



SURINAME:

**COUNTRY REPORT
TO THE FAO INTERNATIONAL
TECHNICAL CONFERENCE
ON PLANT GENETIC RESOURCES**

(Leipzig, 1996)

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Paramaribo, May 31 1995



Note by FAO

This Country Report has been prepared by the national authorities in the context of the preparatory process for the FAO International Technical Conference on Plant Genetic Resources, Leipzig, Germany, 17-23 June 1996.

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CHAPTER 1

Introduction to Suriname and its Agricultural Sector

1.1 GEOGRAPHY AND POPULATION

Suriname is situated on the northeastern coast of South America and lies just above the Equator between 2° and 6° north latitude and 54° and 58° west longitude.

In the East it is bordered by French Guyana, in the West by Guyana, in the South by Brazil and in the North by the Atlantic Ocean. The total area is about 165,000 km².

Suriname has a small population of about 400,000 and consists of several ethnic groups such as Negros 40%, Hindustanis 38%, Javanese 15%, Amerindians 3%, Chinese 2% and the rest 2% consist of several groups of European origin. The original inhabitants the Amerindian were driven out of the coastal area during the colonisation period. They populated the interior part of the country as do the descendants of runaway negro slaves called marrons. The greatest part of the Surinamese population about 85% is concentrated in the coastal area (40% residing in Paramaribo the capital). About 15% lives in the interior in villages along the rivers and consists mostly of bushnegros and Amer-indians. Suriname has a good starting point for a sustainable socioeconomical development. The availability of many natural resources and the potential of fertile land and freshwater provide a solid base for the economical development of the country.

Besides this there is a reasonable health care, fair educational possibilities, a reasonable infrastructure and a relativity well educated population.

For decades the pillars of the Surinamese economy are the mining of bauxite and production of aluminium and the agricultural production of rice, bananas, oilpalm, vegetables and fruits. About 15% of the working population is working in agriculture, 4% in mining and about 10% in trade. Of the labour force 45% is working for the government.



1.2 CLIMATE AND GEOMORPHOLOGICAL LAND-DIVISION

The average temperature is 27°C with daily deviations between 23°C and 33°C. The yearly temperature spread is just 2°C. The average yearly rainfall in Paramaribo is 2200 mm. In the whole country the rainfall varies of less than 1750 mm to more than 3000 mm. For this year reason we can distinguish 4 seasons viz.

- Main rainy season - from April till August
- Main dry season - from September till November
- Main rainy season - from December till January
- Main dry season - from February till March.

The rivers of the country flow from south to north and two of the biggest rivers form of border, in the west the Corantine river and in the east the Marowijne river. The ecological variety of the country is not formed by the climate but more by the Geomorphological differences for which we distinguish 4 areas.

A. The young coastal plain Demerara formation

This area is 8 km width in the east and about 50 km in the west and lies between 0 and 4 m above sealevel. It consist of swampy clay soil deposited by the sea. Suriname has a coastal line of about 350 km and consist of large mud banks with some small strokes of sand beaches. The coastline is unstable this because if the rapid deposit of clay by the sea forming land and destroying by the Guyana stream. Sand and shells are deposited from the bottom of the sea.

The salt and brackish water area is covered with mangrove. More land inward lie the sweet water swamp with a shrub vegetation.

B. The old coastal plain Coropina formation

This area lies 4 llm above sealevel and is about 20 km – 70 km width and consists of swampy clay soils and sand ridges of sea and river origin. This area is covered with different types of grass and swamps, swamp forest, dry land forests and large areas with swampy turf swamp.



C. The savannah belt Zanderij formation

This area is about 12,000 square km lies 10m above sealevel. The coarse bleached and unbleached sandy soils vary in amount of clay and are of poor structure and quality. The area is covered with erofytic and mesofytic dry land and swamp forests vegetation and dry till swampy grass and brush savannas.

D. The interior

The interior makes 80-85% of the total land area of Suriname. It consists of hills, mountains and ronk formation. The area is covered with primary tropical rainforest. Suriname is part of the Amazon Province. The Amazon Province is subdivided in 15 districts, one of them is the Guyana district of which the Suriname forest makes a part.

1.2.1 Agriculture

Suriname has a potential of about 3 million ha suitable for agricultural purposes. In the coastal area about 1.5 million ha can use for agricultural purposes and of this 1.5 million ha about 10% has been brought into culture. The agricultural potential of the interior part is about 400,000 ha. The export value of the agricultural production as a percentage of the export value of Suriname rose from 11% in 1983 to 16% in 1987.

The total productive area in 1987 was about 100,000 ha. Of these 54,000 ha was used for rice production. About 24,000 ha consists of grassland for cattle and more than 20,000 ha are in permanent use for several crops such as Bananas 2,000 ha, Oilpalm 4.600 ha, Citrus 2,500 ha, Coconut 1,300 ha, Sugarcane 2,200 ha (the last ten year not in production), Vegetables 2,000 ha and some other perennial crops. Agriculture accounts for 12% of the G.N.P. In the production structure of the agricultural sector we can distinguish two forms of farms organization.

- Plantation/large farms (enterprises)
- Small farmers.

The plantation/large farms agriculture is meant to produce raw materials for industrial purpose for export. The products produce are rice, bananas, oilpalm, citrus. Most of these enterprises are in hands of the government. Vegetables farms are private own and most of the vegetable production is exported. The most important characteristics of the organization of the production are:



- a. A relative high mechanization grade and chemicalizing of the production process;
- b. More part-time farmers in the production on small farms;
- c. Dependency on third parties for inputs, soil preparation, plant protection, transport and sale of produce.

Agricultural development is guided by the Multi Annual Development Programs. The programme for the years 94-98 has been recently published. In this plan for instance the expansion of dry land rice, alternatives for the oilpalm culture in the interior, the availability of healthy, productive, disease and pest resistant varieties and the testing of new crops are explicitly mentioned. Integrated pest management and sustainable organic agriculture is also to be researched more intensively.



CHAPTER 2

Indigenous Plant Genetic Resources

2.1 FORESTRY GENETIC RESOURCES

About 90% of the country is covered with forest. The larger part is covered with rainforest (78%), other types de occur also such as mangrove forests and swamp vegetation (10%) and savannah vegetation about 1%.

The greatest part of the forest area is not accessible this because of the mountainous country side and the bad navigability of the rivers. For this reason the timber production is mostly situated in the northern part of the Suriname rainforest the so-called forestry belt. This is an economic zone of high forest trees and varies in width of 10 to 45 km. This area consists of 1.5 million ha of forest trees of which about 600,000 ha is suitable for sustainable timber production. In this area 10,000 ha is man made forest. This forestry belt is accessible by about 2,000 km of good roads. The rainforest consists of more than 300 botanical sorts of which less than 10% is suitable for timber harvest. In Suriname the emphasis has been laid on commercial timber production for a long time. Even now the other functions and products of the forest are undervalued such as the genetic potential, medicinal plants, ornamentals and fauna in all their diversities. Under the Timber Act of 1947 the following tree sorts are protected and should not be harvested.

Bolletrie	-	Manilkara bidentatah
Tonka	-	Dipteryx odoratah
Hoepelhout	-	Copaifera guianensish
Rozen hout	-	Aniba spph
Kwassibita	-	Quassia amara
Maho	-	Hibiscus tiliaceus

A list of commercial species has been compiled according to a FAO Report of 1974. (FO. DP/SUR/71/506 Technical report 6 Forestry Development Suriname). **See annex 1.**

The Ministry of Natural Resources with workarm the Suriname Forest Service is responsible for both forest production and management of the country's protected area.



2.2 AGRICULTURAL PLANT GENETIC RESOURCES

Within the Ministry of Agriculture, the Agricultural Experiment Station is the institute responsible for agricultural research. Conservation related activities are foremost located at several experimental gardens. The most important of these gardens are La Poule, Dirkshoop and Tijgerkreek-West. A number of relevant agricultural species such as citrus, mango, coffee, cacao and coconut is being grown and used in field trials or kept for future breeding efforts. The species are multiplied at the Experimental Garden and several nurseries if necessary. Species that are present at these gardens and other are set out in **Annex 2**.

The different varieties are listed at the Experimental Garden (Landbouwproefstation). The following departments are working with this material. The department on Citrus, Maize and Pulses, the Palm Research Centre and the Fruit and Vegetable department.

Some research has been executed on:

- The purification of available vegetable and fruit varieties,
- The adaptation of imported maize and soybean varieties for mechanized culture.

2.2.1 Ananas pineapple

The total area planted with Pine apple in Suriname is about 200 ha with a total yearly production of about 2,000 ton. Field trials with pine apple started as early as 1951 with the following cultivars Smooth Cayenne, Ripley Queen and Lontoenasie. There is no mentioning where cultivars came from although it is known that the Smooth Cayenne originated in the highlands of Guyana from which Suriname is a part. In 1961 there were imports of plant material of smooth Cayenne from Martinique (1,000 slips) and from the Dominican Republic 3,000 (slips). In 1961 pine apple plant materials (Ripley Queen) was exported from Suriname to Puerto Rico. Although the acreage of pine apple in Suriname is small the genetic variability is quite extraordinary.

The following varieties can be found in Suriname:

Smooth Cayenne, Red Spanish, Inginasi, Lontoe, Watra Peni, Singasi Nana, Langa, Ripley Queen, Ondrobong.



The varieties marked with an asterisk are local varieties and are mostly grown by the Amerindian and bushnegros people living in the interior part of Suriname. Pineapple could become an important commercial agricultural crop for Suriname. There are wild progenitors of pineapple occurring in the forest of which an inventory should be made, also research should be undertaken how wild pineapple progenitors could be used for breeding purposes.

Palmae

There are also plans to execute some research on:

Alternative within the palmae family, for the oilpalm estates. Several palm species are evaluated to be grown on plantation scale. Tribal inhabitants of the hinterland are involved in the search for certain species.

2.2.2 Other economic potential palmae

The Sabanna obè *Elaeis oleifera* will be used for breeding purposes with the African oil palm *Elaeis guineensis* for obtaining spearrot resistant hybrids. Fruit from Awarra *Astrocaryum vulgare* and Maripa *Ma imilliana*, maripa are used by the inland tribes for the production of edible oil. The fruit of the awarra is exported to the Netherlands in very small quantities. The pulp can also be used as a tastemaker (flavor) in ice-cream. *Euterpe oleracea* is producing a good quality palmito, *Bactris gasipaes* the paripoe or peach palm is not indigenous but still is found around the inland villages. The *Attalea* spp. could become of economic importance for the production of strips for parquet floors.

Medicinal Plants

Some 600 indigenous plants are used for medical purposes. Not all the plants used by the several people living in Suriname have been inventorized. One of the famous medicinal plant used all over the world is the *îkwasibita* *Quassia amara* used against fever attacks. A few other medicinal plants are:

Koeswe *Bixa arellana* used against inflammation of the mouth and throat.

Oema boesipapaja *Cecropia surinamensis* used for treatment of kidney ailments, nervous diseases and heart conditions.

Watra kanoe *Ruellia tuberoza* for kidney ailments and antidiabetic.



Posentrie *Hura crepitans* used against skin problems.

Finibita *Phyllanthus amarus* used against venereal diseases, cold, influenza, diuretic.

Blaka tiki minti *Lippia geninata* used against stomach problems.

Anesi wiwiri *Piper marginatus* against stomach ailments and nervous conditions.

Medicinal plants are described by H. Heide in "Genees planten in Suriname" 1992, Surinaamse Medicijn planten 1987 and "Medicinal plants of Suriname" by Dr. S. Tirimanna 1987.

2.3 ORNAMENTALS

A lot of plants occurring in the Suriname forest can be used as ornamentals and could become of economic importance for the local growers of ornamentals. These plants are for example Orchids, Bromeliaceas, Araceae, Musaceae and ferns.

Other species of economic importance which are grown by the local population and of which relatives occur in the forest are:

Cassave	Manihot esculenta
Yams and napi	Dioscorea alata and Diocorea trifida
Sweet potato	Ipomoea batatas
Tania	Xanthosoma spp
Cacao	Theobroma cacao
Passion fruit	Passiflora spp
Koemboe	Oenocarpes bacaba
Cashew	Anacardium occidentale
Para noto	Bertholletia excelsa
Inginoto	Caryocar nuciferum



The paramarkoesa

Passiflora laurifolia could be used in breeding programs with the Brazilian markoesa - *Passiflora edulis* to improve the latter against fungal disease

Para nuts (Brasil nuts)

Bertholletia excélsa and *inginoto* *Caryocar nuciferum* are used by the Amerindians and are sometimes available on the local market.

Cassave, yams, napi and sweet potato are already exported on a small scale to the Netherlands and French Guyana.

All these above mentioned plant species can be develop commercially and can be an important source of plant genetic products.



CHAPTER 3

Conservation Activities

3.1 IN SITU CONSERVATION - FORESTRY RESERVES

The Surinam Forest Service gives high priority to conservation and sustainable management of natural resources. Other tasks are forest inventory, forest management, accessibility to the forest, nature conservation, forest research, forest control, timber control and training of foresters (forest guards).

There are 14 protected areas ranging from 100 to 220,000 ha, covering 7% of the total land surface.

They include forest ecosystems, sea turtle nesting beaches and estuarine areas hosting North American migratory birds and other locally breeding coastal birds. The names of the country's protected areas are listed here.

Name		Area (ha)	Established/ Expanded
1. Wia Wia	Nature-reserve	36,000	1961/1966
2. Voltzberg- Raleighvallen	"	77,000	1961/1986
3. Coppename monding	"	12,000	1996
4. Brinck heuvel	"	6,000	1961
5. Tafelberg	"	140,000	1966
6. E. de Haan gebergte	"	220,000	1966
7. Galibi	"	4,000	1969
8. Hertensrits	"	100	1972
9. Sipaliwini	"	100,000	1972
10. Copie	"	28,200	1986
11. Boven Coesewijne	"	27,430	1986
12. Peruvia	"	35,150	1986
13. Wane Kreek	"	43,860	1986
14. Brownsberg	Nature Park	8,400	1969



Proposal under consideration include the establishment of the following nature reserves and forest reserves.

1. Nanni nature reserve 53,920 ha
2. Kaboeri kreek nature reserve 67,720 ha
3. Mac Clemen forest reserve 5,970 ha
4. Snake creek forest reserve 4,125 ha
5. Lelydorp forest reserve 500 ha
6. Cassipora forest reserve 4,420 ha

Wild life outside the reserves is protected by law and controlled by the Forest Service, Nature Conservation Division.

All forest and other domain land is the property of the government of Suriname. Timber concessions and cutting permits limit the exploitation of forest land of those forest that remain full property of the government. About 150 concessionaires held in 1990 about 2,000,000 ha under concession or annual permits.

Also, tribal communities living in the interior are entitled to a forest part in the vicinity of their villages, the total forest held under these privileges amounting to approximately 400,000 ha in 1987.

A low level of trade in wild flora and fauna existed in Suriname for many years, but has never been considered a serious threat to the fauna and flora of the country. An export quota system for all wildlife dealers to have a licence. All exports of wild flora and fauna has to be accompanied by an expert permit.

In addition, as a member of the Convention on International Trade in Endangered Species (CITES), Suriname required all wild fauna and flora exports a Cites permit for those species. The country is committed to the conservation of natural resources while promoting better living conditions for in the population of the small villages of the interior and the people living the coastal areas. The country have some programmes or projects for in situ conservation of Forest Resources. Currently there is a demand for the situ preservation of indigenous palm species at the Agricultural Experiment Station.

A necessity is the strong involvement of the inland tribes to manage in situ conservation cites. Suriname does not have national plant genetic resources collections, the above mentioned experimental gardens can be considered as gene bank. There is further a gene bank for rice.



SML's (Stichting ter ontwikkeling van de Machinale Landbouw) facility at LON (Landbouwkundig Onderzoek Nickerie) has served the rice growing community since 1951. Release since 1958 include 17 varieties, four of which are still being maintained in a commercial scale. Variety Awini, released in 1971, was the first Suriname variety with semidwarf plant type. Varieties have otherwise been characterized by stiff straw, extra long grains around 8 mm or more, very good cooking quality. Eloni, released some 13 years ago is now the dominant variety, occupying some 80% of the area. The newly established Foundation National Rice Research Institute SNRI will take over the work of SMLLON. More than 500 varieties (rice) were imported by SNRI in 1994. The local storage conditions for seed collection are very poor and inadequate. At LON and Celos the storage conditions for seeds are reasonable good. The storage conditions do not comply with the internationally recommended standards. Temperature and humidity cannot be controlled and all sorts of containers are used to pack the seeds. The main constraints is lack of funds to establish the appropriate storage facilities.



CHAPTER 4

In-Country Uses of Plant Genetic Resources

The main institute responsible for cultivar introduction and evaluation is the Agricultural Experiment Station of the Ministry of Agriculture.

At this station certain varieties of vegetables, food legumes, grain legumes and maize, which were selected in the past after field trials were conducted, are maintained most of the vegetable seeds used by farmers are imported seed especially the Brassica seeds.

Locally some vegetable seeds are produced at the experimental garden of Dirkshoop. To a limited extent seeds of the following crops are produced.

Solanum melongena - var. long purple - eggplant.

Vigna sinensis - var. sesquipedalis - LP-9 - yard long bean.

In the past years several imports of genetic materials of the following crops has taken place: From Mexico maize (*Zea mais*), from Brazil soya bean (*Glycine max*), Tomato and Brassica seeds from the Asian Vegetable Research and Development Centre (AVRDC) and some groundnuts (from India and Indonesia). Due to financial problems, availability of qualified manpower and other infrastructural problems it has not always been possible to conduct field trials and to make evaluation on a regular basis. At the experimental gardens La Poule and Dirkshoop several fruit crops species and varieties are being maintained. Varietal evaluation trials for coconut (*Cocos nucifera*) have been conducted with the tall and dwarf varieties available in the collection of the Palm Research Centre of the Ministry of Agriculture Activities are now mainly on maintenance and propagation of Genetic stock.

SML/LON has been responsible for rice varietal improvement and maintenance of a collection of rice varieties. The rice seeds produce by this institute is mainly used in the coastal area. Upland rice varieties are mostly used in the interior part of the country. Many of the upland rice varieties have not been maintained by the local growers. The *Oryza* seed station has saved some of these varieties and reproduced them again. Most of the farmers in Suriname are market oriented and in general purchase seeds from the government institutions such as the agricultural experiment



station (vegetable seeds) and SML (rice seeds). Some especially the farmers in the interior produce their own seeds and planting material or buy them from other farmers. The quality of these seeds is not always good.

4.1 FAO SEEDS PROGRAMME - SURINAME

The FAO Project "Improved Seed Production: CARICOM countries and Suriname" addresses key components related to the production of and secure accessibility to improved seed/planting material in the CARICOM region and Suriname.

A key component of improved seed material production involves the collection, characterization, evaluation and maintenance of germplasm. In the Caribbean Region there is a wide variety of germplasm available. However, within the Region up till now insufficient attention has been paid to germplasm collection and conservation: partially because the region is lacking in skills needed for germplasm management.



CHAPTER 5

National Goals, Programmes and Legislation

At the moment there is no national programme existing in Suriname which organized plant genetic resources activities. Element related to plant genetic resources are existing but linkage between these elements is lacking. To safeguard the plant genetic resources for future needs a work plan should be established.

The activities of the work programme will aim at:

- a. The recovery of land races,
- b. The characterization and purification of species already to be found in Suriname,
- c. The reintroduction of certain species like *Theobroma cacao* and *Coffea arabica*,
- d. The selection of elite lines for breeding,
- e. Exchange of germplasm with the region and world wide.

On the institutional side all activities will involve:

- a. Setting priorities on all relevant matters,
- b. An expansion of the gene bank facilities, documentation abilities, information exchange and training. Species dependant storage methods, Regeneration protocols, cross pollinated seed; genetic mixing and seed mixing are some of the main topics where knowledge and or experience is lacking.
- c. Acquiring the right market information. Depending on development in the research on alternative animal, feed and the market development it is possible that root crops, ornamental species and medicinal plants will be added to the genetic resources programme. These efforts could well lead to the introduction of new plant species and their subsequent development into major grown crops. Our economy will only benefit from these efforts.
- d. Realising biological control laboratory facilities. There will probably be a need for rearing facilities of target pests and corresponding enemies. It depends on the chosen pest/disease host complex.



5.1 LEGISLATION

Quarantine plays an important factor to be able to move genetic material through the borders. Plant genetic resources accessions should meet the requirements stated in the Plant Protection Act of 1965 no. 102.

The Quarantine Office of the Plant Protection Division is not fully equipped for massive imports, there is no quarantine storage room, a lack of staff for disease and pest detection, lack of apparatus and inadequate transportation to the customs areas.

A well equipped quarantine sanitary unit is needed to enhance the imports as well as export of agricultural commodities and the treatment of plant genetic resources. In Suriname we do not have any laws in effect for locally produced seed neither is seed legislation in force. In the case of rice seed farmers protect themselves by buying certified seed at the well known rice seed producers in the country. Assistance is needed on legal matters concerning plant genetic resources and locally produced plant material. Gene bank facilities are practically non existing in Suriname. Skills in actual gene bank management, variety characterization are scarce and training of available manpower in this field is urgently needed. To be able to set up and strengthen a national programme it is mandatory that certain conditions are created to facilitate the conservation of plant genetic resources in Suriname.



CHAPTER 6

International Collaboration

With the following organisations or institutions a form of co-operation has been established or is now operated.

FAO

FAO has started a project in Suriname i.e. Project GCP/RLA/108/ITA "Improved Seed Production: CARICOM Countries and Suriname".

In the framework of this project a computerized tool has been designed for a successful seed improvement: The Caribbean Seed and Germplasm Resources Information Network.

This tool will help to:

- improve germplasm and variety exchange
- facilities communication among breeders, seed technologists and agricultural extensionists
- facilities standardized information access to users and reduce unneeded redundancy of research efforts.

IICA

Suriname can get access to the following fruit germplasm gene bank via IICA.

1. USDA/TARS Puerto Rico Germplasm Inventory
2. Fairchild Tropical Garden, Miami Florida
3. Phytogetic Resources, CATIE, Turrialba, Costa Rica
4. Fruit Germplasm Collection, TREC, Univ. of Fl: USA
5. Tropical Fruit Germplasm, CIRAD/FLHOR, Guadeloupe
6. Mango Germplasm; CIRAD/FLHOR, Guadeloupe
7. Citrus Germplasm, CIRAD/FLHOR, Martinique
8. Pineapple Germplasm, CIRAD/FLHOR, Martinique
9. Mango Germplasm/CEVACU/Aguaruto, INIFAP, Mexico

**CIMMYT**

With CIMMYT a program has been established to test out new maize and sorghum varieties under Surinamese conditions. On a regular basis maize germplasm is received and tested in the field and the results are submitted to CIMMYT for evaluation.

IRRI and CIAT

From IRRI in the Philippines and CIAT in Columbia rice germplasm is received. This germplasm is used by SNRI for crossbreeding and up grading of the Surinamese rice varieties. Germplasm has been received also from AVRDC - in Taiwan (vegetable seeds), ICRISAT - Sorghum and peanuts from India, from EMBRAPA - Brazil (cassave germplasm).

At this moment the Suriname State Forest Service has only a form of cooperation with the United Nations Organization such as FAO, UNDP and UNEP.

Because of lack of hard currency to pay the yearly contributions the State Forest Service has no cooperation with ITTO International Timber Organization in Malaysia, Tropenbos in the Netherlands, ICRAF in Kenia and CIFOR in Indonesia.

Suriname i.e. the State Forest Service could benefit a lot if somehow she could managed to pay the yearly contributions and become a member of these above mentioned organizations.



CHAPTER 7

National Needs and Opportunities

Suriname with its large, wide territory, almost 80% still unexploited, has a rich biodiversity and rich plant genetic resources. Suriname has a lot to offer the world and would like to see her plant genetic resources to be protected, studied and utilized through international projects but under certain conditions. These conditions could be:

1. Suriname has the sovereign rights to exploit her own resources according to her own environmental policies. Before any prospecting is undertaken an agreement is required a condition of which is the equitable sharing of any benefits arising from the use of resources.
2. Access to genetic material and access to the technology which enable biodiversity to be conserved and utilized on a sustainable basis.
3. Equitable sharing of the benefits arising from the use of genetic resources between the country of origin and the exploiting party.
4. When exploiting the plant genetic resources, the rights and interests of the indigenous people should not be harmed and it is also of importance that they should benefit of any activity undertaken in the field of exploiting plant genetic resources in their territories.

Suriname should invest in plant genetic resources and should approach international organizations such as the World Bank in order to exploit her plant genetic resources.

It is necessary to initiate (in Suriname) some strong activities in the field of plant genetic resources.

An inventory has to be made of the plant genetic resources occurring in the interior (botanical varieties and medicinal plants).

Measurements should be taken to protect endangered plant species (by establishing nature reserves or nurseries (*ex situ* conservation)).

There is need to establish a national commission to deal with plant genetic resources. This commission which would have an antenna function could consists of persons from the Ministry of Agriculture, Ministry of Natural Resources, the University of Suriname and the private sector.



In order to function well the scientists sitting in this commission should have the opportunity to undergo some training in the field of plant genetic resources.

One of the urgent needs is training of personnel in inventorization of plant genetic resources. This can be done at any suitable institution in the Amazonian Pact countries which offer training in the field of plant genetic resources.

Suriname could benefit a lot if the above mentioned needs could be realized because it is better to make use of your own plant genetic resources (germplasm) for future agricultural development than to import from other countries.



CHAPTER 8

Proposals for a Global Plan of Action

1. National inventories of genetic resources should be established in developing countries. Quantities and which sorts occur where and which sorts are endangered.
2. The tropical rainforest should be protected and utilize in a sustainable way so that the biodiversity can be conserved.
3. Establish a programme for biodiversity utilization and sustainable use of plant genetic resources in the tropics.
4. Establish a programme on utilization of palm genetic resources.
5. The plant genetic resources should be conserved world wide with the help of United Nations organizations such as FAO.
6. Suriname is willing to share her plant genetic resources with other countries in the world in order to help to stabilize the world food situation.
7. Local communities and farmers should benefit from the activities on plant genetic resources.
8. Funds should be made available for small countries to inventorize and characterize their plant genetic resources.
9. Small countries should have the support of a UN agency when dealing with third parties who wishes to exploit their plant genetic resources.
10. It is important for developing countries to remain in control if their own genetic resources base and to impose a charge on those who wish to exploit it, which provides a fair return.



ANNEX 1

COMMERCIAL SPECIES

1001	Laagland baboen	<i>Virola Surinamensis</i>	<i>Myristicaceae</i>
1002	Hoogland baboen	<i>Virola melinonli</i>	"
1003	Pintri baboen	<i>Virola sebifera</i>	"
1010	Basralokus	<i>Dicorynia guianensis</i>	<i>Papilionaceae</i>
1020	Bolletri	<i>Manilkara bidentat</i>	<i>Sapotaceae</i>
1030	Bruinhart	<i>Vouacapoua americana</i>	<i>Papilionaceae</i>
1040	Kopi	<i>Goupia glabra</i>	<i>Celastraceae</i>
1051	Kras pisi	<i>Ocotea petalanthera</i>	<i>Lauraceae</i>
1052	Witte pisi	<i>Ocotea petalanthera</i>	"
1053	Kleinbladige zwarte pisi	<i>Nectandra of Ocotea wachenheimii</i>	"
1054	Grootbladige zwarte pisi	<i>Nectandra of grandis Ocotea glomerata</i>	"
1055	Zwarte pisi	<i>Ocotea glomerata</i>	"
1056	Kaneel pisi	<i>Licaria guianensie</i>	"
1057	Pedrekoe pisi	<i>Xylophia aromatica Xylophia nitida</i>	"
1058	Wana pisi	<i>Ocotea puberula</i>	"
1059	Waikara pisi	<i>Aniba hostmanniana</i>	"
1062	Rode kabbes	<i>Andira coriacea Andira inermis Andira surinamensis</i>	<i>Papilionaceae</i>
1063	Kleinbladige rode kabes	<i>Andira sp.</i>	"
1064	Grootbladige rode kabbes	<i>Andira sp.</i>	"
1071	Sali	<i>Tetragastris sp.</i>	<i>Burseraceae</i>
1072	Rode sali	<i>Tetragastris altissima</i>	"
1080	Soemaroeba	<i>Simarouba amara</i>	<i>Sterculiaceae</i>
1090	Gele pisi	<i>Ocotea sp.</i>	<i>Lauraceae</i>
1091	Zilver pisi	<i>Ocotea guianensis</i>	"
1092	Harde bast pisi	<i>Ocotea schomburgkiana</i>	"
1093	Savanne pisi	<i>Ocotea schomburgkiana</i>	"
1100	Ceder	<i>Cedrela odorata</i>	<i>Meliaceae</i>
1110	Groenhart	<i>Tabebuia serratifolia</i>	<i>Bignoniaceae</i>
1111	Man groenhart	<i>Tabebuia sp.</i>	"
1120	Kromanti kopi	<i>Aspidosperma sandwithianum</i>	<i>Apocynaceae</i>



COMMERCIAL SPECIES

1121 Kleinbladige kromanti kopi	<i>Agonandra silvatica</i>	<i>Opiliaceae</i>
1130 Pakoeli	<i>Platonia insignis</i>	<i>Guttiferae</i>
1131 Hoogland pakoeli	<i>Rheedia sp.</i>	<i>Guttiferae</i>
1141 Manpurperhart	<i>Peltogyne pubescens</i>	<i>Papilionaceae</i>
1141 Purperhart	<i>Peltogyne venosa</i>	"
1152 Rode lokus	<i>Hymenaea courbaril</i>	"
1160 Slangenhout	<i>Loxopterygium sagotii</i>	<i>Anacardiaceae</i>
1170 Zwarte kabbes	<i>Diplostropics purpurea</i>	<i>Papilionaceae</i>
1200 Gevlamde bosta-marinde	<i>Marmaroxylon racemosum</i>	"
1210 Kaneelhart	<i>Licaria canella</i> <i>Licaria cayennensis</i>	<i>Lauraceae</i>
1220 Koenatepi	<i>Platymiscium trinitatis</i> <i>Platymiscium ulei</i>	<i>Papilionaceae</i>
1231 Manletter	<i>Perebea laurifolia</i>	<i>Moraceae</i>
1232 Letterhout	<i>Piratinera scabridula</i>	"
1233 Berg manletter	<i>Helicostylis tomentosa</i>	"
1240 Pritijari	<i>Fagara pentandra</i>	<i>Rutaceae</i>
1250 Satijnhout	<i>Brosimum paraëense</i>	<i>Moraceae</i>
1260 Wana	<i>Ocotea rubra</i>	<i>Lauraceae</i>



ANNEX 2

Preliminary list of relevant agricultural species in several Suriname Gardens. BO=Boma, BR=Brokopondo, C=Cultuurtuin, D=Dirkshoop, N=Nanhoe, O=Oryza, P=La Poule, T= Tijger Kreek West.

Family	Genus	Species	Traditional name	English	Location
Anacardeaceae	<i>Anacardium</i>	<i>occidentale</i>	kasjoe	Cashew	COT
	<i>Mangifera</i>	<i>indica</i>	manja	mango	BODNT
	<i>Spondias</i>	<i>mombin</i>	mopé	Hogplum	CT
	<i>Spondias</i>	<i>purpurea</i> var. <i>lutea</i>	red mombin		N
Annonaceae	<i>Annona</i>	<i>biriba</i>	biriba		BRN
	<i>Annona</i>	<i>cimaro</i>			N
	<i>Annona</i>	<i>glabra</i>	zwampzuurzak	monkey apple	N
	<i>Annona</i>	<i>montana</i>	boszuurzak	mountain soursop	CN
	<i>Annona</i>	<i>muricata</i>	zuurzak	soursop	BOCNT
	<i>Annona</i>	<i>reticulata</i>	kasjoema	bullock's heart	CNT
	<i>Annona</i>	<i>squamosa</i>	kaneelappel	sugar apple	CNT
	<i>Cananga</i>	<i>odorata</i>	kenanga	ylang ylang	C
	<i>Duroia</i>	<i>eriophylla</i>	fluweelappel		N
<i>Stelechocarpus</i>	<i>burahol</i>	kepel		C	
Averrhoaceae	<i>Averhoa</i>	<i>bilimbi</i>	lange birambi	bilimbi	N
	<i>Averhoa</i>	<i>carambola</i>	fransman birambi	carambola	BODN
Bixaceae	<i>Bixa</i>	<i>orellana</i>	koeswé	annatto	BR CN
Cactaceae	<i>Opuntia</i>	<i>species</i>	schijfcatus	prickly pear	C
Caesalpiniaceae	<i>Dillenia</i>	<i>indica</i>	olifant-gajam	elephant's	T
	<i>Inocarpus</i>	<i>edulis</i>	tamarinde	tamarind	CT
	<i>Tamarindus</i>	<i>indica</i>			CNT
Caricaceae	<i>Carica</i>	<i>papaya</i>	papaja	papaya	CDJ
Caryocaraceae	<i>Caryocar</i>	<i>nuciferum</i>	sawarinoto		C
Chrysobalanaceae	<i>Chrusobalanus</i>	<i>icaco</i>	icacopruim	coco plum	NT
Combretaceae	<i>Terminalia</i>	<i>catappa</i>	amandel	tropical almond	CN
	<i>Terminalia</i>	<i>species</i>	wilde amandel	wild almond	C
Guttiferae	<i>Garcinia</i>	<i>dulcis</i>	moendoe		CT
	<i>Garcinia</i>	<i>mangostana</i>	mangistan	mangosteen	CN
	<i>Mammea</i>	<i>americana</i>	mami	mammey apple	CN
Lauraceae	<i>Cinnamomum</i>	<i>camphora</i>	kamfer	camphor	N
	<i>Cinnamomum</i>	<i>zeylanicum</i>	kaneel	cinnamon	CTN
	<i>Persea</i>	<i>americana</i>	advokaat	advocado	BR CNT
Lecythidaceae	<i>Bertholletia</i>	<i>exeisa</i>	paranoot	Brazil nut	N
Malpighiaceae	<i>Malpighia</i>	<i>punicifolia</i>	West Indische kers	W.I.Cherry	J
Melastomaceae	<i>Bellucia</i>	<i>grassularoides</i>	mispel		N
Meliaceae	<i>Azadirachta</i>	<i>indica</i>	niem	neem	CDORT
Mimosaceae	<i>Inga</i>	<i>bougoni</i>	swit'bonki	sweet bean	C
	<i>Inga</i>	<i>edulis</i>	swieti bonki	sweet bean	CN
	<i>Inga</i>	<i>laurina</i>	swit bonki	sackysac	T
	<i>Inga</i>	<i>pezizifera</i>	swit'bonki	sweet bean	C



Family	Genus	Species	Traditional name	English	Location
Moraceae	<i>Artocarpus</i>	<i>altilis</i>	kastanje	bread nut	T
	<i>Artocarpus</i>	<i>communis</i>	siribredebon	bread nut	C
	<i>Artocarpus</i>	<i>heterophylla</i>	nangka	jack fruit	C T
	<i>Castilloa</i>	<i>elastica</i>		Panama rubber	C
Myristaceae	<i>Myristica</i>	<i>fragrans</i>	nootmuskaat	nutmeg	C N
Myrtaceae	<i>Eugenia</i>	<i>polyantha</i>	salam		C N
	<i>Eugenia</i>	<i>uniflora</i>	surinaamsekers	pitanga cherry	BO C J
	<i>Eugenia</i>	<i>wulfschaegelian a</i>	kromoko		C
	<i>Pimenta</i>	<i>dioica</i>	piment	pimento	C N T
	<i>Pimenta</i>	<i>racemosa</i>	bayrumboom	bay	C N T
	<i>Psidium</i>	<i>guajava</i>	gujaba	guava	BO C
	<i>Syzygium</i>	<i>cuminil</i>	djamoen	jambolan	C N
	<i>Syzygium</i>	<i>jambos</i>	pommeroos	rose apple	C
	<i>Syzygium</i>	<i>malaccense</i>	pommerak	pomerac	C N T
	<i>Syzygium</i>	<i>samarangense</i>	curacaouse apple	java apple	C N T
Palmae	<i>Areca</i>	<i>catechu</i>	betel	betel nut	N
	<i>Bactris</i>	<i>gasipaes</i>	paripoe	peach palm	C
	<i>Carludovica</i>	<i>palitana</i>	panama palm		N
	<i>Caryota</i>	<i>mitis</i>	wijnpalm	wine palm	N
	<i>Cocos</i>	<i>nucifera</i>	kokosnoot	coconut	BR D J N P
	<i>Elaeis</i>	<i>Oleifera</i>	sabana obé	S. Am. oilpalm	
	<i>Euterpe</i>	<i>oleraceae</i>	podo siri		N C PC
	<i>Maximilliana</i>	<i>maripa</i>	maripa		N
	<i>Oenocarpus</i>	<i>bacaba</i>	koemboe		N
	<i>Roystonea</i>	<i>regia</i>	koningspalm		N
	<i>Sabal</i>	<i>palmetto</i>		cabbage palmetto	
Papilionaceae	<i>Alexa</i>	<i>wachenheimii</i>	nekoe-oedoe		C
	<i>Dipteryx</i>	<i>odorata</i>	tonka	tonka bean	C
	<i>Erythrina</i>	<i>poepigiana</i>	Trinidad kofimama	mountain immortelle	C
	<i>Erythrina</i>	<i>indica var. picta</i>	bonte kofimama	Nicaraguan cacao shade	C
	<i>Erythrina</i>	<i>glauca</i>	Kofimama	swamp immortelle	C
	<i>Gliricidia</i>	<i>sepium</i>	madre de cacao		C
	<i>Myroxylon</i>	<i>balsamum</i>	perubalsemboom	balsam of tolu	C T N
	<i>Phaseolus</i>	<i>vulgaris</i>	snijboon	common bean	D
<i>Vigna</i>	<i>sinensis/sesqu alis</i>	kouseband	longbean asparagus	D	
Passifloraceae	<i>Passiflora</i>	<i>edulis</i>	markoesa	passion fruit	C D
Piperaceae	<i>Piper</i>	<i>nigrum</i>	zwarte	pepper	BR C D
Polygonaceae	<i>Coccoloba</i>	<i>unifera</i>	schusterdruif	sea grape	C
Punicaceae	<i>Punica</i>	<i>granatum</i>	granaatappel	pomegranate	J
Rhamnaceae	<i>Zizyphus</i>	<i>jujuba</i>	olijf	jujube	J
Rubiaceae	<i>Coffea</i>	<i>arabica</i>	koffie	coffee	BR
Rutaceae	<i>Citrus</i>	<i>amblicarpa</i>	djeroek li mo sambal		N
		<i>aurantifolia</i>	lemmetje	lime	D
		<i>aurantium</i>	zure oranjies	sour oranje	D
		<i>jambhiri</i>	rough lemmon	rough lemmon	D
		<i>limon</i>	citroen	lemmon	D
		<i>maxima</i>	pompelmoes	pummelo	D
		<i>medica</i>	sucade	citron	C D
		<i>microcarpa</i>			N
		<i>paradisi</i>	grapefruit	grapefruit	BO BR D P
		<i>reticulata</i>	Cur.oranje/poskan	mandarin	D
		<i>reticulata</i>	tangelo's	tangelo	D P
		<i>x paradist reticulata</i>	tangors	tangors	D
		<i>sinensis</i>	sinaasappel	sweet	BO BR D N P
	<i>Fortunella</i>	<i>margarita</i>	kunquat		D



Family	Genus	Species	Traditional name	English	Location
<i>Sapindaceae</i>	<i>Blighia</i>	<i>sapida</i>	akie	akee	T
	<i>Litchie</i>	<i>chinensis</i>	litchee	litchi	N
	<i>Lucuma</i>	<i>bifera</i>	eivrucht	eggfruit	NT
	<i>Melicocca</i>	<i>bijugatus</i>	knippa	Spanish lime	DT
	<i>Nephelium</i>	<i>lappaceum</i>	ramboetan	rambutan	DNT
<i>Sapotaceae</i>	<i>Chrysophyllum</i>	<i>cainito</i>	sterappel	star apple	NT
	<i>Chrysophyllum</i>	<i>cainito</i>	ministerappel	mini starapple	N
	<i>Lucuma</i>	<i>nervosa</i>	eivrucht	eggfruit	NT
	<i>Manilkara</i>	<i>achras</i>	sapotille	sapodilla	BO T
<i>Solanaceae</i>	<i>Capsicum</i>	<i>annuum</i>	peper	chillies	D
	<i>Solanum</i>	<i>melongena</i>	boulangier	egg plant	D
<i>Theobromaceae</i>	<i>Theobroma</i>	<i>cacao</i>	cacao	cacao	BR C N



Acknowledgements

A special word of thanks to the following persons for their kind cooperation and advises.

Ir. J. Sahtoe

Acting Coordinator Research

Ms. P.Y. Milton Lcs

Head of Fruit trees and Vegetables Division

Ms. J. Asgarali

Head of Palm Research Centre

Ing. S. Ausan

Head of Weed Control and Grain Division

Ms. Maureen Playfair

State Forestry Service Ministry of natural Resources and

Mrs. **S. Saleh and R. Amatjasir** for typing out the manuscript.



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