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Agronomic Performance of *Fusarium* wilt tolerant elite clones of bananas subgroup 'Prata' (AAB)

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Abstract: The evaluation of new banana genotypes with agronomic potential and tolerant to the main pests and diseases is essential for the market. The objective was to evaluate the vegetative and productive characteristics of new potential banana clones, such as 'Prata Gorutuba R1' and 'Prata Gorutuba R2' and commercial cultivars. The experiment was implemented in a rural property located in the municipality of Nova Porteirinha, MG. The treatments consisted of 'Prata Gorutuba R1' and 'Prata Gorutuba R2' banana clones (genotypes selected from the 'Prata Anã' clone 'Gorutuba' tolerant to Panama disease) and four cultivars: 'Prata Gorutuba', 'Prata Anã', 'Grande Naine' and 'BRS Princesa'. The treatments were distributed in randomized blocks, with four replications and six useful plants per plot. The planting spacing used was 3.5 m x 1.7 m. The evaluations were carried out in the first and second production cycles. The 'Prata Gorutuba R1' and' Prata Gorutuba R2' clones in general showed excellent performance compared to the already consolidated cultivars. The clones presented median height and number of leaves in the ideal flowering for banana trees of the 'Prata' subgroup. Bunch and bunch weight, as well as production were similar to the 'Prata Anã', 'Prata Gorutuba' and 'BRS Princesa' cultivars. Considering that the clones evaluated present high tolerance to *Fusarium* wilt, the result indicates that the materials have great potential for the registration of new cultivars.

Index terms: *Musa spp*., *Fusarium oxysporum f. sp. Cubense*, 'Prata Gorutuba', 'Prata Anã', Cultivars.

Desempenho Agronômico de Clones-elites de Bananeiras tipo 'Prata' (AAB) tolerantes à murcha de *Fusarium*

Resumo: Avaliação de novos genótipos de bananeira com potencial agronômico e tolerantes às principais pragas e doenças é essencial para o mercado. Objetivou-se avaliar as características vegetativas e produtivas dos novos potenciais clones-elites de bananeira 'Prata Gorutuba R1' e 'Prata Gorutuba R2' e de cultivares comer-

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ciais. O experimento foi implantado em propriedade no município de Nova Porteirinha-MG. Os tratamentos consistiram nos clones-elites de bananeira 'Prata Gorutuba R1' e 'Prata Gorutuba R2' (tolerantes à murcha de *Fusarium*) e das cultivares: 'Prata Gorutuba', 'Prata-Anã', 'Grande Naine' e 'BRS Princesa'. Os tratamentos foram distribuídos em blocos ao acaso, com quatro repetições e seis plantas úteis por parcela. As avaliações foram realizadas no primeiro e segundo ciclos de produção. Os clones-elites 'Prata Gorutuba R1' e 'Prata Gorutuba R2' apresentaram excelente desempenho, comparados às cultivares já consolidadas no mercado. Os clones-elites apresentaram altura de planta considerada mediana e número de folhas no florescimento ideal para bananeiras do subgrupo 'Prata'. Peso de cacho e de pencas, e produção foram semelhantes às cultivares 'Prata-Anã', 'Prata Gorutuba' e 'BRS Princesa'. Considerando que os clones avaliados apresentam elevada tolerância à murcha de *Fusarium*, o resultado sugere que os materiais apresentam grande potencial para o registro de novas cultivares.

Termos para indexação: *Musa* spp., *Fusarium oxysporum f. sp. Cubense,* 'Prata Gorutuba', 'Prata-Anã', Registro de cultivares.

Introduction

In Brazil there are 48 banana varieties registered in the Ministry of Agriculture, Livestock and Supply, of these, 23 belong to the 'Prata' subgroup (MAPA, 2022), with emphasis on the 'Prata Anã', the most planted cultivar in the Brazilian semi-arid regions (BARBIERI, 2019). Despite the countless qualities of this cultivar, the moderate susceptibility to *Fusarium* wilt (*Fusarium oxysporum f. Cubense*) is one of the characteristics that has led the producers in search of new genetic materials with the 'Prata Anã' fruit qualities, but those present higher levels of pathogen resistance.

The'Prata Gorutuba' (AAB) banana plant was selected from a spontaneous mutation of the 'Prata Anã' banana plant cultivated in rural properties in the North of Minas Gerais. This genetic material differs morphologically from the 'Prata Anã', with the advantage of presenting greater tolerance to the *Fusarium* wilt (RODRIGUES, 2009; RODRIGUES, 2010). From the possession of this information, the producers rapidly disseminated the clone through vegetative propagation. However, field observations demonstrated that the 'Prata Gorutuba' clones presented symptoms from the slightest to the most severe of *Fusarium* wilt Thus, some examples of this genetic material were collected and evaluated, proving the existence of high variability, both in molecular level and the reaction to *Fusarium* (RODRIGUES et al., 2012; LIBRELON et al., 2013). This preliminary result indicated the need for new studies in order to select clones with high resistance level and with morphophysiological characteristics of the 'Prata' subgroup.

Studies aiming the selection of elite-clones with high level of *Fusarium* tolerance in 2015 and after some studies, two potential clones, designated as 'Prata Gorutuba R1' and 'Prata Gorutuba R2' were selected (PAIXÃO, et al., 2015; SILVA, 2018). The clones were multiplied in *in vitro* cultivation and then taken to the field, in experimental area of the State University of Montes Claros for the implementation of Values for Cultivation and Use (VCU) trials aiming the registration of new varieties of the clone type.

For the application of a particular cultivar in the National Register of Cultivars (RNC), it is previously necessary to submit it to the VCU, that is, the intrinsic value of the combination of agronomic characteristics of the cultivar with its use properties in agricultural, industrial, commercial and *in natura* consumption. The registration issued by the Ministry of Agriculture gives the producer, service or establishment the guarantee of quality and technical and legal compliance (CARVALHO et al., 2009).

Considering the trajectory of more than a decade of studies, the present study aimed to evaluate the vegetative and productive characteristics of the new potential banana elite-clones 'Prata Gorutuba R1' and' Prata Gorutuba R2' and commercial cultivars.

Material and Methods

The experiment was implemented in August 2018, in a rural property located in the municipality of Nova Porteirinha, North of Minas Gerais, with the geographical coordinates 15°47'22'S and 43°16'48'O, at 556 m of altitude. The climate in the region in the Köppen classification is Aw, tropical, with average rainfall of approximately 800 mm, minimum average temperature of 19° and maximum of 30°.

We used randomized block design (RBD), with four replications and 20 plants per plot, with six useful plants. The scheme was used in subdivided plots, where the six plot treatments were composed of 'Prata Gorutuba R1' and 'Prata Gorutuba R2' banana clones (selected genotypes of the 'Prata Anã' 'Gorutuba' clone) and four cultivars: 'Prata Gorutuba', 'Prata Anã', 'Grande Naine' and 'BRS Princesa'. The subplot was composed of two productive cycles, first and second. The seedlings of 'Prata Anã' and 'Grande Naine' cultivars were collected in the Experimental Farm of the State University of Montes Claros (Unimontes). The 'Prata Gorutuba' cultivar seedlings were obtained in the rural property described above. The 'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones were selected in the experimental area of the Unimontes Genetic Improvement Program of Banana Plant. All the seedlings used in the experiment were of big sword suckers type. The planting spacing used was 3.5 m x 1.7 m. The handling, irrigation and fertilization of the orchard were performed according to Donato et al. (2021).

Vegetative characteristics were evaluated at the time of inflorescence emission: plant height, with the aid of metric tape from the soil level to the leaf rosette; pseudostem base circumference and pseudostem circumference at 30 cm of the soil, measured with a metric tape in the stem base and at 30 cm above the soil level, and the obtained value divided by Pi (π) for obtaining the diameter. We also evaluated the length and width of the third leaf by measuring the leaf base distance in the petiole insertion point until its apex throughout the central nervousness, and measuring the median part of the same leaf. Number of functional leaves, counting the living leaves; total leaf area, where: $TLA=0.5187(L \times W \times N) + 9603.5$, in which L is the third leaf length (cm), W is the third leaf width (cm), and N is the total number of leaves in the plant; relative chlorophyll content measured by the SPAD index, performed using the portable chlorophyll meter, measuring in the median part of the leaf.

Productive characteristics were evaluated in the harvest day: length and bunch diameter with metric tape, measuring in the fixation point of the first cluster until the last cluster, and in the median region of bunch (the median region was considered from the fixation point of the first cluster until the last cluster), respectively. Length and stalk diameter measured from the bunch fixation point to the last cluster and measurements in the median region from the bunch fixation point of the first cluster until the last cluster respectively; bunch, stalk and clusters weight using mechanical scale in the field; number of clusters per bunch and productivity. The characteristic planting cycle to harvest was obtained by calculating the difference between the harvest date and the planting date.

The variables were submitted to the Lilliefors test and the Bartlett test for verification of data normality and homogeneity of the variables, respectively. After the confirmation of the requirements, the data were submitted to a joint analysis of variance. The significant differences for the variation sources involved in the experiment were observed, then the variables averages were submitted to the F or Tukey test ($p>0.05$) for the detection of the differences among the treatments. All

statistical analyses were performed using the Genes software (Cruz, 2016).

Results and Discussion

Characterization of plants in flowering

The variables such plant height, pseudostem base diameter, 3rd leaf length and relative chlorophyll content presented significant interaction among cycles and cultivars. The number of leaves presented significant difference only among cultivars. In contrast, the total leaf area, pseudostem base diameter at 30 cm, 3rd leaf width presented significant differences among the production cycles.

When observing the development of cultivars between the two productive cycles for the plant height variable, we noticed that in the second cycle the plants obtained a greater size compared to the first cycle (Table 1). The first cycle is not the appropriate moment to analyze the size, because the family stability (mother, daughter and granddaughter) in the hole is only achieved later. We also highlight that, the largest increase in the banana tree height occurs from the first to the second cycle (SOTO BALLESTERO, 1992). This is due to two reasons, the first is in the fact that the daughter plant, which when being linked to the mother plant, takes advantage of its reserves, and the second is associated with the competition among the plants in the same clump, promoting the growth of them in search of luminosity.

Table 1 - Mean plant height values, base diameter (base D), 3rd leaf length (3rd leaf L) and relative chlorophyll content (RCC) of different cultivars and banana clones, in two productive cycles.

	Plants Height (cm)		Base D (cm)		3rd leaf L(cm)		RCC	
Cultivar/ Clone	1° Cycle	2° Cycle	1° Cycle	2° Cycle	1° Cycle	2° Cycle	1° Cycle	2° Cycle
Prata Gorutuba R1	259.17 Bb	344.74 Ab	25.99 Ba	31.42 Aa	131.01 Bbc	202.34 Aab	64.11 Aab	54.03 Ba
Prata Gorutuba R2	242.67 Bbc	316.97 Ab	25.12 Ba	29.16 Aab	123.25 Bc	181.71 Ab	65.97 Aa	53.52 Ba
Prata Gorutuba	249.77 Bb	335.49 Ab	24.91 Ba	30.32 Aab	122.43 Bc	195.45 Ab	62.16 Aab	57.23 Ba
Prata Anã	252.87 Bb	320.12 Ab	24.72 Ba	28.95 Abc	139.46 Bbc	192.00 Ab	63.44 Aab	53.24 Ba
Grande Naine	217.74 Bc	252.95 Ac	21.08 Bb	23.28 Ad	198.69 Aa	182.34 Aab	61.43 Aab	54.15 Ba
Princesa	305.77 Ba	404.02 Aa	24.44 Ba	26.67 Ac	163.56 Bab	236.62 Aa	58.35 Ab	54.94 Aa
C.V (%)	4.57		4.29		10.85		4.64	

Averages followed by the same capital letters in the line and lowercase in the column, do not differ statistically among themselves by the Tukey's test ($p<0.05$) for each variable.

Studying the cultivars within the cycles, both in the first and second cycle 'BRS Princesa' presented greater plant size compared to the other cultivars, while 'Grande Naine' presented the smallest. Nomura et al. (2013), evaluating the vegetative development of 20 banana genotypes in the Ribeira Valley, state of São Paulo, also reported the same behavior observed in the present study, both in the first and the second cultivation cycle. These results seem to suggest that the height in the 'BRS Princesa' cultivar has a good genetic determination, regardless of the planting site, and, although variations in the character values occur, it is characterized as high size.

The 'Prata Gorutuba R1', 'Prata Gorutuba R2' clones, and the cultivars 'Prata Anã', 'Prata Gorutuba' and 'Grande Naine' are classified as medium-sized plants, with the height varying from 2.00 m to 3.50 m, which according to Santos et al. (2006) is the most commercially recommended height range, facilitating the harvest and other handlings.

Regarding the pseudostem base diameter studying the cultivars between the cycles, in the second cycle the plants obtained the greater base diameter compared to the first (Table 1). In the first cultivation cycle it was observed that the 'Grande Naine' presented a lower base diameter compared to the other cultivars, yet in the second cycle the 'Prata Gorutuba R1', 'Prata Gorutuba R2' and 'Prata Gorutuba' presented greater diameter, while the 'Grande Naine' presented lower base diameter. The pseudostem diameter is related to its tipping over and/or the break of it by the wind action, that is, the size confers vigor and resistance, reflecting the bunch's support capacity (SILVA et al., 2006). Genotypes that present greater pseudostem diameter are less susceptible to tipping over (MENDONÇA et al., 2013).

The 'Grande Naine' cultivar presented the lowest height and a lower base diameter of the pseudostem. It was the only cultivar that presented problems with plant tipping over, about 42% of the plants. This can be explained because this cultivar is of the Cavendish subgroup, which normally produce the largest bunches among the edible banana cultivars, having as the main characteristic a high productivity (SILVA et al., 2002).

It was observed that in the second cultivation cycle the 'Prata Gorutuba R1', 'Prata Gorutuba R2' clones, and 'Prata Gorutuba', 'Prata Anã' and 'Princess BRS' cultivars were superior in the third leaf length compared to the first cultivation cycle (Table 1). Studying the development of cultivars within the cycles, in the first cultivation cycle it was observed that the 'Grande Naine' and 'BRS Princesa' cultivars were superior compared to the 'Prata Gorutuba R1', 'Prata Gorutuba R2' clone and the 'Prata Gorutuba' and 'Prata Anã' cultivars. In the second cultivation cycle it was observed that, the 'Prata Gorutuba R1' clone, the 'Grande Naine', 'BRS Princesa' cultivars were superior compared to the 'Prata Gorutuba R2' clone and the 'Prata Gorutuba' and 'Prata Anã' cultivars.

The relative chlorophyll content, in the first production cycle was higher compared to the second cycle with the exception of the 'BRS Princesa' cultivar that there was no difference (Table 1). When studying the cultivars within the cycles it was observed that the 'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones, the 'Prata Gorutuba', 'Prata Anã' and 'Grande Naine' cultivars presented superiority in the relative chlorophyll content compared to the 'BRS Princesa' in the first production cycle. In the second cycle, there was no significant difference among the cultivars. The determination of the leaf chlorophyll levels is important because the plant photosynthetic activity depends in part of the leaf capacity to absorb light (Salla; Rodrigues; Marenco 2007).

The 'Prata Gorutuba R1', 'Prata Gorutuba R2' clones, and the 'Prata Gorutuba' and 'Prata Anã' cultivars presented higher number of leaves compared to the 'Grande Naine' and the 'BRS Princesa' cultivars, independent of the production cycle (Table 2). Different studies show that at the time of flowering, banana plants of the Cavendish subgroup require 12 entire leaves, the 'Prata Anã a minimum quantity among 10 to 12 leaves, whereas the 'BRS Princesa' cultivar 12 to 15 leaves, so that they have a good bunch development (SOTO BALLESTERO, 2015; LÉDO et al., 2007; RODRIGUES; DIAS;PACHECO, 2009). According to Soto Ballestero (1992), the presence of more than eight leaves in the flowering plant is a factor considered as sufficient for the normal development of the bunch, since there is no longer leaf emission after this moment.

Table 2- Mean number of functional leaves in the flowering of different banana plants cultivars and clones.

Cultivar/ Clone	Number of living leaves
Prata Gorutuba R1	15.34a
Prata Gorutuba R2	15.91a
Prata Gorutuba	16.12a
Prata Anã	15.17a
Grande Naine	12.06b
Princesa	12.92b
C.V (%)	6.42

Averages followed by the same letter in the column do not differ statistically among themselves by the Tukey's test ($p<0.05$)

It was observed that for the variables total leaf area, pseudostem base diameter at 30 cm and 3rd leaf width, in the second cultivation cycle the plants presented higher values compared to the first cultivation cycle (Table 3). This difference can be related to the greater plant vigor in the second cycle due to the transferred reserves of the moth-

er plant to the daughter. The leaf area of any culture is the true measure of its photosynthetic magnitude, directly determining the plant production potential (ANDRADE et al., 2020). According to Zucoloto et al. (2008), the leaf area estimate is used to evaluate the plant growth, being commonly used in agronomic and physiological studies in the banana plant; environmental factors can influence the values.

Table 3 - Mean values of total leaf area (TLA), pseudostem base diameter at 30 cm (P base at 30 cm), 3rd leaf width (3rd leaf W) in two productive cycles of cultivars and banana clones.

	TLA (cm^2)	P base at 30 cm (Cm)	3rd leaf W (Cm)
1° Cycle	6.76 b	20.5b	61.65 b
2° Cyclo	11.18 a	27.60a	72.32a
C.V (%)	13.65	26.53	4.89

Averages followed by the same letter in the column do not differ statistically among themselves by the F-test ($p<0.05$).

Characterization of bunch and production

In the plant cycle to the production harvest variable it was observed that the 'Prata Gorutuba R1' clone presented the first longer cycle compared to the 'Prata Gorutuba', 'Prata Anã' and 'Grande Naine' (Table 4). In the second cycle, the 'Grande Naine' presented the lowest cycle compared to the other evaluated cultivars. Cultivars with shorter production cycles provide greater gains to the producers, since the harvest occurs with greater precocity. In general, the duration of the culture cycle depends on the cultivar, temperature and the water supply among other factors (soil type, handling, fertilization level, phytosanitary treatments) (GONÇALVES et al. 2008; NOMURA et al. 2013; COELHO et al. 2009).

Table 4 - Mean values of planting cycles until the mother's plant harvest (1st Cycle) and until the daughter's plant harvest (2nd Cycle), of different cultivars and banana clones.

	CYCLE (days)	
Cultivar/ Clone	1° Cycle	2° Cycle
Prata Gorutuba R1	525.68 Ba	745.98 Aa
Prata Gorutuba R2	438.67 Bab	726.95 Aa
Prata Gorutuba	402.56 Bb	718.04 Aa
Prata Anã	377.38 Bb	715.75 Aa
Grande Naine	415.94 Bb	609.67 Ab
Princesa	455.54 Bab	669.50 Aab
C.V (%)	7.64	

Averages followed by the same letters in the column do not differ statistically among themselves by the Tukey test ($p<0.05$).

The variables such as bunch weight, bunch diameter, bunch length, stalk weight, cluster weight and productivity presented significant differences among cultivars independent of the cultivation cycle (Table 5). 'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones were similar to 'Prata Gorutuba', 'Prata Anã' and 'BRS Princesa' cultivars compared to the bunch diameter, stalk weight, bunch weight, cluster weight and productivity. These results indicate the great potential that these new clones present regarding to the varieties already registered for planting and marketing. The 'Grande Naine' cultivar presented greater bunch diameter, bunch length, stalk length, cluster weight, bunch weight and productivity (Table 5). The best productive performance observed by 'Grande Naine' cultivar was already expected, since it belongs to the Cavendish subgroup. Cultivars of this subgroup present good adaptation to the majority of edaphoclimatic conditions, ensuring adaptability and stability, besides producing the largest bunches among the edible banana cultivars, having as main characteristic high productivity (SILVA et al., 2006; SILVA et al., 2002).

Table 5 - Mean values of bunch diameter (bunch D), bunch length (bunch L), stalk diameter (stalk D), stalk length (stalk L), stalk weight, bunch weight, cluster weight and productivity of different cultivars and banana clones.

Cultivar/ Clone	bunch D (cm)	bunch L (cm)	stalk D (cm)	stalk L (cm)	stalkW(Kg)	bunch W (Kg)	cluster W (Kg)	Productivity (Kg/ha)
Prata Gorutuba R1	32.48 bc	46.99 b	20.07 abc	67.43 bc	1.66 ab	14.01 b	12.35 b	20.752.84 b
Prata Gorutuba R2	35.11 ab	42.21 b	22.23 a	64.88 c	1.60 ab	12.98 b	11.38 b	19.117.17 b
Prata Gorutuba	33.71 ab	41.58 b	21.43 ab	65.91bc	1.37 ab	11.42 b	10.04 b	16.891.26 b
Prata Anã	36.40 ab	49.87 ab	21.99ab	85.12 a	1.86 a	15.28 b	13.42 b	22.547.17 b
Grande Naine	38.22 a	59.81 a	19.80 bc	90.62 a	1.67 ab	20.15 a	18.47 a	31.045.00 a
Princesa	28.25 c	38.92 b	19.38 c	72.59 b	1.30 b	10.60 b	9.30 b	15.624.80 b
C.V (%)	9.41	16.84	7.67	6.82	20.85	22.25	23.92	23.92

Averages followed by the same letters in the column do not differ statistically among themselves by the Tukey test ($p<0.05$).

Comparing the stalk weight, 'Prata Anã' cultivar presented greater weight than 'BRS Princesa' (Table 5). Several studies indicate a large variation in stalk weight when cultivars are evaluated in different geographical conditions (AMORIN et al., 2012; ROQUE et al., 2014 and TEXEIRA et al., 2020). In this experiment, values much lower than those found by Amorin et al. (2012), Roque et al. (2014) and Texeira et al. (2020) were observed for 'BRS Princesa' cultivar. This variation among studies suggests that the cultivar can present variation in its ecophysiology, according to the edaphoclimatic conditions of each region, the soil type of the site, among other factors such as handling, fertilization level, irrigation, phytosanitary treatments, where banana plants are cultivated (GONÇALVES et al., 2008; NOMURA et al., 2013).

In general, in the second cycle the average values of bunch and productivity characteristics were higher than those obtained in the previous cycle, which can be related to the result of the utilization of daughter plant reserves that was linked to the mother plant from the beginning (Table 6). The mother plant depended only on photosynthesis performed by it since planting. According to Silva et al.(2002), in the first cycle is not the opportune moment to analyze the bunch mass in most genotypes, since the character can vary over the course of the crop cycles.

Table 6 - Mean values of bunch diameter (bunch D), bunch length (bunch L), stalk diameter (stalk D), stalk length (stalk L), number of clusters (cluster N), stalk weight, bunch weight, cluster weight and productivity, in two productive cycles (mother plant: cycle 1 and daughter plant: cycle 2) of cultivars and banana clones.

	bunch D (cm)	bunch L (cm)	stalk D (cm)	stalk L (cm)	cluster N	stalk W (Kg)	bunch W (Kg)	cluster W (Kg)	Productivity (Kg/ha)
Cycle 1	32.68 b	44.21 b	19.32 b	64.49 b	7.00 b	1.36 b	12.39 b	11.03 b	18,524. 66 b
Cycle 2	35.38 a	48.92 a	22.32a	84.37 a	7.89 a	1.79 a	15.76 a	13.97 a	23,468.08 a
C.V (%)	9.41	16.84	7.67	6.82	10.99	20.85	22.25	23.92	23.92

Averages followed by the same letters in the column do not differ statistically among themselves by the F-test ($p<0.05$).

The bunch weight is a character that expresses the productivity of a genotype. However, it cannot be considered alone in the choice of a variety, because other characters also influence the selection process and the consumer market preference, such as those related to the fruit, among which we can highlight : weight, length, diameter, taste and cluster falling resistance (SILVA et al., 2002). The number of clusters per bunch is also of great importance for producer, since much of the market uses the cluster as a commercial unit, besides that, an increase in the number of clusters leads to an increase in the number of fruits and, consequently, an increase of the bunch weight (SOTO BALLESTERO, 1992).

Considering that the evaluated clones have high tolerance to *Fusarium* wilt (PASSION, et al., 2015; SILVA, 2018) and with the data of the present study indicating excellent vegetative and productive performance, we can infer that the 'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones present a great potential for the registration of new cultivars. For the productive system the benefits of new

genetic material records with high tolerance to the *Fusarium* wilt, popularly known as Panama disease, with the guarantee of genetic identity, stability and homogeneity are the key to the culture sustainability, as well as to the expansion of new planting areas.

Conclusions

'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones present excellent vegetative and productive performance in the first two cultivation cycles in the semi-arid region of the states of Minas Gerais in irrigated conditions. 'Prata Gorutuba R1' and 'Prata Gorutuba R2' clones present average size, number of leaves in the flowering, bunch and cluster weight, and productivity similar to 'Prata Anã', 'Prata Gorutuba' and 'BRS Princesa' cultivars.

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