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# UNEMAT Tereza: Morphoagronomic Characteristics of the New Passion Fruit Cultivar for Use as Rootstock

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**Abstract**: Brazil is the world's largest producer of passion fruit but passion fruit productivity can still be improved. Passion fruit neck rot, a disease caused by the soil fungus, *Fusarium solani*, has made cultivation unfeasible. The objective of this study was to evaluate and present the main morphoagronomic characteristics of the new, collar rot-resistant hybrid passion fruit cultivar, UNEMAT Tereza, which was developed by the State University of Mato Grosso (UNEMAT) and is recommended for use as rootstock. The grafted, hybrid plants have oval-shaped, yellow fruits with high TSS (14.97 °Brix) and productive potential (13.46 t. $ha^{-1}$) compared to control fruits, indicating that the grafting did not affect the production or quality of the fruits.

**index terms:** *Passiflora* spp., *Fusarium solani*, Collar rot, Genetic resistance.

# UNEMAT Tereza: Características morfoagronômicas da nova cultivar de maracujá para uso como porta-enxerto

**Resumo:** O Brasil é o maior produtor mundial de maracujá e ainda apresenta possibilidade de expansão de produtividade, a podridão do colo do maracujazeiro, que é uma doença causada por fungos de solo (*Fusarium solani*) tem inviabilizado o cultivo. O objetivo deste trabalho é avaliação das características morfoagronômicas da nova cultivar híbrida de maracujá, UNEMAT Terezaresistente à podridão do colo, desenvolvida pela Universidade do Estado de Mato Grosso - UNEMAT, e recomendada para uso como porta-enxerto. UNEMAT Tereza é um híbrido resistente à podridão do colo, estéril, e por isso recomendada para porta-enxerto. Plantas enxertadas possuem frutos amarelos ovais, com alto TSS (14,97

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°Brix) e potencial produtivo (13,46 t. ha$^{-1}$), comparado à testemunha, comprovando que a enxertia não afetou a produção e a qualidade dos frutos.

**Termos para indexação:** *Passifora* spp., *Fusarium solani*, Podridão do colo, Resistência Genética.

## Introduction

The genus *Passiflora* exhibits wide genetic variability and comprises approximately 561 described and accepted species according to the World Flora Online (WFO) (2023). Some wild species, such as *Passiflora quadrangularis* L., exhibit high genetic resistance to collar rot (PREISIGKE et al., 2015). However, in Brazil, 90% of commercial passion fruit crops belong to the species *Passiflora edulis* Sims, popularly known as sour passion fruit (VIANA et al., 2016). In recent years, the lifespan and economic viability of orchards of *P. edulis* Sims have been declining, dropping from 922,334 tonnes (t) produced in 2010 to 711,278 t produced in 2023 in Brazil, with the state of Bahia being the largest producer and Mato Grosso occupying the 15th position (4,877 t) in the ranking (IBGE, 2023).

One of the possible causes for this reduction is damage caused by phytopathogens, especially those that attack the root system, such as fungi of the genus *Fusarium*. *Fusarium* species have a wide geographic distribution and are responsible for significant losses in various economically important crops (SUMMERELL, 2019). In passion fruit, species of the *Fusarium solani* complex are causal agents of collar rot disease (FISCHER; RESENDE, 2016), which causes substantial production losses. Infection by this pathogen starts in wounds in the collar or roots and can cause sudden wilting, collapse, and death of the plants at any stage of development (FISCHER; RESENDE, 2016). Furthermore, there are no chemical pesticides for controlling this disease that are economically viable and environmentally acceptable (CAVICHIOLI et al., 2009).

One way to reduce the effects of collar rot on passion fruit plants is through the use of wild species or resistant hybrids as rootstocks (SANTOS et al., 2016). Various authors have used rootstocks as a control measure in the past (SILVA et al., 2013; MORGADO et al., 2015; LIMA et al., 2017; ESPINAL et al., 2023). However, most studies have been conducted with wild passion fruit species, such as *P. gibertii* NE Br., *P. alata* Curtis, *P. capsularis* L., *P. nitida* Kunth, *P. laurifolia* L., *P. morifolia* Mast., *P. quadrangularis* L., *P. maliformis* L., and *P. foetida* L.

The morphological differences found in wild passion fruit species may lead to low grafting success, decreased productivity, and low plant vigour, among other issues, resulting in their limited use by producers (MORGADO et al., 2015). Due to these limitations, the best option for farmers is to use interspecific hybrids, obtained by crossing resistant wild species with *P. edulis*, these hybrids contain 50% of the genetic material of *P. edulis*. Several species have already been described as compatible for crossing with *P. edulis*, such as *P. vitifolia*, *P. alata*, *P. cincinnata*, *P. maliformis* (OCAMPO et al., 2016), *P. nitida*, and *P. quadrangularis* (MAROSTEGA et al., 2020). Therefore, the use of resistant hybrids may be the best alternative for controlling soil fungi.

The objective of this study was to evaluate and present the main morphoagronomic characteristics of the new collar rot-resistant hybrid passion fruit cultivar UNEMAT Tereza, which was developed by the State University of Mato Grosso (UNEMAT) and is recommended for use as rootstock.

## Material and Methods

**Plant Material.** The UNEMAT Tereza cultivar is an interspecific hybrid (IH) selected for use as a rootstock, described by Marostega et al. (2020), that is resistant to *F. solani*. The UNEMAT Tereza is registered in the National Cultivar Registry (RNC) of MAPA under number 50273. UNEMAT is responsible for maintaining the genetic material. The cultivar is the

result of crossing the species *Passiflora edulis Sims* (commercial) and the *P. quadrangularis* accession, belonging to the Active Germplasm Bank of the Plant Breeding Laboratory at UNEMAT, which has high resistance to *F. solani* (PREISIGKE et al., 2015) (Figure 1). The purpose of crossing the resistant species with the commercial species was to transfer the resistance gene to *F. solani* into commercial passion fruit. However, the resulting hybrid is sterile, but because it is resistant to the fungus, it is recommended for use as a rootstock.

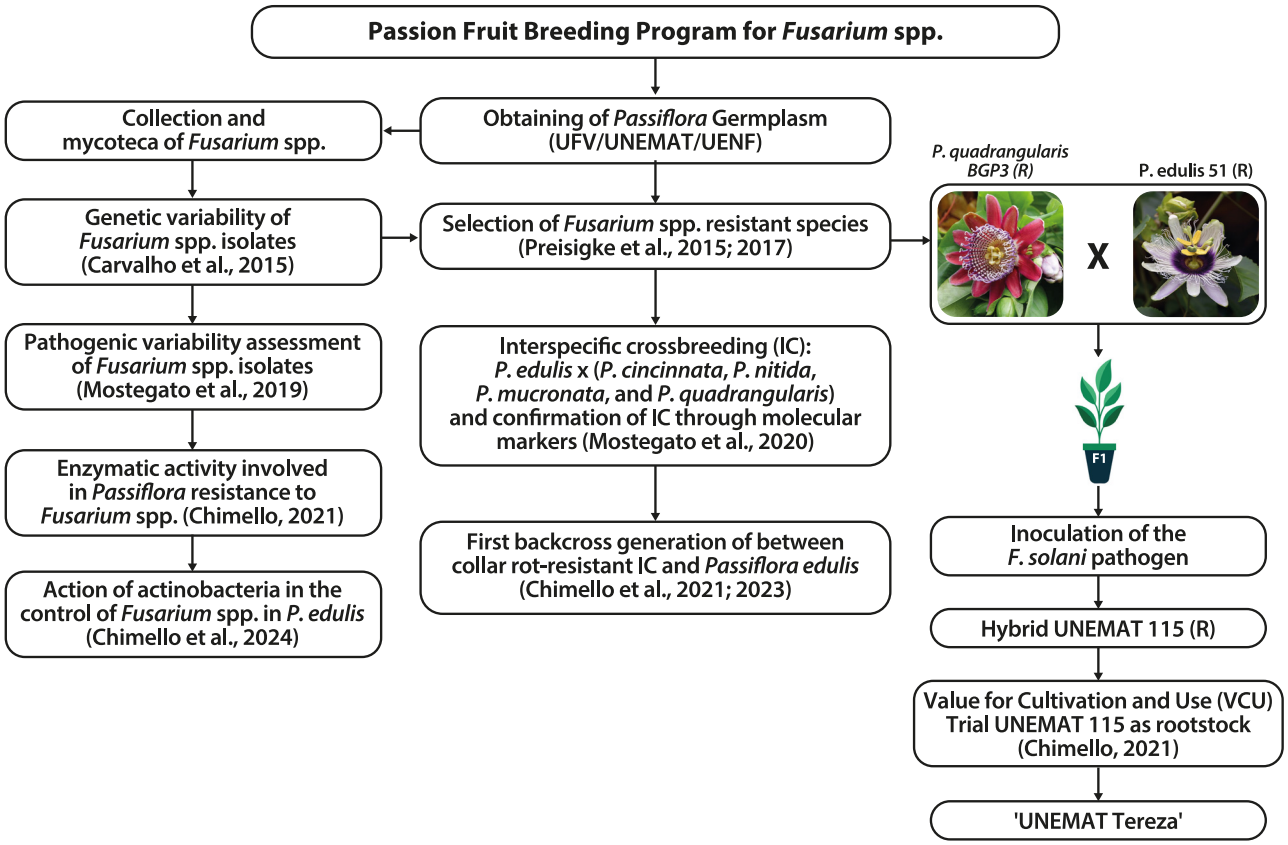


**Figure 1**. Flowchart of the Passion Fruit Breeding Programme for obtaining new cultivars resistant to *Fusarium solani.*

**Cultivation and Use Value Trial**. Initially, a grafting test was conducted with the UNEMAT Tereza cultivar. The grafting method used was full cleft grafting. For this purpose, during grafting, the rootstock seedlings were cut back to 10–12 cm from the plant's base, where a longitudinal cleft of 1–2 cm was made. A scion with two internodes and a wedge-shaped base was inserted into this cleft (Figure 1ab). The stem in this region was protected with plastic tape to keep the canopy and rootstock in firm contact (Figure 1c). The tape was removed fifteen days after grafting (CAVICHIOLI et al., 2011). The seedlings were produced in a protected environment and kept under a shade net with 50% shading.

The Cultivation and Use Value (VCU) trial was conducted at the experimental field of the Plant Breeding Laboratory located at the State University of Mato Grosso – UNEMAT, Jani Vanini Campus in Cáceres, between latitudes 15° 27' and 17° 37' South and longitudes 57° 00' and 58° 48' West, at an altitude of 118 m, from July 2019 to October 2020. The soil is classified as a typical eutrophic red–yellow Latosol (ARAÚJO et al., 2022), and the climate is hot and humid tropical with a dry winter (NEVES et al., 2011).

For the experiment, seedlings from cuttings of healthy adult plants of the UNEMAT Tereza cultivar were planted in 128-cell polystyrene trays and kept under a 50% shade net. After 3 months, these seedlings were transplant-

ed into plastic bags (15x25 cm) containing substrate. The seedlings were produced in a protected environment and kept under a 50% shade net. The seedlings were manually irrigated twice a day at 12-hour intervals.

For grafting, the species *P. edulis* Sims, cultivar BRS Sol do Cerrado (commercial), was used. This cultivar, in addition to having large yellow fruits with a pulp yield of approximately 38% and high productivity, also shows tolerance to foliar diseases such as bacterial blight, anthracnose, and viral diseases. However, it is highly susceptible to soil-borne pathogens such as *F. solani* (EMBRAPA, 2008). The rootstock seedlings were cut at a height of 10–12 cm from the plant base. At this point, a longitudinal cleft of 1 to 2 cm was made, forming a scion with two internodes, where the wedge-shaped base of the scion was inserted. The stem in this area was wrapped with plastic tape to ensure firm contact between the scion and rootstock, which also provided protection. This plastic tape was removed fifteen days after grafting (CAVICHIOLI et al., 2011). The seedlings were produced in a protected environment and kept under a 50% shade net.

The VCU field trial was carried out three months after grafting, with a spacing of 1.5 m between plants and 3 m between rows, in a vertical trellis system, using a randomised block design with five blocks and seven plants per plot, totaling 35 UNEMAT Tereza plants grafted with the "BRS Sol do Cerrado" scion and 35 ungrafted BRS Sol do Cerrado commercial plants as controls, resulting in the evaluation of 70 plants in total. Irrigation was performed twice a day or according to the plant's needs.

The soil preparation and cultivation practices followed the standard procedures for crops (CARVALHO et al., 2015a), with monthly fertilisation of 25 g of N and 30 g of KCl and biannual fertilisation with 30 g of $P_2O_5$ per plant. Sprinkler irrigation was applied twice a day (morning and afternoon).

For the morpho-agronomic evaluation of the grafted plants and controls, 28 descriptors proposed by the Ministry of Agriculture, Livestock, and Food Supply (MAPA) for passion fruit cultivars (*Passiflora edulis*) were used (MAPA, 2016a).

The UNEMAT Tereza cultivar does not produce flowers; therefore, only the 10 descriptors related to the vegetative part (branches and leaves) proposed by the MAPA for passion fruit cultivars (*Passiflora* L. and interspecific hybrids) other than *Passiflora edulis* Sims, were evaluated (MAPA, 2016b). This evaluation was conducted in parallel with the VCU trial. All characteristics were assessed on the basis of the first year of cultivation (01/2020 to 10/2020).

## Results and Discussion

In total, 98 plants were grafted, and a grafting success rate of 68% was observed. Roncatto et al. (2011) also used the species *P. quadrangularis* as rootstock for cultivars of *P. edulis* and reported a grafting success rate of 58.28%. Therefore, the UNEMAT Tereza cultivar is efficient in the grafting process.

The results of the analysis of variance of the quantitative characteristics analysed (Table 1) revealed a significant effect, according to the F test at 1% probability, for the characteristics of bract length (BL), sepal width (SL), flower diameter (FD), width of coloured rings on corona filaments (CC), and androgynophore length (AL). The total soluble solids content (°Brix) of the fruits was significant at the 5% probability level. The other characteristics were not significant.

According to Hartmann et al. (2011), the choice of rootstock can impact the growth and maturation of plants, affecting production, as well as modifying the physical and chemical properties of fruits. The lack of significance of most quantitative characteristics indicates that the use of the UNEMAT Tereza cultivar as rootstock is promising, as grafted plants maintained their characteristics even after grafting.

**Table 1**. Summary of the analysis of variance of the evaluated traits in the grafted and control plants.

| SV | | Blocks | Tratamentos | Residue | CV % |
|---|---|---|---|---|---|
| DF | | 4 | 1 | 4 | |
| MS | PT | 118.8541 | 2.3141 ns | 7.5315 | 6.4 |
| | NF | 5139.4 | 14.4000 ns | 562.4 | 8.59 |
| | PD | 11975849.1 | 233167.0367 ns | 758881.612 | 6.4 |
| | LL | 227.624 | 340.2389 ns | 144.6102 | 8.63 |
| | LW | 58.1989 | 10.8681 ns | 168.2961 | 8.55 |
| | PL | 48.0324 | 27.8389 ns | 13.7611 | 7.03 |
| | BL | 0.2405 | 23.8394 ** | 0.295 | 4.52 |
| | SL | 0.7866 | 0.8294 ns | 2.2483 | 4.09 |
| | SW | 0.1801 | 10.1405 ** | 0.2922 | 3.51 |
| | FD | 1.8376 | 299.0996 ** | 1.5311 | 1.45 |
| | CD | 6.7153 | 72.5764 ns | 15.1628 | 5.13 |
| | CC | 0.3985 | 4.3296 ** | 0.1249 | 1.99 |
| | AL | 0.027 | 0.7840 ** | 0.0233 | 1.35 |
| | FL | 17.2432 | 9.8655 ns | 1.5571 | 1.35 |
| | FW | 23.922 | 3.7638 ns | 4.0404 | 2.39 |
| | L/W | 0.0008 | 0.0001 ns | 0.0012 | 3.11 |
| | FT | 0.3061 | 0.1563 ns | 0.1491 | 7.38 |
| | TSS (°Brix) | 0.4233 | 7.7396 * | 0.9091 | 6.76 |

(**) significant at 1%; (*) significant at 5%; (ns) not significant; SV: source of variation; DF: degree of freedom; CV: coefficient of variation; MS: mean square; PT: total production; NF: number of harvested fruits; PD: yield at t/ha; LL: leaf blade length (mm); LW: leaf blade width (mm); PL: petiole length (mm); BL: bract length (mm); SL: sepal length (mm); SW: sepal width (mm); FD: flower diameter (mm); CD: corona diameter (fringes) (mm); CC: width of coloured rings in corona filaments (mm); AL: androgynophore length (mm); FL: fruit length (mm); FW: fruit width (mm); L/W: length/width ratio; FT: fruit skin thickness (mm); TSS: total soluble solids content (°Brix).

An analysis of the results obtained with the Tukey test ($p < 0.05$) revealed that five of the six significant characteristics are related to flowers (Table 2), and for these, the plants of the commercial cultivar presented higher means than did the grafted plants; however, this difference did not affect production.

**Table 2**. Means of the evaluated traits of grafted and control passion fruit plants.

| Trait | Grafted plants | Control plants |
|---|---|---|
| Flower: Bract length (mm) | 10.478 b | 13.566 a |
| Flower: Width of the sepal (mm) | 14.374 b | 16.388 a |
| Flower diameter (mm) | 79.724 b | 90.662 a |
| Width of the coloured rings of the flower (mm) | 17.098 b | 18.414 a |
| Androgynophore length (mm) | 10.982 b | 11.542 a |
| Total soluble solids content (°Brix) | 14.975 a | 13.215 b |

Means followed by the same letter in the columns do not differ according to Tukey's test ($p < 0.05$).

Both grafted and control fruits have a predominantly oval shape, yellow skin colour, and light orange pulp colour. The fruits harvested from the grafted plants had an average length of 93.46 mm, an average width of 84.84 mm, and a skin thickness of 5.35 mm (Figure 2). A significant difference between the fruits of the grafted and commercial plants was observed for the total soluble solids content, which was 14.97 °Brix for the grafted plants and 13.21 °Brix for the plants of the control cultivar. Therefore, when the UNEMAT Tereza cultivar was used as rootstock, the fruits presented a higher level of sweetness.

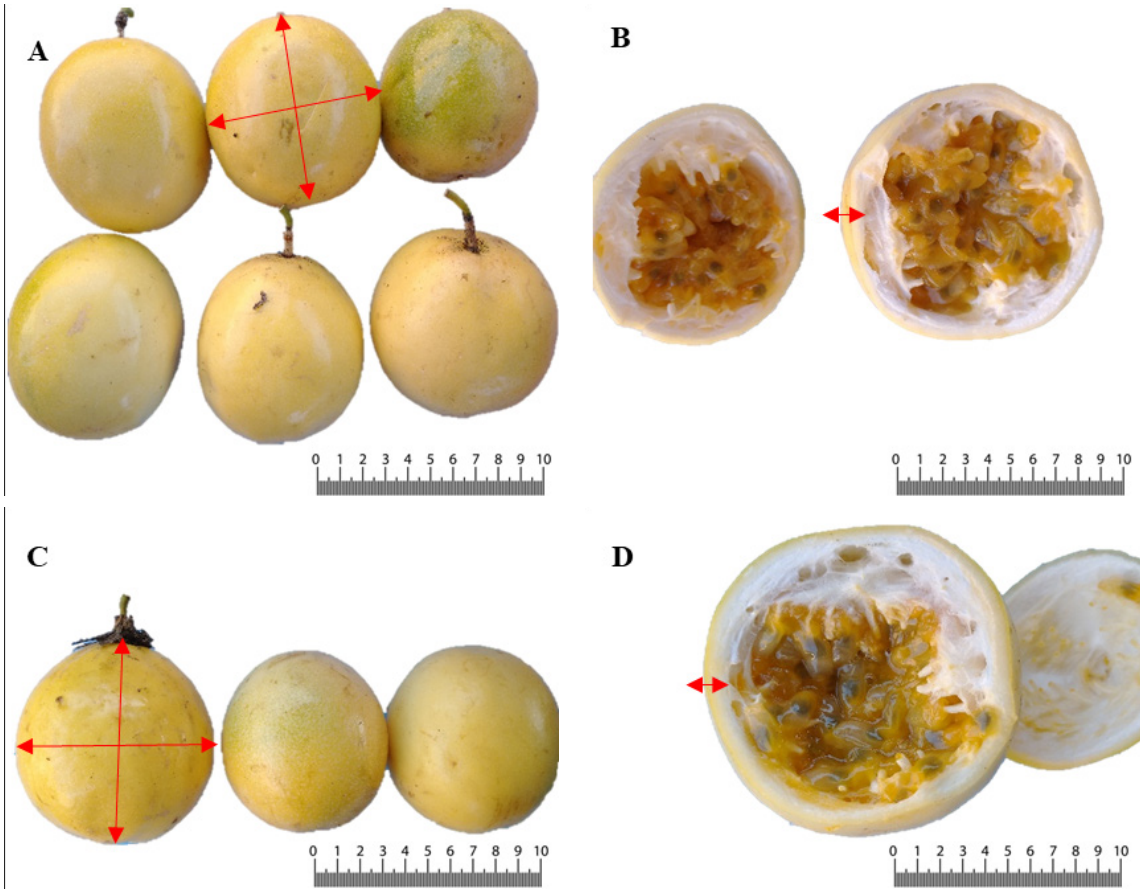


**Figure 2.** Morphoagronomic descriptors in the evaluation of passion fruit fruits. Length and width of fruits (A) and skin thickness (B) of fruits from grafted plants. Length, width of fruits (C), and skin thickness (D) of fruits from commercial cultivar plants.

No significant differences were observed in the morphological characteristics of the canopy of the grafted plants compared with those of the control plants, indicating that the use of the cultivar as rootstock does not interfere with the expression of the characteristics of the canopy used as a graft. In summary, the choice of rootstock had no effect on the overall appearance of the plants. However, differences were observed between the UNEMAT Tereza plants and the cultivar plants (Table 3).

**Table 3.** Morphoagronomic descriptors for passion fruit cultivars (grafted and control plants) and for *Passiflora* L. cultivars and interspecific hybrids (UNEMAT Tereza).

| Characteristics | Identification of Characteristic | G | C | IH |
|---|---|---|---|---|
| 1. Branch: Predominant Color PQ VG (a) | Light green (1); Dark green (2); Purplish green (3); Purple (4) | 1 | 1 | 3 |
| 2. Leaf blade: length QN MI (b) (+) | Very short <8 cm (1); Short 8 to 12 cm (2); Medium > 12 to 15 cm (3); Long > 15 to 18 cm (4); Very long > 18 cm (5) | 3 | 3 | 3 |
| 3. Leaf blade: maximum width QN MI (b) (+) | Very narrow <8 cm (1); Narrow 8 to 12 cm (2); Medium > 12 to 15 cm (3); Wide > 15 to 18 cm (4); Very wide > 18 cm (5) | 4 | 4 | 2 |
| 4. Leaf blade: predominant shape PQ VG (b) (+) | Lanceolate (1); Ovate (2); Cordate (3); Oblong (4); Elliptic (5); Lobed (6); Cleft (7); Divided (8) | - | - | 5 |
| 5. Leaf blade: predominant division PQ VG (b) (+) | Entire (1); Bilobed (2); Trilobed (3); Pentalobed (4); Hexalobed (5); Heptalobed (6) | - | - | 1 |
| 6. Leaf blade: sinus QL VG (b) (+) | Absent (1); Present (2) | - | - | 1 |

(continued)

**Table 3.** Morphoagronomic descriptors for passion fruit cultivars (grafted and control plants) and for *Passiflora* L. cultivars and interspecific hybrids (UNEMAT Tereza). (Continuation)

| Characteristics | Identification of Characteristic | G | C | IH |
|---|---|---|---|---|
| 4. Leaf blade: predominant sinus depth QN VG (b) (+) | Shallow (1); Medium (2); Deep (3) | 3 | 3 | - |
| 8. Leaf blade: hairiness QL VG (b) | Absent (1); Present (2) | - | - | 1 |
| 5. Leaf blade: blistering QL VG (b) | Absent (1); Present (2) | 1 | 1 | 1 |
| 6. Petiole: length QN MI (b) (+) | Very short < 2 cm (1); Short 2 to 3 cm (2); Medium > 3 to 4 cm (3); Long > 4 cm (4) | 4 | 4 | 3 |
| 7. Petiole: predominant position of nectaries QL VG (b) (+) | Adjacent to leaf blade (1); Distant from leaf blade (2) | 1 | 1 | 2 |
| 8. Flower: length of bract QN MI (c) (+) | Short < 2 cm (1); Medium 2 to 3 cm (2); Long > 3 cm (3) | 1 | 1 | - |
| 9. Flower: length of sepal QN MI (c) (+) | Short < 3.5 cm (1); Medium 3.5 to 4.5 cm (2); Long > 4 cm (3) | 2 | 2 | - |
| 10. Flower: width of sepal QN MI (c) (+) | Narrow < 1.5 cm (1); Medium 1.5 to 2 cm (2); Wide > 2 cm (3) | 1 | 2 | - |
| 11. Flower: diameter QN MI (c) (+) | Very small < 3 cm (1); Small 3 to 5 cm (2); Medium > 5 to 7 cm (3); Large > 7 to 9 cm (4); Very large > 9 cm (5) | 4 | 4 | - |
| 12. Flower: corona (fringes) diameter QN MI (c) (+) | Very small < 3 cm (1); Small 3 to 5 cm (2); Medium > 5 to 7 cm (3); Large > 7 to 9 cm (4); Very large > 9 cm (5) | 4 | 4 | - |
| 13. Flower: longest filaments of the corona QL VG (c) (+) | Smooth (1); Wavy (2) | 2 | 2 | - |
| 14. Flower: colored rings on the filaments of the corona QL VG (c) | Absent (1); Present (2) | 2 | 2 | - |
| 15. Only cultivars with presence of colored rings: Flower: width of the colored rings on the filaments of the corona QN MI (c) (+) | Narrow < 1cm (1); Medium 1 to 1.5 cm (2); Wide > 1.5 cm (3) | 3 | 3 | - |
| 16. Only cultivars with presence of colored rings: Flower: intensity of the predominant coloration of the colored ring(s) on the filaments of the corona QN VG (c) (#) | Light purple (1); Medium purple (2); Dark purple (3) | 3 | 3 | - |
| 17. Flower: length of the androgynophore QN MI (c) (+) | Very short < 0.5 cm (1); Short 0.5 to 1 cm (2); Medium > 1 to 2 cm (3); Long > 2 to 3 cm (4); Very long > 3 cm (5) | 3 | 3 | - |
| 18. Flower: anthocyanin in the androgynophore QN VG (c) (+) | Absent or weak (1); Medium (2); Strong (3) | 1 | 1 | - |
| 19. Flower: anthocyanin in the filament QN VG (c) | Absent or weak (1); Medium (2); Strong (3) | 2 | 2 | - |
| 20. Flower: anthocyanin in the style QN VG (c) | Absent or weak (1); Medium (2); Strong (3) | 1 | 1 | - |
| 21. Fruit: length QN MI (d) (+) | Very short < 4 cm (1); Short 4 to 7 cm (2); Medium > 7 to 10 cm (3); Long > 10 to 13 cm (4); Very long > 13 cm (5) | 3 | 3 | - |
| 22. Fruit: width QN MI (d) (+) | Very narrow < 4 cm (1); Narrow 4 to 6 cm (2); Medium > 6 to 8 cm (3); Wide > 8 to 10 cm (4); Very wide > 10 cm (5) | 4 | 4 | - |
| 23. Fruit: length/width ratio QN MI (d) | Very low < 0.9 cm (1); Low 0.9 to 1.2 cm (2); Medium > 1.2 to 1.5 cm (3); High > 1.5 to 1.8 cm (4); Very high 1.8 cm (5) | 2 | 2 | - |
| 24. Fruit: predominant shape PQ VG (d) (+) | Oval (1); Oblong (2); Rounded (3); Oblate (4); Ellipsoid (5); Obovate (6) | 1 | 1 | - |
| 25. Fruit: predominant peel (epidermis) color PQ VG (d) | Yellow (1); Orange-red (2); Red (3); Purple (4) | 1 | 1 | - |

(continued)

**Table 3.** Morphoagronomic descriptors for passion fruit cultivars (grafted and control plants) and for *Passiflora* L. cultivars and interspecific hybrids (UNEMAT Tereza). (Continuation)

| Characteristics | Identification of Characteristic | G | C | IH |
|---|---|---|---|---|
| 26. Fruit: peel thickness QN MI (d) (+) | Thin < 0.6 cm (1); Medium 0.6 to 1 cm (2); Thick > 1 cm (3) | 1 | 1 | - |
| 27. Fruit: pulp color PQ VG (d) (+) | Whitish (1); Yellowish-green (2); Yellow (3); Light orange (4); Dark orange (5) | 4 | 4 | - |
| 28. Fruit: total soluble solids content QN MG (d) (+) | Very low < 10º Brix (1); Low 10º to 12º Brix (2); Medium > 12º to 14º Brix (3); High >14º to 16º Brix (4); Very high > 16º Brix (5) | 4 | 3 | - |

G: Grafted; C: Control; IH: Interspecific Hybrid UNEMAT 115

The plants with the "BRS Sol do Cerrado" canopy have a predominantly light green branch colour, broad leaf blade width (150 to –180 mm), long petiole length (>40 mm), and adjacent nectary position on the leaf blade (Figure 3A, B, and C). In contrast, the UNEMAT Tereza plants have a greenish-purple colour, narrow leaf blade width (80 to –120 mm), medium petiole length (>30 to –40 mm), and distant nectary position from the leaf blade (Figure 3D, E, and F). The UNEMAT Tereza cultivar has a characteristic "predominant leaf blade shape", with elliptical and entire leaves, similar to the leaves of its parent *P. quadrangularis* (Figure 3D and 3E). This characteristic is not present in the MAPA descriptors for the *P. edulis* species.

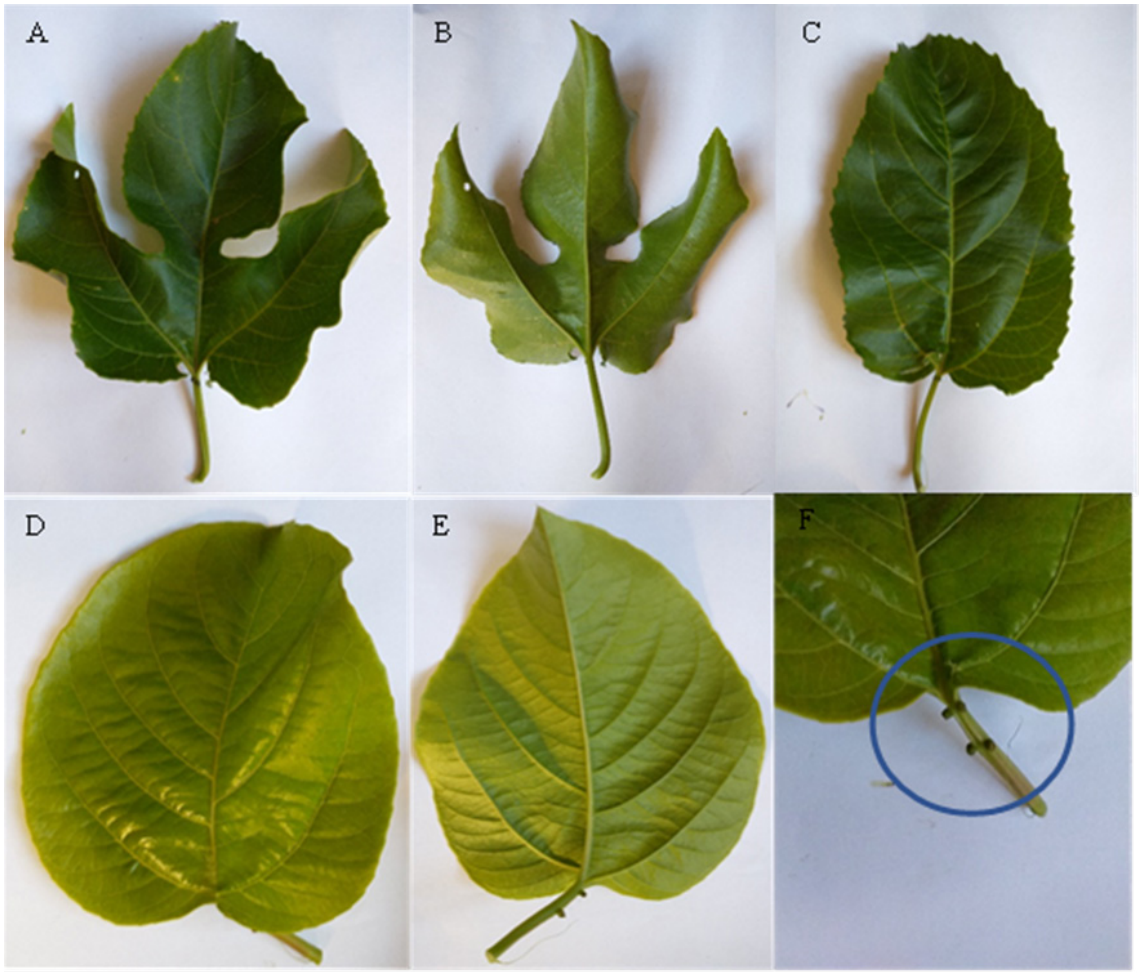


**Figure 3.** Morphological characteristic descriptors of the canopy. Leaves of the canopy of the BRS Sol do Cerrado cultivar (A, B, and C); leaves of the UNEMAT Tereza cultivar plants (D and E); detail of the predominant position of the nectaries distant from the leaf blade (F).

Owing to the sterility of UNEMAT Tereza, the evaluation of flower characteristics was carried out for both the grafted and control plants, both with the canopies of the BRS Sol do Cerrado cultivar (Figure 4). Differences were observed only for sepal width: the grafted plants had narrow sepals (<15 mm), and the control plants had medium sepals (15 to –20 mm) (Table 3). However, this difference does not interfere with fruit production.

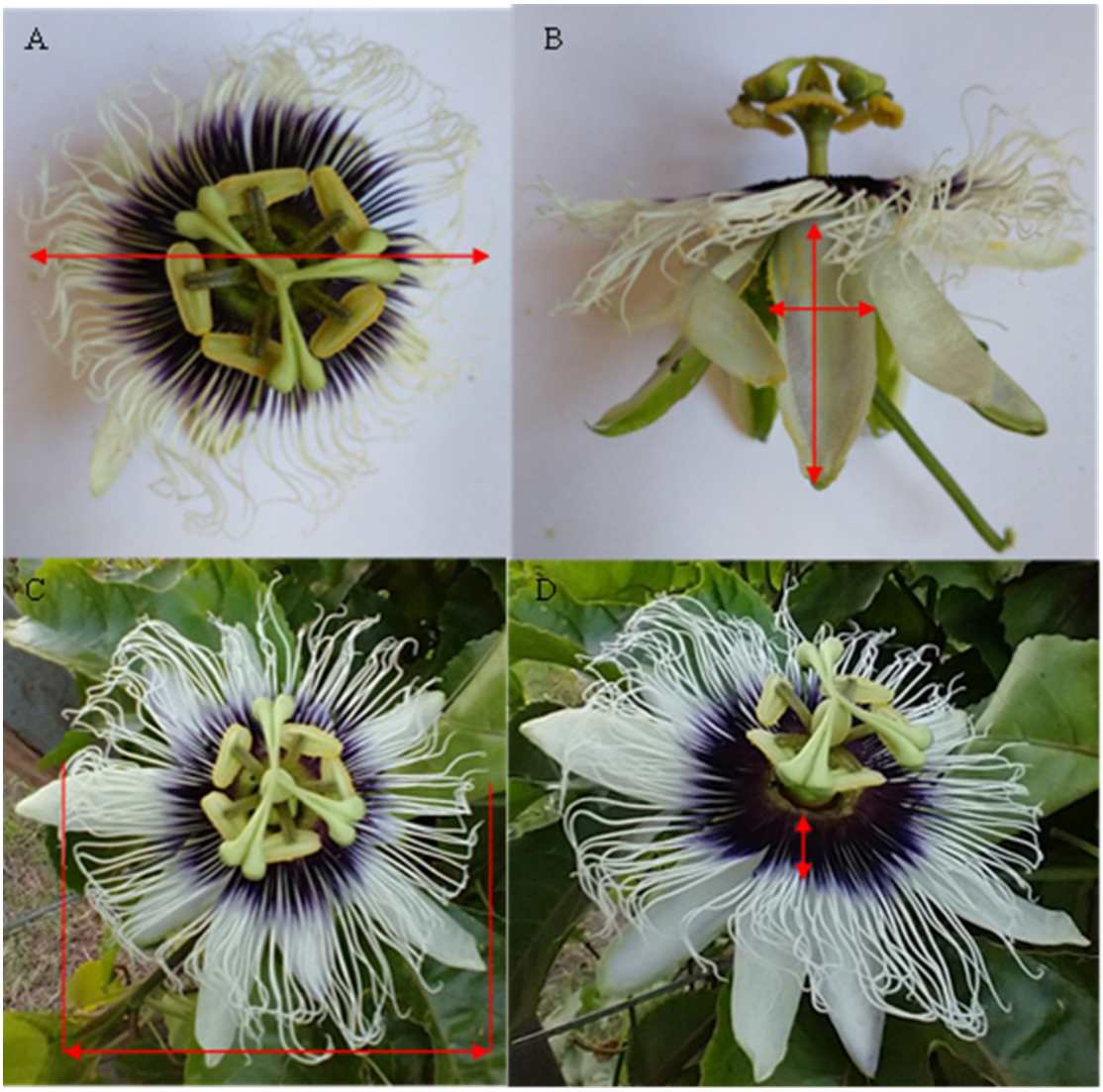


**Figure 4.** Morphological descriptors for flower characteristics. Details of flower diameter (A), length and width of the sepal (B), diameter of the corona/fringes (C), and width of the coloured rings on the corona filaments.

A total of 212.02 kg and 1,375 passion fruits were obtained in an area of 157.5 m² for the plants grafted with the 'UNEMAT Tereza' cultivar (13.46 t. $ha^{-1}$). During the same period, the control cultivar produced 216.83 kg and 1,383 fruits in an area of 157.5 m² (13.76 t $ha^{-1}$). Importantly, natural pollination occurred instead of artificial pollination, and according to Krause et al. (2012), the use of artificial pollination significantly increases passion fruit production. The cultivar UNEMAT Tereza is sterile, but because it is resistant to the fungus, it is recommended for use as a rootstock. Therefore, propagation occurs via vegetative clones and is the responsibility of the State University of Mato Grosso - UNEMAT.

## Conclusions

The UNEMAT Tereza cultivar stands out for its resistance to collar rot, but owing to its sterility, it is recommended to serve as a

rootstock, especially in regions where the disease is prevalent. The use of the cultivar as a rootstock did not affect the physicochemical quality of the fruits. Compared with the commercial reference cultivar 'BRS Sol do Cerrado', the use of UNEMAT Tereza as a rootstock does not compromise production. UNEMAT Tereza has emerged as a valuable alternative for producers who face significant losses due to the manifestation of this disease in their plantations.

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