

20.Sep.2025

N ° 48

Cultivar[®] *Semanal*

**Lost due
to heat**

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Climate stress causes flower abortion in crops

Heat and drought interrupt the reproductive cycle of crops such as corn, soybeans and wheat, reducing the number of grains and seeds

19.09.2025 | 05:37 (UTC -3)

Cultivar Magazine



Climate instability threatens the reproduction of cultivated plants. Heat and

drought intensify reproductive abortion—loss of flowers, ovules, embryos, and seeds—and reduce grain yield. This phenomenon, regulated by genetic, hormonal, and environmental factors, affects essential crops such as cereals, legumes, and oilseeds.

In corn, up to 88% of seeds can be aborted by heat stress. In wheat, more than 70% of potential grains per spikelet fail to form. In 26% of ears evaluated in the Corn Belt region (USA), the apical tip aborted under heat and drought, with losses of up to 91%.

The data comes from a study by scientists at Texas Tech University, Oklahoma State University and North Carolina State University.

Stages vulnerable to abortion

Abortion can occur at various stages: from the development of floral primordia to embryo formation. Before fertilization, heat stress alters hormones, sugar metabolism, and assimilation distribution. This imbalance triggers the programmed death of female cells, such as synergids and eggs, leading to reproductive failure.

During fertilization, stress disrupts the interaction between pollen and pistil. The accumulation of reactive oxygen species (ROS) impairs pollen tube integrity and orientation, in addition to inducing premature cell death. After fertilization, embryo development may fail due to

hormonal dysregulation and energy restriction.



Hormones out of balance

Floral survival depends on efficient carbohydrate distribution. In wheat, stalk

elongation improves light capture and favors grain formation. In corn, drought reduces assimilates before anthesis and during grain filling, explaining 77% of yield variation. Tolerant genotypes maintain invertase activity, transport more sugars, and better discharge sucrose.

Hormones such as auxin, cytokinin (CK), abscisic acid (ABA), and jasmonate (JA) are involved in regulation. In wheat, basal spikelets abort more often because they contain less sucrose and higher levels of ABA and JA. Central spikelets, on the other hand, contain more CK and sugar, and have greater reproductive success.

In legumes, heat reduces the strength of the reproductive drain. In beans and soybeans, water deficit and heat stress

cause flower abortion by compromising ovule development.

Arrested development

Egg miscarriage also results from genetic defects. In rice and soybeans, mutations in genes that regulate meiosis and embryo sac formation cause a high rate of miscarriage. Mitochondrial defects, RNA imbalances, or defects in ribosomal biogenesis affect the maturation of the female gametophyte and prevent embryo formation.

Heat distorts the hormonal gradients essential for ovule growth and induces ethylene production, which worsens abortion. In peas, heat stress increases

the number of aborted ovules by up to 16%, mainly in the upper nodes of the plant.



Barriers to fertilization

Fertilization success depends on the precise interaction between pollen and pistil. Heat affects pollen viability, its

adhesion to the stigma, and pollen tube elongation. In soybeans, temperatures between 35°C and 38°C reduce pollen germination, hinder anther dehiscence, and reduce stigma receptivity.

Drought, in turn, delays the synchronization between stigma emission and pollen release, as occurs in corn.

Competition between ovaries for resources and the accumulation of ABA reduce floral receptivity. An external supply of cytokinins can partially reverse this effect.

Under combined heat and drought stress, damage intensifies. Carbohydrate shortages affect both the pollen tube and the ovary. The energy deficit, compounded by mitochondrial collapse and cytoskeletal disruption, impairs male gamete release

and increases abortion rates.

After fertilization, new risks

Even after fertilization, the embryo faces risks. Mitochondrial function is essential for cell division and differentiation.

Environmental stresses induce ROS accumulation and activate cell death pathways. In corn, mutations affecting mitochondrial ribosomal proteins result in early embryonic abortion.

Auxin guides the embryo's apical-basal axis. Changes in its production or transport affect tissue organization and disrupt development. Elevated levels of ABA and ethylene under stress reinforce cellular

suppression pathways and increase the risk of miscarriage.

Transcriptional reprogramming also contributes. Growth genes are repressed, while stress response genes are activated. This metabolic redirection compromises embryogenesis.

Blocked sugars

The transport of sugars from the mother plant to the seed is blocked under stress. Even when sucrose is available, discharge into the reproductive tissues fails. Inhibition of invertases and SWEET transporters reduces carbon flow and causes abortion in up to 80% of soybean embryos.

In corn, drought reduces starch deposition by 42%. Heat decreases the activity of starch-synthesizing enzymes. Transport is further hampered by callose deposition, which narrows the vascular bundles.

Low sugar intake alters hormonal balance and increases the production of ethylene, one of the factors that induce miscarriage. Even so, ethylene alone does not cause miscarriage under normal conditions. The problem stems from the interaction between lack of energy, hormones, and stress signaling.

Further information at
doi.org/10.1016/j.tplants.2025.08.015

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Corteva evaluates separation of seed and pesticide businesses

The company may soon announce the separation of its operations, the Wall Street Journal reported.

15.09.2025 | 08:34 (UTC -3)

Cultivar Magazine



Corteva is considering separating its seed and crop protection businesses, according to a report in the Wall Street Journal. The

move, still under review, could be announced soon. The company, valued at approximately US\$50 billion, is the result of the 2017 merger between Dow and DuPont, followed by a subsequent spinoff in 2019.

In the North American market, Corteva and Bayer supply approximately 70% of corn and soybean seeds, according to official data. Corteva's Pioneer brand is one of the best known among American farmers.

The operation would aim to protect the seed unit from possible legal liabilities related to pesticides, the WSJ reported.

In 2024, Corteva reported \$17 billion in sales. The seed business generated \$9,6 billion, while pesticides accounted for \$7,4 billion. Since its IPO, the shares have

appreciated 150%, 25% this year alone.

If confirmed, the separation could trigger a new wave of mergers and acquisitions in the agricultural sector, as occurred after the acquisition of Monsanto by Bayer and Syngenta by ChemChina in 2017.

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Agricultural Market - 19.Sep.2025

Soybean complex shipments exceed 109 million tons; new crop sales are delayed

19.09.2025 | 10:48 (UTC -3)

Vlamir Brandalizzi - @brandalizzeconsulting



The soybean harvest in the United States reached 10% of the area, above the historical average (8%) but below that

recorded in 2024 (11%). Approximately 50% of the crops are already maturing. The USDA estimates a harvest of 117,1 million tons. Initial yields are within expectations, with no major surprises. However, analysts view the figure as possibly optimistic, since in 2024, with better-quality crops, the US harvested 118,8 million tons.

In Brazil, soybean shipments between January and September exceeded 90 million tons. In 2024, during the same period, they reached 87 million tons. The country has already exported more than 3 million tons in September alone, with the potential to repeat the 6,1 million tons shipped in the same month last year. Soybean meal also maintains a strong pace, with over 18 million tons shipped, a

historic record. The soybean complex totals over 109 million tons exported, compared to 35 million in 2024.

Brazilian soybean sales in 2025 total 124,7 million tons, or 72,7% of the total harvest of 171,5 million. Although the absolute volume is a record, the percentage traded is below the historical average of 78%.

There are still 46,8 million tons available.

Only 19,5% of the new crop has been sold so far. The average would be 27%. In

better years, this figure exceeded 30%. In

Mato Grosso, the pace is even slower.

Producers are avoiding sales before the harvest, which could create supply pressure in March and April.

Corn situation

In the United States, the corn harvest has begun and is just over 10% complete. About 50% of the crops are maturing. Quality is considered good or excellent in 67% of areas, higher than the 63% for soybeans.

In Brazil, the second harvest has already reached 112 million tons, with 63 million already sold (56%). The historical average would be 60%. Furthermore, there are still 10 million tons of the first harvest in storage, awaiting better prices. In total, approximately 59 million tons of corn remain available on the market.

Sorghum situation

Sorghum had a record harvest in Brazil, with 6,1 million tons. In the US, the harvest reached 30%, within the historical average. American production is expected to be between 8,5 and 10,5 million tons, a consistent level in recent years. Cultivated areas, located primarily in Kansas and Texas, face high climate risks.

Cotton situation

Cotton in the US accounted for 12% of the area harvested, with Texas leading the way with 25%. The quality of the American crop is not considered good.

In China, production is expected to be better, which has slowed the pace of future purchases. The market remains sluggish,

with prices between 65 and 68 cents per pound in New York.

Brazil remains the world leader in exports, with many long-term contracts signed at higher levels than current ones.

Wheat situation

The Brazilian wheat market is facing low demand. Mills are buying only what they need. In Paraná, prices have fallen by R\$50 to R\$60 per ton. The harvest is progressing, with good quality and productivity, despite a significant drop in planted area. Production could exceed 7 million tons. In Rio Grande do Sul, prices range between R\$1.240 and R\$1.270 per ton.

In the international market, strong supply from Eastern Europe is putting pressure on prices, driven by fears of currency appreciation with the eventual end of the war in Ukraine.

Rice situation

Rice also remains slow. Producers in Rio Grande do Sul have begun planting, but expected rains are expected to slow down the process. The price of paddy rice ranges from R\$55 to R\$62. Premium rice reaches R\$65. The sector complains about the lack of access to resources from the Harvest Plan. Retailers are selling rice at discounted prices, between R\$12 and R\$18 per 5-kilogram package. Premium

brands reach R\$30. Producers, industry, and retailers report tight margins.

Bean situation

Carioca beans are experiencing upward pressure. With the end of the third harvest, prices have risen, reaching R\$270 in the São Paulo market. In Goiás and Minas Gerais, the noble variety reaches up to R\$260. Conab reduced its harvest estimate to 3,07 million tons. The reduced supply is favoring price reactions. Black beans are also starting to rise. Sales are already exceeding R\$250 for the noble variety. Demand remains firm at retail, with promotional prices below R\$4 per kilo. Consumption of beans, rice, and eggs is growing among staple foods.

By Vlamir Brandalizze -
@brandalizzeconsulting

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Herbicides affect forage crops in rotation with rice in Uruguay

Results indicate the need for planning when choosing forages in areas with a history of application

18.09.2025 | 14:50 (UTC -3)

Cultivar Magazine



Imidazolinone herbicide residues negatively impact the emergence and early development of forage crops in rice-growing areas in Uruguay. This was the main conclusion of a study conducted between 2021 and 2023 by researchers from the University of the Republic (Udelar) and the National Institute of Agricultural Research (INIA).

The study evaluated soil samples from three rice-growing regions with varying textures and classified the environments into three groups: control (no previous use), IMI-1 (application 17 months prior), and IMI-2 (application 5 months prior). Indicators such as emergence, plant height, and dry biomass of shoots and roots were analyzed.

Affected forages

The species studied included annual ryegrass (*Annual ryegrass*), perennial ryegrass (*L. perenne*), fescue (*Tall fescue*), white clover (*trifolium repens*), red clover (*T. pratense*) and birdsfoot trefoil (*lotus corniculatus*).

Fescue was the most sensitive grass, with an average 30% reduction in emergence in soils with a history of herbicide application. Ryegrass was less sensitive, with losses close to 20%.

Among legumes, red clover suffered the greatest losses. Emergence fell by up to 35% in IMI-2 soils. White clover and birdsfoot trefoil showed greater tolerance.

These results demonstrate that sensitivity to residual effects varies not only among functional groups but also among specific species.

Height and biomass

Plant height showed a more pronounced reduction in IMI-2 soils, indicating a stronger residual effect when the interval between application and sowing is shorter.

At 70 days after sowing, partial height recovery occurred in samples from the deepest layer (16–30 cm), suggesting lower herbicide concentrations at this depth.



lotus corniculatus - Photo: Wilson44691

Dry biomass confirmed the observed trends in emergence and height. In IMI-2, shoot mass was up to 60% lower. Annual ryegrass and fescue showed the greatest losses. Bird's-eye parsley and white clover maintained biomass similar to that of the control, reinforcing their greater tolerance.

Variation according to soil type

Multivariate analysis indicated that sandier soils with acidic pH—such as those found in Rio Branco and Tacuarembó—favored residue availability, increasing the risk of phytotoxicity. Clayey soils with higher organic matter content—such as in Treinta y Tres—promoted greater herbicide adsorption, prolonging their persistence but reducing their immediate availability to plants.

These interactions reveal that soil type can enhance or attenuate the effects of residues, and should be considered when choosing forage species.

Rotation planning

The research highlighted that species sensitivity to residues varies more between species than between functional groups (grasses versus legumes). Therefore, forage selection should consider individual tolerance.

the species *lotus corniculatus* e *trifolium repens* showed greater tolerance in bioassays. Even in soils recently applied to herbicides, they maintained good emergence, height, and biomass indices. These legumes also have the potential to accelerate residue degradation in the soil due to their nitrogen contribution and increased lignification.

Further information at
doi.org/10.3390/ijpb16030110

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Macfrut 2026 expands its scope and focuses on avocado and mango

Italy's largest fruit and vegetable fair will be held in April, with new pavilions

18.09.2025 | 13:59 (UTC -3)

Cultivar Magazine, based on information from Elena Vincenzi



Macfrut 2026 will be bigger, more international, and more innovative. The

43rd edition of the fruit and vegetable fair will take place from April 21st to 23rd at the Rimini Expo Centre, with two additional pavilions and a new exhibition design. The event will be organized into three macro-areas: pre-harvest, post-harvest, and healthy food.

Avocados and mangos will be the star products at this year's fair. Avocado consumption in Italy has increased 694% per capita over the last decade. In terms of value, the market grew 317% between 2019 and 2024. Mangos also saw growth: 24% in 2023 and 12,6% in 2024. Both products will have exclusive events at the fair: Avocado Day and Mango Day, featuring business rounds, tastings, and personalized meetings.

Caribbean Countries

The 2026 edition will have an international focus on Caribbean countries, with a focus on the Dominican Republic, Cuba, Venezuela, Colombia, Panama, Costa Rica, Nicaragua, Honduras, Guatemala, and Mexico. The region exports more than \$30 billion worth of tropical fruits and vegetables and generates a surplus of \$12,8 billion in this segment.

Sicily will be a partner

Sicily will be the fair's partner region. Known for its diverse microclimates and product quality, the region boasts several DOP and IGP certifications. Sicilian products will be presented to the

international public in an extensive program of initiatives throughout the three-day event.

Macfrut's new layout will feature distinct colors for each macro-area. The Pre-Harvest area will include displays on biosolutions, irrigation, nurseries, agrovoltaics, biotechnology, artificial intelligence, and robotics. The Post-Harvest area will bring together processing, packaging, logistics, and marketing technologies. Highlights include the Red Planet area, dedicated to tomatoes, and the Berry Area, focused on red fruits.

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LongPing High-Tech Announces New HR Director in Brazil

Mírian Polastrini takes on the role with a focus on talent development

18.09.2025 | 10:01 (UTC -3)

Cultivar Magazine, based on information from Andrea Natali



LongPing High-Tech has appointed Mírian Polastrini as its new human resources

director in Brazil. The executive previously led the department as a manager and now takes on the role with the mission of strengthening people management, supporting employee development, and consolidating the company's organizational culture.

Joining the company since 2020, Mírian has coordinated HR processes in Brazil, including payroll, compensation, benefits, recruitment, and talent development. She also led the team's cultural and organizational transformation and supported LongPing's global expansion into countries such as the United States, China, Argentina, Tanzania, and Ghana.

She holds a degree in psychology from the Federal University of São Carlos and specializations from FIA Business School

and King's College London. She has over two decades of experience at companies such as Bayer, Monsanto, Diageo, Itaú Unibanco, and Natura, where she led engagement, organizational change, and leadership development projects.

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Bayer launches Raxil Rise in Canada

Fungicide combines four active ingredients

18.09.2025 | 08:32 (UTC -3)

Cultivar Magazine



Bayer Crop Science Canada announced the launch of Raxil Rise, a seed treatment product for cereals that will be commercialized starting with the 2026

harvest. The product expands the Raxil line, which has been used in the country for over 25 years.

Raxil Rise combines four active ingredients: penflufen, [tebuconazole](#), [prothioconazole](#) and metalaxyl. According to the company, this combination protects against fungi such as *Fusarium* spp., *Pythium* spp. And *rhizoctonia* spp.. The microdispersion formulation ensures uniform seed coverage, stable flow at different temperatures and low dust levels during application.

The new feature includes the inclusion of [penflufen](#) (currently being registered in Brazil), indicated for increased efficiency. The product arrives on the market with an intense pink color, a characteristic that

facilitates the visualization of the coating on the seeds and contributes to safe handling.

Pre-commercial trials were conducted in more than 100 areas across Western Canada in the spring of 2025. According to independent consultant Emily Barteaux, who tested the product, the treatment showed good flowability, efficient coverage, and did not cause problems with seeding or treatment machines.

Raxil Rise is registered in Canada for use on wheat, barley, rye, triticale, and oats. The recommended dose is 325 mL per 100 kg of seed. Its use is permitted in both commercial treatment plants and on-farm operations, provided applicators follow appropriate equipment and protective measures.

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Nufarm and Moa advance herbicide with new mode of action

Partnership enters global testing phase after positive results on three continents

18.09.2025 | 07:31 (UTC -3)

Cultivar Magazine, based on information from Alexandra Ranson



Nufarm and Moa Technology announced the start of the next phase of development

of a herbicide with a new mode of action. According to the companies, the breakthrough comes more than a year ahead of the industry average.

The companies tested several compounds identified by Moa's Galaxy platform. The results showed consistent efficacy against some of the world's leading resistant weeds. Field trials spanning three seasons in North America, South America, Australia, and Europe confirmed the technology's potential.

The product under development is a broad-spectrum herbicide for pre-emergent use. Selection of the lead candidate and preparations for registration are underway. This step comes just 24 months after the initial classification of the new mode of

action area by Moa.

The partnership between Nufarm and Moa began in July 2024. The agreement granted Nufarm exclusive access to a compound from the chemical class discovered by Moa, in exchange for upfront payments, development milestones, and future royalties. Nufarm retains the option to commercialize other compounds from the same group.

The initial research cycle took twelve months. In the next phase, the companies plan to expand field trials in different regions, in addition to conducting crop safety studies, environmental testing, and assessing impacts on human health. The goal is to optimize the product for commercial use.

Nufarm CEO Greg Hunt emphasized that the partnership accelerates innovation and creates lasting value for farmers and investors. Moa CEO Virginia Corless stated that the progress reflects the combination of cutting-edge technology and Nufarm's strategic vision.

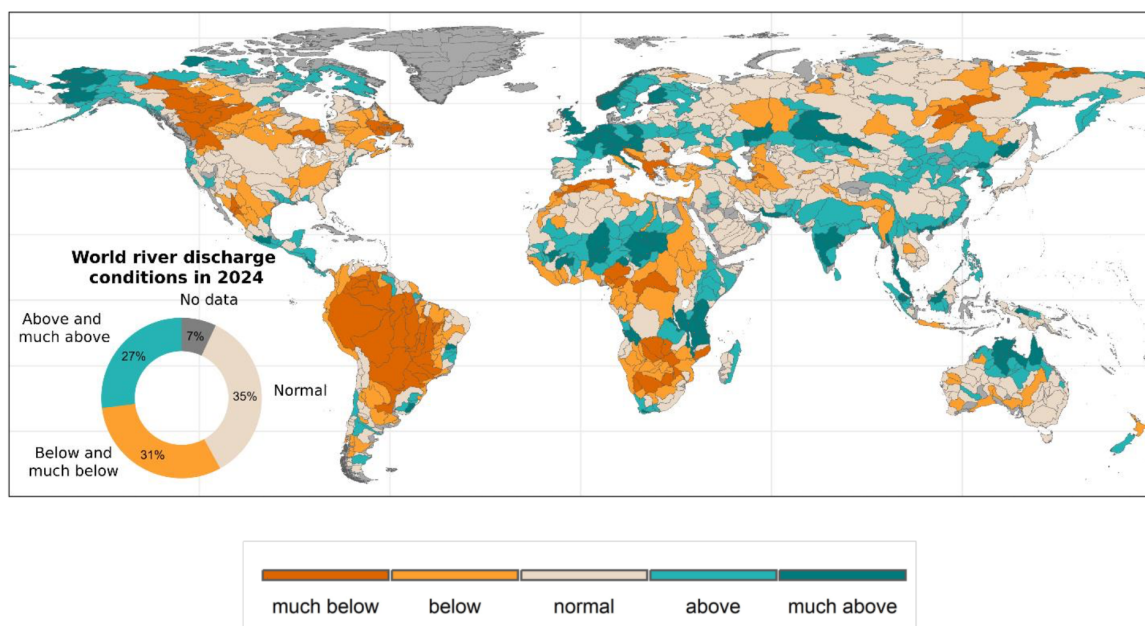
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WMO highlights growing imbalance in the global water cycle

Report shows 2024 saw record glacier loss and climate extremes across all continents

18.09.2025 | 07:04 (UTC -3)

Cultivar Magazine, based on information from Clare Nullis



The planet's water cycle is becoming more unstable. A report from the World Meteorological Organization (WMO) warns of cascading impacts caused by water

scarcity or excess. The document points out that only one-third of river basins experienced normal conditions in 2024.

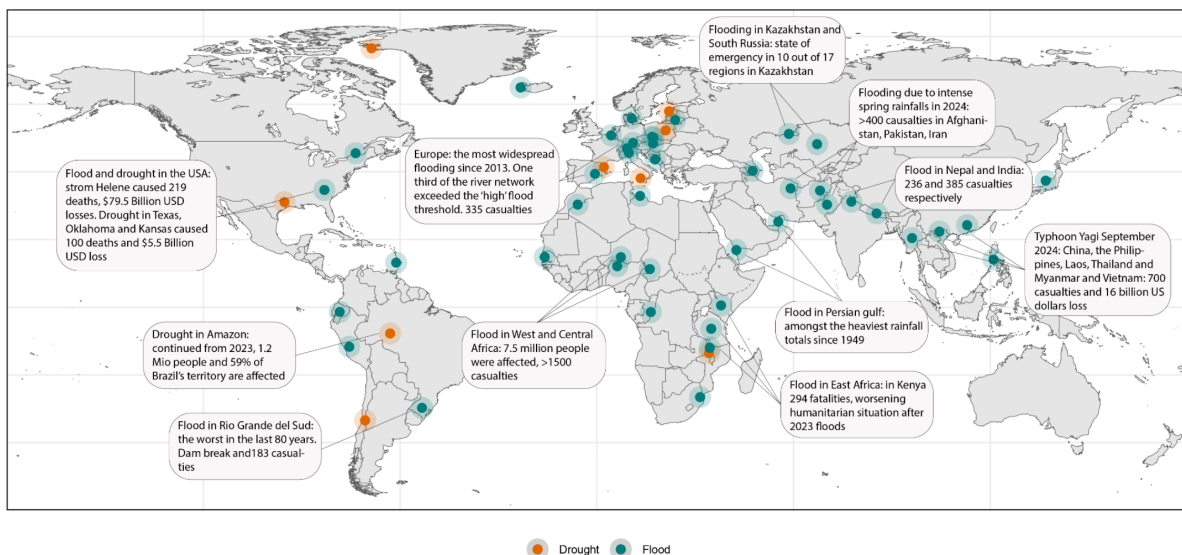
According to the WMO, last year saw the third consecutive period of widespread glacier loss across all regions. The melting released 450 gigatons of ice, a volume equivalent to 180 million Olympic-sized swimming pools, raising global sea levels by 1,2 millimeters. In the tropics, Colombia lost 5% of its glaciers in just one year.

The report indicates a strong imbalance in river flows.

In South America, the Amazon, São Francisco, Paraná, and Orinoco basins experienced well-below-normal flows. In southern Africa, the same occurred with the Zambezi, Limpopo, Okavango, and

Orange rivers.

In contrast, Central Europe and parts of Asia recorded floods with a sharp increase in flow in rivers such as the Danube, Ganges, Godavari and Indus.



Monitored wells

The WMO also highlights that, among 37 wells monitored in 47 countries, only 38% maintained normal groundwater levels.

The remainder showed deficits or excesses. Intensive use of aquifers increases the risk of future water resource collapse.

The year 2024 was the hottest on record, heavily influenced by the El Niño phenomenon. The event exacerbated droughts in northern South America, the Amazon, and southern Africa. Conversely, above-average rainfall hit central and western Africa, Pakistan, northern India, southern Iran, and northeastern China.

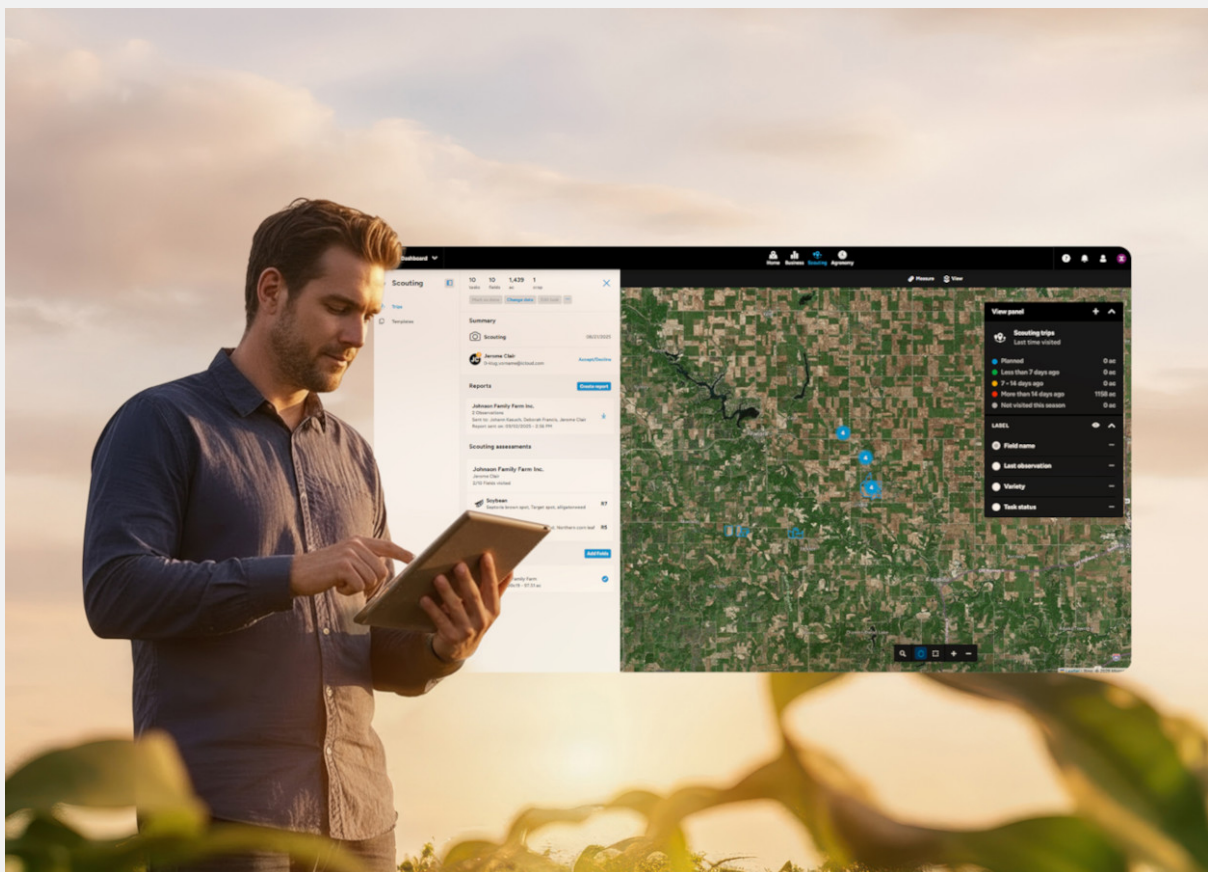
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New BASF solution supports management of multiple farms

Company launches Xarvio Field Manager for AgBusiness in Brazil and Argentina

18.09.2025 | 06:35 (UTC -3)

Cultivar Magazine, based on information from Nathan Quigley



BASF announced the launch of Xarvio Field Manager for AgBusiness in Brazil

and Argentina. The digital platform will be available in 2025. The system is designed to serve agricultural consultants and companies that manage multiple farms and complex operations.

The digital tool offers specific agronomic recommendations for each field, from sowing to harvest. The technology analyzes plant development and indicates pest and disease risks. Graphs, maps, and tables aid decision-making. The data is adapted to local crop conditions.

Main crops

The system works with the main crops of both countries, such as soybeans, corn, wheat, sugarcane, cotton, and canola.

BASF claims the platform promotes more accurate decisions, increases productivity, and reduces the use of inputs. The proposal also includes greater sustainability in agricultural practices.

The Scouting Trips feature allows you to prioritize technical visits based on risk assessments. Consultants can navigate to specific areas using GPS, record observations, add notes, and generate reports. Information can be shared with producers and managers. The feature can be used offline.

The platform can be accessed via computer, tablet, or mobile phone. It adapts to each company's needs and allows integration with existing structures. Users receive training and support from

the Xarvio Digital Farming Solutions and BASF teams.

Testing locations

The solution has already been tested in France and Germany. BASF plans to launch it commercially in these countries starting in 2026. The tool has been available in Canada and the United States since early 2025.

Konstantin Kretschnun, global leader of BASF Digital Farming, stated that the technology offers a competitive advantage. He said the system was created to address the complexity of modern agribusiness, with advanced data and intuitive features.

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Cerrado Expedition celebrates 15 years of integration in agribusiness

Agricultural Experimentation Group of Esalq/USP organizes the largest and oldest student expedition in Brazil

17.09.2025 | 17:04 (UTC -3)

GEA, Cultivar Magazine edition



In 2026, the Cerrado Expedition will reach its 15th edition, consolidating its position

as the largest and longest-running student expedition focused on the agricultural sector in Brazil. Led by the Agricultural Experimentation Group (GEA) at Esalq/USP, the initiative promotes technical immersion in the Brazilian Cerrado, bringing together academics, professionals, and companies for hands-on field experience.

The GEA was created in 1992 by Professor José Laércio Favarin, with the goal of offering students practical agricultural experience while still at university. With the motto "knowledge, dedication, and work," the group studies major crops on 24 hectares of experimental land at Esalq, applying theories learned in the classroom to practice.



Journey through the Cerrado

The Cerrado Expedition, organized by students and sponsored by private companies, stems from students' interest in learning about different production realities in Brazil. The itinerary includes visits to rural properties, cooperatives, research centers, and companies involved

in the production chain. The focus is to provide a comprehensive overview of the sector, covering cultivation technologies, mechanization, sustainable management, logistics, and grain marketing.

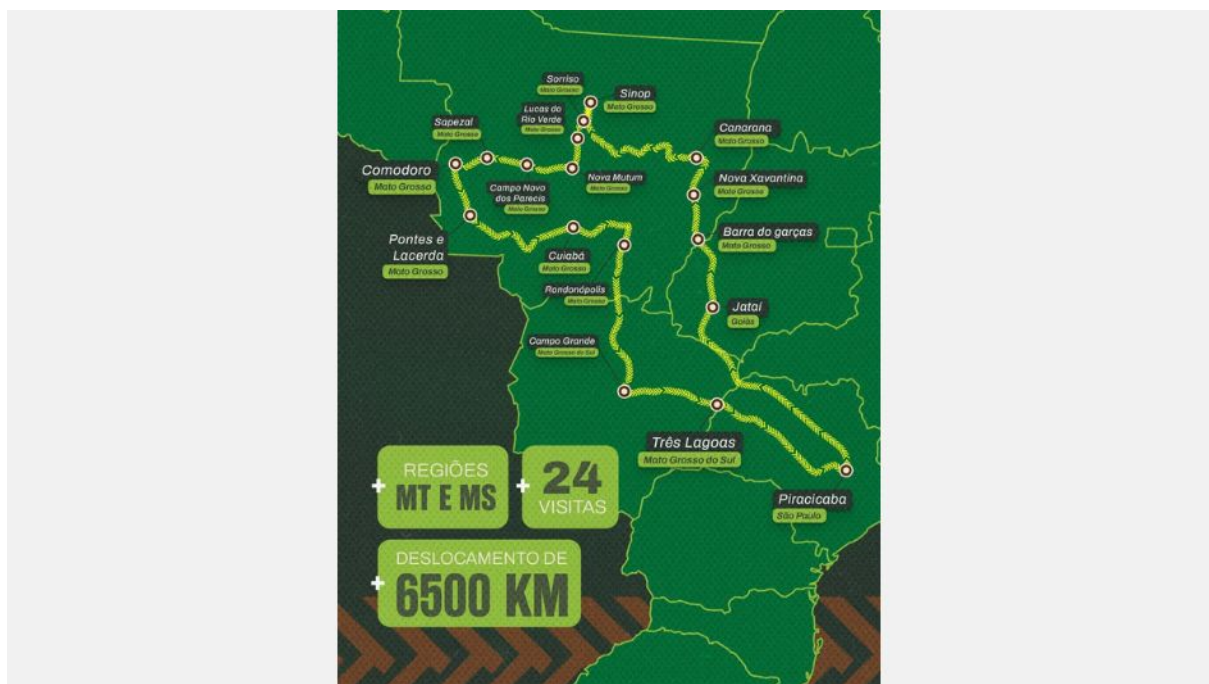
In addition to technical visits, participants experience regional diversity, strengthening their academic training through practical experiences and direct exchanges with producers and researchers.



The 2026 edition will take place between January and February, focusing on the states of Mato Grosso, Goiás, and Mato Grosso do Sul, strategic regions for the production of the country's main agricultural crops. Students will travel more than 6.500 km, visiting cities such as Sinop, Sorriso, Lucas do Rio Verde, Nova Mutum, Sapezal, Pontes e Lacerda, Cuiabá, and Campo Grande, on a 21-day

itinerary.

"The idea of ??the visits is to create a conversation circle with the producer to discuss property management, combining classroom theory with field practice," explains Vitor Ferrari Sia, one of the Expedition coordinators and a member of the GEA.



For 15 years, the Cerrado Expedition has reaffirmed its role in training more

prepared and aware professionals,
inspiring new generations to transform
knowledge into practice and to value the
Cerrado as Brazil's agricultural heritage.

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Ibama embargoes areas due to pesticide irregularities in Rio Grande do Norte

Operation uncovered storage of expired pesticides and illegal disposal of packaging in five companies

17.09.2025 | 15:16 (UTC -3)

Cultivar Magazine, based on information from Ibama



Ibama agents identified irregularities in pesticide storage and packaging disposal during an operation conducted between September 8th and 12th in Rio Grande do Norte. The inspection took place at irrigated fruit farms, a sector that occupies 1.804 hectares in the state and is the leading exporter of melons in Brazil.

Five companies were inspected. Agents found deficiencies in all of them, including the storage of 744 liters of expired pesticides. They also found packaging discarded in the open air, without the triple washing required by ABNT NBR 13.968.

The teams also identified projects without environmental licensing and with outstanding issues in the Federal Technical Registry. These violations

violate the Environmental Crimes Law (Law No. 9.605/1998) and the new Law No. 14.785/2023, which regulates the management of pesticides and packaging.

Ibama imposed more than R\$135 in fines and embargoed 183 hectares due to lack of licensing and registration errors.

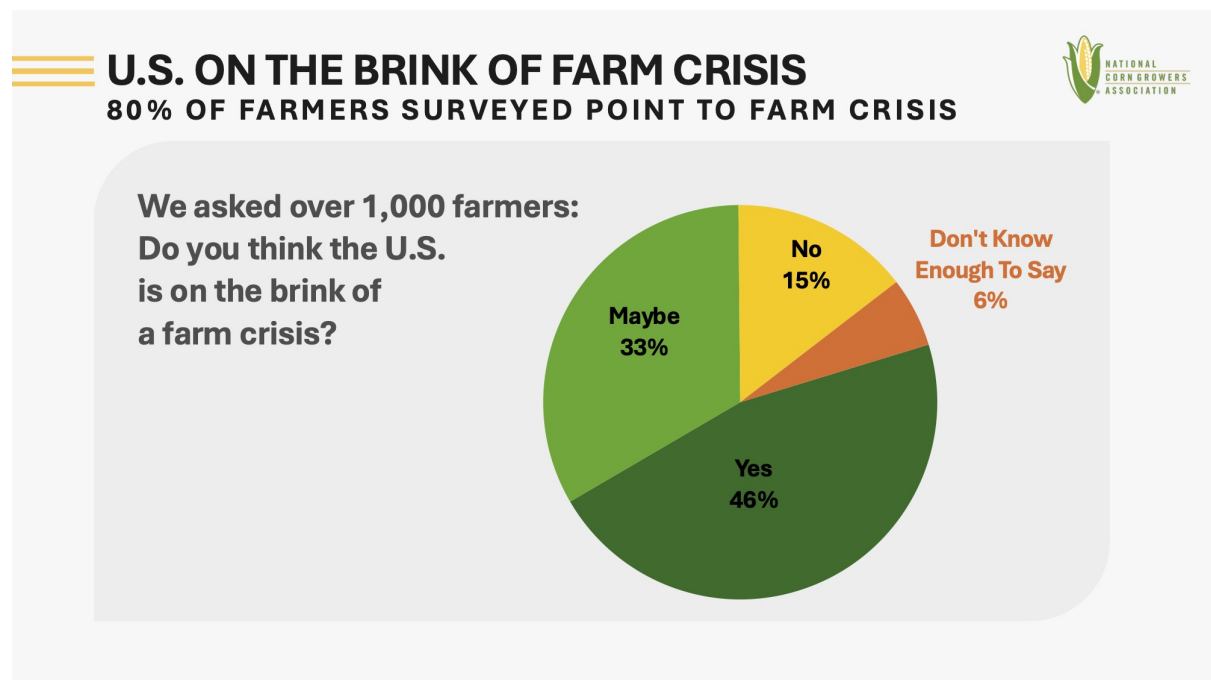
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US corn farmers warn of looming farm crisis

Survey shows that 80% believe that the rural economy is already facing or approaching collapse.

17.09.2025 | 14:29 (UTC -3)

Cultivar Magazine, based on information from Bryan Goodman

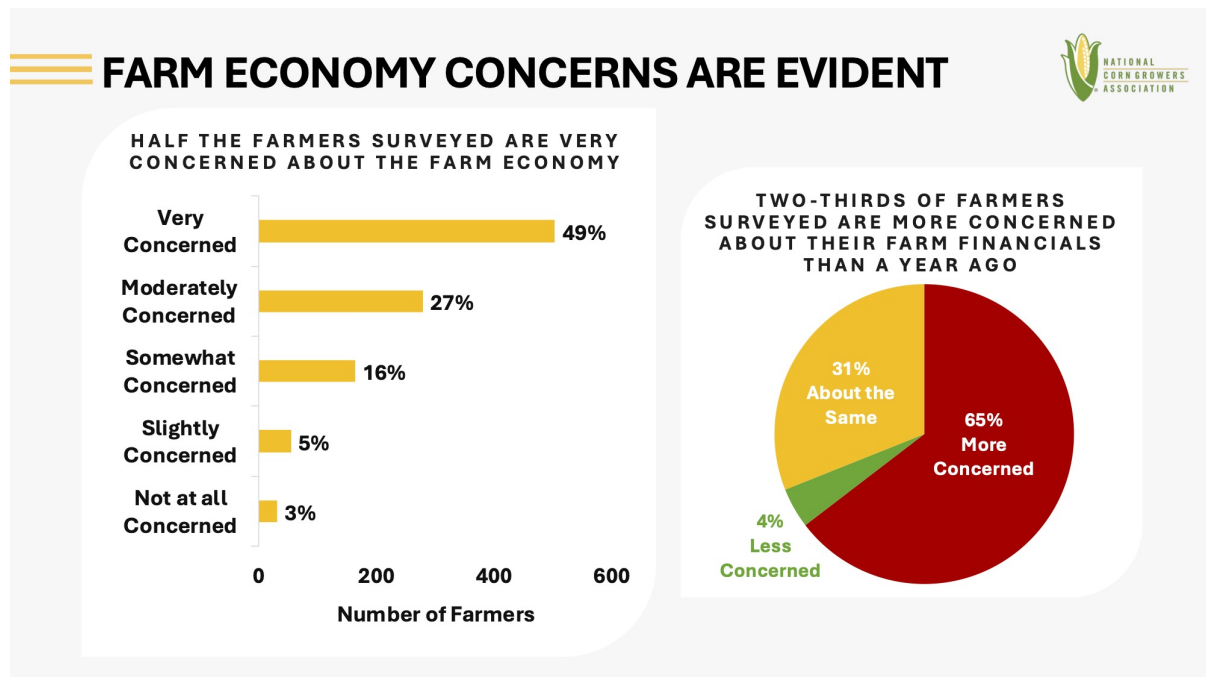


Most U.S. corn farmers believe the agricultural economy is already facing a crisis or is on the verge of collapse, according to a survey by the National Corn

Growers Association (NCGA).

The survey, conducted with 1.034 farmers between August 28 and September 10, showed that 80% see a risk of crisis in the sector. Almost half (46%) stated they believe the country is on the brink of agricultural collapse. Another 65% said their farms' financial situation has worsened compared to last year.

The results were presented at a roundtable in Washington, organized by the NCGA, with the participation of economists and lawmakers. The organization's president, Kenneth Hartman Jr., emphasized the urgency of the issue. "This is a four-alarm fire in the field. We need Congress to act quickly to remove market barriers," he stated.



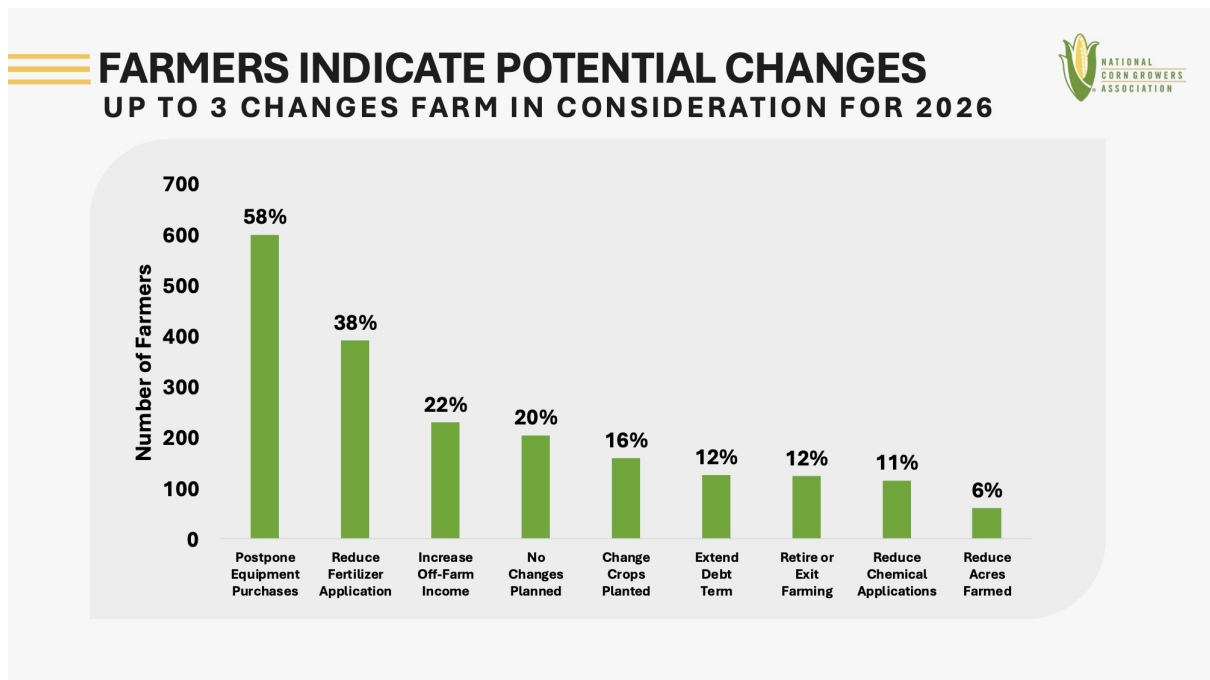
Project to improve the situation

The NCGA advocated for the passage of the Nationwide Consumer and Fuel Retailer Choice Act of 2025, which would allow the sale of fuels containing 15% ethanol (E15) year-round. Currently, the Clean Air Act restricts the sale of this blend in the summer. According to the

association, the measure would free up space for some surplus corn and boost farm income.

A study by the entity indicates that permanent access to E15 could generate an additional US\$25,8 billion to the US Gross Domestic Product, in addition to 128 full-time jobs.

The survey also pointed to signs of a decline in investment. Many farmers plan to postpone machinery purchases, reduce fertilizer use, and seek alternative sources of income off the farm. "The results indicate a generational problem in the agricultural economy," assessed NCGA's chief economist, Krista Swanson.



Fall in profitability

The drop in profitability follows the largest three-year decline in net receipts for the sector. Lower prices and higher costs are putting pressure on margins, even with the Department of Agriculture forecasting a record harvest. Supply exceeds demand, and any decline in consumption could further depress corn prices.

Limited access to credit is also a concern. "Interest rates are higher, and the curve is steeper. Lenders have less flexibility in offering terms, and helping indebted producers doesn't reduce the cost structure," explained John Newton, economist and director of Terrain Ag.

This week, producers are visiting Capitol Hill to pressure lawmakers to pass legislation authorizing the permanent sale of E15.

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New species of insect discovered in Minas Gerais

Guaranyperla puri honors indigenous people and reinforces the importance of environmental conservation in the state

17.09.2025 | 14:29 (UTC -3)

Secretariat of Agriculture, Cultivar Magazine edition



Photo: Frederico Falcao Salles

A new species of insect has been discovered in Serra do Brigadeiro State Park, in the Zona da Mata region of Minas

Gerais. Named *Guaranyperla puri*, the new species belongs to the Gripopterygidae family and was named in honor of the Puri indigenous people, traditional inhabitants of the region where it was found.

The identification is the result of morphological analyses of specimens collected in the park, highlighting the color patterns, wing structure, and also the adult's terminalia (reproductive system), which differentiates it from other known species. The adult *Guaranyperla puri* measures about 12 millimeters, while the nymph (the immature stage) is approximately 8 millimeters long.

This insect has a unique life cycle: in its immature phase, the nymph lives underwater, undergoing transformations

until molting, when it develops wings and a reproductive system and migrates to the terrestrial environment, entering its adult phase. This type of metamorphosis highlights the complexity of the aquatic and terrestrial ecosystems present in the Serra do Brigadeiro.

The scientific description of the species followed the criteria of international zoological nomenclature, consolidating the discovery as an important contribution to the knowledge of Brazilian fauna.

Conservation strategies

For Marília Melo, Minas Gerais State Secretary of Environment and Sustainable Development, the discovery of the new

species reinforces the role of conservation units. Luís Henrique de Mattos Lopes, manager of Serra do Brigadeiro State Park, also emphasized that the discovery of new species in protected areas is essential for understanding ecosystems and their interactions.

"This can directly influence conservation strategies, prioritizing threatened habitats, as well as paving the way for innovations in science, agriculture, and medicine," he said.



Photo: Ana Dária Viana Leite

About the research

A *Guaranyperla puri* was identified in doctoral studies conducted by the researcher **Mellis Layra Soares Rippel** (pictured above), in the Graduate Program in Entomology at the Federal University of Viçosa (UFV), with research conducted by the institution's Entomology Museum Laboratory. Mellis is one of the authors of

the scientific article on the species and recalls the moment of discovery with enthusiasm.

"When we analyzed the specimens, both from a morphological and molecular perspective, we realized we were dealing with a new species. This indicates that the park still maintains a high degree of environmental preservation and reinforces its scientific importance," concluded the researcher.

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UFSCar research proposes strategies to combat greening

Studies reveal defense compounds in citrus plants and the effects of essential oils on the insect vector

17.09.2025 | 14:07 (UTC -3)

Cultivar Magazine, based on information from UFSCar



Researchers from the Natural Products Laboratory (LPN) at the Federal University of São Carlos (UFSCar) have presented advances in combating greening. Their studies propose strategies for early diagnosis, vector insect control, and climate-based prediction of spread.

Greening disease—also called Huanglongbing (HLB)—is already affecting nearly half of the orchards in São Paulo and Minas Gerais, according to a recent study. Caused by the bacterium *Candidatus Liberibacter asiaticus* and transmitted by Asian psyllid (*diaphorina citri*), the disease still has no cure and causes great economic losses.

Reaction to infection

One study investigated how citrus plants respond to infection. PhD student Jéssica Cristina Amaral, supervised by Professor Maria Fátima das Graças Fernandes da Silva, analyzed secondary metabolites produced by the plants.

The presence of compounds such as xanthyletin and seselin—from the pyranocoumarin class—increased in infected roots. These substances, with known antimicrobial properties, may play an active role in defense against the bacteria. Early detection of these metabolites could serve as the basis for new diagnostic methods and genetic improvement.

Essencial oils

Another 2016 study analyzed essential oils from 22 citrus genotypes grown in Brazil. Olfactometer tests measured the attraction or repulsion of psyllids to different scents. Orange jasmine (*Murraya paniculata*), the insect's host plant, attracted more than 70% of the individuals. Less attractive genotypes, however, presented compounds such as phytol, (Z)- α -ocimene, and β -elemene. The hypothesis is that these substances act as natural repellents.

Climatic factors

The team also developed a statistical model to predict the spread of greening based on climate factors. The research, conducted in partnership with Fundecitrus, Unifesp, CNPq, and Fapesp, allows us to

identify times and regions of greatest risk.

The system takes into account variations in temperature, humidity, and rainfall. This enables preventive measures, such as applying pesticides or removing infected plants, based on the weather forecast.

The model can be adapted to other citrus-growing regions, such as the United States, Mexico, China, and Europe. The proposal doesn't replace existing practices in the field, but it does increase decision-making accuracy.

The results were published in the journals *Infectious Disease Modeling* (doi.org/10.1016/j.idm.2024.09.005) and *Molecules* (doi.org/10.3390/molecules21060814), in addition to Amaral's doctoral thesis,

available at the UFSCar Institutional Repository ("Alteration in the metabolome and gene expression in the pyranocoumarin biosynthesis pathway in Citrus sinensis x Citrus limonia in response to Huanglongbing").

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BASF presents digital solutions at the CREA 2025 Congress

Company highlights biodiversity management and precision agriculture tools

17.09.2025 | 09:17 (UTC -3)

Cultivar Magazine, based on information from Yamile Cóceres



Magdalena Sosa Beláustegui and Pablo Provera

BASF is showcasing its sustainable and digital solutions for agribusiness at the CREA 2025 Congress in Tecnópolis, Argentina. The company is showcasing

innovations in corn and sunflower seeds, crop protection, and the Xarvio digital platform.

With over 75 years of presence in Argentina, BASF will present two technical lectures at the event. The first, on sustainability, will take place on September 18th at 9:12 pm. Magdalena Sosa Beláustegui, Stewardship Manager for Argentina, Bolivia, Paraguay, and Uruguay, will discuss the InBioAgro project, which integrates biodiversity into agricultural management. Research centers in Rojas and San Jerónimo serve as pilots for measuring biodiversity in the Pampas region.

The second lecture, at 12 p.m., will cover Selective Applications. Xarvio's team will

present Digital Weed Mapping (MDM) and the One Smart Spray system, the result of a joint venture with Bosch. The technology maps areas with weed infestation and allows for targeted application, reducing input use. A new feature will also be launched in the Nutrition module: Soil Sampling, a georeferenced sampling tool.

According to Pablo Provera, BASF's senior manager of digital solutions, digitalization in the field has become a necessity. He believes Xarvio contributes to more accurate and sustainable agronomic decisions. MDM exemplifies this impact: it improves profitability, reduces environmental impacts, and reinforces BASF's commitment to responsible production.

The CREA Congress brings together more than 7 participants and promotes integration between innovation, data, the environment, and society.

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Scientists publish paper confirming *Amrasca biguttula* in the US

Pest has been recorded in commercial cotton plantations

16.09.2025 | 16:43 (UTC -3)

Cultivar Magazine



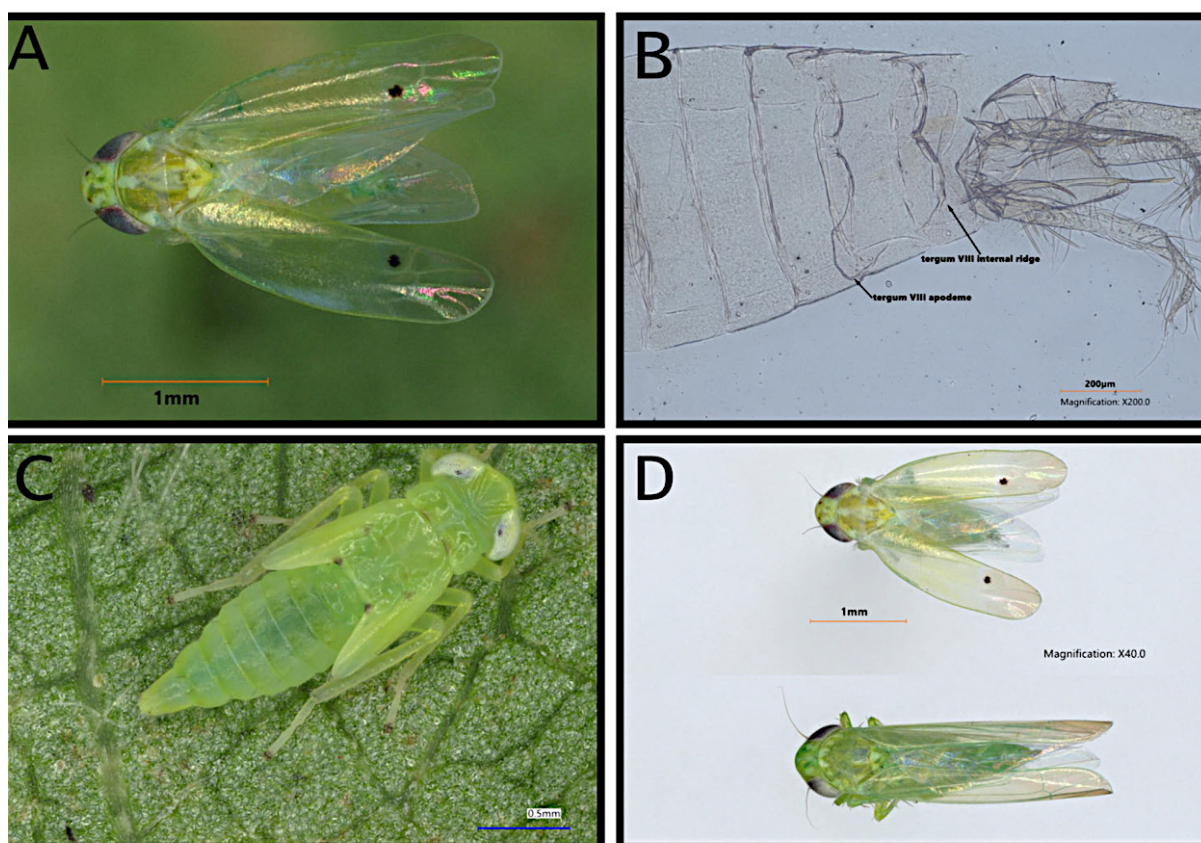
Photo: Pest and Diseases Image Library

Scientists from several universities have published an article on detections of [*Amrasca biguttula*](#) in commercial cotton fields in the southeastern United States. Identification occurred during the 2025 growing season, with confirmed records in more than 100 counties in four states: Alabama, Florida, Georgia, and South Carolina. ([In North Carolina, detection occurred in recent weeks, click here.](#))

Native to the Indian subcontinent, the insect has already caused losses of up to 40% in cotton production in its region of origin. The pest also attacks okra, eggplant, potatoes, sunflowers, hibiscus, and several legumes. Its rapid spread in the United States worries researchers, who point to the risk of significant economic impact.

The first official record in cotton occurred on July 3, 2025, in Gilchrist County, Florida. In less than four weeks, the pest spread over 645 miles (XNUMX km) to its northernmost point. The infestation caused symptoms such as chlorosis, necrosis, leaf drop, and, in severe cases, complete defoliation.

The average area of ??cotton cultivated in the affected states is around 979 hectares per year, with an estimated value of between US\$1,7 billion and US\$2,8 billion. Even modest losses can compromise the crop's profitability. The insect has several generations per year and can survive on a variety of hosts, including ornamental plants.



Amrasca biguttula adult with two distinct black spots on the head and wing (A); dissected and cleaned abdomen of the male, indicating the pair of apodemes that extend to tergum VII and tergum VIII with internal arched ridges (B); 5th instar nymph with markings on wing pads (C); and comparison of *A. biguttula* and a similar-looking adult potato leafhopper (D) - doi.org/10.3390/insects16090966

The pest had already been detected in Puerto Rico in 2023. In 2024, it was identified in 16 Florida counties. In 2025, it was confirmed in commercial and experimental crops, with populations consisting of adults and nymphs. Experts warn that the insect may have been

present before official detection, due to its small size and similarity to native species.

Amrasca biguttula can complete a cycle in two weeks, which explains the rapid onset of damage. Climatic conditions in the southeastern United States favor the development and persistence of the species. Studies indicate a high probability of permanent establishment of the pest, with potential dispersal to other regions by long-distance winds, as already occurs with the potato leafhopper.

Insecticide resistance has been reported in countries such as Pakistan and India, including resistance to pyrethroids, organophosphates, and neonicotinoids. There are still no defined control strategies in the United States.

Further information at
doi.org/10.3390/insects16090966

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Rising ammonia and sulfur prices put pressure on the fertilizer sector

StoneX highlights rising raw material prices and warns of impacts on industry and the countryside

16.09.2025 | 15:21 (UTC -3)

Valeria Campos



The prices of ammonia and sulfur, essential raw materials in fertilizer

production, have soared in recent weeks, raising alarm bells for industry and the countryside. According to a weekly report from StoneX, a global financial services company, ammonia prices in Europe have risen for 14 consecutive weeks.

Meanwhile, at Brazilian ports, sulfur prices have once again surpassed the US\$300 per ton mark—a level last reached in 2022, shortly after the outbreak of war between Russia and Ukraine.

According to Market Intelligence analyst Tomás Pernías, while higher ammonia and sulfur prices don't necessarily mean higher fertilizer prices, the situation is delicate.

"With trade terms already at their worst levels in recent years, this scenario represents yet another challenge for the industry, but ultimately, this situation is

also worrying for farmers," Pernías concludes.

According to him, the rise in ammonia prices is due to lower global supply, resulting from plant shutdowns, maintenance, and gas supply cuts in producing countries. "This trend could limit sharper price declines, as high costs reduce producers' willingness to cut prices, at the risk of squeezing margins," he explains.

The rise in sulfur prices follows a similar logic, driven by strong demand in the international market. The input is essential for the production of SSP, sulfuric acid, and phosphoric acid—the latter required in fertilizers such as MAP and DAP. "With buoyant buyer interest, prices rose in

China and Brazil," notes the Market Intelligence analyst.

"The appreciation of ammonia and sulfur prices could reduce the competitiveness of manufacturers already facing structural challenges or with a reduced capacity to pass on costs to the market. Secondly, higher production costs could also limit producers' willingness to offer price reductions," he concludes.

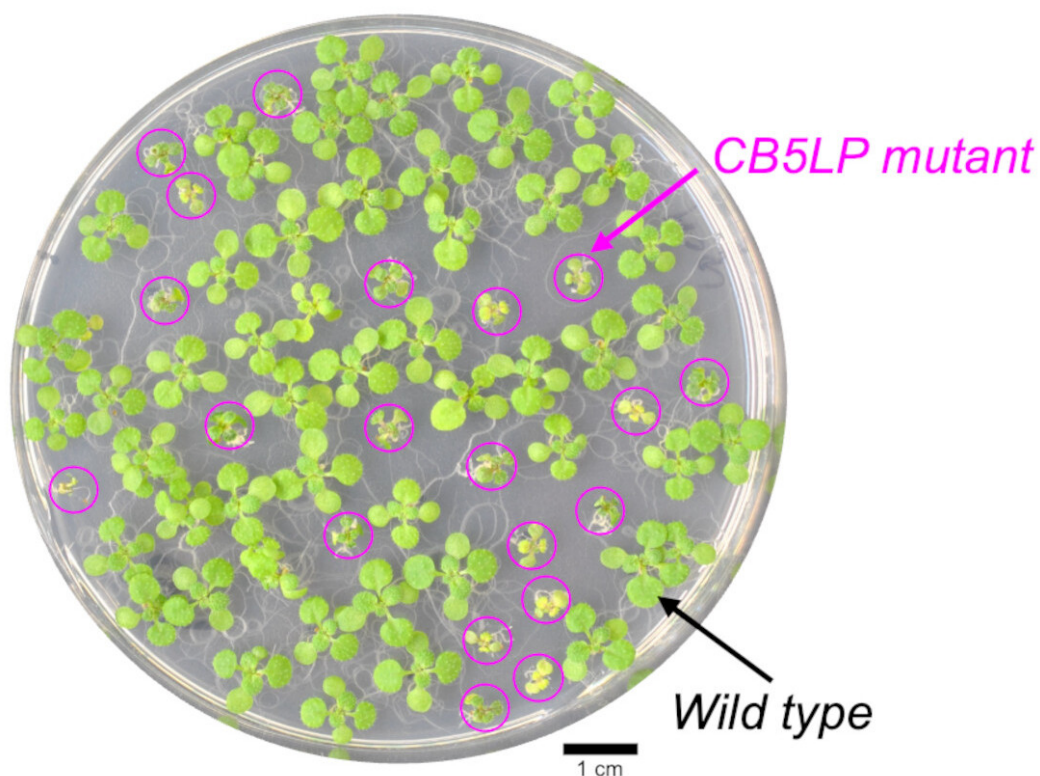
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Plant protein CB5LP could revolutionize herbicides

Study identifies a new protein unique to plants, essential for phytosterol biosynthesis

16.09.2025 | 14:58 (UTC -3)

Cultivar Magazine



Biologists at Brookhaven Laboratory have modified plants from *Arabidopsis* to produce less cytochrome b5-like protein (CB5LP). At two weeks of age, CB5LP mutant plants (circled in magenta) were noticeably smaller than their wild-type counterparts, indicating that CB5LP is essential for typical plant growth and development. - Image: Brookhaven National Laboratory

A team of researchers from Brookhaven National Laboratory in the United States has identified a protein essential for phytosterol biosynthesis in plants. Called CB5LP, this cytochrome b5-like protein is unique to the plant kingdom. Their study demonstrated that the absence of CB5LP causes severe defects in embryo development and lethality in seedlings.

Arabidopsis thaliana.

The discovery places CB5LP at the center of a vital biochemical process: demethylation at C-14, an essential step in the plant sterol pathway. This step is catalyzed by the enzyme CYP51A2, a cytochrome P450 that requires electrons to function. CB5LP is now recognized as the exclusive electron donor for this reaction in

plants, a role previously attributed to canonical proteins of the same family.

Loss of CB5LP

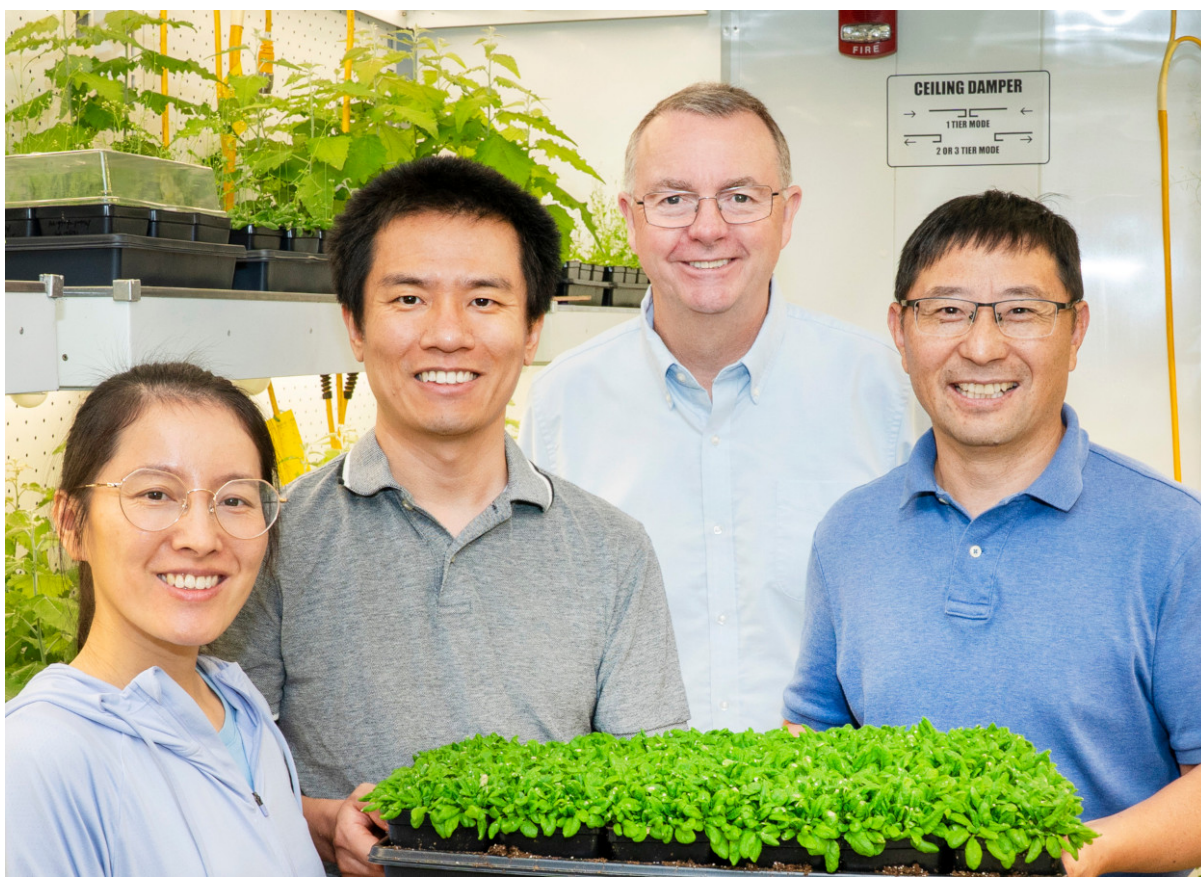
The researchers demonstrated that the loss of CB5LP compromises CYP51A2 activity, causing the accumulation of intermediate compounds such as obtusifoliol and a decrease in the production of phytosterols such as stigmasterol and sitosterol. These phytosterols contribute to the structure and fluidity of cell membranes and act as precursors to plant hormones.

Experiments conducted with mutants and transgenic lines of *Arabidopsis* showed that the electronic activity of CB5LP is

essential. A variant with mutations in the two histidine residues essential for heme binding failed to restore seedling growth. In contrast, reintroduction of the functional protein reversed the lethality symptoms.

CB5LP exhibits an inverse topology compared to classical cytochrome b5.

While the other proteins in the family have a transmembrane domain at the C-terminal end, CB5LP positions this domain at the N-terminal region. This structural configuration does not alter its electron transport function but highlights its distinct evolutionary origin.



Brookhaven Laboratory researchers: Lijun Qiao, Xianhai Zhao, John Shanklin, and Chang-Jun Liu - Photo: David Rahner

Vegetal protein

Phylogenetic analyses revealed that CB5LP-like proteins occur exclusively in plants, from red algae to angiosperms, and are not present in fungi or animals. This distribution suggests that CB5LP

represents an ancestral form of cytochrome b5 that evolved specifically in plant lineages.

The physical association between CB5LP and CYP51A2 was confirmed by biotinylation assays with the TurboID enzyme and also by protein labeling systems based on bacterial pupillary chromatography. Both indicated a close spatial interaction between the two proteins in the endoplasmic reticulum membrane, where sterol biosynthesis occurs.

In in vitro experiments, coexpression of CB5LP and CYP51A2 in yeast significantly increased the conversion of the substrate obtusifoliol to demethylated products, provided the system received electrons

from NADPH. CB5LP was shown to be more efficient as an electron carrier than its inactive mutant.

Comparative studies

Comparative studies with other components of the electron transfer chains, such as the reductases ATR1, ATR2, and CBR1, revealed that their contribution varies depending on the tissue analyzed. In seeds, CBR1 and ATR1 appear to cooperate with CB5LP. In seedlings, ATR1 and ATR2 play a more active role. Canonical cytochromes b5 do not participate in the reaction catalyzed by CYP51A2, reinforcing the functional specificity of CB5LP.

The absence of CB5LP also affected the biosynthesis of glucosinolates, compounds involved in herbivore defense. There was no significant change in fatty acid or phenolic acid composition. However, these secondary metabolic changes do not explain the observed lethality, reinforcing the idea that CB5LP's primary role lies in the phytosterol pathway.

Herbicide development

The results indicate that CB5LP is a protein with essential function in higher plants, directly involved in sterol biosynthesis through activation of the CYP51A2 enzyme. Its absence leads to defects in embryonic development and seedling death.

Because it is exclusive to plants, CB5LP emerges as a promising target for the development of selective herbicides. Specific inhibition of this protein can block the sterol pathway in weeds without affecting non-plant organisms. This approach could represent a new generation of more efficient agrochemicals with a lower environmental impact.

Further information at
doi.org/10.1126/sciadv.ady1719

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Paper biosensor detects transgenic corn and soybeans in the field

Portable device uses leaf extract and delivers results in up to an hour for just \$2,90

16.09.2025 | 14:34 (UTC -3)

Cultivar Magazine

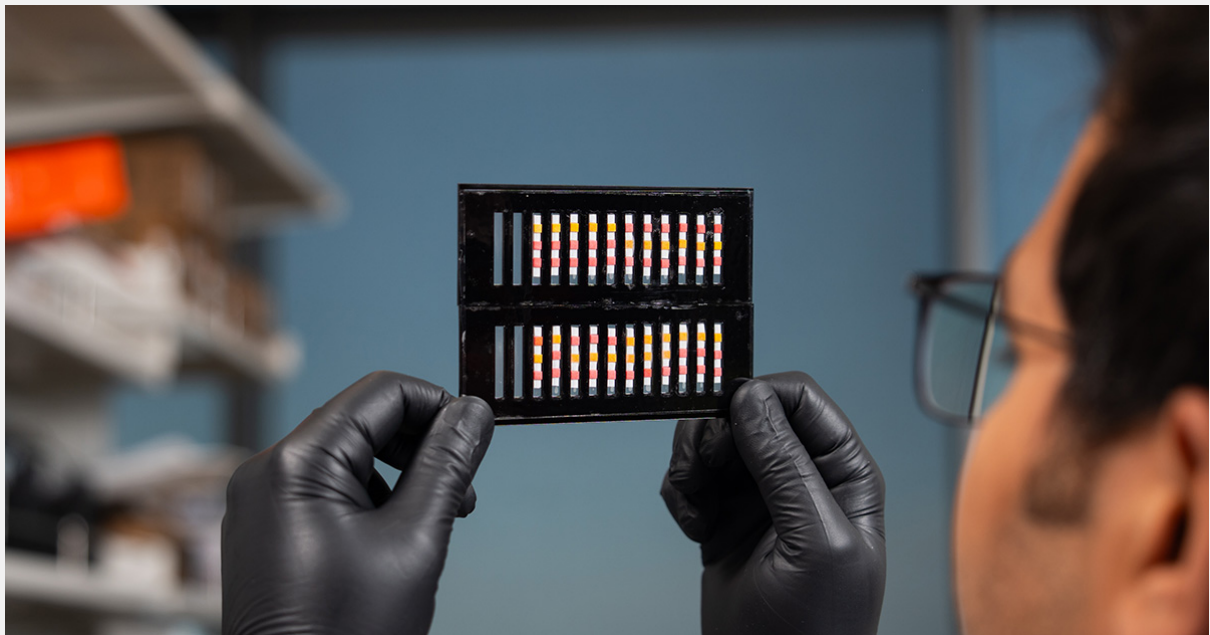


Photo: Joshua Clark

Scientists at Purdue University in the United States have developed a portable paper biosensor capable of identifying

genetic traits in transgenic corn and soybeans directly from crude leaf extracts. The device, based on the loop-mediated isothermal amplification (LAMP) technique, detects Roundup Hybridization System 1 (RHS1) events in corn and Roundup-Ready 1 and 2 (RR1 and RR2) in soybeans.

The analysis takes up to 60 minutes and eliminates the need for DNA extraction or purification. A diluted leaf sample in SDS solution is sufficient. The system operates at 65°C and uses cartridges with preloaded paper strips and an algorithm that analyzes color changes over time, converting the reactions into quantitative data.

The detection limit was up to 100 genome copies per reaction. The biosensor achieved 2,90% sensitivity, specificity, and accuracy, even with crude extract, without purification. The test cost was estimated at US\$9—well below traditional methods using PCR or liquid colorimetric tests, which exceed US\$XNUMX per analysis.

Hardware cost

The system offers portability, robustness against inhibitors, and compatibility with field conditions. Readings can be performed with simple heating and a scanner. The required hardware costs approximately US\$1.500, less than conventional thermal cyclers. The sensor allows for multiple detections in a single

cartridge and can be adapted for other transgenic events.

The technology innovates by integrating LAMP into paper strips with automated image analysis. This approach reduces preparation time, avoids visual errors in result interpretation, and stands out for dispensing with purified DNA. The sensor also incorporates substances such as dUTP, uracil-DNA glycosylase, betaine, and trehalose, which increase stability, reduce contamination, and enhance reaction sensitivity.

The development was supported by Bayer Crop Science and has already been licensed to Krishi, Inc., a molecular diagnostics company. The researchers expect the platform to contribute to seed

traceability, regulatory compliance, and environmental control, especially in light of the expansion of genetically modified crops.

Further information can be found at
doi.org/10.1016/j.bios.2025.117690

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Syngenta promotes Brazilian to global leader in Seedcare and Biologicals

Executive highlights integration of biological and conventional solutions

16.09.2025 | 10:07 (UTC -3)

Cultivar Magazine



Syngenta announced the promotion of Emilhano Stefanello Lima to the position of

Global Head of Seedcare & Biologicals. The executive began his career in the rural sector on a family farm in Brazil and has nearly 30 years of experience. He has led technology launches such as [Plinazolin](#) e [Tymirium](#).

According to the company, the change reinforces its strategy of valuing internal leadership. Emilhano takes over at a time of expanding the company's biological portfolio and with the mission of advancing nature-inspired solutions to complement crop protection.

In an article published the same day, he argued that organics don't replace conventional products, but rather work better in complementary systems. For him, the future of agriculture depends on the

combination of organics, digital technologies, and regenerative practices.

Examples include biological fungicides used alongside chemicals in soybean crops in Brazil for resistance management, pheromones applied to European vineyards for pest control, and biostimulants that help potatoes resist water and heat stress.

Emilhano highlighted that biologicals contribute to healthier soils, greater water and nutrient retention, and carbon sequestration. These characteristics can reduce agricultural emissions and strengthen integrated management systems.

He took over from Jonathan Brow, who became Head of Europe for Syngenta

Crop Protection.

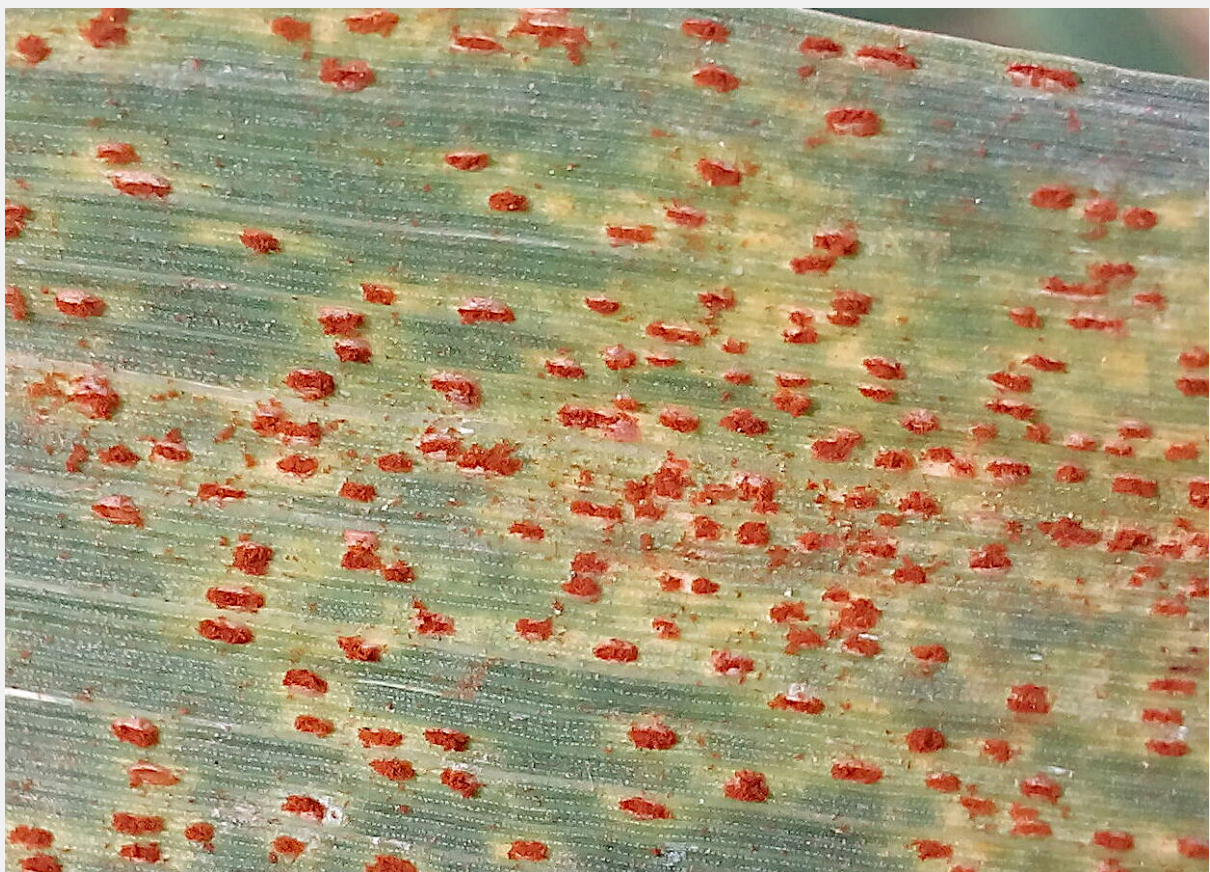
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Diseases cause \$2,9 billion in wheat losses in North America

Study compiled data from 29 US states and the province of Ontario

16.09.2025 | 09:39 (UTC -3)

Cultivar Magazine



Puccinia triticea - Photo: Thirunarayanan Perumal, Banaras Hindu University

Diseases caused by pathogens in wheat crops in the United States and Canada caused estimated losses of 560 million bushels between 2018 and 2021. The economic impact exceeded US\$2,9 billion during this period. The data comes from a study based on information from 29 US states and the Canadian province of Ontario.

The study indicates that, even without considering management costs (such as fungicide application), average losses per planted acre reached US\$18,10. The main disease identified was head blight (caused by *Fusarium* spp.). Next came yellow rust (caused by *Puccinia striiformis*), leaf rust (caused by *Puccinia triticina*) and bacterial leaf spot (caused by *Xanthomonas*

translucens p.v. *undulous*).

Leaders in absolute losses

The states most affected by volume were Kansas and North Dakota. Together, they recorded losses exceeding 245 million bushels. Kansas had losses of \$891 million during the period. Next comes Minnesota, with an estimated loss of \$344 million, and North Dakota, with \$370 million in losses.

Proportionally, Ohio recorded the highest average loss per acre in 2018: \$85,22. Minnesota led the way in 2021, with \$73,01 per acre. Conversely, states like Arkansas and Louisiana saw minimal

impact during the four-year survey.

Biggest financial loss: 2021

In 2019, the total volume of wheat lost to disease reached 188 million bushels.

However, 2021 was the year with the largest financial loss, totaling US\$869 million. This difference is explained by the appreciation of the price per bag of wheat in the market during the last year of the analyzed series.

For example, yellow rust caused similar losses in 2019 and 2021—27,2 and 27,6 million bushels, respectively—but the financial impact was significantly greater in 2021: \$179,7 million versus \$114,6 million

in 2019.



Puccinia striiformis - Photo: Gerald Holmes, Bugwood

Leaf diseases: 62% of losses

Diseases were classified according to the affected plant part: root and stem, leaves, or ears and kernels. Foliar diseases

accounted for 347,8 million bushels lost (62% of the total). Ear and kernel diseases caused a loss of 123,2 million bushels. Root and stem diseases caused a loss of 88,5 million bushels.

Among leaf diseases, leaf rust accounted for the largest loss (74,1 million bushels), followed by yellow rust (74,6 million) and bacterial leaf spot (65,4 million). Fusarium head blight, classified as an ear disease, caused losses of 116,5 million bushels—the largest of any disease.

regional variations

The most problematic diseases vary by region. In the North Central United States, head blight and leaf spot are common.

Parastagonospora nodorum. In the Southern Great Plains region, rusts led the losses. In the Southeast, yellow dwarf virus (caused by *Barley yellow dwarf virus* e *Cereal yellow dwarf virus*) was the main cause of losses in some years.

The study attributes these variations to factors such as climate, management practices, crop rotation, and genetic resistance of cultivars. The annual fluctuation in disease presence and severity was also influenced by environmental conditions and the adoption of control technologies.

Further information at
doi.org/10.1094/PHP-09-24-0087-RS

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Baldan announces unprecedented partnership with Milwaukee

Strategic alliance ensures greater quality, technology, and efficiency in serving rural producers

15.09.2025 | 16:17 (UTC -3)

Mariana Moraes Spelled



Baldan has just entered into a strategic and unprecedented partnership with

Milwaukee, a globally recognized tool company. The goal is to strengthen the efficiency and quality of support offered to dealers and rural producers throughout the country.

With this agreement, Milwaukee becomes the official supplier of tools used by Baldan's after-sales team and its Workshop Trucks, which provide direct technical support in the field. With this agreement, the company aims to further enhance the standard of agility and precision in agricultural equipment repairs and assembly.

"This partnership is a milestone for Baldan. Together with Milwaukee, we've been able to add even more value to our after-sales service, offering cutting-edge solutions that

truly make a difference in the daily lives of rural producers," says Leandro Maria, Baldan's after-sales manager. "Our commitment is to stand by our customers with quality, innovation, and excellent technical support, now strengthened by the expertise of an internationally recognized brand."

For Milwaukee, the partnership also represents an opportunity to expand its presence in Brazilian agribusiness, bringing high-performance tools to the field, developed with a focus on ergonomics, durability, and cutting-edge technology.

"Joining forces with a century-old company like Baldan reinforces our purpose of delivering solutions that transform the way

work gets done. We're excited to help resellers and producers have an even more efficient and productive experience in the field," said Paula Cristina Dani, CEO of Milwaukee Brazil.

Launch



The official launch of the partnership took place last Friday (September 12th) at Baldan's headquarters, where Milwaukee

hosted an exclusive workshop for employees. The training provided a hands-on presentation of the tools' features and highlighted how they can make field support even more agile and efficient.

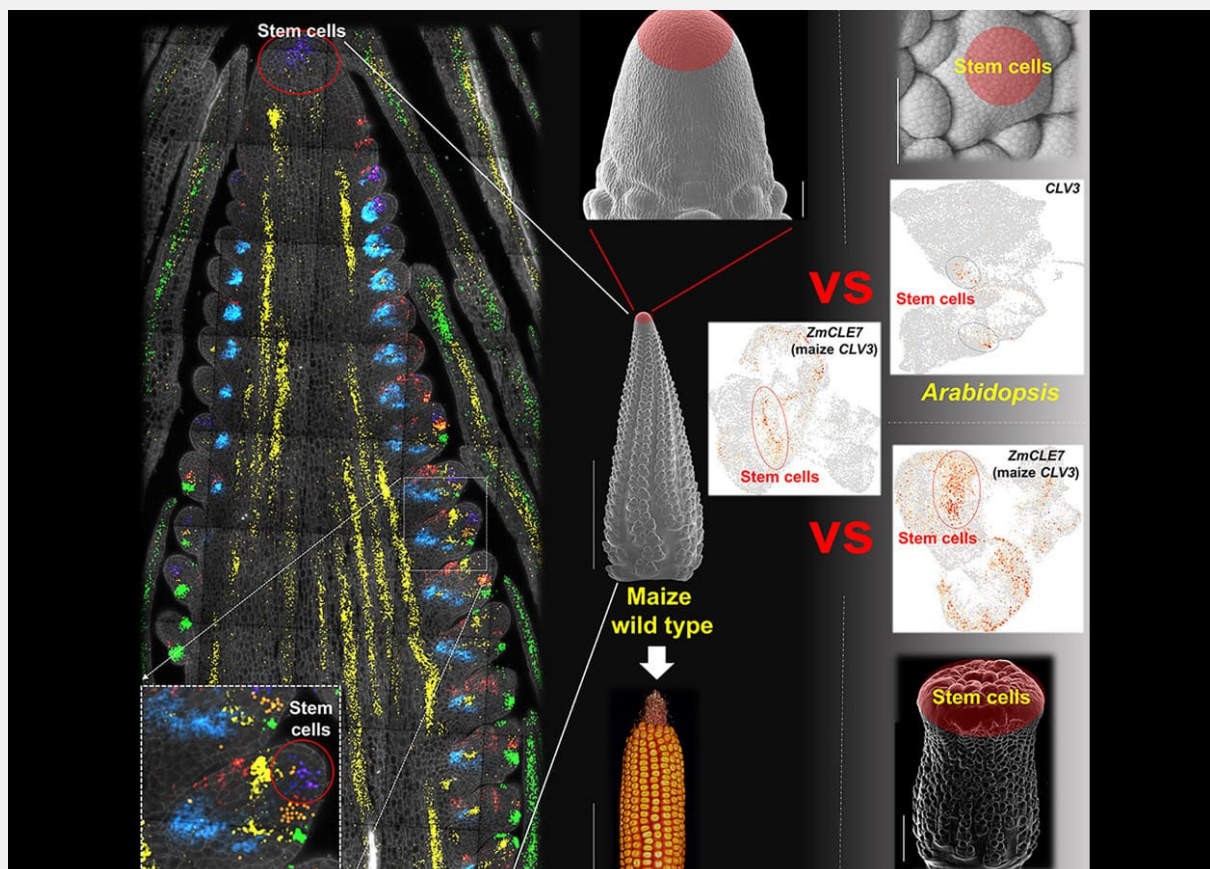
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Scientists identify genes that control stem cells in plants

Study reveals genetic regulators conserved across species and links variants to corn productivity

15.09.2025 | 15:58 (UTC -3)

Cultivar Magazine, with information from Margaret Osborne



doi.org/10.1016/j.devcel.2025.07.024

Researchers at Cold Spring Harbor Laboratory (CSHL) in the United States have mapped two classical stem cell regulators in thousands of cells from the shoots of corn e *Arabidopsis* sp. The study revealed new regulatory genes and linked some of them to important agronomic traits.

The work, led by Professor David Jackson, used a technique called single-cell RNA sequencing. The team analyzed tissues with a high stem cell content, identified the expression of thousands of genes, and produced a genetic "atlas" accessible to other researchers.

According to Jackson, the data could guide genetic advances for a decade and help develop more productive and resilient

crops.

Isolating rare cells

Plant stem cells are located in regions called meristems. There, genes such as *CLAVATA3* (*CLV3*) and *WUSCHEL* (*WUS*) control cell proliferation. Understanding how these genes work allows us to manipulate plant growth and architecture.

However, previous analyses faced difficulties in isolating cells expressing *CLV3* and *WUS*, due to the low quantity and fragility of these cells.

Jackson's team overcame this obstacle with precise microdissection and microfluidics. Each collected cell had its RNA converted to DNA, labeled, and

sequenced. The group recovered approximately 5 cells expressing CLV3 and XNUMX cells expressing WUS.

The technique made it possible to identify hundreds of genes preferentially expressed in corn stem cells and *Arabidopsis*. Many of them have been shown to be conserved between species, indicating important functions throughout plant evolution.

Genes associated with yield

Among the newly identified genes, families of RNA-binding proteins and kinase genes related to sugar metabolism stand out, some with functions in hormonal

homeostasis. These genes, according to the authors, act redundantly to control meristem development.

Analysis of natural genetic variants in different corn lines has indicated that some of these regulatory genes are associated with productive traits, such as number of grain rows and ear length. This information paves the way for rational cultivar engineering.

Among the validated genes, SERBPs, similar to regulators present in humans, have been shown to play a crucial role in the development of plant shoots.

Approximately 70% of the genes conserved between corn and *Arabidopsis* encode ribosomal proteins, which suggests that ribosome specialization may

influence plant stem cell differentiation.

Hormonal pathways and hypoxia

The team also analyzed mutants with excessive stem cell proliferation. The researchers found differences in the expression of genes linked to hormonal regulation pathways, such as ADK genes, which influence the production of cytokinins (hormones involved in the formation of new organs). Some of these genes appear to act via an alternative pathway to the classic LOG pathway, expanding our understanding of hormonal control in plants.

Genes like PFKB, also identified, have bacterial homologues that respond to hypoxia (a condition that regulates pluripotency in human stem cells). The discovery suggests that environmental factors, such as oxygenation, may influence stem cell behavior in plants through mechanisms that have yet to be explored.

Future applications

The study provided a model for identifying regulatory genes in other plant species. The resulting database is now publicly available and can guide genetic improvements focused on productivity, architecture, and resilience.

Further information at
doi.org/10.1016/j.devcel.2025.07.024

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Satis presents new positioning for the 2025/26 harvest

With an initial focus on soybean cultivation, the company highlights its own solutions in nutriphysiology, biologicals and adjuvants

15.09.2025 | 15:49 (UTC -3)

Tiago Ritter, Cultivar Magazine edition



Satis presents its new positioning for the 25/26 cycle, highlighting its technical evolution, from plant nutrition to

nutriphysiology, adjuvants, and biologicals. The goal is to expand market share, diversify channels, and strengthen the brand's presence in strategic crops, with an initial focus on soybeans. The goal is to achieve growth of over 20% compared to the last season.

The choice of soybeans to kick off the new market strategy is due to it being the main market served by the brand, being the segment that contributes most to the Gross Value of Agricultural Production (VBP).

According to data from the Ministry of Agriculture (MAPA), the crop alone accounted for R\$341,5 billion in 2024, largely due to its export potential. Volume growth is expected to be 4% compared to

the 24/25 harvest, leading to a total production of 175 million tons, according to data from the National Supply Company (CONAB).

Experiments prove results

According to the company, the product portfolio combines innovative formulations with a balanced concentration of naturally occurring active ingredients, ensuring a lower environmental impact. This includes exclusive technologies, such as selected microbial strains and chelated micronutrient complexes that facilitate plant absorption.

A study conducted in partnership with Pitanga Agronegócios confirms these results. The objective was to determine the potential of Satis solutions, when applied together, to increase productive nodes, Thousand Grain Weight (MW), and soybean yield. The effectiveness and use of the solutions were demonstrated, resulting in an 11,3% increase in productivity, 14% more productive nodes, and a 3,2% increase in MW.

Another highlight among the product range is Fulland, one of the Minas Gerais brand's flagship products. With a unique formulation on the market, the solution features a systemic chemical complex of copper, designed to enhance phytosanitary management and promote

enzymatic activation in plants. It also synergizes with agricultural pesticides, improving their mobility and control potential.

Strategic management

Under Satis' new positioning, specialized technical teams will also strengthen regional operations alongside farmers, acting as consultants to understand the specificities of each soil, climate, and production environment. With this data, they can recommend the best alternatives and demonstrate that with strategic management, "there's no secret, there's Satis," the campaign's motto.

The teams will also have Satis Ambassadors with personal branding and strategic use of digital technologies to generate sales. This program is geared toward the sales team, offering live classes on digital content, photo/video techniques, editing, and daily content production.

According to Satis' Business Director, **Jair Unfried** (pictured), with this development and the reinforcement of biological products for regenerative agriculture, the company estimates it will be able to leverage its revenue. "The company is reiterating not only its presence in the field, but also its mission to drive the future of Brazilian agriculture with science, trust, and proven results. We want to be a provider of innovative solutions. Proof of

this is the brand's commitment to also entering the line of registered biopesticides," he states.

Portfolio covers all phases

In pre-planting, for example, the highlight is Trichovex, a biofungicide based on *Trichoderma harzianum* (exclusive strain IB19/17), which promotes the microbiological balance of the soil and the biological control of pathogens such as *Rhizoctonia* and *Sclerotinia*, creating the ideal environment for rooting.

Also new to the portfolio is Nemavex. This is another biodefensive, this one made from bacteria of the *Bacillus* genus, used

to control nematodes in crops. It works by reducing root damage and increasing crop productivity. It can even be applied in conjunction with Trichovex, ensuring a favorable environment for initial crop establishment.

During the planting phase, the focus is on the efficiency of Biological Nitrogen Fixation (BNF) and stimulating initial vigor. Products such as Nodular, with a high concentration of molybdenum, cobalt, and nickel, and Vitakelp, a physiological bioactivator with algae extracts, ensure greater uniformity, increased nodulation, and seedlings better prepared for initial stresses.

Satis also offers comprehensive solutions for the vegetative and reproductive phases. Products such as Soymax,

Humicbor, Sturdy, and Vitan offer balanced nutrition and protection against environmental stresses and phytotoxicity. This ensures balanced development and maximum physiological performance of the plant. During the flowering and grain-filling period, technologies such as Fulland, Vitaphol Power-K, and Vitaphol HSK contribute to crop health, promote higher grain protein content, and boost overall production.

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Brazil expands participation in Agritechnica 2025

Brazilian delegation grows 20% and brings innovations in machines and parts

15.09.2025 | 14:48 (UTC -3)

Cultivar Magazine, based on information from Amanda Kasecker



Brazil will have an expanded presence at Agritechnica 2025, the world's largest

agricultural machinery and technology fair, taking place from November 9th to 15th in Hannover, Germany. The event will bring together more than 2.700 exhibitors from over 50 countries.

The country will have nine companies with their own booths and approximately 22 companies in pavilions organized by Sindipeças and Abimaq. These events are supported by Apex-Brasil. The total number represents a 20% increase compared to the previous edition, according to Brena Baumle, director of Bäumle Organização de Feiras.

Metisa, an agricultural parts manufacturer with 80 years of experience, has participated in Agritechnica since 2003. The company seeks to expand its

presence in Europe and stay abreast of trends. "The event allows us to meet clients, identify new business opportunities, and closely monitor global trends," explains Ademar Willrich, the company's export manager.

Tuzzi will be showcasing a new, lighter, and more robust tractor coupling system. For César Bonacini, director of sales and engineering, the show represents a global showcase and an opportunity for exchange within the industry.

Medal Bombas Hidráulicas is participating for the first time, featuring the MD360H, a lighter, higher-pressure hydraulic pump. The company will also showcase other lines launched in the last three years.

In addition to the exhibitors, Brazil will also be represented by a delegation of more than 400 professional visitors. In 2023, the event welcomed 470 people from 149 countries.

Among the visitors who become exhibitors is Save Farm. The Brazilian selective spraying company will debut with a booth in 2025. "Having a space at the fair is a dream come true," says CEO Eduardo Marckmann.

With the theme "Touch Smart Efficiency," Agritechnica 2025 will feature seven themed days aimed at different audiences in the agricultural sector. The program includes debates, launches, demonstrations, and activities for young professionals.

Tickets cost between €29 and €149. They include free public transport in the Hannover area during the visit.

[Click here for more information](#)

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Amrasca biguttula has arrived in North Carolina cotton

Occurrence confirmed in Robeson County

15.09.2025 | 10:14 (UTC -3)

Cultivar Magazine

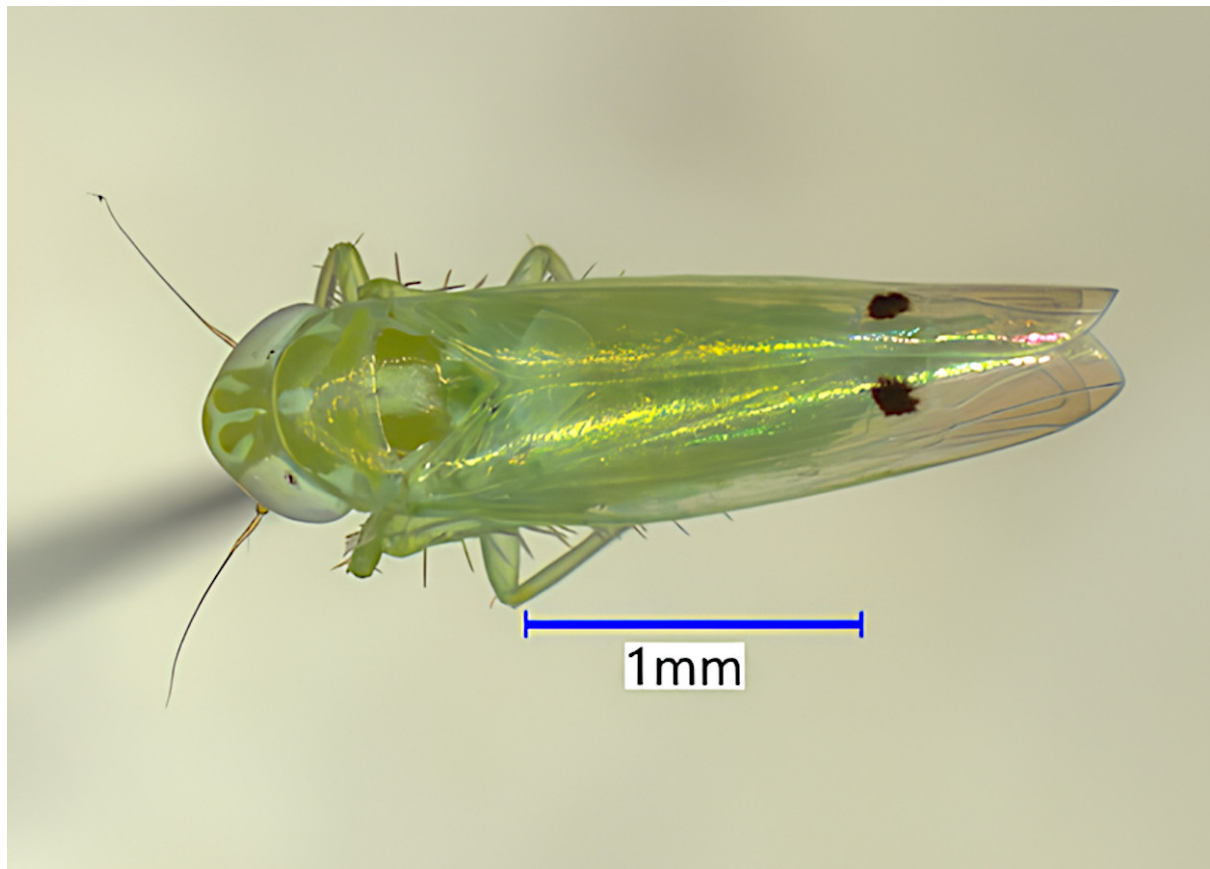


Photo: Isaac Esquivel, University of Florida

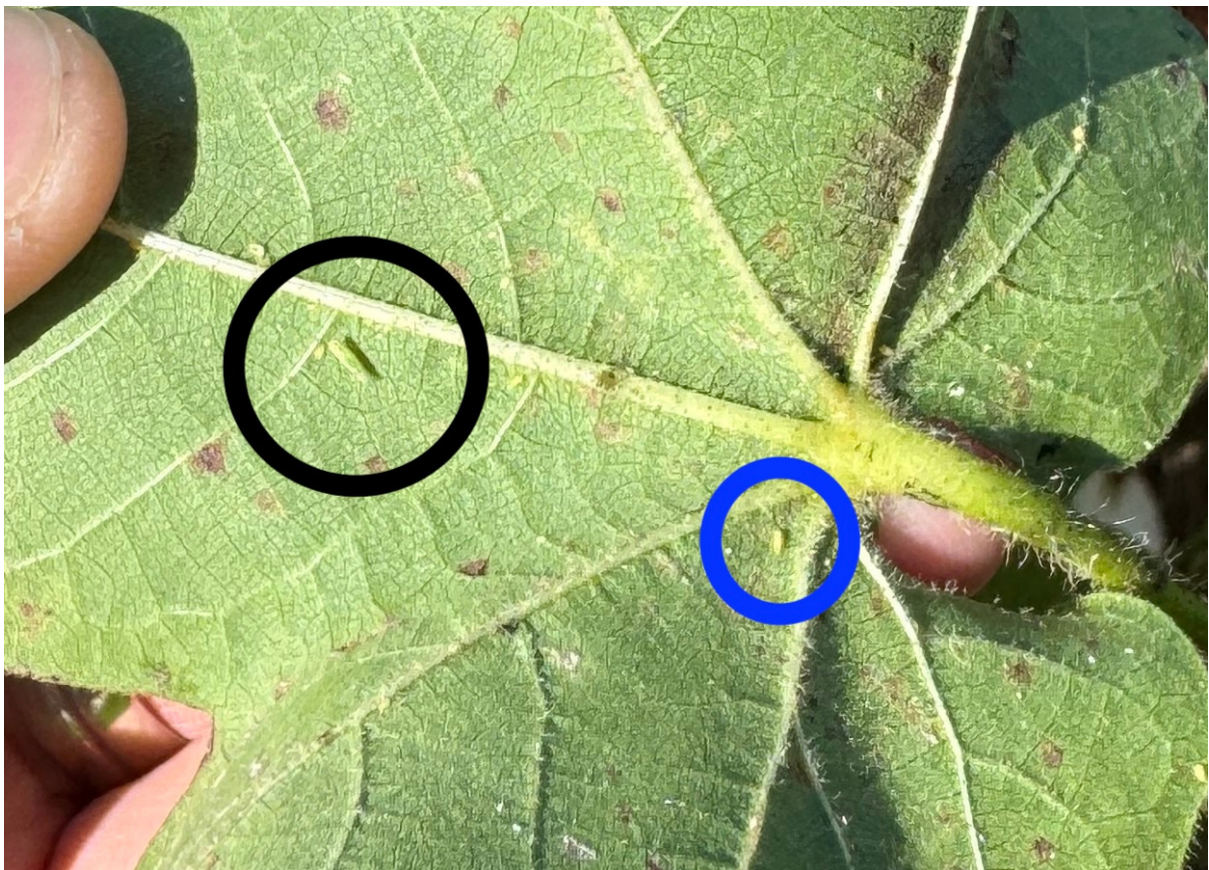
Amrasca biguttula has reached North Carolina cotton. Technicians recorded

adult and nymph leafhoppers in a field in Robeson County. There is a suspicion of the disease in Scotland. The observed field already had open bolls in the lower reaches, a phase with low risk of loss.

The insect spread from Florida and is now present in Alabama, Georgia, and South Carolina. The pest also feeds on okra and eggplant. Populations grow rapidly and, without management, can drop leaves and reduce productivity.

Typical symptoms include yellowing and wilting of leaves, known as "hopperburn." Injury appeared on a few leaves in Robeson's focus. In Scotland, nymphs appeared in low densities and without visible damage.

The current recommendation is to inspect the top 3 to 5 leaves of the leaf tip. States with occurrence use a preliminary threshold of 1 to 2 nymphs per leaf or the presence of the insect along with hopperburn symptoms. The guidance calls for immediate contact with the local Extension office to confirm suspicious samples.



Adult (black circle) and immature (blue circle) - Photo: Dominic Reisig, University of North Carolina

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Agricultural robots and autonomous tractors dominate Agritechnica 2025

Hannover Fair Highlights Artificial Intelligence and Automation Solutions

15.09.2025 | 09:22 (UTC -3)

Cultivar Magazine, based on information from Malene Conlong



Agricultural automation gains momentum at Agritechnica 2025, a trade show taking place from November 9th to 15th in Hannover, Germany. The event will showcase field robots, autonomous tractors, and artificial intelligence (AI)-based systems, focusing on productivity, precision, and labor reduction.

The new machines perform tasks such as planting, fertilizing, and weeding with minimal human intervention. Equipped with sensors, cameras, GPS, and machine learning software, they are already operating in cultivation systems that require intensive care, such as vegetables and organic farming. In tests, agricultural robots reduced the time spent on manual weeding by up to 80%.

The most advanced robots can identify weeds with millimeter precision, even within planting rows. Attached cameras distinguish seedlings and weeds even at an early stage. Even with limited speed, continuous 24-hour operation compensates for the slowness.

Some models remain dedicated to a single crop, as adapting to different crops still requires time and technical expertise. Multifunctional platforms, however, are beginning to integrate all stages—from planting to harvest—and are already operating with perennial crops, such as fruit.

Adaptation kits

The fair will also highlight technologies for machines already in use. Manufacturers such as Claas, Fendt, Case, and John Deere will showcase retrofit kits to transform conventional tractors into autonomous or remotely controlled vehicles. One example is the system developed by the Fraunhofer IOSB institute, which allows tractors to be operated from up to 200 kilometers away.

In practice, these systems increase the efficiency of rural work and reduce the need for trained operators. In harvesters, sensors automatically adjust threshing and ventilation parameters according to the terrain and humidity, preventing losses.

Tractors with automated steering via GPS and RTK have already become common in several regions.



Digital Farm Center

The Digital Farm Center, in Hall 21, will be one of the main points of Agritechnica. Organized by the DLG (German Agricultural Society), the center will showcase solutions in automation, robotics, and digital farming. There will be

live demonstrations and technical discussions on regulation, safety, and connectivity in the field.

Despite the progress, obstacles remain. In rural areas, the lack of a stable internet connection hinders the use of autonomous technologies. Furthermore, there is still no clear regulation for driverless agricultural vehicles. To accelerate adoption, public programs in Germany offer subsidies for the purchase of robots, offsetting the high initial investment.

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Case IH launches 110 hp Farmall A tractor in Europe

Presentation takes place between October 7th and 10th, during the Sommet de l'Élevage, in France

15.09.2025 | 07:03 (UTC -3)

Cultivar Magazine, based on information from Silvia Kaltofen



Case IH launches the new 110 hp Farmall A tractor. It complements the utility line, which includes 90 and 100 hp versions. It offers increased power, improved transmission, hydraulics, comfort, and onboard technology. The brand is committed to providing a versatile and affordable package for daily operations, livestock, and haymaking.

The new model features a 12F/12R transmission with an electronic powershuttle option. This function allows for direction changes without using the clutch. This speeds up work with front loaders. The hydraulic pump now delivers 82 liters per minute, increasing oil flow and implement response.

The Farmall A maintains a lightweight and compact structure, offering agility for maneuvering in corrals and small areas, according to the National Highway Traffic Authority (CNH). It can accommodate the Case IH L625 front-end loader, with a 1,76-ton capacity and a 3,7-meter reach. The automatic leveling system ensures stability during material transport.

battery capacity

Case IH also reinforced the front axle with larger hydraulic pistons. The tractor's maximum total payload capacity reaches 6,5 tons. The new 130-liter tank reduces refueling requirements and improves forward visibility. The U-shaped exhaust system improves field of vision.



Operational comfort has been enhanced. The four-pillar cab features solid doors and new LED lighting. The digital dashboard adapts to ambient light. The ActiveClutch system allows you to control the tractor with just one foot: when you step on the brake, the transmission automatically disengages.

At the rear, the operator has access to the electronic Lift-o-Matic and mechanical traction control. The new rounded trigger button allows simultaneous loader and reverse operation.

more connectivity

The line also advances in connectivity. Models can include a Pro 700 Plus monitor and ISOBUS compatibility. The Connectivity Included feature allows data transfer to the FieldOps system, where producers can manage operational and agronomic information. AccuGuide automatic steering with DirecSteer ensures precise and repeatable passes.

The new Farmall A will hit the European market between October 7th and 10th,

during the Sommet de l'Élevage, in
Clermont-Ferrand, France.



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