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Biometric Characterization of Araticum Seeds (*Annona crassiflora* MART.)

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Abstract:

Annona crassiflora is a plant characteristic of the Cerrado. It is widely used for food use, the fruits, with a very strong aroma, are appreciated for their sweet and yellowish pulp. The use of seeds is the most economical and easiest way to propagate agricultural and forestry crops. Making the study of seeds important. One of the basic tools for this study is the biometric characterization. This work aimed to evaluate the biometric characteristics of araticum seeds. For the biometric characterization of the seeds, at least five fruits were collected from each marked plant, totaling 50 fruits. From this total of fruits, 1000 seeds were randomly obtained for the biometric determination of seeds. The highest frequency of seeds was found in the class of 1.83 to 2.13 cm for length, 1.13 to 1.31 cm for width, 0.66 to 0.97 cm for thickness, and 0.84 to 1.07g for dough. This study can contribute to seedling production and genetic improvement studies. The length variable was the only one that showed great variation in the classes, and it can be

used as a signal for breeding programs. As the others did not have great variation, it would facilitate the quantification of fruit production.

Keywords: biometrics, Cerrado savannah, seeds

1. INTRODUCTION

The Annonaceae family A.L. Juss., has a pantropical distribution and comprises about 120 genera, in Brazil 29 genera and approximately 260 species are registered (BARROSO et al. 2002). In the Cerrado, the Annonaceae family is represented by several genera and species, such as *Annona coriaceae* Mart., *Annona crassiflora* Mart. and *Rollinia emarginata* Schl. (SILVA et al, 2001).

Annona crassiflora is a deciduous, heliophyte, selective, xerophytic plant, characteristic of the Cerrado and Campo Cerrado. It has a wide, but discontinuous dispersion, occurring at low frequency and preferentially in sandy and dry lands with rapid drainage. It has pioneer plant characteristics, but its growth is slow; despite this, it is capable of flowering and fruiting when it is still less than 2 m tall. It annually produces a moderate amount of viable seeds (ALMEIDA et al, 1998).

It is widely used for food use, the fruits, with a very strong aroma, are appreciated for their sweet and yellowish pulp (FERREIRA, 1973; RIZZINI and MORS, 1976). In addition, it is used in folk medicine, the infusion of leaves and powdered seeds are used to combat some diseases (GUIA; 1986; FERREIRA, 1980; SIQUEIRA, 1981).

The use of seeds is the most economical and easiest way to propagate agricultural and forestry crops (SILVEIRA et al., 2002). Making the study of seeds important. One of the basic tools for this study is the biometric characterization (MATHEUS and LOPES, 2007). Making it possible to classify these seeds into size or weight classes, aiming at the uniformity of seedling emergence, obtaining seedlings of similar size or greater vigor (CARVALHO and NAKAGAWA, 2000). This work aimed to evaluate the biometric characteristics of araticum seeds.

2. MATERIAL AND METHODS

The present project was developed at the Federal University of Mato Grosso do Sul, in Chapadão do Sul, MS, using plant material collected from plants from the local cerrado. The Municipality of Chapadão do Sul, with an area of 3,851 km², is located in the northeast portion of the State of Mato Grosso do Sul and is part of the Cassilândia Geographical Micro-Region. Its headquarters are at an altitude of 790 m above sea level and are located at the following geographic coordinates: Latitude - 18º 41' 33" South and Longitude - 52º 40' 45" West of Greenwich, 330 km away from the capital.

The original vegetation cover of the Municipality is of savannahs and clean fields and the predominant soil class is the dystrophic Red Latosol. The climate is, according to Köppen, of the humid tropical type (Aw), with a rainy season in the summer and a dry season in the winter, and an average annual rainfall of 1,850 mm. The average annual temperature varies from 13ºC to 28ºC.

The species studied was araticum (*A. crassiflora*). Ten plants spaced at least 30 m apart were marked for the collection of fruits and seeds. The collection of fruits took place during the year 2014. For the biometric characterization of the seeds, at least five fruits were collected from each marked plant, totaling 50 fruits. From this total of fruits, 1000 seeds were randomly obtained for the biometric determination of seeds. All seeds had their dimensions: length, width, and thickness measured with a digital caliper. Seed mass was determined using an analytical balance with a precision of 0.001g.

To determine the weight of a thousand seeds, the entire sample used for biometric characterization was used (RAS, 2009). Biometrics data were graphically represented in histograms of frequency classes. Pearson's correlation test will be carried out in order to verify the influence of the biometric variables length, width, and thickness on the seed mass.

3. RESULTS AND DISCUSSION

The seeds presented an average weight of a thousand seeds of 904.4841 g, that is, 1,106 seeds per kg of seeds. It is useful for determining the planting density or commercialization of seeds.

The seed length varied from 0.95 to 2.42 cm, the width from 0.96 to 1.83 cm, the thickness from 0.35 to 1.90 cm, and the mass from 0.16 to 1.29 g. . Differently from the result found by some authors in studies of Xylopia aromatica seeds, with the variation in length from 8.01 to 4.49 mm, width from 6.55 to 3.06 mm and thickness from 4.03 to 2, 38 mm (CASTELLANI et al, 2001). The highest frequency of seeds was found in the class of 1.83 to 2.13 cm for length, 1.13 to 1.31 cm for width, 0.66 to 0.97 cm for thickness, and 0.84 to 1.07g for dough.

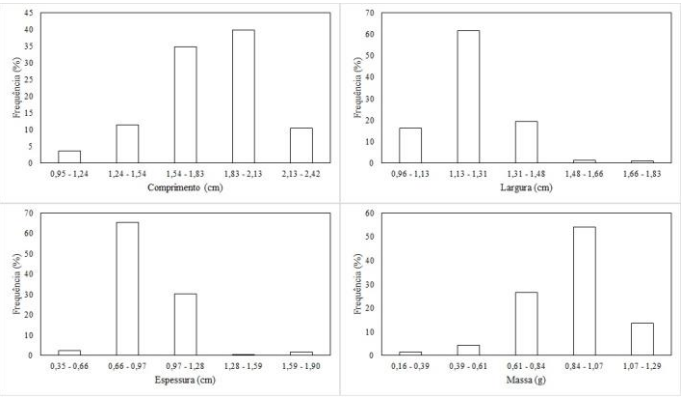

Figure 1. Frequency histograms for biometric variables of araticum seeds.

Of the biometric variables, length and width were those that obtained a moderate Pearson correlation index with mass (Table 1), which is an indication that these variables have a greater effect on the mass of their seeds. This information becomes important since the seed mass is closely linked to the reserve, favoring the formation of vigorous plants and their establishment in the field.

Table 1. Pearson's correlation (r) to verify the influence of the variables length, width, and thickness on the seed mass. (r=0-0.30 weak; 0.30-0.70 moderate; r=0.70-1.00 strong).

	Length	Width	Thickness
Mass	0.48	0.50	0.21

This species has moderate seed production, even with a high rate of predation. This study can contribute to seedling production and genetic improvement studies.

4. CONCLUSION

The length variable was the only one that showed great variation in the classes, and it can be used as a signal for breeding programs. As the others did not have great variation, it would facilitate the quantification of fruit production.

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