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**SOME CULTIVATED PLANTS IN NDUMBA,
EASTERN HIGHLANDS PROVINCE**

By

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ABSTRACT

This paper reports on the cultivation and uses of 47 species of minor food crops and other useful plants in Habi'ina village, a Tairora-speaking community in the Eastern Highlands Province of Papua New Guinea.

INTRODUCTION

In the Papua New Guinea highlands, as earlier in coastal regions, increasing amounts of land are being committed to cash crops. As this trend continues, and with increasing dependence on a cash income, trade stores, and imported food and other items, many traditional cultivated plants are being abandoned and even knowledge regarding them is disappearing. The benefits of many of the new foods, medicines, garments, and other products are undeniable, but much of value is lost in the process.

In 1971-72 (the "present" of this report), the people I refer to as Ndumba, the Tairora-speaking residents of Habi'ina village in the southeastern corner of the Eastern Highlands Province, were still primarily dependent on their local resources to meet their needs. Coffee had been introduced as a cash crop in 1966, and access to money was beginning to have a significant effect on the ability of Ndumba to supplement their diets and meet their other material requirements in new ways. Also in the 1960's, a number of European vegetables and other foods were introduced (others had been arriving since the 1930's through traditional trade routes), a mission was established nearby offering medical services, and trade stores were started in the area. By 1971, the people were generally devoting more land, labor, and attention to non-traditional resources. They were still intensively exploiting their local environment, however, and obtained most of their food, medicines, clothing, ornaments, implements, and construction materials from their gardens and forests. In a previous paper (Hays, 1980) I reported the uses of 133 species, most of which occur naturally, but some 17 of which are also planted. In this paper I report any extra information on these species and discuss a further 30 species which are only cultivated. I will restrict my description to those plants for which determinations were obtained from the Division of Botany in

Lae, where the voucher specimens are deposited. I exclude from present consideration bamboos (of which many types are planted), European vegetables and fruits introduced since the 1960's, and the major food crops of sweet potatoes, yams, taro, bananas, and sugar cane, and focus instead on the "minor" crops and other plants which were cultivated at the time of first European contact in the early 1950's.

Approximately 350 Ndumba claimed, in 1971-72, a territory totalling 60 km² of land, nearly 80% of which was still forested. Gardens (**huta**) are widely scattered throughout the non-forested area of Ndumba and are of varying sizes and shapes.

"Taro gardens" (**sara huta**) are made primarily between 1600 and 1800 m, although scattered plantings of some of the 24 named varieties of taro (*Colocasia esculenta* (L.) Schott) occur in house gardens and along streams up to 2000 m. Most taro gardens are situated on sloping ground on the banks of a river at 1600 m. These gardens usually contain some yams as well, *Cordyline* shrubs as borders, and various herbs planted as magical growth aids. In general, however, **sara huta** are the least diversified of Ndumba gardens, with good taro land being perceived as too scarce to use for things that can grow elsewhere.

"Yam gardens" (**taana huta**) are slightly more diverse in content although, again, good yam ground is considered to be in short supply. Yam gardens, containing some 26 named types, are made within exactly the same elevation limits as taro, with the exception that yams (*Dioscorea* spp.) are not found in house gardens. **Taana huta** might more accurately be called "yam-winged bean gardens" since "winged beans" (*Psophocarpus tetragonolobus* (L.) DC.) are nearly as prominent to the eye. Scattered taro plants are also found, as may *Cordyline* shrubs and herbs associates with garden magic.

The third named type of garden is the **kaama huta** ("sweet potato garden"), which may be found at any elevation between 1600 and 2300 m, on river banks and on ridgetops, in enormous "fields" within grassland or in small patches at the forest edge. The contents of **kaama huta** are as diverse as their locations. In addition to mounded plantings of 25 named types of sweet potatoes (*Ipomoea batatas* L.), one would find almost all other cultivated food crops, *Casuarina* trees, small stands of *Pandanus*, tobacco, various magical herbs, and ornamental shrubs. Especially near hamlets, these gardens are very often partially shaded by clumps of cultivated bamboo.

Since its adoption as a cash crop in the 1960's, coffee trees have been planted almost anywhere there is room, and plantations may vary in size accordingly, from a few trees to hundreds in a single garden. Despite the great attention now being given to coffee, these gardens seldom involve only the single crop. They are most often composed of some of the 17 named types of bananas and 20 named types of sugar cane as well; in the groves one will also find tobacco, an especially-valued form of

ginger (probably *Zingiber officinale* L.), magical herbs, and various trees planted for shade (*Casuarina*, *Ricinus*, and bamboos).

House gardens are almost as diverse as are sweet potato gardens. Not every house has a garden, and they may vary from a small patch of tobacco to large plantings of numerous crops. House gardens are often used as "testing grounds" for newly-introduced European plants. In addition to women's house gardens, each men's house compound has plantings of sugar cane, bananas, tobacco, and some coffee trees. It is also in these compounds that most of the important ritual plants are grown.

OBSERVATIONS

Acalypha sp.

Fam. Euphorbiaceae

Ref. T.E. Hays 452

Ndumba name: **Paa'ringga**

A shrub, up to 4.5 m tall, planted in coffee gardens amidst coffee and *Casuarina*. It is planted to decorate the garden, with its dark red leaves, stems, and flowers; the leaves are also used for personal ornamentation.

Brassica ?juncea (L.) Czern. & Coss.

Fam. Cruciferae

Ref. T.E. Hays 031

Ndumba name: **Kaa'pisi**

Planted as a leafy vegetable, usually in sweet potato or house gardens. Eaten by all, as its name suggests it was introduced sometime in the 1930's through traditional trade routes from Waffa-speaking villages to the east.

Broussonetia papyrifera (L.) Vent.

Fam. Moraceae

Ref. T.E. Hays 498

Ndumba name: **Rira**

A shrub or small tree, planted in sweet potato, coffee, and house gardens. No other plant in Ndumba, cultivated or wild, has as many uses as does the "paper mulberry tree". Women make string from the inner bark, and the string is used to make carrying bags, belts for skirts traditionally worn by both sexes, chin straps and bases for men's headdresses, mourning necklaces for women, strands onto which are strung segments of orchid stems for ornamental necklaces, men's woven wristlets, and bindings for multi-pronged bird arrows. Larger strips of bark are used to make carrying straps for war shields, baby slings, a special man's waistband, one type of woman's skirt, and loops are used by men as tree-climbing aids. Men wrap kapul brains, rats, and mice in the leaves for roasting over coals.

Calycacanthus magnusianus L. Sch.

Fam. Acanthaceae

(See Hays, 1980)

This 4.5 m tall shrub is sometimes planted at forest margins and in hamlets. Hunters watch for birds and kapul feeding on the blossoms, and the red flowers are favoured ornaments.

Canna indica L. Fam. Cannaceae
Ref. T.E. Hays 214

Ndumba name: **Pera'rosa**

A herb, up to 2.5 m tall, planted along paths near gardens. Brought back by returning labour volunteers in the early 1960's, the red flowers are favoured for personal ornamentation.

Cassia floribunda Cav. Fam. Leguminosae
(See Hays, 1980)

Casuarina oligodon L.S. Johnston ined. Fam. Casuarinaceae
(See Hays, 1980)

Also planted for shade in coffee gardens, the timber being used as support poles for beans and yams.

Casuarina papuana S. Moore Fam. Casuarinaceae
(See Hays, 1980)

Cultivated in hamlets since the early 1960's (as administration-urged reforestation).

Coleus scutellarioides (L.) Benth. Fam. Labiatae
Ref. T.E. Hays 272, 276, 296

Ndumba name: **Haang'gora**

A shrub, up to 1 m tall, planted as a decorative shrub in sweet potato, coffee, and house gardens, as well as near houses and paths. The leaves are used as medicine for chills, headaches, and stomach aches in two ways: the leaves are moistened and then rubbed over the body, or they are heated over a fire and the smoke is inhaled (see Hays, 1980). Dye is obtained for string bags by heating the leaves in bamboo tubes, then squeezing the bluish-black juice onto the string.

Cordyline fruiticosa (L.) A. Chev. Fam. Liliaceae
Ref. T.E. Hays 177, 186, 247, 258, 264

Ndumba name: **Saara**

A shrub, 1 to 2.5 m tall, planted in hamlets and in most gardens to mark garden boundaries, as fences, and as "medicine" for sugar cane and sweet potato. As elsewhere in New Guinea, *Cordyline* has many uses and many varieties; Ndumba cultivate more than 20 named varieties. One type, planted in the forest, marks ownership of hunting hides or traps. In hamlets, *Cordyline* is planted to mark a betrothal of two children, with the maturity of the shrub as an approximate index of the time for the subsequent marriage. Leaves have many uses, especially from the dark varieties: leaves are used to wrap food for cooking in earth ovens and to wrap rats and mice for roasting. As personal ornamentation they are used on women's string bags and skirts, and as headbands or arm decorations for men. Pieces of leaf are used to mark sweet potatoes in a divination ritual, and leaves are fed to pigs with sweet potato to increase their body fat. One variety was used as magical medicine in the days of warfare; wounds were bound with the leaves and appropriate chants given.

Cucumis sativus L. Fam. Cucurbitaceae
Ref. T.E. Hays 262

Ndumba name: **Ho'haa**

Cucumbers are planted in sweet potato and house gardens and eaten by all. Hollowed-out, they are also used in making a special horn blown at male initiation ceremonies.

Cucurbita moschata (Duch. ex Lam.) Duch. ex Poir. Fam. Cucurbitaceae

Ref. T.E. Hays 146

Ndumba name: **Paangki**

Two varieties of pumpkin are planted, mainly in sweet potato gardens. Both the fruit and leaves are eaten by all. Despite its obvious loan-word name, it is considered a traditional crop since it arrived in Ndumba before European contact.

Cucurbita pepo L. Fam. Cucurbitaceae
Ref. T.E. Hays 278

Ndumba name: **Furi**

Marrows are planted in sweet potato gardens; both fruits and leaves are eaten by all.

Curcuma longa L. Fam. Zingiberaceae
Ref. T.E. Hays 393

Ndumba name: **Kaapi**

A small herb, planted in men's house compounds. Three named varieties are cultivated, two for yellow dye for string bags. The third variety is said to be used in sorcery, placing the leaf inside a sweet potato and giving it to the intended victim to eat. During male initiation ceremonies, all men and older boys eat the root. Men feed the stems to dogs for hunting luck, and eat the stems themselves for the same purpose.

Cyanotis sp. Fam. Commelinaceae
Ref. T.E. Hays 499

Ndumba name: **Do'a**

A prostrate herb, planted in sweet potato gardens. Ndumba distinguish a half-dozen varieties. The leaves are eaten and fed to pigs to increase their body fat. During male initiation ceremonies, men ritually eat the leaves with salt.

Cyclosorus sp. Fam. Thelypteridaceae
(See Hays, 1980)

Dicliptera papuana Warb. Fam. Acanthaceae
Ref. T.E. Hays 416, 500

Ndumba name: **'Aanrosa**

Distinguished from wild forms of the same species (see Hays, 1980), some *Dicliptera* are cultivated in sweet potato and house gardens. The leaves and stems are eaten by all, usually with ginger and *Cyanotis*.

Diplazium sp. Fam. Athyriaceae
(See Hays, 1980)

- Eleocharis dulcis* (Burm.) Trin. Fam. Cyperaceae
Ref. T.E. Hays 185
Ndumba name: **Saamma**
A sedge, up to 1 m tall, planted by women in artificial ponds near hamlets or sweet potato gardens and on stream banks; bamboo tubes are placed over the growing plant to make it grow straight and tall. The flattened stems are dried in the sun, then made into skirts, worn by both sexes and still traded to neighbouring settlements. It is also used for menstrual pads and as a cushion for the neonate in childbirth.
- Elatostems* sp. Fam. Urticaceae
(See Hays, 1980)
- Euphorbia buxoides* A.R. Sm. Fam. Euphorbiaceae
(See Hays, 1980)
The leaf is fed to pigs to increase body fat, and placed as bait in eel traps.
- Euphorbia pulcherrima* Willd. Fam. Euphorbiaceae
Ref. T.E. Hays 212
Ndumba name: **Purau**
A shrub, up to 3.5 m tall, introduced in the early 1960's and widely planted in hamlets. The flowers and specialized red leaves are a personal decoration favoured by younger people.
- Ficus augusta* Corner Fam. Moraceae
(See Hays, 1980)
- Ficus copiosa* Steud. Fam. Moraceae
(See Hays, 1980)
- Ficus xylosyca* Diels Fam. Moraceae
(See Hays, 1980)
Considered to be a variety of **waa'ora** (see *Ficus augusta* in Hays, 1980).
- Graptophyllum* sp. Fam. Acanthaceae
Ref. T.E. Hays 426, 448
Ndumba name: **Kaa'nrembi**
A shrub, up to 4.5 m tall, planted in sweet potato gardens to mark ownership of an intended garden. Women use the flowers as personal ornamentation. As medicine, especially during epidemics, men chew the leaf, spit it on sweet potato tubers, and give them to women and children to eat.
- Hemigraphis* sp. Fam. Acanthaceae
Ref. T.E. Hays 447
Ndumba name: **Saa'vu**
A small herb, planted in sweet potato, yam, and house gardens as "medicine" for sugar cane, sweet potatoes, and yams. The leaves are fed to pigs to increase their body fat, and men chew the leaves and spit on sweet potatoes for women and children to eat during epidemics.

Homalomena sp.

Fam. Araceae

Ref. T.E. Hays 470

Ndumba name: 'Ong'gona

A herb, up to 0.5 m tall, planted in gardens as growth magic for sugar cane, sweet potatoes, taro, and bananas. Ndumba distinguish 8-10 varieties, all of which have primarily magical and ritual uses. The leaves are fed to pigs to increase their body fat and to dogs for hunting luck. The leaf is given surreptitiously in food to another as "love magic" and is also used for personal ornamentation.

Impatiens spp.

Fam. Balsaminaceae

Ref. T.E. Hays 011, 032, 089, 250, 277, 297, 301, 318;

Ndumba name: **Kovu**

A tall herb (up to 3 m), found wild in the forest and also planted at forest margins and in gardens (especially with sweet potato), and in hamlets near houses. The flowers are favoured for personal ornamentation. It is believed to magically assist the growth of sweet potatoes. For chills, headache, or stomach ache, one rubs the skin with the wet leaves. In previous times, warfare was concluded with a truce ceremony at which men chewed the leaves of kovu and spat it on the food which was exchanged and eaten. Ndumba distinguish 7 named types.

Impatiens spp. (different from above)

Fam. Balsaminaceae

Ref. T.E. Hays 002, 003, 188

Ndumba name: **Sombura**

A herb, found wild in the forest and transplanted to the bases of *Pandanus* and other trees on forest edges. The flowers and leaves are used for personal ornamentation. For chills and fever, one rubs the skin with the wet leaves, and women eat the leaves in the context of women's ceremonies. Ndumba distinguish 5 named varieties.

Iresine herbstii Hook. f.

Fam. Amaranthaceae

Ref. T.E. Hays 213

Ndumba name: **Nrummu'a'maunranra**

A herb, up to 1 m tall, planted in sweet potato gardens and near houses for decorative purposes. A purple dye is obtained from the stem and used in coloring string bags.

Lablab purpureus (L.) Sweet

Fam. Leguminosae

Ref. T.E. Hays 237

Ndumba name: **'Una**

A vine, commonly found climbing fences in sweet potato gardens and in hamlets. The beans are eaten by all except boys 10-18 years old. Because the pods are curved, there is fear that they would grow the same way. Ndumba distinguish two varieties, one of which is an apparently wild form of *Phaseolus lunatus* L. (see Hays, 1980), which is said to cause vomiting if eaten and is thus avoided.

Malvaviscus arboreus Cav.

Fam. Malvaceae

Ref. T.E. Hays 238, 239

Ndumba name: **Son'daara**

A shrub, up to 3.5 m tall, recently introduced by nearby missionaries and by returning labour volunteers. It is planted along fences in hamlets for the flowers which are used for personal ornamentation and to decorate the hamlets.

Miscanthus floridulus (Labill.) Warb. Fam. Gramineae
Ref. T.E. Hays 427

Ndumba name: **Haasa'pu**
A grass, up to 3 m tall, growing in clumps wild in grassland and also planted there and in sweet potato gardens. The culms are used for arrow shafts; formerly, they were "like money" and traded to other settlements for pigs and given in bride price payments.

Nasturtium schlechteri O.E. Schultz Fam. Cruciferae
Ref. T.E. Hays 449

Ndumba name: **Hengga**
A herb, up to 0.5 m tall, planted in sweet potato gardens. All eat the leaves. Newly introduced forms of lettuce are rapidly replacing this traditional green.

Nasturtium sp. Fam. Cruciferae
Ref. T.E. Hays 383

Ndumba name: **Kaa'risi**
A herb, up to 1 m tall, found wild on river banks and planted in sweet potato gardens. This type of green was obtained originally in the early 1960's from the north and east through traditional trade routes. All, except for some old men and women, eat the leaves. Older men and women avoid eating many of the newer vegetables and fruits.

Nicotiana tabacum L. Fam. Solanaceae
Ref. T.E. Hays 268

Ndumba name: **Fu'kaa**
Tobacco is planted in sweet potato, coffee, and house gardens. It is said to have "always" been in Ndumba and despite mission efforts to eliminate it in the area, most men and women smoke, usually in bamboo pipes, but recently they have favoured cigarettes made with newspaper. Three named varieties are distinguished.

Ocimum basilicum L. Fam. Labiatae
Ref. T.E. Hays 267

Ndumba name: **Huru'hina**
A small herb, planted in coffee and house gardens. Favoured for its smell, the flower is used for personal decoration (usually stuffed into armbands). It is also occasionally planted in yam gardens and **saamma** ponds (see *Eleocharis* above) as magical growth aids.

Oenanthe javanica (Bl.) DC. Fam. Umbelliferae
Ref. T.E. Hays 265

Ndumba name: **Meru**
Three named varieties of this small herb are distinguished, two of which are found wild along stream banks (see Hays, 1980). The

other variety is planted in sweet potato gardens and near houses. All eat the leaves and stems, especially with pork.

Phaseolus vulgaris L.

Fam. Leguminosae

Ref. T.E. Hays 289

Ndumba name: **Hohondi**

A dozen named varieties of French beans are grown in Ndumba; this is the "genuine" form of the category **hohondi**, which includes all beans. It is usually planted in sweet potato gardens and sometimes along fences in hamlets. The beans and leaves of this form are eaten by all.

Pueraria lobata (Willd.) Ohwi

Fam. Leguminosae

Ref. T.E. Hays 497

Ndumba name: **Nraa'mmaahinra**

A vine, running up support poles to 4.5 m, planted in sweet potato gardens, but not numerous. Formerly it was used as a reserve food (tubers) but its importance has declined in recent years with the introduction of many new foods. One almost never hears of its being eaten and the vines observed had been planted years previously (see also Hays, 1980.)

Ricinus communis L.

Fam. Euphorbiaceae

Ref. T.E. Hays 266

Ndumba name: **Kaan'daahurura**

A tree, 6-7 m tall, planted in coffee gardens. Women sometimes use the flower for personal ornamentation, but its primary use is as shade for coffee.

Riedelia sp.

Fam. Zingiberaceae

Ref. T.E. Hays 087

Ndumba name: **Faanresa**

A herb, slightly less 1 m tall, growing in clumps wild in the forest and transplanted to the forest edge. Ndumba distinguish 8 named varieties, and this form is the "genuine" **faanresa**. The bright red flowers and leaves are used for personal ornamentation.

Rungia klossii S. Moore

Fam. Acanthaceae

Ref. T.E. Hays 080

Ndumba name: **Honri**

A herb, planted in sweet potato gardens and near houses. Four named varieties are planted. The leaves and stems are eaten by all except men whose wives are pregnant or in the early post-partum period (see also Hays, 1980.)

Salvia splendens Sellow ex Nees

Fam. Labiatae

Ref. T.E. Hays 021

Ndumba name: **Tain'de'a**

A herb, planted near houses, to decorate the hamlets; the flowers are used for personal ornamentation.

Tephrosia vogelii Hook. f.

Fam. Leguminosae

Ref. T.E. Hays 066

Ndumba name: **Bara'waa'aa**

A shrub, up to 2 m tall, recently introduced by returning labour volunteers (as indicated by the name, derived from "flower"). It is planted in coffee gardens and near houses to decorate the hamlets. It has become naturalized, and is found also in grassland areas. The flowers are used for personal ornamentation.

Trichosanthes tricuspida Lour.

Fam. Cucurbitaceae

Ref. T.E. Hays 451

Ndumba name: **Faanrau**

A vine, commonly planted in sweet potato gardens and coffee gardens and near houses; it is often seen hanging from branches of *Ricinus*. Three named varieties are distinguished. All eat the fruit, excepting boys 10-18 years old and men whose wives are pregnant or in the early post-partum period. The fruit is also taken to the forest and used in an elaborate trap as bait for birds.

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