Collection of Fáfia [Pfaffia glomerata (Spreng.) Pedersen] in Northwestern State of Paraná - Brazil

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Abstract
Interviews were conducted with fáfia (Pfaffia glomerata (Spreng.) Pedersen) collectors from the municipal districts of Querência do Norte and Porto Rico, where enterprises and buyers of this plant are concentrated. The results allowed us to conclude that both the adults and children make collection. Each adult collects from 50 to 150 kg of roots/day, depending on the collection area, for about 8 months/year. Collections mostly occur all over the year, but the activity becomes more intense from May to August. All families are not exclusively dedicated to fáfia collection and also develop other rural activities. They have been collecting fáfia for 2 to 13 years, indicating that an intensive exploitation has been present in the region for over a decade. During collection, no plant part is used for replanting the species. The roots are commercialised by regional buyers. The price of the roots varies from US $ 0.07 to US $ 0.13/kg and average gain is about US $ 2,055/family/year, representing a considerable profit for the collectors.

INTRODUCTION
Although it has been used for centuries by Brazilian Indians to cure and prevent diseases, properties of fáfia were scientifically proven after plant material was taken to Japan and submitted to analysis in the laboratory at “Rhoto Pharmaceutical Co. Ltda.” Recent studies have justified traditional uses of the plant and demonstrated that 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, Shiobara et al., 1993).

The roots of the plant species fáfia (Pfaffia spp.) have been used in Brazilian folk medicine as tonic, aphrodisiac and antidiabetic agent. The use of these species, known as Brazilian ginseng, has drawn the attention of the Japanese, who have been importing large 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 % yearly.

Pfaffia glomerata (Spreng) Pedersen, P. paniculata Kuritze and P. iresinoides (H.B.K.) Sprengen, are the three species known as Brazilian ginseng and their phytochemical study is well advanced. P. glomerata naturally occurs on the edges and islands of the rivers Paraná, Paranapanema and Ivaí, in the states of São Paulo, Mato Grosso do Sul and Paraná. (Oliveira et al., 1980). This species is endangered as a result of the intense root collection. The collectors, inhabitants of the area, are immigrants who have come from other areas of the country since the 1960’s when the federal agricultural policies financed the implementation of monocultures, especially of coffee, in deforested areas. As the international coffee price went down, the producers looked for other economical alternatives, which included, among others, the collection of fáfia (Noelli, 1997; Rosa, 1997; Tomanik et al., 1997). The degradation of the natural populations could be minimised by the domestication and cultivation of these species. In addition, this would make fáfia available to a larger part of the population. Therefore several types of studies seem to be necessary. The agronomic and phytochemical characteristics of P.
glomerata need to be determined. The environment in the area of the High Paraná River inundation plain has to be analysed, and the range of the species must be determined (Anonymous, 1995; Campos and Souza, 1997; Souza-Filho and Stevaux, 1997; Jacobs, 1999). This region has been recently established as a national park named “Parque Nacional de Ilha Grande”. All of these facts motivated several entities such as EMATER-PR, IBAMA, universities, IAP, collectors, national and international companies to start cultivation of the species, using optimal agronomical techniques which would satisfy both local and international market demands (Anonymous, 1992). In connection with the above mentioned long-term project, the purpose of the present work was to survey the socio-economic status of fáfia collectors in the municipal districts of Querência do Norte and Porto Rico, state of Paraná.

MATERIAL AND METHODS
In May 2000, 22 fáfia collectors from the municipal districts of Querência do Norte and Porto Rico, north western Paraná state, were interviewed. The “snow ball scheme” was employed and the subject was the interview of fáfia collectors, only (Bayley, 1994).

The questionnaire consisted of 29 questions about the collector himself and about the method and circumstances of collection and sale, and about their intention to cultivate (see below).

RESULTS
The results of the evaluation of the questions and answers are as follows:
1) Age of the collectors ranged from 33 to 62 years, with the following intervals: 33 - 40 years = 6 persons, 41 - 50 years = 2 persons, 50 - 60 years = 12 persons and above 60 years = 2 persons.
2) They had been living in site from 12 to 18 years.
3) They had been living in the region from 12 to 35 years.
4) The majority of them are a male, (20 persons) and females are less (2 persons)
5) They had been collecting fáfia for several years: for 2 years = 2 persons, for 4 years = 8 persons, for 5 years = 2 persons, for 6 years = 8 persons and for 13 years = 2 persons.
6) None of them collect other medicinal plants, only this species.
7) The distance between their residence and the collection site ranges from 2 to 8 kilometres.
8) They use different means of transportation for taking the product from collection site to residence: on foot = 6 persons, by animal drawn vehicle = 18 persons, by bicycle = 6 persons.
9) The majority of them prefer Ivaí River plain as a collection site (18 persons) and less people go to Paraná Islands (4 persons).
10) None of the collectors rely on fáfia collection as the only source of income.
11) As other activity they raise small animals, make dairy products, fish, and cultivate different crops.
12) Distribution of other family members by age and sex who also help in the collection is grouped below:

<table>
<thead>
<tr>
<th>Males (age)</th>
<th>Females (age)</th>
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<tbody>
<tr>
<td>8-13</td>
<td>14-20</td>
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<tr>
<td>6</td>
<td>16</td>
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13) The daily quantities of fáfia roots collected by an adult male range from 50 kg to 150 kg, with the following differences: 50 – 61 kg = 4 persons, 61– 80 kg = 6 persons, 81-100 kg = 8 persons, 101-150 kg = 4 persons.
14) The daily quantities of fáfia root collected by a family range from 150 kg to 400 kg, with the following differences: 150-200 kg = 9 persons, 201-300 kg = 6 persons, 301-400 kg = 6 persons, no answer = 1 person.
15) The total amount collected yearly by one male ranges from 4500 to 5000 kg, by a family from 9000 to 24000 kg (mean = 16400 kg).
16) The yearly income on this activity of one male is calculated 4750 kg x R$ 0.25 = R$ 1187.50, of a family 16440 x R$ 0.25 = R$ 4110.00, presuming that they are working 8 months/year.
17) There are differences in the collection period around the year: 12 people work all year, 6 people from May to September, 4 people from July to December.
18) There are some months preferred for collection: 18 people mentioned that the preferred period for collection ranges from April to September; 12 persons from August to December; one person did not answer.
19) The most important reasons, for preference of collection time are the following: the plains are flooded; it is easier; it is the most fruitful time; the root is “riper”; its skin is more yellow; in August, due to burning the fields, it is easier to find it.
20) During collection, neither of the collectors is replanting any piece of the roots for maintenance of the population.
21) The majority of them do not wash the roots, only 4 persons wash the roots.
22) Among the people who wash the roots, 2 of them do it at home, 2 other ones leave roots immersed in drains so that dust may be washed away and no weight loss occurs.
23) Each of the collectors packs the material into polyethylene bags.
24) Transportation from the collection site to the buyer happens: from collection sites to collector’s residence on foot, by bicycle, or animal draft. Subsequently, by the buyer’s truck (18 persons). According 4 persons, the buyer gets the root at the collection site.
25) The material is commercialised in sacks in all cases, supplied by the buyer.
26) Only 4 persons sell the drug to a cooperative, association, or local wholesaler, while 18 people sell roots to wholesalers from another municipal district.
27) The price per Kg varies from R$ 0.15 to 0.25 /Kg
28) Each of the collectors answered yes, they would cultivate fáfia if they had technical and economical tools to do so.
29) As reasons of the former positive answer, they mentioned that it is easy, it is very profitable, weeds are not problematic, the whole family can help, easy to harvest.

DISCUSSION

Based on interviews with the collectors, collectors were very much interested in agronomical studies on fáfia. They consider this species to have a very good economical potential. As to the best time for collection, in the months of July/August, fáfia is likely to be “ripe.” Most collectors considered the plant to be ripe when the branches and root become yellowish, the weight of the roots is greater, indicating alterations in physiological development. Collection areas are before root harvest in order to remove other species and venomous animals from the area. Fáfia sprouts faster than other species, thus, it is easy to locate after a burn.

Fáfia productivity is closely related to with soil humidity (high) and concentration of organic matter because it grows on alluvial soil submitted to seasonal floods that enrich the soil.

Collectors have observed the existence of three “types” of fáfia, which were characterised by yellow, white and darker coloured roots. The fáfia collected on the islands is of better quality and greater weight than on the River Plan, probably due to the fact that the access to these areas is more difficult and thus more time is allowed for the plant to develop.

The families involved in collection of fáfia, are greatly dependant on this activity, especially in the collection months (from May through August) when they have no other maintenance to be performed on their own crops. The harvested root mass might reach higher quantities than reported in the survey because it is supposed that collectors might be either afraid or unwilling to divulge their income.

The data obtained allows us to conclude that fáfia collection is an important economic activity for a certain part of the rural population that directly depends on it to
support their families. At the same time, the intensive exploitation puts the species at risk of extinction as unrestrained collection has been taking place in the few patches of native vegetation still found in that region.

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