March 28, 2026 N º 72

Cultivar Semanal ®

Audience tunes the bees' dance

Table of Contents

Table of Contents

Table of Contents

Table of Contents

USDA withdraws corn regulation with event MON 95275

Bayer's material receives approval after phytosanitary risk analysis in the USA.

27.03.2026 | 06:58 (UTC -3)

Cultivar Magazine

The United States Department of Agriculture (USDA), through APHIS,

announced the deregulation of MON 95275 corn, developed by Bayer CropScience for the control of *Diabrotica virgifera virgifera*. The decision exempts the material from the regulatory framework applied to organisms obtained through genetic engineering.

The agency concluded that there is no phytosanitary risk greater than that of conventional corn. The analysis considered data presented by the company, scientific literature, and public contributions received during a consultation that began in July 2025.

The MON 95275 event incorporates three insect control mechanisms. The material expresses the insecticidal proteins Mpp75Aa1.1, derived from*Brevibacillus*

laterosporus, and Vpb4Da2, originating from *Bacillus thuringiensis*. The event also produces DvSnf7.1 interfering RNA, targeting the Snf7 gene of *Diabrotica virgifera virgifera*. These components work together in a complementary way.

The combination promotes control of root damage by feeding on larvae. The system includes action through protein toxins and gene silencing via RNAi. The main target involves populations with a history of resistance to previous Bt technologies.

Regulatory assessment

Regulatory assessment indicated genetic stability of the event. Sequencing analyses confirmed unique DNA insertion and stable

inheritance across generations. Studies also did not identify adverse effects on agronomic traits, metabolism, or stress response.

The APHIS study analyzed impacts on non-target organisms. Tests indicated no relevant effects on pollinators, natural enemies, and soil organisms at expected exposure levels. Results pointed to a negligible risk for beneficial species under field conditions.

The agency also did not identify an increase in invasive potential. Corn maintains a low capacity for persistence outside of cultivation. Dispersal and competition characteristics remain unchanged.

The technical report does not indicate any changes in agricultural practices. Management remains aligned with current systems, including the use of hybrids with multiple events and resistance management strategies.

The MON 95275 event is not expected to reach the market as a standalone product. Bayer anticipates combining it with other traits, including herbicide tolerance and control of aerial pests.

Click here to learn more about MON 95275

RETURN TO INDEX

Agricultural Market - March 27, 2026

Soybean production advances in Brazil with improved prices and business deals.

27.03.2026 | 06:47 (UTC -3)

Vlamir Brandalizze - @brandalizzeconsulting

The soybean market is registering improved prices and progress in negotiations in Brazil. The recovery comes

after the end of the classification crisis. Prices at ports range from R$ 132 to R$ 142 for August. Producers are increasing sales. Commercialization has reached 49% of the harvest. The weekly pace is between 4 and 5 million tons.

In the international arena, the war in Iran maintains volatility. Brent crude oil surpasses US$100 per barrel. WTI returns to the US$93 range. The dollar fluctuates according to the progress of the conflict. This environment puts pressure on agricultural commodities.

In Chicago, soybeans are finding support near $11,70 for the May contract. The July contract is facing resistance at $12. Other maturities are trading between $11,40 and $11,90.

Harvesting in Brazil has reached 74%. Mato Grosso leads with over 99%. Paraná and Mato Grosso do Sul have reached 82%. Goiás has reached 76%. Bahia has registered around 65%. Rio Grande do Sul remains below 10%. The state is facing losses due to drought and delays due to rain.

Exports remain at a high pace. March volume is expected to be between 14 and 14,5 million tons. China leads as the main destination. Soybean meal is losing logistical space to grain.

National production is projected to be between 175 and 178 million tons. The final result depends on the performance of the state of Rio Grande do Sul.

Corn situation

In the corn market, Chicago holds support at US$4,60 in May. The July contract is trading above US$5. In Brazil, the second corn crop is showing irregular conditions. Paraná is facing water shortages and losses. The planted area is expected to be below 18 million hectares. Estimated production is down to 105 million tons.

Sorghum situation

Sorghum is gaining ground as an alternative crop for the second harvest. The area could exceed 2 million hectares. Production is expected to surpass 7 million tons.

Wheat situation

In the wheat market, prices are rising. In Rio Grande do Sul, prices range from R$ 1.100 to R$ 1.150 per ton. In Paraná, they reach R$ 1.280. Producers are holding back sales below R$ 1.300. High fertilizer costs are creating uncertainty about the planted area.

Rice situation

Rice prices are rising during harvest. In Rio Grande do Sul, the price of rice fluctuates between R$ 59 and R$ 66 per sack. The smaller harvest and record exports are supporting prices. Mercosur countries are facing production losses.

Bean situation

Bean prices are showing signs of stabilization. After a rise in February, prices are falling between 1% and 3% in March. The premium carioca bean ranges from R$ 315 to R$ 345. The black bean fluctuates between R$ 175 and R$ 195.

RETURN TO INDEX

The public alters the precision of the bees' dance

Number and profile of followers influence communication about food.

27.03.2026 | 06:24 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Robert Schwarz

The precision of bee dances depends on the number and type of followers present in the hive. Foraging bees adjust their behavior according to the number and type of followers. This change affects the quality of information regarding the direction and distance of food.

The so-called "waggle dance," also known as the bee dance or swaying dance, allows the colony to indicate the location of resources. The direction of movement relative to the sun indicates the direction. The duration of the vibratory segment indicates the distance. The colony uses this system to efficiently explore food sources.

Fixed signal

Researchers have found that the dance does not function as a fixed signal. Bees respond to their social environment. When there are more followers, the movement pattern maintains regularity. When there are fewer, variability increases and precision decreases.

The work included experiments with manipulating the audience on the “dance floor.” In one test, the scientists reduced the number of bees present. In another, they maintained the density but increased the proportion of young bees, which do not follow the dance. In both scenarios, the accuracy of the communication decreased.

The results indicate that the decisive factor involves the number of effective followers. The presence of young bees does not

compensate for the absence of individuals capable of interpreting the signal. Bees respond to audience engagement, not just the number of individuals around.

The decrease in precision occurs in two components of the signal. The deviation in the angle of the dance increases, which reduces directional accuracy. The variability in the duration of the movement also increases, which compromises the distance estimation.

Search for an audience

The study identified a related mechanism. With few followers, the bees begin to seek an audience. They move more around the hive during the return phase. They

interrupt the repetitive pattern. This behavior increases the variability of movement.

This process, described as audience acquisition, expands the area covered in the hive. The bees try to attract new followers. As a consequence, the signal loses consistency.

Physical interactions provide social feedback. Contact with antennae and body indicates the presence and interest of followers. The frequency of these contacts indicates the size of the available audience.

Age composition

The data also indicate the influence of age composition. Young bees rarely follow the dance. The predominant presence of this group reduces the number of effective followers, even when the hive maintains a high density of individuals.

The concept of "potential audience" gains relevance. Even with a similar number of followers, the reduction in bees able to follow the dance increases the variability of the signal. The expectation of recruitment influences behavior.

The researchers observed no effect of nectar discharge time on the accuracy of the dance. This factor does not explain the changes recorded. The variation stems from the availability and engagement of the followers.

The results indicate that communication in the beehive involves a two-way exchange. Bees transmit information about resources. At the same time, they receive social signals from the environment. This feedback shapes the content of the message.

Further information at doi.org/10.1073/pnas.2518687123

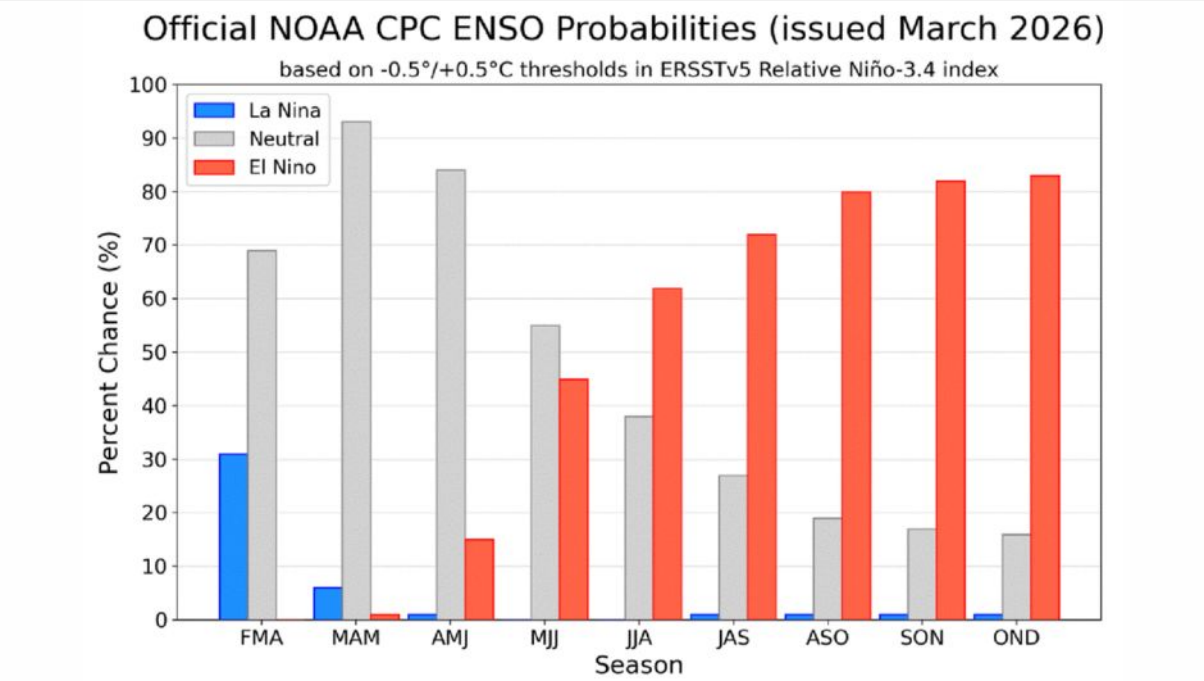
RETURN TO INDEX

El Niño gains strength in forecasts for 2026

This phenomenon could solidify in the second half of the year, with impacts on agriculture.

26.03.2026 | 16:50 (UTC -3)

Inmet, Cultivar Magazine edition



According to the most recent bulletin from the Climate Prediction Center (CPC) of the National Oceanic and Atmospheric Administration (NOAA), released on March 16, there is a 62% probability of the El

Niño phenomenon establishing itself in the June-July-August (JJA) quarter. From August onwards, this chance increases, with a probability exceeding 80% by the end of 2026.

Before that, however, models indicate a transition from the current La Niña to a neutral condition—when neither phenomenon predominates. This phase should occur between March and May, with a probability greater than 90%.

In Brazil, El Niño has opposite effects in the north and south of the country. Typically, the phenomenon increases the risk of drought in the northern parts of the North and Northeast regions, while favoring large volumes of rain in the south.

Or what is the El Niño phenomenon?

El Niño is a climatic phenomenon characterized by the anomalous warming of the surface waters of the equatorial Pacific Ocean. It is part of the system known as ENSO (El Niño-Southern Oscillation), which alternates between three phases: El Niño (warming), La Niña (cooling), and neutral conditions.

During an El Niño event, sea surface temperatures are at least 0,5°C above average for an extended period. It's important to remember that the phenomenon doesn't have a defined duration and can last for more than two years.

During the formation of El Niño, the behavior of the trade winds plays a fundamental role. The trade winds are constant winds coming from the Southern and Northern Hemispheres, which meet in the region of the Equator and move from east to west across the planet Earth.

Normally, wind movements affect the Pacific Ocean, pushing surface waters westward and allowing deeper, colder waters to rise. However, when the trade winds weaken or reverse direction, this exchange of waters does not occur, and the warmer waters remain at the surface for longer, potentially reaching temperatures up to 3°C or more above average, thus forming El Niño.

Impacts of El Niño on agriculture

Agriculture is one of the sectors most sensitive to the climatic effects associated with the El Niño phenomenon, since changes in precipitation and temperature patterns directly impact crop development and productivity. During these episodes, a tendency towards reduced rainfall and more frequent drought periods is observed in the North, Northeast, and northern portions of the Central-West and Southeast regions of Brazil, compromising crop performance and water availability, increasing the risk of losses, especially in rainfed systems.

On the other hand, in the Southern Region, El Niño is usually associated with increased rainfall, especially during winter and spring, resulting in excess soil moisture. This scenario can also be detrimental to crops, affecting agricultural management and favoring the occurrence of phytosanitary problems.

For winter cereal cultivation in the Southern Region, for example, the most critical months usually coincide with the rainiest periods, especially between September and October. Under these conditions, crops are more susceptible to excess water throughout the phenological cycle, particularly during the flowering, grain filling, and maturation phases, which can compromise development and reduce productivity. Furthermore, high soil

moisture favors the occurrence of fungal diseases, impairs grain quality, and hinders machinery traffic, limiting the proper implementation of management practices.

Regarding the summer harvest, the impacts vary depending on the region, as in the North, Northeast, and parts of the Midwest and Southeast, the reduction in rainfall during El Niño years can increase the frequency of dry spells, especially in the spring and early summer. This can harm crop establishment (planting) and the initial development of crops such as soybeans and corn, in addition to increasing the risk of losses in rainfed systems.

In the Southern Region, the increase in rainfall during spring and early summer during these events may favor water availability; however, excessive rainfall can cause soil saturation, increase the incidence of fungal diseases, hinder planting and crop management, and impact quality and harvesting.

It is important to emphasize that the potential impacts of this scenario on crops will depend on other factors, such as sea surface temperatures in the Tropical and South Atlantic Oceans, as well as the intensity of the phenomenon.

RETURN TO INDEX

Essential oils show effectiveness against whiteflies

Natural compounds achieve up to 80% mortality of the pest, according to research from Unesp and UFSCar.

26.03.2026 | 15:50 (UTC -3)

Adriana Arruda, Cultivar Magazine edition

Research conducted by scientists from São Paulo State University (Unesp) in Botucatu and the Federal University of São

Carlos (UFSCar) indicates that essential oils extracted from plants can act effectively in controlling whiteflies (*Bemisia tabaci*), one of the major pests in world agriculture.

The results indicate that natural compounds, such as those extracted from lemongrass (*Cymbopogon citratus*) and cloves (*Syzygium aromaticum*These substances can cause up to 80% mortality in insects under laboratory conditions. The action occurs at different stages of the life cycle, from oviposition to the adult stage.

In addition to causing direct damage by feeding on plant sap, the whitefly is a vector for viruses that compromise crop development, resulting in reduced productivity and quality. Control of this pest

is traditionally based on synthetic insecticides, but faces limitations related to environmental impact, difficulty of application—since the insect concentrates on the underside of leaves—and the development of resistance.

Sustainable alternative

Given this scenario, the study evaluated essential oils from different plant species, including erva-baleeira (*Cordia verbenacea*), field rosemary (*Baccharis dracunculifolia*), aroeira (*Schinus terebinthifolius*and species of the genus *callistemon*The trials analyzed effects on eggs, nymphs, and adults, as well as the potential for repellency and reduction of oviposition.

The results indicate that lemongrass oil showed high efficacy against eggs, being able to inhibit hatching, while oils such as clove and rosemary stood out in controlling nymphs — a critical stage for the development of the pest.

Another distinguishing feature is the mode of action. Unlike conventional insecticides, which act on a single biological target, essential oils contain multiple active compounds, such as monoterpenes and sesquiterpenes, that act simultaneously. This characteristic reduces selection pressure and makes it more difficult for insects to develop resistance.

According to the researchers, substances such as eugenol, present in cloves, and compounds such as geranial and neral, in

lemongrass, are associated with the observed insecticidal effects.

In addition to mortality, studies have also identified behavioral effects, such as repellency and reduced egg laying, which may contribute to decreasing infestation over time.

Advances in integrated management

The results reinforce the potential of essential oils as complementary tools within integrated pest management, especially in systems that seek to reduce the use of synthetic insecticides and adopt more sustainable strategies.

More information at
doi.org/10.1093/jee/toaf184

RETURN TO INDEX

Agroallianz appoints Cristiane Gerbasi as CFO

Executive takes over finance area during strategic phase of company.

26.03.2026 | 14:36 (UTC -3)

Kassiana Bonissoni, Cultivar Magazine edition

In a strategic move aligned with strengthening its governance, Agroallianz announced the arrival of **Cristiane Gerbasi** (pictured) as the new Chief

Financial Officer (CFO). By taking over the finance area, the executive joins a decisive moment for the company and the sector, marked by the need for adaptation, financial discipline, and a long-term strategic vision.

With over 25 years of experience in the sector, Cristiane has held strategic positions in Sales, Marketing, Planning, International Business, and was part of DVA's M&A project in Brazil. For a decade, the executive also led the professionalization of the operation of a coffee farm in southern Minas Gerais, structuring processes, implementing modern management practices, and strengthening the connection between productive efficiency and sustainability.

She holds degrees in Accounting and Business Administration. In addition, she has MBAs and specializations in the areas of Governance, Compliance, Auditing, Tax Planning (National and International), Financial Management and Strategy, Agribusiness Strategic Planning, Economics, Circular Economy, Executive Development Program, Board Member Training (IBGC), and Marketing.

According to Agroallianz, Cristiane's arrival reinforces a growing trend in agribusiness: the increased participation of women in leadership and decision-making positions. The executive takes on this new challenge with the purpose of contributing to the company's institutional strengthening and supporting its next phase of evolution. "This is a moment to consolidate learnings

and contribute to building a solid, sustainable structure prepared for the future," stated the new CFO.

RETURN TO INDEX

Steyr Cervus CVT wins Big See design award

The new line, ranging from 360 to 435 hp, combines power, comfort, and practical solutions.

26.03.2026 | 09:25 (UTC -3)

Cultivar Magazine, based on information from Silvia Kaltofen

Steyr has won the Big See Product Design Award with its new Cervus CVT line. The

award highlights the design of the tractors, which range from 360 to 435 hp. This award marks the brand's second victory in two years.

The Cervus CVT was presented to the public at Agritechnica 2025 (see more by clicking hereThe manufacturing takes place in St. Valentin, Austria. The line inaugurates the brand's above 400 hp range. The project started from scratch. The assembly includes an 8,7-liter FPT Cursor 9 engine and a 4x2 CVT transmission with a top speed of up to 60 km/h.

This model is suitable for diverse operations. It performs heavy-duty loading with ballast. It handles tasks with front and rear hitches. It also carries out high-load

transport without ballast. The optional central tire inflation system increases its versatility.

The cabin reduces noise levels in its category. The semi-active suspension improves comfort. The independent front axle enhances stability. The design integrates high-intensity lighting and facilitates access for maintenance.

The Big See organization emerged in 2018. The initiative evolved into a global design platform. The award recognizes creative solutions with practical application.

RETURN TO INDEX

Cryopreservation increases the viability of Steinernema carpocapsae

Formulations containing glycerol or ethylene glycol plus trehalose retain infectivity after thawing.

26.03.2026 | 09:03 (UTC -3)

Schubert Peter, Cultivar Magazine

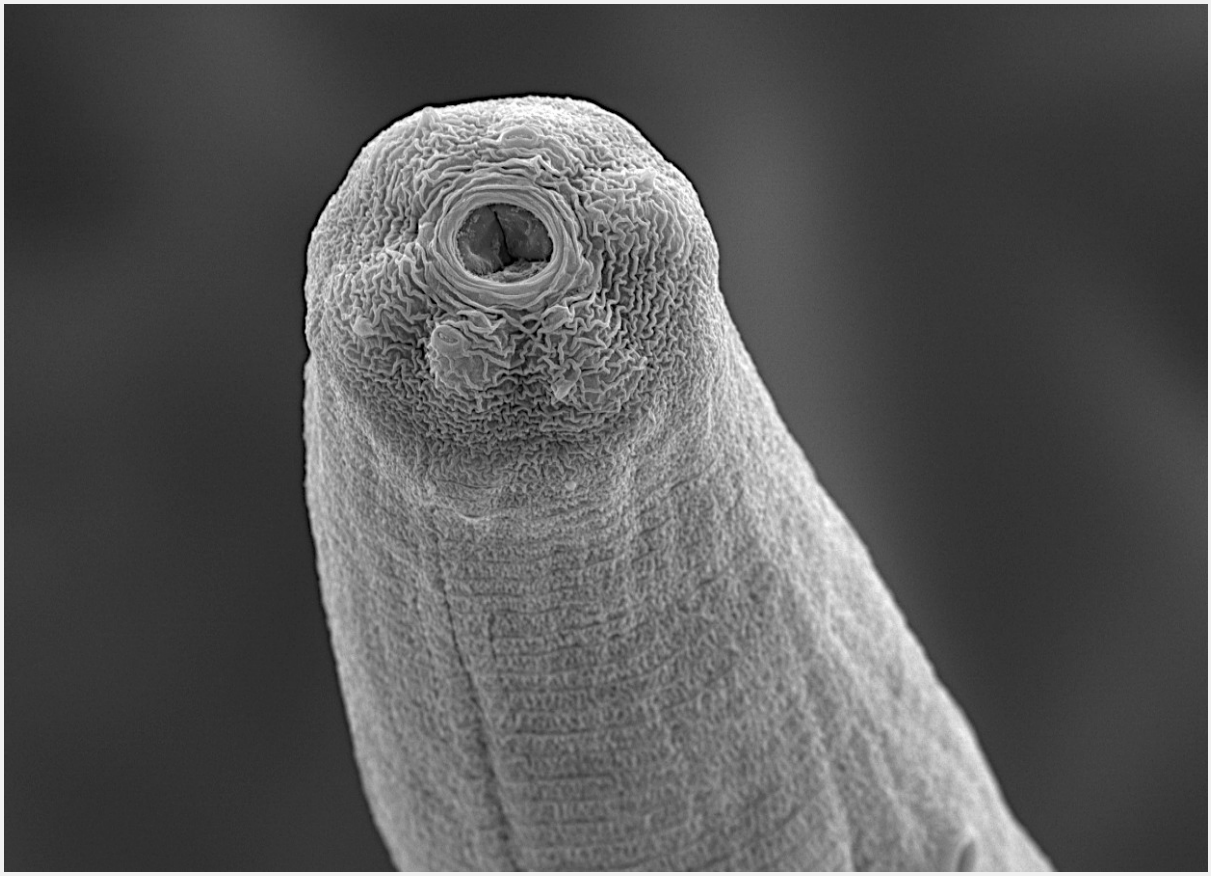


Photo: Mirayana Barros

Researchers have optimized cryopreservation formulations for the entomopathogenic nematode *Steinernema carpocapsae*. The adjustment increased viability after thawing and preserved infectivity. This advancement could expand the use of the agent in biological control and facilitate germplasm management.

The study evaluated three polyols. Glycerol showed the greatest cryoprotective effect. Ethylene glycol came next. Propylene glycol registered the lowest survival rate. In the two-stage pretreatment, ethylene glycol generated 15,8% post-thaw survival. This rate surpassed trehalose alone, but fell short of the best combination of ethylene glycol and trehalose.

Addition of trehalose

The addition of trehalose increased survival, mainly in the group treated with ethylene glycol. Orthogonal tests indicated two more efficient formulations. The first combined 26% glycerol, 7% trehalose, and 108 hours of incubation. The second combined 22% ethylene glycol, 2,5% trehalose, and 105 minutes of incubation.

According to scientists, the optimized formulation with polyol and trehalose delivers high viability and pathogenicity. The protocol offers a practical reference for the preservation of isolates and wider use of entomopathogenic nematodes in biocontrol.

Further information at
doi.org/10.1002/ps.70758

RETURN TO INDEX

Cellular mechanism slows growth under stress

Metabolic pathway reacts quickly and reduces synthesis to protect plants.

26.03.2026 | 08:31 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Stan Lim

Researchers at the University of California, Riverside, have identified a cellular mechanism that rapidly reduces plant growth under extreme environmental stress. The process acts directly on enzymatic activity and may guide the development of more resilient crops.

The system operates on a metabolic pathway essential for compounds linked to growth and survival. Under high light or heat, reactive oxygen molecules interfere with the enzymes and reduce their activity. At the same time, intermediates accumulate and block initial steps. The immediate effect limits the production of growth compounds and halts development.

The response occurs without prior alteration of gene expression. Enzymatic

modulation ensures an immediate reaction, unlike adjustments via RNA and protein synthesis, a slower process.

Later phase

The study also describes a later phase. The plant adjusts its metabolism under prolonged stress. This adjustment redirects resources and reduces final growth.

Results published in an article in PNAS detail the role of the metabolite MEcPP in the MEP pathway. The compound acts as an intermediate and regulator. The accumulation of MEcPP destabilizes and inhibits the MCT enzyme through direct interaction at the catalytic site. This

mechanism creates rapid, transcription-independent control and adjusts the production of isoprenoids.

Scientists report experimental evidence of specific MEcPP accumulation under light stress. Biochemical assays confirm enzyme inhibition and feedback effect.

This work explains previous shortcomings in metabolic engineering. Strategies did not consider a two-phase response. Incorporating this control could increase tolerance to drought, heat, and salinity, as well as optimize carotenoid synthesis.

More information at doi.org/10.1073/pnas.2529243123

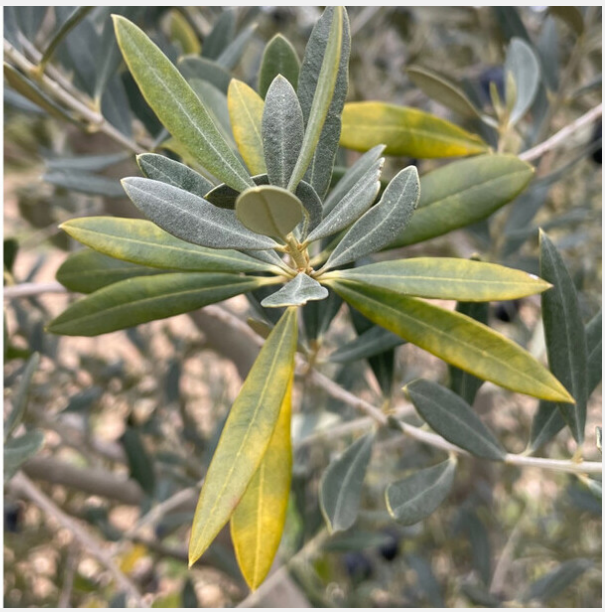
RETURN TO INDEX

Genome of the fungus that causes cercosporiosis in olive trees has been sequenced

Study identifies more than 14 genes and reveals infection mechanisms.

26.03.2026 | 08:10 (UTC -3)

Schubert Peter, Cultivar Magazine



Researchers have sequenced the complete genome of *Pseudocercospora*

cladosporioides, the agent of cercosporiosis in olive trees. This discovery broadens our understanding of the disease and supports breeding programs.

Cercospora leaf spot causes defoliation and reduces productivity. The pathogen infects leaves, generating chlorotic spots on the upper surface and dark discoloration on the lower surface. The disease is gaining importance with the adoption of susceptible cultivars and restrictions on the use of copper.

The work involved teams from the Agronomy and Genetics departments of the University of Córdoba. The researchers overcame the difficulty of isolating the fungus and obtained high-

quality DNA and RNA. The combination of short and long read sequencing allowed them to assemble a 53 Mb genome.

Genes identified

The analysis identified more than 14 genes. Among them, 491 are linked to the degradation of the olive tree's cell wall. This mechanism sustains the infection. The study also detected 434 effector proteins that suppress the plant's defenses.

The genome also revealed genes associated with the production of secondary metabolites and CAZymes enzymes. These groups participate in host colonization and nutrient acquisition.

Further information can be found at doi.org/10.1111/ppa.70130

RETURN TO INDEX

Agroconsult estimates the Brazilian soybean harvest at 184,7 million tons

National average should rise from 62,5 to 62,7 bags per hectare

25.03.2026 | 16:18 (UTC -3)

Cultivar Magazine, based on information from Ana Carolina Silveira

Photo: Eduardo Monteiro

Agroconsult has raised its estimate for the Brazilian soybean crop to 184,7 million tons. This volume exceeds the previous cycle by 6,7% and is also 0,9% higher than the March forecast.

According to the consultancy, the national average yield rose from 62,5 to 62,7 sacks per hectare. The planted area reached 49,1 million hectares, an increase of almost 300 hectares. The total adjustment amounts to 1,6 million tons compared to the last estimate. In the annual comparison, the gain exceeds 11,5 million tons. The expansion of the area accounts for 30% of the increase. Productivity represents 70%.

The figures are based on the analysis of approximately 1.700 farms in 14 states.

The teams traveled more than 60 kilometers since January. The analysis cross-referenced field data with satellite imagery.

Mato Grosso leads production. The state projects 51,3 million tons. Productivity remains at 66 sacks per hectare. Excessive rainfall in February generated an alert, but the final yield remained at a high level.

Bahia stands out positively. Productivity reaches 70,3 sacks per hectare, the highest in the country. Production reaches 9,7 million tons. Harvesting has reached 61% of the area.

The state of Rio Grande do Sul is experiencing a decline. The drought is impacting the cycle. Productivity is

adjusting to 48,3 sacks per hectare. Production is expected to fall below 20 million tons. Harvesting covers 11% of the area.

Mato Grosso do Sul, Goiás, and Paraná are registering reductions. Irregular weather and heat are affecting grain weight. In contrast, Minas Gerais is achieving a record productivity of 68 sacks per hectare. Maranhão and Piauí are progressing with good grain filling. Tocantins and Pará are maintaining averages close to 60 sacks per hectare.

RETURN TO INDEX

ADM has a new president of Latam Agricultural Services

John Grossmann will play a role in strengthening Brazil's strategic position.

25.03.2026 | 15:41 (UTC -3)

Laura Moscatelli

ADM announced **John Grossmann** (pictured) as the new President of Agricultural and Oilseed Services for South America. Based in São Paulo (SP), the

executive will contribute to further strengthening Brazil's strategic role in the segment, through the offering of high value-added services, traceability, and supply chain integration, connecting Brazilian producers to demanding markets. In his new role, Grossmann will lead ADM's grain business in South America and report to the Global President of Ag Services & Oilseeds, Greg Morris.

The executive joined the company in 1998 and built an international career spanning more than 27 years at ADM, holding leadership positions in some of the world's major agricultural markets. Prior to assuming his new role, he served as president of Oilseeds Crush and Grains in North America, leading one of the company's largest soybean processing

and marketing platforms. He also served as president of the oilseeds division for the EMEA region (Europe, Middle East and Africa) and led European origination and crushing operations from Geneva.

Throughout his career, he also held strategic positions in South America, including the presidency of ADM in Paraguay and the vice-presidency for the region, consolidating extensive experience in origination, processing, and global grain trading. An agronomist, Grossmann holds an MBA from Fundação Getulio Vargas (FGV) and is recognized for his ability to integrate global operations, develop high-performance teams, and strengthen the connection between producers, industry, and international markets.

Global perspective

The executive will be guided by his global perspective to drive the sustainable growth of agricultural and oilseed services businesses in the largest country in South America. The goal is to identify innovation opportunities that accelerate value creation for clients and partners, explore synergies in the supply chain, and support the segment's expansion, connecting ADM's portfolio to increasingly competitive markets.

This move comes at a time of record-breaking growth and expansion investments in Brazil. Last year, ADM recorded 5,4 million tons of soybeans processed for refining and packaging in

2025, a record and 4% higher than the volume processed in 2024. It was the best year for crushing in South American history, with strategic units such as Rondonópolis (MT), Campo Grande (MS), Uberlândia (MG), and Ipameri (GO) achieving their highest historical volumes, reinforcing the robustness of the company's industrial operation.

These positive results are in addition to the expansion of three oilseed processing facilities, totaling an increase of 400 metric tons of crushing capacity per year, distributed across the manufacturing units in Campo Grande (MS), Porto Franco (MA), and Uberlândia (MG). Beyond increasing factory capacity and logistical integration, with operational improvements at the Port of Santos, the company has

also invested in traceability, mapping 100% of its direct and indirect soybean suppliers in Brazil, Argentina, Paraguay, and Uruguay.

“Brazil plays a structural role in ADM’s global strategy. The country combines consistent growth in agricultural production, sustainable expansion capacity, a strong presence in the protein chain, and a rapidly evolving biofuel sector. When we connect these factors to a competitive production base, expanding infrastructure, and access to global markets, we see an agricultural system with enormous value-generating potential. For ADM, Brazil is a strategic environment for integrating origination, processing, and export, contributing to increased efficiency in the food, energy, and nutrition supply

chains that fuel the world," says Grossmann.

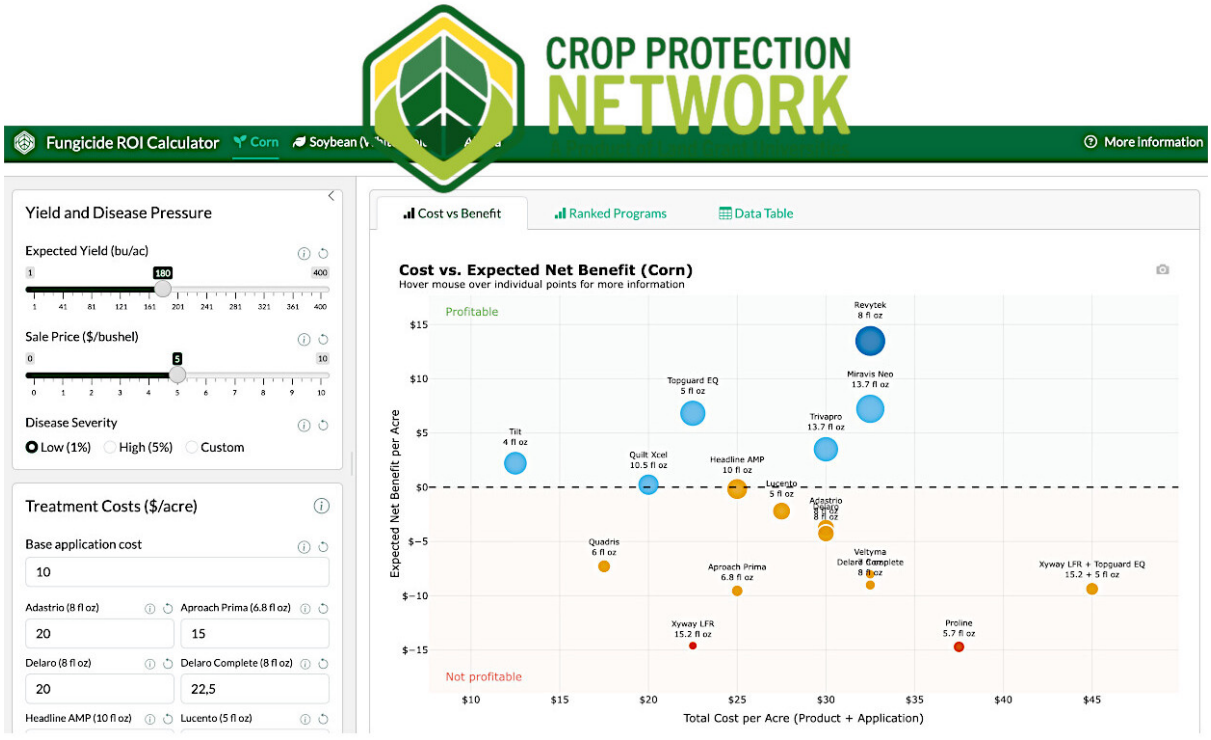
RETURN TO INDEX

Calculator launched to estimate fungicide returns in the US

The tool uses data from multi-year trials and projects net benefit and breakeven point.

25.03.2026 | 14:41 (UTC -3)

Cultivar Magazine



The Crop Protection Network (CPN) has made available a return on investment calculator for fungicide use. The tool

supports economic decisions regarding corn diseases, white mold in soybeans, and foliar diseases in alfalfa.

The calculator gathers research data and user-provided variables, such as treatment cost, commodity price, disease severity, and expected productive outcome. Using this data, the system estimates net benefit and the probability of economic breakeven. The organization recommends using these indicators in the decision-making process.

According to the organization, the tool does not predict outcomes. Its purpose is to compare scenarios and measure the risk and return of management strategies under varying conditions.

The suite of calculators emerged as a decision support tool based on research

conducted by extension specialists. The material uses university trials with fungicides carried out over several years in the United States and Ontario, Canada.

CPN reports that it focuses on producers, agronomists, and other professionals in the sector. Access to the calculator is via the “Fungicide ROI Calculator” page, within the platform's tools area.

See more at doi.org/10.31274/cpn-20250323-0

RETURN TO INDEX

Valtra expands network with new unit in Sinsacate

Cimat SRL dealership expands operations and strengthens service in northern Córdoba.

25.03.2026 | 13:02 (UTC -3)

Cultivar Magazine, based on information from Corina Tareni

Valtra has announced the opening of a new plant in Sinsacate, Argentina. The

operation will be managed by Cimat SRL. This initiative expands the brand's presence in the province.

The facility occupies an area on Route 9, km 759. The expansion is part of a strategy to get closer to the producer. The company seeks to improve the quality of service and expand its territorial coverage.

Cimat SRL has a long history within the official network. The company focuses on the development of local agriculture. Its operations include offering integrated solutions to producers.

Emiliano Ferrari, commercial director for the Hispanic America region, highlights the network's progress. According to the executive, the initiative expands access to technology and services aligned with the

brand's standards.

Manuel Aruta, owner of Cimat SRL, affirms his commitment to the producer. The businessman emphasizes the expansion of operations and a focus on quality and close customer service.

RETURN TO INDEX

CsZAT10 factor enhances cucumber resistance to whitefly

Protein activates defense pathways linked to ROS, salicylic acid, and jasmonate.

25.03.2026 | 09:25 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Pflanzenschutzamt Saarbrucken

The transcription factor CsZAT10 enhances the resistance of cucumber to whitefly (Bemisia tabaci. The target emerges as an option for breeding programs aimed at controlling the pest.

The study evaluated the function of CsZAT10 in *Cucumis sativus*. The protein combines two zinc finger domains. This structure places the factor in the Cys2/His2-type ZFP group. Gene expression increased after whitefly infestation. The same pattern occurred after application of salicylic acid, methyl jasmonate, and hydrogen peroxide.

Silencing CsZAT10 increased whitefly survival and boosted the insect's preference for the host plant. Overexpression had the opposite effect,

reducing both indicators.

Defense responses

The assays also showed a decline in defense responses after gene silencing. There was a reduction in the levels of signaling molecules linked to defense. The researchers also recorded lower expression of genes related to resistance. The activity of defense enzymes decreased, notably superoxide dismutase, peroxidase, and phenylalanine ammonia-lyase. The levels of phenols, tannins, and flavonoids also decreased.

Conversely, overexpression of CsZAT10 activated these responses. The gene promoted pathways associated with

reactive oxygen species, salicylic acid, and jasmonic acid.

Further information at doi.org/10.1002/ps.70747

RETURN TO INDEX

Ethanol occurs in floral nectar in various species

Study detects alcohol in 48% of samples and indicates potential impact on pollinators.

25.03.2026 | 08:52 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: David Clode

Floral nectar contains low concentrations of ethanol in a wide range of plant species. Analysis of 147 samples, obtained from 29 species, recorded the presence of the compound in 48% of cases. At least one positive sample appeared in 26 species. The data indicate frequent exposure of pollinators to alcohol during foraging.

Researchers used an enzymatic assay to quantify ethanol in nectar collected from a botanical garden in California. Average concentrations per species reached 0,016% (w/w), with a maximum average of 0,032% and an individual peak of 0,056%.

Microbial fermentation explains the origin of ethanol. Yeasts colonize nectar rich in sugars and convert the substrate into alcohol. Previous studies indicate the

frequent presence of these microorganisms in flowers. Thus, ethanol production tends to occur recurrently in different environments.

Sugar and ethanol

The data reveal a positive correlation between sugar content and ethanol concentration. Sweeter nectars favor fermentation. Statistical models indicate a significant relationship between Brix degree and alcohol, although with variation between species.

Pollinator display

Daily exposure of pollinators can reach significant levels. Estimates based on

energy consumption indicate intake of up to 0,20 g/kg/day in hummingbirds and up to 0,27 g/kg/day in African nectar-feeding birds. Bees exhibit lower values, close to 0,05 g/kg/day. The high volume of nectar ingested compensates for the low concentration of ethanol.

Scientists compare this consumption to the equivalent of one alcoholic drink in humans throughout the day. The correlation arises due to the intense metabolism and high intake relative to body weight. Further studies on direct physiological effects in pollinators are still lacking.

Phylogenetic signal

The study also indicates an absence of a strong phylogenetic signal for ethanol. Closely related species did not show a consistent pattern. Sugar content, on the other hand, exhibited greater predictability within each species, but with low consistency between evolutionary groups.

The results suggest an ecological role for ethanol as a possible chemical signal. Compounds derived from fermentation can influence pollinator behavior. Previous studies have shown insect responses to nectar substances such as caffeine and nicotine. Ethanol may act similarly at low doses.

Further information can be found at doi.org/10.1098/rsos.250847

RETURN TO INDEX

Gene GbWRKY11 extends resistance to Verticillium wilt

Transcription factor activates jasmonic acid biosynthesis in cotton

25.03.2026 | 07:38 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Penn State University

Activation of the GbWRKY11 gene increases cotton's resistance to Verticillium wilt by inducing jasmonic acid biosynthesis. This information comes from a recent study. The work identifies a direct molecular mechanism between gene regulation and plant immune response.

The disease, caused by Verticillium dahliae compromises productivity and fiber quality. The pathogen persists in the soil for up to 14 years. Chemical control has low efficiency. The selection of resistance genes emerges as a viable alternative for breeding programs.

Transcriptional activator

Researchers demonstrated the induction of GbWRKY11 expression after infection with the fungus and application of methyl jasmonate. The encoded protein acts in the cell nucleus as a transcriptional activator. The gene positively regulates the expression of genes linked to the jasmonic acid pathway.

Gene silencing assays indicated increased plant susceptibility. There was leaf chlorosis, a higher disease index, and greater fungal biomass in the roots. There was also a reduction in the expression of key genes in the jasmonate pathway, such as AOS, LOX5, and AOC4, as well as defense genes such as PR1 and PR5.

Symptom reduction

On the other hand, the overexpression of GbWRKY11 reduced the symptoms of the disease. The plants showed less colonization by the pathogen and greater expression of genes in the jasmonic acid pathway. The effect was also confirmed in transgenic plants of Arabidopsis thaliana, which indicates functional conservation between species.

Exogenous application of methyl jasmonate partially restored resistance in plants with GbWRKY11 silencing. The result reinforces the direct link between the gene and the hormonal pathway. The incomplete effect indicates the involvement of other regulatory factors.

The study identified the GbLOX5 gene as a direct target of GbWRKY11. The protein

binds to W-box elements in the GbLOX5 promoter and activates its transcription. This gene participates in the initial step of jasmonic acid biosynthesis. Silencing GbLOX5 also increased susceptibility to the pathogen, with symptoms similar to those observed with silencing GbWRKY11.

Regulatory module

The results establish a WRKY–LOX regulatory module in cotton defense. This module controls the production of jasmonic acid and, consequently, the activation of immune responses. The regulation occurs independently of the MYC2 factor, traditionally associated with the jasmonate pathway.

The jasmonic acid pathway plays a role in defense against necrotrophic pathogens. The study reinforces this role in the case of *Verticillium dahliae*. The evidence broadens our understanding of the interaction between WRKY transcription factors and plant hormones.

Further information can be found at doi.org/10.1111/mpp.70251

RETURN TO INDEX

Massey Ferguson highlights new tractors at the 24th Expoagro Afubra

Solutions for small and medium-sized producers combine versatility, robustness, and technology.

24.03.2026 | 15:48 (UTC -3)

Flavia Amarante

Massey Ferguson is participating in the 24th Expoagro Afubra, held from March

24th to 27th, 2026, in Rio Pardo (RS), presenting solutions geared towards the needs of small and medium-sized rural producers. Highlights include the MF 4300 series tractors and the new MF 5M line.

Developed to meet the demand for versatility in day-to-day operations, the MF 4300 series is suitable for activities such as transport, soil preparation, and mowing. The models are equipped with a three-cylinder AGCO Power engine, designed to offer simplified mechanics and fuel savings of up to 10%.

With power ranging from 57 to 80 horsepower and a lifting capacity of up to 2.500 kg, this line aims to facilitate routine maintenance in the field. The tractors in this series are also eligible for the Mais

Alimentos Program, a federal government credit line designed to finance family farming.

For producers who demand greater operational capacity, the new MF 5M series includes models ranging from 105 hp to 145 hp. Designed for grain, sugarcane, livestock, and rice cultivation, the MF 5M offers simpler versions focused on robustness and cost-effectiveness, or complete configurations with advanced technology.

One of the main highlights is the MF 5M.105 model, which now features a four-cylinder AGCO Power engine, offering greater performance and efficiency compared to the previous three-cylinder model. The series retains the 12x12

transmission, recognized as one of the best ranges in its category, with options for mechanical reverser or Power Shuttle for those seeking greater operational comfort, and in platform or cab models.

The design follows the global standard, the same applied to the MF 8S and MF 9S series, with a more modern hood, 100% LED lighting, a gray cab, and ergonomic controls. In terms of connectivity, the MF 5M incorporates MF Guide, the same autopilot system used in the brand's high-power tractors, as well as MF Connect for telemetry and remote monitoring. The model also forms an ideal combination with the MF 500 planter.

To facilitate the acquisition of agricultural machinery, the brand offers special financing conditions through AGCO

Finance, Massey Ferguson's factory bank. In addition, the Massey Ferguson National Consortium enables the planned purchase of machinery, interest-free and with terms of up to 120 months.

RETURN TO INDEX

Embrapa launches platform with data on the wheat supply chain in Brazil

The tool gathers information by microregion and points to ways to expand national production.

24.03.2026 | 14:32 (UTC -3)

Vivian Chies, Cultivar Magazine edition

Embrapa has launched the digital platform Wheat in Brazil, which brings together data

and maps on the entire wheat production chain -- from production and import to industrial processing and exports.

The tool presents detailed information by microregion, covering both traditional areas in the South and expanding regions in the Midwest, Southeast, and Northeast. Among the highlights is a groundbreaking analysis of the proportion of irrigated and rainfed areas in wheat cultivation in Central Brazil.

Developed to support public policies and private investments, the platform emerges in a context where Brazil still depends on imports -- which totaled 7 million tons in 2024 -- but is also expanding its presence in the foreign market. Between 2020 and 2025, exports grew 11,5 times.

In addition to production data, the tool gathers information on consumption, prices, employment, infrastructure, and international trade, consolidating information previously scattered across different sources. This initiative is part of a broader project focused on expanding wheat production in tropical areas and achieving national self-sufficiency.

The platform also presents scenarios for increased production, including estimates of productivity gains in already cultivated areas and the potential for expansion of up to 5 million hectares, according to the Agricultural Zoning for Climatic Risk (Zarc).

According to Embrapa, integrating this information makes it possible to identify bottlenecks and guide strategies to strengthen the wheat supply chain in the country.

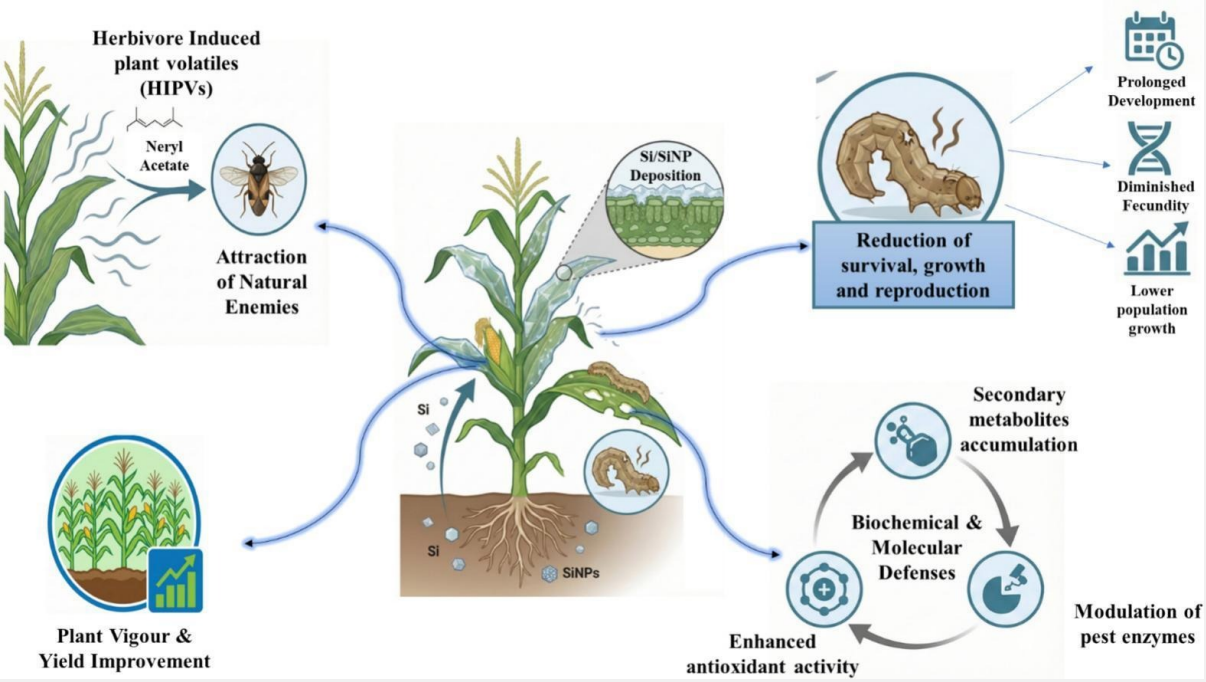
RETURN TO INDEX

Silicon and nanosilicon are making progress in controlling the fall armyworm

Review points to population reduction and productivity gains with use in integrated management programs.

24.03.2026 | 13:38 (UTC -3)

Schubert Peter, Cultivar Magazine



The use of silicon and nanosilicon reduces the survival, growth, and reproduction of

Spodoptera frugiperda. The strategy enhances the plant's defenses and improves agronomic results. This conclusion appears in a recent scientific review.

Silicon acts as a beneficial element. Corn accumulates high levels of it. Absorption promotes physical barriers and biochemical responses. Silica deposition increases leaf hardness. Plant tissue becomes abrasive. Larval feeding becomes less efficient. Consumption decreases.

In addition to its physical effect, silicon activates metabolic pathways. The plant increases phenolic compounds and antioxidant enzymes. The insect's metabolism is affected. Digestive enzymes

reduce their activity. Growth slows down. The life cycle lengthens. Fertility decreases.

Population parameters

Studies indicate a decline in population parameters. The intrinsic growth rate decreases. The net reproduction rate declines. Larval survival is reduced. The larval and pupal periods increase. This combination limits population expansion.

Nanosilicon amplifies these effects. The particles have a larger surface area. Absorption by the plant occurs more efficiently. Reactivity increases. The defensive response becomes more intense. The insect faces high metabolic

stress. Nanoparticles also act directly. The material adheres to the caterpillar's cuticle. The lipid layer ruptures. Water loss accelerates. The insect becomes dehydrated. At high doses, structural damage and mortality occur.

Genetic alterations

Transcriptomic evidence shows gene alterations in the insect. Metabolic and hormonal pathways are deregulated. Genes linked to detoxification show suppression in some systems. The result is reduced adaptive capacity.

Silicon also interferes with tritrophic interactions. The treated plant emits specific volatile compounds. These signals

attract natural enemies. The recruitment of parasitoids and predators increases. Biological control becomes more efficient.

Application method

The application method influences the outcome. Foliar spraying has a rapid effect. Direct deposition on leaves increases initial mortality. Soil application promotes a systemic response. Root absorption sustains protection throughout the cycle. Combining the two strategies tends to increase control.

Various sources of silicon show effectiveness. Potassium and calcium silicates stand out in performance. Silicon dioxide also presents good results.

Biological sources, such as rice husk biochar, contribute to more sustainable management.

More information at doi.org/10.1016/j.pestbp.2026.107088

RETURN TO INDEX

Biosensor detects fungi before visible symptoms appear

Technology uses split inteins and fluorescence to monitor molecular signals in plants.

24.03.2026 | 07:11 (UTC -3)

Schubert Peter, Cultivar Magazine

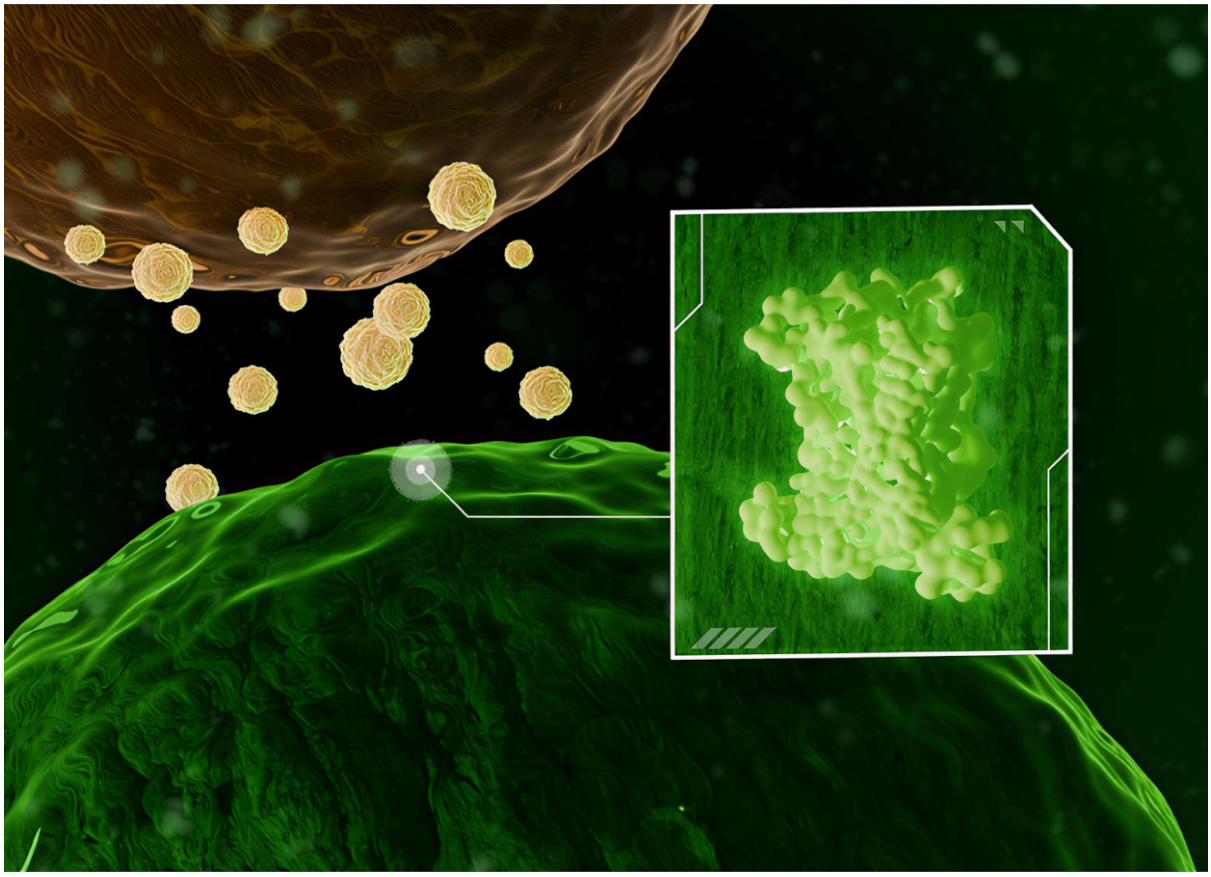


Image: Philip Gray - USDE

A biosensor developed at Oak Ridge National Laboratory makes it possible to detect the presence of fungi in plants at a molecular level before visible symptoms appear. The technology identifies chitin-derived signals and generates fluorescence in minutes, paving the way for faster and more precise disease management.

The system works through split proteins called inteins. Protein fragments remain inactive until they bind to a specific ligand. After molecular recognition, the fragments join together and form a functional protein. In this case, the fluorescent protein GFP is reconstructed, generating a visible signal in plant cells.

Main target

Chitin acts as the primary target. This polymer makes up the cell wall of fungi and represents a molecular pattern associated with pathogens. The perception of this compound initiates immune responses in plants. The biosensor exploits this natural mechanism by coupling fragments of GFP and inteins to receptors involved in chitin detection.

The researchers used LYK5 and CERK1 proteins, chitin receptors found in plants. Binding to chitin promotes dimerization of these proteins in the cell membrane. This event brings the divided proteins closer together and activates the protein splicing process. As a result, GFP reconstruction

occurs and fluorescence is emitted at the cell periphery.

Essays on sheets of *Nicotiana benthamiana* demonstrated a rapid response. The fluorescent signal appeared within 10 minutes after chitin application. Detection occurred with concentrations starting at 1 micrometer. Controls without chitin did not show fluorescence. The results indicate high specificity and a low occurrence of false signals.

Tests with mutations

Validation included tests with mutations in the inteins. Point alterations prevented splicing and eliminated fluorescence. This result confirms a direct dependence of the

protein reassembly mechanism for signal generation.

The biosensor also detects early plant-microorganism interaction events. The technology allows monitoring of both pathogens and beneficial interactions. This capability expands applications in plant breeding and biotechnology.

Analysis of road signage

According to the developers, the tool contributes to functional genomics studies. The system enables the analysis of signaling pathways and protein-protein interactions in living cells. The approach also facilitates ligand screening and

evaluation of immune responses in near real-time.

Practical applications include early monitoring of diseases such as canker caused by Septoria in poplar trees. Early detection allows for intervention before visible damage occurs, potentially reducing production losses.

Modular character

The concept is modular. Researchers can adapt the biosensor for different signaling molecules. This strategy allows them to generate not only fluorescence, but also other cellular responses, such as the activation of transcription factors or gene-editing enzymes.

Further information at
doi.org/10.1111/pbi.70523

RETURN TO INDEX

Soil limits water extraction and redefines drought tolerance

Study shows central role of soil physical properties in plant water deficit.

24.03.2026 | 06:56 (UTC -3)

Cultivar Magazine, based on information from Ori Schipper

The ability of plants to extract water depends on the physical properties of the soil. This factor limits water performance more than the characteristics of the plant itself. This result helps explain the failure of breeding programs aimed at drought tolerance.

Researchers led by Andrea Carminati of ETH Zurich and Tim Brodribb of the University of Tasmania analyzed water transport in plants under negative stress. Their study indicates dominant soil control over water flow.

Water in the soil occupies pores of different sizes. These pores generate capillary forces. These forces retain water and increase with drying. Models show a rapid increase in resistance when the

pores lose water. At this stage, root suction does not meet the plant's demand.

Insufficient levels

Soil water potential values ??below -1,5 MPa (megapascals) reduce extraction to insufficient levels. The plant maintains transpiration and growth under restriction. The system enters a state of functional water deficit.

The study integrated soil physics and plant physiology. The team evaluated xylem tension and stomatal response. Stomata act as valves. Opening allows CO2 to enter and vapor to exit. Closing reduces water loss. The process limits photosynthesis and growth.

A meta-analysis of 19 species identified a narrow range of leaf tension. Transpiration reduction begins near 1,3 ± 0,6 MPa. This value coincides with predictions from an optimal soil water extraction model, around 1,4 ± 0,6 MPa. Convergence indicates a common physical constraint among species.

Pore drainage

Larger pore drainage occurs easily. Reducing the size of the reservoirs increases capillary and viscous forces. The energy required for extraction increases. The flow becomes inefficient.

The xylem withstands high tension. Thick cell walls prevent collapse. Solutes in the

cells generate osmotic pressure and maintain turgor. Even with such adaptations, the operational limit is reached in the soil.

Breeding programs sought to increase cellular solutes. The goal involved enhancing water absorption. According to scientists, high investments did not yield consistent gains in the field. The new model attributes the failure to the physical control of the soil over the flow.

Further information can be found at doi.org/10.1126/science.adx8114

RETURN TO INDEX

Sergio Cavalheiro assumes new position at CNH Latam

With a career spanning over 23 years at the company, the executive was promoted to Director of Parts Operations and Sales Administration.

23.03.2026 | 17:13 (UTC -3)

Cultivar Magazine

The administrator **Sergio Cavalheiro** (pictured) has assumed the position of

Director of Parts Operations and Sales Administration for Latin America at CNH. With over two decades of experience at the company, he has expertise in operations, aftermarket parts distribution, and team leadership.

Prior to his new role, Cavalheiro served for over four years as Director of Parts Operations for Latin America. He holds a bachelor's degree in Business Administration from the University of Sorocaba and an MBA in Logistics, Materials, and Supply Chain Management from the Getulio Vargas Foundation.

RETURN TO INDEX

John Deere presents its 2026 product launches in Brazil

The portfolio includes tractors, harvesters, and advancements in planting and spraying.

23.03.2026 | 15:41 (UTC -3)

Cultivar Magazine

John Deere presented new products and innovations at Casa John Deere 2026. The

company focuses on automation, connectivity, and operational efficiency. The portfolio covers planting, spraying, and harvesting.

For large-scale operations, the package combines the new 8R tractor series with the 3100FT and DB transportable planters, as well as the 400R sprayer series. For smaller properties, the line includes the 5M tractor family, the 3041E tractor, and the 1025E sprayers. The package also incorporates the S4, which will become part of the line of intelligent combine harvesters launched in 2025.

8R Series Tractors

The company highlights high-horsepower tractors from the 8R series, launched in

the United States in February (read more hereThe 440, 490, and 540 models deliver up to 634 hp, according to the company.

John Deere highlights the onboard technology that automatically delivers extra power during heavy-duty operations. The goal is to maintain a constant work pace under high load. The brand also points to a 13,6-liter engine focused on efficiency and an electric transmission, the EVT, capable of supplying power directly to the planter and eliminating the need for external generators.

This design brings the tractor closer to a mobile power center. It doesn't just pull the implement; it powers the system. The proposal responds to an agriculture where every hectare demands mechanical precision and electronic stability.

According to the company, the cab has been reconfigured for comfort and features precision systems to ensure connectivity and efficiency during long workdays. With this, John Deere positions the 8R series as a key component combining power, automation, and data integration in planting.

Clique aqui e veja no Instagram
Click here and watch on Instagram

Other tractors

John Deere also showcased the 5M tractor line. The family includes four models, with 85, 95, 105, and 120 hp.

The new series uses a John Deere PowerTech four-cylinder electronic engine. According to the company, the engine delivers high performance, reliability, high torque, and quick responses for different agricultural operations and crops.

The 5M tractors feature two types of transmission, both developed specifically

for this line. John Deere claims that the system increases efficiency and productivity in the field. The high lifting capacity also allows the use of heavier implements, which expands the machine's versatility.

The 3041E tractor is designed for producers seeking low operating costs and high performance, according to John Deere. Equipped with a turbo intercooler engine, the model combines a good power-to-torque ratio with balanced fuel consumption.

Its compact dimensions and reduced turning radius allow for agile operation in tight areas, reducing the need for maneuvering. Furthermore, compatibility with front loaders expands its applications

in daily farm operations, making the 3041E a practical and complete solution for multiple operations, from soil preparation and spraying to general farm activities.

Seeding

The DB transportable planter reduces preparation time for transport by more than 90%. The system reaches a width of 3,2 m in about two hours. The solution allows for rapid movement between areas. According to the company, the solution cuts preparation time for transport between farms by more than 90%.

The 1200 FT line expands options for small and medium-sized farms. The machines operate with between 12 and 17

rows. The design ensures precision on uneven terrain and facilitates transport.

Spraying

In the spraying industry, the 430R, 440R, and 400R ND models, manufactured in Catalão, have undergone structural renovation. The 400R series features engines up to 300 hp and booms up to 40 m. The machines operate at speeds up to 40 km/h. The system reduces refueling time by 10%. Operational adjustments are reduced by up to 50%.

The 400R sprayer also incorporates automatic track width adjustment with memory, the CommandDrive, which automates and optimizes driving. And the JDLink Boost, a satellite connectivity

solution for areas with low coverage. According to John Deere, CommandDrive can generate up to 7% fuel savings.

The See & Spray system applies pesticides only to weeds. The technology generates an average savings of 50%. The potential reaches 93%. The system increases the success rate by up to 18%.

In turn, the 1025E sprayer is an option for properties that require extreme stability, greater ramp capacity on sloping terrain, and ease of maneuverability in delicate crops. John Deere states that the model confirms that properties of different sizes can access high performance and input savings.

Harvest

Manufactured in Horizontina, the CR corn platform comes in versions with 12 to 27 rows and integrates with recent John Deere harvesters, such as the S5, S7, and X9. According to John Deere, the platform automates the opening of the separating

plates in real time. The system eliminates the need for constant manual adjustments and aims to ensure that the ears of corn are separated precisely and arrive intact at the harvester, adapting to variations in the field. The machine also automates the speed of the platform's rear axle, synchronizing its operation with the harvester's movement to maintain a constant flow of material.

In turn, the S4 combine harvester is another new product from John Deere. It expands the line of intelligent machines. The equipment caters to various crops. The machine improves grain quality and reduces losses (see more by clicking here).

Clique aqui e veja no Instagram
Click here and watch on Instagram

RETURN TO INDEX

Giant amaranth outbreak identified in Santa Catarina

A high-risk pest was recorded on a rural property in Campo Erê.

23.03.2026 | 14:41 (UTC -3)

Alessandra Carvalho, edition of Cultivar Magazine

The Integrated Agricultural Development Company of Santa Catarina (Cidasc) confirmed the detection of an outbreak of *Amaranthus palmeri*, known as giant

amaranth, was found on a rural property in the municipality of Campo Erê, in western Santa Catarina. According to a statement, measures to control and contain the plant, considered one of the most aggressive weeds in agriculture, are already being implemented in an integrated manner.

According to Alexandre Mees, manager of the State Department of Plant Health Defense (Dedev) at Cidasc, the pest requires an immediate response. “This is a species with a high potential for dispersal, a large reproductive capacity, and a history of herbicide resistance. Therefore, early detection and the rapid adoption of phytosanitary measures are fundamental to preventing its spread,” he states.

Laboratory confirmation was performed by a laboratory accredited by the Ministry of Agriculture (MAPA), based on morphological and molecular analyses, visual inspection, consultation of the literature and/or reference material, visual examination, observation of the morphology under microscopy, and Polymerase Chain Reaction (PCR).

“Santa Catarina has a structured and agile agricultural defense system. Our work is swift and strategic to protect agricultural production, applying the protocol for controlling and eradicating the quarantine pest,” explains the president of Cidasc, Celles Regina de Matos.

Immediate measures to contain the plague

A. palmeri – male plant – detail of a spot on the leaves; photo: Diogo Deoti

After confirmation, Cidasc began implementing the phytosanitary measures stipulated in federal legislation, which establishes the National Program for Prevention and Control of *Amaranthus palmeri*Among the actions taken are the

closure of the property, the eradication of the identified plants, and a boundary survey of neighboring properties.

According to Alexandre Mees, containment efforts are already underway. "Teams are working around the affected area to pinpoint the source and guide producers. This monitoring is essential to prevent further outbreaks," he says.

The Secretary of State for Agriculture (Sape), Admir Edi Dalla Cort, emphasizes the importance of integrated action. “Joint action between the government, defense agencies, and producers is crucial. We are mobilized to contain this outbreak and preserve the competitiveness of agriculture in Santa Catarina,” he concludes.

Invasive plant threatens crops

Giant amaranth is notable for its rapid growth – it can reach up to three centimeters per day – and its high capacity for infestation through various routes. Each plant produces, on average, 200 to 500 seeds, but can exceed 1 million.

The seeds remain viable in the soil for years, making control difficult after the pest is introduced into an area. Due to these characteristics, it is classified in the country as a present quarantine pest. It was initially identified in 2015 in the state of Mato Grosso, followed by Mato Grosso do Sul in 2022, São Paulo in February 2026, and Santa Catarina in March 2026.

Furthermore, it exhibits resistance to widely used agricultural herbicides, such as glyphosate and acetolactate synthase (ALS) inhibitors, which make control difficult, especially in soybean and corn crops. In the summer, the plant finds favorable conditions to establish itself rapidly, competing for water, light, and nutrients, causing significant economic losses.

Field identification requires attention

Female flowers and seeds – Amaranthus ssp; (SC-2024)

In the field, it can be confused with other species already present in the state. Among the main characteristics of the giant amaranth are:

- Oval leaves, with a petiole longer than the leaf;
- possibility of a white spot in the shape of an inverted "V";

- female inflorescences with rigid, thorn-like structures;
- more upright plant form and less branched inflorescences; and
- Plants are either male or female – there are no flowers of both sexes on the same plant.
- Prevention is the main strategy.

The main way the pest enters new areas is through the transit of contaminated agricultural machinery. Recommendations include rigorous cleaning of machinery and implements, ensuring no plant debris or soil adheres; the use of certified seeds, both for planting and for soil cover, is also fundamental; avoiding inputs of unknown origin, as they may contain weed seeds;

and constant monitoring of crops.

Suspicions should be reported to Cidasc.

In case of suspicion, producers and technicians should notify Cidasc by email: didev@cidasc.sc.gov.br or contact the company's local office. Contact information is available on the official website (cidasc.sc.gov.br/estrutura-organizacional).

RETURN TO INDEX

Compounds from Streptomyces control diamondback moths

Molecules isolated from marine bacteria caused high mortality in Plutella xylostella.

23.03.2026 | 07:47 (UTC -3)

Schubert Peter, Cultivar Magazine

Photo: Whitney Cranshaw, Colorado State University

Researchers have isolated three new compounds and one known compound from *Streptomyces huasconensis* NA10 with insecticidal action against larvae of *Plutella xylostella*, the main pest of cruciferous plants worldwide. Two of them, azaspiromycin and pentalenolactone O, achieved performance close to that of abamectin in bioassays.

The study started with crude extracts of the marine bacterium, which already showed significant activity against the pest. The team used genomic mining to predict the production of previously undescribed insecticidal metabolites. Activity-guided screening led to the isolation of azaspiromycin, pentalenolactone J, neopentalenolactone G, and pentalenolactone O.

Azaspiromycin yielded the newest structural finding. The molecule comprises a bicyclic spiro-tetrahydropyran-gamma-lactam framework, previously unrecorded among natural products. The structures were identified through spectroscopic analysis and quantum chemistry calculations. The researchers also proposed plausible biosynthetic pathways for the four compounds.

In the rehearsals with *Plutella xylostella* The compounds exhibited moderate to strong insecticidal effects, with LD50 values ??ranging from 5,1 to 25,5 micrometers. Azaspiromycin registered an LD50 of 8,3 micrometers. Pentalenelactone O reached 5,1 micrometers. The positive standard, abamectin, registered 4,2 micrometers.

The study also evaluated acute toxicity in a non-target organism. The compounds spared the silkworm, a sign of biological safety in this model.

According to scientists, this result opens up possibilities for new biopesticides in pest management. *Plutella xylostella*The study also provides the first report of the insecticidal action of azaspiromycin and pentalenelactone derivatives against this pest.

More information at doi.org/10.1002/ps.70751

RETURN TO INDEX

Nitrogen in late-planted soybeans does not increase productivity in the US

Study indicates lack of agronomic response in system after corn.

23.03.2026 | 07:35 (UTC -3)

Cultivar Magazine

Photo: Syngenta

Applying nitrogen at planting does not increase productivity or growth of soybeans sown too late, after corn harvest. This result comes from trials conducted between 2022 and 2024 in South Carolina, in the United States. Data indicate no response in plant height, height of the first pod, and grain yield.

The study evaluated five doses of nitrogen via ammonium nitrate: 0, 15, 30, 60, and 90 lb/ac. Application occurred between V1 and V2. Experiments took place at the Edisto Research and Education Center, in sandy soil, under irrigation and standard regional management.

average productivity

Average productivity ranged from 19,4 to 21,0 bu/ac. Differences did not reach statistical significance. The 15 lb/ac dose showed the highest average, at 21,0 bu/ac. An approximate gain of 1 bu/ac compared to the control. Even so, economic analysis indicates inconsistent returns. Estimates suggest a partial gain of US$ 2,20/ac with soybean prices at US$ 10/bu and nitrogen at US$ 0,52/lb.

Plant height also did not respond to the fertilizer. Values ??ranged from 17,5 to 18,9 inches. Height of the first pod varied from 4,9 to 5,4 inches. No statistical difference was observed between doses. Results reinforce the absence of nitrogen effect even under stress conditions due to late sowing.

System evaluated

The evaluated system involves corn-soybean crop rotation in the same agricultural year in the United States. Producers harvest corn with high moisture content and plant soybeans outside the ideal window. Environmental conditions limit growth. Reduced photoperiod, short cycle, and lower temperatures affect development. Plants are shorter. Harvesting becomes less efficient.

Producers are testing strategies to increase plant height. These include cultivar selection, increased plant population, and adjusted spacing. The use of nitrogen at planting has also become common practice. Recommendations in

neighboring states suggest 30 to 50 lb/ac to increase plant height. Data from the study do not confirm this effect.

Soybeans meet nitrogen demands through biological fixation and soil absorption. A response to fertilizer is usually limited in some environments. Even in these cases, economic returns tend to be low. Current results follow this trend.

Conclusion indicates no agronomic gain from nitrogen in ultra-late soybean planting after corn. The practice does not generate consistent returns. Management decisions should prioritize cost reduction. Research suggests focusing on other agronomic factors to increase growth and harvest efficiency.

Further information can be found at doi.org/10.1002/cft2.70103

RETURN TO INDEX

*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

CONTACT
editor@grupocultivar.com
comercial@grupocultivar.com