopavel. Using high-precision sensors, it adjusts the planter's pressure against soil of varying textures and moisture levels, ensuring the ideal planting depth and seed emergence. This reduces waste, making harvesting more efficient.

Visitors will also be able to see the display and pilot station up close, an immersion into the world of connected agriculture, with the entire PTx Trimble monitor portfolio (GFX-350, GFX-1060 and GFX-1260) and autopilot options. In this space, producers can experience the usability and versatility of each solution, understanding how the intuitive interface and advanced features can optimize their daily operations. The Precision Planting 20|20 monitor offers real-time monitoring and control of operations, allowing farmers to make informed decisions and precise adjustments to optimize planting quality.

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Oriental butterfly uses glitter to choose leaves

Study indicates that female *Grapholita molesta* prefer bright areas even under irregular light in the canopy

28.05.2026 | 14:04 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Clemson University - USDA

Females of [Mole Grapholite](#) retain the ability to distinguish brightness and light

intensity in environments with irregular lighting, suggests a study by Chinese scientists. The result indicates consistent use of visual cues in choosing oviposition sites, even under conditions similar to those found in orchards at dusk.

The research evaluated the preference of females between light green and dark green stimuli. The study also compared posture in areas with higher, medium, and lower light intensity. The tests were conducted under uniform light, simulated dappled light, and complex dappled light. The scientists used three illuminance levels: one hundred lux, one lux, and zero point zero one lux. These values correspond to twilight, late twilight, and moonlight.

Under all conditions, females laid more eggs on the light green stimulus. Preference occurred at all three illuminance levels. Damp light did not reduce brightness discrimination. The same pattern occurred for light intensity. Females concentrated egg laying in areas of higher intensity, with a frequency greater than sixty-six percent.

Pest in rose bushes

Mole Grapholite occurs as a pest of peach, pear, apple, and other rosaceous plants. Females typically lay eggs on young leaves located at the top of host plants during dusk. Previous studies had already indicated a preference for greater brightness and higher light intensity in low-

light conditions. The new work evaluated whether heterogeneous canopy light could alter this behavior.

The researchers set up the experiments in cardboard boxes measuring 20 centimeters by 20 centimeters by 30 centimeters. Light green and dark green rectangles, measuring 5 centimeters by 10 centimeters, were arranged on the inner walls. The stimuli simulated young and old peach tree leaves. A white LED lamp illuminated the system from above, more than 50 centimeters from the box.

To simulate speckled light, the scientists used filters with light green, dark green, and transparent areas. In the complex speckled light treatment, a second layer with vertical stripes was superimposed on

the initial pattern. Each experiment had ten repetitions, with one hundred moths per condition.

The tests began at 5 p.m., three hours before the start of the scotophase. Ten mated females, three days old, were placed in each box. They had fifteen hours during the night to lay eggs. The following morning, the researchers removed the females and counted the eggs deposited in the light green and dark green rectangles.

Statistical analysis

Statistical analysis indicated a significant preference for light green in uniform light, speckled light, and complex speckled light. The response occurred at 100 lux, 1 lux,

and 0.01 lux. The study also recorded a significant preference for zones of higher light intensity in all combinations tested.

According to scientists, the stability of this response may help the species locate suitable oviposition sites in orchards, where branches and leaves create an uneven distribution of light during much of the growing season. The researchers also highlight potential applications in management. Understanding brightness preference can aid in the development of visual strategies, such as traps or repellent surfaces with higher light contrast.

More information at
doi.org/10.3390/insects1706055

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Massey Ferguson brings new tractors to AgroActiva 2026

The brand will present the MF 5M, MF 7S, and MF 9S series, as well as connectivity and precision agriculture solutions

28.05.2026 | 10:11 (UTC -3)

Cultivar Magazine, based on information from Corina Tareni



Photo: Charles Echer

Massey Ferguson will present three new tractor series at AgroActiva 2026 in Armstrong, Santa Fe, Argentina. The event takes place from June 3rd to 6th. The brand will welcome producers and visitors at booth 196B, focusing on technology, connectivity, and integrated solutions to increase agricultural productivity and profitability.

The company will also act as the Official Tractor of the show. The Massey Ferguson 8S model will represent the brand in this capacity. According to the organization cited by the company, the exhibition is expected to attract more than 270 visitors and companies from the sector.

The new series include MF 5M, MF 7S, and MF 9S. The MF 5M will focus on

productivity. The MF 7S will cater to operations with higher power demands. The MF 9S will combine technological features for demanding jobs.

Massey Ferguson will also showcase precision agriculture solutions and onboard connectivity. The MF 5M series will feature models with autopilot and real-time connectivity. According to the company, these features aim to improve the predictability and efficiency of operations.

The MF 7S is suitable for mixed farming applications, agricultural businesses, and service providers. The tractor features Agco Power engines with up to 210 horsepower. The line offers Dyna VT or Dyna 6 transmissions.

The MF 9S caters to large producers and contractors. The series offers up to 425 horsepower, connectivity, comfort, and precision agriculture features.

In the harvesting area, the company will showcase the Trident Series, featuring the MF 9695, MF 9795, and MF 9895 axial combine harvesters. In spraying, the brand will present the MF 500R, with automation and intelligent control technologies. This equipment aims to increase application precision, reduce overlaps, and minimize waste of inputs.

The program will also feature the MF 3700 tractor, recently introduced to the market, as well as solutions for haymaking and animal nutrition.

The FarmENGAGE platform will also be part of the exhibition. This tool allows for real-time monitoring and management of the agricultural fleet, including machines from different brands, all within a single digital environment.

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New Holland presents the CR11 combine harvester in Argentina

The twin-rotor model has a 775-horsepower engine, a 20-liter tank, and automation with artificial intelligence

28.05.2026 | 10:00 (UTC -3)

Cultivar Magazine, based on information from Facundo Cabrera



New Holland is presenting the CR11 combine harvester at AgroActiva, an event taking place in early June in Argentina.

The model expands the brand's presence in the high-capacity segment and completes the CR family in the country.

The machine features a twin rotor, a 775-horsepower FPT Cursor 16 engine, a 20-liter grain tank, and a discharge speed of 210 liters per second.

The CR11 uses the IntelliSense system.

This technology applies artificial intelligence to adjust machine parameters.

Sensors and cameras monitor working conditions. The system adapts the configuration in real time. The goal is to optimize yield, reduce losses, and maintain grain quality.

The harvester also features IntelliCruise. This feature regulates the forward speed. The automation aims to maintain operational capacity and material feeding without manual operator intervention.

Another component of the CR11 involves TwinClean. The system increases cleaning capacity and reduces losses in demanding conditions. The technology uses double sequential cleaning, automatic cross-distribution, and optimized airflow.

According to the company, the twin rotor technology allows for smoother and more efficient threshing. The system reduces mechanical damage, improves grain quality, and facilitates residue management. The uniform distribution of material also aids the performance of the

cleaning system.

The machine comes from the factory with full connectivity and compatibility with the brand's digital platforms. Data transfer, remote support, and agronomic management are handled through FieldOps. New Holland also monitors the machine in real time through the Intelligence Center.

The cabin has been redesigned. The space includes two IntelliView 12 touchscreens, integrated cameras, remote controls, climate control, interior comfort, and improved visibility and lighting.

The CR11 will be presented with a 61-foot Draper NH FD2 platform, manufactured in Brazil. The FD2 line features an articulated chassis, a three-section flex system,

adjustable approach angle, and adjustable conveyor speed.

In Argentina, the CR family includes the CR6, CR7, CR7+, CR8, and CR9 models, produced at the CNH factory in Córdoba.

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São Paulo updates rules for controlling citrus greening

SAA Resolution number 32 changes the criteria for eradication, monitoring of the psyllid, and interstate transit of citrus fruits

28.05.2026 | 09:39 (UTC -3)

Cultivar Magazine



Photo: Jeffrey W Lotz, Florida Department of Agriculture

The Government of São Paulo has published new criteria and procedures for the prevention and control of Huanglongbing, known as HLB or citrus greening. Resolution SAA number 32, of 2026, applies to properties and establishments with citrus plants - *Citrus* spp., *Fortunella* spp. and *poncirus* spp. - in the state.

The resolution defines São Paulo as a Federative Unit with occurrences of HLB. The text cites pests as etiological agents *Candidatus Liberibacter americanus* and *Candidatus Liberibacter asiaticus*. The regulation mandates the registration of all properties and establishments producing propagation materials with the Agricultural Defense agency, through the computerized system adopted by the

agency.

The new rule revokes Resolution SAA number 88, of December 7, 2021, and incorporates guidelines from Ordinance SDA/MAPA number 1.326, of July 4, 2025. This ordinance established the National Program for Prevention and Control of HLB and defined criteria for the phytosanitary status of the Federative Units and measures for the prevention and control of the disease in the country.

Main change

The main change involves the classification of municipalities in São Paulo according to the incidence of the disease. Municipalities with a plant incidence rate showing HLB symptoms between 0,001%

and 10% fall into the low incidence category. Municipalities with a rate above 10% fall into the high incidence category. The definition of the municipalities will be determined by an order from the competent director.

This division alters the obligation to eliminate diseased plants. In municipalities with a high incidence of disease, eradication will now apply to orchards of *Citrus* spp., *Fortunella* spp. and *poncirus* spp. up to the third year. In municipalities with low incidence, eradication remains mandatory for orchards of any age.

The municipal division seeks to encourage municipalities with significant economic importance in citrus farming to intensify actions to control and eradicate diseased

plants in production areas. The idea is to adapt the legislation to the impact of the disease in the state and bring balance to the citrus sector in areas of high incidence, preserving mature orchards under proper management.

Property inspection

The resolution maintains the obligation to inspect properties. The producer must identify and eliminate plants with HLB symptoms. Elimination must occur by uprooting or cutting close to the ground, with management to prevent sprouting. The regulation does not provide for compensation to the producer.

The text also requires two annual reports to the Agricultural Defense agency. The first must be submitted by July 15th. The second must be submitted by January 15th. The reports must communicate the results of inspections and the elimination of plants with HLB symptoms related to the previous semester. The regulation requires at least two inspections per semester, with a maximum interval of 90 days between them.

Vector monitoring

Another relevant change involves monitoring the insect vector, [Diaphorina citri](#). The resolution requires monitoring and control of the vector on all properties with *Citrus* spp., *Fortunella* spp. and

poncirus spp. Monitoring can be done using sticky traps, visual analysis of shoots by inspectors, or other methods recommended by research institutions.

The regulation considers monitoring the vector in orchards of any age every 15 days as a control measure. It also requires chemical control with sufficient frequency to prevent the psyllid's egg-to-adult development cycle. The resolution also includes plant inspection, eradication according to the municipality's category, and the acquisition of seedlings only from establishments registered with the Agricultural Defense agency.

Monitoring and chemical control records must be kept in a legible and unalterable format. The producer must maintain

monitoring reports, including the product used, dosage, application date, and other relevant information. These records must remain auditable for five years. Tax and phytosanitary documents related to the acquisition of seedlings must also be auditable for the same period.

Properties without management

The resolution prohibits properties with floor plans of *Citrus* spp., *Fortunella* spp. and *poncirus* spp. without HLB management. The standard defines properties as having no management or inadequate management when vector control does not occur, when control is insufficient, or when nymphs are present in

at least 5% of the inspected shoots.

Nymph assessment should cover the first two rows or border plants, at a height of 1,5 meters or more. The inspection should observe two shoots in 40 plants per plot, for a total of 80 shoots. Upon identifying a property without management or with inadequate management, the Agricultural Defense agency should notify the producer to carry out pest control of *Diaphorina citri* at a frequency sufficient to prevent the egg-to-adult cycle.

In the event of non-compliance with the notification, the producer must carry out prior chemical control against the vector and eradicate all plants with HLB symptoms at their own expense. On properties without commercial purpose or in backyard conditions, the finding of

plants with HLB symptoms leads to notification of the holder for the elimination of the plants.

The resolution also changes procedures for interstate transit. Fresh citrus fruits must undergo brushing and processing to remove branches and leaves before transit to other states, according to the provisions of SDA/MAPA Ordinance number 1.326. Brushing will not be mandatory for Ponkan tangerine fruits, *Citrus reticulata* Blanco.



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Plants adjust their growth by detecting nearby volatiles

Study with barley shows biomass and gene response to volatile organic compounds in intact plants

28.05.2026 | 08:29 (UTC -3)

Schubert Peter, Cultivar Magazine



Illustration demonstrating communication between plants - Image: Velemir Ninkovic

Barley plants are able to detect the growth rate of their neighbors through volatile organic compounds. Exposure to these signals alters biomass accumulation and gene expression in the recipient plants. The result indicates a still poorly understood function of these volatiles in environments with plant competition.

Research evaluated barley cultivars, *Vulgar hordeum*. The scientists used Fairytale, a slow-growing plant; Luhkas, an intermediate-growing plant; and Salome, a fast-growing plant, with distinct growth strategies. The recipient plants received only volatiles from the aerial parts of the emitting plants. The system prevented contact between roots and other underground compounds.

Dependent response

The results showed a response dependent on the origin of the volatiles. Fairytale accumulated more biomass when it received compounds emitted by Salome. Salome reduced biomass when it received volatiles from Fairytale. Exposure to plants with similar growth rates produced small or no significant difference in effects.

According to a statement from the scientists, the recipient plants adjusted their growth according to the competitive pressure indicated by the "smell" of their neighbor. The response occurred in leaves, stems, and roots. The effect indicated not only a redistribution of resources between organs.

Gene expression analysis reinforced this interpretation. Fairytale exposed to Salome showed more genes with reduced expression. These genes were related to protein maintenance processes, stress response, and defense. Salome exposed to Fairytale showed a large increase in genes linked to RNA processing, DNA replication, cellular transport, and protein metabolism.

Growth and defense

Scientists interpret the data as evidence of a balance between growth and defense. Plants exposed to signals from rapidly growing neighbors tended to prioritize growth. Plants exposed to signals from

slowly growing neighbors tended to reduce growth and amplify responses linked to induced defense.

Chemical profile

The study also analyzed the chemical profile of volatiles. The three cultivars emitted distinct mixtures. Classification by random forest model achieved 93,1 percent accuracy in separating the profiles of intact plants. Salome and Fairytale showed the greatest chemical separation.

Among the compounds that contributed most to this separation were benzyl nitrile, linalool, octanal, 1-octen-3-ol, benzothiazole, tetradecane, dodecane, and nonanal. Benzyl nitrile and an

unidentified compound, with a retention index of 1160, showed the highest emission in Fairytale. 1-octen-3-ol characterized Salome. Tetradecane, octanal, and linalool varied between Fairytale and Salome.

This work expands the understanding of the role of volatile organic compounds in plant communication. Previous studies focused on signals released after damage, such as herbivore attacks. In this research, undamaged plants emitted signals capable of altering growth and gene expression in neighboring plants.

The experiments were conducted in a laboratory, with plants grown under controlled conditions. Evaluations included dry biomass, morphological

characteristics, RNA sequencing, and gas chromatography coupled with mass spectrometry.

More information at

doi.org/10.1101/2025.08.15.670058

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Super El Niño 2026: When the climate redefines health risk

By Ricardo Silveiro Balardin, DigiFarmz

27.05.2026 | 14:27 (UTC -3)



Photo: Charles Echer

In scenarios characterized by intense El Niño events – often classified as “Super El Niño” – there is a significant increase in

the probability of atypical weather conditions occurring, including excess precipitation in certain regions, irregular water distribution in others, increased canopy moisture, and operational restrictions.

These conditions do not determine, but substantially increase the likelihood that agricultural production systems will face greater sanitary pressure, especially in crops such as soybeans, corn, and wheat. The potential impact tends not to be limited to direct climate stress, but rather to the interaction between climate, pathogens, and operational capacity, creating an environment conducive to the occurrence of epidemics.

According to the Food and Agriculture Organization of the United Nations (FAO), El Niño events alter precipitation and temperature patterns on a global scale, with significant effects on agricultural production and food security. In Brazil, for example, the 2023/2024 harvest showed a significant reduction associated with adverse weather conditions, illustrating how such events can affect productive performance – albeit with significant regional variability.

Regional variability

El Niño events do not manifest themselves homogeneously. On the contrary, they tend to amplify regional contrasts, which requires differentiated management

approaches.

In southern Brazil, there is a higher probability of frequent and heavy rainfall, which favors diseases dependent on leaf wetness and high relative humidity, in addition to increasing the risk of operational limitations. Under these conditions, the pressure from diseases such as Asian rust, white mold, leaf spots and Fusarium head blight tends to intensify.

In the Cerrado and Central-West regions, the most likely scenario involves irregular rainfall, dry spells, and high temperatures, with distinct impacts: lower initial pressure from diseases dependent on continuous moisture, but greater physiological stress on plants, uneven crop distribution, and

instability in operational windows. If rainfall resumes during critical phases, the system could rapidly transition to a condition of greater sanitary vulnerability.

In Matopiba (an agricultural frontier comprising areas of Maranhão, Tocantins, Piauí, and Bahia), the risk tends to be associated with water variability, affecting the establishment and efficiency of control measures.

In the Southeast region, mixed scenarios predominate, with behavior dependent on altitude, topography, and local rainfall patterns. Under these conditions, the pressure from diseases such as Asian soybean rust, white mold, and leaf spots can intensify in a more regionalized manner.

Effects on soybeans

In soybean cultivation, the sanitary risk in years with a strong El Niño influence is associated with a combination of high rainfall frequency; early canopy closure; operational restrictions for application; and pod opening under intense water conditions.

Under these conditions, the likelihood of diseases such as Asian soybean rust, septoria leaf spot, cercospora leaf spot, target spot, and white mold increases.

It is important to highlight that this is not inevitable, but rather a scenario in which control efficiency tends to be more sensitive to operational timing and environmental conditions. Reduced

residual fungicide efficiency and application delays become more significant factors in the outcome. Regarding fungicide efficiency, problems related to absorption and metabolic rate cannot be disregarded. Together, these factors can compromise their residual effect. Thus, favorable weather conditions combine with inefficient chemical management. For this reason, under El Niño conditions, disease damage reaches significant proportions.

In the Cerrado region, the dynamics tend to be more dependent on rainfall distribution throughout the cycle. Stress situations followed by a return of moisture can result in rapid transitions to environments favorable to the disease, especially in unevenly distributed crops.

In intensive operating systems, any delay of even a week can be significant. Crops with this climate profile are particularly at risk.

Effects on corn

For corn, the increased risk is related to the convergence of moisture, temperature, inoculum pressure, and ear husk coverage.

Foliar diseases and stalk and ear rots tend to be more likely to occur under these conditions, potentially impacting photosynthetic area, grain filling, and final quality. Mycotoxin accumulation is a crucial factor in El Niño situations, and can significantly compromise the quality of the

grains produced.

In the soybean-corn system, especially in the Cerrado region, delays in soybean planting can shift corn planting to less favorable windows, increasing exposure to stress and disease at the end of the cycle, as well as impacting final productivity.

Effects on wheat

Wheat exhibits high sensitivity to humidity and temperature conditions during its reproductive phases. In El Niño scenarios, there is an increased probability of Fusarium head blight, especially when there is rain during flowering and grain filling.

In addition to productivity, industrial quality can be significantly affected, with the risk of mycotoxin contamination – a critical factor in marketing.

Critical factor

One of the main indirect effects of events like Super El Niño is the reduction in operational capacity.

Frequent rainfall can limit access to crops, the timing of application, the efficiency of re-applications, harvesting, and post-harvest handling.

Thus, even technically well-structured programs can have their effectiveness compromised. The loss of operational efficiency becomes one of the main

determinants of the outcome.

Management strategies

Given this scenario, management tends to shift from a static logic to an adaptive and risk-based approach. In the South, there is a greater focus on anticipation and preventive protection. In the Cerrado, there is a need for flexibility and dynamic adjustments. In Matopiba, there is integration between water and sanitary risks. In the Southeast, management is guided by microclimates.

It is important to highlight that these strategies are not exclusive to El Niño years. On the contrary, they represent good practices that tend to generate

returns even in more stable climate scenarios.

Conclusion of the approach

Super El Niño events should be interpreted as amplifiers of variability and risk, not as guarantees of specific climatic or health behavior.

Adopting strategies tailored to this scenario should be seen as a way to reduce risk and increase the resilience of the production system. Even in situations where the event does not manifest with the expected intensity, the adjustments made tend to improve operational efficiency, increase crop protection, and reduce

structural vulnerabilities.

In short, logic ceases to be reactive and becomes probabilistic and strategic, where decisions are made not based on the certainty of the event, but on the relationship between risk, potential impact, and mitigation capacity.

By Ricardo Silveiro Balardin, *DigiFarmz*

* Article published in [Cultivar Grandes Culturas Magazine No. 321](#)

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FMC has a new Planning and Performance Manager

Rodrigo de Pinho Garcia has over 22 years of experience and will focus on strategic planning and execution

27.05.2026 | 14:09 (UTC -3)

Cultivar Magazine



FMC has a new Planning and Performance Manager. **Rodrigo de Pinho Garcia** (pictured) assumes the position

with over 22 years of experience in corporate leadership, financial performance, financial planning and analysis (FP&A), and strategic support to senior management. The executive will be based in Campinas (SP).

Throughout his career, Rodrigo has built a strong track record in Brazilian agribusiness by connecting corporate strategy and commercial execution across different business lines within the sector, combining financial expertise and commercial acumen.

Before joining FMC, he worked for seven years at BASF. At the company, he led the Agribusiness Business Performance team, focusing on the integration between corporate strategy and margin execution.

He also chaired the Fiscal Council of BASF Previdência and served as the accountant responsible for the company's operations in Brazil, focusing on statutory and technical accounting management.

The executive also accumulated more than four years of experience in leadership positions at PepsiCo.

Rodrigo holds a degree in Accounting from the Pontifical Catholic University of São Paulo and an MBA in International Financial Reporting Standards (IFRS).

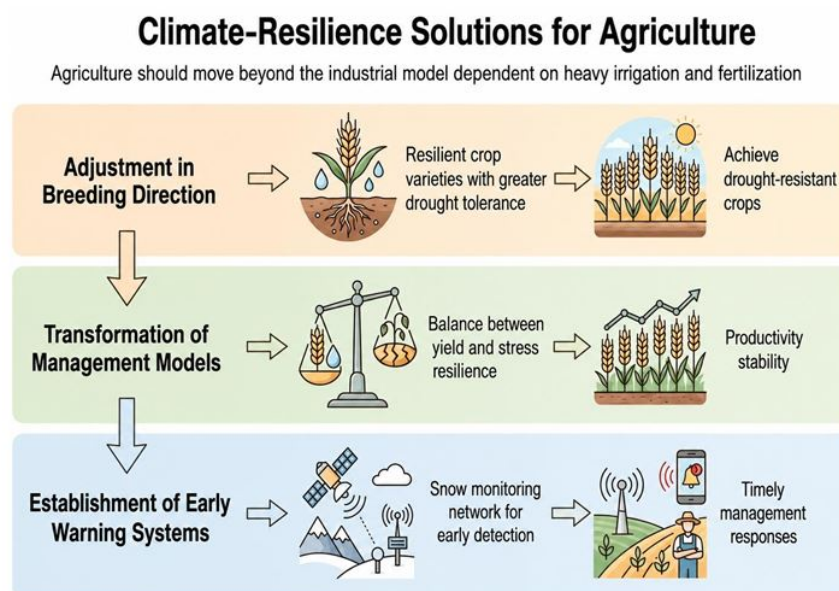
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Snow drought increases risk to winter wheat

Study indicates increased sensitivity of crops to lack of snow in the Northern Hemisphere

27.05.2026 | 14:06 (UTC -3)

Schubert Peter, Cultivar Magazine



doi.org/10.1038/s43016-026-01302-7

Snow drought threatens winter wheat productivity in the Northern Hemisphere. Research indicates an increase in the frequency of these events between 1960

and 2020. The phenomenon reduces thermal protection and water supply for the crop, thus increasing the risks of cold damage and water stress.

The study involved scientists from The Hong Kong Polytechnic University, the University of Hong Kong, and the University of California, Irvine. The team analyzed winter wheat-producing areas in the Northern Hemisphere. The proportion of crops affected by snow drought increased from 46% to 54% between 1960 and 1970 to 70% to 99% between 2010 and 2020.

Machine learning

Researchers used explainable machine learning, grid-based productivity data, and a standardized snow water equivalent index. The analysis assessed the sensitivity of winter wheat productivity to snow variation between 1982 and 2016. The work indicates a significant increase in this sensitivity in more than 25% of cultivated areas in the Northern Hemisphere.

According to scientists, about 45% of the crops evaluated suffered significant negative impacts from the snow drought. Europe, Central Asia, and the United States experienced the most severe effects. In East Asia, productivity gains linked to longer growing seasons have been diminishing.

Three factors

The team identified three main factors contributing to the increased sensitivity of winter wheat: greater fertilizer use, intensified freezing stress, and a slight reduction in precipitation. Higher soil nutrient levels can promote growth. However, they also increase the crop's dependence on water and thermal insulation provided by snow cover.

Scientists recommend varieties with tolerance to cold and drought. They also advocate for more precise and sustainable nutritional management. Monitoring snow cover should be integrated into risk assessment and agricultural alert systems.

Further information at

doi.org/10.1038/s43016-026-01302-7

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Pyriculol activates rice's defense against blast disease

Study indicates role of Magnaporthe oryzae metabolite in rice plant immunity

27.05.2026 | 13:41 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Karlheinz Knoch, KIT

Researchers have identified the effects of pyriculol on rice's defense against *Magnaporthe oryzae*. The study indicates no correlation between levels of the metabolite and disease severity. External application of pyriculol or its isomer pyriculariol reduced lesion expansion by 30 percent.

Rice blast affects rice crops in more than 85 countries. The disease also affects other cereals. It spreads rapidly. In just a few days, extensive areas of dead leaves can appear, and grain production drops.

The study evaluated transgenic strains of the fungus with alterations in pyriculol biosynthesis. Pathogenicity assays involved different rice genotypes. The results did not indicate pyriculol as a

virulence factor of *Magnaporthe oryzae*.

Pyriculol action

According to the study, pyriculol mimics part of the action of salicylic acid, a compound associated with plant defense. The metabolite suppressed early genes in jasmonate biosynthesis, such as OsAOS1, OsAOS2, and OsAOC. It also affected wound-responsive JAZ transcripts.

The molecule preserved the expression of OsJAR1. This effect allowed the systemic conversion of methyl jasmonate to JA-Ile. Thus, pyriculol modulated the interaction between salicylic acid and jasmonate. The process favored the preparation of the defense associated with salicylic acid and

maintained systemic signaling by jasmonate.

Histological analyses indicated pyriculol-induced cell death in the host tissue. This response restricted the advancement of fungal hyphae. The effect acted in conjunction with the biosynthesis of phytoalexins triggered by the pathogen.

Further information can be found at doi.org/10.1093/jxb/erag061

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Valtra will bring new tractors to Agroactiva 2026

The brand will showcase solutions in tractors, spraying, and precision agriculture for the Argentinian countryside

27.05.2026 | 13:30 (UTC -3)

Cultivar Magazine, based on information from Corina Tareni



Valtra has confirmed its participation in Agroactiva 2026 in Argentina. The brand will present a new generation of tractors during the fair. The equipment will feature advancements in efficiency, operational comfort, and digital resources to support farm management.

The company will also showcase solutions in tractors, spraying, and precision agriculture. The proposal aims to assist producers, contractors, and specialists in making decisions related to the upcoming agricultural season.

According to Emiliano Ferrari, commercial director of Fendt and Valtra for Latin America, the fair is taking place at a strategic moment for the sector. He stated that the brand seeks to maintain close

contact with producers and offer concrete solutions.

The technology area will include systems with artificial intelligence and connectivity. Among them are the Talking Tractor and the FarmENGAGE platform. These tools enhance the interaction between the producer and the machine. They also convert operational data into information for use in daily work routines.

The technologies were presented globally at Agritechnica 2025. They then arrived in South America at Agrishow 2026.

The booth will feature dealers and brand specialists. They will provide technical guidance and present information to improve performance and operational efficiency.

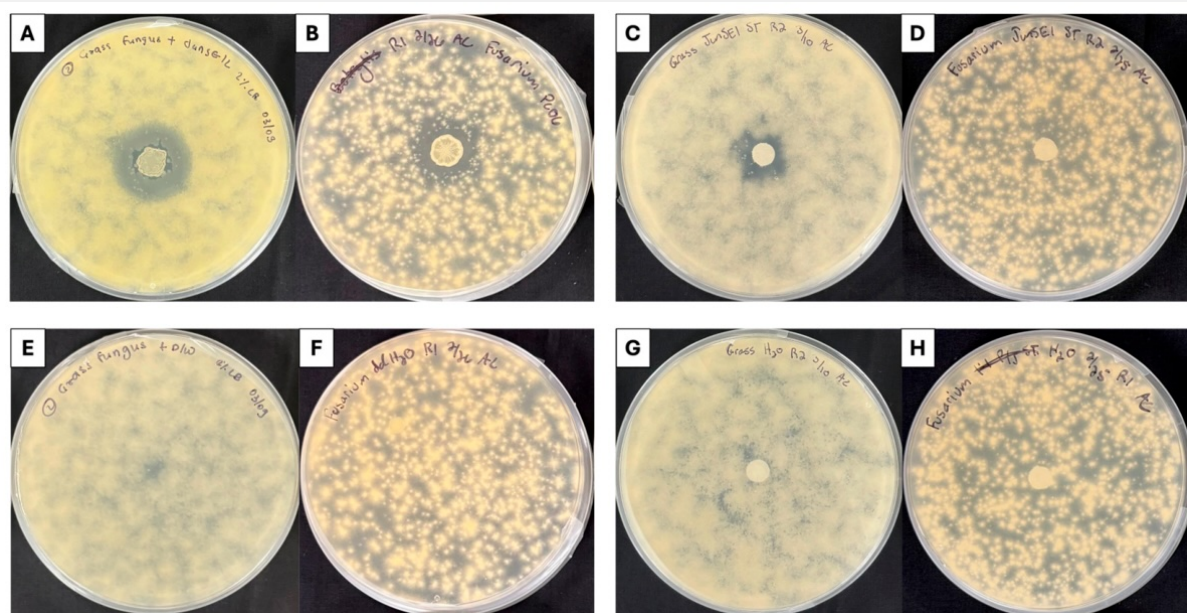
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Wheat endophyte shows antifungal activity in seedlings

The isolated bacterium *Bacillus atrophaeus* migrated from the seed to the roots and shoots and inhibited fungi in in vitro assays

27.05.2026 | 08:43 (UTC -3)

Schubert Peter, Cultivar Magazine



Antifungal activity of JunSE1L against *Mucor hiemalis* e *Fusarium proliferatum*. (A, B) Inhibition of fungal growth by live JunSE1L cells. A 10 μ L drop of bacterial suspension with adjusted OD600 was placed in the center of fungal cultures and incubated for 4 days at 22 $^{\circ}$ C. (A) *M. hiemalis*; (B) *F. proliferatum*. (C, D) Inhibition by supernatant of cell-free culture applied with sterile filter paper discs. (C) *M. hiemalis*; (D) *F. proliferatum*. (E, F) Control treatments with sterile distilled water applied directly to the surface of the agar. (E) *M. hiemalis*; (F) *F. proliferatum*. (G, H) Control treatments with sterile filter paper discs soaked in sterile distilled water. (G) *M. hiemalis*; (H) *F. proliferatum* No inhibition was observed in the control treatments - doi.org/10.3390/seeds5030030

A bacterial endophyte isolated from wheat seeds showed the ability to colonize root and shoot tissues during the initial establishment of seedlings. The isolate, named JunSE1L, belongs to the species *Bacillus atrophaeus*. In laboratory tests in the United States, it also inhibited the growth of *Fusarium proliferatum* and *Mucor hiemalis*, two fungi used as targets in the study.

The research evaluated winter wheat seeds, cultivar Juniper. Scientists sterilized the surface of the seeds with ten percent hydrogen peroxide. Then, they incubated the material in LB medium with two percent agar, at 22 degrees Celsius. White colonies appeared on 44 out of 55 seeds, a proportion close to 80 percent.

The team purified two types of colonies. The work focused the analysis on the larger, rougher form, called JunSE1L. Identification by sequencing the 16S rRNA gene confirmed 100 percent identity with *Bacillus atrophaeus*.

Different compartments

The isolate appeared in different plant compartments after six days of growth in sterilized sand. Researchers recovered colonies in soil adhering to roots, on the root surface, in root segments, and in leaf and shoot tissues. Emergence occurred most frequently at the cut edges of tissues. This observation indicated mobilization of the endophyte from the seed during germination.

JunSE1L exhibited strong plasticity depending on the culture medium. In LB medium, it formed compact, rough, and hydrophobic colonies. Water droplets remained nearly spherical on the colony surface for about one and a half to two hours. In minimal medium, the colonies spread out more, became less hydrophobic, and absorbed the droplet in about ten minutes.

Spore formation

The behavior also changed in spore formation. In minimal medium, spores appeared inside the mother cells on the fifth day. Free spores emerged on the seventh day. In LB, sporulation took longer and only appeared after 15 days.

The bacteria formed a biofilm in a rich medium. In static liquid cultures with LB, JunSE1L produced a thick film at the air-liquid interface in 48 hours. In minimal medium, under the same conditions, no film was visible. This result indicated a direct influence of nutrient availability on the lifestyle associated with surfaces.

The isolate produced compounds with surface activity. During growth in minimal liquid medium, the surface tension of the filtrate dropped from 72,2 to approximately 30 millinewtons per meter. The drop occurred during the late exponential growth phase. The estimated critical micelle concentration for the precipitated fraction at pH two reached approximately 0,125 milligrams per milliliter.

Extracellular activities

JunSE1L also exhibited extracellular activities associated with microbial competition. Colonies formed hemolysis halos on blood agar after three days. On skim milk agar, they formed casein hydrolysis zones, a sign of protease secretion. The isolate did not show detectable phosphate solubilization on Pikovskaya agar. It also did not indicate nitrogen fixation in nitrogen-free medium.

In antifungal assays with live cells, a ten-microliter bacterial suspension generated zones of inhibition against both fungi. The median halo reached 3,0 centimeters for *Mucor hiemalis* and 2,0 centimeters for *Fusarium proliferatum*. Control treatments

with sterile distilled water did not inhibit fungal growth.

The cell-free supernatant maintained activity only against *Mucor hiemalis* under the tested conditions, filter paper discs soaked in the supernatant produced an average halo of 1,5 centimeters against this fungus. The same supernatant did not generate detectable inhibition against *Fusarium proliferatum*. The scientists state in the study: the effect depended on the assay design and the fungal species. The biochemical mechanism involved was not identified.

Seed surface

The application of JunSE1L to the surface of seeds also showed dose dependence. Concentrations of 10^1 and 10^2 colony-forming units per milliliter resulted in little or no recovery of the bacteria in the seed. A concentration of 10^3 colony-forming units per milliliter allowed the recovery of approximately 10^1 colony-forming units per seed. At 10^4 colony-forming units per milliliter, the recovery was close to 10^2 colony-forming units per seed.

The seeds showed radicle emergence at all doses tested. However, the scientists did not measure root length, shoot height, or dry biomass. Therefore, the study did not confirm an effect of the isolate on seedling vigor. The results indicate the potential of JunSE1L as a model for studying native endophytes of wheat

seeds and their contribution to the initial assembly of the plant microbiome.

More information at

doi.org/10.3390/seeds5030030

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Luxyva arrives in Mexico to reduce radiation stress

Rovensa Next's biosolution aims to maintain photosynthesis and productivity in crops under high solar intensity

27.05.2026 | 08:17 (UTC -3)

Cultivar Magazine, based on information from Elisa Lipperheide Vallhonrat



Rovensa Next has launched the Luxyva biosolution in Mexico. The product assists crops under high solar radiation. The technology aims to maintain photosynthetic efficiency, energy balance, and productivity during periods of increased sunlight.

The company claims that the product helps plants adapt to excessive radiation. This stress can cause photoinhibition, oxidative stress, and yield losses in open-field crops. This condition is particularly relevant in Mexico, where a large portion of crops are grown outdoors.

Luxyva acts on the plant's physiological processes. The biosolution helps regulate and utilize received radiation more efficiently. The product does not limit light

exposure. The goal is to maintain photosynthetic activity when radiation exceeds ideal levels.

According to Rovensa Next, Luxyva reduces photoinhibition in photosystem two. The product preserves the functionality and repair balance of the D1 protein, a target of stress-induced damage. This action prevents a decrease in photosynthetic capacity and effective leaf area.

The company reports agronomic gains in tomato trials in high-radiation environments. Plants treated with Luxyva showed 45% to 50% more fruit per plant. Yield per plant increased by up to 70% compared to untreated plants.

Biosolutions can be integrated into existing crop management programs. They are suitable for horticultural, fruit, grain, ornamental, and industrial crops. Their use is targeted at regions with high solar intensity, high temperatures, and low relative humidity.

Following its launch in Mexico, Rovensa Next plans to progressively deploy Luxyva in other markets. The company states that the technology integrates its strategy to expand the use of biosolutions to address climate challenges in agriculture.

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Fabrícia Souza takes over as financial director of VLI

The executive will assume the role of CFO starting June 1st, reinforcing the female presence in the company's leadership

26.05.2026 | 16:10 (UTC -3)

Wilson Silvaston, Cultivar Magazine edition



VLI announced that **Fabrícia Gomes de Souza** (In the photo) will assume the position of Chief Financial Officer (CFO) of

the company starting June 1st. The role had been temporarily filled by the company's CEO, Fábio Marchiori. With Fabrícia's arrival, VLI's executive board will now have a female majority.

Among the new CFO's responsibilities will be leading the accounting, tax, and financial areas of the group's companies, as well as strengthening internal controls, digitizing strategic processes, and supporting the execution of the corporate strategy with a focus on value creation and sustainability.

In a statement, Fabrícia highlighted the company's relevance to national logistics and the competitiveness of strategic production chains in the country. "I assume the position of CFO with great satisfaction

and a sense of responsibility. My expectation is to contribute to strengthening an increasingly disciplined, sustainable financial management system that is connected to the needs of the business," she stated.

The new CFO has a long track record in the sector

The executive has over 30 years of experience in leadership positions in the areas of finance, corporate governance, operations, and logistics. Throughout her career, she has worked at companies such as CSN, MRS Logística, and Wilson Sons.

Fabília also served on the board of the Internal Railway of the Port of Santos (Fips). She holds a degree in civil engineering from the Federal University of Rio de Janeiro, an Executive MBA from Coppead/UFRJ, and training for board members from the Brazilian Institute of Corporate Governance (IBGC).

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Government launches unified system for pesticide registration

The Sispa platform seeks to reduce bureaucracy and increase regulatory efficiency in Brazil

26.05.2026 | 15:45 (UTC -3)

Ministry of Agriculture, Cultivar Magazine edition



The Ministry of Agriculture (Mapa) launched this Tuesday (May 26) the Unified System of Information, Petition and

Electronic Evaluation (Sispa), a platform created to modernize and integrate the process of registering pesticides in Brazil. The tool complies with the provisions of Law No. 14.785/2023, which defined Mapa as the registering body for pesticides and related products and established the adoption of a single protocol for registration requests.

With the new system, all requests will be made exclusively in a unified electronic environment, coordinated by the Ministry of Agriculture, Livestock and Supply (Mapa). Until now, companies had to file requests separately with Mapa, the National Health Surveillance Agency (Anvisa), responsible for toxicological evaluation, and the Brazilian Institute of Environment and Renewable Natural

Resources (Ibama), in charge of environmental analysis.

According to the government, the integration will allow for greater agility, traceability, and transparency in all stages of the pesticide evaluation and registration process. The platform should also facilitate access to information related to the trade and registration of these products.

Investments exceed US\$6 million

The system was developed in partnership with the private sector, with participation from the Brazilian Cotton Producers Association (Abrapa) and the Brazilian Cotton Institute (IBA), which invested over

US\$6 million in the project. The initiative also received support from the United Nations Development Programme (UNDP) and the Ministry of Foreign Affairs (MRE).

During the launch, the Minister of Agriculture, André de Paula, stated that Sispa is part of the digital transformation process of Brazilian agricultural defense. “Sispa aims to modernize the registration of pesticides in Brazil. Our daily challenge is to build the conditions for an increasingly sustainable and competitive agriculture,” he declared.

The Secretary of Agricultural Defense at the Ministry of Agriculture, Carlos Goulart, emphasized that the new tool does not alter the technical evaluation criteria, but seeks to reduce costs and increase

administrative efficiency. "The system brings administrative efficiency, reduces costs for the Federal Government, and delivers clear solutions for all those involved," he stated.



Photo: Carolina Antunes

According to Márcio Portocarrero, executive director of Abrapa, the productive sector expects shorter lead times and less rework in the processes. He believes that standardizing orders could

accelerate the arrival of new molecules to the market.

The acting CEO of Anvisa, Leandro Safatle, assessed that Sispa fulfills a historical demand for integration between the bodies responsible for registration.

“There were three distinct systems, with communication difficulties and little uniformity in procedural flows. Sispa represents an important evolution by integrating the processes of one of the largest regulatory systems in the world,” he said.

With the new platform, companies will be able to track the progress of processes in real time across the three agencies involved, reducing duplication of procedures and the so-called "ping-pong effect" of documents between institutions.

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High technology and power mark Fendt's debut at Agroactiva

German manufacturer from the AGCO group participates for the first time in Argentina's largest open-air agricultural fair

26.05.2026 | 11:33 (UTC -3)

Beatriz Voltani



Fendt, the German agricultural machinery manufacturer belonging to the AGCO group, is making its debut at another event

in Argentina. This time, the brand will be present with its powerful and highly technological machinery at the largest open-air agricultural fair in the neighboring country: Agroactiva, which takes place between June 3rd and 6th in Armstrong, Santa Fe.

Fabio Dotto, Fendt's Product Marketing Director, states that the country plays a fundamental and strategic role in the brand's regional growth plan. "Due to its importance in global agriculture, Argentina is a market that demands technology. Therefore, our goal is to bring innovative solutions adapted to the conditions of local agriculture to local producers."

During the fair, the brand will present its line of tractors, harvesters, and sprayers

available for the local market, targeting a demanding and high-tech segment, designed to meet the needs of an increasingly professionalized agricultural sector.

Fendt 728 Vario Gen7: The tractor is equipped with the powerful AGCO Power CORE 75 engine, with 283 hp, which, with Dynamic Performance, offers up to 20 additional hp to meet auxiliary demands, reaching a maximum power of 303 hp. The VarioDrive transmission, with four-wheel drive and intelligent torque transfer between the axles, allows for greater traction.

Fendt 900 Vario Gen7: These high-powered tractors (355 to 415 hp) represent the pinnacle of technology, efficiency, and

comfort in the segment. The 9-liter MAN engine utilizes the Fendt ID concept, offering high torque at low RPMs, resulting in the lowest fuel consumption in its class. The series stands out for its self-cleaning air filter systems which, together with the engine's reversible hydraulic fan, increase operational performance.

Ideal Fendt: The combine harvesters feature an efficient processing system that delivers superior harvest quality. Superior energy efficiency—along with high processing capacity and grain preservation—allows the machines to achieve up to 15% greater operational efficiency, enabling the harvest to finish a week earlier. The machine also offers 20% savings in fuel consumption, 25% higher grain quality, and up to 30% reduction in

losses.

Fendt Rogator 934H: With its main tank options of 3.500 or 4.200 liters and adjustable height from 1,53 to 1,93 meters, the self-propelled sprayer incorporates technologies that guarantee greater time and cost savings, such as additional 150-liter tanks for direct injection of products for localized and targeted applications. The LiquidLogic system, with its product recirculation and proportional agitation, ensures homogeneous application across the entire spray boom. The progressive application technology (PWM) individually adjusts the dose at each nozzle, ensuring greater precision and efficiency.

Connectivity also plays a central role in the solutions presented to farmers, such as

the digital platforms from PTx FarmEngage and Panorama, which allow for the integration of agronomic information, real-time monitoring of operations, and the transformation of data generated in the field into tools for productive decision-making.

With nearly 100 years of experience and leadership in innovation applied to agriculture, Fendt announced the opening of four new dealerships this year: Balcarce Maquinarias (Balcarce and Tres Arroyos, Buenos Aires), Natural Argentina (Villa Mercedes, San Luis province) and DeltaAgro (Armstrong, Santa Fe province).

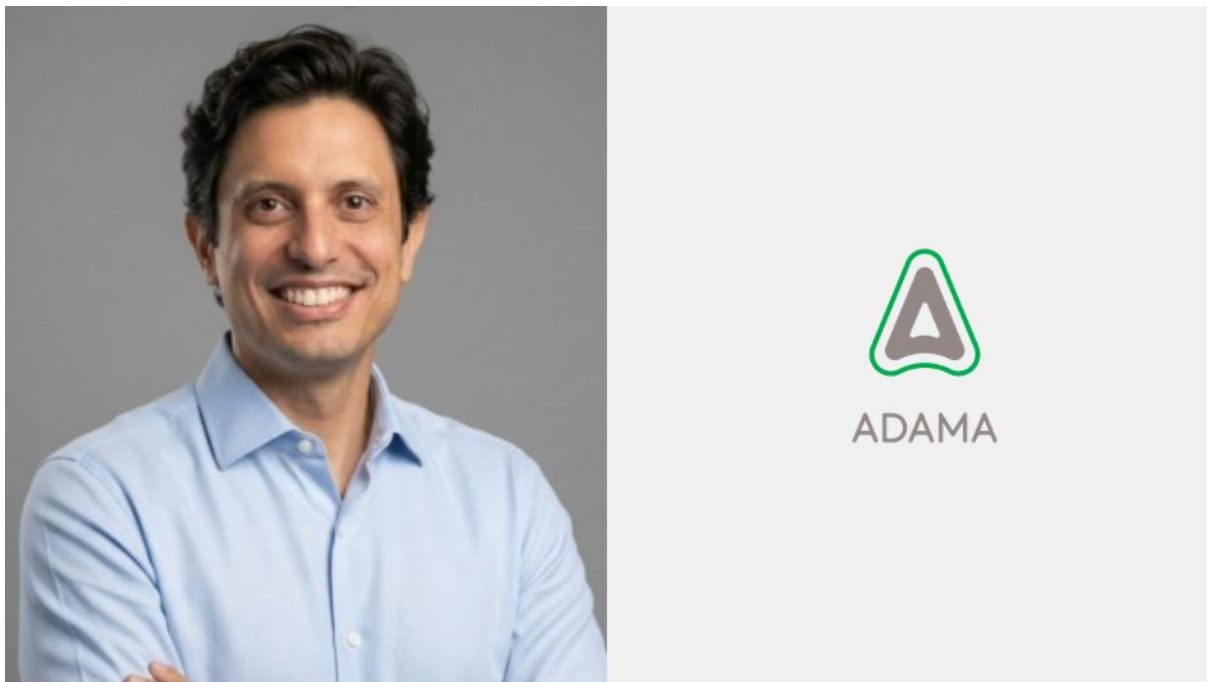
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Adama appoints regional manager for Sinop (MT)

Guilherme de Menezes Costa has worked for companies such as Bayer, BASF, and Stoller

26.05.2026 | 09:42 (UTC -3)

Cultivar Magazine



Guilherme de Menezes Costa (pictured) has assumed the regional management position for Adama Brasil in the Sinop region (MT). An agricultural engineer, the

executive has over 15 years of experience in agribusiness, working in the areas of commercial leadership, market development, and business management.

Prior to his new role, Guilherme served as Business Unit Manager at Stoller do Brasil, where he led growth strategies, managed sales teams of over 60 professionals, and expanded the market in the Cerrado region, focusing on Mato Grosso and Rondônia, for more than three years.

Throughout his career, he has also worked for companies such as Mosaic, Bayer, Monsanto, and BASF.

Guilherme holds a degree in Agronomic Engineering from the Luiz de Queiroz Higher School of Agriculture (Esalq/USP) and an MBA in Marketing with an emphasis on Sales from the Getulio

Vargas Foundation (FGV).

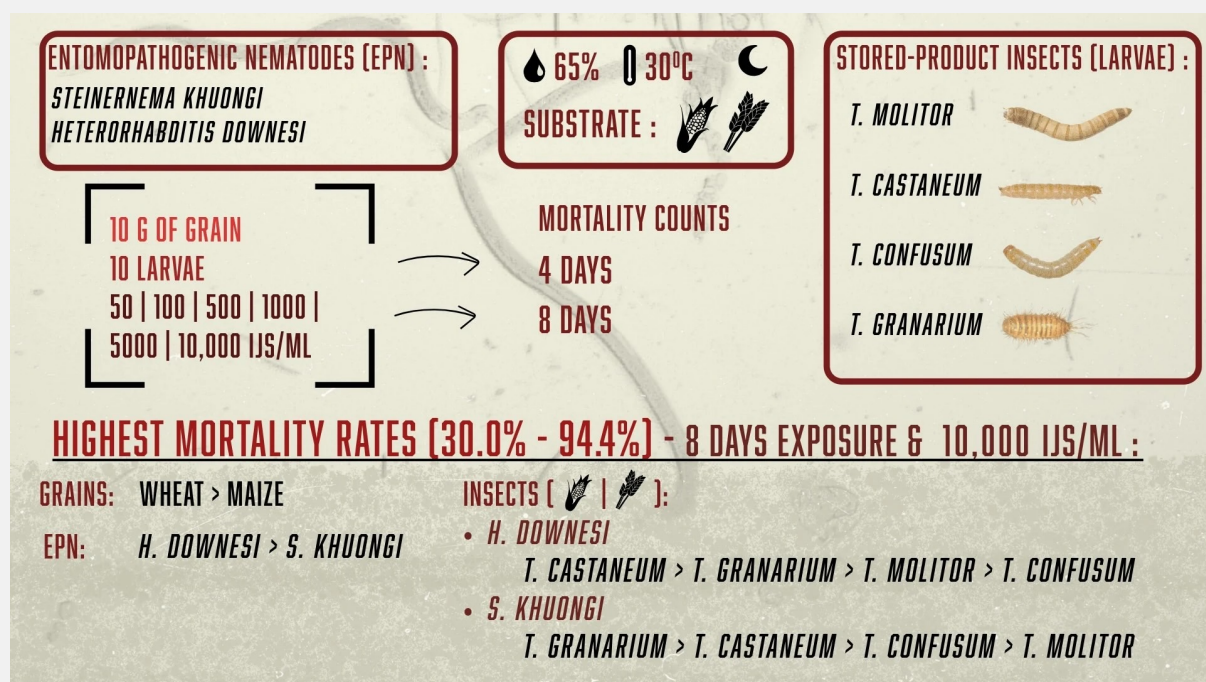
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Nematodes reduce beetle larvae in wheat and corn

The study evaluated *Steinernema khuongi* and *Heterorhabditis downesi* against four stored grain pests

26.05.2026 | 08:29 (UTC -3)

Schubert Peter, Cultivar Magazine



Two entomopathogenic nematodes showed potential for biological control of stored product pest beetles. The study

evaluated *Steinernema khuongi* and *Heterorhabditis downesi*, against larvae of *Tribolium castaneum*, *Tribolium confusum*, *Tenebrio molitor* and *Trogoderma granarium* in wheat and corn. The highest mortality rates occurred in wheat and at the highest concentrations tested.

Research indicates greater virulence of *Heterorhabditis downesi* with regard to *Steinernema khuongi* in most of the scenarios evaluated. The difference appeared in both grains, in both exposure periods, and at different concentrations. The researchers highlight the potential of these beneficial organisms for stored product protection programs.

Six concentrations

The trials used six concentrations: fifty, one hundred, five hundred, one thousand, five thousand, and ten thousand infective juveniles per milliliter. Evaluations were conducted after four and eight days. The tests were performed on wheat and corn, with ten grams of grain per plate. Each plate received ten larvae of the target species.

In wheat, at a concentration of ten thousand infective juveniles per milliliter, both nematodes caused high mortality in larvae of *Trogoderma granarium*. The rates ranged from 88.9 percent to 92.2 percent. For corn, the values ??ranged from 72.2 percent to 77.8 percent.

Tribolium castaneum also showed high susceptibility. In wheat, mortality at the

highest concentration ranged from 81.1 percent to 94.4 percent. In corn, the rates ranged from 74.4 percent to 87.8 percent.

Performance against *Tribolium confusum* remained below the other targets.

Researchers classified the larvae of this species as tolerant to both nematodes.

Even at the highest concentration,

Heterorhabditis downesi reached seventy-seven point eight percent in wheat and sixty-four point four percent in corn after eight days. *Steinernema khuongi* reached 48.9 percent for wheat and 45.6 percent for corn.

The larvae of *Tenebrio molitor* They responded differently to the two officers. *Steinernema khuongi* showed low efficacy. Mortality was below thirty-four percent.

Heterorhabditis downesi caused over 83.3 percent mortality at the highest concentration, in both wheat and corn.

Grain type

The type of grain influenced the results. Wheat favored nematode activity compared to corn. Researchers attribute this effect to the smaller space between wheat grains. This condition may facilitate the encounter between the nematode and the host.

The study also reinforces the importance of biological control in storage environments. Insects in stored products cause losses through direct consumption, contamination with feces, and the creation

of conditions favorable to secondary fungi. Among the species evaluated, *Trogoderma granarium* receives attention for its quarantine relevance and its tolerance to various contact insecticides.

The researchers conclude that *Heterorhabditis downesi* and *Steinernema khuongi* are able to move within the grains and locate larvae under simulated storage conditions. The results indicate a need for further evaluations against other pests, developmental stages, and commodities.

Further information at
doi.org/10.3390/insects17060534

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Small producers represent 54% of Brazilian coffee farming

A survey by Sebrae shows a higher concentration of small businesses in states outside the Southeast region

25.05.2026 | 17:27 (UTC -3)

Rafael Baldo, Cultivar Magazine edition



More than half of Brazilian coffee producers are small businesses. A groundbreaking survey by Sebrae

indicates that 54% of the country's coffee farmers operate on properties with less than 20 hectares. Medium-sized producers represent 38% of the total, while large producers account for 8%.

The research was based on the National Survey of Coffee Producer Segmentation and surveyed 1.102 producers in 14 states. According to the study, the predominant profile among small producers is of farmers with an average age of 49 years and approximately 21 years of experience in the activity.

The survey indicates regional differences in the coffee farming profile. Minas Gerais and São Paulo have a higher concentration of medium-sized producers, while states outside the Southeast region

show a predominance of small businesses. Rondônia leads this group, with 87% of producers classified as small, followed by Acre (83%) and Goiás plus the Federal District (76%).

Advancement in education

The data also shows an increase in education levels among coffee farmers. More than half of those interviewed have at least completed high school. In states such as Goiás, the Federal District, Paraíba, São Paulo, and Minas Gerais, there is a greater presence of producers with higher education and postgraduate degrees.

Among respondents from Goiás and the Federal District, 47% have a higher education degree and 29% have a postgraduate degree. In Paraíba, 53% reported having a higher education degree and 11% a postgraduate degree. In São Paulo, the percentages are 40% and 11%, respectively, while in Minas Gerais they reach 45% and 8%.

Men represent 79% of the producers interviewed, while women account for 21%. Generation X, made up of people between 41 and 56 years old, comprises 41% of coffee growers. The so-called boomers, over 57 years old, make up 29%, and millennials, between 25 and 40 years old, represent 27%. Generation Z, from 18 to 24 years old, accounts for 3%.

Production of specialty coffees is growing.

The survey also points to growth in the production of specialty coffees and the pursuit of certifications. According to the research, 61% of respondents stated that they produce specialty coffees. In addition, 27% already have socio-environmental certifications and another 29% intend to obtain some type of certification.

Geographical Indications are also making progress.

Another highlight is the growth of geographical indications (GIs) related to

coffee. Currently, Brazil has 23 GIs for coffee, all with support from Sebrae.

Among the states surveyed, São Paulo shows the highest adherence to certifications and recognitions of origin, with 44% of the producers interviewed, followed by Minas Gerais, with 35%.

According to Carmen Sousa, a Competitiveness analyst at Sebrae (Brazilian Micro and Small Business Support Service), strengthening management and sustainable practices has contributed to increasing recognition of the quality of Brazilian coffee in the market.

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Promip strengthens its sustainability and bio-inputs area

Company hires Claudia Quaglierini to work on expanding the MipExperience program in the area of ??large crops

25.05.2026 | 16:04 (UTC -3)

Janete Galbiati, Cultivar Magazine edition



Promip announced the hiring of an agricultural engineer **Claudia Quaglierini** (pictured) for the company's sustainability

management. The executive will now focus on expanding the MipExperience program in large-scale crops, especially soybeans, corn, cotton, and vegetables.

With over 30 years of experience in agribusiness, Claudia has accumulated expertise in sustainability, integrated pest management, and good agricultural practices. Throughout her career, she has worked for companies such as Monsanto and Bayer, where she participated in projects related to soybean seeds, pollinator protection, and sustainability in the field. Subsequently, she joined CropLife Brasil initiatives focused on bee preservation, applicator training, and dissemination of good agricultural practices.

At Promip, the executive's responsibilities will include expanding MipExperience, a program focused on Integrated Pest Management (IPM) and the technical training of rural producers. The program brings together protocols related to integrated management, the use of bio-inputs, farm management, and the adoption of agricultural practices considered sustainable.

According to Claudia Quagliarini, the expansion of the use of biological products in large-scale crops requires greater technical guidance in the field. The executive emphasizes that factors such as dosage, timing of application, and integration between management tools directly influence the results obtained by

producers.

MipExperience prepares for launches

Authorized by the Ministry of Agriculture (Mapa), MipExperience was initially developed for the fruit and vegetable sector and is now expanding its operations to larger-scale crops. As part of this strategy, the company is preparing to launch the "Sustainable Corn Route" and "Sustainable Soy Route" programs, focused on technical guidance and compliance with new regulations related to bio-inputs.

According to Promip's CEO, Marcelo Poletti, the growth of the biologicals market

in Brazil is increasing the demand for training and technical support for producers. He cites the increased use of baculoviruses to control caterpillars in crops such as soybeans, corn, cotton, and vegetables as one of the factors driving this new phase in the sector.

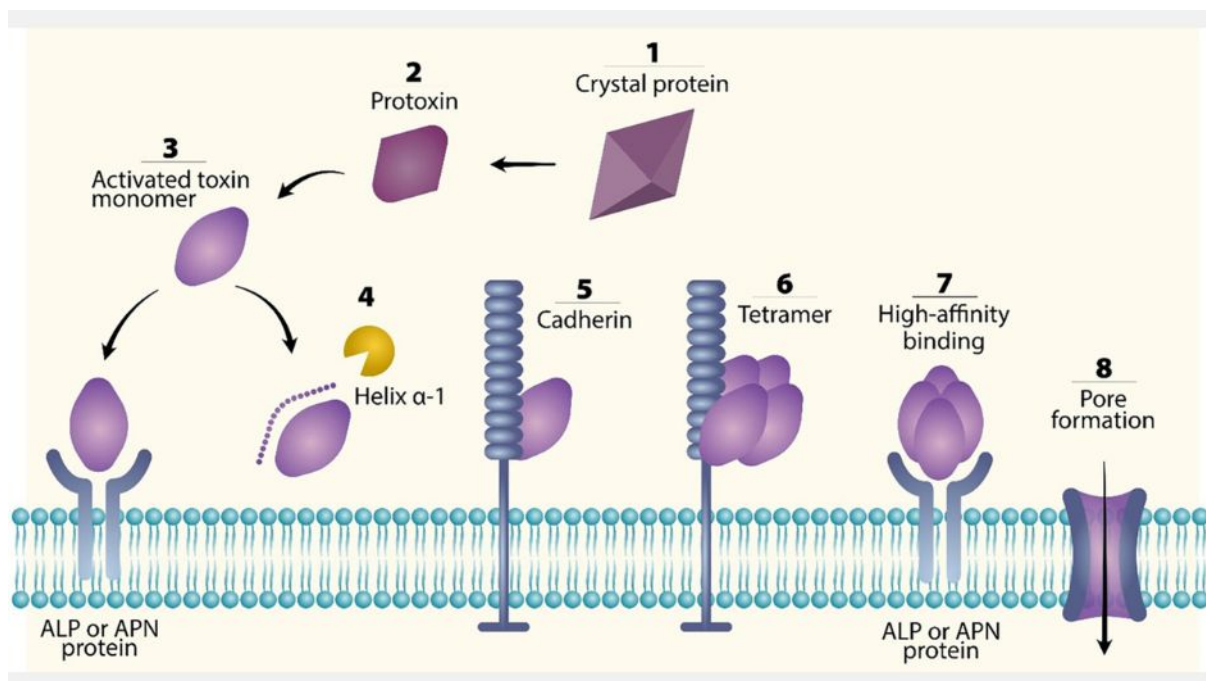
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Bacillus thuringiensis may open a new frontier for agave

Scientists advocate the use of Cry proteins to reduce insect-related crop losses in semi-arid regions

25.05.2026 | 10:47 (UTC -3)

Schubert Peter, Cultivar Magazine



The incorporation of genes from *Bacillus thuringiensis* in agave could enhance pest management in semi-arid regions.

Brazilian researchers advocate for Bt technology as an alternative for crops *Tequilana agave*, *agave sisalana*, *Salmiana agave* and *Agave fourcroydes*, this strategy has not yet been commercially applied.

The topic gains importance given the expansion of dry areas. Arid lands cover forty-one percent of the Earth's surface and are advancing with climate change. In this scenario, agave possesses relevant agronomic characteristics. The plant exhibits crassulacean acid metabolism, high water use efficiency, and adaptation to water-deficient environments.

The sector supports beverage, fiber, and bioenergy supply chains. Mexico leads in the production of agave-based beverages.

Tequila production is projected to reach 583,5 million liters in 2025. In Brazil, sisal fiber production reached 93.261 tons in 2024, making the country a world leader. Some of the biomass, such as leaves and processing waste, remains underutilized.

Agronomic limitation

The main agronomic limitation comes from insects. The agave weevil, *Scyphophorus acupunctatus*, causes internal damage, creates galleries in the stem, and reduces the quality of the pineapple. Infestations can reach ninety percent in areas of Mexico. The insect also favors pathogens associated with rot, such as *Pectobacterium carotovorum*, species of *Erwinia*, species of *Pseudomonas* and

species of *Aspergillus*.

Other pests increase the risk. Mealybugs *Acutaspis agavis* colonizes leaves, reduces photosynthesis, causes deformities, and can lead to plant death.

The caterpillar *Comadia redtenbacheri* bores into the stem during the larval stage, forming galleries and reducing vigor, height, and root tissue. The internal development of these insects hinders contact with insecticides and reduces the effectiveness of conventional measures.

Cry protein action

Cry proteins *Bacillus thuringiensis* act in the midgut of susceptible insects. After ingestion, the protoxins solubilize in an

alkaline environment, undergo activation by proteases, and bind to epithelial receptors. The process leads to the formation of pores in the cell membrane. This selectivity supports the use of Bt technology in integrated pest management programs.

For agave, researchers point to greater initial interest in Cry3 proteins. This group exhibits activity against beetles. How *Scyphophorus acupunctatus* belongs to the Curculionidae family, the hypothesis of its use against the weevil gains a biological basis. However, experimental validation of this species' susceptibility is necessary.

Technology may also require gene combination. Stacking Cry proteins reduces the risk of selecting resistant

populations. This strategy is already appearing in crops such as cotton and corn. Resistance management would require refuge areas, adequate toxin expression, and integration with pest monitoring.

Genetic transformation

The biggest obstacle remains the genetic transformation of the agave.

Monocotyledons have limitations in in vitro regeneration, low availability of competent cells, and physical barriers in the cell wall.

In *Agave salmiana*, protocol with *Agrobacterium tumefaciens* resulted in a transformation efficiency of 2,7 percent. In *Agave sisalana* 'RLV nineteen', the reported efficiency reached 0,5 percent.

Despite the limitations, the researchers assess the technology as feasible.

Advances with morphogenic regulators, such as Wuschel and Baby Boom, and gene editing systems could reduce historical barriers. They also cite experiences in other semi-arid crops, such as pigeon pea with Cry1Ab, with larval mortality of ninety percent in in vitro assays against *Helicoverpa armigera*.

Regulatory assessment

The adoption of Bt agave would depend on regulatory assessment, market acceptance, and the participation of producing communities. In Mexico, agave products involve designations of origin and specific rules for tequila. In Brazil, the sisal

chain also depends on external markets. For small producers, cost, access to propagation material, and agronomic benefits would determine viability.

The researchers who participated in the study were Aline Vitória Corim Marim, Marcelo Falsarella Carazzolle, Gonçalo Amarante Guimarães Pereira, and Carolina Rossi De Oliveira.

More information at
doi.org/10.1002/ps.70964

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Ihara has a new executive director of Research and Development

Daniel Zanetti Del Bianco has accumulated two decades of experience in leadership positions at the company

25.05.2026 | 08:44 (UTC -3)

Cultivar Magazine



The agricultural engineer **Daniel Zanetti Del Bianco** (pictured) has been promoted

to the position of Executive Director of Research & Development at Ihara Defensivos Agrícolas. With over 20 years of experience in leadership positions at the company, the executive will now be responsible for the company's research and development strategy.

In his most recent role, Del Bianco served as general director of R&D, with responsibility for regulatory, technology, and biological areas, as well as coordinating research and the company's research centers.

Holding a degree in Agronomy from the Federal University of Viçosa, the executive also has a specialization in Plant Protection from the same institution and in Business Management with an Emphasis on Strategy from the Getulio Vargas

Foundation.

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Genetic key keeps mycorrhiza active in phosphate soils

Study shows how reducing HIV2 gene activity can maintain the association between roots and fungi and enhance nutrient absorption

25.05.2026 | 08:21 (UTC -3)

Schubert Peter, Cultivar Magazine



Lotus japonicus; photo: Elena Roitsch - IPB

Researchers have identified the HIV2 enzyme as a regulator of arbuscular mycorrhizae in *Lotus japonicus*. The

reduction in activity of this gene increased the colonization of roots by mycorrhizal fungi and increased the absorption of phosphorus and other nutrients, even under conditions in which phosphate usually inhibits symbiosis.

The discovery links the plant's perception of phosphate to the control of its association with soil fungi. The study points to inositol pyrophosphates as regulatory signals in this response. These low-abundance molecules are involved in the response to phosphate deficiency, nutrient acquisition, and root endosymbiosis.

Arbuscular mycorrhiza

Arbuscular mycorrhizae facilitate the acquisition of phosphate, nitrogen, sulfur, micronutrients, and water through the fungal hyphal network. In return, the plant provides carbon to the symbiont. The cost of the association helps explain the reduced colonization in soils with moderate or high phosphate levels.

The research group used *Lotus japonicus* as a model plant. Inoculation occurred with *Rhizophagus irregularis* in pots with washed sand. They received solutions with 25, 250, 750, 1.500, or 2.500 micromoles of phosphate. After four and a half weeks, the authors evaluated root colonization, the expression of marker genes, and nutrient levels in the aerial part of the plant.

The vih2 mutant lines showed greater total root colonization, greater abundance of shrubs, and greater vesicle formation across a wide range of external phosphate, from 25 to 1.500 micromoles. The expression of the PT4 marker gene followed this increase. The shrubs maintained morphology comparable to that observed in wild-type plants.

The effect also appeared in mineral nutrition. In plants colonized by mycorrhizae, the vih2 mutants accumulated more phosphorus in the aerial part. The study also recorded increases in nitrogen, potassium, magnesium, and copper, depending on the nutrient and growing conditions.

Stability of the arbuscules

The scientists also assessed the stability of the shrubs. The *vih2-1* lineage showed 452 shrubs per root system, compared to 283 in wild-type plants. The proportion of degrading shrubs decreased in the mutants. The result indicates maintenance of colonization, without premature degeneration of fungal structures.

In topsoil collected in the field, with moderate availability of nitrogen, phosphorus, and potassium, the *vih2* plants also received greater colonization by natural mycorrhizal fungi. There were no visible growth defects. The fresh weight of the aerial part remained comparable to

that of wild-type plants. Under these conditions, the mutants accumulated more phosphate, nitrogen, magnesium, sulfur, molybdenum, and calcium.

Grafting experiments indicated local and systemic control of VIH2 mycorrhization. Colonization increased when VIH2 shoots were grafted onto wild-type roots. The increase also occurred when wild-type shoots were grafted onto VIH2 roots. The response appeared under both low and high phosphate availability.

The VIH2 enzyme acts as a kinase linked to the synthesis of InsP8. This compound functions as a signal of phosphate status in plants. In vih2 mutants, the reduced synthesis of InsP8 activated responses typical of phosphate deficiency and

favored mycorrhization.

Scientists point to potential use in plant breeding with greater nutrient use efficiency. The strategy still requires validation in agricultural crops and under agronomic conditions.

Further information can be found at doi.org/10.1126/sciadv.aec5607

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Bayer promotes Jorge Costa to Marketing area

Agronomist will lead strategic actions in the seed sector across four regions

22.05.2026 | 16:06 (UTC -3)

Cultivar Magazine



The agricultural engineer **Jorge Costa** (pictured) was promoted by Bayer to the position of Executive Marketing Manager. In his new role, he will be responsible for leading the company's strategic marketing

initiatives for its seed business in the Central-West region of Brazil, encompassing the states of Goiás, Minas Gerais, São Paulo, and Sealba.

With eight years of experience at Bayer, Costa has accumulated expertise in different areas of the company. Before his promotion, he held the position of Regional Sales Manager for the Cerrado region, a role he held for over four years.

Throughout his more than 15-year career in agribusiness, the executive also worked for companies such as Monsanto and Ihara, in roles related to leadership and commercial management.

Jorge Costa holds a degree in Agronomy from the Federal University of Viçosa and an MBA in Business Management from the

Getulio Vargas Foundation.

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Propolis increases flies' tolerance to ethanol

Study links diet with propolis to activation of antimicrobial peptides in *Drosophila melanogaster*

22.05.2026 | 14:53 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Pest and Diseases Image Library, Bugwood

Fruit flies [*Drosophila melanogaster*](#) fed a diet supplemented with propolis resisted

ethanol stress better. The effect appeared without an increase in the expression of classic genes linked to alcohol metabolism or antioxidant defense. The result points to a direct role of innate immunity in the adaptation of insects to chemical stressors, according to Korean researchers.

The study evaluated adult females raised throughout their life cycle on an artificial diet with one gram of propolis. The control group received the same diet without supplementation. Then, the insects were exposed to ethanol vapor at concentrations ranging from zero to 20%. Survival was monitored hourly for eight hours.

At a concentration of 12,5% ??ethanol, used in gene expression analyses, survival after eight hours reached 63,33% in the group with propolis. In the control group, the rate was 40,0%. The difference showed statistical significance, with p equal to 0,036.

Scientists did not observe increased activation of the Adh and Aldh genes, which are linked to ethanol metabolism. The expression of these genes remained lower in flies fed propolis. There was also no widespread induction of antioxidant genes, such as SOD1, SOD2, CAT, Trxr1, GstD2, and GstD5.

The main alteration occurred in genes for antimicrobial peptides dependent on the IMD pathway. A diet with propolis

increased the expression of DptA, DptB, AttC, and Mtk before exposure to ethanol. Expression remained higher in the first hours of exposure.

According to the researchers, the data indicate a state of immune preparedness induced by the diet. This prior activation may increase ethanol tolerance in *Drosophila melanogaster*. The work also expands the role of antimicrobial peptides beyond defense against pathogens.

Further information at
doi.org/10.3390/insects17060542

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DLG Feldtage 2026 will focus on organic farming

Event in Germany will bring together experiments, machines and discussions on resilient organic systems

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Cultivar Magazine, based on information from Malene Conlong



DLG Feldtage 2026 will highlight solutions for organic farming in field areas. The event will take place from June 16th to 18th at the DLG International Plant Production Center in Bernburg, Germany. The program's theme will be "Crop Production out of the Box". The organizers expect more than 300 exhibitors.

The DLG Spotlight "Organic Farming" event will feature field trials, machinery demonstrations, and technical discussions. Bioland and the Saxony-Anhalt State Institute of Agriculture and Horticulture will present crops and mixtures for organic systems in experimental plots.

The plots will include durum wheat, a mixture of winter peas and triticale, and vegetables. The proposal aims to

showcase the role of these crops in regional value chains. A complete crop rotation will demonstrate the potential of organic, livestock-free systems in dry regions of Central Germany.

The event will also address cultivation in raised beds. This technique aims to increase the resilience of organic and conventional systems. The management can include cereals, legumes, corn, and other crops. According to DLG, the system favors loose soil structure, aggregate formation, root development, and water management in the soil.

The program will include demonstrations of mechanical weed control. Exhibitors will show the use of hoes in spring crops, with 45-centimeter spacing between rows.

There will also be demonstrations of harrowing in spring durum wheat and hoes in corn.

The FarmRobotix area will showcase agricultural robots in practical use. The goal is to demonstrate the current state of autonomous systems in the field. The machine demonstrations will cover seven themes and feature 66 equipment combinations.

Naturland, Marktgesellschaft der Naturlandbauern AG and Biopark will address organic markets. These organizations will also provide guidance to organic producers, new entrants, and conventional farmers interested in the sector.

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