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Cultivar[®] *Semanal*



**Tank mixes
with herbicides**

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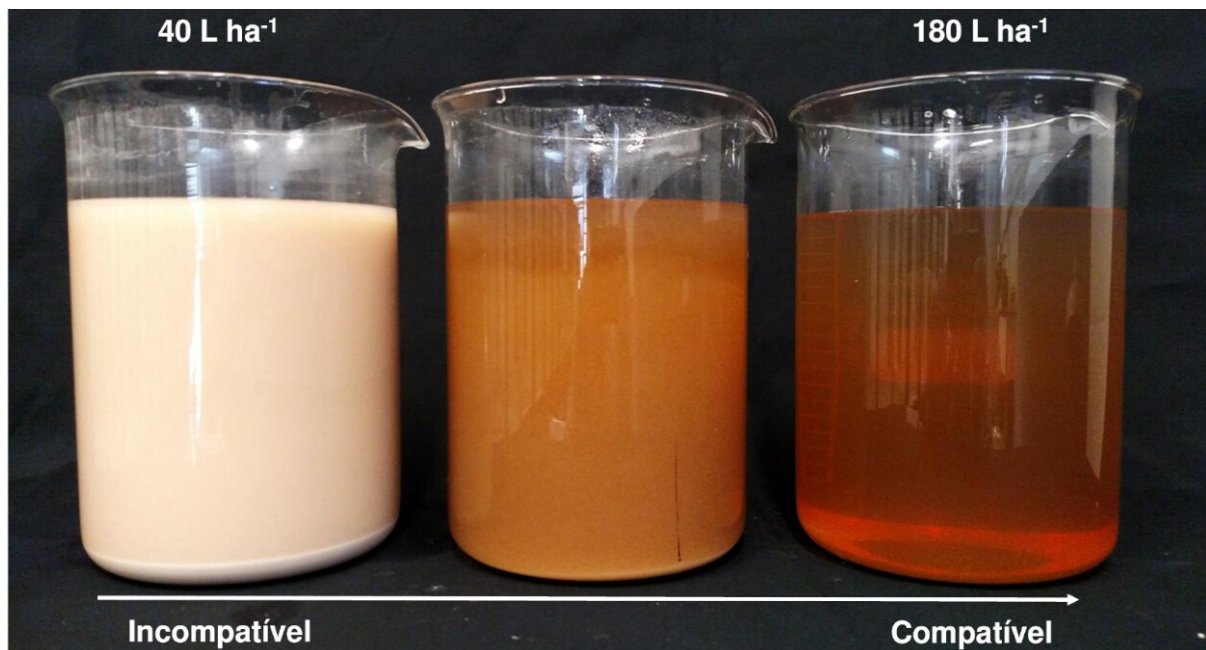
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Physical compatibility of tank mixes with herbicides

By Rodolfo Glauber Chechetto; Fernando Kassis Carvalho; Alisson Augusto Barbieri Mota (AgroEfetiva); Ulisses Rocha Antuniassi (FCA/Unesp)

04.01.2025 | 05:55 (UTC -3)



The search for optimizing the operational capacity of sprayers has encouraged the

application of increasingly complex solutions, notably due to the use of mixtures containing several agricultural pesticides, adjuvants and foliar fertilizers at the same time.

Although the result of this practice is questionable in some cases, when the mixture is made without apparent agronomic criteria, it is clear that its use is increasingly frequent.

An aggravating factor for this process is the concomitant reduction in the application rate (Figure 1), which makes mixing several products in a reduced amount of water a very complex technical challenge (Chechetto et al, 2014; Carvalho et al, 2017).

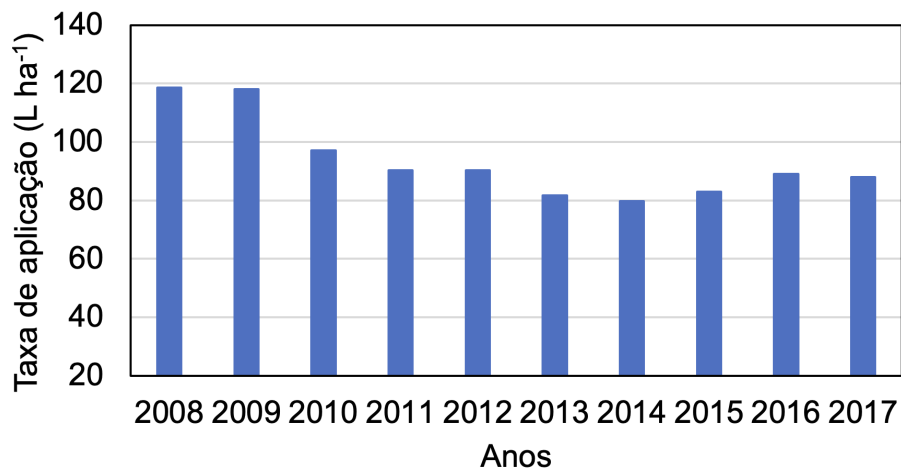


Figure 1 - reduction in the application rate (L/ha) observed, on average, in the state of Mato Grosso in the last decade

There is also a growing demand for tank mixes to correctly manage plant resistance to pesticides. In this case, the issue of herbicides is of particular interest, as the number of cases of resistance or tolerance of weed species to different modes of action has been increasing year after year, requiring the use of strategies for applying mixtures that can provide longevity and sustainability to chemical weed control.

Therefore, it is necessary to understand the factors that interfere in tank mixtures containing glyphosate and 2,4-D-based herbicides, with a view to the physical-chemical compatibility of the mixtures. We tested these herbicides by varying the concentration (through the application rate), the commercial brand and the mixing order.

Research and evaluations

The research was conducted by AgroEfetiva in partnership with the Faculty of Agricultural Sciences, Unesp, in Botucatu (SP). Initially, an experiment was carried out with two commercial products

based on glyphosate WG, described in Table 1.



Example of compatibility problem of mixtures with gli wg1 + 2,4-D at application rates of 40 L/ha (a) and 80 L/ha (b) with residues, similar to foam, on 100 mesh sieves

Two commercial brands of glyphosate WG were analyzed with the herbicide 2,4-D (dimethylamine salt of (2,4-dichlorophenoxy) acetic acid), 806g/L (670g.ea/L), at a dose of 3,5L/ha.

The treatments consisted of two sequences of mixing the products (for example, first glyphosate and then 2,4-D,

or vice versa) and different application rates, 40L/ha, 80L/ha, 180L/ha and 250L/ha, thus offering different concentrations of the products in the sprays.

In a second step, a foliar fertilizer (homogeneous suspension; 2% nitrogen, 3% potassium oxide; and 1% manganese) was added to the broths containing glyphosate, at a dose of 0,4 L/ha, without mixing with 2,4-D.

Tabela 1. Descrição dos herbicidas a base de glifosato utilizados nesta pesquisa

Formulação WG	Equivalente ácido (g kg⁻¹)	Ingrediente ativo (conforme bula de cada produto)	Dose* (kg ha⁻¹)
Gli wg1	720	Sal de amônio de GLIFOSATO	3,5
Gli wg2	720	Sal de amônio de GLISOTATO	3,5

* A dose (em kg ou L do produto comercial por hectare) foi estabelecida para cada produto comercial visando garantir uma dose de 1800 g de equivalente ácido de glifosato por hectare.

Description of glyphosate-based herbicides used in the research

In order to preserve the practical agronomic aspect of the proposed

treatments, all glyphosate-based products were dosed in the sprays considering a basic recommendation of 1.800gea/ha of glyphosate.

In this way, the dose, in liters of commercial product per hectare for each herbicide, was adjusted to proceed with the mixture so that all treatments offered the same control potential (based on a standard dose of 1.800gea/ha).

All treatments started with an initial application rate of 40 liters per hectare, and this value was increased until a change in behavior was perceived in case of compatibility problems in the mixture. For WG products, the maximum application rate used (250 L/ha) represents the highest rate recommended in the

package insert for these products.

The compatibility assessment was carried out based on the methodology described in ASTM E1518 – 05 (2012). The mixture is considered compatible when, at the end of the agitation process, it is homogeneous and no residues are found on the sieve or in the container where it is stored.

Results of the study

It was possible to observe that in all mixtures, between glyphosates WG and 2,4-D, below 180 L/ha, there were compatibility problems for any herbicide tested and in any mixing order.



Examples of tank mixing with gli wg1 + 2,4-D, showing that as the mixtures became increasingly diluted, compatibility problems disappeared: (a) 40 L/ha; (b) 80 L/ha; (c) 180 L/ha; and (d) 250 L/ha

Table 2 presents the compatibility data relating to the evaluations for the two glyphosate-based herbicides WG (ammonium salt), in a mixture with 2,4-D and also in a mixture with the foliar fertilizer.

Only in the tank mixture with 180 L/ha was it possible to observe differences between the pesticides for mixture compatibility. Whenever 2,4-D was added first in the

mixture, up to 180 L/ha, there were problems with mixture compatibility, regardless of the commercial brand of glyphosate.

When the mixing order was performed with glyphosate WG added first to the mixture, the results were different for the two commercial brands tested. In this case, there were compatibility problems for the gliwg1 brand, while no compatibility problems were observed for the gliwg2 brand. For the maximum application rate recommended in the package insert for the WG formulations (250 L/ha), there were no compatibility problems with the method analyzed for the two commercial products, even when the mixing order varied.

The results show that as the solutions became increasingly diluted (corresponding to the highest application rate), the compatibility problems disappeared. However, in this process it was possible to clearly observe a difference in behavior between the commercial brands. While the mixture of the herbicide gliwg1 still resulted in compatibility problems at the dilution of 180 L/ha, the mixture of the herbicide gliwg2 already resulted in a compatible solution at this dilution.

Therefore, any tank mixing recommendations for these two herbicides would need to be differentiated between commercial brands. These differences in behavior between commercial products

are expected in practice, due to the qualitative and quantitative variations of the components of each formulation (the inerts), which may interact with each other in the spray and may or may not cause compatibility problems, depending on their concentrations.

Mixtures with gliwg1 and gliwg2 + foliar fertilizer did not result in compatibility problems for any application rate and in any mixing order evaluated.

Ordem de adição		Taxa de aplicação (L/ha)	Presença de Resíduos
Gli wg1	2,4-D	40	Sim
Gli wg2	2,4-D	40	Sim
2,4-D	Gli wg1	40	Sim
2,4-D	Gli wg2	40	Sim
Gli wg1	2,4-D	80	Sim
Gli wg2	2,4-D	80	Sim
2,4-D	Gli wg1	80	Sim
2,4-D	Gli wg2	80	Sim
Gli wg1	2,4-D	180	Sim
Gli wg2	2,4-D	180	Não
2,4-D	Gli wg1	180	Sim
2,4-D	Gli wg2	180	Sim
Gli wg1	2,4-D	250	Não
Gli wg2	2,4-D	250	Não
2,4-D	Gli wg1	250	Não
2,4-D	Gli wg2	250	Não

Table 2 - results for evaluations with glyphosate-based herbicides with WG formulation. The results in green indicate compatible mixtures. Results in orange indicate situations in which there were problems with mixture compatibility. And the results in bold indicate differences in behavior between similar products from different commercial brands. / Mixtures with WG glyphosates + foliar fertilizer did not present problems with mixture compatibility in this study. For this reason, the treatments are not included in the table

Analysis and conclusions

The treatments with compatibility problems tested in this research, with these doses, at these application rates and for these products, require attention when used in

mixtures. From this scenario, it is possible to conclude three main parameters:

- The determination of the application rate (L/ha) must also be carried out considering the compatibility tests of the tank mixtures and not only the operational yield. Based on the fact that for lower application rates, the mixture of agricultural pesticides is carried out in higher concentrations, thus increasing the chance of compatibility problems.
- Tank mixes should be recommended taking into account the commercial brands of the products.

- Mixing recommendations should be detailed and specific regarding the order in which products should be mixed.

*** For Rodolfo Glauber Chechetto;
Fernando Kassis Carvalho; Alisson
Augusto Barbieri Mota (*AgroEffective*);
Ulisses Rocha Antuniassi (*FCA/Unesp*)**

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How to protect crops against the coffee berry borer

Patrick Rodrigues de Souza, consultant at Cocari's Technical Department, shares effective techniques against the pest

03.01.2025 | 16:27 (UTC -3)

Cocari, edition of Cultivar Magazine



The coffee borer (*hypothenemus hampei*) is the second most significant coffee pest in Brazil, especially in Arabica crops. In its adult phase, the insect is a small black beetle that can cause great damage if not managed correctly.

“Management of the coffee berry borer begins with a good harvest, eliminating as many beans as possible in the crop to remove the berry borer’s host. Traps installed at strategic points help to indicate the best period for application, and control should be carried out when the insect flies, and can be chemical or biological,” explains Patrick Rodrigues de Souza, consultant for the Technical Department at Cocari.

Impacts of the pest on coffee productivity

The damage caused by the borer can be severe, affecting up to 20% of productivity.

The life cycle of the borer varies depending on the weather conditions.

According to the Embrapa catalog, at a temperature of 27 °C, this cycle variation occurs as follows:

- **Egg:** 4 days
- **Larval period:** 15 days
- **Pre-pupa:** 2 days
- **Pupa:** 8 day average
- **Adult:** male - 40 days; female lives on average 156 days

“The female creates galleries inside the fruits, where the larvae feed on the seeds, causing severe damage,” explains Patrick.

The consequences of borer infestation include premature fruit drop, reduced bean weight and reduced coffee quality due to the increase in borer beans.



Photo: L. Shyamal

“The holes in the grains caused by the larvae can serve as an entry point for pathogens, resulting in undesirable

fermentations that compromise the quality of the drink,” warns Patrick.

Efficient monitoring and control

The coffee berry borer survives from one harvest to the next in the remaining fruits, making careful harvesting and monitoring essential.

“Monitoring should begin as soon as insects are in transit, identified by traps or visually in crops,” reinforces Patrick.

With strategies such as the use of traps, biological or chemical control and attention to crop management, coffee growers can significantly reduce the impacts of this pest.

Learn more:

- [click here to see the products registered for the management of *hypothenamys hampei*](#)

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Andermatt Group acquires Entocare CV in Europe

Acquisition expands portfolio of biological solutions and consolidates global operations in sustainable protection for agriculture

03.01.2025 | 14:36 (UTC -3)

Fernanda Amaral, edition of Cultivar Magazine



The Andermatt Group kicked off 2025 by announcing the acquisition of the beneficial insect business of Entocare CV,

a Dutch leader in biological pest control. The strategic acquisition strengthens Andermatt's presence in Europe and expands its portfolio of innovative technologies for sustainable crop protection.

Headquartered in Wageningen, the Netherlands, Entocare is recognized for its expertise in developing solutions with beneficial insects, which present themselves as effective and sustainable alternatives to chemical pesticides.

“The arrival of Entocare to the Andermatt Group is another fundamental step in our mission to promote regenerative and sustainable agriculture. This acquisition, combined with the recent integration of Agricheck in Argentina, reinforces our

leadership in Latin America and the world, offering advanced technologies for farmers to face the challenges of agricultural management”, highlights **Carlos Gajardoni** (pictured above, center), CEO of Andermatt Brasil.

Simon Fleischli (pictured above, left), CEO of Andermatt Nederland, also celebrates the union. “We are very excited to integrate Entocare into the Andermatt family. Together, we will be able to offer farmers more complete and effective solutions, strengthening our leadership in biocontrol and agricultural innovation,” he celebrates.

FOR Maedeli Hennekam (pictured above, right), CEO and owner of Entocare, the integration into the group expands the

company's operations and positive impact on more farmers around the world. “This union is the perfect opportunity for us to advance even further in the biological protection of plants,” he concludes.

With a global presence in 27 subsidiaries and 11 factories, the Andermatt Group consolidates its operations in more than 60 countries, providing innovative biological solutions that increase yields, protect crops and preserve the environment.

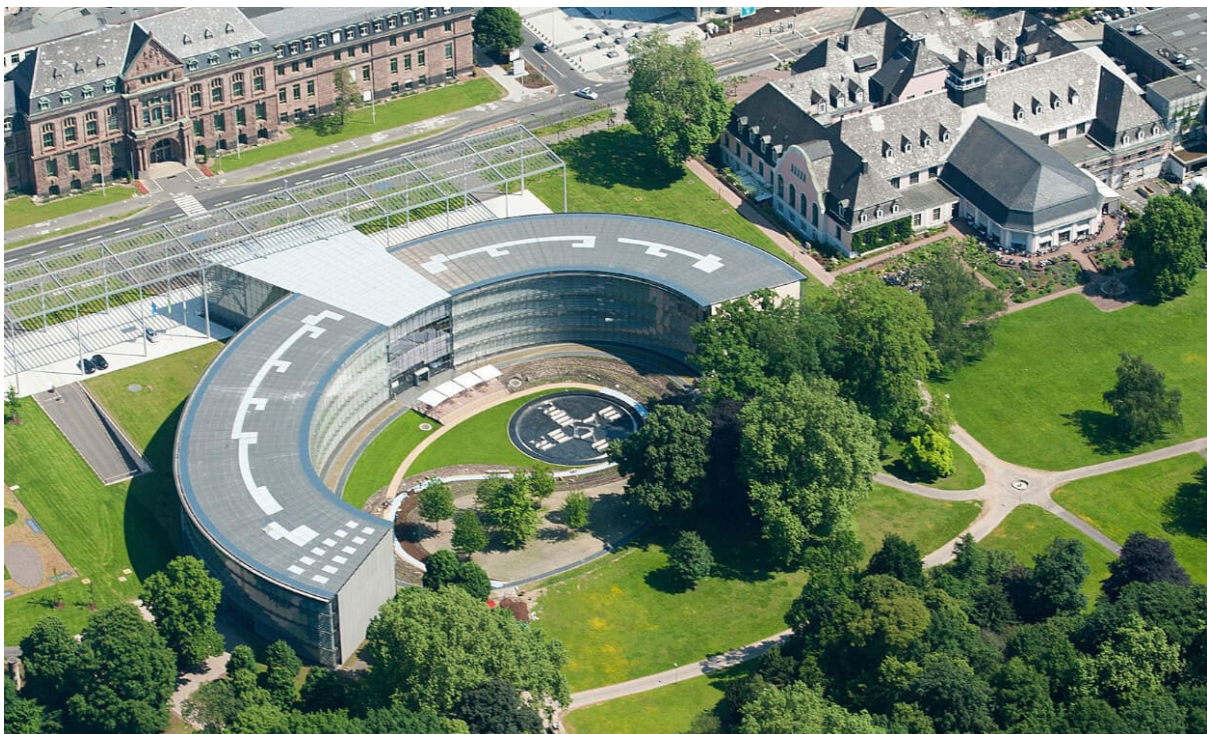
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Bayer announces end of glyphosate lawsuits in Australia

In the United States, the company has won 15 of the 22 trials it has brought.

03.01.2025 | 10:13 (UTC -3)

Cultivar Magazine, based on information from Philipp Blank



Bayer has announced the end of legal disputes over its Roundup herbicide in

Australia. The Australian Federal Court has granted a motion to dismiss the last pending class action lawsuit, known as the Fenton case.

According to the company, scientific evidence does not support a link between glyphosate — the active ingredient in Roundup — and non-Hodgkin lymphoma (NHL).

In the United States, the company has reported a record of winning 15 of 22 trials so far. Bayer plans to appeal to the Supreme Court to discuss whether claims based on state laws on warning labels preempt federal regulations.

At the same time, the company evaluates possible agreements and legal actions to minimize legal risks.

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Cibra has a new marketing director

Alexandre Jahn has over 20 years of experience in the sector

02.01.2025 | 16:23 (UTC -3)

Cultivar Magazine



Alexandre Jahn is the new marketing director of Cibra, a Brazilian fertilizer company. With over 20 years of

experience in the sector, Jahn will be responsible for maintaining the brand and visual identity, strategic public relations plans, integrated marketing communications planning, digital strategies, and other actions.

Jahn has been with the company for three years, previously holding the position of digital marketing manager. He also worked for John Deere for over 15 years, serving in positions such as strategic applications manager, digital and e-business manager for Latin America, and tactical marketing planning supervisor.

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RS 2024/25 Harvest: soybean planting has made little progress

Water deficit, especially in the West and Northwest, has limited development

02.01.2025 | 15:45 (UTC -3)

Cultivar Magazine



Fases da cultura no Rio Grande do Sul

Soja 2024/2025 Fases	Safrá atual		Safrá anterior	Média*
	Em 03/01	Em 26/12	Em 03/01	Em 03/01
Plantio	97%	96%	95%	97%
Germinação/Des. Vegetativo	92%	96%	91%	84%
Floração	8%	4%	9%	14%
Enchimento de Grãos	0%	0%	0%	2%
Em Maturação	0%	0%	0%	0%
Colhido	0%	0%	0%	0%

Fonte: Emater/RS-Ascar. Gerência de Planejamento. Núcleo de Informações e Análises. *Média safras 2020-2024.

The soybean harvest in Rio Grande do Sul recorded modest progress last week, with sowing reaching 97% of the projected area of 6,8 million hectares, according to Emater/RS. The slow pace is due to

reduced soil moisture and the need to wait for the harvest of other crops for successive planting. The expected average productivity is 3.179 kg/ha.

The general conditions of the crops are considered adequate, with 8% of the areas already in the flowering phase.

However, the water deficit, especially in the West and Northwest of the state, has limited development in areas with soils with lower moisture retention capacity.

In these regions, producers face the risk of reduced productivity due to delayed plant growth and possible flower abortion.

Crop health is good, with low to medium risks for Asian rust monitored by the state disease control program. Phytosanitary

management includes preventive fungicide applications, varying according to the stage of development and costs.

There have been reports of a high incidence of buva (*Conyza* spp.) and grasses in some areas. It is an invasive species that is difficult to control in the post-emergence stage, even with the use of selective herbicides.

Featured regions

- **Bagé Region:** Planting is practically complete, but the lack of rain has impacted crops in the vegetative stage, with a risk of floral abortion if the situation persists.

- **Caxias do Sul:** environmental conditions are favorable, with a low incidence of pests and the need for preventive management against diseases such as Asian rust and white mold.
- **Ijuí:** sowing was completed, with 60% of the areas presenting an adequate stand, while 15% still face density below the ideal, with no need for replanting.
- **Pelotas Region:** The occasional rains allowed the continuation of sowing, which is in the final stages, with crops mostly in adequate conditions.
- **Santa Maria:** Crops are showing good vegetative development, but

the water deficit is worrying producers in areas further west, where 7% of crops are already in bloom.

- **Santa Rosa:** the lack of moisture limited sowing and increased the need for replanting in up to 20% of areas, with 97% of crops still in the vegetative phase.
- **Soledade Region:** climatic conditions have favored plant growth, with progress in the closing of interrows and the beginning of flowering in short-cycle cultivars.

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CropChem announces restructuring in the commercial area

The company informs that, starting this month, it will be serving the Cerrado and North Central regions of Brazil

02.01.2025 | 14:47 (UTC -3)

Everton Barboza



CropChem, a Brazilian company that develops and sells agricultural pesticides, has announced that it is restructuring its sales department. Starting in January 2025, the company will also be serving the Cerrado and Central North regions of Brazil with its sales structure.

With headquarters in Porto Alegre (RS), CropChem highlighted in a statement that “it is fully convinced that it will continue to offer quality service, with differentiated products and innovative solutions. But now, it will take its experience and knowledge to the whole of Brazil”.

Furthermore, the company emphasized that it will no longer use Agriconnection's sales service. “We thank Agriconnection for the partnership during this period that it

was by our side, which was certainly very productive for both companies,” it concluded.

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Greening: Paraná eradicated more than 200 thousand plants in the Northwest

Eradication of host plants of the disease in areas neighboring the production sector is of great importance

02.01.2025 | 14:40 (UTC -3)

Adapt



In a new stage of combating the most serious citrus disease, the task force against greening, 'Big Citros Umuarama', inspected approximately 180 properties and eradicated more than 200 thousand infected plants in the Northwest of Paraná, the main producing region of the State.

The operation was carried out in November 2024 and involved 30 employees from the Paraná Agricultural Defense Agency (Adapar), covering the municipalities of Altônia, Cruzeiro do Oeste, Maria Helena, Iporã, São Jorge do Patrocínio, Perobal, Cafezal do Sul and Umuarama.

The task force worked on two fronts: registering new production areas and investigating reports of diseased citrus

plants. The task force promoted awareness-raising, monitoring and reinforcing measures to prevent and control greening in the Northwest region.

The operation resulted in the eradication of around 220 infected citrus plants on 22 properties, with the support of teams from the production sector, according to data from the Plant Health Department (DESV) of Adapar.

According to the department, eradicating these greening host plants in areas neighboring the production sector is of great importance. “These plants are infected with the disease and are a constant source of inoculum for the bacteria and the vector, the so-called citrus psyllid, making control within the orchards

very difficult,” explains Renato Blood, head of the Plant Health Department at Adapar.

Of the 89 reports of properties with symptoms of the disease, 8 were considered unfounded. Among the valid reports, 11 producers were notified to present the HLB Control Management Plan, and 35 were notified to eradicate the diseased plants within 20 days.

In addition, the department's data indicate the identification of 117 new citrus production areas for registration in the Plant Health Defense System (SDSV). Of this total, 104 properties have already been registered. In 9 properties, the producers were not present at the time of the visit, and another 13 were not inspected due to weather conditions or

time constraints.

According to the head of the Fruit Pest Surveillance and Prevention division at Adapar, Paulo Jorge Pazin Marques, cooperation with producers was essential for the effectiveness of the operation. “It is important to highlight that the vast majority of producers inspected in this operation had already met Adapar’s requirements for eliminating symptomatic plants, which demonstrates the success of this operation.”

For the head of the pest surveillance division in fruit farming, the operation reinforces the effective and responsible advancement of citrus farming in the region. “This operation will provide safe and sustainable development of citrus

farming throughout the North and Northwest of Paraná,” reinforces Marques.

In the coming months, Adapar will return to these inspected locations to ensure that the measures have been applied to these properties.

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Soybean planting in Mato Grosso ends on January 7th

Producers must also be aware of the deadline for registering production units

31.12.2024 | 17:03 (UTC -3)

Cultivar Magazine



The Mato Grosso State Agricultural Defense Institute (Indea) reinforced the alert to soybean farmers in Mato Grosso

about the end of the soybean sowing deadline for the 2024/25 harvest, scheduled for January 7.

The calendar, established by the Ministry of Agriculture, Livestock and Supply (Mapa), defined the planting period in the state between September 7 and next Tuesday, totaling 123 days of planting window.

The measure's main objective is to reduce the use of fungicides and mitigate the risk of fungal resistance. *Phakopsora pachyrhizi*, which causes Asian soybean rust.

Producers must also be aware of the deadline for registering production units, which is mandatory under the Mato Grosso Plant Protection Law (State Law 8.589/26).

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Law includes independent producers in the National Biofuels Policy

The law goes into effect immediately for most devices, with the exception of a few measures.

31.12.2024 | 16:51 (UTC -3)

Cultivar Magazine



DIÁRIO OFICIAL DA UNIÃO

Publicado em: 31/12/2024 | Edição: 251 | Seção: 1 | Página: 868

Órgão: Atos do Poder Legislativo

LEI Nº 15.082, DE 30 DE DEZEMBRO DE 2024

Altera a Lei nº 13.576, de 26 de dezembro de 2017, que dispõe sobre a Política Nacional de Biocombustíveis (RenovaBio), para nela incluir os produtores independentes de matéria-prima destinada à produção de biocombustível; e altera a Lei nº 9.478, de 6 de agosto de 1997.

Law No. 15.082 of December 30, 2024, which amends the National Biofuels Policy (RenovaBio), was published in the Official Gazette of the Union. The new legislation includes independent producers of raw materials for the production of biofuels in the sharing of revenues from Decarbonization Credits (CBIOs).

The law also changes the legislation on proof of biodiesel stock and establishes stricter penalties for failure to meet decarbonization targets.

According to the text, independent producers of sugarcane and other biomass will now have the right to a minimum share of the revenue generated by the sale of CBIOs.

This share will be 60% for those using the standard agricultural profile and 85% for those providing specific data for calculating energy-environmental efficiency. The additional revenue will depend on the data provided and the associated environmental performance.

The new law also provides that fuel distributors that do not meet decarbonization targets will be subject to penalties that include fines of up to R\$500 million and the possibility of revocation of their authorization to operate.

Furthermore, default may prevent the sale of fuels, as defined by the National Petroleum Agency (ANP).

Measures were included to improve control over the production and sale of biodiesel.

Distributors must prove that their stocks are compatible with sales, under penalty of administrative and commercial sanctions.

The law comes into effect immediately for most provisions, with the exception of some measures that will have a 90-day adaptation period.

[Related to the subject, click here to read "Brazil now has a specific law on bioinputs".](#)

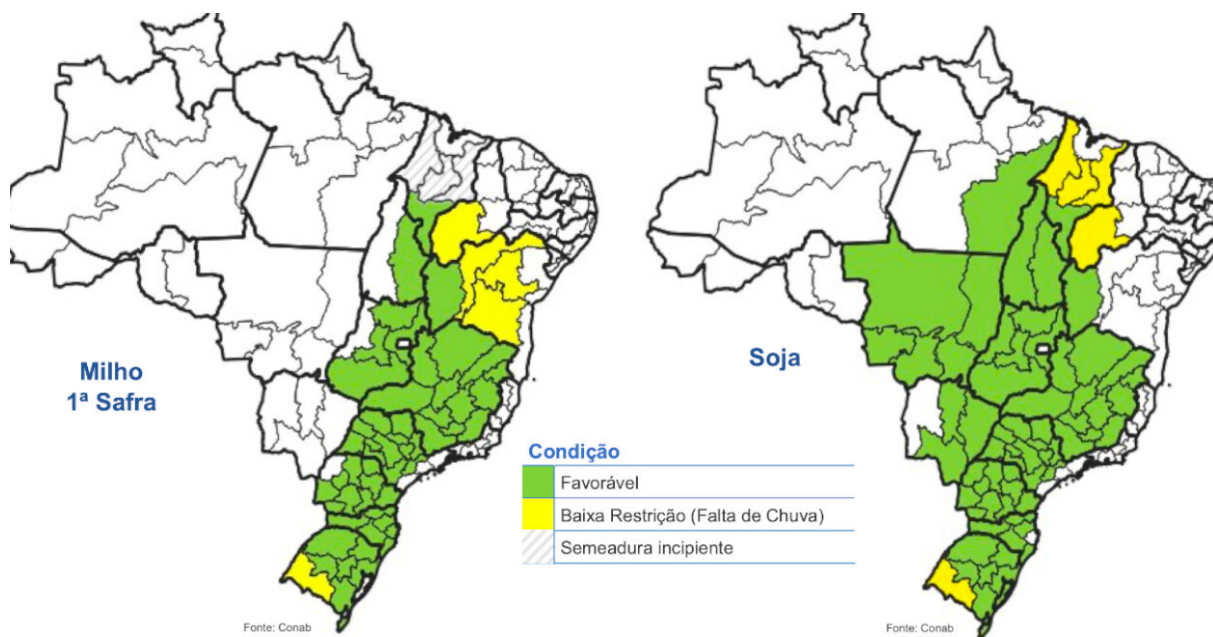
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Conab: crop monitoring December 30, 2024

Soybeans reached 98,2% of the planned sowing area

31.12.2024 | 11:18 (UTC -3)

Cultivar Magazine



The advance of soybean, corn, rice and bean crops in Brazil marks the final stretch of planting for the 2024/25 harvest, with an

emphasis on 98,2% sowing of soybeans and 80,8% of corn. The information is from Conab.

Soybean advance

Soybeans reached 98,2% of the planned sowing area, but face regional difficulties.

Excessive rainfall in Mato Grosso delays harvesting and increases disease pressure. In Rio Grande do Sul, low rainfall impairs plant development, requiring replanting in areas sown late.

In Goiás, grain filling is progressing under favorable weather conditions. In Bahia, crops are performing well and there are no significant records of pests or diseases.

In other regions, such as Maranhão and Pará, irregular rainfall compromises the pace of planting.

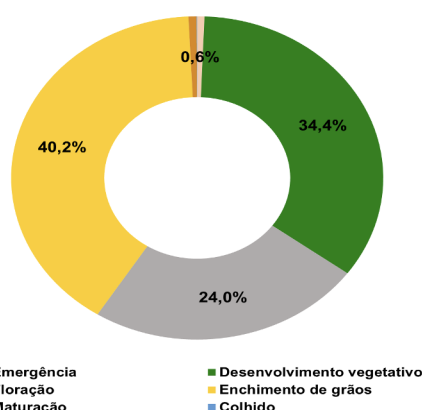


Soja - Safra 2024/25

(Esses 12 estados correspondem a 96% da área cultivada)

Semeadura

Estado	Semana até:		
	2023	2024	
	30/dez	22/dez	29/dez
Tocantins	99,0%	100,0%	100,0%
Maranhão	65,0%	62,0%	67,0%
Piauí	95,0%	97,0%	98,0%
Bahia	95,0%	99,0%	100,0%
Mato Grosso	100,0%	100,0%	100,0%
Mato Grosso do Sul	100,0%	100,0%	100,0%
Goiás	99,0%	99,6%	99,9%
Minas Gerais	99,0%	100,0%	100,0%
São Paulo	100,0%	100,0%	100,0%
Paraná	100,0%	100,0%	100,0%
Santa Catarina	92,0%	94,0%	95,0%
Rio Grande do Sul	97,0%	95,0%	96,0%
12 estados	97,9%	97,8%	98,2%



Corn reaches 80,8% planting

The first corn crop registered 80,8% planting, with different performance between states.

In Minas Gerais and Goiás, the crop is developing well due to regular rainfall.

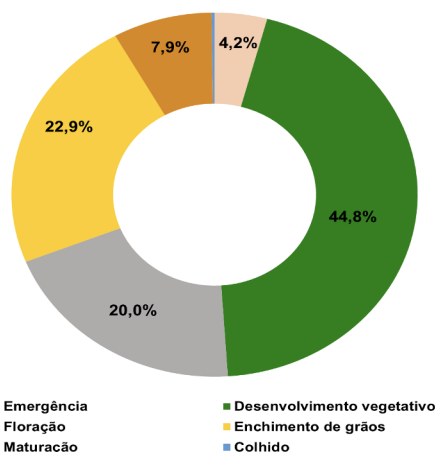


Milho 1ª - Safra 2024/25

(Esses 9 estados correspondem a 92% da área cultivada)

Semeadura

Estado	Semana até:		
	2023	2024	
	30/dez	22/dez	29/dez
Maranhão	30,0%	16,0%	25,0%
Piauí	20,0%	23,0%	35,0%
Bahia	76,0%	64,0%	67,0%
Goiás	80,0%	99,0%	100,0%
Minas Gerais	99,0%	100,0%	100,0%
São Paulo	100,0%	100,0%	100,0%
Paraná	100,0%	100,0%	100,0%
Santa Catarina	100,0%	100,0%	100,0%
Rio Grande do Sul	90,0%	90,0%	92,0%
9 estados	80,4%	77,9%	80,8%



In Paraná, climate conditions favored crop growth, but in Rio Grande do Sul productivity is below last year's harvest due to the drought.

In Bahia and Piauí, irregular rainfall affects production potential in several regions.

Rice has 92,8% of the planted area

Rice planting reaches 92,8%, with varying stages of development.

In Rio Grande do Sul, which concentrates the largest production, sowing is almost complete, with areas in flowering and others at the beginning of reproductive development.

In Maranhão, the harvest of irrigated areas is progressing. In states such as Goiás and Tocantins, cultivation remains stable, benefiting from climate conditions and adequate management.



Arroz - Safra 2024/25

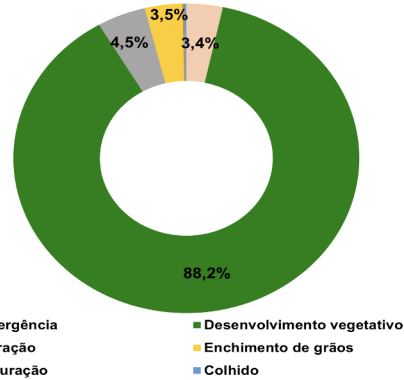
(Esses 6 estados correspondem a 88% da área cultivada)

Semeadura

Estado	Semana até:		
	2023	2024	
	30/dez	22/dez	29/dez
Tocantins	95,0%	90,0%	95,0%
Maranhão	24,0%	7,0%	14,6%
Mato Grosso	76,3%	76,0%	89,7%
Goiás	82,0%	85,0%	87,0%
Santa Catarina	100,0%	100,0%	100,0%
Rio Grande do Sul	97,0%	99,0%	99,0%
6 estados	90,6%	90,7%	92,8%

Colheita *

Estado	Semana até:		
	2023	2024	
	30/dez	22/dez	29/dez
Tocantins	0,0%	0,0%	0,0%
Maranhão	3,0%	3,5%**	4,1%
Mato Grosso	0,0%	0,1%	1,0%
Goiás	0,0%	2,0%	5,0%
Santa Catarina	0,0%	0,0%	0,0%
Rio Grande do Sul	0,0%	0,0%	0,0%
6 estados	0,2%	0%**	0,2%



Beans: harvest in progress

The first harvest of beans has reached 66,1% of planting, with regional progress and challenges. In Paraná, 25% of the total area has already been harvested, benefiting from rains that favored the development of the crop.

In Goiás and Minas Gerais, crops are flowering and grain filling, presenting good conditions.

In Bahia, the Central-North and South regions are facing problems due to the drought, while in the Central-South, planting is progressing at a moderate pace.

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Study compares ants and humans in cooperative problem-solving

For ants, performance improves as the number of participants increases

30.12.2024 | 15:33 (UTC -3)

Cultivar Magazine



Comparative study analyzed group problem-solving skills among ants of the species *Paratrechina longicornis* and humans. Used the "piano carrier puzzle".

The experiment challenges participants to move a geometric "T"-shaped load through a space divided into chambers connected by narrow openings. It aims to observe how individual and collective skills influence the efficiency of cargo transportation.

The research, carried out by scientists at the Weizmann Institute in Israel, presented different configurations: individuals, small groups and large groups, for both humans and ants.

The results show that for ants, performance improves with increasing number of participants. For humans, efficiency is reduced in large groups when communication is limited.

Ants' performance

Ants operate with an emergent collective memory, generated by constant interaction between individuals during transport.

This allows large groups of ants to persistently and in an organized manner navigate obstacles, outperforming small groups and individuals.

Despite not having a global understanding of the problem, the ants exhibit collective behavior that simulates a systematic

solution, such as moving along the walls of the environment until they find the exit.

Human performance

Humans have demonstrated more advanced abilities in spatial understanding and individual problem solving.

However, in larger groups with restricted communication, their efficiency decreased due to the lack of consensus and the tendency to adopt immediate decisions, called "greedy options".

Human groups that could communicate, on the other hand, performed more consistently, similarly to individuals, thanks to their ability to discuss strategies and avoid suboptimal choices.

Analysis of information

The study highlighted that while ants use a simple and efficient strategy based on mechanical interaction and short-term memory, humans rely on their individual cognitive capabilities. This creates a barrier to efficient collaboration in large groups without communication.

The research offers insights into how collective intelligence emerges across different species and suggests implications for the design of cooperative systems such as robots in complex environments.

The study concludes that humans and ants represent distinct evolutionary trajectories, with ants demonstrating advantages in scalability and humans in cognitive

flexibility.

More information can be found at

doi.org/10.1073/pnas.2414274121



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Federal University of Viçosa registers new wheat cultivar

This is the second variety developed by the UFV Wheat Program approved by Mapa

30.12.2024 | 15:10 (UTC -3)

Federal University of Viçosa



The Federal University of Viçosa (UFV) has just obtained registration of its second

wheat cultivar from the Ministry of Agriculture and Livestock (Mapa). The variety, called UFVT N2401, was selected based on data from 14 environments in Minas Gerais.

It is recommended for cultivation in tropical regions for the irrigated production system and stands out for its precocity, high grain yield and flour quality for the bakery industry. Sowing should take place between the months of April and May. The demand is for short-cycle cultivars, since there is an intensive production system in an irrigation area under central pivots.

The cultivar was developed by the UFV Wheat Program, linked to the Department of Agronomy and coordinated by Professor Maicon Nardino. He recalls that this

second variety was developed almost 20 years after the first, in 2005, and now there are other lines in the final stages of evaluation.

“The Program has made significant progress with the application of traditional and modern breeding strategies for the development of new wheat cultivars for the tropical region. Very soon, new competitive cultivars will be on the market to meet the demands of the sector in Brazil,” says the professor.

Maicon Nardino also highlights that the Program aims to train undergraduate students and postgraduate students in Plant Science and Genetics and Plant Breeding.

“We seek to align research with the development of innovations demanded by the wheat sector in tropical regions, especially regarding abiotic stresses and increased genetic resistance to blast, an extremely aggressive and frequent disease in these regions,” he says. When developing new varieties, researchers at the University seek to optimize generations of improvement by using high-throughput phenotyping tools and genotyping via molecular markers.

Promise for Agriculture

Brazil is currently a wheat importing country. However, in work carried out in partnership with the universities of Florida and Munich, UFV researchers identified a

potential area for wheat cultivation of around 2,5 million hectares, which would lead the country to self-sufficiency.

“Obtaining potential land is the first step towards increasing production in the quest for self-sufficiency, but there is still a need to make Brazilian wheat a competitive cereal compared to Argentine wheat. In this sense, wheat produced in tropical regions has demonstrated greater competitiveness due to its high industrial quality, grain yield and early market entry period,” explains Professor Maicon.

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Bioinputs Law boosts research, says Embrapa

Embrapa Agroenergia is among the institutions that contributed technically to the PL

30.12.2024 | 14:50 (UTC -3)

Cristiane Vasconcelos



Photo: Francisco Rezende

Law No. 15.070, which establishes procedures for the production of bio-inputs

for agricultural, livestock, aquaculture and forestry use, was sanctioned on December 24 by President Luiz Inácio Lula da Silva. It is an unprecedented and important regulatory milestone in the country, positioning Brazil among the leaders in the production and use of bio-inputs.

The contribution of science was fundamental to the construction of Bill 658/21, which gave rise to the regulation. Embrapa Agroenergia, as a leading research center in the area, is among the institutions that contributed technically to the Bill. The Unit currently has approximately 40% of its project portfolio focused on the development of bioinputs, within Embrapa's "Green Economy" portfolio.

“We conduct research that ranges from the isolation, characterization and selection of microorganisms to the development of biofertilizers, biostimulants and biopesticides that improve agricultural productivity and the health of plants and soil. In addition to using microorganisms, we have also developed bioinputs based on plant and algae extracts, which also help reduce the use of synthetic inputs and their environmental impact,” explains Bruno Laviola, head of Research and Development at Embrapa Agroenergia. For the researcher, the enactment of this Law envisages an even greater stimulus for research and development of bioinputs, now counting on a regulatory framework that guarantees legal certainty and encourages innovation, expanding the

possibilities for technology transfer to the production sector.

In addition to developing new biological products, Embrapa Agroenergia's research has optimized bioprocesses to incorporate agro-industrial waste as raw material, promoting greater circularity in production systems. This approach is in line with the concept of biorefineries, which aims to maximize the use of resources, minimizing waste and increasing production efficiency throughout the agricultural value chain. "In this way, the adoption and development of bioinputs not only boosts sustainability, but also fosters innovation in various sectors, such as bioenergy," highlights Bruno.

Understand the topic

Bioinputs are agro-industrial products or processes developed from enzymes, extracts (from plants or microorganisms), microorganisms, macroorganisms (invertebrates) and other components used for the biological control of insects, bacteria and fungi, for example. They are renewable, non-polluting technologies that favor the regeneration of biodiversity in the environment, especially soil.

The new Law provides for the production, import, export, registration, marketing, use, inspection, supervision, research, testing, packaging, labeling, advertising, transportation, storage, fees, provision of services, disposal of waste and packaging, and incentives for the production of bioinputs for agricultural, livestock,

aquaculture, and forestry use. It applies to all cultivation systems, including conventional, organic, and agroecological systems, as well as to all bioinputs used in agricultural activities.

This regulation is in line with the promotion of a greener economy in Brazil and worldwide. This is also in line with what is sought when we talk about energy transition. In this context, the regulation of bioinput production procedures has a direct impact on biofuel research, another area of ??activity for Embrapa Agroenergia.

Laviola recalls that, last October, Law No. 14.993, known as the Fuel of the Future Law, was enacted, establishing national programs aimed at promoting sustainable

fuels, such as green diesel, biomethane, sustainable aviation fuel (SAF), as well as biodiesel and ethanol. The synergy between the Bioinputs Law and the Fuel of the Future Law is a clear example of how regulation can enhance complementary sectors.

“The synergy between these two laws is clear. By regulating and encouraging the use of bio-inputs, Brazilian agriculture becomes more sustainable and emits fewer greenhouse gases. Crops managed with bio-inputs tend to have a smaller carbon footprint, providing cleaner raw materials for the production of biofuels. Consequently, biofuels produced from these raw materials have a lower carbon intensity, in line with the objectives of the

Fuel of the Future Law of promoting a cleaner and more sustainable energy matrix,” explains Laviola.

“At Embrapa Agroenergia, we have been working intensively to integrate these research fronts, promoting technological solutions that meet the demands of the energy transition and the bioeconomy”, he concludes.

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*The Cultivar Semanal magazine is a technical and scientific publication focused on agriculture in Brazil.
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