

# Brazilians' Favorite Forest Types and Trees

Masaaki IMANAGA, Shigejiro YOSHIDA

Nelson Y. NAKAJIMA<sup>1</sup>, Masamichi CHYO<sup>2</sup>, Isao NAKASE<sup>3</sup>, Roberto T. HOSOKAWA<sup>4</sup>,

Guenji YAMAZOE<sup>5</sup>, Eduardo C. CRUZ<sup>6</sup> and Niro HIGUCHI<sup>7</sup>

(*Laboratory of Forest Resources*)

## Introduction

The aim of the study is to learn how the inhabitants and young people feel and think about their forest in Brazil. Here especially Brazilians' favorite forest types and trees are studied. In three cities in Brazil the opinion surveys were carried out in 1991 and in 1992.

The questionnaire consists of one face sheet and 13 questions which are classified in the following types.

- 1) The primitive and religious emotion toward nature.
- 2) The mystic and holy feeling about trees and forests.
- 3) The affection for forests in daily life.
- 4) The feeling and knowledge of trees.
- 5) The attitude toward hunting.
- 6) The propriety of forest management.
- 7) The preference of the forest type by the paired comparison method using the five suits of photographs.

And 4), 6) and 7) were chosen here for the analysis of Brazilians' favorite forest types and trees.

## Methods

São Paulo City in the State of São Paulo and Curitiba City in the State of Paraná were selected. Natural forests surrounding these two cities can hardly be found now. Manaus was selected because the city is surrounded by rich natural forests. Citizens and highschool students were selected as the respondents for the opinion survey.

The outline of these three cities is as follows;

São Paulo: Capital city of State of São Paulo. Biggest commercial and industrial city in Brazil.

Population 11 million.

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<sup>1</sup> Student of United Graduate School of Agricultural Sciences, Kagoshima University

<sup>2</sup> Kagoshima University Forests

<sup>3</sup> Faculty of Nature & Environmental Science, Himeji Inst. of Technology

<sup>4</sup> Faculty of Forestry, Paraná University, Brazil

<sup>5</sup> Forest Institute of São Paulo, Brazil

<sup>6</sup> Faculty of Agriculture, Amazon University, Brazil

<sup>7</sup> National Institute of Amazonian Research (INPA), Brazil

Curitiba: Capital city of State of Paraná. Called "Environmentally correct city". Population 1.4 million.

Manaus: Capital city of State of Amazonas. Situated in tropical climate. Population 1.2 million.

The numbers of respondents are 197 citizens, 289 university students and 203 highschool students in São Paulo; 479, 124 and 149 in Curitiba and 519, 40 and 125 in Manaus respectively.

## Results and Discussion

The answers to the following five questions were obtained for the analysis of this study.

Q1 Which is your opinion ?

1. Man should manage forests to keep them beautiful.
2. Man should not manage forests at all.

Q2 Which do you prefer ?

1. Nature, influenced by man, with mixed farm, meadow and forest.
2. Unspoiled nature, such as virgin and wild forests.

Q3 Attached to this questionnaire is a sheet showing five pairs of photographs of natural scenes, each numbered and marked A or B. Please indicate below your preference in the case of each pair. When making your selection do not consider the quality of the photographs themselves but only the appearance of the differing landscapes.

1.A, B 2.A, B 3.A, B 4.A, B 5.A, B

The sheet is shown in Fig. 1.

Q4 Name five trees which are most familiar to you.

Q5 Which of these trees do you like best ?

### **1. The propriety of forest management and the preference of forest type by the paired comparison method using the five suits of photographs.**

Here the answers from citizen and highschool students were analyzed.

The answer to Q1 is shown in Fig. 2. As shown in this Figure, about 60% of Brazilians selected 1. Citizens selected 1 more than highschool students. In Manaus 10% more people selected 1 than the other two cities.

The answer to Q2 is shown in Fig. 3. In São Paulo and in Curitiba highschool students selected both 1 and 2 at the same rate, but in Manaus they selected 1 more than 2. Brazilians selected more 1 than 2.

The results of Q3 are shown in Fig. 4. They selected A more than B in Fig. 4-1, B more than A in Fig. 4-2, B more than A in Fig. 4-3, B more than A in Fig. 4-4, and A more than B in Fig. 4-5. The way of this selection was just the same as with Japanese people. And it was made clear that Brazilian people prefer regular or artificial forest types to irregular or natural forest types.

Secondly, the relationship between the answers to Q1 and those of Q2 was investigated. The results are shown in Fig. 5. and Fig. 6. From Fig. 5. it can be pointed out that the people in Manaus prefer artificial landscapes to the people in other cities without regard to their selection of Q1. From

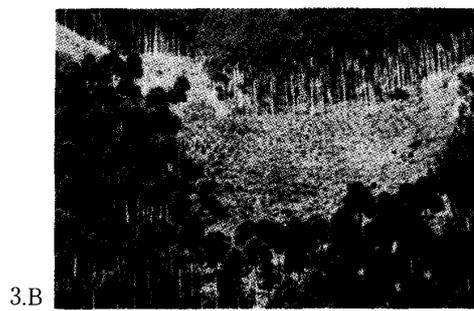
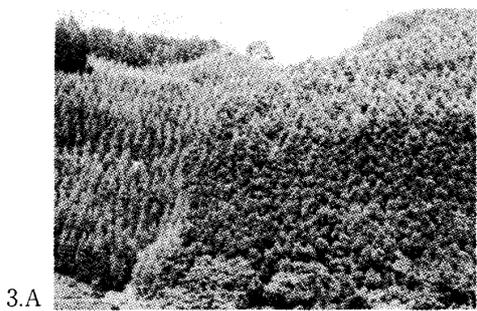
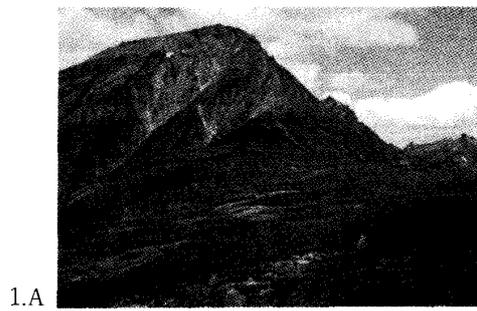


Fig. 1. Forest Types (Source: Typical forest in Japan, Japan Forest Technical Association, 1966).

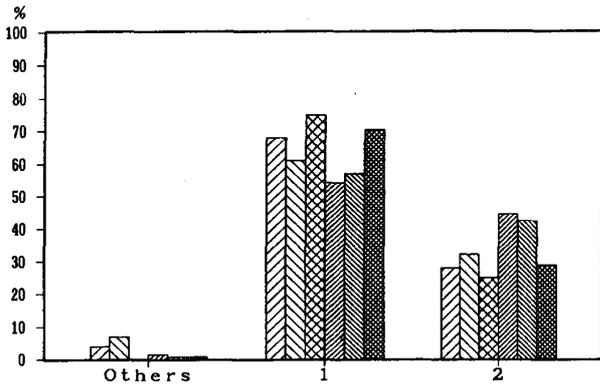


Fig. 2. Which is your opinion?  
 1. Man should manage forests to keep them beautiful.  
 2. Man should not manage forests et all.

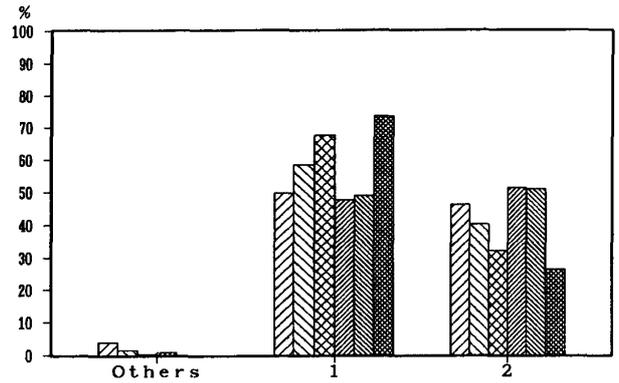


Fig. 3. Which do you prefer?  
 1. Nature influenced by man with mixed farm, meadow and forest.  
 2. Unspoiled nature, such as the virgin forests and wilds.

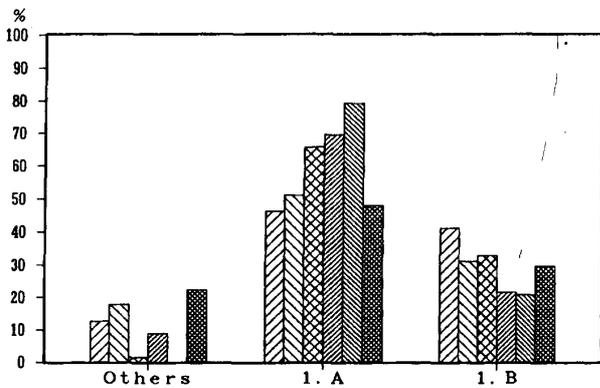


Fig. 4-1. Which do you like better, 1A or 1B?

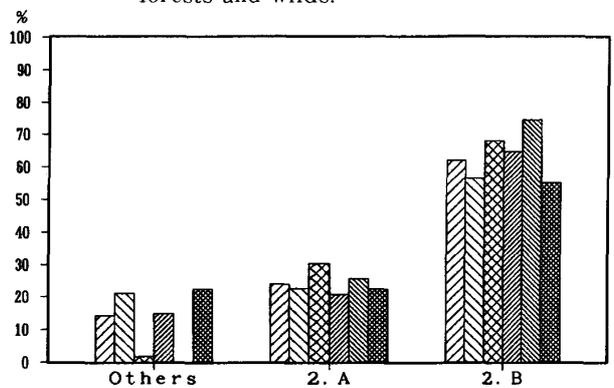


Fig. 4-2. Which do you like better, 2A or 2B?

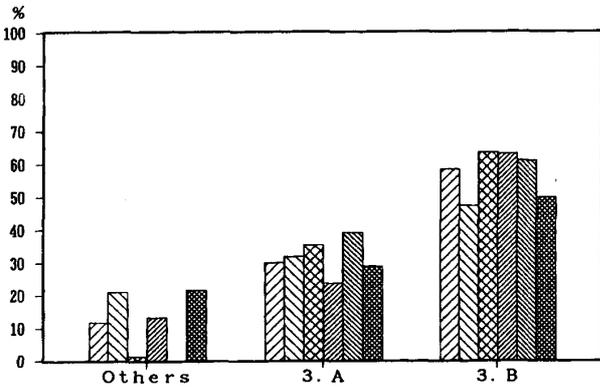


Fig. 4-3. Which do you like better, 3A or 3B?

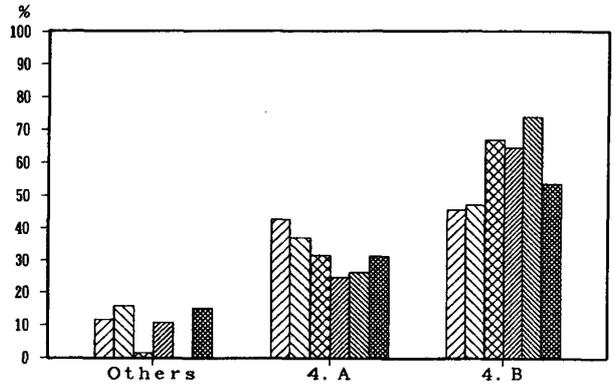


Fig. 4-4. Which do you like better, 4A or 4B?

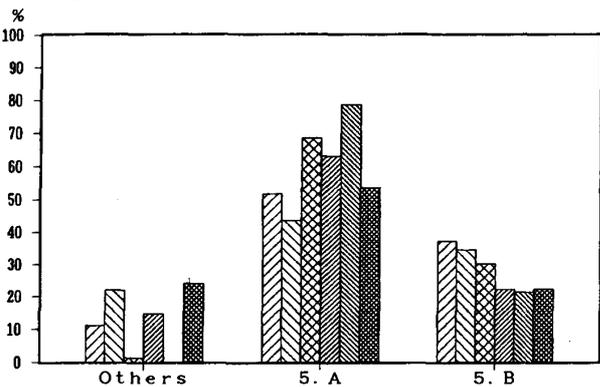


Fig. 4-5. Which do you like better, 5A or 5B?

- ▨ São Paulo Citizen-SP
- ▧ Curitiba Citizen-PR
- ▩ Manaus Citizen-AM
- São Paulo Highschool St. -SP
- Curitiba Highschool St. -PR
- ▬ Manaus Highschool St. -AM

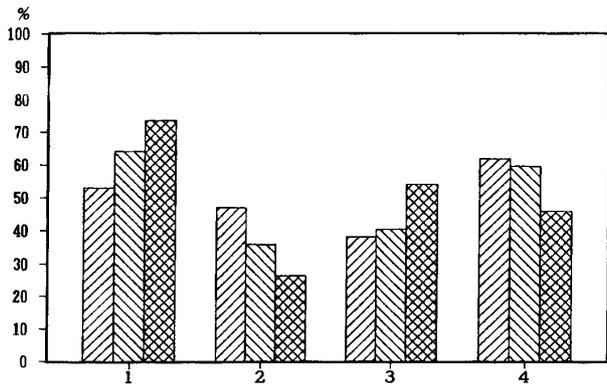


Fig. 5. The relation between Q1 and Q2 and A1 in Q2 in percentage  
 1. People-Answer 1 in Q1 and A1 in Q2  
 People A1 in Q1

2. A1 in Q1 and A2 in Q2  
A1 in Q1
3. A2 in Q1 and A1 in Q2  
A2 in Q1
4. A2 in Q1 and A2 in Q2  
A2 in Q1

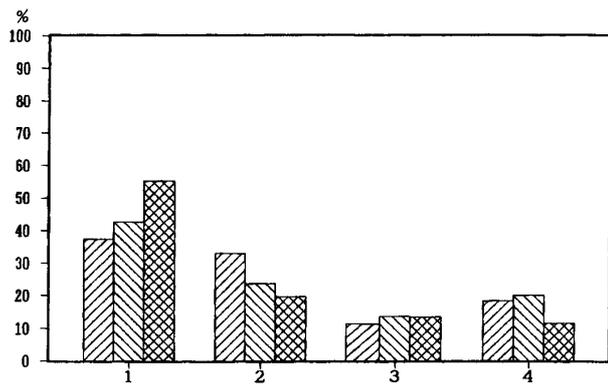


Fig. 6. The relation between Q1 and Q2 in percentage  
 1. A1 in Q1 and A1 in Q2  
 whole people

2. A1 in Q1 and A2 in Q2  
whole people
3. A2 in Q1 and A1 in Q2  
whole people
4. A2 in Q1 and A2 in Q2  
whole people

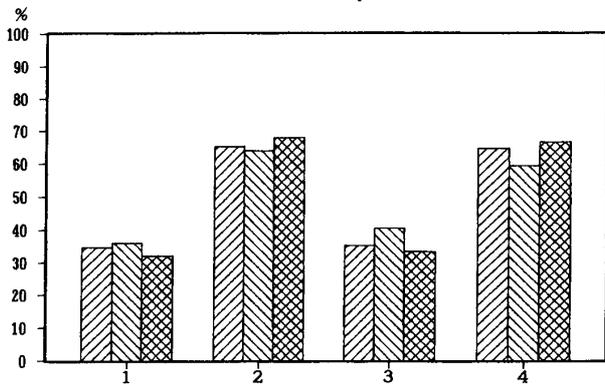


Fig. 7. The relation between Q2 and Q3 in percentage  
 1. A1 in Q2 and 4A in Q3  
 People A1 in Q2

2. A1 in Q2 and 4B in Q3  
A1 in Q2
3. A2 in Q2 and 4A in Q3  
A2 in Q2
4. A2 in Q2 and 4B in Q3  
A2 in Q2

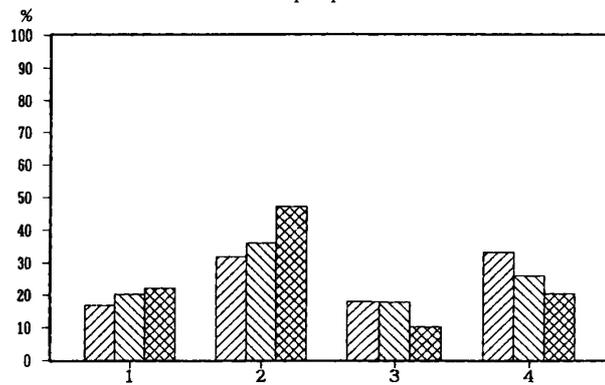


Fig. 8. The relation between Q2 and Q3 in percentage  
 1. A1 in Q2 and 4A in Q3  
 whole people

2. A1 in Q2 and 4B in Q3  
whole people
3. A2 in Q2 and 4A in Q3  
whole people
4. A2 in Q2 and 4B in Q3  
whole people

São Paulo-SP  
 Curitiba-PR  
 Manaus-AM

Fig. 6. it can be pointed out that Brazilians notice the importance of forest management, and they also prefer artificial landscapes to natural ones.

Thirdly, the relationship between the answers to Q2 and those to Q3 was investigated. In Fig. 1. the pair of pictures 4.A, B was used, because these pictures show the difference between artificial forests and natural forests. Fig. 7 shows that people selected artificial forest without regard to their selection of Q2. Fig. 8. shows that they selected 4.B without regard to their selection of Q2.

## 2. The feeling and knowledge of trees

The answer to Q4 is shown in Table 1. It can be pointed out that citizens and students in São Paulo like Ipê, Araucária and Eucalipto. And some citizens selected Pau Brasil, which originated the name of this country.

Table 1. Favorite tree species (Q4)

Rank	Citizens	%	Univ. students	%	High school students	%
<b>São Paulo</b>						
1	Ipê	58	Araucária	57	Araucária	67
2	Araucária	32	Ipê	54	Ipê	43
3	Eucalipto	25	Eucalipto	28	Eucalipto	43
4	Flamboyant	21	Coqueiro	19	Coqueiro	32
5	Pau Brasil	19	Chorão	17	Mangueira	31
<b>Curitiba</b>						
1	Araucária	85	Araucária	83	Araucária	82
2	Ipê	51	Ipê	44	Ipê	46
3	Cedro	32	Eucalipto	35	Eucalipto	36
4	Eucalipto	30	Cedro	20	Coqueiro	32
5	Imbuia	19	Imbuia	16	Cedro	30
<b>Manaus</b>						
1	Mangueira	57	Castanheira	38	Castanheira	68
2	Jambeiro	40	Jambeiro	35	Mangueira	48
3	Abacateiro	34	Araucária	25	Seringueira	42
4	Castanheira	32	Palmeira	23	Jambeiro	30
5	Araucária	22	Mangueira	20	Cedro	26

In Curitiba more than 80% of citizens and students selected Araucária, about 50% selected Ipê and about 30 to 40% selected Eucalipto. They call the Araucária the Paraná Pine, and it is the symbolic tree of the State Paraná. In the cities of São Paulo and Curitiba they were apt to select the same tree species. One of the main reasons is that the climate and tree species are similar in both states.

In Manaus many people selected Mangueira and Castanheira. Fruit trees and flower trees were apt to be selected. Because Manaus is located in the tropical rain forest zone, those trees thrive. Araucária, on the contrary, doesn't grow here, but they selected this tree because this tree is the symbolic tree not only in State Paraná but also in all Brazil.

The apparent tendency of the selection of trees among three categories of the people was not found, so these categories for the next analysis were not used. On Q5 only the difference among three cities were considered.

The answer to Q5 is shown in Table 2. As shown in this table, a lot of people selected Ipê and Araucária both in São paulo and Curitiba. In Manaus they selected Mangueira and Castanheira. Six tree species which were selected by people in São Paulo and in Curitiba are the same ones. And also in Manaus Araucária was selected by many people as cited above.

Table 2. Favorite tree species (Q5)

Rank	São Paulo	%	Curitiba	%	Manaus	%
1	Ipê, Ipê-amarelo	19.4	Araucária, Pinheiro	39.8	Mangueira	14.6
2	Araucária, Pinheiro	16.4	Ipê, Ipê-amarelo	13.2	Castanheira	11.8
3	Eucalipto	6.8	Eucalipto	3.6	Araucária, Pinheiro	8.3
4	Coqueiro	3.5	Coqueiro	3.1	Abacateiro	6.4
5	Palmeira	3.3	Palmeira	2.9	Seringueira	5.8
6	Chorão, Salgueiro	3.2	Chorão, Salgueiro	2.5	Jambeiro	5.0
7	Paineira	3.0	Imbuia	2.3	Coqueiro	3.5
8	Ipê-roxo	3.0	Cedro	2.0	Laranjeira	2.8
9	Mangueira	3.0	Figueira	1.3	Ipê, Ipê-amarelo	2.6
10	Flamboyant	2.8	Laranjeira	1.3	Cedro	2.2
11	Pau-brasil	2.0	Sombreiro	1.2	Palmeira	2.2
12	Quaresmeira	1.6	Flamboyant	1.2	Pau-brasil	1.9
13	Figueira	1.5	Jaboticabeira	1.2	Cupuaçú	1.8
14	Jaboticabeira	1.5	Mangueira	1.1	Sumauma	1.8
15	Jacarandá	1.0	Ameixeira	1.1	Goiabeira	1.5
16	Sequóia	1.0	Peroba	0.9	Pau-rosa	1.5
17	Abacateiro	1.0	Platanus	0.9	Cerejeira	1.3
18	Jequitibá	1.0	Carvalho	0.9	Acacia	1.3
19	Cereja	1.0	Pinus	0.8	Bananeira	1.0
20	Figueira	0.9	Seringueira	0.8	Cajueiro	1.0

The characteristics of the native trees of Brazil which were selected by many people (Q5) in this country are cited below:

#### São Paulo-SP

##### 1) Ipê, Ipê-amarelo (*Tabebuia chrysotricha*)

- . height: 4-10 m
- . diameter: 30-40 cm
- . utilization: the wood is proper for external and internal uses as posts, bridges, fences, boarded floors, inlaid floors and frames. This tree is extremely ornamental, mainly when it is in bloom. It is frequently planted on streets and squares in Brazilian cities.

##### 2) Araucária (*Araucaria angustifolia*)

- . height: 20-50 m

- . diameter: 90-180 cm
  - . utilization: the wood is proper for ceilings, frames, packing-boxes, toys, furniture structures, matches, pencils, domestic utensils. The fruit of this tree (pinhão), is comestible and very appreciated in the south part of Brazil by men and birds.
- 3) Eucalipto (exotic)
- 4) Coqueiro (*Cocos nucifera*)
- . height: 10-20 m
  - . diameter: 20-30 cm
  - . utilization: the wood is utilized as quay pillars, rural buildings, workmanship like walking sticks, little furnitures, etc. The main value of these trees are the fruits, that are widely consumed in Brazil and many other countries.
- 5) Palmeira, Coqueiro gerivá (*Syagrus romanzoffiana*)
- . height: 10-20 m
  - . diameter: 30-40 cm
  - . utilization: the wood is utilized as footbridges, warehouses on swamp areas with mangroves. This tree is very ornamental, and it is utilized on streets and avenues all over Brazil. The fruits are eaten by many kind of animals.
- 6) Chorão, Salgueiro (*Salix humboldtiana*)
- . height: 12-20 m
  - . diameter: 40-60 cm
  - . utilization: the wood is utilized for internal parts, packing-boxes, rural constructions and cellulose pastes. This tree is extremely ornamental, mainly because of its crown growth with hanging branches. It can be used in general landscapes.
- 7) Paineira (*Chorisia speciosa*)
- . height: 15-30 m
  - . diameter: 80-120 cm
  - . utilization: the wood can be utilized to make boats, wooden shoes, package-boxes and cellulose pastes. This tree is extremely ornamental, when it is in bloom. It is frequently utilized in large gardens and squares.
- 8) Ipê-roxo (*Tabebuia avellanae*)
- . height: 20-35 m
  - . diameter: 60-80 cm
  - . utilization: the wood is proper for external use and heavy civil and naval constructions, as posts, beams, railway sleepers, bridges, boarded floors, inlaid floors, walking sticks, etc. This tree is a nature spectacle, when it is in bloom. It is the species utilized in general landscapes in the southern region of Brazil.
- 9) Mangueira (*Mangifera indica*)
- . height: it can reach until 30 m
  - . diameter: it can reach until 2.5 m

utilization: the fruits are the main product of this tree. They are consumed naturally or can be made into candy, juice, jam, etc. This tree is utilized in landscapes due to the beauty of its flowers, and its wood is utilized in carpentry.

10) Flamboyant (exotic)

11) Pau-brasil (*Caesalpinia echinata*)

. height: 8-12 m

. diameter: 40-70 cm

. utilization: at present, this wood is utilized only to make violin arcs. In the past, it was utilized a great deal in civil and naval constructions. However, its main value was to provide an extration from its trunk called "brasileina", that was often used to fabricate paint and ink. It is very good to be used in landscapes.

12) Quaresmeira (*Tibouchina granulosa*)

. height: 8-12 m

. diameter: 30-40 cm

. utilization: the wood can be utilized for internal use, to fabricate toys, package-boxes, etc. This tree is very ornamental, mainly when it is in bloom. It is widely utilized in any kind of landscape projects.

13) Figueira (*Ficus guaranitica*)

. height: 10-20 m

. diameter: 90-180 cm

. utilization: this wood is used to make doors and ornamental panels, package-boxes, etc. Its fruits are consumed by bats and other animals. The large crown of this tree provides excellent shade, and it is often planted in rural areas and eventually in squares and large garden landscapes.

14) Jabuticabeira (*Myrciaria trunciflora*)

. height: 10-15 m

. diameter: 30-40 cm

. utilization: this wood is utilized to make furnitures, civil constructions and firewood. The fruits are comestible and very tasty and can be eaten naturally or as marmalade, candy, liqueur and brandy. It is a fruitful tree, so it is cultivated in many Brazilian house yards. These fruits are also consumed by birds and other animals.

15) Jacarandá (*Jacaranda cuspidifolia*)

. height: 5-10 m

. diameter 30-40 cm

. utilization: this wood is proper to be used at joineries. It is extremely ornamental, mainly when it is in bloom, and can be utilized in general landscapes.

16) Sequóia (exotic)

17) Abacateiro (*Persea americana*)

. height: 8-20 m

. utilization: its fruit is utilized as nutritious food.

- 18) Jequitibá (*Cariniana estrellensis*)
- . height: 35-45 m
  - . diameter: 90-120 cm
  - . utilization: this wood can be used for furniture structures, frames, plywood, shoe heels, package-boxes and civil construction as beams, roof timbers, laths, ceilings, etc. Its seeds are consumed by monkeys.
- 19) Cereja (*Eugenia involucrata*)
- . height: 5-8 m
  - . diameter: 30-40 cm
  - . utilization: this wood is utilized to make axe helves and other tool helves, firewood and charcoal. This tree is extremely ornamental and can be utilized in landscapes. Its fruits are comestible and very tasty. They can be utilized to make candy, marmalade, and liqueur and can also be consumed naturally. It is widely planted in home yards in the south part of Brazil. The fruits are widely consumed by birds.
- 20) Figueira, *Ficus benjamina* (*Ficus retusa*)
- . it is a small tree with many branches and a closed crown. This tree is frequently utilized in landscapes.

#### **Curitiba-PR**

- 1) Araucária (See SP-2) 2) Ipê, Ipê amarelo (See SP-1) 3) Eucalipto (exotic)
- 4) Coqueiro (See SP-4) 5) Palmeira (See SP-5) 6) Chorão (See SP-6)
- 7) Imbuia (*Ocotea porosa*)
- . height: 15-20 m
  - . diameter: 50-150 cm
  - . utilization: this wood is utilized to make luxury furnitures, mainly for its beauty. It also is often utilized in civil constructions like inlaid floors, railways, bridges, fences, posts, etc. The tree is very ornamental and can be utilized in general landscape. Its fruits are widely consumed by many kinds of birds.
- 8) Cedro (*Cedrela fissilis*)
- . height: 20-35 m
  - . diameter: 60-90 cm
  - . utilization: this wood is widely utilized in plywood, frames, general furnitures; civil, naval and aeronautics constructions, small package-boxes, pencils and musical instruments, etc. It is widely used in parks and large gardens.
- 9) Figueira (See SP-13)
- 10) Laranjeira (*Citrus aurantium*)
- . height: it can reach until 5 m
  - . utilization: the fruits are the main product of this tree. They are utilized to make juice, candy, jam, brandy and eaten naturally.
- 11) Sombreiro, Chapéu de sol (*Terminalia catappa*)

- . height: 10-15 m
- . diameter: 50-60 cm
- . utilization: it is utilized in landscapes. From its bark, fruit and leaves is obtained a black liquid that can be utilized as ink.

12) Flamboyant (exotic)

13) Jaboticabeira (See SP-14) 14) Mangueira (See SP-9) 15) Ameixeira

16) Peroba (*Aspidosperma polyneuron*)

- . height: 20-30 m
- . diameter: 60-90 cm
- . utilization: the wood is proper to civil constructions, such as roof timbers, beams, doors and window rabbets, frames, parquet, furniture, etc. It is an ornamental tree, and can be utilized in general landscapes.

17) Platanus (exotic)

18) Carvalho (*Roupala brasiliensis*)

- . height: 15-25 m
- . diameter: 50-70 cm
- . utilization: the wood is proper to make furniture, radio-boxes and ornamental objects. It can also be utilized in civil and naval constructions. This tree possesses ornamental quality to be utilized in general landscapes.

19) Pinus, Pinos (exotic)

20) Seringueira (*Hevea brasiliensis*)

- . height: 20-30 m
- . diameter: 30-60 cm
- . utilization: the wood can make wooden floors, ceilings, package-boxes, etc
- . Its main value is the latex, obtained from the trunk, and transformed into excellent quality rubber.

### **Manaus-AM**

1) Mangueira (See SP-9)

2) Castanheira (*Bertholletia excelsa*)

- . height: 30-50 m
- . diameter: 100-180 cm
- . utilization: the wood can be used for internal civil constructions, wood floors and walls, plywood, package-boxes, ceilings, etc. The seeds (nuts) are appreciated and consumed in many countries.

3) Araucária (See SP-2) 4) Abacateiro (See SP-17) 5) Seringueira (See PR-20)

6) Jambiro (*Eugenia malaccensis*)

- . height: it can reach 8 m
- . utilization: it is utilized in landscapes due to its beautiful crown. The fruits can be consumed naturally, and its taste is similar to the apple. They can also be made into wine or brandy.

7) Coqueiro (See SP-4) 8) Laranjeira (See PR-10) 9) Ipê, Ipê amarelo (See SP-1)

- 
- 10) Cedro (See PR-8) 11) Palmeira (See SP-5) 12) Pau-brasil (See SP-11)
- 13) Cupuaçu (*Theobroma grandiflorum*)
- . height: 6-10 m
  - . diameter: 25-30 cm
  - . utilization: the fruits are the main product of this tree. They are utilized to make candy, juice, jam, and from the seeds chocolate can be obtained.
- 14) Sumauma (*Ceiba pentandra*)
- . height: 30-40 m
  - . diameter: 80-160 cm
  - . utilization: the wood is utilized to make boats, plywood fillings and cellulose pastes.
- 15) Goiabeira (*Psidium guajava*)
- . height: 3-6 m
  - . diameter: 20-30 cm
  - . utilization: the wood is utilized as posts, tool helms, firewood and charcoal. The fruits are comestible and very tasty, and can be consumed naturally or as juice, candy, guava jam, fruit-jelly, etc. It is cultivated in domestic orchards and commercial plantations.
- 16) Pau-rosa, Pau-brasil (See SP-11)
- 17) Cerejeira (*Amburana acreana*)
- . height: 15-25 m
  - . diameter: 80-120 cm
  - . utilization: the wood is utilized to make noble furnitures, wainscots, sculptures and general joinery.
- 18) Cássia (*Cassia grandis*)
- . height: 15-20 m
  - . diameter: 40-60 cm
  - . utilization: this wood can be utilized in civil constructions, mainly for internal completion. It is extremely ornamental and can be used in general landscapes.
- 19) Bananeira (It is not a tree)
- 20) Cajueiro (*Anacardium occidentale*)
- . height: 5-20 m
  - . diameter: 25-40 cm
  - . utilization: the wood is proper for civil construction, joinery, tool helms, wooden shoes and package-boxes. This tree is cultivated all over Brazil and other countries. The pseudo-fruit and nut are appreciated all over Brazil and are exported to many countries, and this pseudo-fruit can be consumed naturally or as juice and candy.

## Conclusion

The propriety of forest management and the preference of the forest type by the paired comparison method using the five suits of photographs were investigated.

Many Brazilians, especially the people in Manaus, have the opinion that "man should manage forests to keep them beautiful." And it can be said that they prefer regular or artificial forest types to irregular or natural forest types.

Brazilians' feeling and knowledge about trees were also investigated. And it can be concluded that Brazilians like Araucária (*Araucaria angustifolia*) the best. Araucária is called Paraná Pine, and it is the symbolic tree of Brazil. They also like Ipê (*Tabebuia* sp.) with its beautiful flowers. Fruit trees such as Mango (*Mangifera indica*) are popular in Manaus.

## Summary

Brazilians' favorite forest types and trees were investigated. For this purpose, an opinion survey was carried out. The questions used here can be classified as follows.

- 1) The feeling and knowledge of trees.
- 2) The propriety of forest management.
- 3) The preference of the forest type by the paired comparison method using five suits of photographs.

As the respondents, citizens, university students, and highschool students were selected in São Paulo City, Curitiba City and Manaus City. Natural forests surrounding São Paulo and Curitiba can hardly be found now, while, Manaus is surrounded by rich natural forest. The total numbers of responses were more than two thousand.

The conclusion is as follows.

- 1) There are more Brazilians with the opinion, "man should manage forests to keep them beautiful," than people with the opinion, "man should not manage forests at all".
- 2) They prefer regular or artificial forest types to irregular or natural forest types.
- 3) Brazilian likes Araucária (*Araucaria angustifolia*) the best of all.

## Sumário

Foram investigados os favoritos tipos de árvores e florestas dos brasileiros. Para essa finalidade foram realizadas pesquisas de opiniões. As questões consultadas podem ser classificadas como seguem.

- 1) O sentimento e conhecimento a respeito de árvores.
- 2) A adequação do manejo de florestas.
- 3) A preferência por tipos de florestas através do método de comparação pareada como uso de cinco pares de fotos.

Os respondentes foram: cidadãos em geral, estudantes universitários e estudantes de segundo grau. As cidades selecionadas foram: São Paulo, Curitiba e Manaus. Atualmente florestas nativas não são comumente encontradas nos arredores das cidades de São Paulo e Curitiba, enquanto que nos arredores de Manaus, ao contrário, existem exuberantes florestas. O total de respondentes nas três cidades ultrapassaram duas mil pessoas.

As conclusões foram:

- 1) Existem mais brasileiros que são da opinião de que "as florestas deveriam ser manejadas para as tornarem mais belas" do que "as florestas não deveriam ser manejadas".
- 2) A maior preferência foi para florestas regulares ou plantadas que florestas irregulares ou nativas.

- 3) Os brasileiros elegeram a Araucária (*Araucaria angustifolia*) como a árvore mais preferida.

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