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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

UNIVERSITY OF COLORADO MUSEUM
BOULDER, COLORADO 80302

12 September 1975

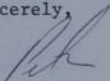
David J. Rogers
Professor
Department of EPO Biology
Campus

Dear Dave:

I would like to thank you for your recent gift of two herbarium specimens to the University of Colorado Museum. They represent specimens and areas not present in the Museum collection and help add to the quality of our holdings.

I thank you for your continued interest in the Museum.

Sincerely,



Peter Robinson
Director

PR:ls

cc: Development Foundation, Inc.

Specimen

DEPARTMENT OF BOTANY • POMONA COLLEGE
CLAREMONT, CALIFORNIA

CLASSROOMS AND LABORATORIES
CROOKSHANK HALL
100 BLOCK, WEST SIXTH STREET
TELEPHONE, NATIONAL 8-8511
EXTENSION 2993

LYMAN BENSON
PHILIP C. BAKER

EDWIN A. PHILLIPS
MRS. PATRICIA ANN WILDER
HERBARIUM BOTANIST

HERBARIUM OF POMONA COLLEGE
RANCHO SANTA ANA BOTANIC
GARDEN BUILDING
1500 NORTH COLLEGE AVENUE
TELEPHONE, NATIONAL 8-3922

ALL MAIL, EXPRESS AND FREIGHT SHOULD BE ADDRESSED TO THE DEPARTMENT OF BOTANY, POMONA COLLEGE, CLAREMONT, CALIFORNIA 91711

January 29, 1968

Dr. C. D. Harrington and Dr. David J. Rogers
The Herbarium- Department of Botany
Colorado State University
Fort Collins, Colorado

Dear Doctors Harrington and Rogers:

When Dr. Rogers moved from the New York Botanical Garden to Colorado State University, I received a note from Dr. Bassett Maguire requesting transfer of our loan Number 169 consisting of 8 specimens of Mankia from one institution to the other. This loan was dated October 9th, 1962. I am wondering now whether Dr. Rogers may have had an opportunity to finish studying these specimens or whether he still wishes to retain them for further study. I am merely making a routine check to determine the state of the loan at this time. Thank you.

With best wishes to both of you,

Sincerely yours,

Lyman Benson
Lyman Benson
Professor and Head
Department of Botany

LB-w

Dear Dave:

No record of this on our books. I'll let you answer this. I am also sending some more records on the Mankia loans.

Harold

SHIPPING NOTICE

ARNOLD ARBORETUM OF HARVARD UNIVERSITY AND GRAY HERBARIUM OF HARVARD UNIVERSITY
22 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS
U. S. A.

Prof. C. D. Harrington, Curator
Herbarium
To: Colorado State University
Fort Collins, Colorado

Date: July 19, 1965

No. of Packages: transfer of loan

Shipped by { Parcel post prepaid
Express collect

We are sending you herbarium specimens as indicated below. Upon the arrival of the shipment, kindly verify its contents and acknowledge by signing this green sheet and returning it to the Curator.

- (1) Gift.
- (2) Exchange.
- (3) For identification.
- (4) Return of borrowed material.
- (5) Loan no. _____ Return is expected by prepaid express or parcel post before _____.

Extension of this period may be granted on request to the Curator. The borrower is expected to annotate each sheet of the loan with permanent ink (not ball point). All material included in this loan must be returned at one time with the exception of types which must be returned within sixty days of receipt of the specimens.

Lorin I. Nevling, Jr.
SUPERVISOR OF THE HERBARIA
ASSOCIATE CURATOR

DESCRIPTION OF SPECIMENS

Dear Professor Harrington:

We have given permission to the New York Botanical Garden to transfer two loans of Manihot to your institution. This material is for the study of Dr. David J. Rogers. The loans are as follows:

#487	69 sheets <u>Manihot</u>	November 27, 1959
#62-63	95 sheets <u>Manihot</u>	May 1, 1962

On their safe arrival please sign and return this sheet. These loans have been renewed for an additional six months (due Feb. 1, 1966) and should be renewed semi-annually.

Sincerely,

Lorin I. Nevling Jr.

Lorin I. Nevling, Jr.
Supervisor of the Herbaria

LIN:ml

This sheet to be signed and returned on receipt of the shipment.

Received the above in good order

Date

Signed

UNIVERSITY OF MICHIGAN HERBARIUM
NORTH UNIVERSITY BUILDING
ANN ARBOR, MICHIGAN, U. S. A.

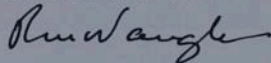
July 21, 1965

Professor C. D. Harrington
Colorado State University
Department of Botany
Fort Collins, Colorado

Dear Professor Harrington:

This is to authorize the transfer to your institution, from the New York Botanical Garden, of our loan No. 529, consisting of 87 sheets of *Manihot*. The loan was sent to New York on 18 May 1961 for a period of 6 months. We are now extending the loan period for one year, to August 1, 1966.

Sincerely yours,



Rogers McVaugh
Curator of Vascular Plants

RMcV:dd

MANIHOT LOANS

Loan No.	Date of Loan	No. of Sheets	From
1	12/7/59	69	Gray Herbarium Cambridge, Mass.
2	1/14/60	110	Chicago Nat. Hist. Mus. Chicago, Illinois
3	5/24/61	87	University of Michigan Ann Arbor, Mich.
4	9/11/61	136	Naturlust. Riksmus. Stockholm, Sweden
5	9/25/61	135	Royal Botanical Gardens Kew, England
6	10/17/61	62	Botan. Staats. Munich, Germany
7	10/18/61	194	Conserv. et Gard. Bot. Geneva, Switzerland
8	10/19/61	50	Jard. Bot. do Rio de Jan. Rio de Janeiro, Brazil
9	2/5/62	266	Naturhist. Mus. Vienna, Austria
10	3/20/62	357	Chic. N. H. Mus. Chicago, Ill.
11	3/26/62	32 + 5 unmounted	Inst. Bot. Caracas, Venezuela
12	4/2/62	156	Mo. Bot. Gard. St. Louis, Missouri
13	4/6/62	363	Smithsonian Inst. Washington, D. C.
14	5/10/62	95	Gray Herbarium Cambridge, Mass.
15	8/7/62	22	Univ. of Texas Austin, Texas
16	3/14/62	1	Mo. Bot. Gard. St. Louis, Missouri
17	9/5/62	4	Inst. Bot. Caracas, Venezuela

18	9/27/62 returned 4/16/64	15	Chic. Nat. Hist. Mus. Chicago, Illinois
19	10/22/62	8	Pomona College Claremont, California
20	11/16/62	49	Mus. Para. Emil. Goeldi Belem-Para, Brazil
21	5/28/63	3	Fla. State Univ. Tallahassee, Florida
22	6/14/63	43	Purdue Univ. Lafayette, Indiana
23	1/28/64	54	U. S. Nat. Arboretum Washington, D. C.
24	9/18/64	2	Royal Bot. Gards. Kew, England
25	9/23/64	100	Brit. Mus. Nat. Hist. London, England
26	10/15/64	229	Mus. Nat. d'Hist. Natur. Paris, France

TRANSFERRING
(For RECORDS only)

INVOICE OF SPECIMENS

Our Invoice No. B-7899 and
B-8338

CHICAGO NATURAL HISTORY MUSEUM
FORMERLY FIELD MUSEUM OF NATURAL HISTORY

Chicago 5, Illinois, U.S.A. July 23 1965

Recommended _____

Approved _____

Authorized _____

First Class ☐
Parcel Post ☐
Express ☐
Freight ☐
Prepaid ☐ Collect ☐
Personally ☐

Transferred from New York Botanical Garden
Backed by _____

Your Invoice No. _____

Received _____

Shipped _____

DATE _____

To: Colorado State University
Ft. Collins
Colorado

Attn: Dr. David J. Rogers
Dept. of Botany and Plant Pathology

The material listed below contained in _____

boxes

will be
~~PACKED~~ (sent) (~~checked~~) as TRANSFER of

1. gift

3. loan at your request

5. return of material borrowed by us

7. on loan

8. for identification

loan

2. exchange

4. examination at our request

6. return of material sent for identification

9. Please see below:

The New York Botanical Garden has been granted permission by this Museum to transfer to Colorado State University, the following material on loan to them from this Museum for study by Dr. David J. Rogers:

Invoice B-7899 110 specimens of Manihot

Invoice B-8338 357 specimens of Manihot

467 Total

Return of this loan is expected before February of 1966. All material included in this transfer must be returned at one time. No part of such material may be transferred to any other institution or person without the written consent of the Chief Curator or the Director of this Museum.

(A copy of this TRANSFER notice has been sent to New York Botanical Garden.)

Please SIGN and RETURN this copy promptly to:

CHICAGO NATURAL HISTORY MUSEUM
Roosevelt Road and Lake Shore Drive
CHICAGO 5, ILLINOIS, U.S.A.

CABLE ADDRESS—Museum, Chicago

Received: in good condition ☒ except as noted ☐

Signature _____

Date _____

MMG/TL

THE RUBBER RESEARCH INSTITUTE OF MALAYA

TELEGRAMS & CABLES:
"SEARCHING" KUALA LUMPUR

CODE
BENTLEY'S COMPLETE PHRASE

TELEPHONE NOS. K. L.

72051
72052
72053
72054



OFFICES AND LABORATORIES:—

3RD MILE AMPANG ROAD

KUALA LUMPUR

POSTAL ADDRESS:—

POST OFFICE BOX NO. 150

KUALA LUMPUR, MALAYA.

PLEASE ADDRESS ALL COVERS
TO THE DIRECTOR

6th October, 1962.

This letter is sent on the understanding that its contents shall not be published or otherwise transmitted to a third party without the consent of the Director.

PLEASE QUOTE Bot. 3269

Dr. David J. Rogers,
Curator of Economic Botany,
The New York Botanical Garden,
Bronx Park,
New York 53,
New York,
U.S.A.

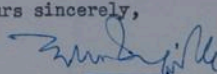
Dear Dr. Rogers,

MANIHOT sp.

I thank you for your letter of 13th Sept. '62 and your comments in the 4th para are noted with interest.

The materials we sent to you are duplicates of those sent to Kew and are for your retention. We will be pleased to know your identification of them at your convenience.

Yours sincerely,


(M.M. Chandapilla)
Botanical Division

January 12, 1965

Dr. Jose de Js. Jimenez
Calle Maximo Gomez 34
Santiago de los Caballeros
Rep. Dominicana, West Indies

Dear Dr. Jimenez:

The specimens of Manihot domingensis arrived yesterday in excellent condition. I am very pleased with the specimens and with the very fine collection of data that you have sent with them. This is a very magnificent set of materials, and I am very happy to have it. It is a great pleasure to work with such good materials, and this is indeed something for which I am greatly indebted to you. I trust that the contributions that you have made can be as adequately reflected by my own contributions to the studies of Manihot.

May I trouble you for one more bit of information concerning this material? Inasmuch as this seems to be the only ~~wild~~ species of the genus Manihot in all of the West Indies, I would find it important to know something about the rainfall and climatic conditions where the specimen was ~~collected~~. I assume that there is adequate rainfall throughout the year in this area. However, the fact that it was collected in "arroyo seco" makes me wonder if this area could be a restricted xerophytic spot. The plant material itself does not match a description for xerophytic conditions, but the genus Manihot is full of surprises, and this one may be one of them. It will be most helpful in decisions about the origin of this species if I know something about the climatic conditions thereof.

Thank you again for your very great contribution. If I can be of any assistance to you, please let me know.

Sincerely yours

David J. Rogers
Curator of Quantitative Taxonomy

DJR:MDF

Dr. JOSE DE JS. JIMENEZ

Calle Máximo Gómez 34

SANTIAGO DE LOS CABALLEROS

Rep. Dominicana - West Indies

JK

Dec. 24, 1964

Dear Mr. Rogers:

Just a few words to let you know that I have been successful in locating Manihot domingensis in flower and fruit.

All the material is in the presses. As soon as it is dried will send it right away.

By ordinary mail I have forwarded to-day to you a box containing the whole root system so that you can have a good idea how the plant is. Also I included a young one.

When sending you the pressed material will also send all the data available meeting all your requirements.

Wishing you and yours a very happy Christmas and a prosperous new year I am yours very sincerely

Jose de J. Jimenez

P.S. - I am absolutely in agreement with you that the plant is a genuine new species.

MEMORANDUM 5/7/62

TO: Dr. Maguire

From: Dr. Rogers

Subject: Loans from Paris, Hamburg, and Belem

1. Although we have asked for the material of the genus Manihot from Paris. I think that we should put through a follow-up request for the material. We should have received the loan by now.

2. As you suggest, the collections of Ule might be found at Hamburg. Will you, therefore, please request all of the specimens of the genus Manihot, with any undetermined specimens of Ule? For the benefit of the people at Hamburg, the specimens that I am particularly concerned to find are as follows:

Ule 3072 <i>M. reptans</i>	Ule 7045 a, b, c, <i>M. dichotoma</i>
3073 <i>M. Uleana</i>	<i>v. genuina</i>
3074 <i>M. paviaeifolia</i>	7085 <i>M. reniformis</i>
3081 <i>M. mossamedensis</i>	7141 a, b, c, <i>M. piahyensis</i>
3193 <i>M. violacea v. genuina</i>	7142 <i>M. catingae</i>
4605 <i>M. tubuliflora</i>	7206, 7206 a, b <i>M. heptaphylla</i>
5264 <i>M. amazonica</i>	7362 <i>M. dichotoma</i>
6635 <i>M. peruviana</i>	<i>v. parvifolia</i>
7003 <i>M. maracasensis</i>	7944 <i>M. surumuensis</i>

3. Also, I would be very pleased if in their collections they have those of Zehntner particularly the following numbers:

s.n. *M. chapadarum* (herb. name)
 238 *M. labroyana*
 299 *M. lyrata*
 365 *M. bahiensis*
 381, 385 *M. heptaphylla* x *M. piahyensis*
 390 *M. rotundata*
 394 *M. cuneata*
 533 *M. trifoliata* (nom. nud.)
 598 *M. Zehntneri*
 611 *M. ferruginea*
 689 *M. microdendron*
 691 *M. harmsiana* (unpubl. name)
 695 *M. toledii*

4. I would also like to have the collections of Manihot from the Museu Goeldi.

Sept. 13, 1962

Mr. M. M. Chandapilla
The Rubber Research Institute of Malaya
Kuala Lumpur, Malaya

Dear Mr. Chandapilla:

The specimens of Manihot arrived today, although in a somewhat battered condition from rough handling in the mails.

We had received your letter and field notes earlier.

I trust that this material is for our herbarium. I will have the material mounted, and as soon as practical, will have the specimens identified.

It is only fair to warn you that the particular group within the genus Manihot to which these specimens seem to belong, are rather badly mixed up. Hybridization within this group is rampant, and many of the "species" represent hybrids to the nth generation. Perhaps we can give some idea as to their parentage, however.

Thank you for sending the specimens. Material of the genus is always welcome.

Sincerely yours,

David J. Rogers
Curator of Economic Botany

MMC/AV

By Air Mail

THE RUBBER RESEARCH INSTITUTE OF MALAYA

TELEGRAMS & CABLES:
"SEARCHING" KUALA LUMPUR

CODE
BENTLEY'S COMPLETE PHRASE

TELEPHONE NOS. K. L. 3351
3352



OFFICES AND LABORATORIES—
3RD MILE AMPANG ROAD
KUALA LUMPUR

POSTAL ADDRESS—
POST OFFICE BOX NO. 150
KUALA LUMPUR, MALAYA

PLEASE ADDRESS ALL COVERS
TO THE DIRECTOR

27th July, 1962

This letter is sent on the understanding that its contents shall not be published or otherwise transmitted to a third party without the consent of the Director.

Bot. 3269

PLEASE QUOTE

Dr. D.J. Rogers,
Curator of Economic Botany,
The New York Botanical Garden,
Bronx Park,
New York 58,
New York,
U.S.A.

Dear Dr. Rogers,

Manihot

I am sending you by surface mail herbarium specimens of Manihot sp. which is used in Malaya as a quick-growing shade tree and would be pleased to know your identification.

This is done at the request of Dr. P.R. Wycherley, who is now on leave in England, following correspondence with you.

The specimens, including bark samples and fruit, are in quadruplicate from trees numbered 1, 2 and 3.

I attach also some short field notes on the trees for your information.

Thank you for your co-operation.

Yours sincerely,


(M.M. Chandapilla)
Botanical Division

c.c. Dr. P.R. Wycherley

Man. File

% 52, Beadon Road,
Bromley, Kent,
England.

28th June 1962

Curator of Economic Botany
New York Botanical Garden.

Dear Dr. Rogers,

Thank you for your letter of 25th June. Your request for material, including field notes on size, bark, etc, has been passed to my colleague at the Rubber Research Institute of Malaya and I expect you will receive specimens by surface mail in about two months time. Duplicate material will be sent to the Botanic Gardens at Kew and Singapore, where I know other botanists to be interested. There are one or two sheets of similar material at Kew now and possibly among those loaned to you. However, it is obviously better to send complete material of the individual in question, if the delay is not too inconvenient.

Thus I look forward to learning from you in October or so when I return to Malaya (address:- Rubber Research Institute of Malaya,

← To open cut here →

Sender's name and address:

P. Wycherley
852 Beadon Road,
Bromley, Kent
England.

AN AIR LETTER SHOULD NOT CONTAIN ANY
ENCLOSURE ; IF IT DOES IT WILL BE SURCHARGED
OR SENT BY ORDINARY MAIL.

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Dr. D. J. Rogers
Curator of Economic Botany
The New York Botanical Garden
Bronx Park
New York, 58,
N.Y., U.S.A.

← First fold here →

P.O. Box 150, Kuala Lumpur, Malaya). I should make it clear that this plant is not exploited to produce rubber, it is used as a quick grown shade and possibly it has culinary or folk-medicine uses about which I will try to learn more on my return to Malaya. However, it is among lactiferous plants examined in fundamental studies by Dr. Southam. Meanwhile, we will proceed with means to provide you with material for identification.

Yours sincerely

Paul Wycherley

June 25, 1962

Mr. P. R. Wycherley
c/o 52 Beadon Road
Bromley, Kent
England

Dear Mr. Wycherley:

I am pleased to have your letter of June 20 requesting information on a species of Manihot. Perhaps the best procedure would be for you to send me herbarium materials or dried specimens that I might be able to identify.

Unfortunately, I can not give you an answer from your description in your letter inasmuch as there are several rubber-bearing species and it is difficult to know which of these is the subject of your discussion. Certainly M. glaziovii is one of the most likely possibilities, but then M. dichotoma, M. cearaensis, and M. piahyensis and several others might be involved.

As I said above, I will be able better to determine the material for you if you send me specimens. Of course, the better the information available with the specimen, the better will be the chances of determination. I would suggest that in addition to the typical fruiting and flowering materials, the size of the tree and the nature of the bark would also be of great assistance.

Looking forward to the receipt of the materials from you, I am,

Sincerely yours

David J. Rogers
Curator of Economic Botany

DJR:MDF

For the kind attention
of Dr. Rogers.

% 52, Beadon Road,
Bromley, Kent, England.
20th June 1962

Dear Sir,

Manihot

Mr. N. Y. Sandwith of the Royal Botanic Gardens, Kew, tells me that you have borrowed a number of sheets of Manihot, presumably to aid in a revision of the genus and you may therefore be able to advise me.

One of my colleagues in the Rubber Research Institute of Malaya has been examining latex in various plants, one of which has given difficulty in nomenclature. It is a common ornamental shrub or small shade tree found in nearly every Malayan village. In 'Wayside Trees of Malaya' Corner indicates it as probably Manihot dulcis. The local name in Malay is ubi kayu, the same as that for Cassava, although the villagers know it to be a different plant. However, Mr. Foreman at Kew identified a specimen as M. glaziovii on the grounds that the leaves were just peltate, see the key in Pax, Engl. Pflanzenreich IV, 147, II.

The plant I know as M. dulcis in Malaya is easily propagated (a local aberrant may have been multiplied) and has rather glaucous thin leaves, whereas I consider M. glaziovii to be a more robust tree acclimatised in monsoon regions but rare or now lost in Malaya.

The treatment by Pax seems rather artificial

→ To open cut here →

Sender's name and address:
P. R. WYCHERLEY
% 52, BEADON ROAD,
BROMLEY, KENT
ENGLAND.

AN AIR LETTER SHOULD NOT CONTAIN ANY
ENCLOSURE; IF IT DOES IT WILL BE SURCHARGED
OR SENT BY ORDINARY MAIL.

← Second fold here →



The Director

(for Dr. Rogers)

NEW YORK BOTANICAL GARDENS,
BRONX PARK,
NEW YORK, 58,
N.Y., U. S. A.

← First fold here →

and adequate authentic material is probably lacking from Kew at present to allow definitive identification. We would like the nomenclature of the plant studied to be accurate. Therefore I enquire if you can refer me to a more suitable treatment of the genus than that of Pax, or if you would be willing to identify material if I was to arrange despatch of specimens to you from Malaya?

With best wishes towards a satisfactory revision of the genus,

yours faithfully,
P. R. Wycherley

File: m/lttr to McV, in
M. res.

UNIVERSITY MUSEUMS
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN, U. S. A.

UNIVERSITY HERBARIUM

April 27, 1961

Dr. David J. Rogers
The New York Botanical Garden
Bronx Park
New York 58, New York

Dear Dave:

We will send our specimens of *Manihot* along as soon as possible. The formal request came yesterday from Bassett.

I am glad to have you raise the point about "fleshiness"; actually perhaps "succulent" would be a better word. They are not fleshy like a *sedum*, in the sense of being soft and rubbery, but fleshy like a green pepper. The large fruits, for example, are green and fairly hard when ripe, but when they dry the thick exocarp (?) may shrink to a tenth or so of its former thickness.

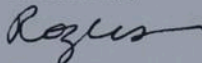
It is certainly true that in the *angustiloba-chlorosticta-rhomboidea* group one can usually find both flowers and fruits at the same time. In the arborescent species I have not always been so lucky.

As for the roots I simply do not know. Some of the species (*M. foetida*, *caudata*, *tomatophylla*) are pretty large trees, and I have no reason to suppose they have anything but ordinary roots; it certainly should be investigated, but I have never done it. The smaller species, again including *angustiloba* and its kin, do have elongate woody enlarged roots heavily loaded with HCN.

I have seen *Manihot* roots in the city market in Tepic, but I have never seen the plants in cultivation. I do not think they are extensively cultivated in Jalisco.

Perhaps you can get in some field-studies in western Mexico. The genus *Manihot* is abundant and interesting there, and certainly needs study by an expert.

Sincerely,



Rogers McVaugh

RMcV:mv

April 19, 1961

Dr. Rogers McVaugh
University Herbarium
University of Michigan
Ann Arbor, Michigan

Dear Rog:

I have just seen your article in *Brittonia* entitled "Euphorbiaceae Novae Novo-Galicianae." I would certainly like to have a reprint of this if any are available.

I was particularly interested in seeing your comments on the genus Manihot. I am sorry that there was no opportunity for you to let me see some of the work before publishing on it. I have been looking at the Mexican and Central American species particularly as they relate to the cultivated complex but also with the idea that I would eventually revise the whole genus. I agree that the treatments in the past are useless and that Croizat did nothing but muddy the waters in his discussions of this genus in Mexico.

There are some comments on the genus that you made that are quite interesting to me. First is the statement that the plants are "fleshy." I have never seen one which is fleshy and would be quite interested in your comments on the degree of fleshiness possessed by these species. I found unusual also your statement that these plants never seem to have flowers and fruits on the same plant. I have never had an opportunity to collect species of Manihot other than the cultivars in which there were not at least a few small fruits on the same plant. I wonder if you had the inflorescences from several parts of the same plant together when you made this comment.

It strikes me as unusual, too, that in a plant six meters tall, as in your species, M. auriculata, and in M. michaelis, which is five meters tall, the plants had no fruit and seed. These must indeed be unusual species. I would like to ask also if you had any knowledge at all about the kind of roots that these two species have. As you no doubt know, the roots offer some of the best diagnostic characteristics in this group. Of course, none of the older herbarium specimens (or for that matter even the most recent ones) bother to collect root material. Because of the nature of the flower structure and the fact that the plants are almost always obligately out-crossed, the species problem in this group is especially complex. I think that we have fractured the species unmercifully, and it is

April 19, 1961

now time to do a tremendous amount of re-combining along more reasonable biological grounds.

I was also surprised to see that there was no mention of a cultivated species in this huge area which you examined. Is it true that no cultivars are found there? I would be amazed if this were the case. I am sure that the cultivated ones are not of any importance as a food source in this area, but I am sure that a few plants must be found somewhere in that region.

If it is convenient to you, I should be pleased to see the material in your herbarium, not only for the two new species, but also I would like to borrow all of the representatives of the genus. Although we are still in our temporary quarters at The New York Botanical Garden, I have managed to scrounge enough room so that I can do some work and at least I can get some of the preliminary problems straightened out without being too badly hampered by the lack of library facilities. We had hoped to be back in the Museum Building by now, but the place is still in utter chaos and it may be next September before we open our doors for business again. At the moment the front steps are completely demolished and one has to go by rather circuitous routes to get into the building. I expect that at least one strike will occur on the step building program before it is finally complete. I think that this is about par for the course.

I look forward to your comments and to receipt of the specimens of Manihot for which I shall ask Bassett Maguire to make the formal request.

Sincerely yours

David J. Rogers
Curator of Economic Botany

DJR:MDF

TEXAS RESEARCH FOUNDATION
RENNER, TEXAS

August 9, 1961

amid
Aug 24.

Dr. Davis J. Rogers
Curator of Economic Botany
The New York Botanical Garden
Bronx Park
New York 58, N. Y.

Dear Dr. Rogers:

With reference to your letter of July 26th, I am very interested in your studies of yuca, and I will attempt to obtain a series of collections for you in Guatemala and elsewhere in my area of interest in Middle America.

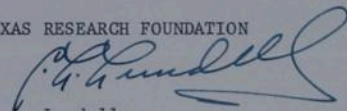
In the Tikal National Park, I have encountered wild plants of yuca three times, all sterile. This year I expect to return to Peten in November or December, and I hope to find either flowering or fruiting specimens of Manihot.

I will be glad to send you on loan the few sheets we have in our herbarium now.

not yet

Sincerely yours,

TEXAS RESEARCH FOUNDATION


G. L. Lundell
Executive Vice President and Director

CLL:lh

July 26, 1961

Dr. C. L. Lundell
Texas Research Foundation
Renner, Texas

Dear Dr. Lundell:

I have just had the opportunity to read in the winter number of EXPEDITION your interesting article on "The Flora of Tikal." I have concerned myself for some time with the study of the variations of Manihot esculenta and have found that there are at least three centers in the New World tropics from which this plant seems to have developed. One of the primary centers, I am sure, is in the area of Central America, and I would be pleased to know if you have made any collections of yuca in that area.

The cultivars apparently have no barriers to hybridization with a large number of wild and semi-wild species, and the problems of the origin of cultivated yuca can only be determined in connection with the wild complexes.

I would be pleased to know if you have specimens which are available for loans of both the cultivars and of any related wild ones which you may have found in that area. I already have some of your collections from the Yucatan Peninsula, but I do not believe I have any at the moment from Guatemala. I will be pleased to hear from you.

Sincerely yours

David J. Rogers
Curator of Economic Botany

DJR:MDF

September 11, 1962

Dr. C. Earle Smith, Jr.
U.S.D.A., A.R.S.
New Crops Research Branch
Beltsville, Maryland

Dear Smitty:

The Material of Manihot pauciflora came through in fine style. Only time will tell whether or not we get any issue from this. I have a sneaky suspicion that cuttings will not be easy to root.

We have just planted the seeds and hope that we will get something from those. You may be assured that the material is in a greenhouse that will be protected. It is under the direction of our plant pathologist, Dr. Pirone, who knows his stuff in this connection.

Thanks for your help.

Sincerely

DJR:MDF

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
BELTSVILLE, MARYLAND

September 6, 1962

Dr. David Rogers
New York Botanical Garden
Bronx Park
New York, 58, New York

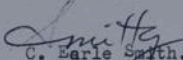
Dear Dave;

I am returning the plant quarantine labels which you sent for use in shipping material of Manihot pauciflora. By now it is obvious that I was unable to use them. The symposium in Mexico D. F. was very successful as was my trip to the Tehuacán valley. The vegetation was in good shape since they have had a good bit of rain this summer. Unfortunately, I was not able to launch into any very extensive collecting since I had to cut my time schedule and get back to Chicago where my family is currently packing for the trek down to Maryland.

If you should receive a contribution from a friend in the Middle West, please keep it under strict quarantine for several months since his stock has not been treated for the control of insects or fungi. I hope that you will be able to get several starts out of the material even though the seeds were not mature; many Euphorbs come easily from cuttings but this plant is such an off-beat species that there may be some difficulty in getting wood to root.

Best of luck.

Sincerely yours,


C. Earle Smith, Jr. Botanist
New Crops Research Branch



Growth Through Agricultural Progress

Mambrillo - ~~Ber.~~

1)

Mexico

Hinton 4149, 8854, 3562,
8741 (2 sheets) - all from
Tomascattepec - specimens
labelled "M. foetida (Kuntze)
Pohl," shrub 3 m. or 2 m.
white fls.

has very large fruits - about
1-1.5 inches long, 1 in.
at widest point



Remember that the Mexican ~~text~~
mentioned one w/ seeds
eaten. is this it?

Kew (Cont) -

2)

Costa Rica - Tonderup 13977
named centroamerican.

Max - I. of M. angustiloba
M. arg. - Wright 1811

Max - Hinton 940, 4467, 6188
as M. angustiloba - excellent for
Hinton 10488, 8029, as
M. mexicana.

South Am. -

Coloziou 22136 - M. araliaefolia Pax
Brazil, chiefly Prov. of Hayz.
= tormentosa.

Gl. 22137 - as I in K.

Clausen 469 - ^{as I} M. pubescens

Glaziov 18476^a - ~~examined~~

as M. pubescens -
this spec. not cited by Pax
but without the as cited as pedunculata

Kew (cont)

Type (?) of M. pubescens 3]

is not the same as the specimens
listed at bottom of p 2 (above)
2 spec. in type folder numbered
1658 - without collector's name,
but with Pohl added -

M. divergens: Burchell 6105 -
for M. violacea var. divergens

M. varians Pohl - Burchell
6191-2. another Burchell
spec., 8099, $\pm$ to 6191-2
labelled as M. digitiformis at K.

M. triphylla -

collector? - No. 1700

"Brasilia: Herb. Mus. Vind. 837

is this a Pohl spec.?

M. pseudobatrachophylla - Type?
Hassler 5649.

4)
M. mirabilis Type Harber 10711

M. reniformis -
No 7119

2 specs.
Gardner 3975 (or 3915?)

Goyaz, Dry upland Campos
Oct, March, 1840

= purpureo-costata?

or = M. attenuata?

Spec. has single fr.

T. of M. purpureo-costata Pohl.
is this Pohl spec? Lohel
says "Brazil, Herb. - Vienna."
#1703 - specs.

Simple leaves:

Inset - Mandol

Gardner 3974 - date 1841
Prov. Goyaz, Brazilian tropics

65

T. - *M. amazonica* Ale # 9546 -
Peru

W. Trop. South Am.

Manihot carthagenensis -
=> looks like Humboldt spec. -
the no. is 607 - "Funché",
"Cumana" -
labelled *Jamipha yuguilla* HBK.

Jamipha anisophylla type - ?

Col: Galander su

=> 9. III. 1882.

Quebrada del Salado
Argentina.

19 sheets of Manihot returned to R. E. Schultes,
Herbarium Oakes Ames, 5/19/64

Manihot species growing in Pirone's greenhouse (or accessions of seeds given to him for propagation). Nov. 20, 1962

1. Lot 1 (his number) = *M. pauciflora* from Tehuacán, Mexico, collected by C.E. Smith, Jr.
2. Lot 2 " " = *M. species* from a collection of George Eiten, with the following information: temporary number 998A = permanent number 4661.
Wild species of *Manihot* on "Chapada Alta" (a semi-closed woodland or "cerrado" on flat top of a plateau) ca. 40 km. south of Loreto, município do Loreto, Maranhão, Brazil. Shrub 1 and 1/2 m. tall. Alt. 360 m.
See Eiten's letter of 13 Nov. for further details.
3. Lot 3. " " Ibid no. 2. These seeds were originally sent to Morton (see letter) who forwarded them to me on Nov. 1. These seeds came with Eiten's permanent no. 4661(plant 3).
4. Lot 4. " " *M. flabellifolia*? Seedlings sent by Wm. Reese, Dept. Biology, Southwestern Louisiana University, Lafayette, La. See notes in Letter from Reese 10 Nov., 1962.



UNIVERSITY OF SOUTHWESTERN LOUISIANA

Joel L. Fletcher, President

LAFAYETTE, LOUISIANA

10 Nov., 1962

Dear Dave:

I don't believe that I can do any more with the computer business for the present. Within the next year or so however, I will be accumulating a lot of measurements on specimens of another, larger genus than the one I just finished, and perhaps we can work out something then. You can understand that I haven't much interest in going back over the material that I have allegedly revised to perfection!

About the Manihot; I am ashamed to say that I let the situation go until it was too late to get any fruiting material at all. John Thieret and I went out yesterday to collect for you, finally, but we were too late and could find only a few shrivelled carpels on the ground. I'm sure you don't want sterile specimens if you can have them otherwise, so I will undertake to collect again in the spring, at flowering time, and will try once more for the fruits later on. We did pull up a couple of healthy seedlings for propagation; these I have sent off to you already. The parent plant that produced these seedlings is about 18' tall, and although severely damaged by the hard freeze of last winter, is still growing. Some of my taxonomy students found manihot plants growing in the wild along the Vermilion River last week; one could say that it is definitely spreading from cultivation. Country people down here plant it in their door yards because it "keeps the flies and mosquitos away"! Chickens are fond of the seeds but the citizens know nothing about the plant otherwise. (They don't even have a name for it). How's that for on the spot reporting on economic plants?

Give my regards to Henry.

Best wishes

Bill



SECRETARIA DA AGRICULTURA
INSTITUTO DE BOTANICA

N.º 01233

13 Nov 62

Dr. David Rogers
New York Botanical Garden
Bronx Park 58, New York
E.U.A.

Dear Dave,

I have your letter of 5 Nov. The temporary number 998A is the same collection as permanent number 4661. However, ~~you~~ notice what seeds come from what individuals in the populations, since seeds from different individuals were in separate packets. I'm glad to hear that some are coming up. The batch Morton sent should come up also.

I have a kodachrome of this species about a km. away from the plant whose seeds I sent, part of the same semi-continuous population on the same plateau. I want to keep the Kodachrome but I'll send you a black & white of it. When the plant is young the leaves are green, but towards the entrance of the dry season, the leaves turn yellowish, then brown. The seeds ripen at this time also. Ripe seeds are always with yellowish leaves or with the leaves almost gone. Common name is "manisoba". It has a thick woody taproot. I saw it in two kinds of places in the region, most commonly on the plateaus with cerrado vegetation, the "chapadas". I also saw it growing along an intermittent brook bed in forest, at the base of one of those plateaus at the inner edge of the Paranaíba River plain (at that point about 1 km. wide and 3 m. above river level). However, the forest is only a thin gallery, not many meters from the same cerrado vegetation outside it, that descends the plateau slope.

Regards to all.

Yours truly,

George Eiten

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON 25, D. C.

Seeds given to Pirone for planting November 1, 1962
11/5/62

Data on the seeds:

Coll: George Eiten, & Lt. Eiten No. 4661 (plant 3) 24 May, 1962
Wild species of Manihot on "Chapada Alta" (a semi-closed woodland or
"cerrado" on flat top of a plateau) ca. 40 km. south of Loreto, municipio
do Loreto, Maranhão, Brazil. Shrub ~~11~~ 1-1/2 m. tall. Alt. 360 m.

Dr. David J. Rogers
New York Botanical Garden
Bronx Park
New York 58, New York

Dear Dr. Rogers:

I have recently received some seeds of a wild
Manihot collected in the interior of Brazil. We do
not have facilities here in Washington for growing
plants. I am sending these to you, in case you would
like to try them in the greenhouses at New York. If
not, you may discard them.

Yours sincerely,

C. V. Morton
C. V. Morton
Curator
Division of Ferns

*Will these
be sent as lot 3 in Pirone's G'her?!*

collections at B.A. São Paulo
J.P. Caldas
6740 - *M. undet.* - Rio Preto S.P.

A.P. Viçosa

5962 *M. undet.* Aguas de Santa, S.P.
6685 " " , Campinas, S.P. - Campesinato, Punt.
6681 - *M. undet.* " " " " "
6682 " " " " "
6683 " " " " "
! 6684 " *tuxediana* " "

E. Normonha

6158 - *M. undet.* - Jauhaty, S.P. Herbaceous mata, 5800 mts.

M. Kuhlmann

44.810 - *M. undet.* Galheter, Guarujá, S.P.

O.T. Mendes

4718 - *M. undet.* - Pindorama, S.P.

C. A. Krug.

4232 - *M. pedicellaris* var. - Cunha, S.P.

A. S. Lima

7147 *M. cattingae*, Campinas, S.P.

F.C. Hoehne - date 23/1/1919.

SN - *M. pedicellaris* - Caldas, Minas Ger.
2907 - " " " " "

W. name -

3754. Comm. Geogr. E. Ger. d. S.P.
M. Pedicellaris

Nov 1911 400.21 - *M. pedicellifera*, Serra do Curup, S.
2 sheets, good material, important.

Alberto Loefgren 31454 - *M. trifurcata* var. *glabra* - Rio Claro, S. P.

Brazil, without state location.

Guariroba, Goyaz? (Hb. G.) M. longipetiolata

Cap. Goyaz in sylva Matogrosso. M. Pohl

" " ad Villa Boa "

" " ad ? Trahiras "

" " , Villa Boa M. utilisima Pohl

" " ad Engenho do A. Sebastiao

Cante St. Luzia, Corumbas, C--go do

Tarasno, Durofino, Villa Boa. M. pubescens (Pohl)

Amazonas

São Paulo de Olivença, varzea (mamão bravo)

Munic. Humayta, near Tres Casas. Rio Madeira *M. inflata*

Bahia

? Serra Jacobina

M. jacobinensis

Mun. Itambe, near Sapucaia

M. cf. pilosa (Fries)

São Paulinho card. to R. Catolico

M. cf. brevipedicellata

basin of R. Colonia

M. ?

Crejao, caatinga

(maniva)

entre Catole Grande e Itatinga

adjacencia do Rio Colonia, Itatinga M. palmata

Estrada de Itambe a Sapucaia. (maniva braba).

entre Brejao and Itacema, campo geral M. reniformis

Itacema, caatinga, na regio do

Serra do Limoeiro

Serra do Rio Preto

M. jacobinensis

central Bahia - caatinga -

M. cattinga

Rio de Contas. Formosa

M. sagittato-partita

N. Bahia, Jamandina, caatinga

M. picubensis

Cesra

near Itapege (formerly São Francisco) M? - Cutler 8113

Senade Trevipe

M. trifoliata.

Goyaz

ant. Goyaz (Goyaz) *M. stenophylla*.

Guaririba, Serra do Campo " *M. gracilis*.

Fazenda da Cava, perto de ~~Morro~~ da Canastra. *M. canastrina*.

Goiás, Serra Dourada. *M. rigidula* (Macedo, A.)

" Mun. Goiás, Serra Dourada. *M. violacea* "

Serra Dourada - W. of Tocantins Riv, ca Lat. $13^{\circ}S$, $48^{\circ}W$.

Maranhão
Island of São Luiz.

M. bulbin "Mamão de Vião"

Matth. Grosso

Guapore territory, Guajara-mirim. M. brachyfolia.

Source of the Jatuarana River, Machado R. region. M. dulcis.

Minas Geraes -

Mun. Santa Luzia - Fazenda Chicaca

Vicososa, Univ. Rural do Est. M.G.

Belo Horizonte, Barreiro, hab. campo. M. sprucei.

" " , Marzagão, hab. cerrado. M. tripartita

" " , Estação Exp'tl. M. catingae

Santa Luzia, Lagoa Santa, hab. cerrado. M. tripartita

Cambuquira, Mata do Empreza, M. palmata

Diamantina, Sentinella, hab. nas pedras " "

Faria M. palmata (Glaziov)

trail from Vicososa to São Geraldo M. palmata (Moxia)

Rel. " " " " Miguel M. dulcis "

inter Cocoses et St. Cruz, Alto do

Monro, Duro Branco M. tripartita var (Pohl)

Mun. Belo Horizonte, near Lagoa

Pampulha M. tripartita (L. Williams)

Mun. Serro, 10 km. NW. of Serro, (L. Williams)

Serra da Bocaina, sandstone area. M. utulinus

Para

Rio Pixuna, Praia - M. util.

" Cupari, Capoeirinha - " "

Japajós, Aramanahy - M. longsdorffii (maneira de usar)

Serra do Cachimbo - M. glaziovii

Santarem

" "

This is located at the headwaters of the Curuçá Riv.,
Lat 9° S, 55° W. Long.

Parahyba

Serido, Parahyba do Norte, Acary. M. pseudogloziinii

Alagoa Grande

Myglazini

Parana

Paranaqua

Gratiz, in "capocira" ad rivulums.

Curitiba - cult.

M. glaziovii (Dusen)

M. tweedii

M. aff. heptaphylla

"

"

Rio de Janeiro

Petropolis, near Cascade d'Itamaraty - M. palmata var.

without local.

M. Palmata

(Regnell)

São Paulo -

Usina, W. of Santa Cruz do Rio Pardo. M. dulcis.

Pedregulho

M. varians

Pinheiros, S. Paulo. cult.

"aipim branco"

Notes on plants collected in Brazil, Feb.-Mar., 1961

Feb. 1, 1961. Rio de Janeiro, on summit of Pão Açucar (Sugar Loaf Mt.).

Volunteer above path just below summit. Perianth yellow-green
Disc bright yellow; fruit smooth, without wings. Petioles
dark red. Mature stems smooth, without obvious leaf scars,
dark brown. Branching several times, but stems broken or
cut several times, thereby obscuring true habit. Plants
probably about 6 feet tall. Leaves uniformly 5-lobed, both
on vegetative parts, as well as those associated with inflores-
cence. Roots not observed, though one exposed root seemed
somewhat enlarged.

Feb. 6-8, 1961. Campinas, São Paulo, Brazil. Grounds of the Instituto
Agronomico.

Specimens numbered 335 through 361 left at the ~~xxxxx~~ Jardim Botanic,
Parque do Estado, São Paulo, Brazil, to be mailed to me. All data recorded
on field labels with the specimens.

Feb. 17, 1961. Minas Gerais, near Lagoa Santa, in ~~xxxxxx~~ cerrado.

#362. *M. gracilis* (Pohl) M. Arg. ^{en} ^{storage}
~~tripartita~~ Plants prostrate, from large root, root cortex
yellow, with white subepidermis. One enlarged storage
root. No flowers. Green in all parts.

#363. Same local. Single deep root. Plant in fruit.

#364. " " . Single deep carrot-shaped root. Plants prostrate.
Red pigment on stems and petiole. In fruit.

Feb. 17, 1961. Minas Gerais, Sete Lagoas, Grounds of the federal Expt.
Sta. numbers 365-370. All recorded as "sweet".

365--stem silver, root smooth; 366--stem silver root smooth;
367--stem brown, root rough; 368--stem brown root rough;
369--stem brown, root rough; 370--stem brown, root rough.

He informed Dr. Pirone that Jehn Behnke of Ronald Press had phoned and requested permission to add to the title page of Pirone, Dodge and Rickett's book - "An official publication of The New York Botanical Garden." Permission had been granted. They have re-copyrighted the old and are copyrighting the new in their (Ronald Press) name.

Dr. Rogers thanked Mr. Kolkebeck for assisting him in getting rid of billing for "Economic Botany." Mr. Kolkebeck told Dr. Rogerson that he hoped to assist him in the same way with "Mycologia."

###

Feb. 18, 1961. Minas Gerais, Belo Horizonte, grounds of the state agricultural experiment station.

#371--*Manihot Glaziovii* or *plauyensis*? Tree, 4-5 m. tall, low trunk, frequently branched, laticiferous. Fls. yellow-green, red at base. Fruit without conspicuous disc. Estipulate, or the stipules early caducous. Petioles red above, green below; bark of tree exfoliate in part, but mostly smooth.

Feb. 20, 1961. Minas Gerais, Lavras. Substation of Federal Gov't. sta. at Sete Lagoas.

#372--*M. pedicellata*? ~~and~~ *brevipedicellata*? *palmata*? This and following number (373) are called "*mandioquinha do mato*". Plants

Roots: from slender (1-2" diam.) roots, some of which are slightly enlarged in places.
Stems: To 20 feet tall, each period of growth apparently terminated by inflorescence. Lower trunk smooth, ^{3-5 in. diam.} woody, with little pith. Upper stems with very large pith.
Leaves: Mature leaves very large, lobes exceeding 10". Petioles redish-green. Upper leaves gradually smaller. Inflorescence similar to *M. esculenta*. The fls. larger, ca. 1 cm. long, light greenish-yellow, with darker spots in sinus of perianth lobes. Fruits without wings, 1-1.5 cm. diam.
Inflorescence
Fls!
Fr:
Seed collection.

#373--see above notes, plus those of field label.

February 24, 1961. Pernambuco, Vitoria de S. Antao, /Cedro State experiment sta.
Soils a red, loamy sand. Specimens 374-380 from a collection of cultivars from various parts of Brazil. The collection is a "stand-by" collection, and was not actively in use at the them. Most of the cultivars are about two years old, but accurate planting dates were not available.
See field labels for data.

February 25, 1961. Pernambuco, Gloria do Goita. Fazenda Sta. Antonia,
a private farm raising mandioca for commercial production
of "farinha". A starch factory was erected on the farm,
but has not been in operation for several years.
Soils in this vicinity sandy.

- #381. "Mandioca brava", in secondary forest (average height of trees
20-30 feet). ~~Species rather common in the forest.~~ Plants from enlarged
roots. Stems with smooth bark, woody. ~~Bark gray.~~ Upper
stem with large pith. Roots soft inside, the form essentially
the same as the cultivars of *M. esculenta*. Fls. ca. 1 cm.
long, externally whitish-green, internally 2.5 R 3/7 (Nicker-
son Color fan, dark red). Plants apparently dioecious.

See specimen #385 for 9 fls.

See also data on field label.

- #382. Cultivar, same local as 381. "Amazonia da Praia".
#383. Cultivar, same local as 381. "Enrica homem".
#384. Cultivar, same local as 381. "Pernambucana".
#385. "Mandioca brava", see description for 381. soils for both this No.
and 381--sandy, thin, with frequent granite outcrops. see
field labels for further data.

Feb. 27, 1961. Pernambuco, Lagoa dos Gatos, about 80 ~~km~~ miles SW of
Recife, in a transition zone between mata and caatinga
zones. Soils thin sandy, over granite, with many outcrops
of granite. Seems an excellent region for growth of mandioca.
18 months produces very large rooted cultivars. Photographed
1 cultivar--no specimens--of "Alagoa", ~~and~~ an 8-9 lobed
variety. Lagoa dos Gatos is site of another starch factory,
Built in 1954--used 10 hours--never operated again. Lacked
suitable water supply.

- #386. "Manicoba" (*M. piauensis*, or *M. Glaziovii*). Plants growing as
fence-rows along road North of Lagoa dos Gatos. Some older
plants with trunks 8-10" diameter, to 25 ft. tall.

Feb. 28. Pernambuco, Tambe, state agricultural experiment station. Soils in an area sandy, known as "tabuleiro." Another large collection of cultivars from many areas in Brazil. Although the specimens were well cared for, there was obviously mixtures as to the field numbers and the planting scheme. Here was found a most interesting cultivar, very different in vegetative characteristics from others. This is a low, many-branched variety, with the roots having a roughly triangular outline in cross-section. Reportedly, this cultivar is sweet, but it had a very intense odor of HCN. The leaves of this cultivar are consistently 3-lobed, or the lamina simple, but seldom more than 3-lobed. The young stems are wiry, and resilient, tough, hard to break, in contrast to the situation for most cultivars, where the younger stems are very brittle. See x field labels for specimens no. 390-91 for further data. See also color photos.

387-393--all specimens cultivated on grounds of the experiment station.

See field labels for data. Also color photos of 390-91

Mar. 2, 1961--There is some confusion in the numbering from this point on, the first number below duplicating the last number above.

~~This trip was to the caatinga area of northeast Brazil, in the state of Pernambuco and a little in the state of Ceará. The caatinga is divided into two areas based on water, or amounts of rainfall, and altitude and as well as~~

insect. over → on vegetation differences. →

394--(numbered as 393 in collection book) M. sp. near Caruaru, on roadside Large shrub or small tree 10-15 ft. west of town. Frequently cut--either intentionally or by

Divisions

~~Areas~~ of the caatinga: Agreste and Sertao. These are ill-defined areas, but the "agreste" is generally lower, with more rainfall, and apparently with some affinities to the lower "mata" or forested regions to the east along the sea coast. The "sertao" is ^a the high^{er} ~~est~~ and drier ^a area of the caatinga ^a with a thorn-forest aspect. The commonest plants are members of the Euphorbiaceae, with species of Croton predominant. Cnidosculus phylacanthus is a common large shrub or small tree. Soils are thin, red, and there are numbers of rocky outcrops. Actually, ~~the~~ ^{the} "chapada", another area is higher than the sertao, ~~although I heard no~~ physiographic name for the area. In northwest Pernambuco, in Piauí, and parts of Ceará are flat, mesa-like areas rising a few hundred feet above the sertao in sharp cliff-like demarkations. This higher area is mostly sandy, the sand is very deep, in places supposedly 200 meters. The caatinga is mostly devoted to cattle raising, although in the valleys and dry stream beds some ~~x~~ vegetables, and some cotton are raised. Near ^{Pernambuco,} Pesqueira [^] is the world's largest tomato farm, with over 6000 hectares devoted to production. "Mandioca" is probably the commonest food crop.

grazing animals. Weedy appearance. in Agreste area.

395 (394 in book)--~~SM~~ M. sp. near Pesqueira, on road to Mimoso.

Shrub 2-3 m., from enlarged base. Petioles light green-reddish.
Verg frequent in agreste area.

396 (395 in book)--M. sp. near Custodia, along road to Sitio dos Nunes.

Small tree, 5-6 m., without latex (or very little). Straight
stem 3-5 in diam at base. Petioles dark red. Fls. yellow-
green outside, dark red at base inside. In undisturbed??
area, beyond influence of roadside. In sertao, standing

above the general vegetation.

Mar. 3, 1961

397 (396 in book)--M. *pisuhyensis* Ule. S. Jose do Belmonte (formerly
Manicobal), Pernambuco. Farm 1 km. north of town. Plants
from a former manicoba plantation, now not in active
production. Latex bright yellow. Seeds whitish. Fruit
rounded at apex.

398 (397 in book)--M. *pisuhyensis* Ule. S. Jose do Belmonte (formerly
Manicobal), Pernambuco. Farm 1 km. north of town. Plants
from a former manicoba plantation, now not in active
production. Plant said to produce more latex than the
former specimen (397). Fruits more pointed than 397,
seeds yellowish.

399 (398 in book)--"mandioca brava" S. Jose do Belmonte (formerly Mani-
cobal), Pernambuco. on fallow field of farm, apparently
volunteer. Plants of various ages and sizes, 2- 8- 10 feet
tall. Much variation in leaf form and inflorescence size.
Young fls. very dark purple, almost black.

400 (399 in book) *Cnidoscylus phylacanthus*. Mar. 4, 1961. in Sertao
near Parnamirim, Pernambuco. Plants very common in this
area. Plant 3-6 m. tall. Fls. white, latex milky.

Mar. 4, 1961. Araripina, Pernambuco, State Agricultural Experiment Station.
401 (400 in book)--cultivar of *M. esculenta*. ^{yellowish} sandy soils of "chapada".

high, flat table land of north and northwestern Pernambuco.

402 (401 in book)--cult., ibid 401

403 (402 in book)--ibid, local 401--*Mandioca brava*?, ^{or} "Pronuncia".

Supposedly native in Araripina. Plant 6-8 ft. tall. Very deep-rooted, the roots enlarged. Sometimes cultivated, though more of a curiosity than for productivity.

♂ Fls. greenish-yellow, with dark red interior. ♀ Fls. greenish-yellow, without red pigment. Disc yellow.

Petioles reddish-green.

404 (403 in book)--*M. piahyensis* Ule. "manicoba". ~~growing~~ In brush along road near Experiment station of Araripina, in chapada. ~~very deep sands. Plants~~ ^{formerly} ~~are or less volunteers; No~~ evidence of present care; ~~May have been cultivated earlier.~~ All plants apparently with pointed fruit; and seeds yellow-speckled.

Mar. 5, 1961. Araripina, Pernambuco, grounds of experiment station, in chapada.

405 (404 in book)--cultivar of *M. esculenta*. Interesting variety because foliage seems to have gene combinations reminiscent of leaves of *M. piahyensis* Ule, dark green glossy above, light green glaucous below.

406 (405 in book)--cult. of *M. esculenta*. One of best varieties for the chapada, according to men of experiment station.

407 (406 in book)--cult. of *M. esculenta*. On farm in chapada about 5 miles from the Ag. Exp. Sta. of Araripina. Plant about 6 months old. Foliage demonstrates genes reminiscent of introgression with species of the type represented by specimen no. 403.

Mar. 5, 1961. Northwest Pernambuco, on road between Araripina and Crato, state of Ceara, about 50 km. sw of Crato, on chapada.

408 (407 in book)--see local above. *M. piauihyensis* Ule. Plants 6-8 ft. tall, slender, latex producing, very frequent. Soils a little darker than those of Araripina, but still sandy chapada.

409 (408 in book)--near Crato, ~~Pernambuco~~, Ceara on hillside on road down from chapada to valley. One plant seen, growing in edge of forest ~~of very tall trees~~ along path which edges field of sugar cane. ^{Fruits with slight} ~~Plants with suggestion of a ridge or wing~~ on fruits. ♀ Fls. yellow-green outside, deep red toward center part inside. Disc cream colored. ^{well-developed} Petioles reddish above, green below. No ~~fruit~~ ♂ fls. on plant at this time.

410 (409 in book)--*M. sp.* South of Crato, near Barbalha, Ceara. Plants 10-15 feet tall. Single plant seen. Fruit dark purplish-red. Petioles Red.

411 (410 in book)--*M. sp.* ~~ibid 410~~ local. Plant with less red pigment, 15 feet tall.

Mar. 10, 1961. Belem, Para, Instituto Agronomico do Norte.

412 (411 in book)--*M. Glaziovii*? Single tree, to about 30 ft. tall, on grounds of instituto. Latex white.

413 (412 in book)--*M. sp.* ^{"maniva de vado"} ~~Filices of Instituto Agronomico, Belém, Para.~~ ^(varzeas) ~~along roadside, in moist areas~~ under shade of forest trees. Plants ~~more or less decumbent, clambering over other vegetation as a vine, 5-10-20 ft. long.~~ ^{from a long tap root,} Buds green, petioles with a little red on top, mostly green. Root a long tap root, ~~easily pulled out of the ground;~~ ^{never more than} ~~no enlarged storage roots.~~ Leaves ^{always} 3-lobed. ~~In varzeas,~~ margins of rivers, apparently in all estuaries of the Amazon.

414 (413 in book)--Ibid, 413. climbing liana 5-10 meters long. ♂ Fl. Cream exterior, carmine interior. Roots or other parts

Bassett:

Enclosed are lists of type materials I'd like to have for the genus Manihot. Please ask for the types from the following herbaria: Vienna, Munich, Geneva, Paris, Stockholm, and Kew. I do not think that there is any use asking for types of Manihot from Berlin, in that that wing of the herbarium was supposedly destroyed in WWII. If you think that they might have saved some of the material, and might have it available, then please add them to the loan requests.

You might also request all their unidentified materials of the genus Manihot as well.

Thanks,

Dane

Incoming Loans for Dr. Rogers

Types of the genus Manihot

Numbers to left refer to Pax and Hoffman in Engl. Pflanzenreich IV, Pam. 147 II. Heft 44: 21-110. 1910, and addenda of later issues.

Mexico and Central America

- | | |
|---|----------------|
| 57. <i>M. aesculifolia</i> (HBK) Pohl
(<i>Janipha aesculifolia</i> HBK) | Humboldt s.n. |
| 6. <i>M. crassinopala</i> P & H | Kerber 185 |
| 7. <i>M. foetida</i> (HBK) Pohl
(<i>Janipha foetida</i> HBK) | Humboldt s.n. |
| 87. <i>M. microcarpa</i> Muell. Arg. | Karwinsky s.n. |
| 51. <i>M. Olfersiana</i> Pax | Ude 1176 |
| 30. <i>M. rhomboides</i> Muell. Arg. | Sesse s.n. |

South America

- | | |
|---|--|
| 74. <i>M. acuminatissima</i> Muell. Arg. | Gardner 3446 |
| 44. <i>M. affinis</i> P & H | LMfgren 5969 |
| 66. <i>M. amaroleitensis</i> Baill. | Weddell 2862 |
| 54. <i>M. amazonica</i> Ule | Ule 5264 |
| 80. <i>M. angustifrons</i> Muell. Arg. | Riedel 1026 |
| 112b. <i>M. Anisitsii</i> P & H | Anisits 1931 |
| 96. <i>M. anisophylla</i> (Griseb.) Muell.
Arg. (<i>Janipha anisophylla</i> Griseb.)
(also <i>M. carthaginensis</i> var.
<i>anisophylla</i> O. Ktze.) | Lorentz 297, 383, 462, 1871;
Schickendantz 24 |
| 86. <i>M. anouala</i> Pohl | Pohl 1197, 1702
Burchell 8451
Clausen 322, 755 |
| 119. <i>M. attenuata</i> Muell. Arg. | Burchell 7865 |

17b. <i>M. bahiensis</i> Ule	Zehutner 365, 371
var. <i>microsperma</i> Ule	Zehutner 384, 387, 455
79a. <i>M. brachyandra</i> P & H	v. Lützelburg 12252 (12253 ex parte)
83. <i>M. brachyloba</i> Muell. Arg.	Martius s.n.; Sieber s.n.
122. <i>M. brachystachys</i> P & H	Glazion 22126
68. <i>M. brevipedicellata</i> P & H	Glazion 8322
76. <i>M. Burchellii</i> Muell. Arg.	Burchell 7849
112a. <i>M. boliviana</i> P & H	Herzog 1233
102. <i>M. caricaefolia</i> Pohl	Pohl 1187
94. <i>M. carthaginensis</i> (Jacq.) Muell. Arg.	Mexico: Sesse s.n., Palmer 1027a Panama: Sutton Hayes 717 Colombia: Karsten s.n., Triana s.n. Venezuela: Jacquín s.n.
90. <i>M. Catingae</i> Ule	Ule 7142
14a. <i>M. cearensis</i> P & H	LBfgren 327
13. <i>M. coerulescens</i> (Pohl amend.) Muell. Arg. var. <i>genuina</i>	Martius s.n.; Spruce
23. <i>M. conulifera</i> Muell. Arg.	Riedel s.n.
117. <i>M. cordifolia</i> Pax	Fiebrig 5297
93. <i>M. corymbiflora</i> P & H	Glazion 13203, 14242, 14243
75. <i>M. crotalarinaeformis</i> Pohl	Pohl 494
101. <i>M. cujabensis</i> Muell. Arg.	Silva Manso 768
7a. <i>M. cuneata</i> Ule	Zehutner 394
30. <i>M. depauperata</i> P & H	Hassler 10222
98. <i>M. dichotoma</i> Ule var. <i>genuina</i> Pax var. <i>parvifolia</i> Ule	Ule 7045a, 7045b, 7045c Ule 7362
78. <i>M. digitiformis</i> Pohl	Pohl 1371, 1709

- 25a. *M. discolor* Ule Zehntner 690
79. *M. dulcis* (J. P. Gmel.) Pax
 var. *diffusa* (Pohl) Pax Colombia: H. H. Smith 365
 (*M. diffusa* Pohl) Guiana: Sagot 1082, Wulfschlaegel 1075
 Brazil: Martius s.n.
 var. *ferruginea* (Muell. Arg.) Brazil: Regnell 1070;
 Pax (*M. palmata* var. Schwacke 9269
 ferruginea Muell. Arg.) Peckolt 55, 74
 var. *aipi* (Pohl) Pax (*M. aipi* Brazil: Pohl 2437, 3776, 3777,
 Pohl) 3778, 3779, 3780
 var. *leptopoda* (Muell. Arg.) Brazil: Guillemin 132, Regnell
 Pax (*M. palmata* var. 186, Riedel 191
 leptopoda Muell. Arg.)
 var. *multifida* (Graham) Pax Brazil: Tweedie s.n.
 (*M. Grahami* Hook.) (M. Mexico: Ehrenberg s.n.; Schiede
 palmata var. *multifida* s.n.
 Muell. Arg.)
 var. *flabellifolia* (Pohl) Pax Brazil: Pohl 1188
 (*M. flabellifolia* Pohl;
 M. palmata var. *flabel-*
 lifolia Muell. Arg.)
43. *M. elegans* Muell. Arg. Riedel 476; Lfegren 2084
- 94b. *M. enneaphylla* P & H Ekman 496
- 96b. *M. epruinosa* P & H v. Lfetzburg 12417, 12433,
 15005, 15009, 15013
- 7b. *M. ferruginea* Ule Zehntner 611
84. *M. Piebrigii* P & H Piebrig 10469
- 76a. *M. flexuosa* P & H v. Lfetzburg 9, 10
- 77a. *M. floribunda* P & H v. Lfetzburg 12253
111. *M. Glaziovii* Muell. Arg. Glaziov 1022, 9585
88. *M. gracilis* (Pohl emend.) M. Arg.
 var. *genuina* Muell. Arg. Pohl 1659, 3920
 (*M. gracilis* Pohl) Riedel 2819
 Claussen 445
 Regnell 1073

- var. *pronifolia* (Pohl) Muell. Pohl 1185
Arg. (*M. pronifolia* Pohl) Glaziou 22130
- var. *tenuifolia* (Pohl) Muell. Pohl 2421
Arg. (*M. tenuifolia* Pohl) Burchell 6874
Sellow 2102, 2062
- var. *tenerrima* (Pohl) Muell. Pohl 1182
Arg. (*M. tenerrima* Pohl)
- M. Grahami* Hook (*M. dulcis* var. *multifida* (Graham) Pax) Tweedie s.n.
31. *M. graminifolia* Chodat & Hassler Hassler 5172
19. *M. grandiflora* Muell. Arg. Riedel 791; Warming s.n.
95. *M. grandistipula* Pax Hassler 2675
- 25b. *M. Harmsiana* Ule Zehntner 691
58. *M. hassleriana* Chodat Hassler 4576
69. *M. hemitrichandra* Muell. Arg. Riedel 1848
35. *M. heptaphylla* Ule Ule 7206a, 7206b, 7206
- 17a. *M. heptaphylla* x *piuhyensis* Ule Zehntner 381, 385
103. *M. heterophylla* Pohl Pohl 1254
91. *M. hilariana* Baill. St. Hilaire s.n.
59. *M. humilis* Muell. Arg. Riedel s.n.
53. *M. inflata* Muell. Arg. Riedel 190
38. *M. intercedens* Muell. Arg. Blanchet 3324; Warming s.n.
12. *M. Jacobinensis* Muell. Arg. Blanchet 2553
92. *M. Janiphoides* Muell. Arg. Warming s.n.
89. *M. Johannis* Pax (*M. Pohlana* Muell. Arg.) Martius s.n.
- 17d. *M. Labroyana* Ule Zehntner 234, 275, 290
39. *M. laciniosa* Pohl (*Jatropha laciniosa* Steud.)
- var. *genuina* Muell. Arg. Pohl 2207
- var. *lanata* Muell. Arg. Riedel s.n.

32.	<i>M. iagoensis</i> Muell. Arg.	Warming s.n.
71.	<i>M. Langsdorffii</i> Muell. Arg.	Riedel & Langsdorff 1530 Sellow 5590
56.	<i>M. leptophylla</i> P & H	Eggers 15156
120.	<i>M. linearifolia</i> Muell. Arg.	Haenke s.n.
97.	<i>M. lobata</i> (Chodat & Hassler) Pax (<i>M. Tweediana</i> var. <i>lobata</i> C & H)	Hassler 5407, 5413a, 5413b
47.	<i>M. longipetiolata</i> Pohl	Pohl 822
35a.	<i>M. lyrata</i> Ule	Zehutner 282, 299
16.	<i>M. macrantha</i> P & H	Hassler 5132
5.	<i>M. maracasensis</i> Ule	Ule 7003
5.	<i>M. maracasensis</i> var. <i>vestita</i> P & H	v. Litzelburg 12251
125a.	<i>M. mattogrossensis</i> P & H	Maine 2344
42.	<i>M. neeboldii</i> P & H	Hassler 9525a
100.	<i>M. melanobasis</i> Muell. Arg.	Schomburgk 694
26a.	<i>M. membranacea</i> P & H	F. C. Hochne 1380
17c.	<i>M. microdendron</i> Ule	Zehutner 689
4.	<i>M. mossampiensis</i> Taubert	Ule 3081
103.	<i>M. multiflora</i> P & H	Fiebrig 4360
49.	<i>M. nana</i> Muell. Arg.	Riedel 2824
11.	<i>M. occidentalis</i> Muell. Arg.	Tamberlik s.n.
48.	<i>M. oligantha</i> P & H	Glaziov 23127
118.	<i>M. orbicularis</i> Pohl	Pohl 1992
32.	<i>M. palmata</i> (Vell.) Pax (<i>Jatropha palmata</i> Vell.)	Sello(w) 1161, 1829, 5150 Glaziov 1321, 14244
14.	<i>M. paraensis</i> Muell. Arg.	Sieber s.n.; Spruce 186
40.	<i>M. pardina</i> Muell. Arg.	Riedel s.n.
20.	<i>M. pavinaefolia</i> Pohl	Pohl 1190; Ule 3074
72.	<i>M. Pavoniana</i> Muell. Arg.	Ruiz & Pavon s.n.

67. <i>M. pedicellaris</i> Muell. Arg.	Glaziov 18476; Warming s.n.
114. <i>M. peltata</i> Pohl	Pohl 1661, 1901; Burchell 7663, 7662
21. <i>M. pentaphylla</i> Pohl	Pohl 1186, 1706
8. <i>M. peruviana</i> Muell. Arg.	Ule 6635, Spruce 4287
17. <i>M. pinuhyensis</i> Ule	Ule 7141 a, b, & c
61. <i>M. pilosa</i> Pohl	Martius s.n.
94a. <i>M. Pittieri</i> P & H	Pittier 1567
25. <i>M. Pohlii</i> Wawra	Peckolt 21
108. <i>M. polyantha</i> P & H	Glaziov 22133
116. <i>M. Populifolia</i> Pax	Hassler 10896
28. <i>M. procumbens</i> Muell. Arg.	
var. <i>genuina</i> Pax	Sellow 4520, 4526, s.n. Hassler 4981
var. <i>grandifolia</i> Chodat & Hassler	Hassler 4441
65. <i>M. pruinosa</i> Pohl	
var. <i>genuina</i> Muell. Arg.	Pohl 1705, 2469 Gardener 3443 Riedel 2823
var. <i>pumila</i> Muell. Arg.	Riedel 2824
111a. <i>M. pseudoglaziovii</i> P & H	v. Lützelburg 12888, 12430, 12422, 12426, 12429, 12432, 12463 ¹²⁴²⁰
63. <i>M. pseudopruinosa</i> P & H	Glaziov 22131
121. <i>M. purpureo-costata</i> Pohl	Pohl 2130
45. <i>M. pusilla</i> Pohl	Pohl 1181
15. <i>M. quinquefolia</i> Pohl	Martius s.n.
109. <i>M. quinqueloba</i> Pohl	Pohl 1701, 1902
112. <i>M. recognita</i> Pax	Hassler 8497; Lorentz & Hieronymus 330

115. <i>M. reniformis</i> Pohl	Martius 1935; Ule 7085
10. <i>M. reptans</i> Pax	Ule 3072
125. <i>M. Riedeliana</i> Muell. Arg.	Riedel 613
13a. <i>M. rigidifolia</i> P & H	v. Lützelburg 484
22. <i>M. rigidula</i> Muell. Arg.	Schenck 3477; Riedel s.n.; Warming s.n.
17a. <i>M. rotundata</i> Ule	Zehntner 382, 390
70. <i>M. sagittato-partita</i> Pohl	Pohl 734, 1704
123. <i>M. salicifolia</i> Pohl	Pohl 1194, 1660
37. <i>M. sinuata</i> Pohl	Pohl 1655; Claussen s.n.; Warming s.n.; Löfgren 1432
64. <i>M. sparsifolia</i> Pohl	Pohl 2206
18. <i>M. speciosa</i> Muell. Arg.	Riedel 2822
<i>M. esculenta</i> var. <i>Sprucei</i> (Pax) Lanj.	Spruce 825
81. <i>M. stenophylla</i> P & H	Glaziou 22129
46. <i>M. stipularis</i> P & H	Glaziou 22128
124. <i>M. stricta</i> Baill.	Gardner 3442
110. <i>M. subquincqueloba</i> Muell. Arg.	Silva Manso s.n. (Patricio da S. M.)
90a. <i>M. surumuensis</i> Ule	Ule 7944
41. <i>M. tenella</i> Muell. Arg.	Riedel s.n.
33a. <i>M. Toledo</i> Labroy	Zehntner 695, 694, 692
27. <i>M. Erichandra</i> P & H	A. Robert 558
16a. <i>M. trifoliata</i> Ule	Zehntner 530, 532, 533
var. <i>platyphylla</i> Ule	Zehntner 456a
26. <i>M. tripartita</i> (Spreng.) Muell. Arg. (<i>Jatropha tripartita</i> Spreng.)	

- var. *dalechampiaeformis* (Pohl) Pohl 477, 1707, 3598, 3722;
Pax (*M. dalechampiaeformis* Burchell 82; Glaziov 22138,
(Pohl), also *M. tomentella* 22139, 1192, 1193, 13301,
Pohl and *Adenoropium tripartitum* 13202; Riedel 2871, 790;
Pohl Claussen 315, 321, 752;
Regasii 1071
- var. *lanccolata* Muell. Arg. Sello (Sellow) s.n.
- var. *porrecta* (Pohl) Muell. Pohl 1191, 1656; Claussen s.n.;
Arg. (*M. porrecta* Pohl) Regnell 1071
- var. *seminuda* Muell. Arg. Gardener 3445
- var. *subintegra* Muell. Arg. Warming s.n.
- var. *cajaniformis* (Pohl) Muell. Pohl 3921
Arg. (*M. cajaniformis* Pohl)
- var. *glauca* Muell. Arg. Blanchet 3324; Sellow s.n.;
Claussen 456; Riedel s.n.
- var. *glabra* Muell. Arg. Warming s.n.; Riedel s.n.;
Loefgren 991
82. *M. triphylla* Pohl
var. *genuina* Pax Pohl 1164, 1708
var. *fruticulosa* Pax Riedel 2820a.
60. *M. tristis* Muell. Arg. Spruce 3604
62. *M. tubuliflora* P & H Ule 4605; Moura 1018;
Luchnath s.n.
53. *M. tweediana* Muell. Arg. Tweedie s.n.
24. *M. Uleana* P & H Ule 3073
29. *M. varians* Pohl Pohl 1711, 2208
104. *M. variifolia* P & H Hassler 10897
9. *M. violacea* (Pohl exend.) Muell.
arg.
var. *genuina* Muell. Arg. Pohl s.n., herb. Berol.;
Glaziov 19836; Pohl 1189
var. *arcuata* (Pohl) Muell. Arg. Pohl 1183
var. *divergens* Pohl 1657, 6040
var. *cecropiaefolia* Muell. Arg. Pohl 1649, 3919; Burchell 7774;
Glaziov 22134, 22135

33. M. warningii Muell. Arg.	Warning s.n.
26a. M. Weberbaueri P & H	Weberbauer 6517
126. M. Weddelliana Baill.	Weddell 2908
51a. M. Zehntneri Ule	Zehntner 598

JAMAICA, PARISH OF MANCHESTER GROVE
PLACE EXP. STA., JUNE-JULY, 1954

Sta. No. Humichini's Island

Name N. Yuca blanca, chatsi atsa

Origin gotten from Campa

Stem color (ext.) ^{long:} tan and green ^{upper: purplish red}

Stem color (Int.) cream color

Bud color reddish brown

Petiole color purplish red

Stipule prominence
(1=none or weak, 2= more pronounced, 3=long persis., pron.)

Rel. Ht. Plant
(in plot at Bodles)

Fruit Set Yes

Attitude of Plant
(1=erect, 2=inclined, 3= decum.)

Branching of Plant 4, 5
(1=none, 2=at base, 3= $\frac{1}{2}$, 4= $\frac{1}{2}$,
5= $\frac{3}{4}$, 6=near top)

Color of Root (ext.) ^{dark} light brown

Color of root cortex ^{out: mahog. pinky} white ^{inside: ~~white~~ pinky}
color of inside of root: white

Surface cond. of root thick, rough

Maturity of root ^{thicker than atsa}
(at time of sampling)

Remarks

JAMAICA, PARISH OF MANCHESTER GROVE
PLACE EXP. STA., JUNE-JULY, 1954

Sta. No. Chumichinia

Name yuca blanca atahuxo (lt. white manna)

Origin gotten from Campa Indians

Stem color (ext.) almost silvery buff

Stem color (Int.) white, very slight cream ^{color}

Bud color on stem: same as stem; * bud of flower: green, red

Petiole color light green

x Stipule prominence
(1=none or weak, 2= more pronounced, 3=long persis., pron.)

x Rel. Ht. Plant
(in plot at Bodles)

Fruit Set yes

x Attitude of Plant
(1=erect, 2=inclined, 3= decum.)

Branching of Plant 4, 5
(1=none, 2=at base, 3= $\frac{1}{2}$, 4= $\frac{1}{2}$,
5- $\frac{3}{4}$, 6-near top)

Color of Root (ext.) dark brown

Color of root cortex cream color

Surface cond. of root rough; cracked

x Interior of root creamy white
Maturity of root
(at time of sampling)

Remarks

JAMAICA, PARISH OF MANCHESTER GROVE
PLACE EXP. STA., JUNE-JULY, 1954

Sta. No. _____

Name atapinsi

Origin _____

Stem color (ext.) red and gray

Stem color (Int.) yellowish

Bud color pinky brown

Petiole color reddish purple

Stipule prominence
(1=none or weak, 2= more pronounced, 3=long persis., pron.)

Rel. Ht. Plant
(in plot at Bodles)

Fruit Set none

Attitude of Plant
(1=erect, 2=inclined, 3= decum.)

Branching of Plant 4, 5
(1=none, 2=at base, 3= $\frac{1}{4}$, 4= $\frac{1}{2}$,
5= $\frac{3}{4}$, 6=near top)

Color of Root (ext.) brown

Color of root cortex creamy^{white} (inside & out)

Surface cond. of root rough, cracked, very thin bark

Maturity of root
(at time of sampling)

Remarks leaves are very small

JAMAICA, PARISH OF MANCHESTER GROVE
PLACE EXP. STA., JUNE-JULY, 1954

Sta. No. Chumickin's Island

Name atsá (nothing more)

Origin _____

Stem color (ext.) grayish brown

Stem color (Int.) yellowish

Bud color same as stem

Petiole color yellowish green

Stipule prominence
(1=none or weak, 2= more pronounced, 3=long persis., pron.)

Rel. Ht. Plant
(in plot at Bodles)

Fruit Set yes ; flowers

Attitude of Plant
(1=erect, 2=inclined, 3= decum.)

Branching of Plant 4, 5
(1=none, 2=at base, 3= $\frac{1}{4}$, 4= $\frac{1}{2}$,
5= $\frac{3}{4}$, 6=near top)

Color of Root (ext.) light brown
purplish red (outside)

Color of root cortex cream (inside)
color of inside of root: creamy white

Surface cond. of root slightly rough, papery

Maturity of root
(at time of sampling)

Remarks _____

March 31, 1961

Dr. Hugh Popenoe
Department of Soils
University of Florida
Gainesville, Florida

Dear Dr. Popenoe:

The Manihot specimen collected by you in Guatemala has been received. I am certainly pleased to have it and appreciate your endeavor in looking after this work for me.

I do hope that you will have an opportunity to see the variety which we spoke of in earlier correspondence from the Polichic Valley. I am very eager to see that specimen because it seems to match quite closely one that I found in northeastern Brazil, and I would like to compare the two plants. It would be particularly desirable if you could get a picture of the intact plant with the roots attached. I hope you will have a chance on this next trip to find this material.

Thank you again for your help.

Sincerely yours

David J. Rogers
Curator of Economic Botany

DJR:MDF

UNIVERSITY OF FLORIDA
COLLEGE OF AGRICULTURE
GAINESVILLE

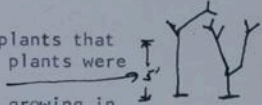
DEPARTMENT OF SOILS

March 20, 1961

Dr. Davis J. Rodgers
Curator of Economic Botany
New York Botanical Garden
Bronx Park
New York, 58, New York

Dear Dr. Rodgers:

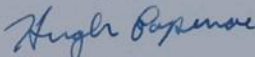
Have just returned from a trip to Guatemala and, although I didn't visit the area described by Conklin, I collected one variety of Manihot, grown on Lake Izabal, at sea level. A herbarium specimen of the plant is being sent to you separately. I will be returning to Guatemala in April and at that time I hope to collect the variety requested by you.

The Manihot specimen I am sending was collected from plants that had been harvested but were left in the field to dry. The plants were approximately eight feet high. Branching is as follows:  During the same time (February) waist-high plants were seen growing in another field. Root color is light tan. Although the surface condition of the root appears rough after drying, it has a smooth surface when freshly harvested. After drying, the roots are boiled and eaten like potatoes by the local inhabitants.

The plants occur at approximately 30 feet elevation on the Atlantic coast of Guatemala. Precipitation is 120 inches a year, and the dominant vegetation is Rain Forest.

I hope I can be of more service to you in the future.

Sincerely,



HUGH POPENOE
Assistant Professor of Soils

HP:dad

AGRICULTURAL EXPERIMENT STATIONS
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA

DEPARTMENT OF
BOTANY

22 March 1961

Dr. Dave Rogers
New York Botanical Gardens
Bronx Park
New York, New York

Dear Dr. Rogers:

We sent you yesterday a specimen of Manihot which
Hugh Popenoe recently collected for you in Guatemala.

Sincerely,

Dan Ward

Daniel B. Ward
Curator

DBW:mg1

Specimen acknowledged by post card 3/31/61

Fib -



Digitized by the Hunt Institute for Botanical Documentation

Xingú - Rio Pixuna Cupari - Tapajós
Uapichuna - Região Uapés - Rio Negro Amazonas
Niplê - Oiapoque (índios Galibis)
Amazonas - Pernambuco (Nordeste)
Paicá - Maioba - São Luiz Maranhão

- 16 Tons/Ha. A - Mameluca - Município Cametá Pará ⁽¹⁾ Dist var. for varzeas
15 " " B - Abaeté - " " " (2)
C - Cachimbo-Rio Uapés - Rio Negro Amazonas
D - Pai Lourenço-Município Portel Pará (3)
E - Pretinha - " " Belém Pará.

Cassava (14 Varieties).

1. 3 Months
2. Bluestick
3. Butterstick.
4. Red stick.
5. Bittersweet.
6. ?
7. Dandablé.
8. Tukapit.
9. Blacktukapit.
10. Fromage
11. Hutton.
12. Six Months
13. Cent Livres
14. St. Marten.

John Goadling
ICTA
St. Augustine, Trin.

Manihot samples collected by J. ~~Wur~~ Wurdack, in Venezuela, Aug., 1959

1. Seis meises--large rose-tinted lvs; matures in 6 months; root soft, readily processed.
2. Cachicamo--lvs white above, green below; root with undulations
3. Planta Blanca--petioles and blades green; yields very white yuca.
4. Cascadura--plants yellow-tinged.
5. Pajarito--roun red-tinged lvs.
6. Yuca dulce "algodon"--lvs finer & longer than yuca amarga.
7. Guahibo--plants low, much-branched; lvs little finer than others; (mañoco) good for mandioca; root harder and more difficult to process; lasts long in conuco than other varieties.
8. Planta morada--lvs dark red; good for ~~mañoco~~.
9. yuca dules (dulce)
10. Lancetilla--root much-branched, with points
11. Piaroa--lvs yellow-tinged below, white above; commonest var. of Piaroa Indians
12. Bocachica--little-branched with straight trunks, white yuca

19 Numbers 1 - 7 collected in x Conuco in Guasariapana near S. Fernando de Atabaxo, Terr. Amazonas, Venezuela.

Numbers 8 - 10 collected in conuco at Coromoto, Rio Casiquare at mouth of Rio Siapa, Terr. Amazonas, Venezuela.

Conuco = agricultural clearing

US Nat Herb.

Mex. -

M. aesculifolia -

Hinton 6468 ; Purpus 8448

Schott 518 - probably *aesculifolia*. 2 sheets.

Nicaragua - Mason, Harvey + Valentim 7107 - M.V. "*yuca silvestris*,"

yuca cinerascens - big inflores.

" 7192 - 3 sheets.

El Salvador - Chourey 73540

" - Calderon 776

M. caerulescens Rose + Standley.

Mex.: Rose + Rose 11190 - Type spec..

M. carthaginensis -

Mexico:

King 1213 ; Nelson 2852 (2 sheets)

Sundell + Sundell 7473

Wiggins + Rollins 221

Costa Rica

Pittier 13977 = type of *M. paniculata* Rose + Standley
or is it *Tonduz*?

Guatemala - Cook + Doyle 311 - Det. by Pax

C.R. " " 648

US Nat Herb.

M. caudata - type - E. Palmer 201 -
Pringle 8687 (2 sheets)
Rusby 178

M. chlorosticta Standl. & Bellm... -
type Nelson & Goldman 7401
Gentry 14243, 14282, 7085
Palmer 272
Hinton 4437

M. coerulescens var. *pubescens* -
type Gardner 1837

M. colimensis Croizat
type - Ferris 6140 -
Hinton 10939, 10345

4 in US Nat, in folder w/ *M. dulcis* is sheet of
Pittier & Jondray 6579 from C.R.
labelled *M. palmata*.

M. davisiae Croiz. - type - Semmon sn.

Venezuela - *M. filamentosa* Pittier - type Saer 366

M. guianensis Blake - type Blake 7688 -

- Thorne 5473 Honduras.

Standley 11481 - Nic.

M. intermedia - Rusby 2 - Mex.

Hinton 10376

Mexico 8778 -

type of *intermedia* Wetherby is Pringle 13939.

US Nat Herb.

Brazil - *M. leptophylla* HB - type 467206-

M. isolata - Standl. type Gentry 2372

Ecuador *M. leptophylla* P+H - type Eggers 15.156.

M. ludibunda Wieg - type Seler 2814.

Colombia - *M. Pittieri* P+H type Pittier 1567 (2 sheets)

Venezuela. *M. remotiloba* Pittier type Pittier 11761.

Mexico *M. rubricaulis* F.M.G. type Σ . Palmer 224.

Cf. *M. olfersiana* Pax and *M. guatemensis* - same
Coll. in US - of *M. olfersiana*

Mexico - Hinton 13972, Σ . Palmer 1536 (2 sheets)

M. Pringlei - see all of Collection

Cf. all indet material from Mex.

Butter stick 53 ^{grat}

Cassia yellow when
boiled.

Black Cas - Tobago cas, 1

Silver stem Sweet

root -

leaves top

3'

Sweet Black stick (best) 1
yellow ^{red} & brown stems

root yellow red, smooth
washer from bottom to top
4-5' high & spread.

Butter stick 2 2

stem silver

root ~~silver~~ Tan - rough

branching below

5' 6" high

Bitter stick 3

Brown stem

Tobago sweet ^{or dwarf} 4

red leaf stems

stem silver

root dark tan

White stick

small branches at top 9

stem silver

root silver & smooth

5' 6" high

5 mo.

Collected at Arima Valley,
all soils basic,

- leaves from bottom
1. Black stick (best)
Sweet
Yellow-red and brown stems ^{5 1/2' - good - deep}
Root yellow red, smooth
Branches from bottom to top ^{Schist}
4-5 high and spread
5 months 4'-5' and spread 5' ^{quartz basic}
 2. Butterstick 2
Stem silver
Root tan, rough
Branching below
5'-6' height
Age 5 months
- 2 types by this name
 3. Bitterstick
Brown stem
Root tan smooth
Branches at top
6'-7'
3 months 6'
Bitter
very poisonous the only var which is.
 4. Tobago ~~var~~ or dwarf sweet *all of this name are dwarf*
Red leaf stems *seasonal zone*
Stems silver
Root dark tan
Branches top
Height 3'-4' *fairly woodland roots as large as others*
 5. Butter stick
Cassava yellow when boiled
Sweet
Stem brown
Root dark brown (like stem)
Leaves on top
Root rough
5'-6' tall
5 months 4'-5'
 7. Black cas.--Tobago cas.
Sweet
Silver stem
Root
Leaves top
3'
3 months
 8. Bittersweet *rather schist soil clayey tertiary*
Height 5'-6'
5 months 5'
Stem silver
Branches on top
Root silver smooth
 9. White stick *no woody branch*
Small branches at top
Stem silver
Root silver and smooth
5'-6' high
5 months
750' elev good cocoa land

4. Das Pflanzenreich
Euphorbiaceae - Adriaenae

44. Heft. (IV. 147. II) 1910

P. 67 - M. utilisissima Pohl.

A. Macedo-

Localities of M. esculenta Crantz -
Brazil -

Minas - Uiooa - coll A. Macedo - 2915

Bahia - Rio Grongogy Basin Curran 242

Matto Grosso - Broco, Bolkwin 3025 - Fl. 9/26

Columbia - Dept. El Valle, Cordoba Killip 33395

" Choco A. Fernandez 324

" Santander Hought 1919

Surinam - Lantzon

Br. Guiana De Sa Cruz 2122 - Sept. - Oct. Fl.
" 4209 - July - Fl.

Argentina - Tucuman, Chiligasta - Venturi 4589

Peru Dept. San Martin Rio Huallaga - Kluge 2662
 Colpasi, Urechamba Valley: Cook + Gilbert 1065
 June 1 - fl. May 31, fl., July 10, fl. + young fr.
 Distr. Iquitos - Mexico 6494 - Feb. 7 - Fr.
 Dept. San Martin Kluge 3861 - Oct. Fr.
 " Ayacucho Killip + Smith 22722 - fl. May -
 " Loreto Schumaker 291 - fl. 20 Feb.

Paraguay Central Morong 391
 " near Icaño Ypacaray Hassler 11760

Holap. Islands - A Stewart 1911

Bolivia - Sta. Cruz - Cardenas 4729
 Rurrenaboque - " ? 1766 - fl. Nov.
 " 1944 - fl. + young fr. Dec.

Venezuela - St. of Aragua Pittier 5823 fl. Jan-Feb.

Old World:

US N Herb.

Guam: Gressitt 2025 Yag Is. Jan.

(Marianas: Rota Island, Necker R. 14, Fl + Fr.

Agaña Bay - Moore 118 - (Root spec.)

" " Fl + Fr - Nov 1.

Sumatra: Toroes 1764 Fl. Mar.-May.

Subdim. Saboehan Toroes 4054 - Fl. - Apr.-May

Tahiti: Sutchell + Parks 140 - Fr. May.

Sampa: Reinecke 213

THE
Hay-Adams
HOUSE

COMPLETELY AIR-CONDITIONED
SIXTEENTH AT H STREET, N.W.
WASHINGTON 6, D.C.

TELEPHONE
METROPOLITAN 2260

TELETYPE
WA-260

Philippines: Mr. Gregor 18 505 Fl June.
Negus Isl. A. E. Elmer 9939 Fl ^{young} Fr. April.

Hotels under Manger Ownership Management

THE VANDERBILT - THE WINDSOR - THE HAMILTON - THE ANNAPOLIS - THE HAY-ADAMS - THE MANGER - THE ROCHESTER - THE ROWE
NEW YORK, N.Y. NEW YORK, N.Y. WASHINGTON, D.C. WASHINGTON, D.C. WASHINGTON, D.C. BOSTON, MASS. ROCHESTER, N.Y. GRAND RAPIDS, MICH.

THE
Hay-Adams
HOUSE

USN Herb

TELEPHONE
METROPOLITAN 2260

COMPLETELY AIR-CONDITIONED
SIXTEENTH AT H STREET, N.W.
WASHINGTON 6, D.C.

TELETYPE
WA-260

Panama: Canal Zone Balboa - Standby 25 252
Fr. Fl Non-Dec.
Litter # 25559 -
Orizaba-Duges 1905

Guatemala : Heyde 286
Santa Rosa - Heyde & Lux 4 306 - Non-Fl.

El Salvador - Santo Tomas - Calderón 2048

Hotels under Manager Ownership-Management

THE VANDERBILT - THE WINDSOR - THE HAMILTON - THE ANNAPOLIS - THE HAY-ADAMS - THE MANGER - THE ROCHESTER - THE ROWE
NEW YORK, N.Y. NEW YORK, N.Y. WASHINGTON, D.C. WASHINGTON, D.C. WASHINGTON, D.C. BOSTON, MASS. ROCHESTER, N.Y. GRAND RAPIDS, MICH.

M. esculenta or utilissima

Cent. Am. + Mex. US Nat Herb.

Honduras - Dept. Morazan PC Standley 14467 - Fl. Nov.

Mex: St of Mexico - Hinton 7044 - Fr. Nov.

BAILEY HORTORIUM
NEW YORK STATE COLLEGE OF AGRICULTURE
CORNELL UNIVERSITY
ITHACA, NEW YORK

G. H. M. LAWRENCE, *Director*
H. E. MOORE, JR.
ETHEL ZOE BAILEY

Address:
BAILEY HORTORIUM
SAGE PLACE, ITHACA, N. Y.

14 October 1952

Dr. David J. Rogers
Department of Biology
Allegheny College
Meadville, Pennsylvania

Dear Dave:

Under separate cover we are sending you a loan, as requested,
of 11 sheets of cultivated specimens of Manihot.

I think you are to be congratulated for tackling as difficult
a group as this and certainly not only do I wish you every success,
but I will be anxious to learn of your results. We will want to
consider them in our accounting of Manihot esculenta in Hortus Third
(now in preparation).

The formal loan sheet is enclosed. You will note that the
loan is for 90 days, but this is subject to renewal for a second
like period if necessary. I hope you will find it possible to
annotate the sheets before their return.

I am taking the liberty of enclosing with this a copy of a
list of misprints and errata known to me to be in my book. It
might be you care to be informed of them. A second printing of
the book is scheduled and they will be corrected at that time.

Sincerely yours,


G. H. M. Lawrence

lm

Enc.

October 8, 1953

Dorf International Ltd.
89 Broad Street
New York 4, New York

Gentlemen:

I should appreciate your handling of the enclosed bill for me. I think the best arrangement was the one for a previous carton which was shipped in bond to Erie, Pa. If the same can be handled on this shipment, it would be satisfactory to me.

Mr. G. Stern handled the previous arrangements.

If it is not possible for you to handle this, please notify me immediately.

Yours truly,

David J. Rogers

1 case dried plants	Wt. and/or meas.	Rate min.	Charge
	10-0		\$6.00

United Fruit Co.
General Freight Dept.
Pier 2, North River
N. Y. 4, N. Y.

B/L No. 936
Proc. No. 5433

S.S. Cape Cod V-11
Cargo originating at Pto. Simon



THANK YOU—WE APPRECIATE YOUR PATRONAGE.
RAILWAY EXPRESS AGENCY
INCORPORATED

DUE BILL FOR CHARGES
(Multiple Entry)

(3016)
(12-42)
Printed in U.S.A.

Consignee

Dr. D. J. Rogers

Address

Erie, Pa.

OCT 1 - 1921

Due Railway Express Agency, Inc. For transportation of the following shipments:

Delivery Sheet No.	Date Shipped	Article	Value	Wt.	Shipper	Point of Origin	Charges	Tax
<i>61450</i>	<i>9/24</i>	<i>1 box</i>		<i>29</i>	<i>Box for Lta</i>	<i>ny ny</i>	<i>307</i> <i>789</i> <i>76</i>	
<i>Paid</i>							Totals	
							Add Tax	<i>9</i> XX XXX
							TOTAL DUE	<i>11 81</i> XX XXX

(Driver)

(Badge No.)

(Consignee)

CERTIFICATE OF EXAMINATION OF PLANTS

SECOND SCHEDULE

THIS IS TO CERTIFY that } a representative sample of the living plants or plant products
 the living plants or plant products

(Strike out words not applicable) included in the consignment of which particulars are given below.

were ~~was~~ thoroughly examined on the 16th July 1953 (date)

by (name) O. V. SIMPSON a duly authorised

Official of the DEPARTMENT OF AGRICULTURE, JAMAICA, and found to be healthy, no evidence of the presence of any insect, fungus, or pest destructive to agricultural or horticultural crops having been found in or on them.

It is further certified that the consignment does not contain any plant of the genus *Ulmus* or of the genera of the Order Pinaceae, viz., *Abies*, *Larix*, *Picea*, *Pinus*, *Pseudotsuga*, *Sequoia*, *Thuja*, and *Tsuga*, or any plant of sugar beet or mangold (*Beta vulgaris* Linn.) or any *Chrysanthemum* plant.

It is further certified that no case of the disease known as "wart disease" or "black scab" of potatoes (*Synchytrium endobioticum*) has occurred at any time on the farm or holding where the potatoes included in the consignment were grown, nor within two kilometres thereof.

(Signed) Simpson

(Official Status) Agricultural Assistant C

(Date) 16th July 1953

No. and description of packages ONE

Distinguishing marks ADDRESS

Description of living plants or parts thereof DRIED CASSAVA PLANT SPECIMENS
 (FOR SCIENTIFIC PURPOSE)

Stated to be grown at JAMAICA

Exported by DIRECTOR OF AGRICULTURE - JAMAICA

Name and address of consignee DR. DAVID J. ROGERS, BIOLOGY DEPT.

ALLEGHENY COLLEGE, MEADVILLE, PENNSYLVANIA - U.S.A.

Name of vessel

Date of Shipment ON OR ABOUT 27/7/53

Port of landing

This certificate is issued from information found or believed to be correct, but no liability attaches to the Department or any of its officers in respect of this certificate.

EB

Phone Digby 4-0144

DORF INTERNATIONAL LTD.

CUSTOMS BROKERS

89 Broad Street

P 08738

New York 4, 9-15-53 195

M. DR. DAVID J. ROGERS
 BIOLOGY DEPT. ALLEGHENY COLLEGE
 MEADVILLE, PA.

SHIPPED VIA

CONSIGNEE TO SAME

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VIA S/S CAPE AVINOFF

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SHIPMENT OF 1 CARTON CASSAVA SPECIMENS

MARKS	BROKERAGE	5.00
& NOS.	OCEAN FREIGHT	5.00
	CARRIERS CERTIF.	1.00
	CARTAGE	2.50
	SHIPPING & ATTEND.	1.00
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		22.89
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	BALANCE DUE US	7.89
	WILL BE COLLECTED BY CARRIER	
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Our File Prep 5579

Your Reference

New York 4, N. Y. August 17, 1953

TO Dr. David J. RogersBiology Dept.
Allegheny College
Meadville, Pa.FROM G. Stern:maj
Mgr. Intransit Divs.

Dear Dr. Rogers:

Please be advised that one carton of Cassava Specimens is due to arrive on the SS CAPE AVINOFF, 8/19.

We could clear this shipment for you in New York, in which case we would need a commercial invoice. Or else we could forward your shipment in bond to Erie PA., which is the nearest Customs port; which is the quickest way to expedite same.

Please send along with your letter a check for \$21.00

\$21.00 - - ~~\$46.00~~ Ocean Freight
\$15.00 Brokerage, etc.

Very truly yours,
G. Stern
DORF INTERNATIONAL LTD.

GS:maj

ASSOCIATE COMPANIES

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22 WALNUT STREET
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148 STATE ST.

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PHILADELPHIA 6, PA.
113 CHESTNUT ST.
SAN FRANCISCO 11, CAL.
510 BATTERY ST.

HOUSTON 2, TEXAS
311 COTTON EXCHANGE BLDG.

September 10, 1953

Mr. G. Stern
Manager, Intransit Divs.
Dorf International Ltd.
New York

Dear Mr. Stern:

Enclosed please find a postal money order for \$21.00 for handling of one carton of Cassava Specimens assigned to me.

I would appreciate your sending the carton in bond to Erie, Pa., since this will be the easiest way for me to get the material.

I am sorry that I could not attend to this matter previously.

Yours truly,

David J. Rogers



THANK YOU—WE APPRECIATE YOUR PATRONAGE.

RAILWAY EXPRESS AGENCY
INCORPORATED

DUE BILL FOR CHARGES
(Multiple Entry)

(2016)
12-42
Printed in U.S.A.

Erie, Pa.

12/1/53

Consignee

Address

Due Railway Express Agency, Inc. For transportation of the following shipments:

Delivery Sheet No.	Date Shipped	Article	Value	Wt.	Shipper	Point of Origin	Charges	Tax
61453	1/20	100-88			Ray Smith		6.68	
		Embroid						
Totals								
Add Tax								XX XXX
TOTAL DUE							XX XXX	XX XXX

(Driver) *Ed E. Ryan* (Badge No.) _____ (Consignee) _____



UNITED FRUIT COMPANY

SHORT FORM BILL OF LADING

Ship: **CAPE GOD**Port of Loading: **LIMON, COSTA RICA**Shipper: **INSTITUTO INTERAMERICANO DE CIENCIAS AGRICOLAS - TURRIALBA, COSTA RICA**Port of Discharge From Ship: **NEW YORK N.Y.**Destination of Goods: **NEW YORK N.Y.**
(If goods are to be transhipped or forwarded after discharge from ship)Consignee: Order of **DAVID ROGERS, Allegheny College,
Meadville, Pennsylvania, USA**
S. A. M. E.Arrival Notice to be Addressed to: **S. A. M. E.**

Routing (if any):

FORWARDER**FELIPE J. ALVARADO & CIA.
SUCS.S.A.****P.O. Box 112
Port Limon, Costa Rica****DESCRIPTION OF GOODS**

MARKS AND NUMBERS	No. of Packages	SHIPPER'S DESCRIPTION OF CLASS AND CONTENTS OF PACKAGES	Measurements	SHIPPER'S WEIGHT		RATE	STEAMSHIP FREIGHT
				POUNDS	KILOS		
DAVID ROGERS ALLEGHENY COLLEGE MEADVILLE PENNSYLVANIA	1	CASE DRIED PLANTS	10-0"	86	39	5.00	6.00
		-FREIGHT TO COLLECT-					

ORIGINAL

Received, by the carrier named at the foot hereof (hereinafter called the carrier) from the above-named shipper, the goods, or packages said to contain goods, hereinabove described, in apparent good order and condition unless otherwise noted hereon, to be held and transported subject to all the written, typed, printed and stamped provisions of this bill of lading, on this and on the reverse side hereof, to the port or place of discharge named above or so near thereunto as the ship can always safely get and leave, always afloat at all stages and conditions of water and weather, and there to be delivered or transhipped on payment of the charges thereon, with liberty to proceed via any port or ports within the scope of the voyage described overpage, and with liberty before or after loading to forward the whole or any portion of the goods by any other ship or ships, whether prior or subsequent, and whether of the carrier's own line or of any other line, or otherwise as provided herein.

It is agreed that the custody and carriage of the goods are subject to the terms and conditions on this and on the reverse side hereof, which shall govern the relations whatsoever they may be between the carrier, master and ship and the shipper, consignee and goods in every contingency, whosoever and whensoever occurring, and also in the event of deviation, or abandonment of the voyage, or unseaworthiness of the ship at the time of loading or inception of the voyage or subsequently; and none of the terms of this bill of lading shall be deemed to have been waived by the carrier unless by express waiver in writing duly signed by a duly authorized agent of the carrier.

Total Steamship Freight

6.00

Total U. S. Currency

6.00

In Witness Whereof, the master or agent of the said vessel has signed **3** bills of lading, all of this tenor and date, and if one is accomplished, the others shall be void.

Dated at

LIMON, C. R. SEP 2, 1953



UNITED FRUIT COMPANY

SHORT FORM BILL OF LADING

Ship: **CAPE COD** Port of Loading: **LIMON, COSTA RICA**

Shipper: **INSTITUTO INTERAMERICANO DE CIENCIAS AGRICOLAS - TURRIALBA, COSTA RICA**

Port of Discharge From Ship: **NEW YORK N.Y.** Destination of Goods: **NEW YORK N.Y.**
(If goods are to be transhipped or forwarded after discharge from ship)

Consignee: Order of: **DAVID ROGERS, Allegheny College, Meadville, Pennsylvania, USA**

Arrival Notice to be Addressed to: **S. A. M. E.**

Routing (if any):

FORWARDER

FELIPE J. ALVARADO & CIA.
SUCS.S.A.

P.O. Box 112
Port Limon, Costa Rica

DESCRIPTION OF GOODS

MARKS AND NUMBERS	No. of Packages	SHIPPER'S DESCRIPTION OF CLASS AND CONTENTS OF PACKAGES	Measurements	SHIPPER'S WEIGHT		RATE	STEAMSHIP FREIGHT
				POUNDS	KILOS		
DAVID ROGERS ALLEGHENY COLLEGE MEADVILLE PENNSYLVANIA	1	CASE DRIED PLANTS	10-0"	86	39	min	
		-FREIGHT TO COLLECT-					

COPY

Not negotiable

Received, by the carrier named at the foot hereof (hereinafter called the carrier) from the above-named shipper, the goods, or packages said to contain goods, hereinabove described, in apparent good order and condition unless otherwise noted hereon, to be held and transported subject to all the written, typed, printed and stamped provisions of this bill of lading, on this and on the reverse side hereof, to the port or place of discharge named above or so near thereunto as the ship can always safely get and leave, always afloat at all stages and conditions of water and weather, and there to be delivered or transhipped on payment of the charges thereon, with liberty to proceed via any port or ports within the scope of the voyage described overpage, and with liberty before or after loading to forward the whole or any portion of the goods by any other ship or ships, whether prior or subsequent, and whether of the carrier's own line or of any other line, or otherwise as provided herein.

It is agreed that the custody and carriage of the goods are subject to the terms and conditions on this and on the reverse side hereof, which shall govern the relations whatsoever they may be between the carrier, master and ship and the shipper, consignee and goods in every contingency, whosoever and whenever occurring, and also in the event of deviation, or abandonment of the voyage, or unseaworthiness of the ship at the time of loading or inception of the voyage or subsequently; and none of the terms of this bill of lading shall be deemed to have been waived by the carrier unless by express waiver in writing duly signed by a duly authorized agent of the carrier.

In Witness Whereof, the master or agent of the said vessel has signed **3** bills of lading, all of this tenor and date, and if one is accomplished, the others shall be null and void.

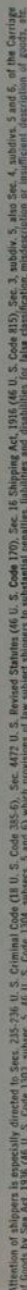
Attest: **LIMON, C. R. SEP 28 1953**

Total Steamship Freight

6 00

Total U. S. Currency

6 00



UNITED FRUIT COMPANY

SHORT FORM BILL OF LADING

Port of

Loading:.....LIMON.....COSTA RICA

Ship: CAPE COD

Port of Discharge From Ship:.....NEW YORK N.Y.

Destination of Goods: NEW YORK N.Y.

(If goods are to be transhipped or forwarded after discharge from ship)

Consignee: Order of..... DAVID ROGERS, Allegheny College,
Meadville, Pennsylvania, USA

Arrival Notice to be Addressed to: S A M E

Routing (if any):

FORWARDER

FELIPE J. ALVARADO & CIA
SUCS.S.A.

P.O. Box 112

Port Limon, Costa Rica

DESCRIPTION OF GOODS

MARKS AND NUMBERS	No. of Packages	SHIPPER'S DESCRIPTION OF CLASS AND CONTENTS OF PACKAGES	Measurements	SHIPPER'S WEIGHT		RATE	STEAMSHIP FREIGHT
				POUNDS	KILOS		
DAVID ROGERS ALLEGHENY COLLEGE MEADVILLE PENNSYLVANIA	1	CASE DRIED PLANTS -FREIGHT TO COLLECT-	10-0"	86	39	mail	
COPY Not negotiable							

Received, by the carrier named at the foot hereof (hereinafter called the carrier) upon the above-named shipper, the goods, or packages said to contain goods, hereinabove described, in apparent good order and condition unless otherwise noted hereon, to be held by the carrier subject to all the written, typed, printed and stamped provisions of this bill of lading on this and on the reverse side hereof, to the port or place of discharge named hereon or so near thereunto as the ship can always safely get and leave, always afloat at all stages and conditions of water and weather, and there to be delivered or transhipped at the payment of the charges thereon, with liberty to proceed via any port or ports within the scope of the voyage described overpage, and with liberty before or after loading to forward the whole or any portion of the goods by any other ship or ships, whether prior or subsequent, and subject of the carrier's own line or of any other line, or otherwise as provided herein.

Total Steamship Freight

It is agreed that the custody and carriage of the goods are subject to the terms and conditions on this and on the reverse side hereof, which shall govern the relations whatsoever they may be between the carrier, master and ship and the shipper, consignee and consignee's agent, in any contingency, wheresoever and whensoever occurring, and also in the event of deviation, or abandonment of the voyage, or unseaworthiness of the ship at the time of loading or inception of the voyage or subsequently; and none of the terms of this bill of lading shall be deemed to have been waived by the carrier unless by express waiver in writing duly signed by a duly authorized agent of the carrier.

Total U. S. Currency

In Witness Whereof, the master or agent of the said vessel has signed **3**

3

bills of lading, all of this tenor and date, and if one is accomplished, the

Dated 2

LIBRARY OF THE HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION

SEP 28 1953

Port of Loading:.....LIMON.....COSTA RICA

Port of Discharge From Ship: **NEW YORK N.Y.** Destination of Goods: **NEW YORK N.Y.**
(If goods are to be transhipped or forwarded after discharge from ship)Arrival Notice to be Addressed to: SAME

Routing (if any):

FORWARDER

FELIPE J. ALVARADO & CIA
SUCS.S.A.

P.O. Box 112

Port Limon, Costa Rica

MARKS AND NUMBERS	No. of Packages	SHIPPER'S DESCRIPTION OF CLASS AND CONTENTS OF PACKAGES	Measurements	SHIPPER'S WEIGHT		RATE	STEAMSHIP FREIGHT
				POUNDS	KILOS		
DAVID ROGERS ALLEGHENY COLLEGE MEADVILLE PENNSYLVANIA	1	CASE DRIED PLANTS -FREIGHT TO COLLECT-	10-0"	86	39	min	
COPY Not negotiable							

copy

Not negotiable

Received, by the carrier named at the foot hereof (hereinafter called the *carrier*) from the above-named shipper, the goods, or packages said to contain goods, hereinabove described, in apparent good order and condition unless otherwise noted hereon, to be his and the carrier's joint liability to all the writers, typed, printed and stamped provisions of this bill of lading, on this and on the reverse side hereof, to the port or place of discharge named above; or so near thereto as the ship can always safely get and leave, always afloat at all stages and conditions of water and weather, and there to be delivered or transhipped on payment of the charges thereon, with liberty to proceed via any port or ports within the scope of the voyage described overpage, and with liberty before or after loading to forward the whole or any portion of the goods by any other ship or ships, whether prior or subsequent, and subject of the carrier's own line or of any other line, or otherwise as provided herein.

It is agreed that the custody and carriage of the goods are subject to the terms and conditions on this and on the reverse side hereof, which shall govern the relations whatsoever they may be between the carrier, master and ship and the shipper, consignee and goods in every contingency, wheresoever and whenever occurring, and also in the event of deviation, or abandonment of the voyage, or unseaworthiness of the ship at the time of loading or inception of the voyage or subsequently; and none of the terms of this bill of lading shall be deemed to have been waived by the carrier unless by express waiver in writing duly signed by a duly authorized agent of the carrier.

In Witness Whereof, the master or agent of the said vessel has signed **3** bills of lading, all of this tenor and date, and if one is accomplished, the others shall be void.

Dated at LIMON, C. R. SEP 28 1953

Total Steamship Freight

Total U. S. Currency

FELIPE J. ALVARADO & CIA. SUCS. S. A.

CASA FUNDADA EN 1895

N.º 04377

Limón, Septiembre 29 de 1953

Srs. INSTITUTO INTERAMERICANO DE CIENCIAS AGRICOLAS, Turrialba.

Con la presente nota de gastos tenemos el gusto de remitir a Ud. dos ejemplares de conocimiento de embarque efectuado por vapor "CAPE COD" 28/9/53 con destino a NEW YORK, N. Y. a la consignación de DAVID ROGERS Pedimento N.º

291233 Universal

Muellaje (Impuesto fiscal)				
Bodegaje				
Derechos de Exportación	\$	a \$ 0.04 kg.		1.56
Flete de Mar, B/L.	\$	a \$		
Factura Consular	\$	a \$		
Flete de Ferrocarril				
Embarque Alvarado				
Embarque (Servicio de Muelle)	m/m.			2.00
Despacho	m/m.			5.00
Acarreo doble CAMION -			5.00	
PEONAJE MANEJO BULTO			1.50	
SOBRETUENDOS EMPLEADOS OFICINA			1.00	7.50
Nuestra Comisión	% s./ \$	m/m.		1.24
Pedimentos, conocimientos, portes y timbres				6.30
TOTAL \$				23.30

MARCAS	BULTOS	CONTENIDO	KILOS
DAVID ROGERS ALLEGHENT, COLEGE HEADVILLE, PENN. SYLVANIA	1 caja	PIANTAS SECAS	39
mmh/-			



INSTITUTO INTERAMERICANO DE
CIENCIAS AGRICOLAS

EL INSTITUTO ES UN ORGANISMO ESTABLECIDO
POR LOS GOBIERNOS DE LAS REPUBLICAS AMERI-
CANAS PARA PROMOVER EL ADELANTO DE LAS
CIENCIAS AGRICOLAS POR LA INVESTIGACION Y
EDUCACION

TURRIALBA, COSTA RICA

Octubre 6, 1953

Sr. David ROGERS
Allegheny, College
Meadville, Pennsylvania
U. S. A.

Estimado señor:

Adjunto estamos enviándole dos originales y tres
copias del Conocimiento de Embarque No.936, que corresponden
a una caja con plantas secas.

También encontrará copia de factura por los gastos
demandados para el respectivo envío, y que ascienden a \$23.30
equivalentes a \$3.52, que rogamos nos remita con cheque a nom-
bre de Instituto Interamericano de Ciencias Agrícolas.

Aprovechamos esta oportunidad para suscribirnos de
Ud.

Attos. y Ss. Ss.


H. G. Laprade
Gerente Interino.

PHONE DIGBY 4-

0144
0145
0146
0147
0148

Cable Address "HERDORF"

H. S. DORF & CO., Inc.

CUSTOMS BROKERS

89 BROAD STREET

NEW YORK 4.

9/15/53

19

M

RAILWAY EXPRESS AGENCY

REF. NO. P-8738

Shipment of

Consigned to

1998

Arrived

Sailed

DORF INTERNATIONAL Ltd.

CUSTOMS BROKERS & FORWARDERS

89 BROAD STREET

Our File *Page 5924*
Your Reference

New York 4, N. Y., 10/12/53

TO Mr. David Rogers
Allegheny College
Meadville, PaFROM G. Stern Intransit Dept

Dear Mr Rogers,

we can handle your shipment of one case dried plants, arrived SS Cape Cod, 10/6/53, but we must have at least ONE ORIGINAL Bill of lading. (No 936)

Please send us same by return mail, as goods may go into Customs storage on Oct 16 th, causing additional charges. Please also remit us a check for the amount of \$ 21.- (\$ 6.- for Ocean freight and bal. for brokerage, etc.)

Your shipment will then be dispatched in bond to Erie, Pa, as per your instructions.

Very truly Yours

G. Stern
G. Stern
Intransit Dept

ASSOCIATE COMPANIES

 NEWARK 2, N. J.
22 WALNUT STREET
BOSTON 9, MASS.
148 STATE ST.

 LOS ANGELES 13, CAL.
354 SO. SPRING ST.
BALTIMORE 2, MD.
27 SOUTH GAY STREET

 NEW ORLEANS 12, LA.
318 CARONDELET ST.
CHICAGO 4, ILL.
141 W. JACKSON BLVD.

 PHILADELPHIA 6, PA.
113 CHESTNUT ST.
SAN FRANCISCO 11, CAL.
510 BATTERY ST.

 HOUSTON 2, TEXAS
311 COTTON EXCHANGE BLDG.

UNITED FRUIT COMPANY
 INWARD FREIGHT DEPARTMENT

ARRIVAL NOTICE AND INWARD FREIGHT BILL

DATE **10/6/53**
**DAVID ROGERS
 ALLEGHENY COLLEGE
 MEADVILLE, PA.**

ADDRESS CORRESPONDENCE TO:—

**UNITED FRUIT COMPANY
 INWARD FREIGHT DEPARTMENT
 PIER 2, NORTH RIVER
 NEW YORK 4, N. Y.**

 S. S. **CAPE COD** **V-11** ARRIVED **10/6**
 CARGO ORIGINATING AT **PTO. LIMON** EX S. S.
DISCHARGING AT
PIER NO. **3 NR**
 COMPLETES DISCHARGE **10/7**
 FREE TIME EXPIRES **10/16**
 B/L No. **936** PRO. No. **5433**

MARKS & NOS.	PKGS.	DESCRIPTION	WEIGHT AND/OR MEAS.	RATE	CHARGES
AS ADDRESSED	1	CASE DRIED PLANTS	10-0	MIN	\$6.00
PLEASE READ REVERSE SIDE					

CHECKS SHOULD BE MADE PAYABLE TO UNITED FRUIT CO. AND MAILED TO UNITED FRUIT CO., FREIGHT CASHIER, PIER 2, NORTH RIVER, NEW YORK CITY 4, N. Y.

IF RECEIPT IS REQUIRED THIS BILL SHOULD ACCOMPANY PAYMENT

RAILWAY EXPRESS AGENCY,
UNION DEPOT,
ERIE, PA.

TELEPHONE 23-623

ERIE, PA.

NOV 25 1953

(date)

David J. Rogers
Allegheny College
Meadville Pa

Dear Sir:

RE: Dried Plants From:
Costa Rica.

Above shipment is "In Bond" and must be cleared through U.S. Customs as it will be placed in U. S. Customs Warehouse subject to storage charges after 48 hours. Please call at this office and arrange for clearance. You are entitled to take care of this formality yourself by personally calling at this address, or, if you have a licensed Customs Broker, he can arrange for clearance.

Your prompt attention will expedite the clearance of your shipment and will eliminate storage charges at the Appraiser's stores.

U.S. Customs Deputy Collector
102 U.S. Court House Bldg.
Erie Pa Phone 23848.

Yours very truly,

ALBERT GREEN,

On Hand Agent.

I.T. No. 11692

Express Charges \$ 6.68

NOTE: Customs House Hours: 9:00 A.M. to
4:00 P.M. daily; closed Saturdays,
Sundays and Legal Holidays.

DORF INTERNATIONAL Ltd.

CUSTOMS BROKERS & FORWARDERS

89 BROAD STREET

Our File P-8898

Your Reference

New York 4, N. Y. November 12, 1953

TO Mr. David J. Rogers
Allegheny College
Meadville, Pennsylvania

FROM George Stern

Dear Sir:

Your shipment has been held up for several days by the Bureau of Entimology and Plant Quarantine, and they have not released it yet for re-forwarding.

As soon as it will be released by that office, shipment will go automatically to Erie, Pennsylvania.

We will notify you as soon as Railway Express will be allowed by B. E. P. Q. to take the shipment out.

Very truly yours,

DORF INTERNATIONAL LTD.

J. Stern
Intransit Division

GS:NH

ASSOCIATE COMPANIES

NEWARK 2, N. J.
22 WALNUT STREET
BOSTON 9, MASS.
149 STATE ST.

LOS ANGELES 13, CAL.
354 SO. SPRING ST.
BALTIMORE 2, MD.
27 SOUTH GAY STREET

NEW ORLEANS 12, LA.
318 CARondelet ST.
CHICAGO 4, ILL.
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PHILADELPHIA 6, PA.
113 CHESTNUT ST.
SAN FRANCISCO 11, CAL.
510 BATTERY ST.

HOUSTON 2, TEXAS
311 COTTON EXCHANGE BLDG.

LICENSED
ASSOCIATE COMPANIES

MIAMI 26, FLA.
GEN. DOUG. MACARTHUR BLVD.
P. O. BOX 4221
NEWARK, N. J.
24 WALNUT STREET
LOS ANGELES 13, CAL.
184 SO. SPRING ST.
BOSTON 9, MASS.
148 STATE ST.
PHILADELPHIA 6, PA.
113 CHESTNUT ST.
SAN FRANCISCO 11, CAL.
810 BATTERY ST.
CHICAGO 4, ILL.
141 WEST JACKSON BLVD.
NEW ORLEANS, LA.
318 CARondelet ST.

FOREIGN AFFILIATES

ARGENTINA
BUENOS AIRES
DORF ARGENTINA SHIPPING CO. LTD.
SAN MARTIN 345
BRAZIL
RIO DE JANEIRO
H. S. DORF (BRAZIL) LTDA.
PRACA MANA 7-9 ANDAR DALA 905
SAO PAULO
H. S. DORF (BRAZIL) LTDA.
RUA 19 DE NOVOEMBRO 500-1*
SANTOS
H. S. DORF (BRAZIL) LTDA.
PRACA DA REPUBLICA 51
BERMUDA
HAMILTON
DORF BERMUDA CO.
FRONT STREET
CUBA
HAVANA
DORF HAVANA CO.
LORJA 208
FRANCE
PARIS
H. S. DORF & CO. INC. (FRANCE AGENCY)
8 RUE MARTEL 8
IRAN
TEHERAN
IRANTRANS (DORF IRAN)
AVE. SEYOM-ESFAND 170/172
JAMAICA
KINGSTON
DORF JAMAICA SHIPPING CO.
13 PORT ROYAL ST.
MEXICO
MEXICO, D.F.
DORF MEXICO COMPANY
LOPEZ 218
PERU
LIMA
DORF PERUVIA COMPANY
APARTADO 2366 - CAMANA 773
SWEDEN
STOCKHOLM
H. S. DORF & CO. INC. A.B.
SKOFFERGREN 34
MEXICO
VERA CRUZ
DORF MEXICO COMPANY
EMPARAN NO. 52
SURINAM B.G.
PARAMARIBO
H. S. DORF & CO. INC. SURINAM AGENCY
P. O. BOX 375
TRINIDAD B.W.I.
PORT-OF-SPAIN
DORF WEST INDIES SHIPPING CO.
248 FREDERICK STREET
URUGUAY
MONTEVIDEO
DORF URUGUAYAN SHIPPING CO.
ZABALA 1553
ENGLAND
LONDON
H. S. DORF & CO. LTD.
18 UPPER THAMES ST.
LIVERPOOL
H. S. DORF & CO. LTD.
18 JAMES STREET
SCOTLAND
GLASGOW
H. S. DORF & CO. LTD.
12 RENFIELD STREET
IRELAND
DUBLIN
H. S. DORF & CO. (IRELAND) AGENCY
22/3 LOWER ABBEY STREET
HOLLAND
ROTTERDAM
DORF HOLLAND CO.
NIEUWLAND 4
ITALY
NAPLES
H. S. DORF & CO. INC. (NAPLES) AGENCY
VIA MATTEO SCHILIZZI 19
TORINO
DORF ITALIANA S.R.L.
VIA CELLINI 2
MILANO
DORF ITALIANA S.R.L.
VIALE VITT. VENETO 22
GENOA
DORF ITALIANA S.R.L.
VIA DANTE 2
GUATEMALA, C.A.
GUATEMALA, CITY
DORF GUATEMALA CO.
18 AVENIDA 239
CORRESPONDENTS THROUGHOUT THE WORLD

DORF INTERNATIONAL LTD.

CUSTOMS BROKERS

INTERNATIONAL SHIPPING AGENTS

89 BROAD STREET
NEW YORK 4, N. Y.

WHEN REPLYING REFER TO FILE NO. **F-8898**

10/22/53 19

MR. DAVID J. ROGERS

ALLEGHENY COLLEGE MEADVILLE PENNSYLVANIA

Dear Sir:

The following goods: ONE CS. DRIED PLANTS

are being forwarded to COLLECTOR OF CUSTOMS at ERIE
IN BOND—under an IMMEDIATE TRANSPORTATION ENTRY, they having been shipped
from COSTA RICA TO NEW YORK TI ERIE

via SS CAPE GOD & RAILWAY EXPRESS AGENCY

and this notice is forwarded to you in order that you may know that the goods are on
their way and may promptly enter them at your Custom House before they are placed
in Warehouse at your risk and expense.

When you receive notice from the Railroad Company that the goods have arrived,
do not send for them, or accept them, until you have obtained a CUSTOMS ENTRY PERMIT
from the COLLECTOR OF CUSTOMS; then no Customs Penalties will have to be paid, as
would be the case if the goods were accepted by you before being properly cleared through
your Custom House.

Remarks: PLEASE CONTACT

COLLECT OF CUSTOMS AT

ERIE PA.

Enclosures:

- ☒ Copy I. T. Entry
☐ Consular Invoice
☒ R.R. B/L
☒ Our Bill

Release only against ☐ Our Invoice
☐ Our Forwarders B/Ls
☐

Soliciting any other business you may have arriving at this port.

Yours truly,

DORF INTERNATIONAL LTD.

Import Department

P.S.—The Bill of Lading and Papers received with the goods have been
forwarded to the Collector at your port, with the I. T. Entry.

Important details available for handling your purchases from foreign sources
through our offices abroad. We solicit your inquiries.

FEDERAL MARITIME REGISTRATION No. 862

DORF INTERNATIONAL LTD.

MM

CUSTOMS BROKERS

89 Broad Street

P 08898

New York 4, 10/22 1953

M. DAVID J. ROGERS

ALLENHUGHENY COLLEGE

MEADVILLE RENNSSEN PENNSYLVANIA

SHIPPED VIA RAILWAY EXPRESS AGENCY

CONSIGNEE TO SAME

ARRIVED 10/7/53
VIA S/S CAPE COD

FROM COSTA RICO

SHIPMENT OF 1 CS. DRIED PLANTS

[illegible]

THE GARFIELD CORP., N. Y.

TRANSPORTATION ENTRY AND MANIFEST OF
GOODS SUBJECT TO CUSTOMS INSPECTION
AND PERMIT

Entry No.

Class of Entry 302
(L.T.) (Wd.T.) (Wd.Ls.) (T.L.) (Drawback, etc.)

REF. # P-8898

DISTRICT No. 10-01

FIRST U. S. PORT
OF UNLOADING

N.Y.

PORT OF NEW YORK

DATE 10/19/58

Entered or imported by DOR INTERNATIONAL Ltd to be shipped
in bond via 1229 Railway Express Agency 10th Ave. & 33rd. St. NYC consigned to
(C. H. L. number) (Vessel or carrier) (Car number and initial) (Pier or station)
Collector of customs at Brie, PA. Final foreign destination
(For exportations only)
Consignee Mr. David J. Rogers Allegheny College Mendville, Pennsylvania
(At customs port of exit or destination)
Foreign port of lading Pto. Limon B/L No. 836 Date of sailing
(Above information to be furnished only when merchandise is imported by vessel)
Imported on the CAPE GOD Flag on 10/7/83 via Pto. Limon
(Name of vessel or carrier and motive power) (Date imported) (Last foreign port)
Exported from Costa Rica on Goods now at Pier 3 N.R.
(Date) (Name of warehouse, station, pier, etc.)

G. O. No.

To COLLECTOR: I certify that the above-described goods were laden as stated above, sealed with customs seals Nos.

that the packages (were) (were not) corded and sealed; that the goods agreed with the manifest and were in apparent good order except as noted.

Short or over from importing vessel or carrier.

I truly declare that the statements contained herein are true and correct to the best of my knowledge and belief.

Entered or withdrawn by DORF INTERNATIONAL, Ltd

Declared to under oath before me on 10/19/63
(Date)

(Title or designation)

To the Inspector or Storekeeper: The above-described goods shall be disposed of as specified herein.

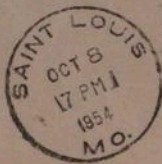
For the Collector

RECEIVED from the collector of customs of above district the merchandise described in this manifest for transportation and delivery into the custody of the customs officers at the port named above, all packages in apparent good order except as noted hereon.

Inspector or Storekeeper.

Андрей и Андрей

F. A. Johnson
No Bot Garden
St Louis 10
Mo.



Dr. David Rodgers
Biology Dept.
Alegheeny College
Meadersville

FIRST CLASS

Letter Mail

Penna.

C O P Y

FOOD RESEARCH INSTITUTE
STANFORD UNIVERSITY
STANFORD, CALIFORNIA

To Mr. Dear Rodgers
Wageningen College
Wageningen, Pa.

Lagos, Nigeria
June 16, 1953

Dear Dr. Anderson:

I enclose my first batch of leaf tracings. The data is very incomplete, and most of the samples are from Dept. of Agr. farms, but it is all I have been able to manage.

The great center of manioc culture on this coast is I think the Anecho cercle of Tago. The manufacture of farina (gari) and of tapioca seems to have been introduced to the coast near here by repatriated Brazilian slaves.

Maurice Birge at Gilidji is beginning the study of manioc and would be glad to hear from you.

At Wageningen, Holland, Dr. G. G. Balbruis of the Institute of Tropical Agriculture continues to work on manioc. He had long experience at Brietenzarg. There is research on manioc varieties in the Ivory Coast, at Adiopodoume, near Abidjan by O.R.S.O.M. under M^r. Mangenot. I did not go there. No work being done at Aura, although, J. Torte of Dept. of Agr. there has promised me more information on varieties. All varieties here are "sweet."

I have already learned a great deal in Western Europe and here. I find the Guinea Coast climate most unpleasant especially in the cities. I arrived here Sunday and shall continual idle until tomorrow because of Eid-L-Fitr, the end of Ramadan.

From June 23 until July 3rd I shall be at the Hotel Regina, Leopoldville, from July 14 to 21 at the I N E A C Station, Yangambi (near Stanleyville).

The humidity makes writing difficult.

Sincerely,

S/ Wm. O. Jones

Mamabol, June 8, 1953

Gold Coast

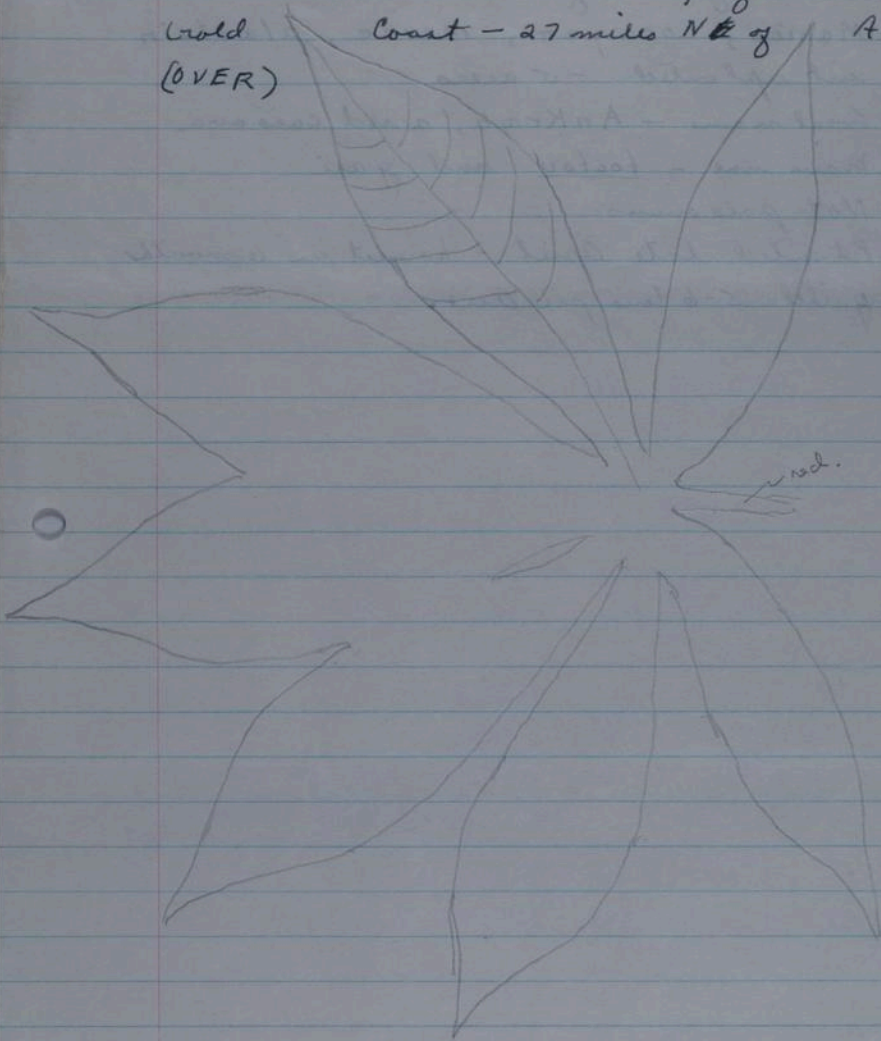
1. Underside light green
2. Said to have large & smaller roots
3. No fruit
4. ^{Busu}~~Busu~~ Agr. Dept Farm — 75 miles north of
Accra
5. ~~F~~ Wild
- 6.
7. Tree case ava — said to be cross between
M. utilis and M. glaziovii — very common
between Accra and Busu — others say it is simply
M. glaziovii
8. Not used
- 9.
- 10.

manihot - June 8, 1953

1. Underlying color - medium dark green
2. Root - not examined - said to be red outside
3. Fruit - two young
4. Plant 6 weeks old. near village of Warababa,

Cold Coast - 27 miles NE of Asara

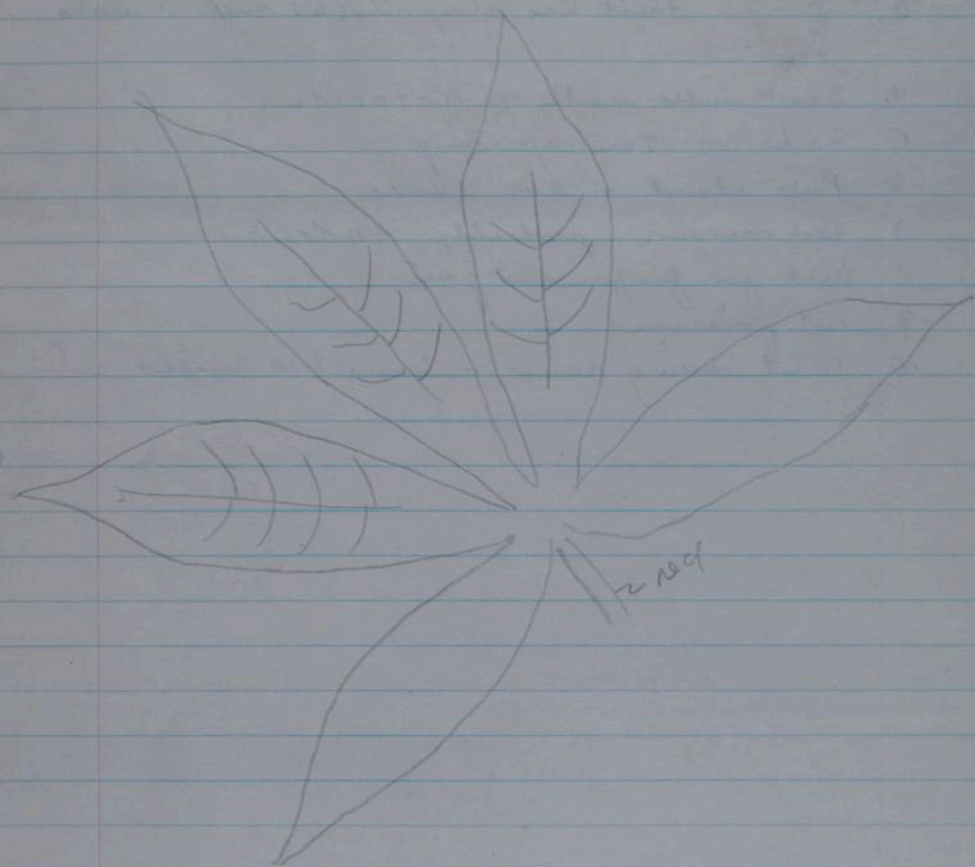
(OVER)



- 5) ~~Ginger~~ - farmer of 5 Acres - Twi
- 6) Manioc, cocoyam, maize, plantain
interplanted - 5 acres
- 7) Local name - AnKrah, a red cassava
- 8) Main use - footou and gari
- 9) Not poisonous.
- 10) Planted late April - harvest in 6 months
yield 5-6 tons per acre.

Gold Coast

1. Underside of medium green, stem red
2. Root red outer skin
3.  Fruit has sharp ribs (6) and 3 seeds
4. 3 or 4 miles north of Kotoridua
5. Tribe - Twi speaking
6. Pure stand - 2 or 3 acres
7. Red cassava probably Ankrak
8. Used for fonfon and garri
9. Not poisonous
10. Plant during rains - harvest 12 months



Manihot - June 8 1953

Gold Coast

1. Underside light green
2. Root said to be red
3. No Fruit

4. ~~At~~ 5 miles N of
Sukum - 35 mi (?)
N of Accra, Gold
Coast

5. Twi (?) - 5 acre
farm

6. 12-13 month old
field - 5 acres -
orig. mainly mixed
crop - now all
manioc - some

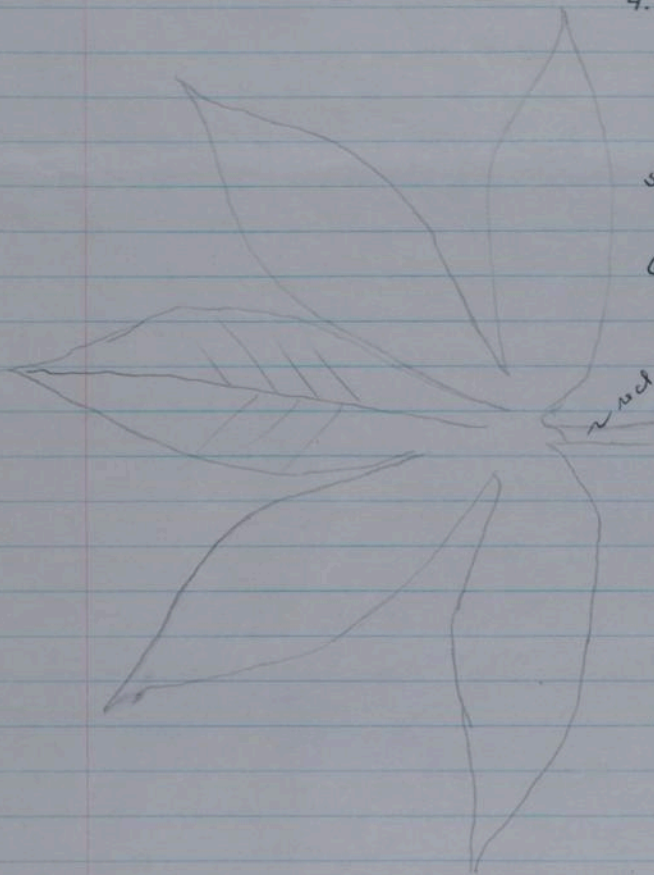
fallen - 10-12 feet
high

7. AnKrah - (Red)

8. Fonfom-gani

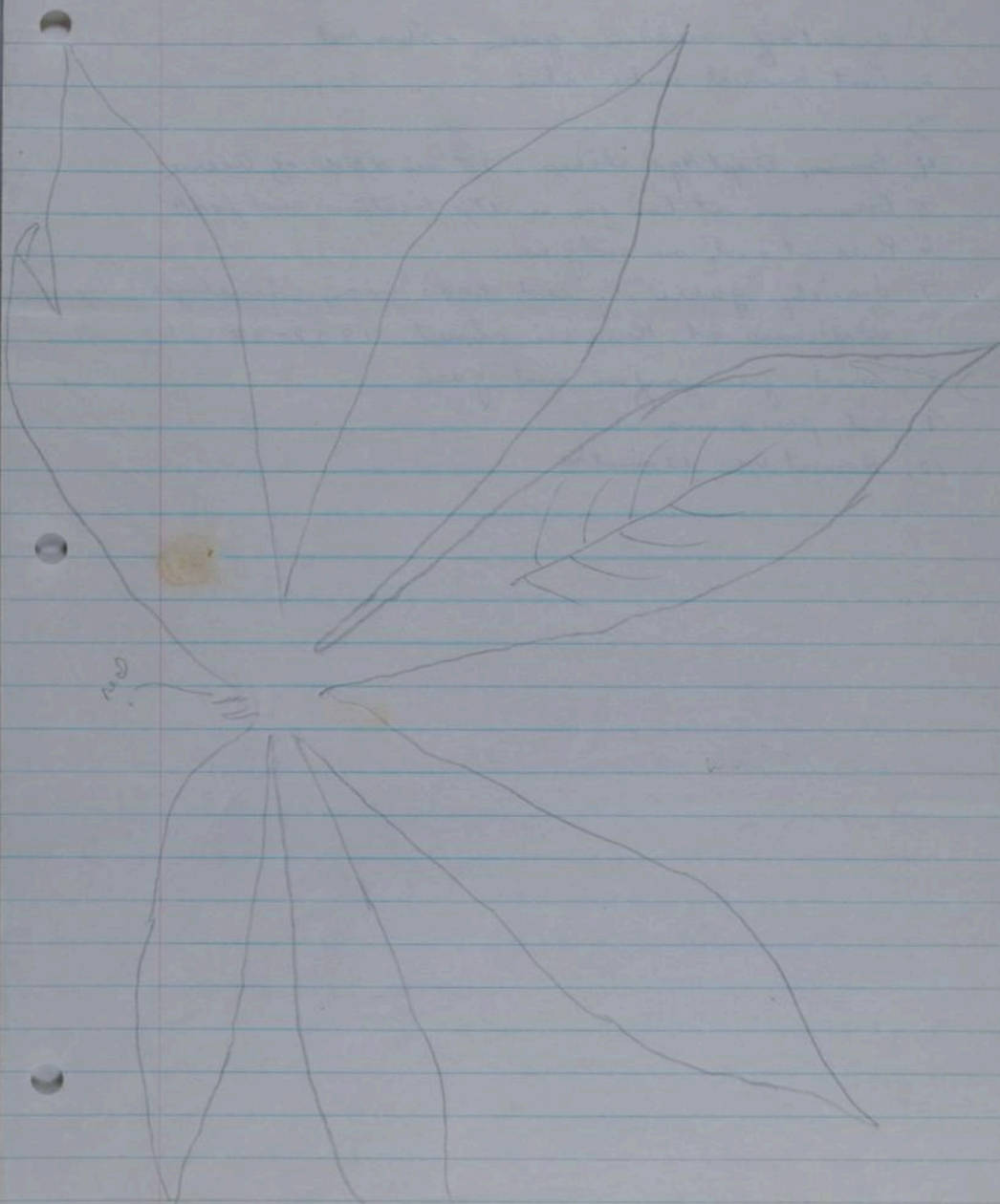
9. Not poisonous

10. Planted late
April - harvest
when sold but
not later than
24 months



Leafy branch

Chrysomelid beetle



Manihot June 8 1953

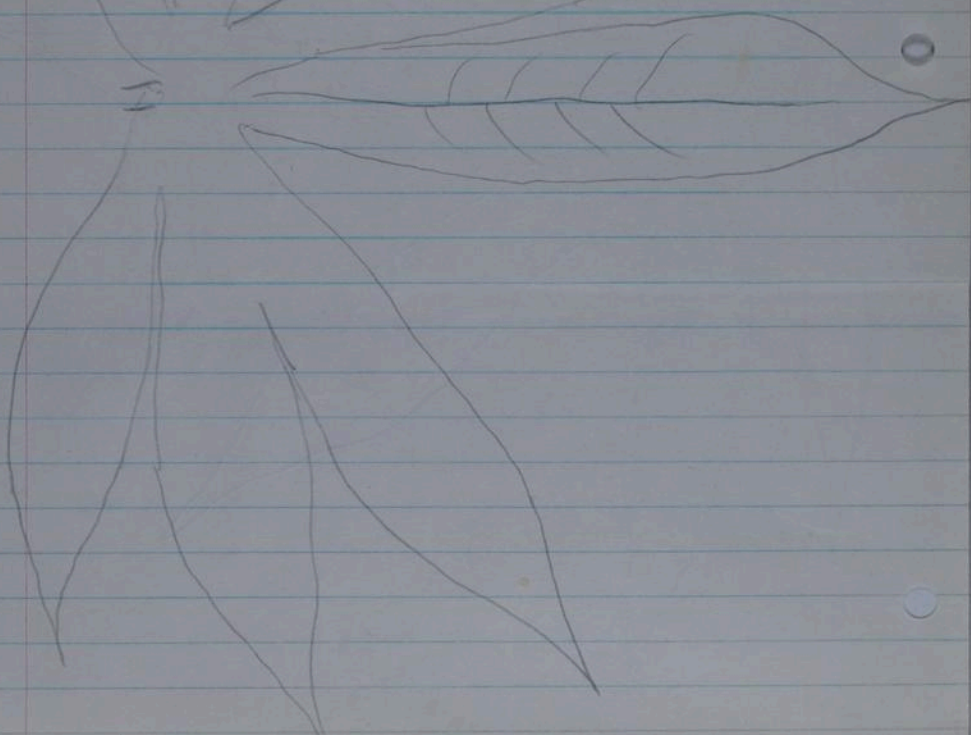
Cold Coast

1. Underlay medium green - stem red
2. Root has red outer skin
- 3
4. Bunker, Dept Agr station, 75 mi NNW of Acera
5. Grown on station for multiple locations and food
6. Pure st and, on ridges
7. Variety "gari", red carsona, developed by Williams at Kumasi about 1937-38
8. used for fufu and gari
9. Not poisonous.
10. Harvest in 12 months

Mambot - June 8, 1953

Gold Coast

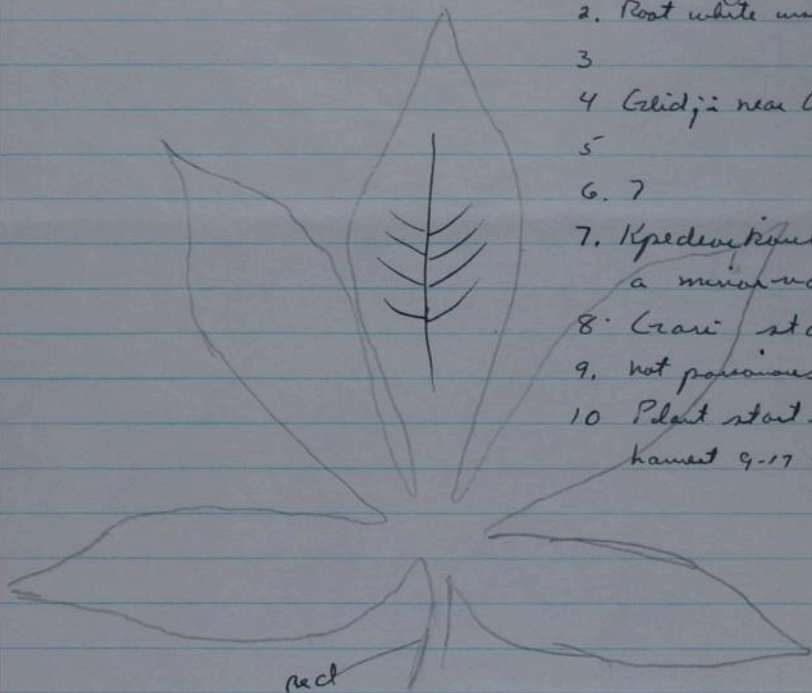
1. Underside of medium green - stem very light
2. Root has very light outer skin
- 3.
4. Banana, Dept Ag station, 75 mi NNW of Accra
5. Grown on station for multiplication and food
6. Pure stand - on ridges
7. Variety "Lusen", a white cassava developed by Williams at Kumasi in 1937-38 about
8. Eating boiled or baked
9. Not poisonous
10. Plant during rains, harvest in 4-6 months



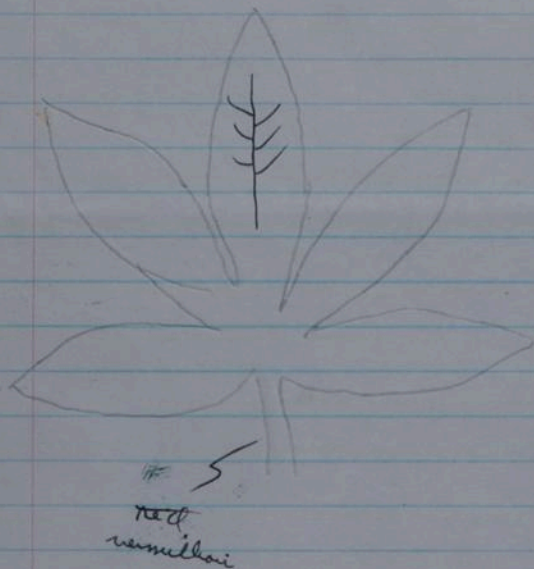
Maitoh, Togo, June 12, 1953

Kpedevi Koute

1. Underside of medium green
2. Root white inside
- 3.
4. Gleditsia near Anecho
- 5.
6. 7
7. Kpedevi Koute is a minor variety
8. Crani starch
9. Not poisonous
10. Plant start rains
harvest 9-17 months



Mambat, Togo, June 12, 1953



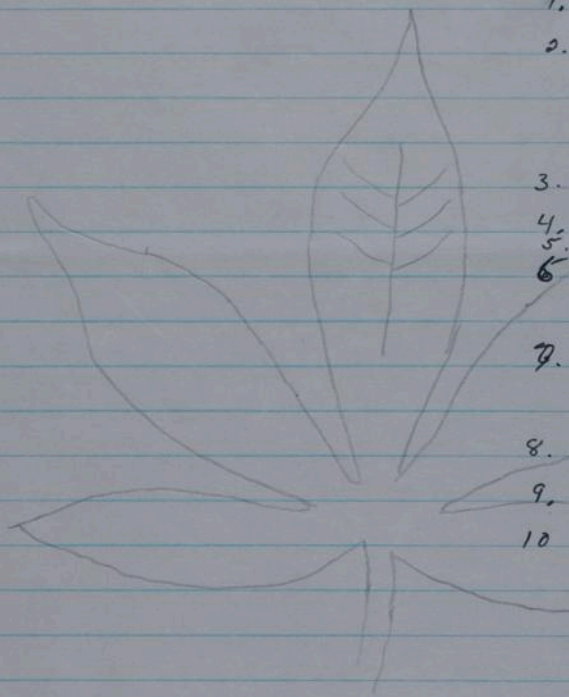
Touyè

1. Underside of very light
2. root white inside
- 3.
4. Glidji near Awecha
- 5.
6. Field 1-2 ha
cycle maize
no fallow
7. Touyè is a minor
variety
8. Grain - starch
9. Not poisonous
10. Plant start rains
harvest 9-17 months

Manhat, Togo, June 12, 1953

Kamalo

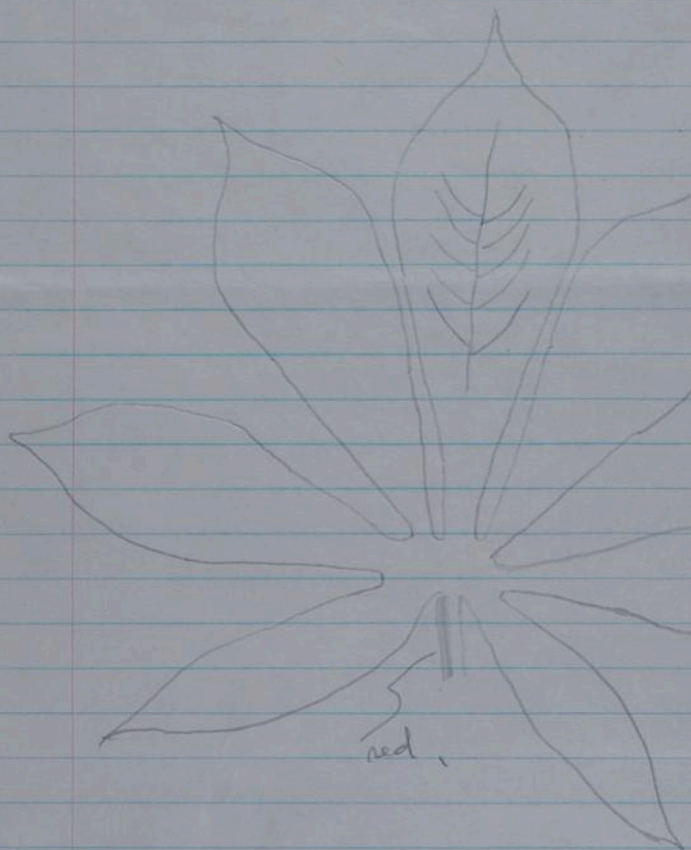
1. Underside of very light
2. Inside of root yellow
sometimes red inner
skin
3. -
4. Gledji in near Anseba
5. minor - nogo
6. Field 1-2 ha of the
waje - no fallow
7. Kamalo is a minor
variety
8. Grass - starch
9. not poisonous
10. Plant starts of rains
harvest 9-17 month



Mamhat, Togo, June 12, 1953

Sodjavi

1. Underside of light green. Young leaves "violet"
2. Root white inside
- 3.
4. Calicij near Ancho
5. Minia, Nago
6. Field 1-2 ha. yellow maize - no yellow
7. Sodjavi is a minor variety
8. Gravi - starch
9. Not poisonous
10. Plant beginning rains
9-17 months to maturity.



Mambhat, Togo, June 12, 1953

Kataoli

1. Husks of light green

2. Roots white-muscle

3

4. Gledji near Anedon

5. Mina, Nago

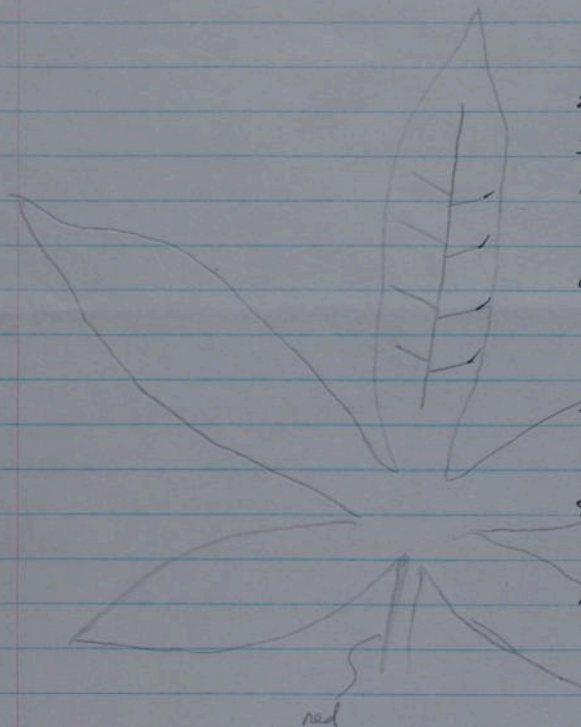
6. Field of 1-2 ha
of the maize - no
fallow.

7. Kataoli is principal
variety of area

8. Grain & starch.

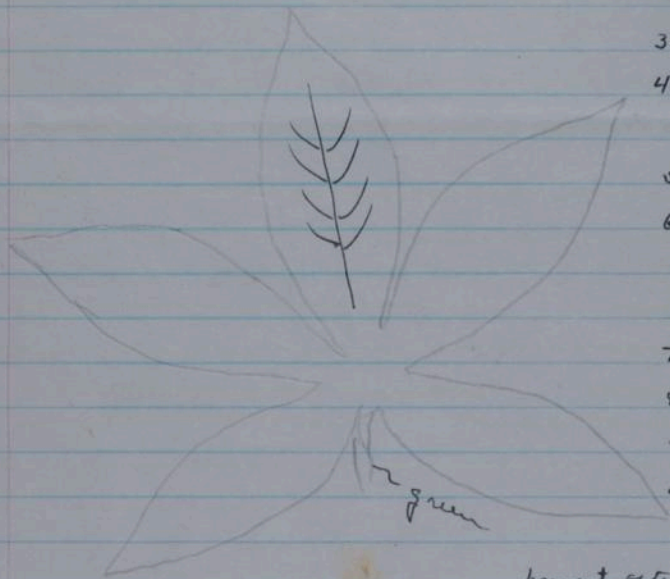
9. Not poisonous

10. Plant - beginning grains
harvest 14-17 months
during dry season
for max yield



See detailed French
description by
M. Borge

Manihot, Togo, June 12, 1953



Manya Ka

1. Under side of light green.
2. root all white inside

3 -

4. G1, dji, near Anseko

5. Minia, Nago

6. Field of 1-2 ha after we are no fallow.

7. Manya Ka

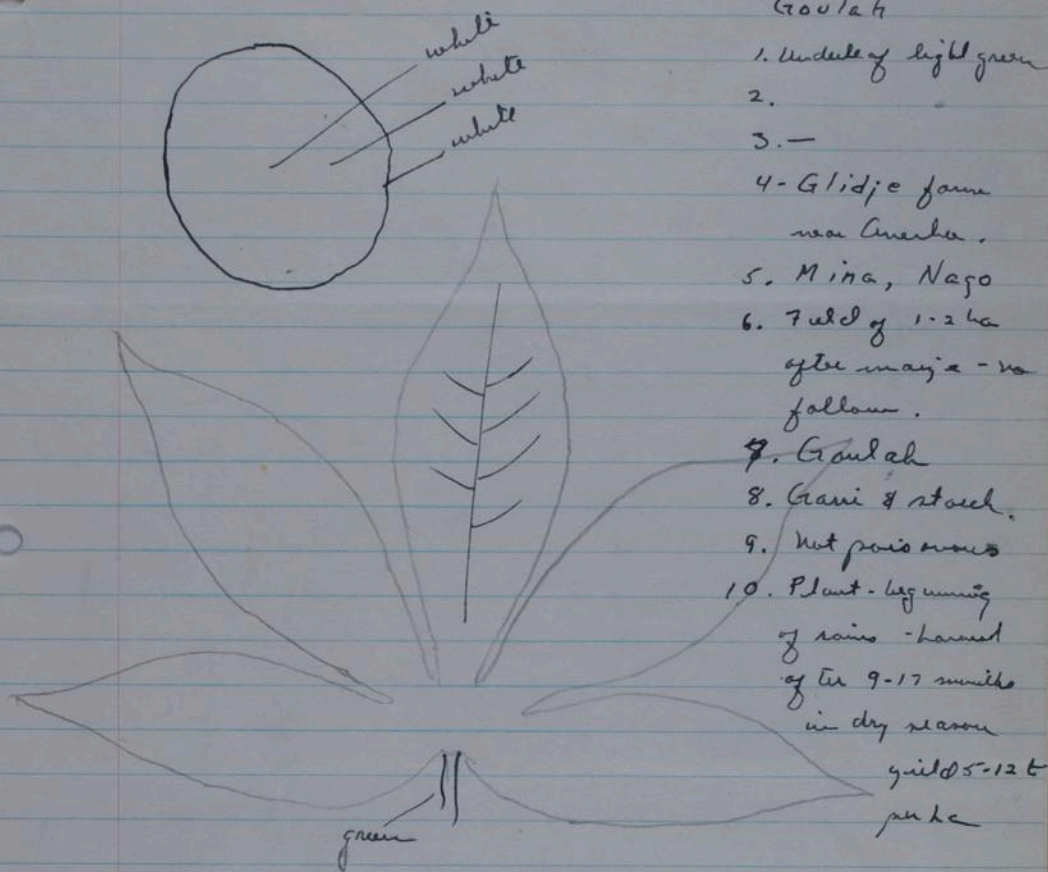
8. Gari & starch

9. Not poisonous

10 - Plant - beginning rains

harvest after 9-11 months during dry season

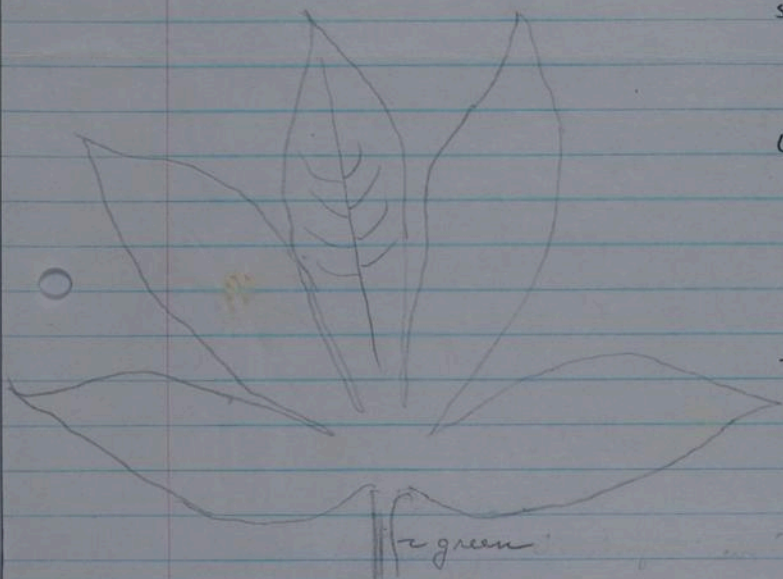
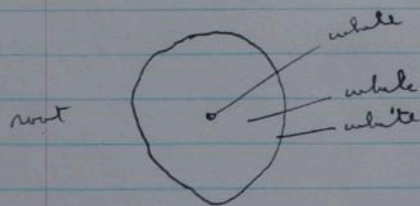
Maintub - Togo - June 12, 1953



See detailed French
description by
M. Dugé
(Goulah)

Manihot - Vago - June 12, 1953

SeKo



1. Underbry-green-gray.

3. —

4. Gidji farm
near Anceba

5. Experimental.
but people use
Mania & Nago

6. Usually grown
in field of a
1-2 ha following
maize - no
fallow

7. SeKo

8. Grass &
starch

9. Not poisonous

10. Plant at

beginning of
either rainy season - harvest
in dry season. - yield
5-12 ton per ha of tree 17 months
can be harvested after 9 months

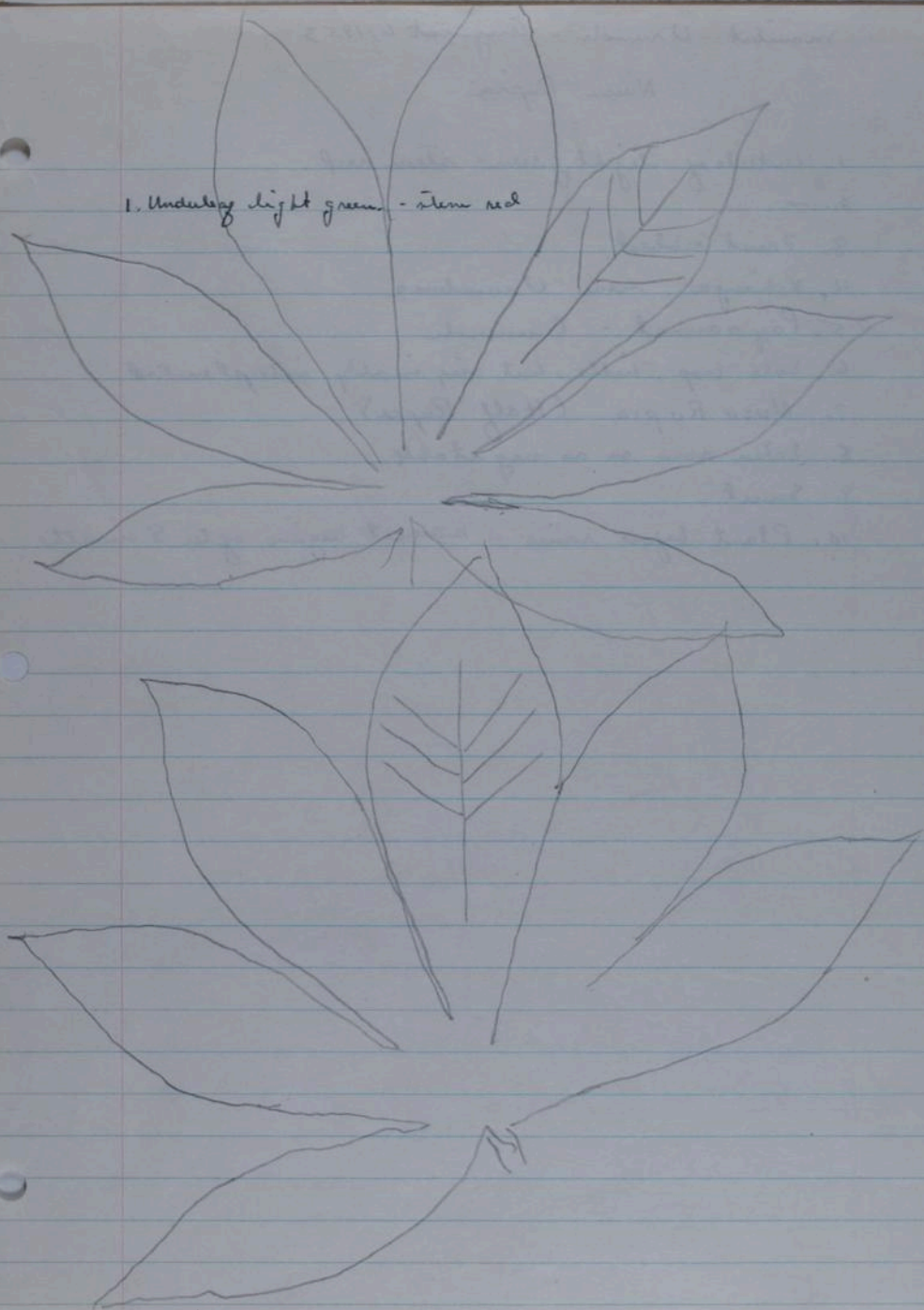
See detailed
Sketch description
by M. Dyer

Mombasa - Usumbi - August 6, 1953

Nusu Rupia

1. Underside of light green - stem red
2. —
3. Fruit ribbed
4. Kihanga, near Usumbura
5. Paysannat - Burundi
6. Sole crop, hills, but originally interplanted
7. Nusu Rupia (Half Rupee)
8. Eaten raw or as vegetable
9. Sweet
10. Plant before rains - harvest begins after 8 months

1. Underside light green - stem red



manihot - Belgian Congo - July 8, 10, 1953

Bushiali Bala or Malema - Congo R. 50 mi below Kisala

Mpondzo

1. Underleaf light green
stem green

2.

3

Bundabala - Congo R.

4. 50 miles (?) below Kisala

Fiberum

5. Bangombe Tribe

6. House garden

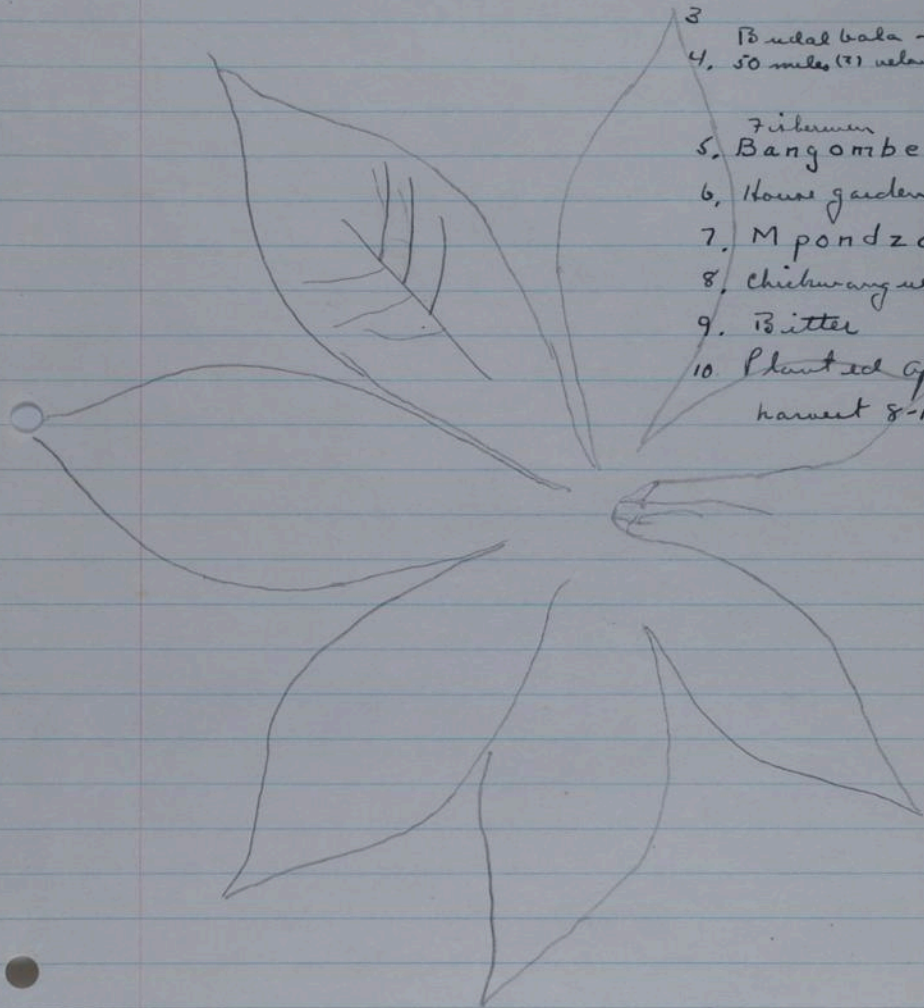
7. Mpondzo

8. Chickwarangue

9. Bitter

10. Planted April

harvest 8-12 months (3)



Maintub - Belgian Congo - July 10, 1953

Village of Budiali Bala or Matema - 50 mi downstream (Congo) from
Kisala

Mondelempaku

Petiole red.

1. Underleaf light green

2. -

3. -

Budiali - Bala, 50 mi below

4. Kisala on Congo

5. Bangombe tribe

6. Small house garden

7. Mondelempaku

8. As vegetable, leaves as
spring after pounding

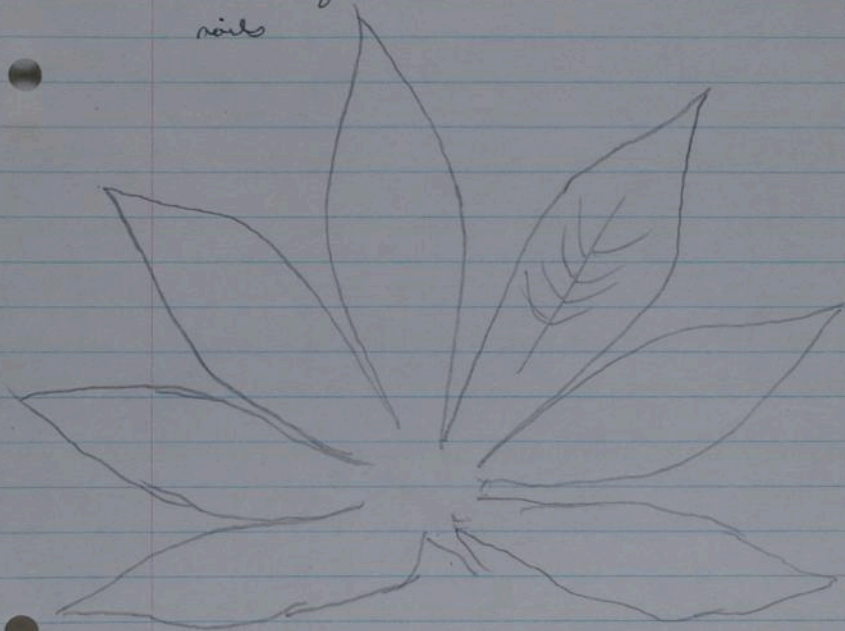
9. Sweet

10. Planted April -
harvest 8-12 months
red

Mambat - Urundi - August 6, 1953

Yongwe

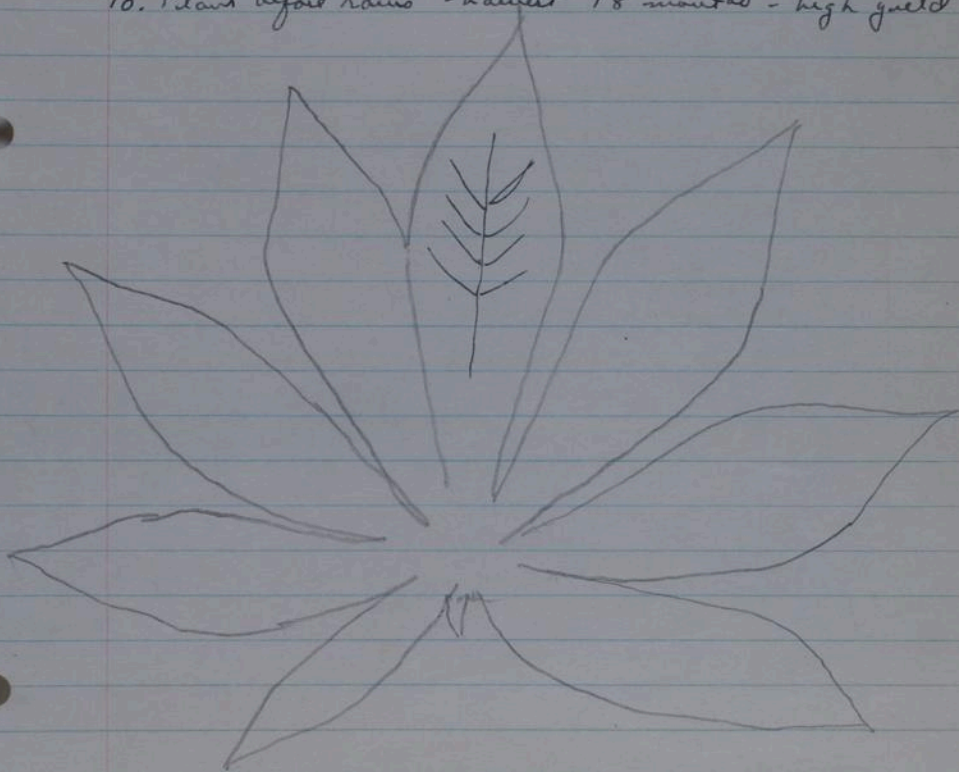
1. Underside of med to dark green - stem dark green, I think
2. Few, large roots - dark skin - white through
3. Ribbed fruit
4. Kikanga, near Usumbura
5. Paysanmat - Burundi
6. Sole crop, hills, originally interplanted
7. Yongwe
8. Farine
9. Semi bitter
10. Plant before rains - harvest 18 months - very good on sandy soils



Mambist - Urundi - Aug 6, 1953

Tamisi (Eala-07)

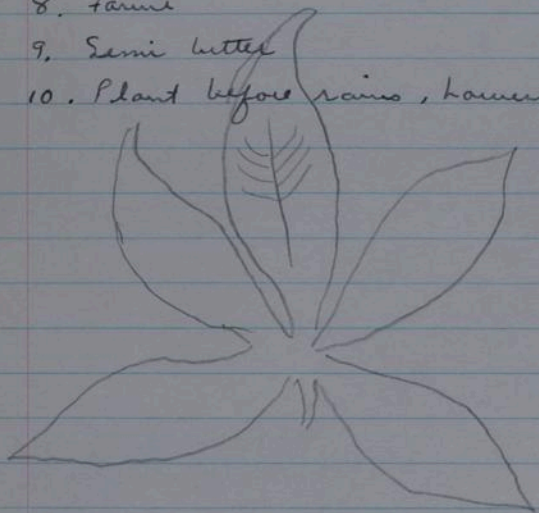
1. medium dark underleaf - stem dark
- 2.
3. Fruit ribbed
4. Kihanga, near Usumbura
5. Pay annual - Burundi
6. Sole crop, hills, originally interplanted
7. Tamisi (Eala-07) variety, developed by INEAC
8. Famine
9. Very bitter
10. Plant before rains - harvest 18 months - high yield



Mambat - Urundi - Aug 6, 1953

Shogata

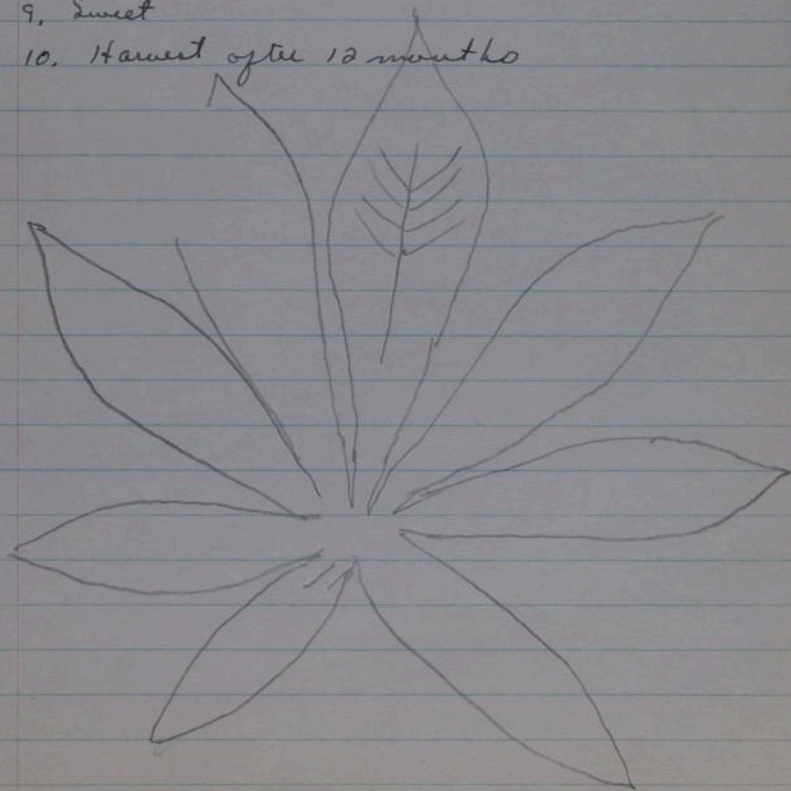
1. Underside of light green, stem light green
2. Root white through - very light skin
3. Fruit ribbed
4. Kihanga, near Usumbura
5. Paysamat Urundi
6. Sole crop, hills, originally interplanted, field $2\frac{1}{2}$ yrs old
7. Shogata
8. Famine
9. Semi bitter
10. Plant before rains, harvest 18 months +



Mankat - Urundi - Aug 6, 1953

Mpamba ya Bashongera

1. Underlay very light green, stem very light green
2. Root white through
3. Fruit ribbed
4. Kahanga, near Usumbura
5. Pay sawat - Burundi
6. Sole crop, originally interplanted, field 2 yrs old
7. Mpamba Ya Bashongera
8. Vegetable
9. Sweet
10. Harvest after 12 months



Description de quelques variétés les plus cultivées
dans le cercle d'Anécho (TOGO)

Par ordre d'importance les noms vernaculaires sont :
KATAOLI 6 SEKO - GULA -

I Kataoli :

- Feuilles: Limbes - vert clair
Nervures- légèrement colorées en rouge franc
ou rouge violet .
Pétioles - Toujours très fortement colorés en
rouge foncé . Le pétiole est toujours uniformément
coloré depuis le point d'insertion sur la tige
jusqu'à la base de la feuille .
Longueur du pétiole des feuilles adultes : 25 cm.
Tiges : La coloration du vieux bois est toujours lie de vin
foncé .
Tubercules : Ecorce très foncée brun rouge, toutes les autres
parties de la racine sont blanches .
Port de la plante : Hauteur moyenne 2 m à 2 m 50 , en relation
avec les cultures associées (Maïs , Arachides ,
Haricots) et la fertilité du terrain .

II SEKO :

- Feuilles: Limbes - vert clair
Nervures - vert clair , très légèrement teintées
par des trainées rouges .
Pétioles - dans 90% des cas vert clair avec une tache
violacée très visible à la base du point d'insertion
sur la tige . - dans 10% des cas les pétioles des
jeunes feuilles sont franchement rouges . On note
cependant des individus intermédiaires entre ces deux
formes , ce qui peut laisser supposer qu'il y a
un passage insensible de l'une à l'autre .
Tiges : en général de coloration claire , gris clair ;
la tige présente toujours des ramifications au
dessous de 1 m. 20
Racines : coloration brun clair de l'écorce - Chair blanche -
Port de la plante : hauteur moyenne 1 m; 70

III GULA

- Feuilles : Limbe : vert clair .
Nervures : vert clair
Pétiole : fond de coloration vert clair y
compris la partie de la base touchant la tige .
quelques anomalies peuvent être constatées :
trainées rouges pointillées de faible coloration ,
anneau rouge de faible coloration vers la base du

pétiole . Longueur moyenne : 14cm. 25

Tige : coloration gris clair , plus foncé que SEKO
Racine : coloration de l'écorce brun ruuge , chair blanche .
Port de la plante : hauteur moyenne 1 m. 80 .

Un essai statistique sur 8 variétés est entrepris a la ferme .

ferme école de "Glidji" au nord Togo
Haouice Berge





THE ISALAH BOWMAN SCHOOL OF GEOGRAPHY
THE JOHNS HOPKINS UNIVERSITY
BALTIMORE 18, MARYLAND

December 21, 1953

Prof. David J. Rogers
Allegheny College
Meadville,
Pennsylvania

Dear Professor Rogers:

It was a pleasure to read your letter on the manioc. I spent the summer in the Chiriqui Lagoon-Almirante Bay area in northern Panama. Sweet manioc is cultivated there by both the Guaymí and Terreba Indians, as well as by the Negro people in the towns of Bocas del Toro and Almirante. The Indians say they have never heard of a bitter manioc. The only reference I can make to bitter manioc in that area is the following: A certain Negro minister in Bocas del Toro, Reverend Alphonse, told me that when he was a boy his mother grated and prepared a poisonous yuca. ^{The parents} of the Negroes having come from Jamaica (though Alphonse's had come from Martinique) it is possible that that variety of the yuca came with them from the Antilles. In any case, poisonous manioc is not cultivated ~~there~~ today.

Though manioc is an important root crop in this area ^(i.e. northern Panama & southern Costa Rica), it competes with the common yam, the ñampi (Dioscorea trifida) and the yautia (Xanthosoma.) It seemed to me that there were many more varieties in northern Colombia in the Dept. of Bolívar. I have in my note book a reference (probably not too satisfactory since it was simply taken from a conversation with two farmers) to several varieties: among them are the zombita, which is much branched and flowers heavily with lavender blossoms; the mona blanca, which has a yellow stem and a long thin root and is the best to eat; the Caucana, which is the largest rooted of all, poor as human food, mainly a pig fattening plant; the Cocli, which has very red leaf petioles and the smallest root of any; the yellow rooted Martina, the gruesana, etc. (I saw specimens of the first, second, and fourth.) There is ~~no~~ no bitter yuca cultivated in the Departments of Bolívar, Atlántico, and westward—nor was there aboriginally: Fernando Enciso in his La Suma de Geografía wrote (1514) concerning the Rio Sinú (Cenú), just west of Cartagena (he was on his way from the Antilles to the Gulf of Darien): In the Sinú "El pan y el vino es de harina de mayz como en Cartagena, también ay raíces de que se hace el pan como en las islas de Cuba, Jamaica, y Española. Pero son de otra cualidad porque las de las islas son malas, que si uno come una dellas muere como si comiera rejalgar (arsenic) y cualquiera animal que come dellas o del agua que dellas

(is westward)

sale muere, y para hacer pan dellas las rallan y despues las exprimen: y como quedan en polvo seco hacenias pan y las de esta tierra del Cenu y de toda la tierra de aqui en adelante comenlas crudas y asadas, que son muy buenas de comer y de gentil sabor."

From this reference (and several others bear it out) I conclude that bitter manioc was not known west of Cartagena in the 16th century. However, I should say ^{that} I was told about a feral yuca, poisonous but edible, growing in abandoned fields up the Magdalena at Mompo--I had hoped to check it-but never got over there.

I have many questions. You will perhaps be answering them in your publications (I would be very pleased to receive copies:) Have recent analyses been made of the toxic substance in the bitter variety? I have read that it is a cyanogenic glucoside; is that the case? I was very surprised, incidentally, when Dr. Robert Pendleton told me of the sweet variety's leaves being used as salad in the Belgian Congo (I don't think of Euphorbs being used that way.) Is the manioc anywhere grown from seed? (Mr. Sauer contends that it is not; I have seen it grown from stem segments only.) Why are the seeds not viable? What are the most closely related species of Manihot and where are they found?

Enclosed is a photo of a yuca cultivated by the Terraba Indians on the Rio Changuinola, Panama--Costa Rica. I took it because I hadn't come on yuca with well developed seed capsules before. I don't know what these would have been like when mature.

Give Fritz my regards and ^{my} congratulations on the new addition to his family.

Sincerely,

Roy Gordon

P.S. I'll write Fritz soon.

3. Pax, Euph-Adrianeae, 7. Mainhol, p. 21

Seed. *Panicum* *sectae*, Subsec. 4g, *Utilisissima*

74. M. - 79 Spec in US Nat Herb.

74 *acuminatissima* - photo of Gardner N. 3446.

75. *M. acutalariseformis*

76. *M. Burchellii* - no specimens.

77. *M. utilis*

78. *M. digitiformis*

79. *M. dulcis* -

See also *M. brachyloba*, sec 4i - *Novae* *Anticae*

These in *M. M. brevipedicellata* Sec. 4e *Pedicellatae* *Slazioni* 8322

US Nat. *M. Amazonica*

Herb. *M. Carthagenensis*

for *M. Catingae* - photo only - Uls 7142

probably *M. discolor* - " " " 690

rel. to *Utilissima*.

M. esculenta, Crantz.

M. hemitricandra - photo only Riedel 1548

M. Lange-dorffii - " " " 477

M. leptophylla - " " Egger 15156

(additional material in type herbarium).

M. lobata Photo Only Hassler 5413

M. Meridenensis, Jahn 1000

M. oligantha Photo only - *Slazioni* 22127

M. palmata v. *pusilla* - Coll. Pohl No 1181

M. palmata - specimen under this name is *M. brevipedicellata* - *Slazioni* 8322

M. pedicellaria - C. Novae No 532

See Croizat. Preliminary Per uno studio del
genere "Manihot" nell'America
meridionale

in Revista Argentina de Agronomía
Tomo 10, No. 3, Buenos Aires, Sept, 1943

Type specimens USNH.

M. colimensis Croizat Series 6120 - looks like original
det. of *M. carthaginensis*.

M. filamentos Pittier, Saer 366 = *carthaginensis*? Isotype

M. guatemalensis Blake, Blake 7688 collected in Guatemala, Dept. Imbabura,
2 sheets Guatemala

M. heptaphylla Wess, No. 7206.

M. Pittieri P+H., Pittier 1567 = *carthaginensis*?
2 sheets

M. nematoloba Pittier, #11761 - Venezuela = *carthaginensis*?

See Lanjouw - "Two Interesting Species of *Manihot* from
Surinam".

Recueil des Travaux botaniques néerlandais
Vol. XXXVI, 1939 pp 543-549, May 1939

- M. peruviana* - photo of Spruce 4287
M. pittieri - Killip + Smith, A.C. #14032
M. saricola - Sanguin 955, et al.
M. Sprucei - photo only. Spruce 54
M. surinamensis.
M. Toledii - Photo only Zehner 695
M. tristis - " " Spruce 3604
M. tubuliflora " " W. 4605
M. Tenebricaria
~~*M. Yquilla*~~

Ask for all spec. from West Indies - Some include
 plants collected at Hope Gardens - all are utilisissima.

Inventory of Roger's sheets of M., Dec. 1964.

mild - specimens done

1		26.	✓	51.	✓	76.	✓
2.		27.	✓	52.	✓	77.	✓
3.		28.	✓	53.	✓	78.	✓
4.		29.	✓	54.	✓	79.	✓
5.		30.	✓	55.	✓	80.	✓
6.		31.	✓	56.	✓	81.	✓
7.	✓	32.	✓	57.	✓	82.	✓
8.	✓	33.	✓	58.	✓	83.	✓
9.	✓	34.	✓	59.	✓	84.	✓
10.	✓	35.	✓	60.	✓	85.	✓
11.	✓	36.	✓	61.	✓	86.	✓
12.	✓	37.	✓	62.	✓	87.	✓
13.	✓	38.	✓	63.	✓	88.	✓
14.	✓	39.	✓	64.	✓	89.	✓
15.	✓	40.	✓	65.	✓	90.	✓
16.	✓	41.	✓	66.	✓	91.	✓
17.	✓	42.	✓	67.	✓	92.	✓
18.	✓	43.	✓	68.	✓	93.	✓
19.	✓	44.	✓	69.	✓	94.	✓
20.	✓	45.	✓	70.	✓	95.	✓
21.	✓	46.	✓	71.	no card	96.	✓
22.	✓	47.	✓	72.	✓	97.	✓
23.	✓	48.	✓	73.	✓	98.	✓
24.	✓	49.	✓	74.	✓	99.	✓
25.	✓	50.	✓	75.	✓	100.	✓

✓

101.	✓	126	✓	151	✓	176	✓
102	✓	127	✓	152	✓	177	✓
103	✓	128	✓	153	✓	178	✓
104	✓	129	✓	154	✓	179	✓
105	✓	130	✓	155	✓	180	✓
106	✓	131	✓	156	✓	181	✓
107	✓	132	✓	157	✓	182	✓
108	✓	133	✓	158	✓	183	✓
109	✓	134	✓	159	✓	184	✓
110	✓	135	✓	160	✓	185	✓
111	✓	136	✓	161	✓	186	✓
112	✓	137	✓	162	✓	187	✓
113	✓	138	✓	163	✓	188	✓
114	✓	139	✓	164	✓	189	✓
115	✓	140	✓	165	✓	190	✓
116	✓	141	✓	166	✓	191	✓
117	✓	142	✓	167	✓	192	✓
118	✓	143	✓	168	✓	193	✓
119	✓	144	✓	169	✓	194	✓
120	✓	145	✓	170	✓	195	✓
121	✓	146	✓	171	✓	196	✓
122	✓	147	✓	172	✓	197	✓
123	✓	148	✓	173	✓	198	✓
124	✓	149	✓	174	✓	199	✓
125	✓	150	✓	175	✓	200	✓

201	✓	226	✓	251	✓	276	✓
202	✓	227	✓	252	✓	277	✓
203	✓	228	✓	253	✓	278	✓
204	✓	229	✓	254	✓	279	✓
205	✓	230	✓	255	✓	280	✓
206	✓	231	✓	256	✓	281	✓
207	✓	232	✓	257	✓	282	✓
208	✓	233	✓	258	✓	283	✓
209	✓	234	✓	259	✓	284	✓
210	✓	235	✓	260	✓	285	✓
211	✓	236	✓	261	✓	286	✓
212	✓	237	✓	262	✓	287	✓
213	✓	238	✓	263	✓	288	✓
214	✓	239	✓	264	✓	289	✓
215	✓	240	✓	265	✓	290	✓
216	✓	241	✓	266	✓	291	✓
217	✓	242	✓	267	✓	292	✓
218	✓	243	✓	268	✓	293	✓
219	✓	244	✓	269	✓	294	✓
220	✓	245	✓	270	✓	295	✓
221	✓	246	✓	271	✓	296	✓
222	✓	247	✓	272	✓	297	✓
223	✓	248	✓	273	✓	298	✓
224	✓	249	✓	274	✓	299	✓
225	✓	250	✓	275	✓	300	✓

301	✓	326	✓	351	✓	376	✓
302	✓	327	✓	352	✓	377	✓
303	✓	328	✓	353	✓	378	✓
304	✓	329	✓	354	✓	379	✓
305	✓	330	✓	355	✓	380	✓
306	✓	331	✓	356	✓	381	✓
307	✓	332	✓	357	✓	382	✓
308	✓	333	✓	358	✓	383	✓
309	✓	334	✓	359	✓	384	✓
310	✓	335	✓	360	✓	385	✓
311	✓	336	✓	361	✓	386	✓
312	✓	337	✓	362	✓	387	✓
313	✓	338	✓	363	✓	388	✓
314	✓	339	✓	364	✓	389	✓
315	✓	340	✓	365	✓	390	✓
316	✓	341	✓	366	✓	391	✓
317	✓	342	✓	367	✓	392	✓
318	✓	343	✓	368	✓	393	✓
319	✓	344	✓	369	✓	394	✓
320	✓	345	✓	370	✓	395	✓
321	✓	346	✓	371	✓	396	✓
322	✓	347	✓	372	✓	397	✓
323	✓	348	✓	373	✓	398	✓
324	✓	349	✓	374	✓	399	✓
325	✓	350	✓	375	✓	400	✓

missed

missed

401	✓	426	✓	451	✓	476	✓
402	✓	427	✓	452	✓	477	✓
403	✓	428	✓	453	✓	478	✓
404	✓	429	✓	454	✓	479	✓
405	✓	430	✓	455	✓	480	✓
406	✓	431	✓	456	✓	481	✓
407	✓	432	✓	457	✓	482	✓
408	✓	433	✓	458	✓	483	✓
409	✓	434	✓	459	✓	484	✓
410	✓	435	✓	460	✓	485	✓
411	✓	436	✓	461	✓	486	✓
412	✓	437	✓	462	✓	487	✓
413	✓	438	✓	463	✓	488	✓
(414) - <i>marginul</i>		439	✓	464	✓	489	✓
415	✓	440	✓	465	✓	490	✓
416	✓	441	✓	466	✓	491	✓
417	✓	442	✓	467	✓	492	✓
(418) - <i>spec. not marginul det. yet</i>		443	✓	468	✓	493	✓
419	✓	444	✓	469	✓	494	✓
420	✓	445	✓	470	✓	(495) - <i>??</i>	
421	✓	446	✓	471	✓	496	✓
422	✓	447	✓	472	✓	497	✓
423	✓	448	✓	473	✓	498	✓
424	✓	449	✓	474	✓	499	✓
425	✓	450	✓	475	✓	500	✓

501	✓
502	✓
503	✓
504	✓
505	✓
506	✓
507	✓
508	
509	✓
510	✓
511	✓
512	✓
513	✓
514	✓
515	✓
516	✓
517	✓