

## Evaluation of the Development of Fáfia - *Pfaffia glomerata* (Spreng.) Pedersen

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### Abstract

The aim of this experiment is to evaluate the development in height of the plants of four accessions (2 from Parana – accession 1 and 2, one from São Paulo – accession 3, and one from Mato Grosso do Sul State- accession 4). The experimental design was made of randomized blocks, with four treatments (accessions) and four replications. In each plot were planted 24 seedlings. Five evaluations of the height were accomplished, with an interval of two months, starting from the second month after the planting of the seedlings. The results show a significant difference between accession 4 and other three accessions in first evaluation (141.42 % higher than accession 2, the lowest of three and 44.16 % higher than accession 3, the highest of three), demonstrating a higher vigour of this accession on initial stage of its development. In the second and third evaluation, all accessions have no statistical difference, demonstrating a similar level of development at intermedial stages of development. At 5<sup>th</sup> evaluation, all accessions have almost the same result, with no statistical difference among them. This is a clear result of similar level of development of this species in these accessions, representing a stabilization of their height development at the end of first year. We concluded that fáfia possesses a strong initial growth, with visible difference among the accessions in the first months. From the eight month on, we observed a slight decrease in the height. This suggests the end of annual cycle.

### INTRODUCTION

Fáfia has been used for centuries by Brazilian indians to cure and prevent diseases and its properties were scientifically proved after it was taken to Japan and submitted to analysis in the laboratory “Rhoto Pharmaceutical Co. Ltda”. Recent studies have shown that the indians were not wrong: the root of the plant has components that act on cell regeneration, blood purification, inhibition of cancer cell growth, regulation of hormonal and sexual functions and as a bioenergizer (Nishimoto et al., 1984; Nishimoto et al., 1988).

The roots of the plant species fáfia (*Pfaffia* spp.) have been used in Brazilian folk-medicine as tonic, aphrodisiac and antidiabetic agents. The use of these species, known as Brazilian ginseng, has drawn the attention of the Japanese, who have been importing increasing amounts that reached approximately 120 tons/year in 1995. More recently, both the EU and the USA have shown interest in importing this species whose consumption growth rate has been estimated as 10 % a year.

Specially *Pfaffia glomerata* (Spreng) Pedersen, *P. paniculata* Kuritze and *P. iresinoides* (H.B.K.) Spreng, are known as Brazilian ginseng and their phytochemical study is well advanced. On the margins and islands of the rivers Paraná, Paranapanema and Ivaí, in the states of São Paulo, Mato Grosso do Sul and Paraná, *Pfaffia glomerata* (Spreng) Pedersen (Oliveira et al., 1980) naturally occurs. This species is endangered by the intense collection of its roots. The collectors that inhabit the area are migrants who have come from other areas of the country since the 60's when, stimulated by federal agricultural policies that financed the implementation of monocultures, specially coffee, by putting down the primitive forest. As the international coffee price went down, the

producers went after other economical alternatives, which included, among others, the collection of *fáfia* (Noelli, 1997; Rosa, 1997; Tomanik et al., 1997). Such degradation could be minimized by the domestication and cultivation of these species. In addition, this would make them available to a larger part of the population.

Such a context justifies agronomical studies of the species and its inter-relationship with the environment, in an area of the High Paraná River inundation plain, where it grows spontaneously (Fuem/ Padct-Ciamb, 1995; Campos & Souza, 1997; Souza-Filho & Stevaux, 1997; Jacobs, 1999). This region has been recently turned into a national park named "Parque Nacional de Ilha Grande." This fact led several entities such as EMATER-PR, IBAMA, universities, IAP, collectors, national and international companies to propose the systematic cultivation of the species aiming at supplying both local and international markets using the best agronomical techniques (Fundação Iparides, 1992). The purpose of the present work was to evaluate the development in height of the species of four accessions in Querência do Norte, Paraná state, Brazil.

## **MATERIALS AND METHODS**

The experiment was carried out at Querencia do Norte county, Parana State, at Pontal do Tigre settlement. The materials were obtained from four accessions: one from Rosana county (São Paulo State), two from Querencia do Norte county (Parana State) and one from Taquaraçu county (Mato Grosso do Sul county). Seeds were sown in plastic sacs with commercial substratum and developed in nursery. After 60 days the seedlings were planted in soil with spacing of 1.00 m x 0.50 m. The experimental design was randomized blocks, with four treatments and four replications, with 24 plants in each plot. The evaluations were done two months after planting, each two months, completing four times of evaluation.

## **RESULTS AND DISCUSSION**

The results show a significant difference between accession 4 and other three accessions in first evaluation (141, 42 % higher than accession 2, the lowest of three and 44.16 % higher than accession 3, the highest of three), demonstrating a higher vigour of this accession on initial stage of its development. In the second and third evaluation, all accessions have no statistical difference, demonstrating a similar level of development at intermedial stages of development. At 5<sup>th</sup> evaluation, all accessions have almost the same result, with no statistical difference among them. This is a clear result of similar level of development of this species in these accessions, representing a stabilization of their height development at the end of first year (12 months after sowing).

The results demonstrate yet a great development of height at three firsts evaluation (2 to 6 months after transplanting), ranging from 24.31 cm to 161.56 cm (an increase of 564.58 %) in accession 2 and similar comparisons among other accessions, with significant difference. The maximum height reached was 172.35 cm (accession 1). After 4<sup>th</sup> evaluation, until 5<sup>th</sup> evaluation, all height results are stabilized, with no significant difference among them, except accession, which result in 5<sup>th</sup> evaluation is 12.19 % lower than 4<sup>th</sup> evaluation (151.34 cm and 172.35 cm, respectively). This decrease of average heights at 5<sup>th</sup> evaluation in relation to 4<sup>th</sup> evaluation (fall season) can be credited to stabilization of height development or to break of apical parts of stems by wind or other physical factor or even by accommodation of architecture of its branches. All accessions had similar height development from 1<sup>st</sup> to 5<sup>th</sup> evaluation, demonstrating a similar development at end of one year.

We concluded that *fáfia* possesses a strong initial growth, with visible difference among the accessions in the first months. From the eight month on, we observed a slight decrease in the height. This suggests the end of the annual cycle.

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## Tables

Table 1. Heights of four accessions of *Pfaffia glomerata* in five evaluations, in two month periods each.

	1 <sup>st</sup> evaluat.	2 <sup>nd</sup> . evaluat.	3 <sup>rd</sup> evaluat.	4 <sup>th</sup> evaluat.	5 <sup>th</sup> evaluat.
Accession 1	25.63 bD	122.86 aC	160.32 aAB	172.35 aA	151.34 aB
Accession 2	24.31 bC	126.46 aB	161.56 aA	160.84 abA	156.30 aA
Accession 3	40.71 bC	123.86 aB	150.83 aA	151.72 abA	143.10 aA
Accession 4	58.69 aC	128.27 aB	156.72 aA	158.39 bA	153.00 aA

Means followed by same letter are not statistically significant by Tukey's Test (5% probability). Lower case on columns and capital letters on rows.