

***Heteropterys tomentosa* A. Juss. SEED STORAGE OF DIFFERENT DATES OF COLLECTION**

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ABSTRACT

Heteropterys tomentosa A. Juss. is a species of the Cerrado used as medicinal. The roots are used as an aphrodisiac as potions and in the treatment of nervous weakness. The aim of this study was to investigate the influence of storage time on germination of *H. tomentosa*. We used a completely randomized design with six treatments and five replications of 50 seeds. Seeds collected in Chapada dos Guimarães in 2001 and in Rosario Oeste in 2003 had higher mass of 1000 seeds. The beginning of germination occurred earlier, from the seventh day to the seeds collected in 2004, 2005 and 2006. The length of root and shoot was lower in the collection 2006. The seeds of *H. tomentosa* with 7.5 to 8% moisture content can be stored in paper bags for up to seven years in the laboratory.

Keywords: germination, longevity, Cerrado, *Heteropterys tomentosa*.

INTRODUCTION

Heteropterys tomentosa A. Juss. is a species easy to grow and the roots can be explored from the second year of cultivation (Coelho et al., 2011). The subshrub size facilitates the cultivation associated with other cultures, becoming so an alternative source of income and employment for farmers. Native populations are made up of a few individuals and the management should be done to enrich the area with seedlings grown in nurseries (Coelho et al., 2011).

Popular names *Heteropterys tomentosain* Brazil are ocinanta-sá-caá, nó-de-porco, guaco, jasmim-amarelo, quaro, resedá-amarelo, tintureiro, cordão-de-santo-antônio, cordão-de-são-francisco e

nó-de-cachorro (Corrêa, 1984; Pott & Pott, 1994). The roots are used in folk medicine as anaphrodisiac, in the treatment of nervousdebility, and for the treatment of dysentery and diabetes (Macedo & Ferreira, 2004).

Seed viability is characteristic of each species and the storage under appropriate conditions is a key strategy when it seeks to maintain the viability for longer. Seed quality is not improved by storage, but can be maintained with a minimum of possible deterioration through proper storage.

Thus, storage is of fundamental importance for species whose seeds quickly lose their physiological quality and also for those who cannot be sown immediately after harvest (Marcos Filho, 2015). Thus, the aim of this study was to identify the influence of storage time on germination of *H. tomentosa*.

MATERIAL AND METHODS

The seeds of *Heteropteris tomentosa* were collected at the time of dispersion (August-September), in them unicpalities of Chapada dos Guimarães, Nobres, Rosario Oeste, Varzea Grande, Santo Antônio do Leverger and Cuiaba in Mato Grosso, in the years 2001-2006. They were treated, packed in paper bags and stored in the FAMEV Seed Laboratory in climatic chamber with temperature of 18°C to 22°C until the experiments in November 2013.

It was used a completely randomized design with six treatments and five replications of 50 seeds. They determined thew eight of 1000 seeds and the water content according to Brazil (2009). The seeds were placed in transparent gerbox on filter paper moistened when ever necessary.

The notes of germination were madedaily in thirty days period in November 2013 and were calculated the percentage of germination and germination speed index (Maguire, 1962), percentage of firm seeds and dead seeds. The criteria used to evaluate germination were: a) radicleemergence, b) normal seedling, i.e. the formation of a seedling with all the essential structures (root system, cotyledons, epicotyl) in perfect state of development as recommended by Brazil (2009).

Germination graphs were made in Excel, considering the cumulative germination for 30 days. Analysis of variance and mean test was made in the statistical program SISVAR (Ferreira, 2011).

RESULTS AND DISCUSSION

The seeds from different sources and collection times differed as them ass of 1000 seeds, but the water content did not change (Table 1). Seeds collected in Chapada dos Guimarães in 2001 and Rosario Oeste in 2003 had higher mass of 1000 seeds. Arruda (2001) found 48.45g in 1000 seeds

collected in Várzea Grande in 1999 and Spiller (2012) found 39.37g in 1000 seeds collected in Várzea Grande in 2002. The figures are close those found in this study.

Table 1. Mass of 1000 seeds and water content in *Heteropterys tomentosa* seeds collected at different locations and times. Cuiabá, 2013.

Origin and Year of Collect	Mass of 1000 seeds (g)	Water content (%)
Chapada dos Guimaraes 2001	54.38a	7.70b
Nobres 2002	47.14b	7.54b
RosárioOeste 2003	54.88a	7.73b
Várzea Grande 2004	44.12b	7.98b
Santo Antônio do Leverger 2005	44.88b	7.63b
Cuiaba 2006	44.88b	8.18a
CV(%)	23.12	20.23

The percentage of germination and IVG were higher in more recent samples (Table 2). The high percentage of firm seeds in older collections (2001, 2002 and 2003) may indicate that the storage affect the germination rate and a period longer than a month to check the germination would be necessary.

Table 2. Percentage of germination, germination speed Index (IVG), percentage of firm seeds and dead seeds of *Heteropterys tomentosa* collected at different locations and times. Cuiabá, 2013.

Origin and Year of Collect	Germination (%)	IVG	Firm Seeds (%)	Dead Seeds (%)
Chapada dos Guimaraes 2001	5c	0.16d	87.0a	8.0b
Nobres 2002	30b	0.98c	60.0b	10.0b
RosárioOeste 2003	45b	2.32b	28.0c	2.0a
Várzea Grande 2004	73a	8.96a	16.5d	10.5b
Santo Antônio do Leverger 2005	74a	8.77a	13.5d	12.5b
Cuiaba 2006	74a	9.51a	13.5d	12.5b
CV (%)	18.78	17.89	18.90	19.89

Arruda et al. (2011) found that in the laboratory environment the seeds of *H. tomentosa* in plastic bags kept germination and paper bag lost their viability after 60 days of storage and the seeds stored with 10.3% moisture in packaging paper and lab environment lose quality quickly. Hernandez et al (2011) found that the *H. tomentosa* seeds maintains germination capacity for fifteen months.

In this study it is noted that these eds with 7 to 8% moisture in paper pack remained high germination about 70%. This result is important for the preservation of seeds of the species Laboratory, since the field populations are threatened by fired uring the dispersion. Therefore, it is interesting to focus efforts in the collection and preservation of seeds.

The beginning of germination occurred from these venth day to the seeds collected in 2004, 2005 and 2006, and 2003 seeds from the tenth day to the 2002 from the eleventh day and the collected in 2001 from 14 days after sowing (Figure 1). Germination stabilized at 18 days after sowing. Arruda (2001) and Silva (2004) found germination from 10 days and stabilization to 24 days.

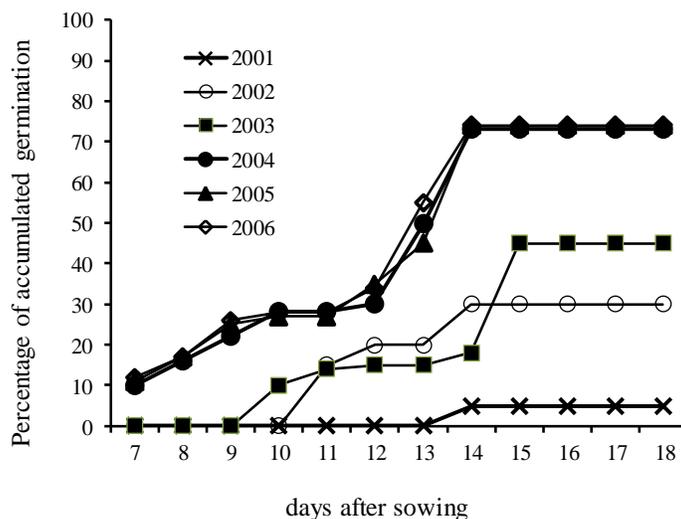


Figure1. Cumulative percentage of *Heteropterys tomentosa* germination collected at different locations and times. Cuiabá, 2013.

The length of root and shoot did not vary much between the different samplings (Figure 2) with the exception of the collection of 2006 showed the lowest root length values and shoots of seedlings.

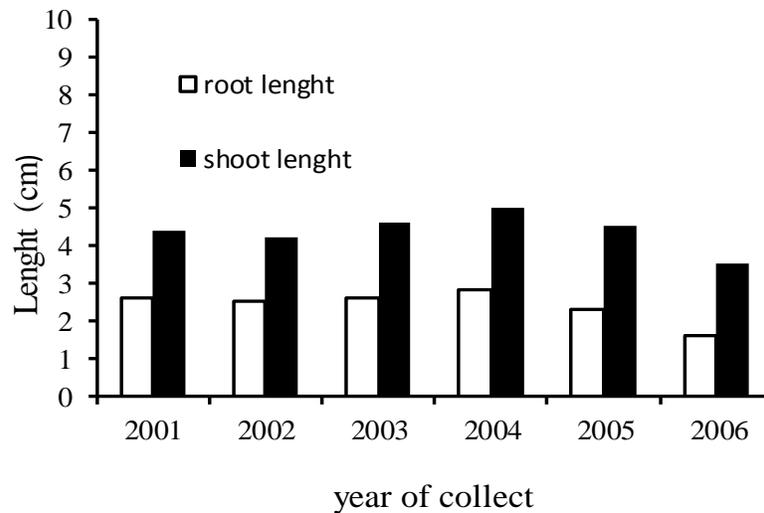


Figure 2. Root length and shoot length of *Heteropterys tomentosa* seedlings collected at different locations and times. Cuiabá, 2013.

Comparatively Spiller et al. (2012) observed that at 45 days after sowing, the average height of *H. tomentosa* of subjects was 11.62 cm and in the present study at 18 days after sowing the height was 4.5 cm. In further studies should be assessed the origins of these seed harvest dates in a factorial design to isolate the effects of seed origin, which cannot be assessed in this study.

CONCLUSIONS

The seeds of *H. tomentosa* 7.5 to 8% moisture can be stored in paper bags for upto seven years in the laboratory.

REFERENCES

Arruda J.B. 2001. *Aspectos da germinação e cultivo do nó-de-cachorro (Heteropterys aphrodisiaca O. Mach)*. 87p. Dissertação (Mestrado - Área de Concentração em Agricultura Tropical) - Universidade Federal de Mato Grosso, Cuiabá

Arruda J.B. Coelho M.F.B. Azevedo R.A.B. Albuquerque R.A.B. 2011. Armazenamento de sementes de *Heteropterys tomentosa* por diferentes períodos, embalagens e ambientes. *Revista de Biologia e Ciências da Terra*, 11(2):1-9.

Brasil. Ministério da Agricultura e Reforma Agrária. 2009. *Regras para Análise de Sementes*, Brasília: SNAD/CLAV. 395p.

Coelho M.F.B. Jorge S.A. Macedo M. Nogueira Borges H.B. Spiller C. 2011. Nó-de-cachorro (*Heteropterys tomentosa* A. Juss.): espécie de uso medicinal em Mato Grosso, Brasil. *Revista Brasileira de Plantas Mediciniais*, 13 (4): 475-485.

Corrêa M.P. 1984. *Dicionário das plantasúteis do Brasil e das exóticas cultivadas*. v.5. Rio de Janeiro: Ministério da Agricultura, 687p.

Ferreira D.F. 2011. Sisvar: a computer statistical analysis system. *Ciência e agrotecnologia*, 35(6):1039-1042.

Hernandez F.M.P. Coelho M.F.B. Maia S.S.S. Albuquerque M.C.F. 2011. Germinação de sementes de *Heteropteris tomentosa* A. Juss. sob diferentes temperaturas e períodos de armazenamento. *Revista Brasileira de Ciências Agrárias*, 6(4):617-621.

Macedo M. Ferreira A.R. 2004. Plantas hipoglicemiantes utilizadas por comunidades tradicionais na Bacia do Alto Paraguai e Vale do Guaporé, Mato Grosso-Brasil. *Revista Brasileira de Farmacognosia*, 14(1):45-47.

Maguire J.A. 1962. Speed of germination: aid in selection and evaluation for seedling emergence and vigor. *Crop Science*, 2 (1):176-177.

Marcos Filho J. 2015. *Fisiologia de sementes de plantas cultivadas*. Londrina: Associação Brasileira de Produção de Sementes – ABRATES, 659p.

Pott A. Pott V.J. 1994. *Plantas do Pantanal*. Corumbá: EMBRAPA, Centro de Pesquisa Agropecuária do Pantanal, 320p.

Silva M.F. 2004. *Levantamento das espécies utilizadas como medicinais pela população urbana no Município de Nova Brasilândia-MT*. 34p. (Monografia de Conclusão de Curso) - Centro Universitário de Várzea Grande, Várzea Grande.

Spiller C. Coelho M.F.B. Azevedo R.A.B. 2012. Crescimento de progênies de *Heteropterys tomentosa* A. Juss. em condições de casa de vegetação. *Revista Caatinga*, 25(1):73-79.