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Semanal

Cultivar®

Preventive management yields results

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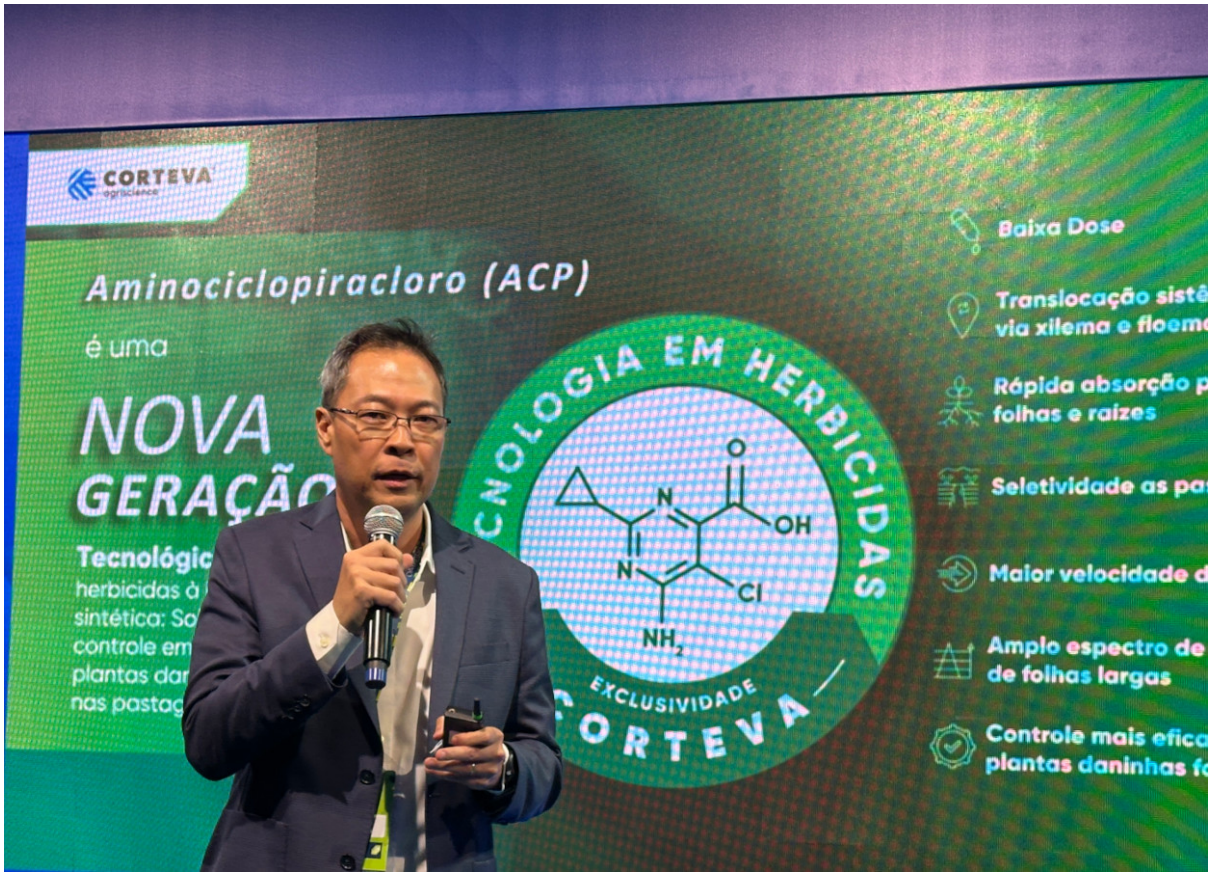
Corteva launches herbicides based on aminocyclopyrachlor

Company presents herbicides Navius ??and Juvix for use in pastures

06.06.2025 | 05:49 (UTC -3)

Cultivar Magazine



Rodrigo Takegawa

Corteva Agriscience has launched herbicides based on the aminocyclopyrachlor molecule in Brazil. In celebration of the 65th anniversary of the Pastagem Line, the company presented two products with the commercial names Navius ??and Juvix.

The new herbicides expand Corteva's portfolio with a focus on effective weed control, ease of application and increased profitability.

According to Rodrigo Takegawa, leader of Corteva's pasture line for Brazil and Paraguay, the new technology eliminates weed competition and improves pasture quality, favoring meat and milk production without the need to open new areas.

Aminocyclopyrachlor (C8H8ClN3O2, CAS 858956-08-8) acts as a hormonal regulator. It interferes with the development of undesirable broad leaves. The molecule presents systemic translocation, rapid absorption by leaves and roots, low volatility and reduced dose. All this with high selectivity to forage grasses.

Navius: granulated formulation

O Navius ??herbicide (click here to learn more) It combines aminocyclopyrachlor and metsulfuron-methyl. According to the company, this is the first herbicide with this formulation in the category. It is odorless

and dissolves easily. Its application is recommended for areas with established grass pastures and herbaceous, semi-shrub or shrub infestations.

In localized foliar application, it is effective against species such as purple fish-eater, cape-bode, milkweed and cow's foot. In total area application, it controls hot grass, white stinker, white gervão and guanxuma, among others.

The product requires a low dose per hectare. In tests, it showed better results than the competitors analyzed even with a lower amount of active ingredient. It acts as a booster for Corteva's own Ultra-S and XT-S technologies, allowing the dose of these complementary herbicides to be reduced without loss of performance.

Juvix: practical handling

On the other hand, the Juvix herbicide (click here to learn more) It comes in a liquid formulation and can be applied to the stump of the plant after mowing. The product stands out for its convenience and increased operational productivity. With continuous use throughout the year, it eliminates the need to dig the soil to control deep roots.

Its use only requires cutting the plant up to 10 centimeters from the ground. This reduces the application time by up to three times compared to the traditional method, reports Corteva.

In difficult-to-control species such as cagaita and leiteiro, Juvix achieved control rates of up to 92%. Market standards did not exceed 83%.

The herbicide is registered for use against species such as miroró, cabriteiro, cipó-prata and lixeira. Its fast and effective action increases the pasture stocking rate and improves animal performance, as they tend to avoid areas infested with large weeds.

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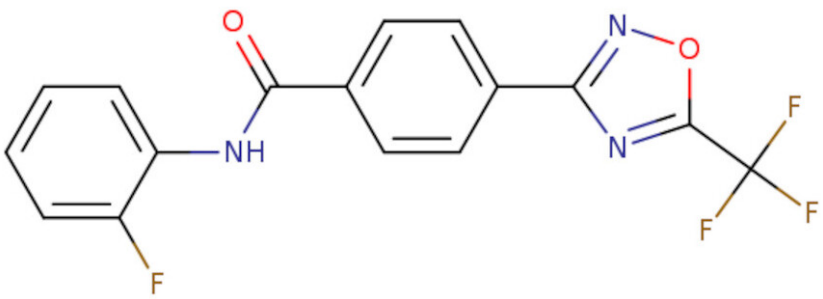
BASF begins registration of new fungicide against Asian rust in South America

Flufenoxadiazam, with the trade name Adapzo Active, promises superior control of the disease

02.06.2025 | 13:22 (UTC -3)

Cultivar Magazine, based on information from Julian Prade



BASF has announced that it has started the registration process for its new fungicide Adapzo Active (Flufenoxadiazam, C16H9F4N3O2, CAS 1839120-27-2) in Brazil and Paraguay. Regulatory submission in Bolivia will follow. The active ingredient is the first in the industry with histone deacetylase (HDAC) inhibition, a novel mode of action in the fight against **Asian Soybean Rust (ASR)**, according to data released by the company.

The formulation, expected to hit the market from 2029, is part of BASF's strategy to offer innovative solutions in the face of growing fungal resistance. According to the company, the product outperforms currently available fungicides.

Adapzo Active was developed with an exclusive focus on controlling ASR, considered one of the most damaging diseases to soybeans. The disease can cause productivity losses of up to 90% when left uncontrolled. Brazil, Paraguay and Bolivia account for 44% of global production of the oilseed.

BASF claims that the new ingredient acts effectively even against mutant fungal strains. The product also respects beneficial organisms when used as directed. In combination with other active ingredients in the company's portfolio, such as Pavecto Active, it broadens the spectrum of control for other relevant diseases, such as **target spot**.

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Study reveals thermal vulnerability of Spodoptera frugiperda

Temperatures above 40 °C would make the reproduction of the fall armyworm impossible

02.06.2025 | 07:24 (UTC -3)

Cultivar Magazine

A **fall armyworm (*Spodoptera frugiperda*)** also has biological limits when faced with extreme thermal events. Research conducted on Hainan Island in China shows that periodic exposure to short periods of intense heat, especially at 43 °C, irreversibly compromises their reproductive capacity.

The study also shows how the pest's gut microbiota reacts to heat stress, opening up new possibilities for biological control in global warming scenarios.

In the experiment, pest populations were subjected to daily heat stress—two hours at 37°C, 40°C, and 43°C—throughout their life cycle. The control group remained at 26°C. Results indicate that moderate heat (37°C) accelerated development. In

contrast, 43°C prolonged the cycle and drastically suppressed pupation, emergence, and fecundity rates. The most drastic effect: eggs produced by adults exposed to 43°C did not hatch.

The thermal robustness of the species was shown to vary by stage. The larvae resisted temperature increases well — survival above 96% even at 43 °C.

The pupae showed acute sensitivity, with a significant drop in emergence rates from 40 °C. The weight of the puparia and the size of the adults also decreased proportionally to the increase in temperature.

Reproductive impairment intensified in the late stages. Mating frequency dropped significantly at 43 °C. Females in this

group produced 56% fewer eggs than the control, and no offspring survived. Gonads also developed less under heat stress. Interestingly, female longevity increased at 37 °C and 40 °C—a phenomenon possibly linked to energy allocation strategies under stress.

The research went beyond morphology. Analysis of the intestinal microbiome of adults revealed a constant dominance of Proteobacteria, but extreme heat induced the replacement of dominant genera. Females at 43 °C showed an increase in Enterococcus, while Providencia disappeared. In males, there was an enrichment of Enterobacter hormaechei and E. mundtii, bacteria with potential immunological role.

Despite specific changes in composition, the overall diversity and richness of the microbiota remained little altered. The predominant metabolic functions—such as energy metabolism and biosynthesis of secondary metabolites—remained stable, indicating a remarkable functional resilience of the microbiota in the face of heat stress.

More information at doi.org/10.3390/insects16060584

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Advantages of using pre-emergent herbicides

By Fellipe Goulart Machado, Lucas Matheus Padovese and others

06.06.2025 | 10:15 (UTC -3)

Since the first reports of glyphosate-resistant weeds began to emerge in 1996, the number of cases of resistance to this herbicide has increased considerably worldwide, covering 45 different species, 25 of which are broadleaf species and 20 of which are narrowleaf species.

In Brazil, due to the introduction of the no-till system and glyphosate-resistant crops, weed management began to be carried out

primarily with this herbicide. Therefore, eight resistant weed species were selected, with four narrow-leaf and four broad-leaf species (Heap, 2019).

Among the resistant weeds, bitter grass stands out. (*Digitaria insularis*), the crow's foot grass (*Eleusine indica*) and the buva (*Conyza* spp.) that have high adaptability in the country's agricultural regions, generating losses in crop productivity and high production costs. In a Technical Circular published by Embrapa, evaluating the economic impact of weed resistance to herbicides in Brazil, it was estimated that the average cost for management in the soybean production system is almost R$ 5 billion reais per year, without considering crop losses due to weed competition, which can increase losses to R$ 9 billion

annually.

In relation to the control of grasses, such as resistant sourgrass, the costs for the rural producer with management can be up to 2,6 times higher compared to an area without the presence of this weed.

The high cost of managing glyphosate-resistant grasses is due to the limited number of herbicides available for post-emergence control and the need for sequential applications. Currently, the options are limited to five mechanisms of action for post-emergence applications: EPSP inhibitors (glyphosate), ACCase inhibitors (DIMs and FOPs), photosystem I inhibitors (paraquat, diquat), glutamine synthetase inhibitors (ammonium-glufosinate) and carotenoid synthesis inhibitors (clomazone, for example). In

situations with glyphosate resistance, ACCase inhibitors are generally the most commonly used for control.

However, with multiple resistance of crowfoot and ryegrass to glyphosate and ACCase inhibitors, options have become even more restricted, increasing the need to employ pre-emergent herbicides to reduce the selection pressure for weeds resistant to herbicides applied post-emergence.

Another benefit of pre-emergent herbicides is to prevent initial infestation, since, to preserve the productive potential of soybeans, the crop must be free of weeds from the beginning of the cycle (Constantin et al., 2007). Herbicides generally provide a significant residual effect for at least 20 days after application, significantly

reducing weed emergence during the vegetative phase of the crop.

There are 23 herbicides registered on the Brazilian market for controlling grasses with glyphosate resistance (ryegrass, sourgrass and goosegrass). However, only seven herbicides are selective for soybeans and can be used in pre-emergence applications.

Herbicidas	Mecanismo de ação	Espécies suscetíveis
S-metolachlor	Inib. do crescimento inicial - K3	capim-amargoso, capim-pé-de-galinha, capim-braquiária, capim-marmelada, capim-carrapicho, capim-colchão, capim-arroz, capim-colonião, capim-custódio
Pyroxasulfone	Inib. do crescimento inicial - K3	capim-amargoso, capim-pé-de-galinha, azevém, capim-colchão
Trifluralin	Inib. do crescimento inicial - K1	capim-amargoso, capim-pé-de-galinha, azevém, capim-braquiária, capim-marmelada, capim-carrapicho, capim-colchão, capim-arroz, capim-peludo, capim-tapete, capim-caiana, capim-colonião, capim-custódio, capim-favorito, capim-rabo-de-raposa, capim-massambará
[flumioxazin+ imazethapyr]	Inib. da Protox + Inib. da ALS	capim-amargoso, capim-carrapicho
Diclosulam	Inib. da ALS	capim-amargoso, capim-marmelada, capim-colchão
Clomazone	Inib. da síntese de carotenoides	capim-pé-de-galinha, capim-braquiária, capim-marmelada, capim-carrapicho,
Metribuzin	Inib. do fotossistema II	capim-pé-de-galinha, capim-braquiária, capim-marmelada, capim-carrapicho, capim-colchão, capim-colonião

Inib. - Inibidor

Herbicides registered in pre-emergence in soybean crops for the control of narrow-leaf weeds - Sources: MAPA (Agrofit, 2018) and Rodrigues & Almeida (2018)

Among the herbicides described above, the following stand out: early growth inhibitors (S-metolachlor), ALS inhibitors (imazethapyr and diclosulam), carotenoid synthesis inhibitor (clomazone) and microtubule formation inhibitor (trifluralin), which are highly efficient in controlling grasses. However, for the control of broadleaf plants, each herbicide has its own peculiarities. One example is S-metolachlor, which, in addition to being selective for the registered crops, provides control for grasses and some other species such as ragweed. (*Comellina benghalensis*) and hot herb (*Spermacoce latifolia*).

In an experiment aimed at evaluating the efficiency of pre-emergent herbicides applied before soybean sowing, it was

evident that the use of any of the herbicides evaluated significantly reduced the density of sourgrass plants per square meter (Figure 1).

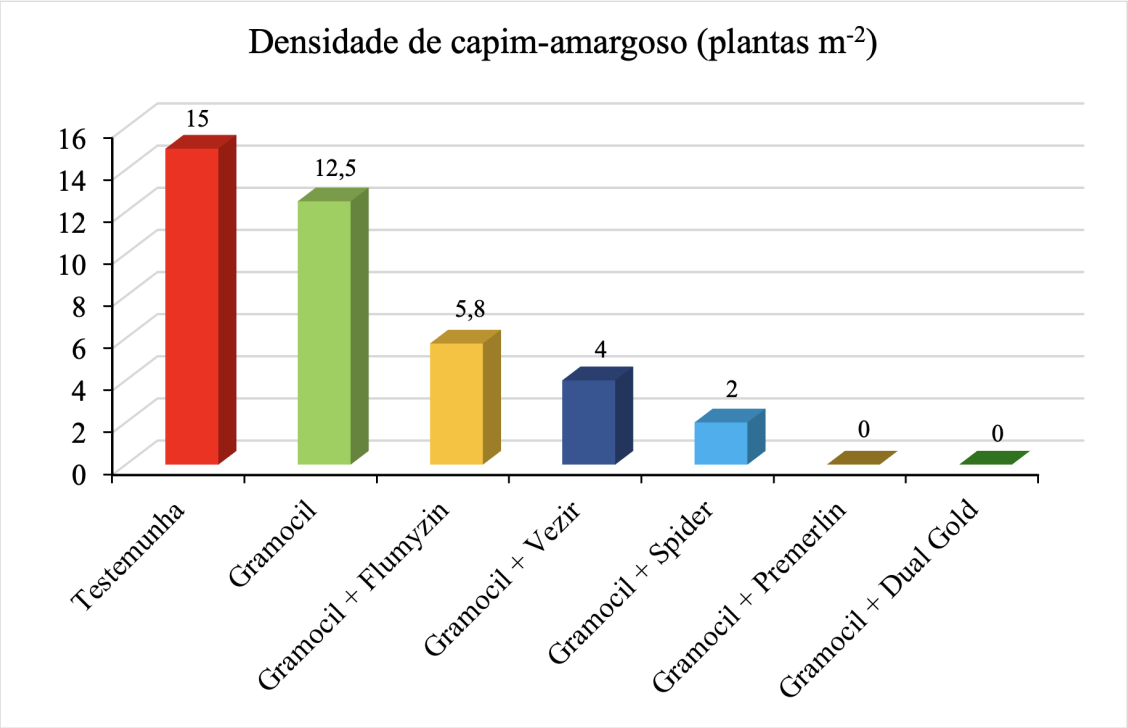

Figure 1 - sourgrass (Digitaria insularis) density as a function of pre-emergence application (residual control), 10 days after soybean emergence - NAPD/UEM. Maringá - PR, 2017

In treatments composed of Dual Gold (S-metolachlor) and Premerlin (pendimethalin), no infestation flows occurred up to ten days after soybean emergence. Regarding productivity, the

management adopted with application prior to sowing, using pre-emergent herbicides, followed by post-emergence application in the crop preserved the productive potential, without losses in productivity. If sourgrass management is not carried out, productivity losses can exceed 80%, and it is essential to adopt strategies that minimize weed competition.

Post-emergence application is generally performed in soybean crops at stages V3 to V5, depending on the species, phenological stage and level of weed infestation. In the example shown in Figure 2, the soybean was at stage V3-V4 (21 DAE), the ideal time for weed control in situation (B), when the plants are young and have low infestation.

Furthermore, the species present in the area is not resistant to glyphosate, which facilitates management and reduces application costs. On the other hand, in situation (A), where no pre-emergent application was carried out, there is a significant weed infestation, with the main infestation being glyphosate-resistant sourgrass. In this situation, management is very difficult, since it is necessary to use sequential applications of graminicides. Furthermore, because the weed is in an advanced phenological stage, shading occurs in the crop, resulting in weed interference and, consequently, reduced productivity.

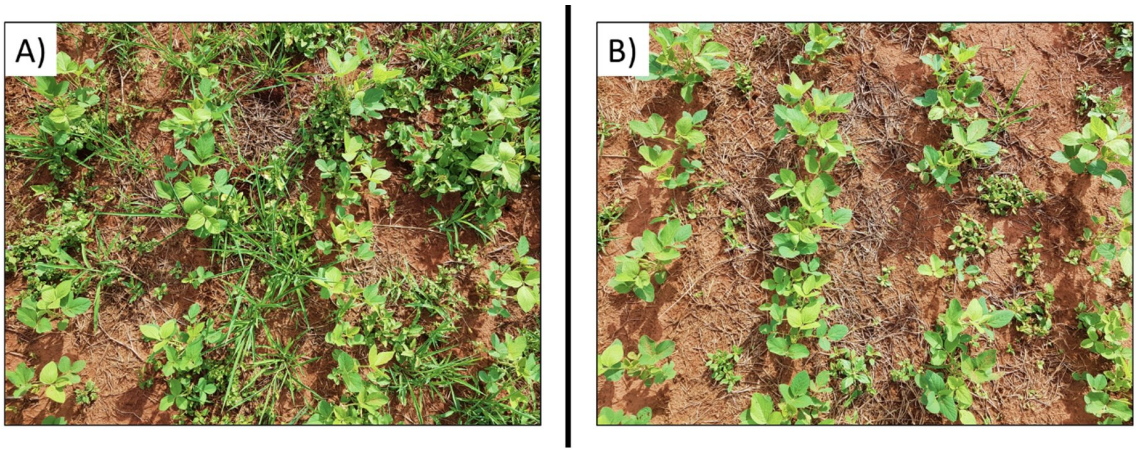

Figure 2 - application of pre-emergent in pre-sowing of soybeans. A) area without application of pre-emergent; B) area with application of pre-emergent. - NAPD - UEM, Maringá – PR, 2019

In this way, adopting weed management that uses pre-emergent herbicides facilitates the management of weeds that would emerge during crop development, presenting several benefits such as:

(a) reduction of initial weed competition;

(b) control of glyphosate-resistant weeds, even at the initial stage;

(c) low weed infestation at the time of post-emergence application;

(d) prevention of selection of herbicide-resistant biotypes;

(e) reducing the cost of weed management by not applying expensive herbicides;

(f) reduction of the seed bank in the soil.

By **Felipe Goulart Machado**, **Lucas Matheus Padovese**, **John Vitor Scarlon Martoneto**, **Rubem Silvério de Oliveira Jr.** *(Center for Advanced Studies in Weed Science, UEM)*

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Domestication of Ugni molinae reduced predator-attracting compounds

Chilean study reveals that cultivated varieties of the native berry emit fewer volatile compounds that protect the plant

06.06.2025 | 08:04 (UTC -3)

Cultivar Magazine

Study compared volatile compounds of wild and domesticated ecotypes of the species *Ugni molinae*, a shrub native to southern Chile, observing how it influences the behavior of insect pests and natural predators. The conclusion: the plant lost part of its natural chemical defenses in the process of domestication.

Researchers from the University of La Frontera and the CGNA center analyzed seven ecotypes: three wild and four domesticated, all cultivated under the same conditions.

The team used olfactory traps and chromatographic analysis to measure the emission of volatile organic compounds (VOCs). The results confirmed that wild plants emit significantly more VOCs than

their domesticated counterparts.

C. defreitasi

These compounds act as chemical signals. Some attract pest predators, such as larvae of *Chrysoperla defreitasi*. Others repel herbivores like *Myzus persicae*.

Among the compounds most emitted by wild plants are 2-hexanone, 1,8-cineole

and alpha-caryophyllene — all absent or in low concentration in cultivated ecotypes.

In the olfactometric test, lacewing larvae preferred volatile extracts from wild plants. The olfactory preference index (OPI) for the W1 ecotype (ancestral) reached 1,64. In domesticated species, such as D1, the OPI was close to 1, indicating a lack of attraction. Aphids showed the opposite behavior: they were more attracted to compounds from domesticated ecotypes.

This inversion has direct consequences for agricultural management. By losing substances that attract natural predators, the plant becomes more susceptible to the action of pests. The ecological cycle of indirect protection is broken.

The study also evaluated isolated compounds. alpha-Caryophyllene and 2,4-dimethyl-acetophenone showed greater attractiveness to lacewings. 2-hexanone and 3-hexanol favored the choice of aphids. The predators' preference increased with the concentration of the compounds — up to 100 ppm. That of aphids did not. This behavior reinforces the selective role of VOCs in communication between plants and insects.

The domestication of *U. molinae* prioritized productivity and fruit size. These characteristics were achieved, but at the expense of defensive chemical diversity. The study confirms the hypothesis of reduced defense due to domestication, already verified in species such as tomato,

corn and cotton.

The research highlights the importance of incorporating ecological characteristics into breeding programs. Maintaining or reintroducing defensive compounds can reduce dependence on chemical inputs. Strategies such as crossbreeding with ancestral ecotypes, using plant consortia or microbiological inoculants are possible paths.

More information at doi.org/10.3390/insects16060594

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Alta Defensivos announces changes in executive structure

Daniel D'Andrea takes over as CEO, while Paulo Alves will focus on leading the Agrihold group

05.06.2025 | 17:47 (UTC -3)

Alta Defensivos

Alta, a leading company in crop protection solutions and member of the Agrihold

group, announces important changes to its organizational structure. As of May 2025, Daniel D'Andrea (pictured, left) will officially take over as Alta's Chief Executive Officer, with the mission of leading the company's next phase of growth and innovation.

With the arrival of Daniel, Paulo Alves (pictured, right) — who had been holding the roles of CEO of Agrihold and Executive Director of Alta — will now dedicate himself fully to the strategic leadership of the Agrihold group. The transition reinforces the holding company's commitment to strengthening its companies and ensuring focus and excellence in the execution of each business unit.

Alta is grateful for Paulo Alves' leadership over the past few years and welcomes Daniel D'Andrea, a professional with over 30 years of solid experience in agribusiness. The company remains steadfast in its purpose of offering sustainable technologies and solutions that boost productivity in the field.

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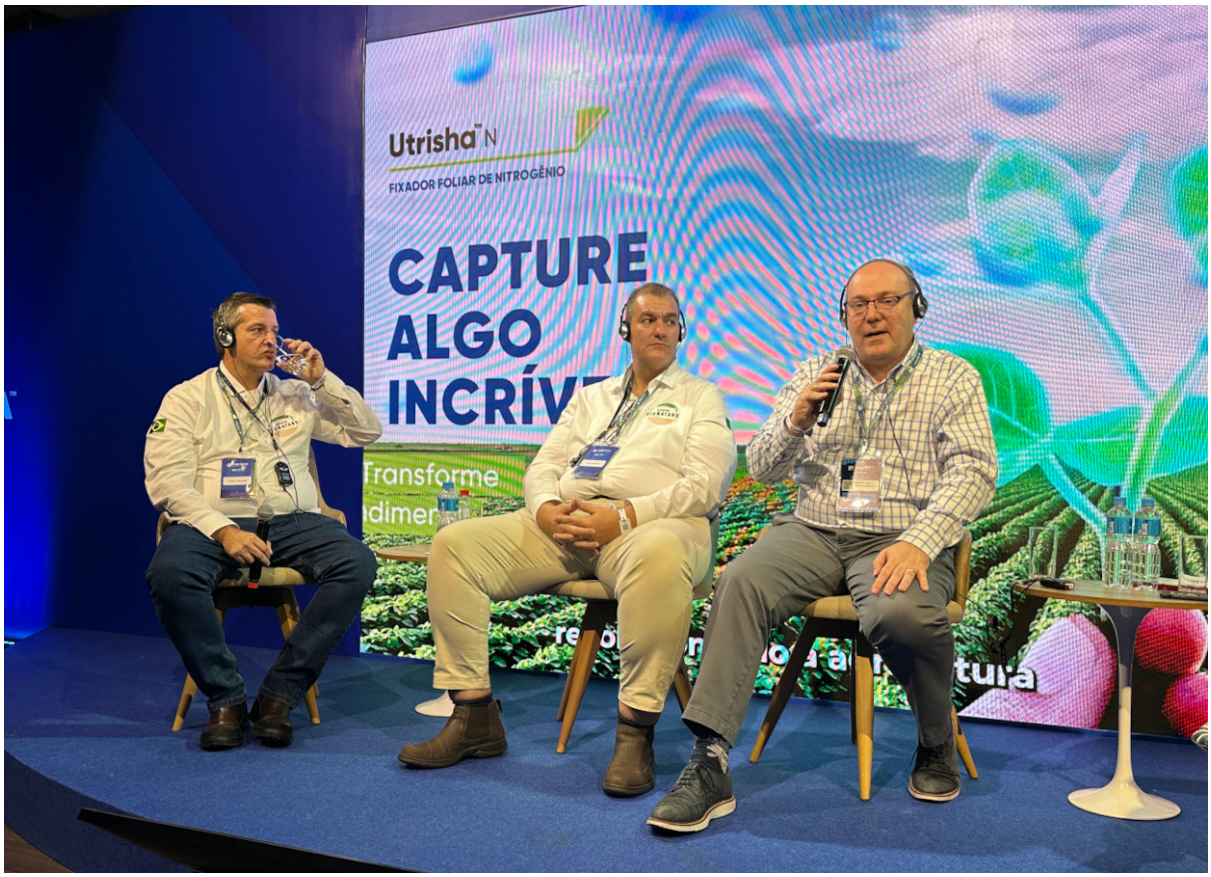
Organics are highlighted on Corteva’s agenda at GAFFFF 2025

Company reinforces global strategy with focus on innovation and sustainability

05.06.2025 | 15:15 (UTC -3)

Cultivar Magazine



Mário Pignataro, Angelo Pignataro and Frederic Beudot

Corteva Agriscience presented a program focused on biological products during the Global Agribusiness Festival in São Paulo on Thursday. The event takes place at Allianz Parque and brings together more than 90 hours of content focused on agribusiness.

Corteva's first specific activity addressed the evolution of biological products. Frederic Beudot, global leader in the area, explained how natural technologies help improve plant performance and control pests and diseases. "We are not replacing chemicals. We work in partnership to maintain their effectiveness," he said.

Beudot divided biologicals into two main categories: biocontrol and plant performance. Biocontrol includes organisms such as viruses, fungi and

bacteria that combat pests. Plant performance seeks to improve nutrient absorption and reduce the impact of stresses such as drought and salinity.

Brazil’s role in Corteva’s global strategy was highlighted by Frederic Beudot, who points out that the country is one of the few that is still expanding its production area. “We need to produce more with fewer resources. Biologicals help in this sustainable progress,” he said. He also mentioned the challenges of adoption, such as product stability and use, in addition to pointing out future innovations with microbial DNA.

Corteva invests more than US$4 million per day in research and development. The company is committed to waves of innovation to expand the genetic potential

of seeds and ensure global productivity with a lower environmental impact.

At 14 pm, Beudot participated in a panel on sustainability and bioinputs. Carlos Goulart (Mapa), Marcio Portocarrero (Abrapa) and Nelson Ferreira (McKinsey) were present, with moderation by Eduardo Leão (Croplife Brasil).

Next, Shona Sabnis, Corteva's global vice president of Public Affairs, highlighted innovation as a strategic pillar. At 16 p.m., the company's Pastagem Line launched a new molecule with products aimed at Brazil and Paraguay, led by Rodrigo Takegawa.

Felipe Daltro, Corteva’s marketing director, emphasized the importance of the partnership with Datagro and XP. “We

connect the most modern technologies in agriculture with a transformative ecosystem," he said.

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João Vitor Dombroski takes on new position at AGCO Corporation

Having worked at the company since 2023, Dombroski now works as product marketing coordinator

05.06.2025 | 09:51 (UTC -3)

Cultivar Magazine

AGCO Corporation is undergoing changes to its structure. João Vitor Dombroski, who

previously worked as Tactical Marketing Coordinator, is now coordinating the Product Marketing area - Crop Care, South America. The professional has been working at the company since 2023.

An agricultural engineer from the Pontifical Catholic University of Paraná, with an MBA in Business Management from Esalq/USP, Dombroski has worked for companies such as Horsch and Kuhn do Brasil. Throughout his career, he has accumulated experience in market analysis, development of technical solutions, support for dealers and launch of new products in the agricultural machinery sector.

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Valtra presents tractors and other machines at Agroactiva 2025

Brand focuses on connectivity, operational management and high performance for Argentine producers

05.06.2025 | 09:30 (UTC -3)

Cultivar Magazine, based on information from Beatriz Voltani

Q Series

Valtra is participating in Agroactiva 2025, in Armstrong, Argentina, with a complete portfolio of machines and technological solutions. In a 2.400 m² stand, the brand is showcasing its main launches, focusing on connectivity, management and performance in the field.

The highlight is the Q Series tractors, imported from Finland. Also present are the new BM Line, the BH HiTech Line and the A3F Fruit Line, aimed at different production scales. Medium-sized models such as the A Generation 4 Line (A114, A124, A134), A4 HiTech (115 to 135 hp) and A G2 (A750, A850, A990) complete the portfolio.

In the spraying area, innovation lies in the R Series carbon fiber booms, which are up

to 40 meters long. The material reduces weight and expands the coverage area, generating greater yield per hectare.

R Series

Valtra is also introducing the Trimble PTx precision agriculture platform. The solution connects all stages of the production process: planting, monitoring, application, irrigation and data management. The proposal aims to improve the use of inputs, support decisions and increase

productivity.

With a consolidated presence in Argentina, the dealer network offers technical and commercial support, direct service and practical demonstrations. Producers and experts share experiences at the stand, reinforcing the brand's presence in the Argentinean countryside.

“Agroactiva is strategic because of its proximity to local producers. We showcase our new products and solutions for spraying and harvesting with a complete proposal for the customer,” says Emiliano Ferrari, senior sales manager at Valtra Hispanoamérica.

See more information about Valtra tractors and sprayers at:

- Exclusive test drive of Valtra Series Q5 tractors and Momentum seeder - Revista Cultivar
- Valtra Series R Sprayers Technical Data Sheet - Revista Cultivar
- Test Drive Valtra A124 HiTech - Revista Cultivar

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Renato Miranda takes over as marketing director at Vittia

Executive has almost three decades of experience in strategic marketing in the agricultural sector

05.06.2025 | 08:33 (UTC -3)

Cultivar Magazine

With almost 30 years of experience in

strategic marketing in agribusiness, Renato Miranda (pictured) is Vittia's new marketing director. A specialist in “go to market”, market intelligence and customer relations, the executive has worked at companies such as Koppert Brasil, Grupo Sinova and Syngenta, where he spent 13 years in different leadership positions.

His career is marked by portfolio management, pricing strategy and brand management, as well as projects focused on customer experience and sustainable growth.

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Fall armyworm uses scent to select young plant

Discovery could revolutionize ecological management of Spodoptera frugiperda

05.06.2025 | 05:11 (UTC -3)

Cultivar Magazine

Spodoptera frugiperda - Photo: Marina Pessoa

Females of ***Spodoptera frugiperda*** prefer the **corn** in the early stages of development to lay their eggs. The choice does not happen by chance. A study conducted by Chinese researchers identified two volatile compounds released by young plants that guide this decision: p-xylene and (+)-camphor. These odors, more intense in newly sprouted corn, act as signals of ideal food for the next generation.

The research tested the pest's behavior in different phases of plant growth. Females showed a clear preference for plants in the seedling stage. The same pattern was repeated when it came to ovipositing.

On average, females laid more than twice as many eggs on young corn leaves

compared to other stages.

Corn in the milk phase, on the other hand, was practically ignored. In this phase, there was no survival of the caterpillars, which died within five days after hatching.

This selectivity has a basis. The offspring born on young plants live longer, grow faster and reach greater weight.

They also reproduce better. On average, females raised on young corn laid almost twice as many eggs as those raised on older plants.

Furthermore, hatching rates exceeded 90%, while in the other groups they barely exceeded 70%.

The study used advanced electrophysiological techniques to identify

the odors that trigger this reaction. Female antennae responded strongly to p-xylene and (+)-camphor. These compounds activated two different types of sensory neurons in the insects' antennae. The scientists then tested the effects in the laboratory and confirmed that the substances strongly attract females, especially at concentrations of 10% to 20%.

The result points to a promising path for ecological control of the pest. If traps are prepared with these compounds, it will be possible to attract females and interrupt the reproductive cycle.

Although traps with sexual pheromones to attract males already exist, they are limited. Females, by choosing where to lay

their eggs, have a direct impact on the survival of the larvae. Therefore, food attractants — such as p-xylene and (+)-camphor — gain a tactical advantage.

According to the researchers, the application of the compounds can be combined with pheromones or even repellents, forming "push-pull" management strategies. These integrated approaches tend to be more effective, sustainable and economical for the producer.

More information at doi.org/10.3390/insects16060592

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Sweet taste inhibitor compromises aphid feeding and reproduction

Study shows that feed additive lactisole reduces feeding preference and performance of aphids

04.06.2025 | 21:34 (UTC -3)

Cultivar Magazine

Myzus persicae - Photo: S. Bauer

Sprays and artificial diets containing lactisole, a sweet taste inhibitor widely used in the food industry, significantly reduced the appetite and reproduction of two important agricultural aphids: *Myzus persicae* e *Sitobion avenae*. The compound affected feeding by inhibiting the insects' taste receptors, which depend on sucrose to locate phloem vessels in host plants.

Researchers tested lactisole on artificial diets and wheat and Chinese cabbage plants. The results indicate reduced aphid attachment to the treated sources, reduced sap ingestion time and a decrease in insect weight and fecundity.

In the experiment, both aphids avoided artificial diets containing 1.000 ppm

lactisole. The number of nymphs produced by females fed this diet dropped significantly within 24 hours.

Researchers also tested the compound diluted in water for foliar application or irrigation. Spraying reduced the preference for treated plants and the production of nymphs.

Application via the root was even more effective: it caused weight loss in the insects and altered their feeding behavior, measured by electropenetrography techniques.

Sitobion avenae - Photo: Douglas Lau

In the experiments, *S. avenae* probed the phloem of treated plants more often, but for a shorter period of time. According to scientists, the reduction in the duration of ingestion explains the poorer nutritional performance of the insects. Since aphids extract nutrients exclusively from the phloem, any reduction in this process

compromises their survival.

Despite the repellent and performance-reducing effect on insects, the use of lactisole had a side effect: it also impaired plant growth. The fresh mass of wheat and Chinese cabbage decreased after irrigation with lactisole, which may limit its direct application in the field.

According to the scientists, this is the first study to evaluate sweet taste inhibitors as agents in the control of phytophagous insects. The approach paves the way for the development of biorational insecticides based on the modulation of aphids' taste. However, the negative impact on plants requires the development of less toxic derivatives or selective application methods.

More information at

doi.org/10.1093/jee/toaf027

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Allterra announces Eduardo Navarro as its new CEO

The arrival of the executive reinforces the company's commitment to innovation and sustainability in the field

04.06.2025 | 16:41 (UTC -3)

Mariana Cremasco

Allterra, a portfolio company of the fund managed by Patria focused on solutions

for efficient land use, announces Eduardo Navarro as its new CEO. With a solid track record in the agricultural sector and a recent stint at Lindsay Corporation as vice president, the executive takes on the mission of leading a new cycle of expansion and positive impact on Brazilian agribusiness.

Navarro’s arrival marks a strategic phase for Allterra, which seeks to accelerate the connection between science, productivity and sustainability in the field. In a recent post on his social media, the new CEO highlighted: “Challenges move people. Purposes transform sectors.”

In its vision, Allterra positions itself as a protagonist of a necessary transformation in agriculture. “In a world where agriculture

needs to be increasingly productive and sustainable, Allterra is on the front lines, connecting biotechnology, innovation and real impact in the field. Leading this journey is more than a responsibility — it is an opportunity to make a difference in one of the most essential industries on the planet.”

Navarro also emphasized the platform’s role in developing solutions that generate value beyond the financial aspect: “At Allterra, we believe that productivity starts in the soil — but not just any soil. Our mission is to transform low-performance areas into highly productive and long-lasting environments. We do this by developing structured, living and resilient soil profiles capable of sustaining high production rates year after year. Our

solutions go beyond efficiency: they deliver real performance, even in the most challenging environments.”

Under the leadership of Eduardo Navarro, Allterra is moving forward with the goal of strengthening regenerative agriculture by building productive, living and sustainable soils. Using bio-based technological solutions, the company is tackling the major challenges of productivity and sustainability in the field, generating real value for both the producer and the soil. “We are moving forward, because transforming the present is the best way to cultivate the future,” concludes the executive.

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Massey Ferguson presents the MF 8S tractor at Agroactiva 2025

With the campaign “In the Massey field”, the brand pays tribute to the work of the Argentine producer

04.06.2025 | 14:22 (UTC -3)

Flavia Amarante

Massey Ferguson, a global leader in the design, manufacture and distribution of agricultural machinery and solutions, reaffirms its leadership in the sector with a prominent participation in Agroactiva 2025. The brand will be present at the fair with a 5.000 m² stand, where it will present its complete portfolio of solutions and services. The space will have customer service and after-sales areas, as well as an exclusive Technology sector, with the presence of PTx Trimble and its proposal in precision agriculture.

“In the Field Massey”, Massey Ferguson’s new campaign, focuses on the real experience of producers and its complete portfolio of agricultural solutions that support farmers throughout the production cycle. The portfolio will be on display at the

brand’s stand during the fair, where visitors will have access to specialized technical and commercial advice. With this proposal, Massey Ferguson reaffirms its commitment and consolidates itself as a true strategic ally for the development of the Argentine countryside.

“In Campo Massey is an expression of our philosophy, it is the way we demonstrate our commitment to offering Argentine producers and service providers access to the most advanced agricultural technology in the world, precisely adapted to their specific needs and challenges, ensuring a real and positive impact on the productivity of our customers”, says Sergio Karin, Commercial Director of Massey Ferguson for Latin America.

As part of the campaign and the show, Massey Ferguson will be showcasing the new MF 8S tractor. Equipped with advanced technology, increased operational efficiency and a design engineered for the demands of the modern farmer, the series marks a new era of simple, reliable and connected tractors.

The brand, which offers a complete haymaking line, is presenting the new MF 1840 baler for small rectangular bales with central loading at the fair.

Visitors to the stand, located in sector B, numbers 196 and 212, will have access to exclusive financing opportunities, as well as specialized service from Massey Ferguson's Product specialists and Commercial and Financial teams.

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Resistant viruses and mites decimate commercial bees in the US

More than 60% of hives were lost before pollination; study reveals massive presence of lethal viruses

04.06.2025 | 08:09 (UTC -3)

Heavily parasitized emerging adult bee showing female mites that were parasitic during larval and pupal development

Commercial beekeeping in the United States has faced an unprecedented collapse in early 2025. Data from six large beekeeping operations indicate colony losses of more than 60 percent since the previous spring. In total, 1,7 million hives have disappeared ahead of California’s almond pollination season, an agricultural event that moves about 1,5 million hives each year and generates billions in economic value.

The losses coincided with the large-scale detection of viruses associated with bee mortality.

Field and laboratory analyses have shown the widespread presence of three highly lethal viral pathogens: Deformed Wing Virus (DWV) in variants A and B, and

Acute Bee Paralysis Virus (ABPV). Both are transmitted by the parasitic mite *Varroa destructor*, a vector widely present in American hives. The study identified all of the mites collected with genetic resistance to amitraz, the most widely used acaricide in commercial beekeeping.

The data was collected in January, at the height of the collapse. Samples included bees with symptoms of motor disturbance, such as tremors and inability to fly. These bees had viral loads up to a hundred times higher than those of asymptomatic bees.

In the laboratory, injections of viruses isolated from these bees caused total mortality in healthy bees within 36 hours, even with millionth dilutions of the original material. A single infected specimen

contained enough viral load to kill 66 million bees.

Interestingly, analyses of still-active colonies—even those considered “strong”—also revealed widespread dissemination of these viruses. This suggests that the presence of the pathogens alone is not a reliable diagnostic. The critical difference lies in the viral load and behavioral response of the bees, indicative of advanced infection.

Female *Varroa destructor* - Photo G. San Martin

The origin of the collapse points to a system on the brink of exhaustion. The mite *Varroa destructor*, present in almost all commercial hives in the country, no longer responds to conventional treatments.

The study identified the genetic marker Y100H, associated with resistance to

amitraz, in 215% of the mites analyzed. This suggests that the product has lost its effectiveness, compromising the parasite's main population control mechanism.

The role of the mite goes beyond simple infestation. It acts as a walking syringe, injecting viruses directly into the bees' bodies, especially during the pupation phase.

Their ability to move between adult and immature bees increases their capacity for viral dissemination, even in colonies with large populations. Without new control methods, the infestation intensifies, compromising the replacement of adult bees and accelerating colony collapse.

The implications go beyond the direct losses to beekeepers, estimated at $600

million. The massive loss of bees compromises the pollination of several food crops, including almonds, apples, berries and melons. Without sufficient pollinators, farmers face lower productivity, misshapen fruit and higher costs for supplemental pollination.

The situation evokes memories of the “Colony Collapse Disorder” recorded in 2007, but now with more robust evidence. While at that time the causal agents remained undefined, current experimental data clearly point to a lethal synergy between viruses and Varroa, aggravated by failure of chemical control methods.

Despite new knowledge, scientists do not rule out the influence of other factors as contributing causes of bee deaths.

More information at

doi.org/10.1101/2025.05.28.656706

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John Deere launches F8 and F9 combines with more power

New machines promise lower fuel consumption and greater productivity

04.06.2025 | 07:53 (UTC -3)

Cultivar Magazine, based on information from Jenni Badding

John Deere has announced the launch of the new F8 and F9 series self-propelled forage harvesters. The models were developed based on customer suggestions. They feature increased power, new automation solutions and precision agriculture technologies. The company's focus is to improve forage quality, optimize fuel consumption and increase productivity in the field.

The F9 series comes with two engine options — John Deere 18X and Liebherr V12 24L — with power outputs ranging from 700 to 1020 horsepower (PS). The F8 uses a JD14X engine, with six power output options, from 425 to 645 horsepower.

John Deere claims that the JD18X engine does not require the use of DEF and, with

HarvestMotion Plus technology, provides up to 15% fuel savings and up to 10% more power.

The new models feature advanced automation. One of the highlights is the automatic control of travel speed, which adjusts the gear according to crop conditions.

The ProTouch Harvest system reduces manual operator input with just one command. Active Fill Control helps ensure consistent truck fills, even under challenging conditions.

The F8 and F9 harvesters feature an inoculant dosing system with a larger, insulated tank and an automated cleaning system. The idea is to improve forage conservation and reduce maintenance

time. The available grain processors — Ultimate250 KP and XStream305 — should generate better grain crushing and longer parts life. The XStream305 model, for example, offers up to 56% more processing area.

Comfort has also been enhanced. The cab of the new harvesters incorporates a swivel seat, increasing visibility during unloading and operational comfort. The new hydrostatic lever and the G5 display system offer more control with less effort. There are also optional lighting packages that increase visibility at night by up to 68%.

The harvesters feature Dura Line parts. Maintenance improvements include redesigned wiring harnesses, centralized panels and updated software, which

should facilitate diagnostics and increase machine availability.

MODELS	ENGINE	DISPLACEMENT	RATED POWER	CHANNEL WIDTH	FUEL TANK CAPACITY
9500 >	JD18X	18.0 L	690 HP	Wide	396 gal. (1500 L)
9600 >	JD18X	18.0 L	740 HP	Wide	396 gal. (1500 L)
9700 >	JD18X	18.0 L	755 HP	Wide	396 gal. (1500 L)
9800 >	Liebherr	24 L	856 HP	Wide	396 gal. (1500 L)
9900 >	Liebherr	24 L	956 HP	Wide	396 gal. (1500 L)

MODELS	ENGINE	DISPLACEMENT	RATED POWER	CHANNEL WIDTH	FUEL TANK CAPACITY
8100 >	John Deere Power Tech™ PSS	9.0 L	425 hp	Standard	290 gal. (1100 L)
8200 >	John Deere Power Tech™ PSX	13.5 L	459 hp	Standard	290 gal. (1100 L)
8300 >	John Deere Power Tech™ PSX	13.5 L	498 hp	Standard	290 gal. (1100 L)
8400 >	John Deere Power Tech™ PSX	13.5 L	533 hp	Standard	290 gal. (1100 L)
8500 >	John Deere Power Tech™ PSX	13.5 L	577 hp	Standard	290 gal. (1100 L)
8600 >	John Deere Power Tech™ PSX	13.5 L	616 hp	Standard	290 gal. (1100 L)

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Bayer launches tomatoes with multiple resistance to ToBRFV

New varieties protect against virus mutations and maintain agronomic performance in tests

04.06.2025 | 07:24 (UTC -3)

Cultivar Magazine, based on information from Benjamin Eberle

Bayer has announced the launch of new tomato varieties with multiple genes for

resistance to tomato rough streak virus (ToBRFV). The cultivars will hit the market in 2025 and promise greater protection against virus mutations.

Unlike the first generations, which brought resistance from a single source, the new cultivars combine multiple genes that interfere in different phases of the plant-virus interaction. The strategy extends the durability of resistance, according to Bayer's Crop Science division.

Two greenhouse trials tested four resistant hybrids under high viral pressure. One group was inoculated with the standard ToBRFV strain. The other was inoculated with a mutation capable of breaking previous resistance. In both cases, the non-resistant tomatoes showed severe

symptoms at 14 and 21 days. The new hybrids with multiple resistance showed no symptoms.

Among the first cultivars to use this technology are the red beef Ferreira and pink beef Futumaru tomatoes from the De Ruiter brand. New hybrids with stacked resistance will also be launched for the Large Truss, Medium Truss, Cocktail and Cherry Plum Truss segments.

Javier Quintero, global tomato research and development leader at Bayer, says the new cultivars maintain quality and agronomic performance even under attack from ToBRFV variants. He believes growers will see similar results to those in the trials.

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BASF debuts at AgroActiva 2025

Company launches corn and sunflower hybrids, herbicide and reinforces its commitment to digital agriculture

03.06.2025 | 16:16 (UTC -3)

Cultivar Magazine, based on information from Yamile Cóceres

For the first time at AgroActiva, an event held in Armstrong, Santa Fe, BASF presents an integrated proposal with

launches in seeds, crop protection and digital solutions. The fair marks the beginning of a new phase for the company in the Argentine market, with a focus on productivity and sustainability.

Three hybrids make up the new seed portfolio. BASF 5575 VT3P offers high potential, stability and plant health in the intermediate cycle. BASF 5747 VIP3CL stands out for its weed control and performance in late plantings. In sunflower, the hybrid InSun 2277 CL brings disease tolerance, high oil content and resistance to abiotic stress.

In the crop protection segment, the company is showcasing the herbicide Voraxor. Launched in 2024, it combines saflufenacil and trifludimoxazin. It controls

broadleaf weeds in soybeans, corn, wheat, peanuts and barley. It promises long-lasting control and is a trendsetter in pre-sowing management.

Digitalization also gains prominence with the Xarvio platform. The tool helps producers optimize seeding density, nutrient application and inputs. The Digital Weed Mapping (MDM) function identifies weeds via drones and generates application maps in less than 24 hours, with savings of up to 60% on inputs.

According to the company, the proposal allows decisions with a direct impact on profitability and efficiency, adapted to different realities in the Argentine countryside.

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New Holland updates CX, CH and TC combines for 2026

Models with a spool valve gain improvements to the Varifeed header, new electronics and quick adjustments

03.06.2025 | 12:05 (UTC -3)

Cultivar Magazine, based on information from Giulia Giovanardi

New Holland TC model 2026

New Holland has announced updates for 2026 to its CX, CH and TC combine harvesters with a hoe. The aim is to facilitate preparation and increase productivity during harvest.

Varifeed headers feature a new design with 'Natural Flow' style side panels. All versions feature 575 mm of knife advance and retraction to better adapt to high volume crops. A new linear knife drive replaces the old belt system. The transmission now uses gears and a telescopic shaft.

The 10,5 m and 12,5 m versions of the header now feature a synchronized double knife, reducing vibration. The knife speed has increased by 11%, reaching 735 rpm. A new reinforced 660 mm auger improves

feeding. The auger height adjustment, now with two pre-defined positions, reduces the time for changing between crops by 75%.

All headers now have a single PTO connection and a new “click-on” aluminum side knife that can be installed or removed in five minutes. Adjustable-gauge wheels are now hydraulically operated from the cab.

In the CX series, the UltraFlow rotor, previously exclusive to the CX6, will be optional on the CX5. According to the company, the stepped rotor improves separation and reduces fuel consumption by up to 10%. The CX5/6 and CH7 series gain remote screen adjustments and synchronized pre-screen, as well as a new lever to facilitate rear adjustment.

Hillside models receive sensors to control the driven rear axle and detect changes in slope. On harvesters with remote straw spreaders and deflectors, the system now prevents build-up and clogging by automatically repositioning the deflectors when threshing is disengaged. A rear-view camera is now standard.

The TC line, produced in Poland and Brazil, also receives Smart Sieve and rear drive axle options for the TC5 models.

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Aerial roots promise to reduce dependence on fertilizers

Study reveals genetic potential of corn aerial roots for biological nitrogen fixation

03.06.2025 | 09:44 (UTC -3)

Corn may be on the verge of a transformation. Researchers have investigated the contribution of aerial roots

to biological nitrogen fixation (BNF) and identified genetic traits that support this phenomenon in traditional varieties from southern Mexico.

Modern agriculture relies on synthetic nitrogen fertilizers. BNF, widely used in legumes, is emerging as an alternative for grasses. But in cereals such as corn, this strategy requires new solutions. One of these literally sprouts above the ground: aerial roots that exude carbohydrate-rich mucilage, an ideal habitat for nitrogen-fixing bacteria.

In the study, plants of the Oaxa524 variety, grown in greenhouses, showed efficiency in absorbing atmospheric nitrogen. Tests with nitrogen-15 isotopes revealed that almost half of the plant's nitrogen came

from the atmosphere when inoculated with nitrogen-fixing bacteria. The commercial line PHP02, without significant mucilage, showed only 15%.

The scientists then crossed the Oaxa524 variety with the elite PHZ51 line, creating populations of doubled haploids. From this, they evaluated five traits: diameter and number of aerial roots, number of nodes with roots, stem diameter and flowering date. Data from 2023 and 2024, from experiments in Georgia and Wisconsin, showed that these traits are influenced by environmental factors, but with significant genetic inheritance.

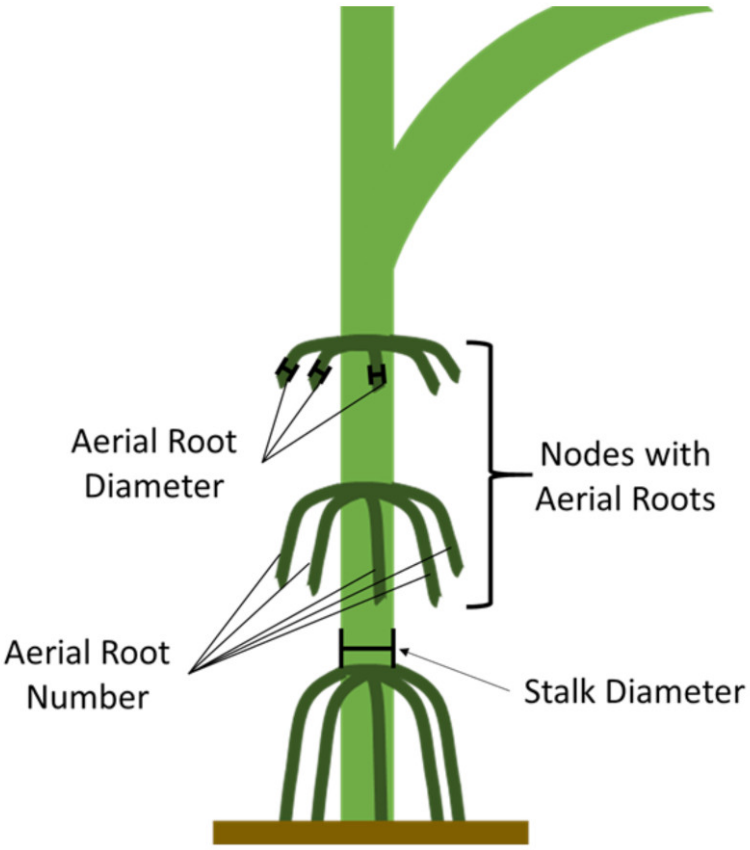
Heritability was 76% for aerial root diameter and 70% for number of nodes with roots. The number of roots per node

was the most affected by environmental variations, with a heritability of 59%. Nevertheless, genetic influence is considerable. Correlation analysis showed that plants with thicker culms tend to have more and larger roots, but correlations between diameter and number of roots are weak.

Quantitative trait loci (QTL) mapping revealed 16 genome regions associated with these traits. Eleven QTL influence aerial root diameter, five are linked to the number of roots per node and five to the number of nodes with roots. Some of these loci already coincide with candidate genes identified in other studies on root architecture.

The authors warn that the effectiveness of this fixation depends on the humidity of the environment, which is essential for mucilage production, and the presence of the right bacteria. Without them, there is no BNF. The use of inoculants may be necessary in the first generations adapted to this technology.

The prospects are intriguing. Previous studies on sorghum have shown that nitrogen-fixing aerial roots have been lost through negative selection during breeding. In corn, the pattern appears to be repeating itself. Recovering this potential in non-commercial germplasm and reintroducing it into modern lines could usher in a new stage in agriculture: cultivars capable of feeding on air.



But the question remains: is it possible to increase fixation without compromising productivity? Preliminary estimates indicate losses of 2% to 11%. The challenge will be to balance nutritional autonomy with profitability.

More information at doi.org/10.1101/2025.05.30.657053

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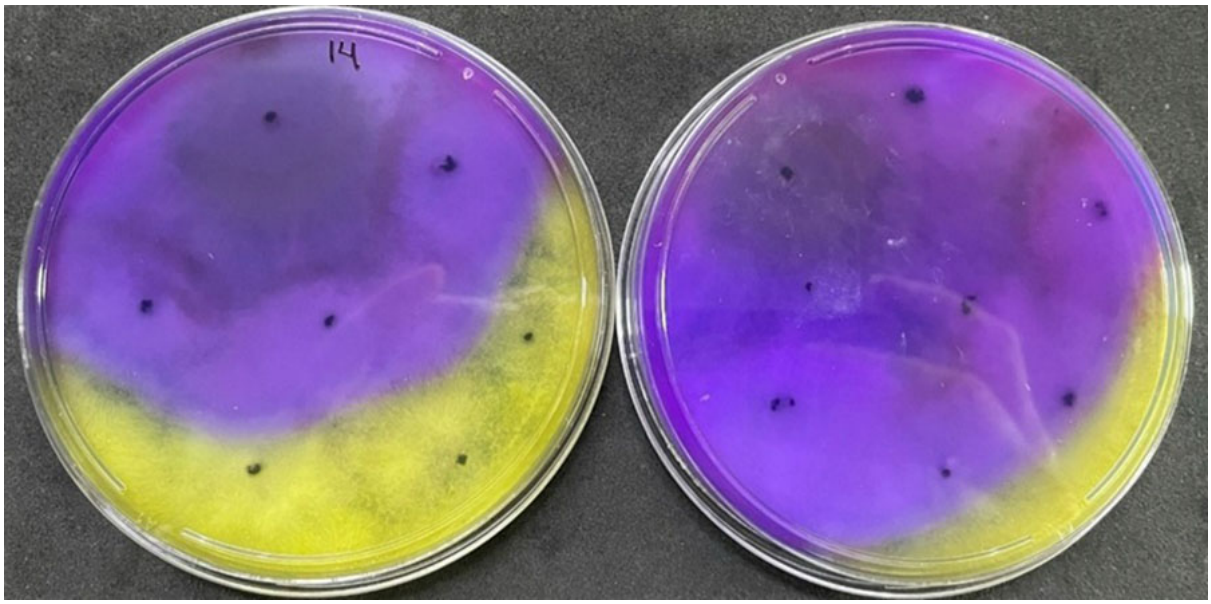
Brazilian fungus eliminates 100% of white mold in laboratory tests

Study with Trichoderma species paves the way for biological control of the disease

03.06.2025 | 08:47 (UTC -3)

Cultivar Magazine, based on information from Cristina Tordin



Brazilian researchers identified species of the genus *Trichoderma* capable of

completely eliminating the sclerotia of ***Sclerotinia sclerotiorum*, fungus that causes white mold**. Laboratory tests have shown that strains of *Trichoderma yunnanense* e *Trichoderma dorotheae* inhibit up to 100% of pathogen germination. The highlight was the *T. yunnanense*, with 97,5% average effectiveness.

The research was conducted by Laísy Bertanha, from Unesp, under the guidance of Wagner Bettiol, from Embrapa. The study points to a new path for biological control of the disease, historically combated with high-cost fungicides that have a negative environmental impact.

White mold survives for years in the soil thanks to sclerotia. Chemical control faces

limitations such as induction of resistance and environmental contamination.

The use of *Trichoderma* emerges as a sustainable alternative. According to Bertanha, the combination of strains increases effectiveness and must be adapted to the local environment.

Biocontrol should integrate strategies such as crop rotation with grasses, use of healthy seeds, sanitization of machinery and addition of organic matter. These practices reduce the initial inoculum and favor beneficial microorganisms.

During the study, nine species of *Trichoderma* were isolated in organic farming areas. *T. yunnanense* e *T. atrobrunneum* showed greater ability to suppress white mold. Bettiol highlights the

relationship between soil microbial diversity and pathogen control.

O *Trichoderma* It also reduces the aggressiveness of the fungus by interfering with the production of oxalic acid, a key compound for severe infections. The effectiveness of biological control depends on integration with cultural practices and, when necessary, complementary application of chemical products.

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Epagri recommends new planting window for wheat

Study shows that planting wheat early improves crop performance and favors crop rotation

02.06.2025 | 15:13 (UTC -3)

Cinthia Andruchak Freitas

Planting wheat earlier is the way to increase production of this cereal in the

West of Santa Catarina. The recommendation comes from Epagri: a survey conducted in Chapecó (SC) showed that when farmers plant their crops between May 11 and June 17, they can harvest earlier, avoiding overlap with the soybean planting that comes next.

“This change improves the efficiency of agricultural production and allows for the cultivation of winter cereals, encouraging farmers to use their land during this period, instead of leaving it fallow,” says Sydney Kavalco, a researcher at Epagri. Early sowing can also increase wheat productivity, as it takes advantage of more favorable weather conditions, reducing the risk of frost and ensuring that the plants develop better.

According to the research, conducted in partnership with CooperAlfa, choosing the right cultivars for each period allows for production of over 4t/ha. “By following the recommendation of sowing between 11/05 and 17/06 with early or medium cycle cultivars, all trials achieved physiological maturity and harvest by the end of October,” reports the Epagri researcher.

In the trials, carried out over six years (2018 to 2023), cultivars such as TBIO Ponteiro, TBIO Motriz and BRS 374 were highly productive when planted on the recommended dates. “These cultivars are adapted to the region's climatic conditions, offering resistance to variations in temperature and humidity,” explains Sydney.

Sustainability

Epagri's guidance enables cultivation with agricultural insurance coverage and official zoning from the Ministry of Agriculture. In addition, it contributes to sustainability, improving soil quality and crop rotation. The results of the research are in Technical Bulletin No. 224, published by Epagri and available for free download at this link.

Early wheat planting in the West of Santa Catarina has been guided by Epagri and the region's cooperatives in lectures, field days and visits to properties. According to Sydney, although some producers were already planting early, research has indicated the best cultivars for this time of

year, which has a direct impact on productivity.

Wheat in SC

Despite achieving good productivity and having great potential to expand wheat cultivation, Santa Catarina contributes only 4% of the Brazilian production of this cereal, according to data from Epagri/Cepa. This small share is attributed mainly to the overlap of the wheat cultivation period with the soybean sowing seasons.

In recent years, the wheat production area in Santa Catarina has more than doubled. In the 2020/21 harvest, the state had 58 thousand hectares planted. In 2024/25,

123 thousand hectares were cultivated. Recommendations for farmers on the sowing time and the most suitable cultivars have contributed to this expansion.

At the same time, the State Government's public policies have been positively impacting the expansion of the area with winter cereals in Santa Catarina, especially to make up for the deficit of corn for animal feed. The 2025 edition of the Winter Cereals Cultivation Project – of the Terra Boa Program, executed by the State Secretariat of Agriculture and Livestock (SAR), has been in operation since the beginning of April. This is one of the initiatives to reduce the deficit in the corn supply in the State.

Farmers can now contact accredited cooperatives or agricultural companies and

formalize the partnership project. In the contract, the farmer agrees to grow cereals, follow technical guidance, use recommended technologies and deliver the production for the manufacture of animal feed. The subsidy is made according to the cultivated area, limited to 10 hectares per farmer. This year, the State Government is expected to invest approximately R$4,1 million in the project, with an expected reach of up to 10 thousand hectares cultivated with winter cereals, representing a 6,1% increase in the value per hectare supported.

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Jacto Group acquires Solo, a German agricultural solutions company

With the acquisition, Jacto expands its global presence and now has factories in North America and Europe

02.06.2025 | 14:01 (UTC -3)

Sibelle Freitas

The Jacto Group, a leader in agricultural solutions and technologies, announces the acquisition of Solo Kleinmotoren GmbH (“Solo”), a German company specializing in the manufacture of manual, motorized and battery-powered sprayers, as well as blowers and cutting machines. With customers in more than 70 countries, Solo has factories in Germany and the USA, an assembly line in China and distribution centers in Chile and New Zealand.

The acquisition is part of Jacto Group’s growth strategy and represents a combination of core values ??shared by both companies: commitment to innovation, customer focus and excellence in product quality. Solo will maintain its brand and portfolio, developed over 77 years of advancements in agricultural

technologies.

“This move will allow Jacto and Solo to access complementary markets and offer even better products and services to customers around the world. In addition, the technologies common to both companies provide ideal conditions for synergy for new developments, manufacturing and distribution,” says Ricardo Nishimura, Chairman of the Board of Directors of Jacto Group.

With a history spanning 77 years and a presence on five continents, the Jacto Group operates in the agricultural, polymer application technologies, transport and logistics, handling and storage, cleaning and medical-hospital equipment segments.

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Yellow rust resistance gene fails in UK

Breakdown of the Yr15 gene causes early outbreak of the disease in cultivars considered resistant

02.06.2025 | 07:10 (UTC -3)

Cultivar Magazine, based on information from Jason Pole

Yellow rust has made an unusually strong advance on winter wheat varieties in the UK, with the disease affecting cultivars listed as resistant, according to Recommended List (RL) field trials and commercial crops monitored this spring.

The initial warning came a few months ago, with symptoms of the disease in a fungicide-free trial near Sunderland. The severity of the situation prompted the Agricultural and Horticultural Development Board (AHDB) to advise growers in April not to rely on the resistance information contained in RL 2025/26. The advice has helped farmers adjust their fungicide application programmes.

The Yr15 resistance gene, present in several varieties assessed as resistant,

showed flaws. Isolates of the disease collected in affected areas not only infected plants with the gene but also sporulated intensely, according to an analysis conducted by the UK Cereal Pathogen Virulence Survey (UKCPVS).

The Yr15 failure was confirmed by NIAB-funded molecular testing. Hard 4 varieties KWS Dawsum, LG Typhoon and Champion, all with high adult resistance scores (8 or 9), were affected.

The outbreak began in north-east England and southern Scotland and is now spreading south-east, reaching East Anglia. According to Paul Gosling, manager of RL, the response of varieties varies depending on other resistance genes. Some are resistant; others show

unprecedented levels of infection.

For more information, click on "Yellow rust on wheat surprises in the UK"

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Disease-fighting mutation accelerates plant aging

Researchers identify protein that protects against powdery mildew but accelerates leaf senescence

01.06.2025 | 19:28 (UTC -3)

Cultivar Magazine

Arabidopsis thaliana wild type, top line, compared to the mutated plant

Researchers at Osaka Metropolitan University have discovered that a mutant protein, although it helps the plant *Arabidopsis thaliana* to resist powdery mildew, it can accelerate leaf aging. Plants with the altered version of the Actin Depolymerizing Factor (ADF) protein yellow more quickly over time and in dark conditions than plants without the mutation.

The study involved student Tomoko Matsumoto and professors Noriko Inada, from the Faculty of Agriculture, and Koichi Kobayashi, from the Faculty of Science. They observed that the mutation affects a group of proteins known as ADFs, which act on the dynamics of actin microfilaments, important for plant growth and defense.

Arabidopsis with the ADF4 protein knocked out or with all ADF subclass I genes silenced showed early senescence.

Genes associated with leaf aging, such as SAG13, SGR1, PPH and WRKY53, were activated earlier in these mutants than in wild-type plants.

The reduction in ADF4 gene expression during natural leaf aging suggests a central role for this protein in controlling senescence.

The nuclear localization of ADF4 was also shown to be essential in this process.

According to Professor Inada, ADFs influence not only aging, but also disease response and plant growth.

More information at doi.org/10.1093/pcp/pcaf027

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