

12.Sep.2026

N ° 96

Cultivar *Semanal*®

Arsenal against plant defenses



Table of Contents

Insects expand their biochemical arsenal against plant defenses	07
Corteva announces Vylor leadership and a new Corteva presence in Latin America	21
Biomass becomes a challenge for the expansion of corn ethanol	28
Chemical communication paves the way for expanding biological control	41
Agricultural Market - 11.Sep.2026	54
El Niño intensifies and raises alert for the end of 2026	64
New mutation increases resistance of <i>Myzus persicae</i> to neonicotinoids	70
Invasive ant exploits fungus for food and potential shelter	75

Table of Contents

Calcium regulates seed germination under saline stress	86
Syngenta appoints Pedro Ferreira to global position	95
Genetic duplication maintains resistance to malathion in fruit flies	98
Ethanol boosts corn production and increases demand for genetics	102
Claas launches Arion 5 CMATIC with continuously variable transmission	109
Bayer and Neste expand winter canola for biofuels	113
Corteva and Globachem create joint venture for crop protection	116
Lecithin causes rapid mortality of Bemisia tabaci through contact	120

Table of Contents

Bacteria reduces gray mold on tomatoes after harvest	125
--	-----

Syngenta and Amoeba celebrate agreement for biofungicide in cereals	129
---	-----

Ferrabait obtains first registration in the European Union	132
--	-----

Models indicate areas for <i>Drosophila suzukii</i> control in the USA	135
--	-----

Carlos Piotto takes over Syngenta's insecticide portfolio	140
---	-----

Geri Meneghello assumes presidency of Abrates	144
---	-----

Azelaic acid reduces <i>Meloidogyne incognita</i> in pepper	149
---	-----

Table of Contents

Glucose increases fengycin production in <i>Bacillus amyloliquefaciens</i>	153
BASF appoints Hendrik Disteldorf to lead R&D in crop protection	159
Study confirms transmission of fungi through millet seeds	163
Mutations confer resistance to carbendazim in <i>Neopestalotiopsis clavispora</i>	173
Yara inaugurates Europe's largest carbon capture unit	177
New baculovirus controls <i>Cydia pomonella</i> in orchard	181
Essential oils reduce the emergence of <i>Spodoptera littoralis</i>	190

Kryver Xtra



Plantas protegidas por dentro e por fora

Boscalida 25,2% + Piraclostrobina 12,8% WG

Conheça o novo fungicida que promove duas linhas de defesa na sua lavoura. **Solução completa e exclusiva Rainbow contra mofo-branco.**



Controle eficiente de **mofo-branco**



Duas linhas sinérgicas de defesa



Efeito verde

wow! Isso é Rainbow.



Escaneie o QR Code e conheça o fungicida com tecnologia global.

www.rainbowagro.com.br

 Kryver Xtra

 Kryver Xtra

Rainbow
all about growing

ATENÇÃO

ESTE PRODUTO É PERIGOSO À SAÚDE HUMANA, ANIMAL E AO MEIO AMBIENTE; USO AGRÍCOLA; VENDA SOB RECEITUÁRIO AGRÔNOMICO; CONSULTE SEMPRE UM AGRÔNOMO; INFORME-SE E REALIZE O MANEJO INTEGRADO DE PRAGAS; DESCARTE CORRETAMENTE AS EMBALAGENS E RESTOS DOS PRODUTOS; LEIA ATENTAMENTE E SIGA AS INSTRUÇÕES CONTIDAS NO RÓTULO, NA BULA E RECEITA; E UTILIZE SEMPRE OS EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL.

Insects expand their biochemical arsenal against plant defenses

Researchers identify enzymes and microorganisms involved in the detoxification of specialized plant metabolites

09.09.2026 | 15:07 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Syngenta

Herbivorous insects utilize different detoxification systems to consume plants rich in specialized metabolites with toxic or deterrent action. Among the main mechanisms are enzymes capable of modifying plant molecules, increasing their solubility, and promoting excretion. Part of this process may also depend on microorganisms associated with the insects.

Detoxification is the most studied strategy, but not the only one. Herbivores also resort to behavioral avoidance, rapid excretion, sequestration of compounds, and target site insensitivity. The relative weight of each of these routes remains unknown, explain scientists Kristina Kshatriya and Jonathan Gershenzon of the

Max Planck Institute (doi
10.1016/j.pbi.2024.102577).

Occurrence of detoxification

Detoxification occurs in stages similar to those described in other animals. In what is called phase I, enzymes promote oxidation, reduction, or hydrolysis of metabolites. These reactions form more polar derivatives. In many cases, the new compounds exhibit lower toxicity and are more easily excreted.

Cytochrome P450s occupy a central position in this process. These enzymes occur in large gene families in insects. Their most common reaction involves the

hydroxylation of lipophilic substrates. Studies with Lepidoptera show the participation of P450s in the detoxification of furanocoumarins produced by plants of the Apiaceae family.

The range of substrates varies according to the insect's feeding habits, scientists say. Generalist species tend to have larger families of detoxification genes compared to specialists. The genome of different herbivores can contain up to two hundred genes in some of these families. Few members, however, have yet undergone functional characterization.

Second step

In phase II, insects attach polar groups to plant metabolites or to products formed in the previous stage. UDP-glycosyltransferases represent one of the main enzymatic groups involved. These proteins add sugars to different lipophilic molecules.

The two-spotted spider mite, *Tetranychus urticae*, possesses eighty genes encoding UDP-glycosyltransferases. One of these enzymes can glycosylate different flavonoids. According to researchers, this diversity may contribute to the arthropod's ability to feed on more than one hundred and fifty crops.

Another case involves the whitefly *Bemisia tabaci*. The insect modifies glycosylated flavonols from tomato plants by adding

malonate residues. This transformation reduces the toxicity of these compounds to the whitefly and increases their polarity. The process also facilitates excretion. The gene responsible for malonyltransferase is believed to have originated in plants and reached the insect through horizontal gene transfer.

Glutathione S-transferases also participate in phase II, the scientists say. These enzymes conjugate glutathione to electrophilic regions of certain molecules. Among the targets are isothiocyanates formed after the degradation of glucosinolates.

This mechanism has a physiological cost. *Spodoptera littoralis* caterpillars were fed a diet with isothiocyanates at a concentration

similar to that found in damaged *Arabidopsis thaliana* leaves for ten days. Glutathione content dropped by up to ninety percent. The level of cysteine, a precursor of glutathione, decreased by fifty percent. The insects also showed a reduction in protein content and body weight.

Defenses triggered by damage

Plants still have defense systems activated by damage, scientists explain. Some metabolites remain stored as low-toxicity glycosides. The herbivore's feeding disrupts cellular compartments and allows contact between these precursors and

plant enzymes. The result can generate toxic compounds.

Glucosinolates, benzoxazinoids, cyanogenic glycosides, and iridoid glycosides comprise this group. Insects have developed distinct strategies to neutralize these defenses.

Diamondback moth caterpillars, *Plutella xylostella*, utilize glucosinolate sulfatases. These enzymes remove sulfate groups from glucosinolates before the formation of toxic isothiocyanates. Experiments silencing these sulfatases have led to an increase in isothiocyanates. The result included decreased growth, survival, and reproduction of the insect.

Plutella xylostella possesses three glucosinolate sulfatases, each associated

with different groups of these metabolites. Expression occurs in the intestine and salivary glands. Thus, chemical processing can begin early in the feeding process.

Other herbivores first allow the activation of plant defenses. Then, they neutralize the toxic products. The conjugation of isothiocyanates with glutathione represents one of the most studied examples.

Case of sucking insects

Sucking insects also face activated compounds, researchers say. In *Bemisia tabaci*, cyanogenic glycosides can receive an additional glucose molecule. This modification prevents the release of

hydrogen cyanide. If the toxic compound does form, the whitefly can convert it into beta-cyanoalanine.

The microbiota expands the detoxification repertoire. One example involves the coffee berry borer, *Hypothenemus hampei*. The insect completes its life cycle inside caffeine-rich beans. Individuals fed a diet containing antibiotics began to excrete caffeine levels similar to those found in coffee itself. The result indicated the participation of intestinal bacteria in the degradation of the alkaloid.

Researchers isolated *Pseudomonas fulva* from the gut of the woodworm. The bacterium possesses a gene for caffeine demethylase. Inoculating insects treated with antibiotics with *Pseudomonas fulva*

restored their ability to degrade caffeine.

The microbiota also influenced *Plutella xylostella*. Larvae kept without intestinal bacteria showed reduced growth after consuming the flavonol kaempferol.

Reintroduction of the bacterial community, or a strain of *Enterobacter*, improved development. This bacterium was able to degrade the compound.

Importance of the microbiota

Despite the results, the relative importance of the microbiota remains uncertain.

Scientists point to the need for studies capable of separating the contribution of microorganisms from enzymes produced

by the insect itself and other resistance mechanisms. Available evidence suggests a possibly greater microbial participation in Coleoptera and Hymenoptera than in Lepidoptera.

Advances in characterizing these pathways also broaden our understanding of plant chemical defenses. Identifying the most easily degraded metabolites can help predict the effectiveness of certain defenses against herbivores. The wide detoxification capacity of insects also offers a possible evolutionary explanation for the high diversity of specialized metabolites found in plants.

Scientists caution, however, that a large part of these transformations has not yet been confirmed as actual detoxification.

The toxicity of plant compounds and that of

their products metabolized by the insect has rarely been directly compared. Until this test accompanies the chemical, genetic, and enzymatic characterization of the pathways, it remains unclear how much of the herbivores' resistance is explained by detoxification.

[RETURN TO INDEX](#)

TRATORES PARA O TAMANHO DO BRASIL



25 A 95 CV
SIMPLES. FORTE. PARA O BRASIL

PREET

CNT COMPANHIA NACIONAL
DE TRATORES

www.preet.com.br



*Imagens meramente ilustrativas.

Corteva announces Vylor leadership and a new Corteva presence in Latin America

Appointments for Latin America, Brazil, and Paraguay will take effect after the separation scheduled for October 2026

08.09.2026 | 12:38 (UTC -3)

Cultivar Magazine, based on information from Ana Beatriz Annunciato Januzi



William Weber and Robert Hun

Corteva has announced new leadership for Latin America, Brazil, and Paraguay following the company's planned separation. Roberto Hun and William Weber will assume positions at Vylor Inc., a future seed and genetics company. Felipe Daltro and Tiago Gontijo will take on roles at the new Corteva, focused on crop protection.

The appointments will take effect after the separation is finalized, which is scheduled for October 1, 2026.

Roberto Hun will assume the presidency of Vylor for Latin America. Currently, he leads Corteva in the Southern Cone and the Meso-Andean region. Since 2019, he has held strategic positions, including commercial leadership for Brazil and

Paraguay.

William Weber will lead Vylor in Brazil and Paraguay. He currently holds the commercial leadership position for Corteva's Northern Region in Brazil. The executive has over 20 years of experience in Brazilian agribusiness, working in sales and marketing.

Vylor will focus its activities on seeds, germplasm, biotechnology, gene editing, and genetic improvement. The company also intends to expand licensing and evaluate opportunities in new crops.

At the new Corteva, Felipe Daltro will assume the presidency for Latin America. Currently, he is responsible for marketing and commercial effectiveness for Brazil and Paraguay. His career includes roles in

research and development, marketing, sales, and project management.

Tiago Gontijo will lead the new Corteva in Brazil and Paraguay. Currently, he leads the area for Missouri and Eastern Kansas in the United States. Prior to Corteva, he held positions at Stoller, which was acquired by the company in 2023. His experience includes crop protection, biologicals, marketing, and sales.

The new Corteva will focus on crop protection and plans to invest in nature-inspired technologies.



Felipe Daltro and Tiago Gontijo

Read also

- [Vylor creates platform for investing in agricultural technologies](#)
- [Corteva extends deadline for bond exchange before spin-off](#)
- [Corteva details agreements foreseen in the separation of Vylor](#)

- Corteva announces boards of directors for new companies
- Corteva names its seed business Vylor

RETURN TO INDEX

O FUTURO DA SUA SAFRA COMEÇA AGORA



TECNOLOGIA

Pulverização precisa
e uniforme



PRODUTIVIDADE

Performance superior
em qualquer terreno



compre em até 3 anos para pagar

LINHA COMPLETA DE AVOLA

Consulte a revenda mais próxima.

 **BALDAN**

***Campanha:**

- A aprovação do crédito, bem como a definição de prazos, limites, taxas, garantias, valores financeiros e demais condições comerciais, dependerá do perfil do cliente e do resultado da análise realizada.
- As operações estão sujeitas à análise cadastral, documental, financeira e de risco, conforme as políticas internas da BALDAN.
- As condições desta campanha são válidas exclusivamente para os produtos previamente selecionados pela BALDAN.
- Consulte a relação de equipamentos participantes junto ao revendedor autorizado ou à equipe comercial.
- A comercialização está sujeita à disponibilidade de estoque dos produtos participantes.
- Esta campanha possui caráter exclusivamente promocional, é válida por prazo determinado e poderá ser alterada, suspensa ou encerrada pela BALDAN, a qualquer tempo e sem aviso prévio.
- Prevalecerão as condições vigentes na data da formalização da contratação.
- A divulgação desta campanha não constitui promessa ou garantia de concessão de crédito, permanecendo a contratação condicionada ao cumprimento dos critérios de elegibilidade e à aprovação da operação.

Saiba mais!



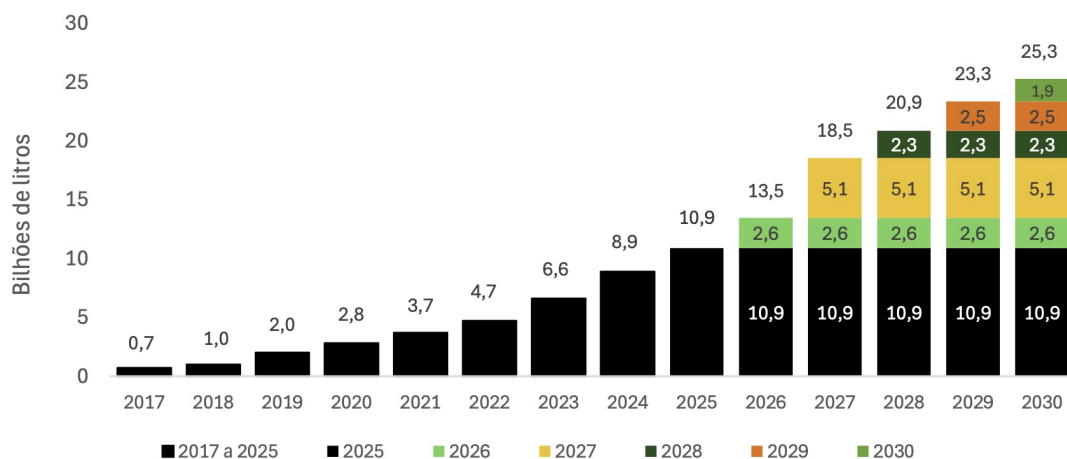
Biomass becomes a challenge for the expansion of corn ethanol

Itaú BBA projects a demand of 816 hectares of eucalyptus in Brazil by 2030 in a single-source scenario

11.09.2026 | 13:48 (UTC -3)

Cultivar Magazine

Evolução da capacidade instalada de produção de etanol de milho - Brasil



The expansion of corn ethanol production could increase the demand for biomass

and require new investments in energy forests in Brazil. A study by the Itaú BBA Agro Consultancy estimates a need for approximately 816 hectares of planted eucalyptus by 2030, if this wood accounts for the entire energy supply of the plants. The projection considers a national capacity of approximately 25,3 billion liters of corn ethanol and a consumption of 57 million tons of corn.

Brazil's installed corn ethanol production capacity is expected to increase from 10,9 billion liters at the end of 2025 to 25,3 billion liters in 2030. This calculation includes announced projects. Some of these projects are still dependent on economic viability and may not proceed.

Energy supply

Energy supply has gained importance in power plant planning. Part of the biomass consumed today comes from legally authorized deforestation. Environmental and regulatory restrictions increase the need for renewable sources, especially planted forests.

In an average efficiency scenario, a national capacity of 13 billion liters of corn ethanol, projected for the end of 2026, would require approximately 35 million cubic meters of eucalyptus biomass. Continuous supply would require a stockpile of approximately 440 hectares planted and an annual harvest of about 63 hectares.

The calculation assumes a steam consumption of 2,6 tons per cubic meter of ethanol, a boiler efficiency of one ton of steam per cubic meter of wood chips, and a forest productivity of 35 cubic meters per hectare per year. The model considers a seven-year cutting cycle and an annual harvest equivalent to one-seventh of the total area.

Challenge in Mato Grosso

Mato Grosso holds a significant portion of the challenge. The state's capacity is expected to increase from 6,9 billion liters in 2025 to 11,9 billion liters in 2030. With a capacity close to eight billion liters, the

potential demand would correspond to approximately 259 hectares of eucalyptus. A production of approximately 12 billion liters in 2030, coupled with the consumption of 27 million tons of corn, would raise the need to nearly 380 hectares. The annual harvest would reach approximately 55 hectares.

The Mato Grosso Institute of Agricultural Economics estimated 165,62 hectares of eucalyptus in the state in 2025. Under Itaú BBA's base-case scenario, Mato Grosso would need to add nearly 218 hectares of energy forests to meet the projected demand for corn ethanol.

The necessary investment also reaches high figures. The study uses an implementation and management cost of

35 reais per hectare over 13 years. With this reference, the necessary forestry expansion in the state would require approximately 7,6 billion reais. In a scenario of lower industrial and forestry efficiency, the necessary area could reach 572 hectares. In this case, the investment would rise to approximately 14,3 billion reais.

Soybean crushing

The pressure for biomass doesn't come solely from the ethanol sector. Mato Grosso has 26 soybean crushing plants, with a capacity of approximately 18 million tons per year, in addition to 1.675 storage units, with a static capacity of around 55 million tons. Slaughterhouses and drying

facilities also use wood, wood chips, and other materials for thermal energy generation.

Preliminary estimates from Itaú BBA attribute just over 60% of the state's biomass consumption to the corn ethanol industry. The remainder is distributed among other agro-industrial activities, notably crushing plants and storage facilities. This combination increases competition for this input.

The role of logistics

Logistics also impacts competitiveness. According to the study, supply radii exceeding 150 to 200 kilometers begin to put pressure on the cost of delivered

biomass, especially in regions with limited infrastructure. Forests near the plants can reduce transportation costs and improve security of supply.

Mato Grosso has adopted a timetable to reduce the use of biomass derived from the suppression of native vegetation by large consumers. The agreement signed between the state government and the Public Prosecutor's Office of Mato Grosso prioritizes planted forests, sustainable forest management, and other renewable sources. The regulations considered by the study limit the use of native biomass to up to 40% by 2034 and foresee the elimination of this source from 2035 onwards for industries already established in the state, including projects awaiting

environmental licensing.

Alternative for areas

The expansion of plantations could open up an alternative for areas with less agricultural suitability. In Itaú BBA's economic simulation, a eucalyptus project with two harvests over 13 years generates accumulated revenue of R\$104 per hectare and a profit of approximately R\$54 per hectare. The average result reaches about R\$4,2 per hectare per year.

The analysis considers a productivity of 280 solid cubic meters per hectare in the first cycle, lasting seven years, and 240 solid cubic meters per hectare in the second, lasting six years. The price of

timber was set at 200 reais per solid cubic meter. The accumulated effective operating cost reaches 35 reais per hectare, excluding lease.

Attractiveness rate

With a minimum attractive rate of return of 14% per year, the project presented a Net Present Value of R\$4,3 per hectare and an Internal Rate of Return of 17% per year. The study also points to strong sensitivity to the price of timber and the cost of capital. With a 14% annual discount, the Net Present Value becomes negative when the price of timber approaches R\$175 per cubic meter.

Itaú BBA emphasizes that the estimates are indicative. The exercise considers eucalyptus as the sole source of supply to gauge the order of magnitude of demand. Agricultural and agro-industrial residues, bamboo, rice husks, bagasse and sugarcane straw, as well as energy grasses, can be integrated into the energy mix. Efficiency gains in boilers and industrial processes can also reduce biomass consumption.

In this environment, long-term contracts gain importance for producers and industries. Greater predictability of demand and prices can reduce the risk associated with the forestry cycle and stimulate new investments in areas destined for energy production.

[RETURN TO INDEX](#)



Herbicida

Thunder®

**Recupere o controle
do manejo de plantas
daninhas resistentes**



Tecnologia exclusiva
com novo modo de ação



Alta eficácia no
controle da buva



Controla pé-de-galinha
com até 8 perfilhos



Não causa fitotoxicidade
quando aplicado 5 dias
antes da semeadura

uplcorp.com/br



@uplbr



/brasilupl

ATENÇÃO

Este produto é perigoso à saúde humana, animal e ao meio ambiente. Leia atentamente e siga rigorosamente as instruções contidas no rótulo, na bula e na receita. Utilize sempre os equipamentos de proteção individual. Nunca permita a utilização do produto por menores de idade.

CONSULTE SEMPRE UM ENGENHEIRO AGRÔNOMO. VENDA SOB RECEITUÁRIO AGRÔNOMICO.

Chemical communication paves the way for expanding biological control

Analysis brings together semiochemicals, receptors, and gaps for the use of natural enemies in integrated pest management

11.09.2026 | 07:49 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Frank Pears / Colorado State University - Bugwood

Chemical compounds released by plants, insects, and microorganisms can guide parasitoids and predators in locating their prey and hosts. The accumulated knowledge about these signals creates prospects for new biological control strategies. However, practical application still faces obstacles. Most studies remain focused on compound identification, laboratory bioassays, and small-scale field experiments.

Chinese researchers analyzed papers published between 1971 and 2025 (doi 10.1127/entomologia/3525). The survey focused on the relationships between plants, herbivorous insects, and natural enemies. It also included studies on receptors involved in the chemical

perception of parasitoids, ladybugs, lacewings, and other beneficial arthropods.

Herbivory-induced volatiles

One of the main groups of signals involves herbivory-induced plant volatiles, known by the acronym HIPVs. Insect feeding alters plant metabolism and induces the release of volatile organic compounds. Parasitoids and predators use some of these compounds during their search for a host. Among the substances studied are methyl salicylate, (Z)-3-hexenol, (Z)-3-hexenyl acetate, linalool, octanal, alpha-pinene, and indole.

The response depends on the species involved and the odor composition. In corn attacked by *Spodoptera frugiperda*, octanal and 2-heptanone attracted the parasitoid *Cotesia ruficrus*. The combination of the two compounds increased the parasitism of pest larvae in experiments. In another system, cis-jasmone and (Z)-3-hexenyl acetate attracted *Campoletis chlorideae*, a parasitoid associated with *Helicoverpa armigera*.

Isolates and mixtures

Mixtures can also produce distinct responses compared to the isolated components. The predatory beetle *Stethorus punctum picipes* showed a

stronger response to a combination of methyl salicylate, (Z)-3-hexenol, and benzaldehyde. Scientists also highlight differences between species. The same compound can attract one natural enemy and repel another. This behavior makes it difficult to develop formulations for broad use.

The plant variety and the herbivore's identity also modify the signals emitted. *Microplitis tuberculifer* showed a preference for volatiles from Bt cotton attacked by *Spodoptera exigua* compared to non-Bt cotton. The same parasitoid responded to volatiles induced by *Spodoptera exigua*, but did not show an equivalent response to signals produced after an attack by *Helicoverpa armigera*.

These results reinforce the need to evaluate each combination of crop, pest, and natural enemy.

Natural enemies

Natural enemies also exploit pheromones produced by the pests themselves. Sexual, alarm, and aggregation pheromones can function as kairomones. (E)-beta-farnesene, known as a component of the alarm pheromone of several aphid species, attracts different parasitoids, hoverflies, ladybugs, and predatory beetles. The response is not uniform. *Chrysopa pallens*, for example, showed strong repellency to the compound in one of the studies compiled by the researchers.

Feces and cuticular hydrocarbons provide further clues. Compounds present in larval feces can influence host location over short or long distances. The parasitoid *Cotesia rubecula* showed greater attraction to *Pieris rapae* feces compared to material from other species evaluated. Larval age also influenced the response. Hydrocarbons present in the cuticle offer additional signals for specific host recognition.

Action of microorganisms

Microorganisms expand this chemical network. Bacteria and yeasts present in nectar alter odors, sugars, amino acids,

and other characteristics of the food resource. The parasitoid *Aphidius ervi* showed an innate preference for nectar fermented by the yeast *Metschnikowia reukaufii*. Studies have pointed to microbial effects on longevity, survival, and behavior of natural enemies. Researchers consider this component still poorly studied.

Advances in genomics and transcriptomics have also made it possible to map genes linked to chemoreception. These groups include odor receptors, taste receptors, ionotropic receptors, odorant-binding proteins, and chemosensory proteins. The number of these genes varies between species. In hymenopteran parasitoids, some lineages have hundreds of odor receptors.

Functional characterization is beginning to reveal the link between specific molecules and behavior. In *Campoletis chlorideae*, one receptor responds to cis-jasmone. In *Hippodamia variegata*, different receptors recognize compounds associated with plants and prey. In *Eupeodes corollae*, one receptor participates in the perception of (E)-beta-farnesene. Alteration of the Orco coreceptor in this species eliminated the preference for the compound and reduced parameters related to mating, oviposition, and hatching.

Known ligands

Despite molecular advances, many of the identified receptors still lack known ligands. Systematic evidence is also

lacking regarding the neural mechanisms involved in encoding the senses of smell and taste in natural enemies.

Scientists have identified another bottleneck for agricultural use. Trials have already proven the attraction of natural enemies by various HIPVs under experimental conditions, and some studies have tested traps in the field. Even so, researchers have not recorded practical application of these volatiles to attract natural enemies for pest control in agricultural production. The field environment contains numerous odor sources. These compounds can compete with the attractant, inhibit the response, or produce synergies.

Researchers advocate for studies on combinations of HIPVs and pheromones. Evaluating mixtures could support strategies such as "push-pull," repelling pests in certain areas and attracting natural enemies in others. They also recommend expanding research on beneficial and harmful microorganisms and identifying the molecular mechanisms involved in the perception of fermentation products.

Identifying the ligands of chemosensory receptors completes this agenda.

According to scientists, this knowledge can guide the development of more selective attractants for parasitoids and predators. Before adoption on an agricultural scale, however, it is necessary to understand the interactions within the complete ecological

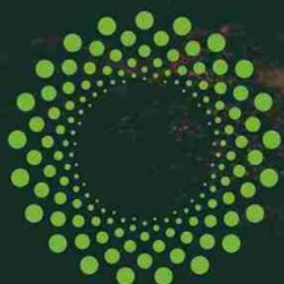
system, considering the plant, herbivore, natural enemy, and microbiota as a whole.

[RETURN TO INDEX](#)

APONTE A CÂMERA
DO CELULAR PARA
SABER MAIS.



CHEGOU



Avakitt[®] Neo

A CONEXÃO QUE VOCÊ NUNCA VIU.
A MICORRIZA QUE CONECTA RAÍZES A PRODUTIVIDADE.

AVAKITT[®] NEO. Conectando raízes à produtividade.

Agricultural Market - 11.Sep.2026

Soybeans and corn receive support from the US harvest.

11.09.2026 | 07:15 (UTC -3)

Vlamir Brandalitze - @brandalitzeconsulting



The soybean and corn markets are receiving support from rising oil prices and doubts about the productive potential of

US crops. Brent crude surpassed US\$102 amid the crisis in Iran. This movement is helping other commodities. In Chicago, soybeans are trying to hold levels above US\$13, while corn contracts remain above US\$5,10.

In the soybean market, the analysts are awaiting the USDA's update on the North American crop. Expectations point to a potential reduction in yield potential and productivity. The weather has been erratic throughout the cycle. The first harvests in the southern part of the producing belt do not yet indicate high productivity.

Soybean maturation has reached 30% in the United States, compared to a historical average of 25%. Good or excellent condition covers 58% of the area, up from

64% last year. Harvesting is expected to gain momentum in the coming days, providing further information on crop yields.

In Brazil, the current crop has been sold to 81%. Last year, the rate was 83%, the same as the average. Producers still have 34,3 million tons of soybeans available. During the same period of the previous cycle, the volume totaled 29,2 million tons.

The new crop has reached 38% commercialization. Last year it registered 39%, compared to an average of 40%. The volume traded is around 70 million tons, a level similar to the previous cycle. In the last seven days, transactions with soybeans from the new crop reached 1,2 million tons.

The first plantings are appearing in Mato Grosso and Paraná. The release of new areas should advance with the end of the sanitary break in different producing regions.

Corn situation

In the corn sector, the condition of North American crops shows deterioration compared to last year. Approximately 56% of the areas receive a good or excellent rating, compared to 68% in the previous cycle. Grain formation reaches nearly 80%, compared to an average of 75%. Maturation reaches almost 30%, compared to an average of 27%. The harvest is around 7%, above the average of 5%.

Chicago maintains positions above US\$ 5,10. In Brazil, the second crop harvest is nearing 96%. The presented projection points to production close to 112 million tons. Some producers are keeping the grain in storage and postponing sales. Other deals are addressing cash needs for the purchase or payment of inputs. There is also the use of contracts on the B3 (Brazilian Stock Exchange) to protect future prices.

Summer corn planting has reached approximately 40%. Rio Grande do Sul shows signs of increased acreage. Santa Catarina indicates stability. In Paraná, planting is progressing. Rain in the South may limit the pace of work in areas not yet sown. In the Southeast, producers are

waiting for rainfall to expand the planting of the first crop.

Wheat situation

Wheat is also receiving support from the international market. Chicago is trading above US\$7,10, while positions for 2027 exceed US\$7,50. This movement tends to raise the benchmark price for Brazilian wheat and for imports next year.

Brazil planted approximately 2 million hectares of wheat, down from the 2,5 million hectares mentioned for the previous cycle. The first crops are being harvested in Paraná and parts of São Paulo. In Rio Grande do Sul, producers report losses due to hail and frost in areas where ears

are forming. Producer prices are around R\$ 72 to R\$ 73 per sack in Rio Grande do Sul and between R\$ 76 and R\$ 80 per sack in Paraná.

Rice situation

In the rice sector, producer prices in Rio Grande do Sul exceed R\$ 80 per sack in several regions. The recent price increase is helping to influence planting decisions. Irga (Rio Grande do Sul Rice Institute) indicated a 3,4% reduction in planted area, while producers mention the possibility of a larger cut.

Bean situation

In the bean market, the harvest of the third crop is nearing its end and the supply is beginning to decrease. The highest quality carioca beans are priced between R\$ 295 and R\$ 330 per sack. In Goiás and Minas Gerais, prices range from R\$ 295 to R\$ 305. Commercial lots are appearing between R\$ 270 and R\$ 300.

Black beans are also gaining strength. Buyers and packers are returning to the market in search of the product. Indicative prices range from R\$ 210 to R\$ 240 per sack. There are reports of high-quality lots near R\$ 250. The next harvests mentioned for the southwest of São Paulo should begin from mid-October.

[RETURN TO INDEX](#)

Decisivo contra as lagartas

Duas soluções de ponta para um problema em comum. **Você escolhe!**



**Caterole
PLUS**

Metoxifenoazida 330 g/L + Indoxacarbe 170 g/L SC



Furion

Clorantraniliprole 60 g/L + Clorfenapir 400 g/L SC



Efeitos de choque e residual



Contra lagartas de difícil controle em diferentes instares



Maior robustez em cenários de desequilíbrio



Complementar para a proteção de biotecnologias



Excelente alternativa para manejo de resistência



Efeitos de choque e residual



Moléculas consagradas para amplo espectro de controle de lagartas



Efeito supressivo de ácaros



Complementar para a proteção de biotecnologias



Versatilidade de dose
(se adequado a diferentes níveis de pressão e estágios fenológicos dos alvos e das culturas)

wow! Isso é Rainbow.



Escaneie o QR Code e conheça inseticidas com tecnologia global.

www.rainbowagro.com.br

Rainbow
all about growing

ATENÇÃO

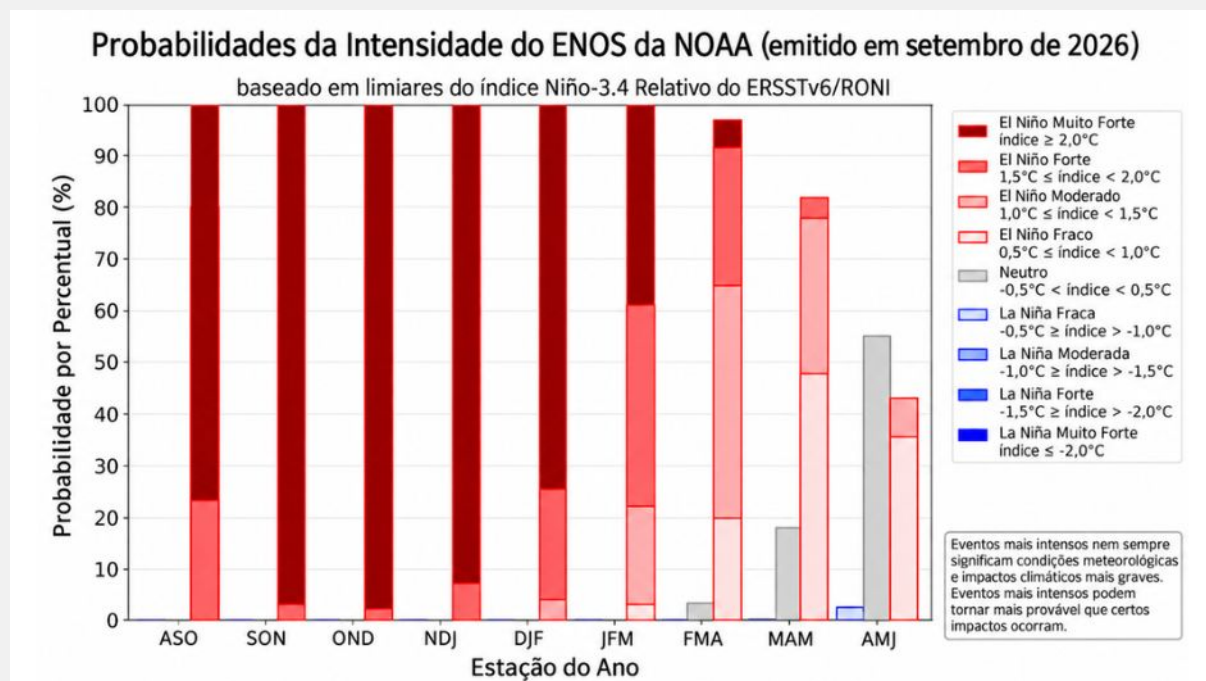
ESTE PRODUTO É PERIGOSO À SAÚDE HUMANA, ANIMAL E AO MEIO AMBIENTE; USO AGRÍCOLA; VENDA SOB RECEITUÁRIO AGRÔNOMICO; CONSULTE SEMPRE UM AGRÔNOMO; INFORME-SE E REALIZE O MANEJO INTEGRADO DE PRAGAS; DESCARTE CORRETAMENTE AS EMBALAGENS E RESTOS DOS PRODUTOS; LEIA ATENTAMENTE E SIGA AS INSTRUÇÕES CONTIDAS NO RÓTULO, NA BULA E RECEITA; E UTILIZE SEMPRE OS EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL.

El Niño intensifies and raises alert for the end of 2026

NOAA records Pacific waters above 3°C and predicts a greater than 90% chance of a very strong event

10.09.2026 | 15:25 (UTC -3)

Cultivar Magazine, based on information from NOAA



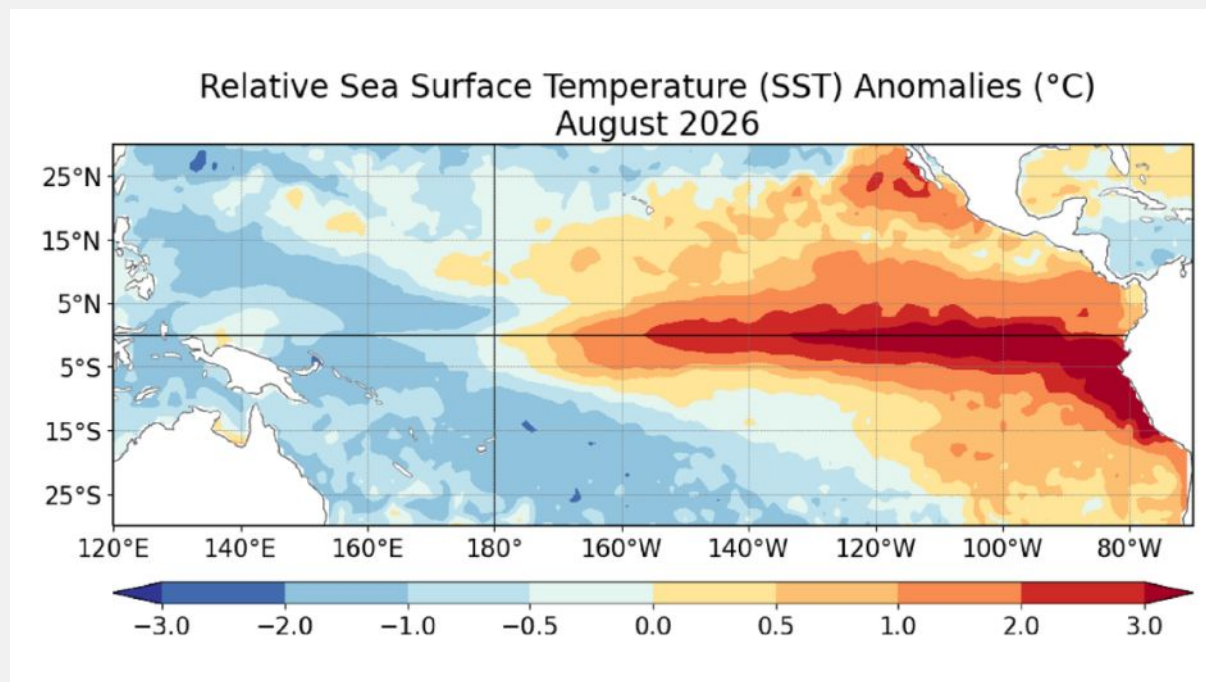
El Niño intensified in August and could reach one of its highest intensities ever recorded by the end of 2026, according to

the United States National Oceanic and Atmospheric Administration (NOAA), in an update released this Thursday (September 10).

The warming of the waters in the Equatorial Pacific, the main characteristic of the phenomenon, has intensified even further in the last month. In some areas of the eastern Pacific, the sea surface temperature has been more than 3°C above average. Warming also remains high in the deeper layers of the ocean.

According to NOAA, signs observed in the ocean and atmosphere indicate that the climate system associated with El Niño is strengthening. These signs include changes in wind patterns, increased rainfall over the central and eastern

Pacific, and reduced rainfall in the Indonesian region.



Mean relative anomalies of sea surface temperature (SST) (°C) for August 2026

The official forecast from the Climate Prediction Center (CPC) indicates that the phenomenon should continue to intensify until the end of the year. For the October to December 2026 quarter, NOAA estimates a 75% probability of an El Niño of historical intensity, with a level of warming higher than that observed in

previous events since 1950.

Considering the broader timeframe, the agency indicates a greater than 90% chance of a very strong El Niño occurring during the spring and summer of 2026-2027 in the Southern Hemisphere.

A more intense El Niño increases the likelihood that its characteristic climatic effects will be observed in different regions of the world. However, the intensity of the phenomenon alone does not determine the climate in each area, as the impacts also depend on other atmospheric factors and the time of year.

NOAA updates ocean and atmospheric conditions related to El Niño and La Niña weekly. The next ENSO Diagnostic Discussion is scheduled for October 8,

2026.

[RETURN TO INDEX](#)

CDC Agro Bradesco

Veículos leves
e pesados com as
melhores condições
para sua fazenda.



**Plano
sazonal**

Parcelas com
valor reduzido
e até

70%
do valor
financiado



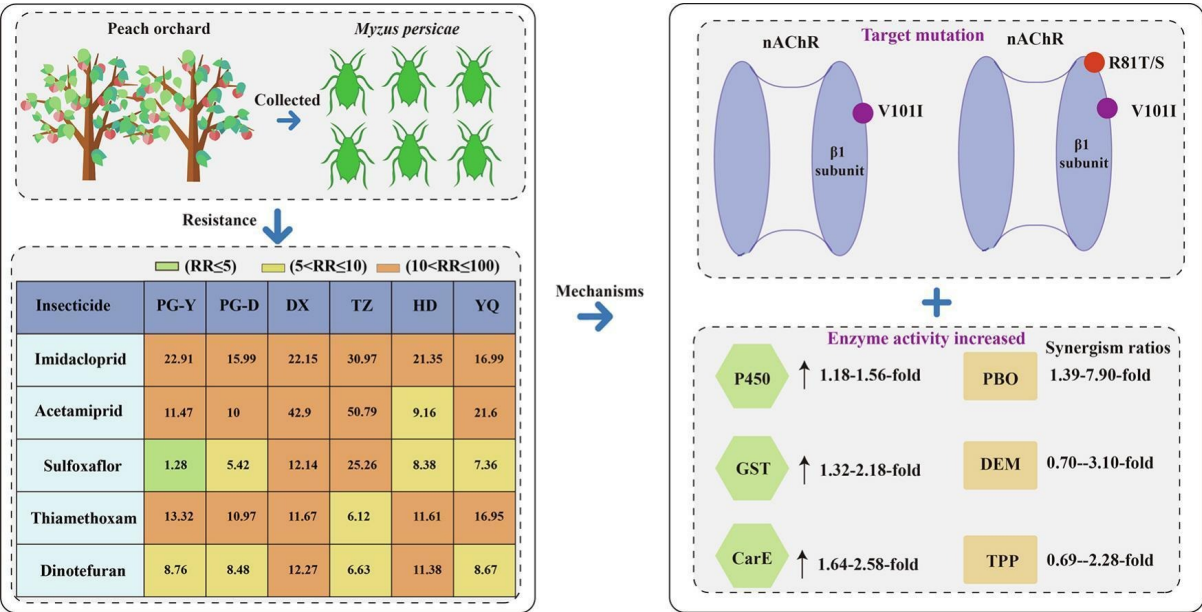
bradesco
financiamentos

New mutation increases resistance of *Myzus persicae* to neonicotinoids

Study links R81S and V101I to high levels of resistance and points to the involvement of detoxification enzymes

10.09.2026 | 09:54 (UTC -3)

Cultivar Magazine



doi 10.1016/j.pestbp.2026.107338

Researchers have identified a new mutation linked to neonicotinoid resistance

in peach orchards in Beijing, China, using the nicotinic acetylcholine receptor nAChR beta1, called *Myzus persicae*. The R81S substitution occurred alongside the V101I mutation. This combination increased resistance to insecticides of different generations.

The study evaluated six populations collected in 2025 (doi 10.1016/j.pestbp.2026.107338). Bioassays recorded resistance of 15,99 to 30,97 times to imidacloprid, 9,16 to 50,79 times to acetamiprid, 1,28 to 25,26 times to sulfoxaflor, 6,12 to 16,95 times to thiamethoxam, and 6,63 to 12,27 times to dinotefuran.

Genetic analysis

Genetic analysis found the already known R81T and V101I mutations, in addition to the new R81S mutation. The isolated V101I mutation appeared in 69,75% of individuals. Combinations of R81T or R81S with V101I occurred in 22,56%.

Monoclonal strains allowed the effect of the genotypes to be separated. The isolated V101I strain provided resistance between 13,73 and 394,21 times. The R81T/S+V101I combinations reached between 73,10 and more than 1.146,79 times.

Another relationship

The study also linked resistance to increased activity of cytochrome P450,

glutathione S-transferase, and carboxylesterase. Assays with synergists indicated greater involvement of P450 enzymes. Molecular simulations showed alterations in the nAChR binding site and reduced affinity for imidacloprid in the combined mutations.

Researchers point to a combined action of mutations in the target and metabolic mechanisms. The results reinforce the need for resistance monitoring and rotation of insecticides with different modes of action.

[RETURN TO INDEX](#)



AGORA, AS **PRAGAS** NÃO TÊM
MAIS ONDE SE **ESCONDER.**



Desaloj expulsa a praga da planta como nenhum outro.
Efervescente. Exclusivo. Eficiente.

PRODUTO ADJUVANTE DE VENDA LIVRE, ISENTO DE REGISTRO JUNTO AO MINISTÉRIO DA AGRICULTURA E PECUÁRIA (MAPA)

CONECTE-SE AO NOVO



Invasive ant exploits fungus for food and potential shelter

Study records unprecedented interaction of *Allomerus auropunctatus* with *Ganoderma* sp. in São Paulo

10.09.2026 | 07:42 (UTC -3)

Schubert Peter, Cultivar Magazine



doi 10.37486/2675-1305.ec08036

Researchers have recorded for the first time the interaction between the invasive ant **Allomerus auropunctatus** and a living fruiting body of a fungus from the genus **Ganoderma**. Worker ants collected exudate produced by the fungus and used its structure as a foraging site and possible nesting area. The work also gathered citizen science data and reinforced the species' broad dietary flexibility.

The observation took place in Laranjal Paulista, São Paulo, in an area under strong rural and urban influence near the Sorocaba River. The site is located in the transition zone between the Atlantic Forest and the Cerrado. The researchers found groups of worker bees on the fruiting body during the night (doi 10.37486/2675-

1305.ec08036).

Exudate secreted by the fungus

The ants were collecting an exudate secreted by the fungus. Several worker ants arrived at the feeding point in coordinated groups. The researchers also observed individuals entering and exiting through natural openings present in the fungal structure. This behavior indicated possible use of the site for nesting. The team did not confirm that the ants themselves opened the cavities.

Remains of arthropods appeared near possible nest entrances. The material included insect fragments, mostly from

other ants. Researchers interpreted these residues as a possible result of opportunistic predation or food discard by the colony. Other ants also visited the fungus to collect the same substance.

Wood-decomposing fungus

The interaction is of added interest because it involves a wood-decomposing fungus. Species of the genus *Ganoderma* cause white rot in the roots and lower trunks of trees from different botanical families. The active mycelium can secrete polysaccharides in response to environmental changes, such as changes in temperature, pH, and mechanical

damage.

In the observed case, the researchers consider a possible association between polysaccharide production and alterations in the mycelium. The accumulation of organic matter deposited by the colony may have influenced the pH. Mechanical damage may also have contributed. Adult *Mycotretus flavomarginatus* fed on the fruiting body and could cause lesions.

Causal relationship?

The study does not allow us to define a causal relationship between ant activity and exudate production. It also does not allow us to determine if this interaction occurs frequently in nature. The

observation period was limited. A visit a week later did not allow for the collection of the colony and the fungus, as the area had been burned and cleared.

To broaden the analysis, the researchers examined 787 records of *Allomerus auropunctatus* available on iNaturalist, also accessible through the Global Biodiversity Information Facility. Blurred images, distant records, observations with bait, and instances of artificial feeding were discarded. The evaluation considered visible morphological characteristics and published taxonomic information.

Among the 787 records reviewed, 150 involved feeding behavior. After screening, 25 were excluded. The final set comprised 125 observations. Of these, 32 occurred

within the species' native distribution area and 93 outside of it.

Food strategy

The collection of honeydew from hemipterans appeared as the most frequent feeding strategy in the survey. The records included interactions with membracids, aphids, and scale insects. The baseline also showed consumption or utilization of various arthropods, in addition to plant resources.

Approximately 22,6% of the feeding records involved insects used as prey or carcass material. Observations encompassed representatives of Hymenoptera, Diptera, Lepidoptera,

Coleoptera, Isoptera, Orthoptera, and Hemiptera. Another 21% showed the use of plant resources. Floral and extrafloral nectar predominated in this group, with additional records of leaf tissue, pollen, sap, and fruits. Unidentified organic matter appeared in 9,4% of cases.

The record in the fungus remained unique among the observations evaluated. For the researchers, the dataset demonstrates the ability of *Allomerus auropunctatus* to exploit varied food sources in different environments. This plasticity helps to understand the ecological success of the species, considered one of the hundred worst invasive species in the world by the International Union for Conservation of Nature.

Taxonomic classification

The taxonomic classification of the species has also undergone a recent change.

Phylogenetic evidence led to the synonymization of the genus *Wasmannia* under *Allomerus*. Thus, *Wasmannia auropunctata* came to be called *Allomerus auropunctatus*.

The researchers also highlight the potential interest of dietary flexibility for future studies in biological control.

However, the interaction with the fungus does not appear to produce only benefits for the fungal organism. The ants may prey on insects associated with the fruiting body, but the accumulation of waste and

activity within the structure can also cause negative effects. The study does not determine whether these alterations favor the production of polysaccharides used as food or attract new prey.

The work was carried out by scientists João PS Medeiros, Karine S. Carvalho and Edgar B. Crispino.

[RETURN TO INDEX](#)

FAMÍLIA
FOX

TRÊS FORÇAS. UMA REFERÊNCIA.

Liderar no manejo das doenças da soja exige
mais do que eficiência, exige consistência.



Fox[®] Supra, Fox[®] Xpro e Fox[®] Ultra
*Diferentes soluções conectadas pelo mesmo propósito:
maximizar os resultados das lavouras de soja no Brasil.*



Inovar com
resultado
é Bayer.



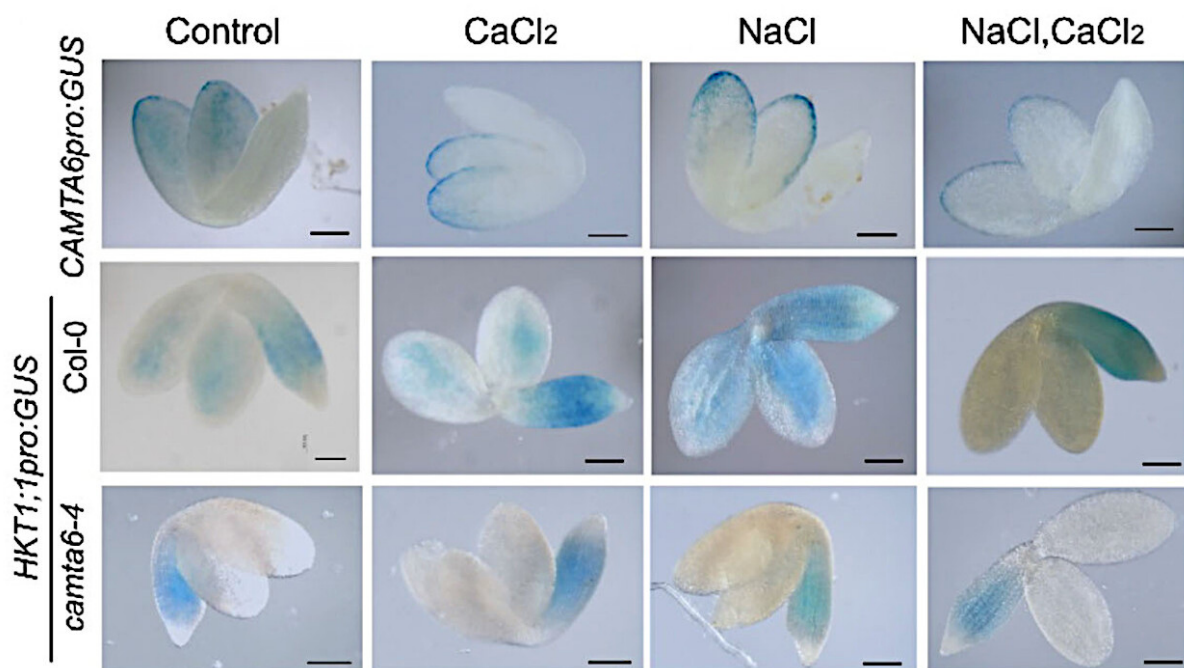
ATENÇÃO ESTE PRODUTO É PERIGOSO À SAÚDE HUMANA, ANIMAL E AO MEIO AMBIENTE; USO AGRÍCOLA; VENDA SOB RECEITUÁRIO AGRÔNOMICO; CONSULTE SEMPRE UM AGRÔNOMO; INFORME-SE E REALIZE O MANEJO INTEGRADO DE PRAGAS; DESCARTE CORRETAMENTE AS EMBALAGENS E OS RESTOS DOS PRODUTOS; LEIA ATENTAMENTE E SIGA AS INSTRUÇÕES CONTIDAS NO RÓTULO, NA BULA E RECEITA; E UTILIZE SEMPRE OS EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL.

Calcium regulates seed germination under saline stress

Study identifies CAMTA6-PP2C49-HKT1;1 axis linked to sodium-potassium balance

10.09.2026 | 07:14 (UTC -3)

Schubert Peter, Cultivar Magazine



doi 10.1111/tpj.71033

Researchers at the Hebrew University of Jerusalem have identified a molecular mechanism involved in controlling the

balance between sodium and potassium during germination under saline stress.

The system involves calcium signaling and the coordinated action of the proteins CAMTA6, PP2C49, and HKT1;1.

Experiments with *Arabidopsis thaliana* also showed increased germination after application of sanguinarine, an inhibitor of PP2C phosphatases. However, the effect was limited to germination and did not protect established seedlings against salinity.

The study evaluated germinating *Arabidopsis thaliana* embryos (doi 10.1111/tpj.71033). The researchers observed a spatial organization of the response to salt. CAMTA6 expression predominated in the cotyledons. Under

salinity, gene activity increased and concentrated at the cotyledon margins. HKT1;1 expression showed a different pattern. In the presence of both sodium chloride and calcium chloride, HKT1;1 concentrated in the radicle.

Calcium and calmodulin signaling

CAMTA6 functions as a transcription factor associated with calcium and calmodulin signaling. The results indicate the participation of this protein in the spatial control of HKT1;1. The HKT1;1 transporter participates in sodium and potassium homeostasis. The distribution of its expression in the embryo influences the

seed's ability to maintain ionic concentrations compatible with germination under salinity.

The phosphatase PP2C49 integrates the same system. Previous studies already indicated its ability to inactivate HKT1;1 by dephosphorylation. In the new work, the activity of the PP2C49 promoter remained concentrated in the radicle of wild-type plants. In mutants without functional CAMTA6, expression spread to other tissues of the embryo. The result points to the participation of CAMTA6 in the spatial restriction of PP2C49 expression.

Sanguinarine effect

The researchers also evaluated the effect of sanguinarine, a benzophenanthridine alkaloid with inhibitory activity on PP2Cs. In wild-type seeds subjected to 150 millimoles per liter of sodium chloride, the application of one micromole per liter of sanguinarine increased germination from 76% to 92%. Under 200 millimoles per liter of sodium chloride, the rate increased from 3% to 37%.

The response depended on the CAMTA6-PP2C49-HKT1;1 axis. The improvement caused by sanguinarine was compromised in mutants of *camta6*, *pp2c49*, and *hkt1*, as well as combinations of these mutations. The loss of HKT1;1 eliminated the favorable response to the compound in some tested lines. According to the

researchers, the data support the transporter's role in sanguinarine's effect on tolerance during germination.

System components

The application of the compound also modified the expression of the system's components. In wild-type embryos, sanguinarine reduced the expression of CAMTA6 and PP2C49. At the same time, it increased the expression of HKT1;1. Under salinity, this alteration coincided with an improvement in the ionic composition of the embryos.

With 150 millimoles per liter of sodium chloride, wild-type embryos accumulated 2,61 micrograms of sodium per embryo.

The combination of salt with sanguinarine reduced this value to 1,89 micrograms. For potassium, the content increased from 0,85 micrograms to 1,10 micrograms per embryo. The treatment, therefore, increased the potassium-to-sodium ratio during germination.

The effect did not appear in *hkt1* mutants. Under sodium chloride, these embryos accumulated 3,10 micrograms of sodium per embryo. With sanguinarine, the value remained close, at 3,06 micrograms. The potassium concentration also remained low. These results reinforce the need for *HKT1;1* for the response observed in the wild type.

Time limit

The action of sanguinarine showed a time limit. Seedlings three days old, transferred to media containing salt and sanguinarine, did not maintain the benefit observed during germination. The compound did not prevent the reduction in primary root growth or the loss of chlorophyll caused by saline stress. The researchers conclude, therefore, based on the tests carried out, that there is a specific effect for the germination phase.

Transcriptome analysis broadened the scope of the mechanism. The group identified 63 PP2C phosphatase genes that responded to the evaluated conditions. Some of them showed regulation associated with CAMTA6, calcium, and sodium chloride. The data indicate a broader signaling network than

the axis formed by CAMTA6, PP2C49, and HKT1;1.

The results do not yet demonstrate a technology ready for agricultural use. The study used *Arabidopsis thaliana* and focused its tests on the molecular functioning of germination. The team points to this mechanism as a basis for future research on genes and strategies capable of favoring crop establishment in saline environments.

[RETURN TO INDEX](#)

Syngenta appoints Pedro Ferreira to global position

The executive assumed responsibility for the company's international logistics strategy and governance, as well as customs operations

09.09.2026 | 17:28 (UTC -3)

Cultivar Magazine



Pedro Leonardo R. Ferreira (pictured) assumed the position of Global Head of Logistics & Customs at Syngenta in March

2026, based in Enkhuizen, Netherlands. In this role, the executive leads the strategy and governance of international logistics and customs operations for the company's Global Vegetable Seeds business.

Ferreira built his career in the areas of Supply Chain and Logistics, working with different 3PL operators and gaining international experience in designing logistics solutions. His career path includes projects related to Value Added Services, warehousing, transportation, customer solutions, and the design of logistics networks.

Before joining Syngenta, the executive worked for over 14 years at DHL Supply Chain. Initially based in São Paulo, he worked for the Latin American region and

later spent about ten years in Bonn, Germany, where he held global and regional positions in Solution Design and Value Added Services for the EMEA region.

Ferreira also worked at Penske Logistics and Intecom Serviços de Logística, gaining experience in projects, business development, and logistics operations in Brazil and abroad.

[RETURN TO INDEX](#)

Genetic duplication maintains resistance to malathion in fruit flies

Study indicates lower adaptive cost of the RS haplotype in *Ceratitis capitata* populations

09.09.2026 | 15:58 (UTC -3)

Cultivar Magazine



Photo: Scott Bauer / USDA - Bugwood

A heterogeneous duplication of the Ccace2 gene favors the maintenance of malathion resistance in *Ceratitis capitata* populations. The mechanism showed a lower adaptive cost than the isolated G328A mutation. The result helps explain the persistence of resistance even after insecticide withdrawal.

Spanish scientists evaluated two mechanisms. The R allele contains the G328A mutation in the acetylcholinesterase gene. The RS haplotype has two copies of Ccace2: one mutated and one without the mutation. Bioassays indicated semi-dominant resistance in both cases.

The R/R genotype showed the worst performance in biological characteristics.

Development from egg to pupa was delayed by about two days. Pupa weight decreased by 9,5% compared to the susceptible S/S genotype. The RS/RS genotype showed a pupa weight similar to S/S and intermediate development.

Genetic stability

The difference also appeared in genetic stability. Without selection pressure in the laboratory, the frequency of the R allele fell from 68% to 1,4% after 24 generations. The RS haplotype fell from 75% to 9% after 29 generations.

Monitoring of seven localities in the Valencian Community reinforced the result. The frequency of the R allele

decreased from 18,6% during malathion use to 4,6% six years after its withdrawal. The RS haplotype varied between 5,4% and 10% during the same period.

An evolutionary model also attributed a higher adaptive cost to genotypes carrying the R allele. In simulations of the eventual return of malathion, greater exposure and a higher number of applications accelerated the selection for resistance. The RS/RS genotype became predominant in scenarios associated with loss of control (doi 10.1002/ps.71269).

[RETURN TO INDEX](#)

Ethanol boosts corn production and increases demand for genetics

The expansion of cereal use increases the demand for productivity and new technologies in the field

09.09.2026 | 14:13 (UTC -3)

Vera Barão



The growth of corn ethanol production is increasing demand for the grain in Brazil

and driving investments in genetics, research, and development. The increase in corn destined for biofuel production is also driving the search for greater productivity and efficiency in the field.

The movement was highlighted by consultant André Aguirre Ramos (pictured) and Cristian Rafael Brzezinski, Global Research and Development Manager at GDM, in the corn and sorghum area, during the XXIII Brazilian Seed Congress (CBSementes), in Foz do Iguaçu (PR).

For Ramos, the expansion of corn production reinforces the importance of focusing on seed quality. On another front, GDM is expanding its research infrastructure to keep pace with market growth.

According to consultant Aguirre, corn productivity results from a combination of genetics, management, and environment, and the seed occupies a central position in this equation. Purity, genetic quality, vigor, and germination are, in his assessment, fundamental attributes to guarantee the uniform establishment of the crop and allow the plant to express the potential developed through genetic improvement.

However, quality comes at a cost. Ramos highlighted that producing high-quality seeds requires investment from companies, but this can return to the producer in the form of increased productivity and profitability, especially in a scenario of high costs.

Ethanol changes the corn landscape

According to consultant Aguirre Ramos, in the last three years, corn has gained economic importance and, in certain situations, has even shown greater profitability than soybeans, benefiting producers who work with both crops.

This scenario is also causing movement in the seed industry. GDM has expanded its operations in corn after acquiring KWS and AgReliant Genetics in the last two years. According to the company, this strategy has strengthened its presence in the national, South American, and global markets and accelerated investments in new technologies for the crop.

Currently, about 12% of the company's revenue is reinvested in corn research and development. This strategy reflects the growth in domestic demand: according to a presentation at the congress, the number of corn ethanol plants in the country has increased between 50% and 60% in the last two to three years.

With more corn being sent to processing plants, domestic consumption is growing and opening up new prospects for the crop. "The effect also reaches the seed market, which is now demanding materials that are better adapted to different production conditions and capable of delivering higher performance in the field," says Cristian.

Research gains structure

To support this expansion, GDM is also investing in a unit in Petrolina (PE). The project, which began about three years ago, will focus on research activities and bring together the company's genetic base, including crossbreeding and the generation and development of lines that will later supply breeding programs in different regions.

The strategy, however, does not represent a shift in focus from soybeans to corn. The company states that it is maintaining its investments in both crops. "The same focus we put on soybeans, we put on corn," highlighted the GDM representative.

[RETURN TO INDEX](#)

Claas launches Arion 5 CMATIC with continuously variable transmission

The new series features three four-cylinder tractors with up to 132 kilowatts of power and digital agriculture capabilities

09.09.2026 | 09:46 (UTC -3)

Cultivar Magazine



Claas presents the new Arion 5 CMATIC series during Innov-Agri in Ondes, France. The line includes the Arion 5.140, 5.160 and 5.180 CMATIC models. The tractors feature a four-cylinder, 4,5-liter engine, as well as the CMATIC continuously variable transmission. Maximum power reaches 132 kilowatts in the Arion 5.180.

The most powerful model delivers a maximum torque of 730 newton-meters at 1.500 revolutions per minute. The machine weighs 7.700 kilograms unloaded. The maximum speed reaches 50 kilometers per hour, with an engine speed of 1.490 revolutions per minute.

The CMATIC transmission incorporates adaptive powertrain management. The "Auto Load Anticipation" feature identifies load increases during the lowering of

tillage implements. The system raises the engine speed and adjusts the transmission before the peak demand. The solution aims to prevent engine speed drops during load changes.

The series also offers, as an option, the Cemos Dialog system. This technology assists the operator in adjusting ballast and tire pressure. The GPS Pilot Cemis 1200 allows for planning and sharing of reference lines between machines. Claas Connect integrates task management, fleet management, operational data, and precision agriculture applications.

The tractors feature Proactiv front suspension and a fully suspended cab. The Cebius terminal integrates hydraulic adjustments, rear lift control, and Isobus functions. The load-sensing hydraulic

system provides up to 150 liters per minute and serves up to six circuits. The K80 hitch supports a vertical load of four tons.

	ARION 5.180 CMATIC	ARION 5.160 CMATIC	ARION 5.140 CMATIC
Max. engine power	132 kW / 180 hp	121 kW / 165 hp	107 kW / 145 hp
Max. torque (at 1,500 rpm)	730 Nm	697 Nm	619 Nm
Fuel tank capacity	215 l	215 l	215 l
Unladen weight	7,700 kg	7,600 kg	7,280 kg
Max. total weight	11,000 kg	11,000 kg	10,250 kg

[RETURN TO INDEX](#)

Bayer and Neste expand winter canola for biofuels

The agreement foresees the expansion of Newgold in the Great Plains of the Southern US and a commercial launch in 2027

09.09.2026 | 09:36 (UTC -3)

Cultivar Magazine, based on information from Alexander Hennig



Bayer and Neste have reached a commercial agreement to expand the

cultivation of Newgold winter canola in the Great Plains of the Southern United States. The initiative seeks to increase the supply of lower-carbon oilseeds for the production of renewable diesel and sustainable aviation fuel.

The companies intend to form a network with other members of the supply chain. The model seeks to support the expansion of the crop and guarantee an additional market for producers. Global demand for biofuels, according to estimates cited by the companies, could almost triple and reach around 40 billion gallons by 2040.

Bayer plans to launch the Newgold hybrids in the North American fall of 2027. The materials will have winter tolerance, TruFlex technology, the second generation

of the Roundup Ready system, and resistance to silique splitting. The company points to potential for increased productivity and higher oil content.

The proposal includes the use of winter canola in rotation with wheat. The crop can also expand the use of agricultural areas and create a new source of income for producers in the region.

The oil will continue to be used as a raw material for biofuels. The high-protein meal will be destined for the animal feed market, including dairy and beef cattle, poultry, and swine.

[RETURN TO INDEX](#)

Corteva and Globachem create joint venture for crop protection

The partnership will involve equal participation and plans to launch new solutions in Europe and the Americas in the early 2030s

09.09.2026 | 08:31 (UTC -3)

Cultivar Magazine, based on information from Bethany Shively



Corteva and Globachem announced a definitive agreement to create a joint

venture focused on developing new crop protection solutions. Each company will hold a 50% stake. The operation will focus on the European and American markets.

The new company will operate independently. The project will leverage technologies in advanced stages of development and products nearing the commercial stage from both companies.

The structure aims to expand development, registration, and commercialization capabilities. Products may reach the market through one or both parent companies.

The partnership is part of a strategy to expand the portfolio ahead of the planned separation of the crop protection company, explains Brook Cunningham, senior vice

president of Corteva. The company intends to combine its pipeline and innovation capabilities with Globachem's expertise in formulations.

Existing partnership

The joint venture expands an existing partnership between the two companies, which has been maintained for several years. The first solutions developed by the new company are scheduled for launch in the early 2030s. Sales will utilize the channels already maintained by the companies.

Koen Quaghebeur, co-founder and Chief Visionary Officer of Globachem, states that the structure will bring together expertise in

discovery, development, formulation, and regulatory enforcement. According to the executive, the initiative seeks to accelerate the offering of differentiated solutions to agronomic challenges.

The completion of the transaction remains scheduled for the fourth quarter of 2026. Closing is contingent upon obtaining the necessary regulatory authorizations and approvals.

[RETURN TO INDEX](#)

Lecithin causes rapid mortality of *Bemisia tabaci* through contact

Laboratory study points to effects on adults and eggs, as well as cellular and metabolic changes

09.09.2026 | 08:04 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Sebastião José de Araújo / Embrapa

Soy-derived lecithin showed rapid contact toxicity against adult *Bemisia tabaci* and

reduced egg hatching in laboratory tests. Exposure to dry residues at a concentration of 10 milligrams per milliliter caused 100% mortality within four hours. The lethal concentration for 50% of adults, in the same period, reached 1,16 milligrams per milliliter.

Chinese researchers worked with the cryptic MED species of *Bemisia tabaci*, grown on tomato plants. In the assay with treated leaves, mortality after 24 hours reached 6% with 0,1 milligrams per milliliter, 37,3% with 1 milligram per milliliter, and 100% with 10 milligrams per milliliter (doi 10.3390/insects17090935).

Route of exposure and effect

The route of exposure influenced the effect. Adults fed a sucrose solution containing 10 milligrams per milliliter of lecithin for 24 hours showed no mortality. The result indicates a predominance of contact action under the conditions evaluated. The study did not measure the amount ingested and, therefore, does not rule out possible oral activity.

Lecithin also affected the eggs. Treatment with 10 milligrams per milliliter reduced hatching from 99,44% in the control group to 37,78%.

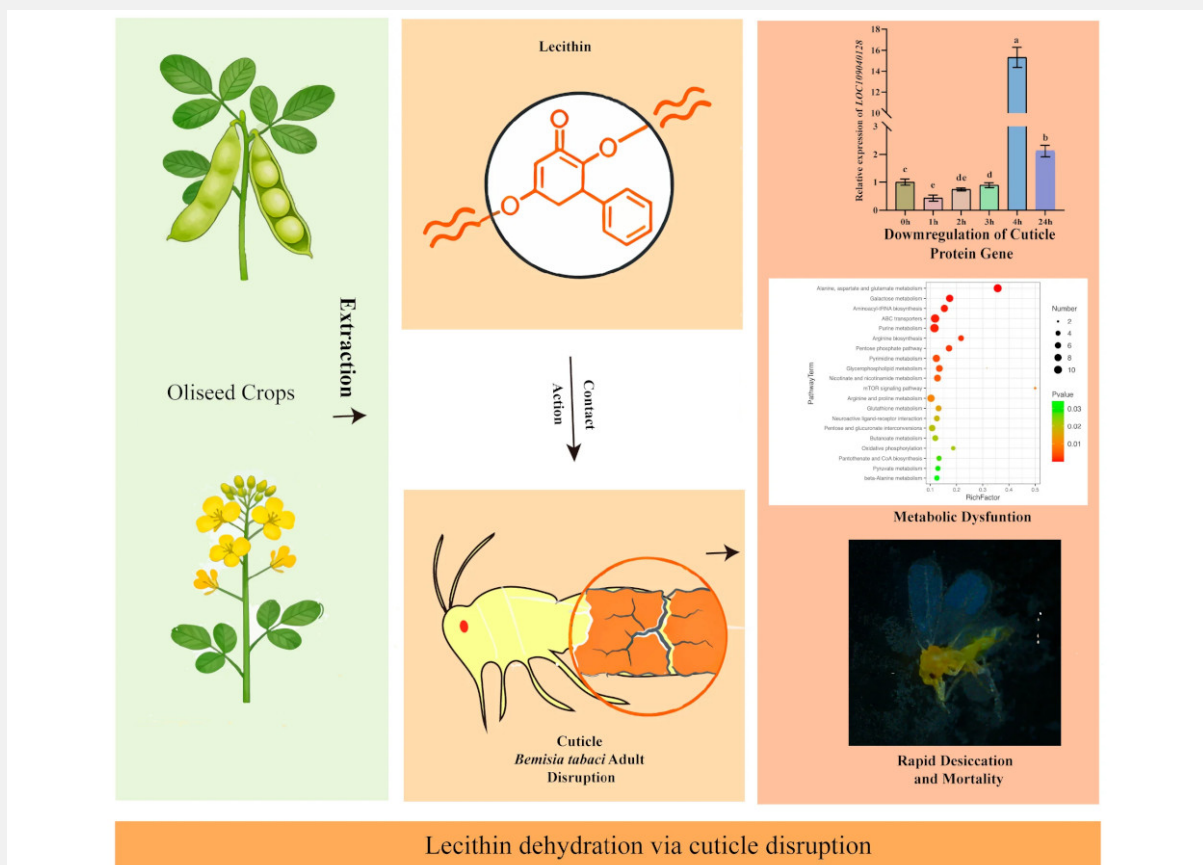
Tissue examinations

Molecular analyses identified 135 genes with differential expression and 599 altered metabolic characteristics after four hours

of exposure to the median lethal concentration. The responses involved processes related to the cuticle, lysosomes, autophagy, and amino acid metabolism. Tissue examinations showed altered abdominal tissue organization and changes in cellular ultrastructure.

The researchers did not determine a single molecular target or a definitive mechanism of action. The results also do not allow for direct extrapolation to field conditions.

Future studies will need to evaluate formulation, persistence, agronomic efficiency, and safety for non-target organisms.



doi 10.3390/insects17090935

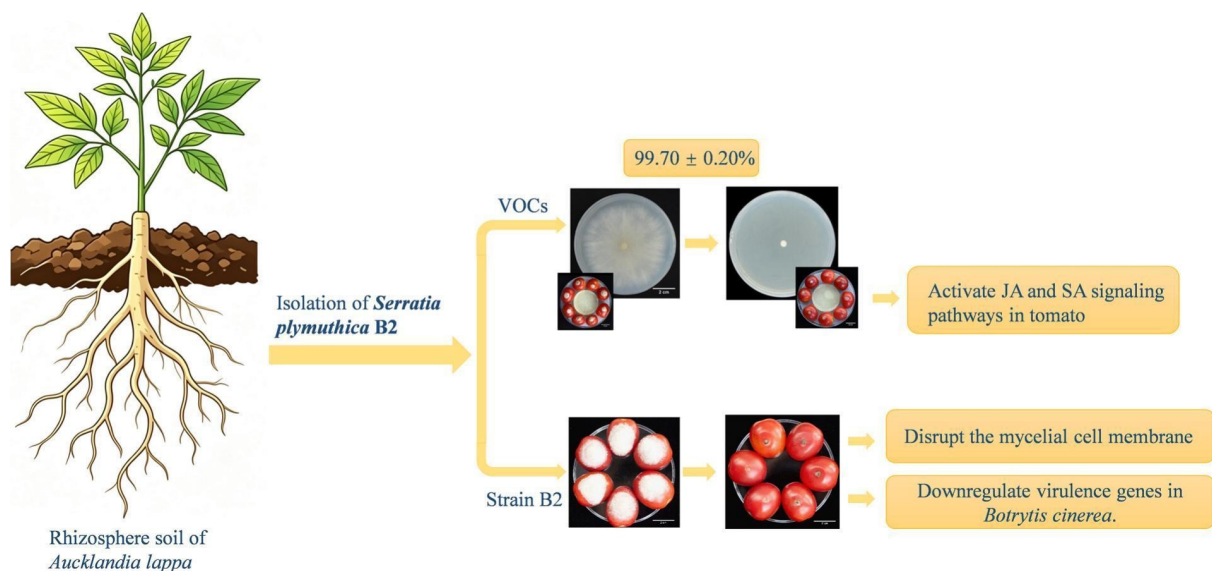
RETURN TO INDEX

Bacteria reduces gray mold on tomatoes after harvest

Serratia plymuthica B2 inhibited *Botrytis cinerea* and activated fruit defense mechanisms

09.09.2026 | 07:04 (UTC -3)

Schubert Peter, Cultivar Magazine



doi 10.1016/j.pestbp.2026.107345

The bacterium *Serratia plymuthica* B2 showed potential for the biological control of gray mold in tomatoes after harvest. In the laboratory, the strain inhibited 85,85% of *Botrytis cinerea* growth. Volatile organic

compounds produced by the bacterium achieved 99,70% inhibition of mycelial growth.

Researchers isolated strain B2 from the rhizosphere of *Aucklandia lappa*. The bacterium also showed activity against six other phytopathogenic fungi. Inhibition rates ranged from 64,2% to 85,5% (doi 10.1016/j.pestbp.2026.107345).

Average number of injuries

In fruits treated with B2, the average lesion area after 96 hours reached 0,222 square centimeters. In the control, it reached 5,932 square centimeters. The biomass of *Botrytis cinerea* in the treated tomatoes

decreased 16,96 times during the same period.

Analyses indicated damage to the integrity of the fungal cell membrane. The treatment also reduced the expression of the pathogenicity genes BcPG1, BcPME1, BcPLC1, and BcBMP1.

Volatile compounds

Analysis of volatile compounds identified 32 molecules. Dimethyl disulfide and dimethyl trisulfide showed the greatest antifungal activity among the compounds evaluated. The former promoted complete inhibition of *Botrytis cinerea* at 32 microliters per liter. The latter achieved the same effect at 8 microliters per liter.

In the fruits, exposure to volatiles reduced the lesion area from 1,670 to 0,3443 square centimeters after 96 hours. The compounds also increased, during this period, the expression of genes linked to the salicylic acid and jasmonic acid pathways.

Genome sequencing identified 12 gene clusters associated with the biosynthesis of secondary metabolites. Researchers emphasize the need for formulation, commercial storage, and safety studies before the strain is used in agriculture.

[RETURN TO INDEX](#)

Syngenta and Amoeba celebrate agreement for biofungicide in cereals

AXP20 targets septoria leaf spot and yellow rust and is expected to reach the European market starting in 2028

09.09.2026 | 06:36 (UTC -3)

Cultivar Magazine, based on information from Julien Fourmont



Syngenta Crop Protection and Amoeba have signed an exclusive agreement for the supply and distribution of the AXP20 biofungicide for cereals in the European Union, the United Kingdom, Ukraine, and Switzerland. The product uses lysate of the amoeba *Willaertia magna* C2c Maky

and initially focuses on controlling septoria leaf spot, caused by *Zymoseptoria tritici*, and yellow rust, caused by *Puccinia striiformis*.

The first regulatory approvals are expected in the third quarter of 2028. Companies anticipate sales in key European Union markets by the end of that year, for use in spring 2029 on wheat, spelt, and triticale, in spring and winter crops.

According to the companies, AXP20 acts primarily by inhibiting the germination of fungal spores. Field trials also indicated activation of the plants' natural defenses. The Fungicide Resistance Action Committee (FRAC) classified the lysate in group BM02, intended for biological agents with multiple modes of action. The

classification indicates an absence of known resistance and a low to very low risk of resistance selection.

The active substance received approval from the European Union in 2025. In June 2026, Amoéba obtained marketing authorization in France for Axpera, a biofungicide based on the same technology.

The agreement grants Syngenta exclusive distribution rights for all cereals, except corn, in the defined territories. The companies also maintain joint agronomic registration and evaluation programs in Europe.

[RETURN TO INDEX](#)

Ferrabait obtains first registration in the European Union

Adama's molluscicide receives approval in Latvia and plans to launch in other European countries starting in 2027

09.09.2026 | 06:18 (UTC -3)

Cultivar Magazine, based on information from Tal Moise



Adama announced that it has obtained the first European registration in Latvia for the molluscicide Ferrabait, formulated with the

active ingredient Feralla (based on elemental iron). The company anticipates further registrations and commercial launches in Europe starting in 2027, with France, Sweden, and Lithuania among the first markets.

The product is effective in controlling slugs and snails. According to the active ingredient Feralla, Ferrabait interrupts the feeding of pests and provides control within the first three days after application. The registration covers various crops, including cereals, rapeseed, potatoes, and high-value vegetables.

The company links the product's development to the increased pressure from slugs on European crops. Milder winters exacerbate the problem, according

to the information released.

Ferrabait utilizes proprietary Desidro technology. According to the company, the process employs multi-stage drying under controlled humidity levels. The technology aims to produce pellets with greater palatability, integrity, and durability.

According to Germain Boulay, global head of herbicides and molluscicides at Adama, the product expands the options available to farmers for managing these pests in light of current regulatory and sustainability requirements.

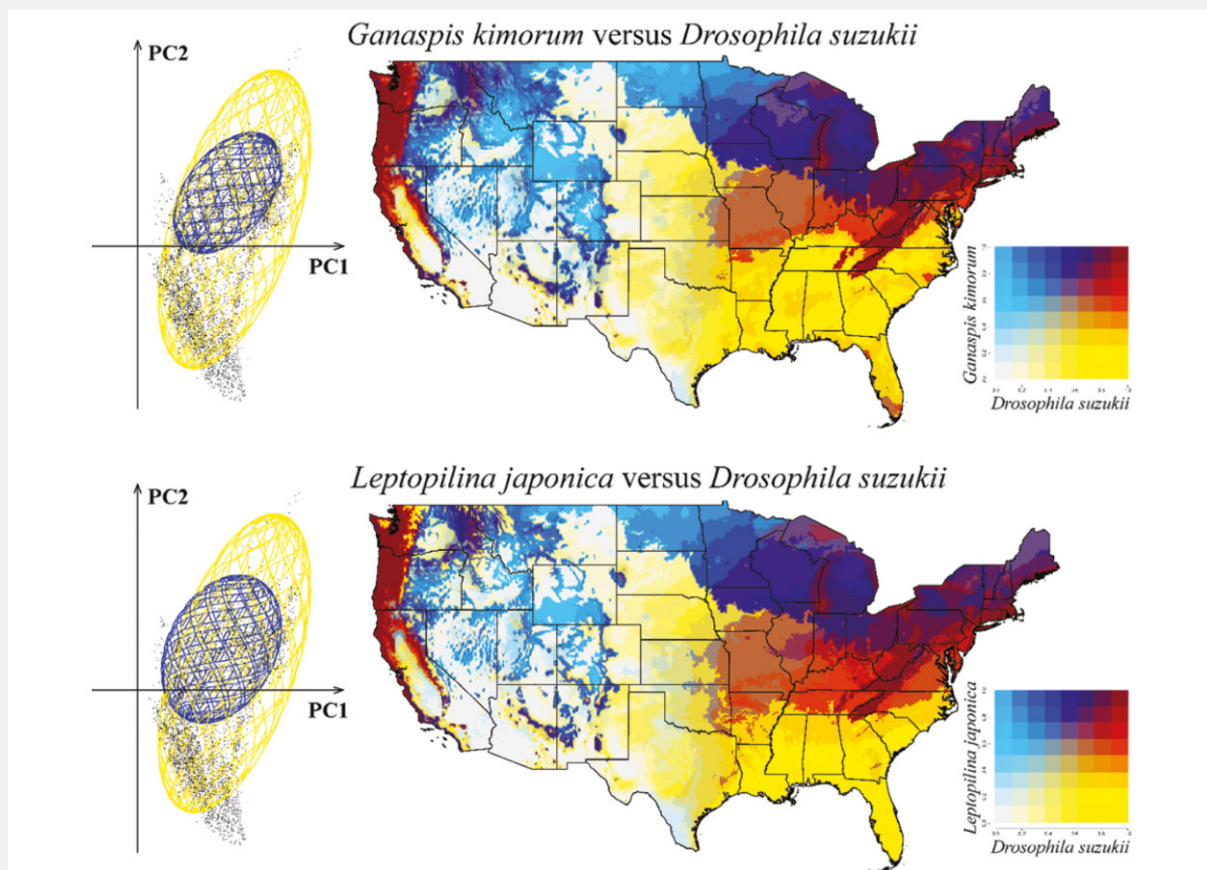
[RETURN TO INDEX](#)

Models indicate areas for *Drosophila suzukii* control in the USA

Study combines climate and phenology to guide releases of two parasitoids

08.09.2026 | 10:39 (UTC -3)

Cultivar Magazine



Habitat suitability and phenology models indicated greater potential for biological

control of *Drosophila suzukii* in the Pacific Northwest and the Northeastern United States. The study evaluated the spatial and temporal coincidence of the pest with the parasitoids *Ganaspis kimorum* and *Leptopilina japonica*.

The two natural enemies occupy smaller realized niches compared to *Drosophila suzukii*. This difference may limit establishment in parts of North America. The models also indicated greater sensitivity of the parasitoids to hot and dry environments (doi 10.1127/entomologia/4365).

Evaluation by states

Oregon and Washington showed high predicted overlap. The same occurred in northeastern states, including Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island. Ohio and West Virginia also recorded favorable conditions.

In the Midwest and parts of the Southeast, the predicted overlap was at an intermediate level, as was the case in Illinois, Indiana, Michigan, Wisconsin, Kentucky, North Carolina, Tennessee, and Virginia. However, much of the Southeast is highly suitable for *Drosophila suzukii* and poorly suitable for parasitoids. In areas where habitat overlap, the lag in the onset of seasonal activity may still reduce control efficiency. In much of the United

States, *Drosophila suzukii* begins activity two to four weeks before parasitoids.

Situation of parasitoids

Ganaspis kimorum acts as a specialist parasitoid of *Drosophila suzukii* and has received authorization for releases in the United States. *Leptopilina japonica* has a wider host range and already maintains established populations without intentional introduction in several regions, in addition to being under evaluation for intentional release.

The model validation gathered data from 134 locations in nine states, including 87 for *Drosophila suzukii*, 41 for *Leptopilina japonica*, and only 6 for *Ganaspis kimorum*. Researchers acknowledge that

the low number of data points limits validation for the latter species. Field records indicated the first detection of the insects between 40 and 50 days after the predicted dates, but part of this difference is attributed to the sampling itself, since detection depends on population density and the efficiency of the capture method. Scientists highlight the combined use of climatic suitability and phenology as a tool to define locations and release periods in biological control programs.

[RETURN TO INDEX](#)

Carlos Piotto takes over Syngenta's insecticide portfolio

The agricultural engineer has 12 years of experience with the company and holds positions in both technical and marketing roles

08.09.2026 | 10:18 (UTC -3)



Carlos Piotto has assumed the position of Insecticides Portfolio Manager at

Syngenta. The agronomist has worked at the company for 12 years and brings experience in technical market development, insecticide and fungicide management, and portfolio management.

Prior to his current role, Piotto held the position of Fungicides Portfolio Manager between July 2024 and October 2025. He also worked as Insecticides Technical Manager for Latin America from October 2022 to July 2024, and as Fungicides Technical Manager for the region between August 2021 and October 2022.

At Syngenta, she also worked in Technical Market Development Management in the Eastern Cerrado region. In this role, she was responsible for activities in Goiás, Tocantins, Bahia, Piauí, Maranhão, and

Pará. Her career at the company began in 2014, in technical market development in southern Mato Grosso.

Before Syngenta, she worked for three years in activities related to DuPont in Mato Grosso. Her responsibilities included market development, sales team support, technical assistance, product positioning, and event organization. The work involved soybean, corn, and cotton crops.

Carlos graduated in agronomic engineering from the Federal University of Mato Grosso. He holds a postgraduate degree in plant protection from the Federal University of Viçosa and training in plant protection and integrated pest management from UNIFEOP. He also completed an MBA in marketing from FIA Business School.

[RETURN TO INDEX](#)

Gerí Meneghello assumes presidency of Abrates

New management prioritizes technical committees, congresses, member participation, and scientific output

08.09.2026 | 08:47 (UTC -3)

Cultivar Magazine, based on information from Vera Barão



Gerí Eduardo Meneghello - Photo: Marcelo Guazzi

Agricultural engineer Geri Eduardo Meneghello has assumed the presidency of the Brazilian Association of Seed Technology (Abrates) for the 2026/28 term. The election took place during a members' assembly, held concurrently with the XXIII Brazilian Seed Congress.

Meneghello succeeds researcher Fernando Henning, president of the organization during the periods of 2022/24 and 2024/26. Henning will now serve as financial director. Former presidents such as Francisco Krzyzanowski and José de Barros França Neto are also part of the new board.

The new administration intends to maintain actions developed in recent years. Among the priorities are strengthening the

technical committees, organizing the next edition of the Brazilian Seed Congress, and expanding the participation of members.

Dedicated committees

Abrates maintains committees dedicated to seed pathology, seed analysis, forage species seeds, and forest species seeds. During Henning's administration, the organization created the seed analysis committee and incorporated the topic into the congress program in a new symposium.

The Brazilian Seed Congress also expanded its program to four days. According to Henning, the event now

brings together an average of around 1,6 participants and has increased the integration between science, technology, and production.

Meneghello also intends to strengthen scientific production and dissemination through the Journal of Seed Science. The journal publishes research from public and private institutions in Brazil and abroad, with peer review.

With a degree in Agronomic Engineering, Meneghello has worked at the Federal University of Pelotas since 1998. He holds a master's degree and a doctorate in the field of seeds. He currently manages the InovaAgro Embrapii Unit as coordinator of relationships and the market.

[RETURN TO INDEX](#)

Azelaic acid reduces *Meloidogyne incognita* in pepper

The metabolite of *Pseudomonas nicosulfuronedens* MiC45 caused 84,22% mortality at 500 micrograms per milliliter

08.09.2026 | 07:16 (UTC -3)

Cultivar Magazine



Photo: Jonathan D Eisenback / Virginia Polytechnic Institute and State University - Bugwood

Researchers have identified azelaic acid as the main nematicidal compound produced by the bacterium *Pseudomonas nicosulfuronedens* MiC45. The metabolite showed activity against *Meloidogyne incognita* and reduced galls and nematode invasion in susceptible pepper plants.

The team isolated the MiC45 strain from the rhizosphere of healthy peppers grown in nematode-infested areas. Treatment with the bacteria resulted in a corrected mortality rate of 89,54% in second-stage juveniles after 48 hours.

Chromatographic analysis

Analysis by liquid chromatography coupled with mass spectrometry identified azelaic acid in the ethyl acetate fermentation extract. The detected concentration reached 505,73 micrograms per milliliter.

In in vitro tests, azelaic acid showed a dose-dependent lethal effect. A concentration of 500 micrograms per milliliter caused a mortality rate of 84,22%. This result surpassed the positive control with abamectin, which was responsible for 76,75%.

Concentrations starting at 300 micrograms per milliliter also reduced egg hatching. The dose of 500 micrograms per milliliter achieved an inhibition rate of 98,71% after 11 days.

Microscopic analysis

Microscopic analysis showed cuticle damage and ultrastructural changes in the treated nematodes. Azelaic acid also stimulated the formation of reactive oxygen species in a dose-dependent manner.

In vessel experiments, MiC45 fermentation broth and azelaic acid reduced the number of galls and invasion of *Meloidogyne incognita*. The fermentation broth also increased pepper biomass. The researchers point to potential for the development of new bionematicides (doi 10.1002/ps.71284).

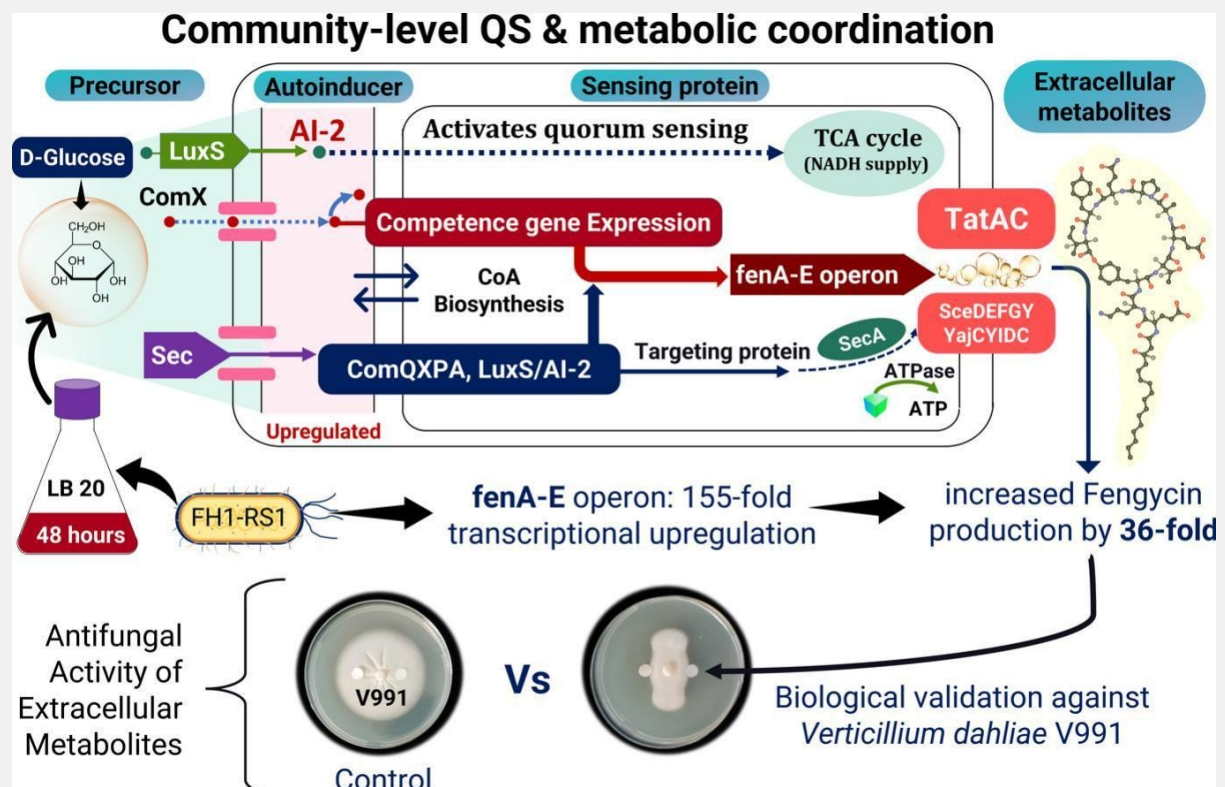
[RETURN TO INDEX](#)

Glucose increases fengycin production in *Bacillus amyloliquefaciens*

Supplementation with 2% in the culture medium increased the lipopeptide to 962,5 mg/L and made the bacteria more effective against *Verticillium dahliae*

07.09.2026 | 15:41 (UTC -3)

Cultivar Magazine



doi 10.1016/j.pestbp.2026.107322

The addition of 2% glucose to Luria-Bertani (LB) culture medium increased fengycin production by *Bacillus amyloliquefaciens* FH1-RS1 and intensified its action against *Verticillium dahliae* V991. The lipopeptide concentration reached 962,5 milligrams per liter. In the medium without supplementation, it reached 26,6 milligrams per liter. The increase was 36,2 times.

A study by Chinese researchers evaluated extracellular metabolites of the bacteria in different media and glucose concentrations. In LB medium with 2% glucose, the supernatant inhibited 61,29% of fungal growth. In conventional LB, the inhibition was 9,66%. Because it does not

contain glucose in its formulation, LB allowed variation only in this carbon source, keeping the other components unchanged. The authors note that comparison with other media, such as PDB, is not useful for inferring a specific effect of glucose, since these media differ in several nutritional constituents.

Relationship to dose

The response was dose-related. The highest inhibition rates occurred between 2% and 2,5% glucose. Higher concentrations reduced antifungal activity. The researchers adopted 2% in subsequent assays because it represented the lowest concentration within the maximum response range.

Peak activity occurred after 48 hours of cultivation. Under these conditions, inhibition reached 58,92%. This result did not coincide with the highest density of bacterial cells recorded before this period.

Metabolism reprogramming

Transcriptomic analysis showed reprogramming of *Bacillus amyloliquefaciens* metabolism. The operons of the three lipopeptide families were activated simultaneously: the iturin operon showed the greatest average increase, of 931 times, followed by surfactin, with 194 times, and fengicin, with 155 times. There was also activation of

pathways linked to energy production, fatty acid synthesis, and precursor supply.

The separation of metabolites indicated fengycin as the main component of antifungal activity under the evaluated conditions. Iturin and surfactin also showed elevated production, but to a lesser extent (7,5 and 3,8 times, respectively). Only fengycin showed convergence between gene expression, chemical accumulation, and biological activity. The results provide a basis for optimizing the production of FH1-RS1 metabolites aimed at the biocontrol of *Verticillium dahliae* (doi 10.1016/j.pestbp.2026.107322).

[RETURN TO INDEX](#)

BASF appoints Hendrik Disteldorf to lead R&D in crop protection

Executive assumes senior vice presidency of research and development after working in strategy and portfolio

07.09.2026 | 11:03 (UTC -3)

Cultivar Magazine



Hendrik Disteldorf has assumed the role of Senior Vice President of Crop Protection Research and Development at BASF Agricultural Solutions. In his new position, the executive will lead activities related to the discovery, development, and delivery of solutions for farmers in different markets.

Disteldorf had held the position of Vice President of Strategy and Portfolio Management at BASF Agricultural Solutions since March 2024. This area encompassed topics such as sustainable agriculture, third-party management and patents, customer and market intelligence, new technologies, and biologicals.

In announcing the change, Disteldorf stated that he expects a closer

collaboration with science, innovation, and the teams responsible for transforming ideas into agricultural solutions. According to the executive, innovation will play a significant role in increasing productivity, strengthening the resilience of production systems, and advancing sustainability.

Prior to his current role at BASF, Disteldorf worked as a partner at the consulting firm Roland Berger between October 2022 and February 2024, focusing on the chemical industry. Between 2017 and 2022, he led the organizational excellence practice at BASF Management Consulting. His career also includes 14 years at AT Kearney, where he reached the position of principal.

Disteldorf holds a doctorate in chemistry from what is now the Rheinland-Pfälzische Technische Universität Kaiserslautern-

Landau and completed postdoctoral studies in chemistry at the University of Utah.

[RETURN TO INDEX](#)

Study confirms transmission of fungi through millet seeds

Research identifies *Exserohilum*, *Curvularia*, and *Fusarium*, and points to a greater susceptibility of the ADR 300 cultivar

07.09.2026 | 08:45 (UTC -3)

Schubert Peter, Cultivar Magazine



Photo: Sandra Brito / Embrapa

Millet (*Pennisetum glaucum*) seeds can carry phytopathogenic fungi and transmit the inoculum to seedlings. Researchers from the Federal University of Tocantins and Embrapa Maize and Sorghum confirmed the transmission of the genera *Curvularia*, *Exserohilum*, and *Fusarium* in four cultivars. The tests also indicated differences in virulence between isolates and greater susceptibility of the ADR 300 cultivar to some of the pathogens evaluated.

The study evaluated BRS 1501, BRS 1502, BRS 1503, and ADR 300. Sanitary analysis detected 11 genera of fungi in the seeds. The group included five genera associated with storage: *Cladosporium*, *Nigrospora*, *Aspergillus*, *Penicillium*, and

Mucor. Six others showed phytopathogenic importance: Alternaria, Colletotrichum, Sclerotium, Exserohilum, Curvularia, and Fusarium (doi 10.3390/seeds5050056).

Incidence of fungi

The total incidence of fungi reached high levels in seeds without surface disinfection. BRS 1502 showed an incidence of 91%. BRS 1501 registered 76%. Disinfestation reduced the occurrence of fungi in all cultivars. Even after treatment, some genera remained in the seeds. The result suggests internal colonization or a closer association with the tissues.

Genres found

Six genera appeared in both disinfected and untreated seeds: *Exserohilum*, *Cladosporium*, *Curvularia*, *Fusarium*, *Alternaria*, and *Aspergillus*. The persistence of these fungi reinforces the limitations of procedures focused solely on the seed surface.

The researchers applied 50% ethanol for 30 seconds and 1% sodium hypochlorite for 40 seconds for surface disinfection. Afterwards, they washed the seeds three times with sterile distilled water. The procedure reduced contamination but did not eliminate all detected fungi.

Exserohilum and Curvularia occurred in all four cultivars, with or without pest control. Among the untreated seeds, BRS 1502 showed the highest incidence of Exserohilum. BRS 1503 showed the highest incidence of Curvularia. Statistical analysis indicated the influence of the cultivar, pest control, and the interaction between the two factors on the incidence of these genera.

Transmission to plants

The study progressed from seed detection to evaluating transmission to plants.

Researchers sowed disinfected and non-disinfested seeds in sterilized sand. After sowing, they monitored the plants for 25 days. Curvularia, Exserohilum, and

Fusarium passed from seeds to seedlings under both conditions evaluated.

Curvularia and Exserohilum caused leaf spots. Fusarium caused wilting.

The highest transmission rate of Exserohilum occurred in ADR 300 without disinfestation, at 24%. In the same cultivar, Fusarium reached 18% and Curvularia, 11%. After disinfestation, the rates dropped to 13%, 10%, and 8%, respectively.

BRS 1502 showed transmission rates of 18% for Fusarium, 13% for Exserohilum, and 10% for Curvularia in non-disinfested seeds. BRS 1501 registered 13% for Exserohilum and Fusarium and 11% for Curvularia. In BRS 1503, the values reached 11% for Exserohilum and

Fusarium and 9% for Curvularia.

Germination varied among cultivars. BRS 1503 reached 98% in both treatments.

BRS 1502 registered 92% in seeds without disinfestation and 91% in disinfested seeds. BRS 1501 showed 88% and 87%. ADR 300 reached 85% and 80%.

Virulence assays

Virulence assays showed differences between isolates. Ten isolates of Exserohilum and ten of Curvularia were evaluated in the ADR 300 cultivar. For Exserohilum, isolates 1 and 2 produced the highest severity indices. Isolate 2 reached 63%. For Curvularia, isolates 6 and 9 showed the highest values. Isolate 9

reached 63%.

The response also varied among cultivars. For *Exserohilum*, ADR 300 showed a severity index of up to 60% and had the highest susceptibility among the materials evaluated. BRS 1503 registered the lowest level, around 45%, but remained classified as susceptible according to the scale adopted in the study.

For *Curvularia*, ADR 300 and BRS 1501 reached 56% severity with one of the isolates and received a high susceptibility classification. BRS 1502 presented the lowest index in this assay, with 27%, a range classified as moderately susceptible.

Epidemiological role of seeds

The results indicate an epidemiological role for millet seeds as a primary inoculum source. The risk becomes more significant in crop rotation and cover cropping systems. Infected seeds can introduce pathogens into the area. These fungi can also remain in crop residues or in the soil and reach subsequent crops.

Researchers recommend sanitary seed analysis, use of pathogen-free seed lots, seed treatment, and integrated disease management. The study highlights another limitation: the identification of fungi occurred at the genus level, based on morphological characteristics. The

researchers point to the need for molecular identification at the species level and additional evaluations in greenhouses and in the field.

The research was conducted by Manuel A. Gonzalez, Osmany M. Herrera, Bruna L. Dias, Ildon R. Nascimento, Marcos V. Giongo, Dalmarcia S. Mourão, Paulo R. Fernandes, Leandro A. Souza, Marcos G. Silva, Maria J. Gonzalez, Rodrigo V. da Costa, Dagma D. Araújo, Luciano V. Cota, Gil R. Santos, and Luis O. Viteri.

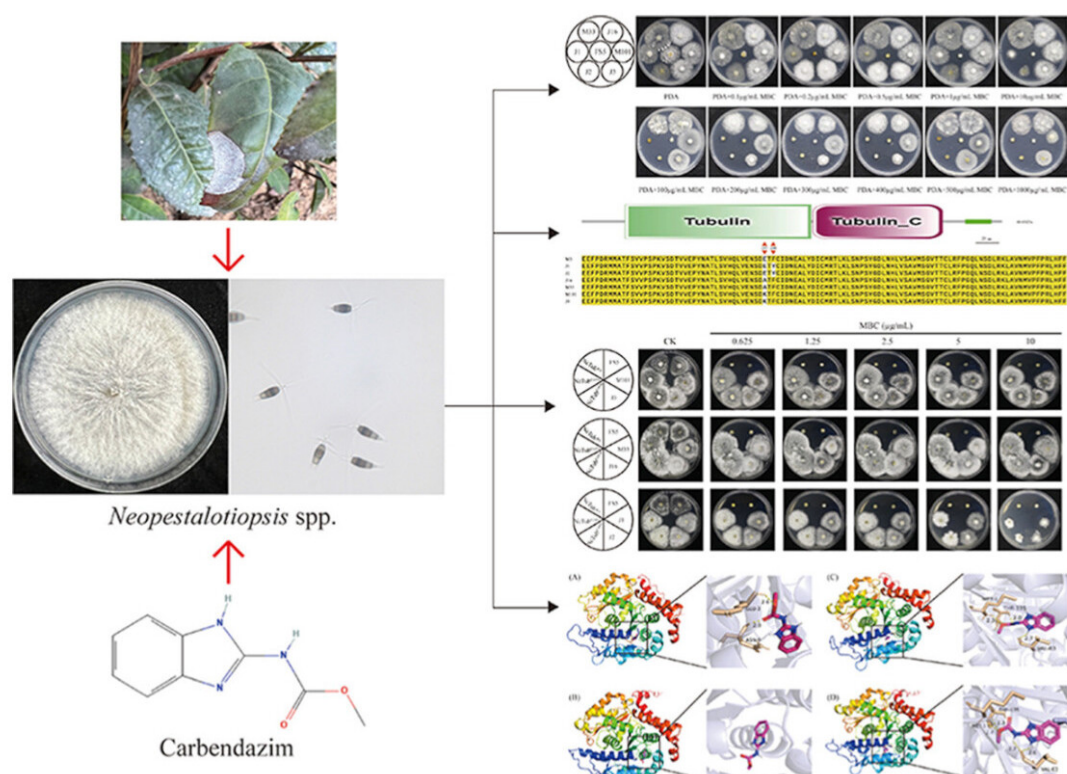
[RETURN TO INDEX](#)

Mutations confer resistance to carbendazim in *Neopestalotiopsis clavispora*

Study detects resistance in 20% of isolates and identifies alterations in beta-2-tubulin

07.09.2026 | 07:07 (UTC -3)

Cultivar Magazine



doi 10.1016/j.aac.2026.09.001

Researchers have identified carbendazim resistance in *Neopestalotiopsis clavispora*. The survey evaluated 85 fungal isolates from the *Pestalotiopsis* group collected from crops in Jiangsu province, China. Seventeen showed resistance, a frequency equivalent to 20%.

Resistant isolates showed a minimum inhibitory concentration greater than 100 micrograms per milliliter (doi 10.1016/j.aac.2026.09.001). In subsequent evaluations, six isolates of *Neopestalotiopsis clavispora* reached high to extremely high resistance levels. The minimum inhibitory concentration ranged from 200 to more than 1.000 micrograms per milliliter. The sensitive isolate showed a value of 0,2 micrograms per milliliter.

Molecular analysis

Molecular analysis identified three amino acid substitutions in beta-2-tubulin: E197K, E197A, and F199Y. Gene substitution experiments confirmed the ability of each mutation, individually, to confer resistance to carbendazim.

Molecular modeling also indicated a reduction in the affinity between the fungicide and the mutant proteins. The calculated affinity went from -7,6 kilocalories per mole in the original protein to values ??between -6,7 and -6,8 kilocalories per mole in the mutant forms.

Resistant isolates did not show significant loss of sporulation capacity or pathogenicity. Mycelial growth showed

punctual differences between isolates. The assays also did not detect significant cross-resistance to fenamacryl, prochloraz, fludioxonil, or tebuconazole. The researchers highlight the need for management strategies focused on resistance and the use of fungicides with different mechanisms of action.

The use of [carbendazim](#) is prohibited in Brazil (Anvisa RDC No. 739, of August 8, 2022).

[RETURN TO INDEX](#)

Yara inaugurates Europe's largest carbon capture unit

A plant in the Netherlands could capture 800 tons of CO₂ per year in ammonia production

07.09.2026 | 06:46 (UTC -3)

Cultivar Magazine, based on information from Kaia Jarlsby



Yara has inaugurated a carbon capture facility in Sluiskil, Netherlands, with the capacity to capture and liquefy up to 800 tons of carbon dioxide per year. According

to the company, the facility represents the largest industrial unit of its kind in Europe and creates the first complete cross-border chain for the capture, transport, and permanent storage of carbon dioxide (CO₂).

The system operates at Yara Sluiskil's ammonia and fertilizer production unit. After capture, the CO₂ undergoes liquefaction and temporary storage at the plant. Northern Lights ships transport the product to Øygarden, Norway. Permanent storage occurs 2.600 meters below the seabed.

Storage forecast

The plan anticipates the capture and storage of approximately 12 million tons of CO₂ over the next 15 years, under appropriate regulatory conditions. The operation also avoids the imposition of carbon taxes on the captured volumes.

Yara highlights CCS as a tool to reduce emissions in energy-intensive sectors, including fertilizers, ammonia, cement, and waste management. The technology allows for maintaining industrial production while reducing emissions.

The project is also part of the company's strategy to expand low-carbon supply chains. Applications mentioned include fertilizers for food production, ammonia for industrial uses and clean energy, as well as fuels with a lower carbon footprint for maritime transport.

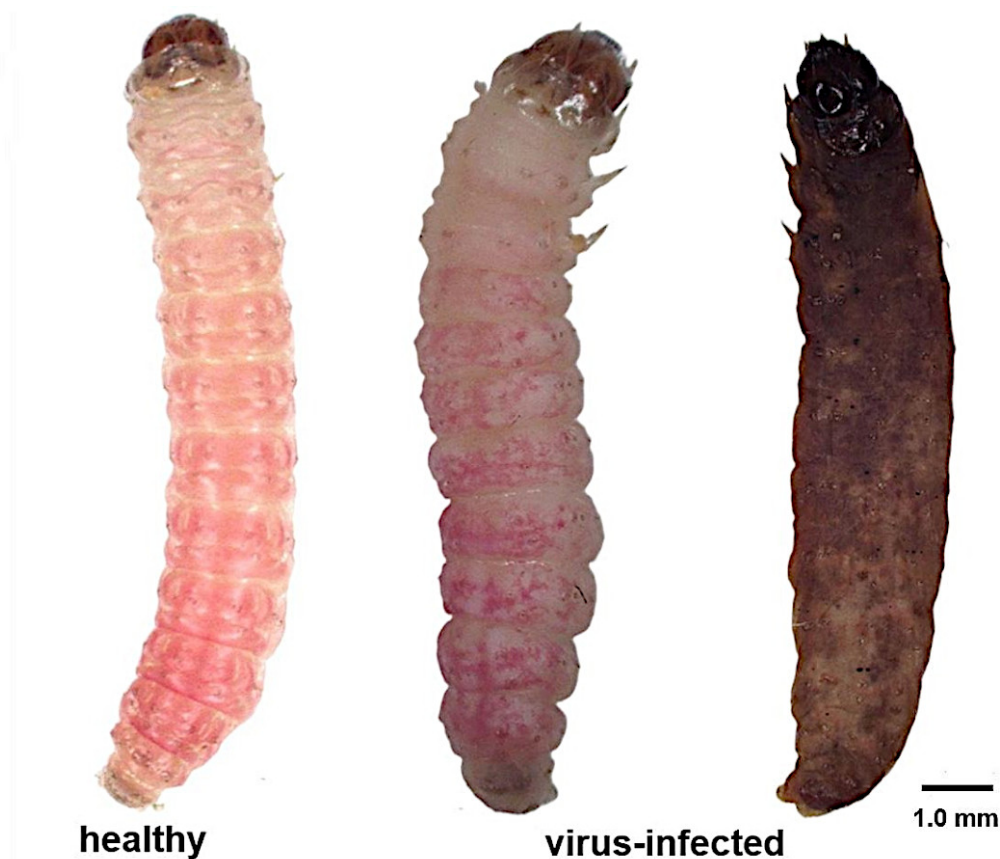
[RETURN TO INDEX](#)

New baculovirus controls *Cydia pomonella* in orchard

CypoNPV showed high pathogenicity in the laboratory and control of up to 77,78% in the field

06.09.2026 | 16:14 (UTC -3)

Schubert Peter, Cultivar Magazine



doi 10.1016/j.pestbp.2026.107339

Researchers have identified a new nucleopolyhedrovirus with potential for the biological control of *Cydia pomonella*, a pest in apple orchards. The virus, named *Cydia pomonella* nucleopolyhedrovirus (CypoNPV), emerged in a population of the insect maintained in the laboratory. Tests indicated high pathogenicity against newly hatched larvae. Tests conducted in an orchard during two growing seasons recorded control of 77,78% in 2024 and 65,48% in 2026.

The study started with a laboratory population with no apparent viral infection (doi 10.1016/j.pestbp.2026.107339). Only 3,14% of individuals showed visible signs of the disease. The researchers isolated the agent from these larvae. Subsequent

inoculation caused typical baculovirus symptoms, such as body swelling, pink or brown lesions, and liquefaction after death.

Morphological analyses

Morphological and molecular analyses supported the classification of the isolate as a novel nucleopolyhedrovirus of *Cydia pomonella*. The occlusion bodies were predominantly spherical or ellipsoidal in shape, with a diameter between 0,5 and 1,1 micrometers. Each body contained one to six rod-shaped virions.

The CypoNPV genome has 112.909 base pairs and a guanine plus cytosine content of 34,30%. Analysis identified 124 open reading frames with more than 150

nucleotides. Of these, 113 showed homology with genes already described in baculoviruses. Another 11 appeared to be unique to the new virus.

Phylogenetic analysis

Phylogenetic analysis utilized 38 core baculovirus genes. CyptoNPV was placed in group II of the Alphabaculoviruses. The closest genetic proximity was to the *Cryptophlebia peltastica* nucleopolyhedrovirus. Even so, the genetic distances used in the taxonomic delimitation supported the identification of the isolate as a distinct virus.

Scientists also evaluated the effects of occult infection on the development of

Cydia pomonella. The 43,40% reduction in the number of viral copies did not improve the main population parameters. Infected populations without treatment and virus-free populations showed similar dynamics. No significant differences emerged for larval duration, pupation rate, adult longevity, total pre-oviposition period, intrinsic growth rate, net reproduction rate, and finite growth rate.

Assessments in bioassays

In bioassays, first instar larvae received different concentrations of occlusion bodies. Mortality began two days after inoculation. The effect increased with

concentration. At a dose of 1,79 million occlusion bodies per milliliter, survival reached zero after seven days. At this concentration, the median lethal time reached 3,18 days.

Field tests were conducted in an apple orchard in Liaoning Province, China. The first trial took place in August 2024. The second occurred in June 2026. Each treatment involved six apple trees.

Researchers applied CyptoNPV, lambda-cyhalothrin, or water. The assessment of the incidence of damaged fruit occurred seven days after spraying.

CyptoNPV reduced damage compared to water treatment in both growing seasons. In 2024, control efficiency reached 77,78%. Lambda-cyhalothrin achieved

86,11%. In 2026, the virus showed 65,48% control, while the insecticide reached 87,74%. In each growing season, the incidence of damaged fruit after virus application did not differ significantly from that recorded with lambda-cyhalothrin.

Environmental stability

Environmental stability was also factored into the evaluation. CypoNPV maintained infectivity after exposure to heat.

Pretreatment at 40 degrees Celsius had a minimal impact on pathogenicity. Viral replication remained at approximately 85,75% to 85,79% of the untreated control at seven days. Increasing the temperature reduced replication. Even after exposure to 100 degrees Celsius, researchers still

detected residual infectivity.

Ultraviolet radiation produced a more intense effect. The virus maintained detectable biological activity after exposure, but increasing intensity reduced symptoms, viral replication, and mortality. At the highest intensity tested, 384 microwatts per square centimeter, replication at seven days corresponded to 49,20% compared to 61,75% of the treatment without radiation.

Two areas of interest

The results indicate two areas of interest for biological control. Cypovirus showed activity against *Cydia pomonella* in the laboratory and reduced fruit damage under orchard conditions. The work also points to

insect populations maintained in the laboratory as possible reservoirs of viruses of interest for the development of biological control agents. The lower tolerance to ultraviolet radiation appears as a relevant aspect for future formulation strategies and field use.

[RETURN TO INDEX](#)

Essential oils reduce the emergence of *Spodoptera littoralis*

Piper aduncum showed greater topical toxicity, while both oils caused delayed effects in the insect

06.09.2026 | 13:56 (UTC -3)

Cultivar Magazine



Photo: Heikinheimo / Bugwood

Essential oils of *Nepeta cataria* and *Piper aduncum* reduced the emergence of adult *Spodoptera littoralis* after sublethal exposure in the laboratory. *Piper aduncum* oil also showed greater topical toxicity. The median lethal dose reached 0,075 microliters of essential oil per insect, compared to 0,196 microliters for *Nepeta cataria*.

The researchers applied the products to fourth-instar larvae and assessed mortality after 24 hours. *Piper aduncum* showed a median lethal dose approximately 2,6 times lower. Mortality increased with the dose in both treatments.

At a fixed sublethal dose of 0,020 microliters of essential oil per insect, developmental duration and body weight

showed no significant differences. Pupa formation also did not change. Adult emergence fell from 100% in the control to 83,3% with *Nepeta cataria* and 71,4% with *Piper aduncum*. The difference between the two oils did not reach statistical significance.

Body dimensions

Body dimensions varied according to developmental stage and treatment. Researchers recommend caution in this interpretation, as the pre-imaging measurements involved limited sampling and the number of adults varied depending on the emergency.

Chemical analysis identified 1,8-cineole as the main component of *Nepeta cataria*, at

39,2%. *Piper aduncum* showed 46,5% dillapiole. The study points to the need to include late effects in the evaluation of botanical insecticides. The assays were carried out under controlled conditions and still require validation under cultivation conditions (doi 10.1016/j.napere.2026.100230).

[RETURN TO INDEX](#)

FAMÍLIA
FOX

TRÊS FORÇAS. UMA REFERÊNCIA.

Liderar no manejo das doenças da soja exige
mais do que eficiência, exige consistência.



Fox[®] Supra, Fox[®] Xpro e Fox[®] Ultra
*Diferentes soluções conectadas pelo mesmo propósito:
maximizar os resultados das lavouras de soja no Brasil.*



Inovar com
resultado
é Bayer.



ATENÇÃO ESTE PRODUTO É PERIGOSO À SAÚDE HUMANA, ANIMAL E AO MEIO AMBIENTE; USO AGRÍCOLA; VENDA SOB RECEITUÁRIO AGRÔNOMICO; CONSULTE SEMPRE UM AGRÔNOMO; INFORME-SE E REALIZE O MANEJO INTEGRADO DE PRAGAS; DESCARTE CORRETAMENTE AS EMBALAGENS E OS RESTOS DOS PRODUTOS; LEIA ATENTAMENTE E SIGA AS INSTRUÇÕES CONTIDAS NO RÓTULO, NA BULA E RECEITA; E UTILIZE SEMPRE OS EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL.



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

Grupo Cultivar de Publicações Ltda.

revistacultivar.com

FOUNDERS

Milton de Sousa Guerra (*in memoriam*)

Newton Peter (director)

Schubert Peter

TEAM

Schubert Peter (editor in chief)

Charles Ricardo Echer (advertising manager)

Rocheli Wachholz

Nathianni Gomes

Sedeli Feijó

Marília von Pfeil

CONTACT

editor@grupocultivar.com

comercial@grupocultivar.com