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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

December 31, 1969

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

Things are not too bright down here. A request to visit Frank has been turned down and it appears that those above me are pressuring me to reduce my phylogenetic work, though they haven't said so in so many words. I really don't understand all that is occurring and there may be something behind it that I don't know about. It may be this concern about relevance emitting from congress, or it could be the ripples from a new investigations leader. The climate is definitely not good. Accordingly, I have not mentioned this graduate student thing yet. However, I am almost certain I would not be allowed to put my name on a proposal for a Rockefeller grant. Our Branch has a policy of steering clear of grants and always has.

I believe I can get clearance for the student to work here if it doesn't cost anything. Right now, I can't even be sure of that.

I have been out of the office for the last few weeks and have a number of deadlines to meet, but will send you sample data as soon as possible. It would help if you could answer my questions about the sequence of information of the various columns so that we would not have to do the job twice.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

December 31, 1969

Dr. Jane Bock
Department of Biology
University of Colorado
Boulder, Colorado

Dear Dr. Bock:

Please excuse the delay in answering your letter of December 18, I have been out of the office until this week. Dr. Martin's letter explains our joint efforts and there is little I can add at this time. About the most that I can offer is use of our facilities and plant materials for any part of the work that may be done at Tifton. Even this would have to be cleared with my Branch, but little difficulty on that score is anticipated. I will not be able to provide travel or living expenses.

An idea of the plant material available (maintained as true seed) can be ascertained from the enclosed reprints. It should be pointed out that many accessions must be started in the greenhouse in midwinter to obtain flowering under field conditions in this area. It is already too late for such plans to be formulated for the next growing season. A number of species are available in the wild in this state and adjacent states and the student may want to use Tifton as home base for some field work. Such work would be best done late in the season when seed pods are more likely to be available, sometime in late August, September or early October. I mention these things because I know how important timing can be to a student.

If a student should accept the challenge of this rather confused genus, I will do my best to assist him.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

Enclosures: 14

cc Dave Rogers
F. W. Martin

May 1, 1968

Dr. F. W. Martin
Federal Experiment Station
USDA, ARS, CRD
P. O. Box 70
Mayaguez, Puerto Rico

Dear Frank:

I agree with most comments made regarding the scoring procedures of our cooperative study and will refer to these in the order given in your letter of April 17.

8. Add as state 6.

11. Add as states 1, 2, and 3 according to your wording.

29. State 1. 

State 2.   in small flowers lobes sometimes overlapped

State 3.  lobes deep and sometimes split apart.

39. Omit.

41. 3 states as suggested.

42. 4 states as suggested with option to add states if crosses are obtained with more than 1 chromosome level.

45. & 46. I suggest about 10 flowers.

17. & 18. I have used 3 leaves in the past but believe I do as well by selecting a representative leaf. This would not be acceptable when plants have widely variable leaves.

In regard to changes in the seed list I will use 68.5, 67.53 and 67.52. Some additional seed are being shipped under separate cover list of same attached to this letter.

I have been quite rushed recently and am trying to catch up so please excuse the abruptness of this letter.

In the seed shipment I am including 3 additional accession numbers which have failed to flower in Tifton and for which I would like to obtain a seed increase. They are:

65.27 Merremia tuberculata var. odontosepales, Ghana, Africa

65.30 I. eggersiana, St. Johns Island, April, 1965

66.91 I. tuberosa, Dallas, Texas

The Sweet Potato seed and the few packets of species arrived in good shape. Seed set was quite adequate for my needs and I appreciate your cooperation.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:cjm

Enclosures: List of Ipomoea species

CC: Dave Rogers

Plant number _____ Species _____ Date _____

1. Weight of 100 seeds _____

2. Shape of seed

   1. rounded, or with 1 or 2 flat sides.
   2. longer than usual

3. Color of seed

   1. black
   2. brown
   3. tan to white
   4. speckled

4. Seed hairiness

   1. hairless
   2. short (velvety) hairs all over
   3. short (velvety) hairs, long on edges
   4. long hair all over
   5. short hairs on edges only
   6. long hairs on edges only

5. Seedling emergence

   1. hypocotyl emerges from soil
   2. hypocotyl stays in soil

6. Cotyledon color

   1. reddish
   2. greenish
   3. yellowish

7. Cotyledon shape

   1. almost entire, smooth
   2. slightly divided
   3. deeply cut, smooth
   4. very deeply cut, smooth
   5. slightly divided, rugose

8. Plant type

   1. slender, twining, and herbaceous
   2. prostrate and rooting at nodes
   3. prostrate, non-rooting at nodes
   4. erect and woody
   5. floating
   6. some stems climbing, some prostrate

9. Plant tip color

1. green
2. tinged with purple

10. Stem type

1. hairless and smooth
2. slightly hairy
3. strongly hairy
4. short, stubby thorns
5. hairless, angular

11. Persistence of vine

1. annual
2. perennial, grows from roots
3. perennial, enlarged or tuberous roots

12. Root skin color

1. light tan
2. dark tan to brown
3. light tan with tint of pink
4. dark tan to brown with tint of pink

13. Root inside

1. fibrous, tan
2. fibrous, cream
3. starchy, tan
4. starchy, cream

14. Leaf lobing of mature leaves

1. entire, some light lobing
2. lightly lobed
3. consistently deeply lobed
4. segmented, sometimes with teeth or lobes on segments

15. Leaf color on underside

1. green
2. some purple tint

16. Leaf hairiness

1. hairless
2. hairy on top only
3. hairy on top and bottom
4. hairy on bottom only

17. Length of mature leaves (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ___

18. Petiole length (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ___

19. Number of buds per flower cluster

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ___

20. Nature of flower cluster

1. branched (at least some flower cluster)
2. not branched

21. Length of peduncle

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ___

22. Length of pedicle

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ___

23. Bracts

1. small (less 1/8")
2. large (mas que 1/8)
3. no bracts

24. Sepal shape

1. acuminate
2. acute
3. emarginate
4. caudate

25. Sepal hairiness

1. hairless
2. hairy along edges
3. hairy all over

26. Corolla shape

1. funnel-shaped
2. bell-shaped
3. salver-shaped

27. Diameter of corolla limb (mm)

____ ____ ____ ____ ____ ____ ____ ____ ____ ____ Mean ____

28. Length of tube (mm)

____ ____ ____ ____ ____ ____ ____ ____ ____ ____ Mean ____

29. Corolla lobes

1. none
2. shallow
3. deep

30. Corolla color

1. white, entire
2. white limb, pink tube
3. pink, entire
4. pink, entire, with darker tube
5. yellow entire
6. yellow limb, pink tube

31. Corolla glands at base of tube

1. glands absent
2. glands present

32. Stigma position

1. included
2. exserted

33. Stigma shape

1. globular
2. filiform

34. Stamens

1. shorter than style
2. longer than style
3. some shorter, some longer

35. Anthers

1. straight
2. twisted

36. Pedicel of mature pod

1. thin and straight
2. thin and curved down
3. enlarged and curved down
4. enlarged and straight

37. Capsule hairiness

1. hairless
2. slightly hairy
3. very hairy

38. Pollen size (microns)

____ ____ ____ ____ ____ ____ ____ ____ ____ ____ Mean ____

39. Pollen surface

1. smooth
2. spiny

40. Seeds set from self-pollinations (pollinate 10)

A. flowers pollinated ____ B. pods set ____ C. seeds set ____

41. Seeds set from unpollinated flowers (Tag 10)

A. flowers tagged ____ B. pods set ____ C. seeds set ____

~~42. Percent stained Pollen~~

42 43. Chromosome No. N. PMC.

43 44. Chromosome No. 2N Root tips

Numerical Taxonomic Study of Section Batatas

On September 13-16, Dr. F. W. Martin, USDA, Puerto Rico, and Dr. David Rogers, University of Colorado, Boulder, met with me at Tifton, Georgia, to plan a cooperative study of the relationship of the sweetpotato to other species of ~~this~~ Section Batatas, genus Ipomoea. There is to be no exchange of funds in this collaborative study. Our agreement summarizes this particular study but does not concern other cooperative efforts between the researchers involved. We proposed to restudy the taxonomic relationships of Section Batatas using computer techniques. The object of our studies is to determine the origin of the sweetpotato and other polyploids of the Section Batatas with respect to diploid species. We will attempt to collect relative materials from the wild, grow them in Tifton and Mayaguez, observe certain characteristics and submit data for analysis in Boulder.

Details and Responsibilities are Outlined Below:

1. Dr. Martin will have the responsibility of developing a letter asking for help in collecting seeds. The letter will be sent to all possible contacts in countries where the species in question are believed to grow wild. This letter will outline

briefly our purposes and request seed of pink and white flower of Ipomoea species.

2. On arrival, each seed lot will be given an accession number by me and divided into two lots for plantings in Tifton and Mayaguez.
3. Dr. Martin and I will cooperate in the development of a list of characteristics to be measured or scored. I will develop the initial list from one used for species studies. We shall both make additions or changes as necessary. The list of characteristics and the attributes will be reviewed by Dr. Rogers for suitability for computer studies.
4. Dr. Martin will prepare voucher specimens to be sent to Dr. Rogers for study purposes. These will eventually be placed in the U. S. National Herbarium.
5. Dr. Rogers will furnish a graduate student who will study the taxonomy of the Section Batatas by conventional techniques. This student may have reason to work at Tifton and Mayaguez during his studies.
6. I will observe and count the chromosomes of the entries. I will also work with the chromosomes of hybrids produced in later phases.
7. I will suggest the hybridizations to be attempted and Dr. Martin will help with these as necessary.

8. Dr. Martin will work with the hybridization failures to determine causes and nature of barriers between the species, etc.
9. Data will be sent to Dr. Rogers at various stages. Dr. Rogers will develop the computer techniques and advise on the taking and preparation of data.
10. Stages at which the data will pass to the computer include:
    a. Preliminary analysis of sweetpotato variation using data already collected by me.
    b. When introductions have been studied.
    c. When F_1 hybrids have been produced.
    d. When F_2 hybrids have been produced.
11. Any investigator of the three may submit to the others an outline of a proposed publication including proposed authorship. Authorship may involve a single investigator or any combination of investigators. In general, each investigator will lead in his own speciality and authorship will be contingent on genuine contributions.

Present Status:

Dr. F. W. Martin will grow the first group of plants (Table 6) in 1968 but the planting at Tifton will be delayed until 1969 to allow time for a broader collection. I spent the week of February 26 - March 1, with Dr. Rogers in Boulder, Colorado, conducting preliminary analyses of sweetpotato Population C-3. On the basis of this familiarization with his procedures, I have worked out the following scoring procedure:

General Instructions:

In all measurements - if wide range occurs, give the range.

In all cases, no information will be scored "0".

A class can be added to any character stating "Not logically applicable because.....".

Additional classes may be added to any character if not described by descriptors given.

Additional characters may be added if necessary. For instance: I have assumed all specimens will have 1 style and 5 anthers. If some exceptions occur, this fact should be noted.

Before sending to Dr. Rogers, some of this information may be condensed, probably in form of matrix characters.

Table 6. Ipomoea Species for Numerical Taxonomic Study

Accession No.	Source
62.19 - I. trichocarpa -	Tift Co., Ga. - 1962
62.78 - I. ramoni -	Received from E. M. Hildebrand as I. gracilis - 1962 - origin unknown but types should be in this study
62.85 - I. triloba -	From Universitets Botaniske Have., Kobenhaven, Denmark, 1962 - original seed - increase available
62.96 - I. trichocarpa -	Louisiana - Dr. W. J. Martin - 1962
62.98 - I. lacunosa -	Louisiana - Dr. W. J. Martin - 1962
63.22 - I. triloba? -	Louisiana via Japan - from Dr. Nishiyama, Kyoto Univ., Kyoto, Japan as K61a (Seed increased at Tifton)
*63.23A. - I. triloba? -	Mexico via Japan - from Nishiyama as K-67
*63.23B. - I. triloba? -	Hawaii via Japan - from Nishiyama as KH-14
63.36 - I. lacunosa -	Oklahoma from H. B. Cordner, Oklahoma (Seed increased at Tifton, 1963)
63.50 - I. lacunosa -	Virginia - from H. L. Smith - original seed increase available-if these fail to germinate
63.60 - I. lacunosa -	Waco, Texas - from M. P. Mauldin Herbarium (Seed increased in Tifton)
63.69 - I. pandurata -	Gallion, Alabama - St. Andrews Church yard by M. T. Deonier 1963 (Seed increased at Tifton, 1966)

* Seed for only 1 packet - please send seed increase to Tifton. (Cont'd.)

Table 6 (Cont'd.)

Accession No.	Source
€4.15 - I. pandurata -	Tifton, Georgia - Alfred Jones - 1964 (Seed increased at Tifton, 1967)
€5.2 - I. trichocarpa var. torreyana -	Texas - L. H. Shinners
65.18 - I. ramoni -	Guanica, Puerto Rico - F. W. Martin - 1965
€5.23 - I. tiliacea -	Las Mesas, Mayaguez, P. R. - F. W. Martin - 1965
*65.25 - I. tiliacea -	Toro Negro, P. R. - F. W. Martin - 1965
*65.26 - I. tiliacea -	El Yunque, P. R. - F. W. Martin - 1965
66.3 - I. lacunosa -	Dallas, Texas - G. W. Lowe, 1966
*67.30 - I. batatas (trifida) -	Mexico via Japan - M. Kobayashi - called T_{11} in Japan - Prob. similar to K-123.
67.36 - I. sp. (lacunosa?) -	18 miles NE Hattiesburg, Miss., near Talahala Stream-Belton Walters - 1967
67.37 - I. sp. (ramoni-lacunosa)-	Tift Co., Georgia - A. Jones - 1967
67.38 - I. trichocarpa -	Tift Co., Ga. - A. Jones - 1967
67.39 - I. trichocarpa -	Tift Co., Ga. - A. Jones - 1967
*67.41 - I. trichocarpa -	Fernandina Beach, Fla. - 1967
67.42 - I. trichocarpa -	4 miles NE (Rt. 17) Yulee, Fla. - A. Jones - 1967

(Cont'd.)

Table 6 (Cont'd.)

Accession No.	Source
67.43 - I. trichocarpa - (segregating for white corolla)	Jekyll Island, Ga. - A. Jones, 1967
67.44 - I. sp. (trichocarpa) -	Hwy. 82, 5 miles E. Pearson, Ga. - A. Jones - 1967
*67.50 - I. gracilis -	Mexico via Chapman via D. B. Williams via Martin [1B-14(201)] (the only collection of this type I have seen) - Please send seed increase to Tifton.
67.51 - I. sp. (triloba) -	Guayanilla, P. R. - F. W. Martin - 1967 (Martin's 1B-3(201))
67.52 - I. sp. (triloba) -	Mona Island - F. W. Martin - 1967 [Martin's 1B-1(170)]
67.53 - I. sp. (triloba) -	Mayaguez, P. R. - F. W. Martin - 1967 - [Martin's 1B-2(1)]
67.58 - I. sp. (lacunosa - ramoni	Tift Co., Ga. - A. Jones, 1967 (More than 1 flower color likely)
67.60 - I. sp. (lacunosa) -	Tift Co., Ga. - A. Jones, 1967
67.62 - I. tiliacea -	Mon Repos, (East Coast) Demerara, Guyana, S. Amer. Miss D. H. Davis via F. W. Martin - 1967
67.65 - I. sp. (tiliacea) -	Gurabo, Provincia de Santiago, Dominican Republic - Dr. Vosede J. Jimenez via F. W. Martin - 1967
67.66 - I. sp. (triloba) -	Indian Ruins, St. John, U. S. Virgin Islands - F. W. Martin-1967
*67.67 - I. sp. (yellow flower) -	Above Koshin, Hagghier Mts., Socota Island, South Africa-Collected by Mr. John Lavranos via Dr. J. W. Dodson, Curator, Succulent collections, Univ. Calif. Bot. Garden (UCBG # 67.954) via Dave Rogers - Please send seed increase to Tifton.

(Cont'd.)

Table 6 (Cont'd.)

Accession No.	Source
67.68 - I. sp. -	Ras Hazira Muqadrihun (Near top of pass) Socota Island, South Africa - by Mr. John Lavranos via Dr. J. W. Dodson, Univ. Calif. Bot. Garden (UCBG # 67.955) via Dave Rogers.
67.69 - I. sp. -	Agaba Hazira, Muqadrihun (Near cave) Hagghier Mts., Socota Island, South Africa - John Lavranos via J. W. Dodson (UCBG # 67.956) via Dave Rogers.
67.70 - I. trichocarpa -	Mauldin Garden, Waco, Texas - M. P. Mauldin via Dave Rogers - 1967
67.71 - I. lacunosa -	Waco, Texas - M. P. Mauldin via Dave Rogers - 1962
68.3 - I. wrightii -	North Louisiana (in soybean field) - W. J. Martin 1967 - seed increased in LSU greenhouse.
68.4 - I. sp. -	San Nicolas de Cartago, Costa Rica (elevation 4117) - Edilberto, Camacho V. Institute Interamericano de Ciencias Agricolas, Turrialba, Costa Rica - via F. W. Martin.
68.5 - I. tiliacea -	Mayaguez, P. R. - F. W. Martin
68.6 - I. tiliacea -	La Hulera, Turrialba (600m.) Edilberto Camacho V. - Centro de Ensenanza e Investigacion, Turrialba, Costa Rica - via F. W. Martin.
68.7 - I. sp. -	San Juan Bautista, Villa Borinquen, Missionis, Paraguay - Dr. Juan A. Vincenty.
68.8 - I. sp. -	P. I. 326189 - 5 miles NE Cuernavaca on toll road to Mexico (6,400 ft. elevation) - H. S. Gentry

(Cont'd.)

Table 6 (Cont'd.)

Accession No.	Source
68.9 - I. sp. -	P. I. 326190 - 5 miles E Iguala, Guerrero (3,000 ft.) - H. S. Gentry
68.10 - I. sp. -	P. I. 326191 - 8 miles S. Tzitizio, Michoacan (3,000 ft.) - H. S. Gentry
68.11 - I. trichocarpa -	Dallas, Texas (Shinners) not var. Torreyana via Martin 1B-8 (144)
68.13 - I. sp.-	Bonne Terre, St. Lucia, West Indies from Calixte George (Seed look like I. tiliacea)
62.19 x 62.78 F_2	2n = 30 (F_1 corolla larger than 62.19)
62.78 x 62.82 1 F_2	2n = 30 (F_1 corolla similar to sweetpotato - Nursery # C-9
62.78 x 62.82 2 F_2	2n = 30 (Nursery # C-54)
62.78 x 62.85 F_2	2n = 30
62.85 x 62.78 F_2	2n = 30
(62.78 x 62.85) x 62.85 F_2	2n = 30
(62.85 x 62.78) x 62.85 F_2	2n = 30
(62.19) colc. tr.	2n = 60 (Nursery # C-12)
(62.78 x 62.82) colc. tr.	2n = 60 (Nursery # C-54)
(62.19 x 62.78) colc. tr.	2n = 60 (Nursery # C-19)

(Cont'd.)

Table 6 (Cont'd.)

Accession No.	Source
(62.78 x 62.85) colc. tr.	2n = 60 (Nursery # C-6)
(62.78 x 62.82) colc. tr. x (62.19) colc. tr.	2n = 60 (Nursery # C-54 x C-12)

Scoring Procedure:

Character No.	Character and states
1	Seed Weight-gms/100 seed-Ordered-(later)
2	Seed Shape - Simple 1-rounded with 2 flat surfaces (typical Morning glory) 2-longer than typical
3	Seed Coat Color-Ordered (Mature seed) 1-black 2-brown 3-tan to white 4-speckled
4	Seed pubescence - Ordered 1-glabrous 2-short (velvety) all over 3-short (velvety) but long on edges 4-long all over 5-short hairs along edges only 6-long hairs along edges only
5	Seedling emergence - Simple 1-hypocotyl elongates, plumule arises above ground 2-hypocotyl fails to elongate, plumule arises below soil surface
6	Cotyledon color - Ordered 1-reddish 2-greenish 3-yellowish
7	Cotyledon shape - Ordered 1-almost entire, smooth 2-slightly divided, smooth 3-deeply cut, smooth 4-very deeply cut, smooth 5-slightly divided and rugose

Character No.	Character and states
8	Plant type - Ordered 1-slender twining and herbaceous except some stems may appear woody late in the season 2-prostrate and rooting at nodes 3-prostrate non-rooting at nodes 4-erect and woody 5-floating 6-twining and herbaceous but with some prostrate running vines (I. tiliacea type)
9	Plant tip color - Simple 1-green 2-tinged with purple
10	Stem type - Ordered 1-stem glabrous and smooth 2-stem lightly pubescent 3-stems strongly pubescent 4-stems muricate (short, hard, protuberances) 5-stems strongly angular and glabrous
11	Persistence - Ordered 1-annual, no regrowth from roots 2-perennial, regrowth from roots, no evident tuberization 3-perennial, regrowth from roots, enlarged roots or tuberization
12	Root skin color - Matrix 1-light tan 2-dark tan to brown 3-light tan with tint of pink 4-dark tan to brown with tint of pink
13	Root flesh - Matrix 1-fibrous, tan color 2-fibrous, cream color 3-starchy, cream color 4-starchy, tan color

Character No.	Character and states
14	Leaf lobing - Ordered 1-entire generally, some light lobing 2-lightly lobed with some entire 3-consistently deeply lobed 4-segmented, sometimes with teeth or lobes on the segments
15	Leaf vein color on underside - Simple 1-green 2-purple or at least some purple tint
16	Leaf pubescence - Matrix 1-glabrous 2-pubescent on top only 3-pubescent on top and bottom 4-pubescent on bottom only
17	Leaf length (mature) in mm - Ordered (Neighbors) later as index of size
18	Petiole length in mm - Ordered (Neighbors) later
19	No. buds/cyme - Ordered (later)
20	Cyme - Simple 1-branched (paniculate) 2-not branched
21	Length of peduncle (bearing cyme) in mm- Ordered (neighbor) later
22	Length of pedicel (stalk of individual flower) in mm - Ordered (neighbor) later
23	Bracts - Simple 1-small 2-large 3-no bracts
24	Sepal shape - Ordered 1-acuminate (long tapering point as *I. Nil*) 2-acute 3-emarginate 4-caudate

Character No.	Character and states
25	Sepal pubescence - Ordered 1-glabrous 2-hairy along edges only 3-hairy
26	Corolla shape - Ordered 1-funnel 2-bell-shaped 3-salver-shaped
27	Limb diam. in mm - Ordered (later)
28	Tube length in mm - Ordered (later)
29	Corolla lobes - Ordered 1-none 2-shallow in small flowers sometimes sort of peaked 3-deep lobes deep and sometimes split apart
30	Corolla color - Ordered 1-white, entire 2-white limb, pink tube 3-pink, entire 4-pink, entire with much darker tube 5-yellow, entire 6-yellow limb, pink tube
31	Corolla glands at base of tube (as in sweet-potato and *I. gracilis*) - Simple 1-glands absent 2-glands present
32	Stigma position - Simple 1-included 2-exserted
33	Stigma shape-Ordered 1-2 or 3 - globular (round) 2-2 or 3 - filiform (long)

Character No.	Character and states
34	Stamens-Ordered 1-shorter than style 2-longer than style 3-variable, some equal to, longer or shorter than style
35	Anthers-Simple 1-straight 2-spiral
36	Peduncle of mature pod-Ordered 1-thin and straight 2-thin and curved down 3-enlarged and curved down 4-enlarged and straight
37	Capsules-Ordered 1-glabrous 2-lightly pubescent 3-heavily pubescent
38	Pollen size-Ordered (later)
39	Pollen surface-Simple 1-smooth 2-spinose
40	Self compatibility (in P. R.)-Ordered-Matrix 1-set seed freely in isolation 2-sets some seed in isolation 3-does not set seed in isolation
41	Cross compatibilities (in P. R.)-Ordered Matrix 1-hybridizes with 2n (I. trichocarpa) 2-hybridizes with 4n (I. gracilis) 3-hybridizes with 6n (I. batatas) 4-does not hybridize with above species
42	Chromosome numbers n (PMC) - Probably simple
43	Chromosome numbers 2n (Root tips) - Probably simple
44	Self seed set - Ordered
45	OP seed set - Ordered

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

December 23, 1969

AIRMAIL

Dr. David J. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

Thanks for your letter. I'm glad to hear of your continued interest in the sweetpotato; I can well understand your financial problems.

I am enclosing a copy of my reply to the letter from Dr. Bock. I presume that I have second-guessed correctly, that the student will be involved in the computerized program. For strictly conventional taxonomy I sought out some local help. Unfortunately, this cooperation developed more rapidly than I intended, but I believe will not interfere with our mutual interests.

We are entering a time when clear and frank communication will be necessary. Therefore, please write frequently until we have all responsibilities clearly defined.

Sincerely,

Frank

Franklin W. Martin
Plant Geneticist

Enclosures

December 23, 1969

AIRMAIL

Dr. Alfred Jones, Geneticist
Vegetables and Ornamentals Res. Branch
Crops Research Division, ARS, USDA
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al:

Enclosed is a copy of a letter from Dr. Jane Bock, and my reply. I think maybe you can write directly to her.

Decisions are a little difficult now because it appears we have got the ball rolling again, and we yet have to work out details. Please accept anything I say in my letters as tentative pending decision of all parties. Let's keep in close touch.

Dr. González-Más has jumped with enthusiasm into the local Ipomoea picture, and is vigorously collecting the Convolvulaceae of Puerto Rico. Because of his conventional background in taxonomy, he appears to me to be the best man we've got for the conventional study. I felt it necessary to get something to my chief in this respect, and therefore prepared the memo, enclosed.

I was glad to get Dave's letter, and think that prospects for future cooperation look good.

Sincerely,

Franklin W. Martin
Plant Geneticist

Enclosures

ARS:FES:FWMartin:hjc

cc: D. J. Rogers

December 23, 1969

AIRMAIL

Dr. Jane Bock
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dr. Bock:

Thank you for your letter of December 18, 1969. I hope we can work out a satisfactory problem for your student.

For some years now Dr. Alfred Jones of Tifton, Georgia and I have been working cooperatively with the sweetpotato. In addition to our long-term goals with respect to breeding and improvement, we have tackled many basic botanical problems. Dr. Jones has specialized in the cytogenetics of Ipomoea. I have pursued the nature of the sterility and incompatibility of this species. We are now jointly working on the close relatives of the sweetpotato in an attempt to understand their interrelationships, and to find how they are related to the sweetpotato. Dr. Rogers is cooperating with us on this problem, and we especially look forward to his help with the computerization of the taxonomy.

Thus, our interests are largely evolutionary, how the sweetpotato evolved, and how we can guide its evolution in the service of mankind.

Since neither Dr. Jones nor I are strongly oriented in taxonomy, we need help in particular in this area, particularly in the application of numerical techniques to the problem. In this respect we have available already considerable data on about 75 collections of the species. We have probably the world's largest collection of living relatives of the sweetpotato. We shall be growing these again in 1970 in Georgia and in Puerto Rico. We feel the time is ripe for a student to begin to play an active role.

Speaking for myself, I think your student's participation would be welcome. The problem would involve first a review of the literature (familiar to both of us), field work to become acquainted with the species, and laboratory work on the computerization of the data. As far as publication is concerned, we feel that the man who leads a particular piece of work and who writes the paper merits the senior authorship. Any cooperation with your student would not preclude publication on our part of studies already developed.

I believe further communication with Dr. Rogers, Dr. Jones, and myself will be necessary to reach a mutual understanding before your student begins.

Some of my reprints are enclosed.

Sincerely,

Franklin W. Martin
Plant Geneticist

Enclosures

cc: D. Rogers
A. Jones

ARS:FES:FWMartin:hjc

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

December 18, 1969

Subject: Cooperative studies of Ipomoea

To: M. H. Gaskins
Officer in Charge

For some time I have needed some taxonomic help with our studies of the relatives of the sweetpotato. Our cooperative program with Alfred Jones and David Rogers continues, but Rogers has not had the funds necessary to dig into his part of the program. I have therefore talked to Dr. Arturo González-Más of the College of Agriculture and Mechanical Arts here in Mayaguez, and find him eager to cooperate in a program of mutual benefit. My interests, in order of priority, are the sweetpotato, its relatives, and the genus and family. His interests, in order, would be the family, the genus, the section Batatas, and finally the sweetpotato. In addition, Dr. González-Más would like to learn some of the techniques of modern characterization of plants, including the computerization of our study of the section Batatas and the uses of isozyme technology.

In our talks together we have agreed on the following points:

1. The cooperative work with Jones and Rogers will be completed independent of this new cooperative venture.

2. Dr. González-Más will keep informed of our progress with the computerized study, in order to learn techniques.

3. We shall begin immediately a conventional taxonomic study of the species of Convolvulaceae in Puerto Rico and possibly the Virgin Islands. Dr. González-Más will take the leadership in this study, and I shall help, mostly through my knowledge of the local species and the literature.

4. We shall also cooperate in a conventional taxonomic study of the section Batatas although this study will be held off for perhaps 6 months. Dr. González-Más will take the leadership in this study, and I shall again help in growing

materials, etc. This study will, we hope, complement the studies Jones, Rogers, and I will be finishing. Dr. Jones and Dr. Rogers may wish to be included in these studies.

5. As soon as I finish my first analysis of isozyme variation in Ipomoea, Dr. González-Más and I shall plan a longer-term, joint study under my leadership. My goals with isozyme technology will be to characterize variation and relationships in the sweetpotato and its relatives. Dr. González-Más will have broader goals with respect to the family Convolvulaceae.

6. We feel that the above projects will lead us into other problems of mutual interest.

Franklin W. Martin
Plant Geneticist

Copy of ltr sent 12/10/69

Dear Al and Frank:

I hope you both will forgive me for my unresponsiveness this past year. Believe me, it is not for lack of desire to continue our work that I have not, but rather, the absolute requirement that I find funds for survival of my team. As you may not know, we are completely dependent for all funding--salaries, services, computing, travel, etc.,-- on outside grants. The U. of Colo. has supported only my salary, and that only in part, and nothing else. We were flying high on a grant from NSF when we initiated our work, and we made the ~~false~~ assumption that we would probably continue to be successful in attracting granting from the same agency. When I went in for renewal of our support in January, 1969, I discovered how wrong I was in that assumption, and have continually since that time, been trying to find the key that opens the cash box. You wouldn't believe the number of places and efforts we have made to continue our support, and when we have thought we were successful, even in the glamor areas such as oceanography, have found /that all the sources of Federal funding have dried up. Al, you mentioned the same thing happening in USDA. Recall that I tried to get some help for our project from ARS--no luck whatsoever. While we aren't out of the woods yet, we are beginning to see some cracks in the wall, and hope that we won't die. I perhaps am foolishly optimistic that we will be able to find the needed money to keep us at work in the various important and interesting areas where we have chosen to work. One basis for the optimism is that AID seems to be interested in cassava studies, and we're hoping to get some funds from them to continue our work on that crop. At least I have funds for one post-doc to finish up some work we have in progress now. All this long-winded, sad, mournful introduction leads up to my saying that let's keep the sweet potato project going, even if [illegible]

I believe that I can find a student to work on the project, even without funds, even though the candidates at the moment are still in a decision-making process. I've tried to sell the idea that the student will have an excellent opportunity to work with two outstanding men on a project which has tremendous value, and that eventually, we will get the funding necessary to put things on a full-scale operational level. Whether the funds be through some NSF panel, the USDA, or somewhere else isn't at all certain, but certainly the present interest in increasing world food supplies should work in our behalf. I hope you two don't mind my advertising that you and your facilities will be open to the student to aid and abet his own work. Xx xoxmitxmxnt isxmxdx toxthexsxuxexntxfxom xoxrxbxdxetsx-juxtxwhax xox knxx. I'm also putting in the facilities and programs of the Taximetrics Lab., and would, of course, assume that I will carry the burden of the student's financing. Here, I would like to have your assistance in prying loose funds for the work--wherever that might come from. Maybe a joint effort, where you two and I put our names on a jxxxx proposal to Rockefeller would be the answer.

Al, if you'll send along a copy of the the 43 traits under study, and with a small sample of actual data to show the variations in the traits, we can xxxxxx check it out for suitability for the programs. Frank, at the moment, just keep on gathering that material, but don't send anything along till I've gotten the student settled in on the problem. I'll be working on the student just after Christmas, and should have someone coming along by late January or perhaps early February.

Here's hoping we can keep things going, and looking forward to your "input".

Sincerely, and Merry Christmas!

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

November 25, 1969

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

We're almost through collecting data from the Ipomoea species and could begin transferring the information to work sheets.

As you recall, there were about 43 traits planned for study. Data will not be complete on all entries since some failed to flower and others senesced before root characters were determined. Duplicate plants were studied here at Tifton and in Puerto Rico, and I believe Frank may have data for more than one season on at least some entries.

It may be a good idea for us to get together on the format of collecting data on work sheets. Your experience in this area is much greater than mine and since we would be using programs developed by your organization, it may be best that you establish the sequence of information of the various columns.

If you need a copy of traits studied, let me know.

The timing of this study was pretty good in that we got started before the money squeeze affected all three of us. It looks like lean years for USDA personnel in the immediate future. No doubt, you have already felt the pinch. Under present conditions, we could probably not have started this work so I'm glad we did get things rolling when we did.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

cc Frank Martin

Department of Horticulture
University of Hawaii
Honolulu, Hawaii 96822
May 6, 1969

Dr. David Rogers
Taxonomic Laboratory, Dept of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave –

My work days are numbered here, and his wages to get the first charades cooking shucks off to you. These consist of the data collected from about 57 plants, according to the attached list. I have not had time to seriously study the data here. But I shall be spending lots of time with these plants when I return to P.R. It would appear to me to be desirable for you to look over the data and advise me and I of any shortcuts you might see, or any other suggestions.

I confess to be away from sweet potato long enough to be a little rusty and unsure of future plans. But I hope to remedy this in the next few months, and you will be hearing from me regularly.

Let me know if you want the data sent to you. I leave here May 29.

Sincerely

Frank

#	Species	Number of plants	Completeness of Data (1-5)
6219	I. trichocarpa	3	5
6285	I. trilobz	1	5
6296	I trichocarpa	1	5
6298	I. lacunosa	1	5
6322	I trifida	1	5
6323	I. trilobz	1	5
6336	I lacunosa	1	5
6350	I lacunosa	1	5
6360	I. lacunosa	1	5
6369	I. parviflora	1	5
64 9	I. trichocarpa	1	5
6415	I parviflorata	1	2
652	I trichocarpa	1	5
6523	I tiliacea	1	2
6526	I. trilobea	1	5
663	I. lacunosa	1	5
6730	I trifida	1	3
6736	I. lacunosa	1	5
6737	I. vernona - lacunosa hybrid	1	5
6738	I trichocarpa	1	5
6739	I. trichocarpa	1	5
6741	I trichocarpa	1	5
6742	I. trichocarpa	1	5
6743	I. trichocarpa	1	5
6744	I. trichocarpa	1	5
6750	I. ~~trichocarpa~~ gracilis	1	4
6751	I. ramosi - trilobz	1	1
6753	I. ramosi	1	5
6758	I. lacunosa	1	5
6760	I. lacunosa	1	5
6762	I tiliacea	1	2
6766	I. trilobz	1	5

6767	I. speciosa	1	5
6770	I. trichocarpa	1	~~2~~ 5
6771	I. lanuginosa	1	5
68.3	I. wrightii ?	1	5
68.4	I. ?	1	5
68.5	I. filiacea	1	2
68.6	I. filiacea	1	2
68.7	I. ?	1	3
68.9	I. ?	1	5
68.10	I ?	1	~~2~~ 5
68.11	I. trichocarpa	1	5
68-13	I. ?	1	1
62-19 x 6278	I trichocarpa	~~3~~ 2	5
6278 x 6282	I ?	3	5
6278 x 6285	I. ?	2	5
6285 x 6278		1	5
6278 x 6219		1	5
6285 x (6278) x 6285		2	5

UNIVERSITY OF HAWAII
College of Tropical Agriculture
Department of Horticulture

March 11, 1969

Dear Al and Dave –

I have just been looking over the data sheets from the first survey of Ipomoea introductions in Puerto Rico. Although not all data are in my hands, and accession and planting records are not available (still in P.R.) I believe that I can make some generalizations and suggestions, and hope that I can get some discussion and decisions from the two of you.

First, last year was a poor one for Ipomoeas in Puerto Rico. Rain was excessive, and days were often cloudy and damp. This led to poor growing conditions in the greenhouse, and a large number of plants evidently did not survive until flowering. I cannot be sure until I check planting records how serious this problem was, and I find it unexcusable that plants should die, but I wasn't there, and this cannot be sure of problems, and care the plants received. I am sure that with proper care this problems can be avoided. I shall plan to plant later this year, and get most data during the dry season. In most cases, plenty of seed should be available, and I anticipate no problems in replanting.

Henke Hall · Room 137 · 1825 Edmondson Road · Honolulu, Hawaii 96822 / Cable Address: UNIHAW

A second problem arose with respect to certain species that are different to grow or that flower very slowly. I. pandurata does not do well under our P.R. short days (I see, however, that our accession flowered). On the other hand, I. tiliacea flowers only during short days, and needs to be mature by that time. This year I shall plant I. tiliacea early, try to develop large plants, and count on flowering during the dry season.

A third problem arose with respect to making the cross-pollinations. This was a problems of timing, getting materials to bloom simultaneously, etc., and of technique. The new arrangements for planting will eliminate some of these timing problems, and Jill be there to supervise and coordinate all aspects.

In summary, I would like to say that we learned a few lessons about these materials, and expect to be able to have a very good season in late 1969 early 1970.

Now, what to do with the data. I have about 60 5-page note forms, most about completed, but some with only partial data. If you are interested, Dave, I can send these to you for your evaluation. You may wish to set up your program, make a preliminary run, or just evaluate the characters, the number of measurements of each, etc. and give advice that we might be able to use in the coming season. Later, before planting, I wish to evaluate these myself and see if all materials need

Henke Hall · Room 137 · 1825 Edmondson Road · Honolulu, Hawaii 96822 / Cable Address: UNIHAW

replanting. If doubt exists, I favor replanting all materials, but reducing note taking and measuring according to any recommendations Dave makes.

UNIVERSITY OF HAWAII

College of Tropical Agriculture
Department of Horticulture

Ah, I am going to place most of my emphasis this year on items 40-43, the self-fertility, cross fertility data. In addition, I expect to work up some biochemical characters, isoenzymes, etc. Although I cannot include that information now, I shall be working out techniques this summer and shall expect to devote lots of time to this in the spring.

As a goal, I shall expect to have all this work completed and all records turned over to Dave by April, 1970.

I have only one regret, that we have only one accession of *I. gracilis*, the most anomalous of our species collection.

I suppose I have failed to discuss many points of common interest. But I hope I can spike discussion and get both of you heated up, as this, our big year, approaches.

I miss Puerto Rico, the old coffee farm, and the familiar way of life, but we had a great year and expect to do much more in the 3 months I have left.

Sincerely Frank

Henke Hall · Room 137 · 1826 Edmondson Road · Honolulu, Hawaii 96822 / Cable Address: UNIHAW

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

November 26, 1969

AIRMAIL

Dr. David J. Rogers
Department of Biology
University of Colorado
Denver, Colorado

Dear Dave:

We have about finished a second season of work with the Ipomoea species of the section Batatas. We have clearly come to a time for evaluation and decision making. As I have been collecting herbarium specimens and have a very good living collection of species and materials, I feel that I must get started very soon on the conventional aspects of the taxonomic work, as a prelude to the computer studies.

I wonder if at this time you would like to see some of this material? Do you have or do you expect to have a student that can attack this problem? What are your plans for this cooperative program, and how can I help with materials to get things rolling again?

I hope you will take some time to answer this letter so that we can work together on the next steps in the program.

Sincerely,

Frank

Franklin W. Martin
Plant Geneticist

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
BELTSVILLE, MARYLAND 20705

March 18, 1969

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado 80302

Dear Dr. Rogers:

We appreciate your letter of March 11, concerning USDA support on a problem of the origin and classification of the sweet potato.

This research is of interest to us but unfortunately we do not have funds available to support this work at the present. We have lost a sizeable amount of funds as result of reductions effected under recent legislation in both Fiscal years 1968 and 1969.

It is suggested that you consider grants from some of the various private granting groups, particularly Rockefeller. If feasible we would be happy to add our support to your request for funds for evalutionary and taxonomic research on sweet potatoes.

Sincerely yours,

August E. Kehr

August E. Kehr
Chief
Vegetable and Ornamentals
Research Branch

19 February 1969

Dr. Alfred Jones
USDA - ARS - Crops Research Division
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al:

Thanks for your letter of the 11th. It's great to hear you are going ahead with the Ipomoea job on schedule. I just wish I could hold up my end of the bargain on a graduate student. Living as we have from hand to mouth on grants I am in very bad shape right now. If I can get a graduate student free (which is doubtful these days) and if I can find some funds for student travel, maybe I can get back into the swing on our mutual project. What with budgets being what they are, I don't have much hope.

Does ARS have any way to receive applications for graduate research assistants where the graduate student would be at a university such as ours but work on a project of mutual concern to the USDA? Let me know if you know of any such route and I will apply through it.

I would suggest very strongly that in the data gathering process which you and Frank will be planning together that we work pretty closely on the structure of the data gathering. I would like to see our information retrieval system put to work on these data in addition to our various classification procedures. If you could send me some worksheets on your data gathering process, then maybe we can facilitate putting it into the computer.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA

February 11, 1969

Dr. David J. Rogers
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

We are making plans for our year's work and I am planning to grow the Ipomoea species as planned. Originally, you were to supply a graduate student to help with part of this study. What are your plans now?

I believe we will be able to handle scoring of the specimens for the various characters planned. However, we would not be able to conduct the studies of herbarium specimens at other locations as discussed in our original plans. Omission of this part of the study would certainly be regrettable but understandable as we all have to live within the limits of budgets. We could leave this aspect of the study open now and add it back in should money become available after July 1 or later in the year.

Let me know your plans.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jjg

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

February 24, 1969

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

In regard to our data-gathering process, I believe Frank and I have sent copies of our plans as they developed to you. According to my files, you have a letter dated April 9, 1968, which gives the plans for collecting data and then some amendments listed in a letter dated May 1, 1968. Frank has already gathered one year's data with these procedures. If any changes are to be made for this year, we will need your recommendations shortly.

I am sure that ARS must have methods of receiving applicants as Research Associates but I do not know the exact procedure. I could provide a desk in our laboratory and the necessary supplies for a student to work here at Tifton. His living and travel expenses would have to come from somewhere else. Why don't you write Dr. A. E. Kehr, Chief, Vegetables and Ornamentals Research Branch, USDA-ARS, Crops Research Division, Beltsville, Maryland 20705, for information relative to such an arrangement. There may be some funds available for this sort of thing that I have never heard about.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jjg

UNIVERSITY OF HAWAII

College of Tropical Agriculture
Department of Horticulture

Dear Dave

Thanks for your note. Sorry your address was wrong. The addresses on the envelopes were copied from an old list.

Yes, I think we ought to have a note on our collaborative project. I have by no means forgotten this, and my assistant in P.R. should have reams of data from his genus work. I am thinking also of some enzyme work that might give additional descriptive information concerning the species. In a brief survey here, I find that the isozymes of peroxidase in the stigma are constant among varieties of sweet potato. Among a number of species tested, only ramonii showed an identical pattern of isozymes. I hope about a year from now to check its entire collection for isozymes of 3-4 enzymes, for this may give one of the best possible ~~systematics~~ techniques to show relationships.

Dave, I'm going to have too much to say already in the newsletter. Could you make up a note and send it to

Regards, Yours, Martin

Henke Hall · Room 137 · 1825 Edmondson Road · Honolulu, Hawaii 96822 / Cable Address: UNIHAW

JAN 7 1969

Dr. Frank Martin
Department of Horticulture
College of Tropical Agriculture
University of Hawaii
Honolulu, Hawaii 96822

Dear Frank:

Sorry I've taken nearly a month to get around to answering your letter of the 9th. I am sending a short note to your Puerto Rico address to be used for the newsletter. It is good to hear that things are moving along on the studies. The isozyme analysis sounds interesting. I'd like to hear more about it.

Happy New Year!

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

11 November 1968

Dr. Frank W. Martin
USDA-ARS-CRD
Federal Experiment Station
Mayaguez, Puerto Rico 00708

Dear Frank:

With respect to the newsletter, do you wish to give a run-down on the potential collaboration that you, Al and I have made on sweet potatoes, and classification with relation to other species in the genus. It might be nice to reinforce the idea that people should send us seeds, since I haven't received any at all recently.

Please note change in address from that given on the letter to me.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

October 31, 1968

Dr. David J. Rogers
Dept. of Botany
Colorado State University
Ft. Collins, Colorado USA 80521

Dear Sir:

During the International Symposium on Tropical Root Crops in 1967, an annual newsletter was proposed as a medium of communication among investigators interested in these crops. A committee headed by Dr. Jorge León was organized in order to set up such a publication. The first such newsletter appeared in January 1968. The committee is now in the process of organizing a second newsletter, with the hope of publishing it in early 1969. To make this newsletter a success the help of all persons interested in receiving the newsletter is urgently requested.

You can help by filling in the blanks of the enclosed form. Your name will then be added to the address list and you will receive the newsletter at no cost to you. Your name will also be included in a list of investigators to be published in the next newsletter.

You can also help by forwarding to me items for inclusion in the next newsletter. Items should include announcements of news, meetings, new programs, etc., and concise reports of completed research work. The newsletter will also contain a list of names of persons maintaining collections of root or tuber crops, special stocks, etc.

Your cooperation in promptly answering this inquiry will assure your receipt of the newsletter. The newsletter will not be continued unless sufficient replies are received to make the necessary efforts worthwhile. Your suggestions as to other names to add to the address list will be greatly appreciated.

Sincerely yours,

Franklin M. Martin
Plant Geneticist

Dave - how about a note this time?

F.

23 May 1968

Dr. Franklin W. Martin
USDA - ARS - CRD
Federal Experiment Station
Mayaguez, Puerto Rico 00708

Dear Frank:

Thanks for the character coding sheets. It occurs to me that we will have several useful programs in addition to the one already known to you which will be useful when we go into the origin and evolution of sweet potatoes. The information gathered on these coding sheets you have sent can serve as "input" to these other programs without modification, but used in different ways.

Some day, either going or coming from Hawaii, why don't you stop in and we'll give you a complete run down on what we can do with various pieces of our equipment. Most of our efforts turn out to be quite useful for the kind of thing you and Al and I want to do.

Have a good time in Hawaii.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

May 20, 1968

AIR MAIL

Dr. David F. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

I am sending herewith a copy of the character list that will be used to rate Ipomoeas this summer. I'm sure that a summer of experience will help us know what changes to make for the big study. I'll have these data ready in the fall and winter, and then you will be welcome to them. Some consolidation of data will be necessary. Measurements will have to be put into character classes, etc.

I'm leaving June 1 for my year of study away. My address will be:

Department of Horticulture
University of Hawaii
Honolulu, Hawaii 96822

If you come that way, be sure to look me up.

Meanwhile, hope you have a good summer.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

Plant number _____ Species _____ Date _____

1. Weight of 100 seeds _____

2. Shape of seed

   1. rounded, or with 1 or 2 flat sides.
   2. longer than usual

3. Color of seed

   1. black
   2. brown
   3. tan to white
   4. speckled

4. Seed hairiness

   1. hairless
   2. short (velvety) hairs all over
   3. short (velvety) hairs, long on edges
   4. long hair all over
   5. short hairs on edges only
   6. long hairs on edges only

5. Seedling emergence

   1. hypocotyl emerges from soil
   2. hypocotyl stays in soil

6. Cotyledon color

   1. reddish
   2. greenish
   3. yellowish

7. Cotyledon shape

   1. almost entire, smooth
   2. slightly divided
   3. deeply cut, smooth
   4. very deeply cut, smooth
   5. slightly divided, rugose

8. Plant type

   1. slender, twining, and herbaceous
   2. prostrate and rooting at nodes
   3. prostrate, non-rooting at nodes
   4. erect and woody
   5. floating
   6. some stems climbing, some prostrate

9. Planttip color

1. green
2. tinged with purple

10. Stem type

1. hairless and smooth
2. slightly hairy
3. strongly hairy
4. short, stubby thorns
5. hairless, angular

11. Persistence of vine

1. annual
2. perennial, grows from roots
3. perennial, enlarged or tuberous roots

12. Root skin color

1. light tan
2. dark tan to brown
3. light tan with tint of pink
4. dark tan to brown with tint of pink

13. Root inside

1. fibrous, tan
2. fibrous, cream
3. starchy, tan
4. starchy, cream

14. Leaf lobing of mature leaves

1. entire, some light lobing
2. lightly lobed
3. consistently deeply lobed
4. segmented, sometimes with teeth or lobes on segments

15. Leaf color on underside

1. green
2. some purple tint

16. Leaf hairiness

1. hairless
2. hairy on top only
3. hairy on top and bottom
4. hairy on bottom only

17. Length of mature leaves (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

18. Petiole length (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

19. Number of buds per flower cluster

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

20. Nature of flower cluster

1. branched (at least some flower cluster)
2. not branched

21. Length of peduncle

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

22. Length of pedicle

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

23. Bracts

1. small (less 1/8")
2. large (mas que 1/8)
3. no bracts

24. Sepal shape

1. acuminate
2. acute
3. emarginate
4. caudate

25. Sepal hairiness

1. hairless
2. hairy along edges
3. hairy all over

26. Corolla shape

1. funnel-shaped
2. bell-shaped
3. salver-shaped

27. Diameter of corolla limb (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

28. Length of tube (mm)

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Mean ____

29. Corolla lobes

1. none
2. shallow
3. deep

30. Corolla color

1. white, entire
2. white limb, pink tube
3. pink, entire
4. pink, entire, with darker tube
5. yellow entire
6. yellow limb, pink tube

31. Corolla glands at base of tube

1. glands absent
2. glands present

32. Stigma position

1. included
2. exserted

33. Stigma shape

1. globular
2. filiform

34. Stamens

1. shorter than style
2. longer than style
3. some shorter, some longer

35. Anthers

1. straight
2. twisted

36. Pedicel of mature pod

1. thin and straight
2. thin and curved down
3. enlarged and curved down
4. enlarged and straight

37. Capsule hairiness

1. hairless
2. slightly hairy
3. very hairy

38. Pollen size (microns)

____ ____ ____ ____ ____ ____ ____ ____ ____ ____ Mean ____

39. Pollen surface

1. smooth
2. spiny

40. Self-compatibility

1. pollen germinates on stigma
2. pollen does not germinate on stigma

41. Cross compatibility

1. sets seed with 2n (I. trichocarpa)
2. sets seed with 4n (I. gracilis)
3. sets seed with 6n (I. batata)
4. sets seed with none of these

42. Seeds set from self-pollinations (pollinate 10)

flowers pollinated _____ pods set _____ seeds set _____

43. Seeds set from unpollinated flowers (Tag 10)

flowers tagged _____ pods set _____ seeds set _____

May 1, 1968

Copy

Dr. F. W. Martin
Federal Experiment Station
USDA, ARS, CRD
P. O. Box 70
Mayaguez, Puerto Rico

Dear Frank:

I agree with most comments made regarding the scoring procedures of our cooperative study and will refer to these in the order given in your letter of April 17.

8. Add as state 6.

11. Add as states 1, 2, and 3 according to your wording.

29. State 1. 

State 2.   - in small flowers, lobes sometimes sort of peaked

State 3.  lobes deep and sometimes a split a part.

39. Omit.

41. 3 states as suggested.

42. 4 states as suggested with option to add states if crosses are obtained with more than 1 chromosome level.

45. & 46. I suggest about 10 flowers.

17. & 18. I have used 3 leaves in the past but believe I do as well by selecting a representative leaf. This would not be acceptable when plants have widely variable leaves.

In regard to changes in the seed list I will use 68.5, 67.53 and 67.52. Some additional seed are being shipped under separate cover list of same attached to this letter.

I have been quite rushed recently and am trying to catch up so please excuse the abruptness of this letter.

In the seed shipment I am including 3 additional accession numbers which have failed to flower in Tifton and for which I would like to obtain a seed increase. They are:

65.27 Merremia tuberculata var. odontosepales, Ghana, Africa

65.30 I. eggersiana, St. Johns Island, April, 1965

66.91 I. tuberosa, Dallas, Texas

The Sweet Potato seed and the few packets of species arrived in good shape. Seed set was quite adequate for my needs and I appreciate your cooperation.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:cjm

Enclosures: List of Ipomoea species

CC: Dave Rogers

Supplement to list of Ipomoea Species for Numerical Taxonomic Study

May 1, 1968

Accession No.	Source
68.11 - I. trichocarpa -	Dallas, Texas (Shinners) not var. Torreyana via Martin 1B-8 (144)
68.13 - I. sp.	Bonne Terre , St. Lucia, West Indies from Calixte George (Seed look like I. tiliacea)

Segregating progenies of hybrids made at Tifton, Georgia

(62.82 = I. lacunosa, other parents as listed)

62.19 x 62.78 F_2 2n = 30 (F_1 corolla larger than 62.19)

62.78 x 62.82 (1) F_2 2n = 30 (F_1 corolla similar to sweetpotato - Nursery #C-9

62.78 x 62.82 (2) F_2 2n = 30 (Nursery # C-54)

62.78 x 62.85 F_2 2n = 30

62.85 x 62.78 F_2 2n = 30

(62.78 x 62.85) x 62.85 F_2 2n = 30

(62.85 x 62.78) x 62.85 F_2 2n = 30

Tetraploid lines produced by colchicine treatment

(62.19) colc. tr. 2n = 60 (Nursery # C-12)

(62.78 x 62.82) colc. tr. 2n = 60 (Nursery # C-54)

(62.19 x 62.78) colc. tr. 2n = 60 (Nursery # C-19)

(62.78 x 62.85) colc. tr. 2n = 60 (Nursery # C-6)

(62.78 x 62.82) colc. tr. x (62.19) colc. tr. 2n = 60 (Nursery # C-54 x C-12)

APR 11 1968

Copy

April 9, 1968

Dr. F. W. Martin
Federal Experiment Station
USDA, ARS, CRD
P. O. Box 70
Mayaguez, Puerto Rico

Dear Frank:

Enclosed is a list of 55 accessions for use in our numerical taxonomic study of section Batatas. Seed will be shipped under separate cover.

This list has been restricted to accessions known to belong to section Batatas and unknown species. A decision will have to be made about what to do with species included in the study that obviously do not belong in section Batatas. A few of these may be of interest to confirm the techniques. Too many will confuse the scoring techniques and probably necessitate adding new characters. I have used my accession number for all entries. We could, however, assign entry numbers if you think this more convenient.

I have not included hybrids or artificially produced tetraploids in this lot of seed. However, I have a number of F_2 seed from various hybrids and backcrosses and a number of 60 chromosome lines which could be added to the study. I will be out of the office the rest of this week and next week but will work these over as soon as possible.

It would be a good idea for you to check the spelling of proper names and locations as in some cases I had difficulty reading the labels included with the seed. Your familiarity with the Spanish language will probably enable you to correct some obvious errors.

I can't recall deciding how many specimens to grow of each accession. In most cases, two specimens will probably be sufficient. However, in cases where segregation was observed in the wild population more plants may be necessary to recover some types.

A list of characters and suggested states has also been included. Some of the characters will be used only when species are included which do not belong to section Batatas. I have tried to keep these characters to a minimum. I have not included some leaf characters used in many Botanical keys because in my experience these characters are quite variable within the same accession. If you think necessary, however, such characters may be added.

Some characters will have to be put into matrix form which can better be done after the data has been collected. I have not attempted to assign states to incompatibility as this is better left to you. I am sure we will find it necessary to combine some of the characters listed into one character before subjecting the study to analysis.

We received shipment of sweetpotato seed the other day for which I would like to thank you.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

Enclosures: List of ~~accessions~~ characters
List of Ipomoea species

cc Dave Rogers

In all measurements - if wide range occurs, give the range.

In all cases, no information will be scored "0".

A class can be added to any character stating "Not logically applicable because.....".

Additional classes may be added to any character if not described by descriptors given.

Additional characters may be added if necessary. For instance: I have assumed all specimens will have 1 style and 5 anthers. If some exceptions occur, this fact should be noted.

Before sending to Dr. Rogers, some of this information may be condensed, probably in form of matrix characters.

Scoring Procedure for Ipomoea species to be used in a numerical taxonomic study, 1968-1969.

Character No.	Character and states
1	Seed Weight - gms/100 seed - Ordered - (later)
2	Seed Shape - Simple 1 - rounded with 2 flat surfaces (typical Morning glory) 2 - longer than typical
3	Seed Coat Color - Ordered (Mature seed) 1 - black 2 - brown 3 - tan to white 4 - speckled
4	Seed pubescence - Ordered 1 - glabrous 2 - short (velvety) all over 3 - short (velvety) but long on edges 4 - long all over 5 - short hairs along edges only 6 - long hair along edges only
5	Seedling emergence - Simple 1 - hypocotyl elongates, plumule arises above ground 2 - hypocotyl fails to elongate, plumule arises below soil surface
6	Cotyledon color - Ordered 1 - reddish 2 - greenish 3 - yellowish
7	Cotyledon shape - Ordered 1 - almost entire, smooth 2 - slightly divided, smooth 3 - deeply cut, smooth 4 - very deeply cut, smooth 5 - slightly divided and rugose
8	Plant type - Ordered 1 - slender twining and herbaceous except some stems may appear woody late in the season 2 - prostrate and rooting at nodes 3 - prostrate non-rooting at nodes 4 - erect and woody 5 - floating

(Cont'd.)

Scoring Procedure (Cont'd.)

Character No.	Character and states
9	Plant tip color - Simple 1 - green 2 - tinged with purple
10	Stem type - Ordered 1 - stem glabrous and smooth 2 - stem lightly pubescent 3 - stems strongly pubescent 4 - stems muricate (short, hard, protuberances) 5 - stems strongly angular and glabrous
11	Persistence - Ordered 1 - annual 2 - perennial with large tap roots, stem sometimes remaining green during winter 3 - perennial with enlarged roots (like sweetpotato) and tops dying back to the ground during winter
12	Root skin color - Matrix 1 - light tan 2 - dark tan to brown 3 - light tan with tint of pink 4 - dark tan to brown with tint of pink
13	Root flesh - Matrix 1 - fibrous, tan color 2 - fibrous, cream color 3 - starchy, cream color 4 -starchy, tan color
14	Leaf lobing - Ordered 1 - entire generally, some light lobing 2 - lightly lobed with some entire 3 - consistently deeply lobed 4 - segmented, sometimes with teeth or lobes on the segments
15	Leaf vein color on underside - Simple 1 - green 2 - purple or at least some purple tint
16	Leaf pubescence - Matrix 1 - glabrous 2 - pubescent on top only 3 - pubescent on top and bottom 4 - pubescent on bottom only

(Cont'd.)

Scoring Procedure (Cont'd.)

Character No.	Character and states
17	Leaf length (mature) in mm - Ordered (neighbors) later as index of size
18	Petiole length in mm - Ordered (neighbors) later
19	No. buds/cyme - Ordered (later)
20	Cyme - Simple 1 - branched (paniculate) 2 - not branched
21	Length of peduncle (bearing cyme) in mm - Ordered (neighbor) later
22	Length of pedicel (stalk of individual flower) in mm - Ordered (neighbor) later
23	Bracts - Simple 1 - small 2 - large 3 - no bracts
24	Sepal shape - Ordered 1 - acuminate (long lapering point as I. Mil) 2 - acute 3 - emarginate 4 - caudate
25	Sepal pubescence - Ordered 1 - glabrous 2 - hairy along edges only 3 - hairy
26	Corolla shape - Ordered 1 - funnel 2 - bell-shaped 3 - salver-shaped
27	Limb diam. in mm - Ordered (later)
28	Tube length in mm - Ordered (later)
29	Corolla lobes - Ordered 1 - none 2 - shallow 3 - deep
30	Corolla color - Ordered 1 - white, entire 2 - white limb, pink tube 3 - pink, entire 4 - pink, entire with much darker tube 5 - yellow, entire 6 - yellow limb, pink tube

Prob. will use these together to classify as small, medium and large flowers--

(Cont'd.)

Scoring Procedure (Cont'd.)

Character No.	Character and states
31	Corolla glands at base of tube (as in sweetpotato and I. gracilis) - Simple 1 - glands absent 2 - glands present
32	Stigma position - Simple 1 - included 2 - exserted
33	Stigma shape - Ordered 1-2 or 3 - globular (round) 2-2 or 3 - filiform (long)
34	Stamens - Ordered 1 - shorter than style 2 - longer than style 3 - variable, some equal to, longer or shorter than style
35	Anthers - Simple 1 - straight 2 - spiral
36	Peduncle of mature pod - Ordered 1 - thin and straight 2 - thin and curved down 3 -enlarged and curved down 4 - enlarged and straight
37	Capsules - Ordered 1 - glabrous 2 - lightly pubescent 3 - heavily pubescent
38	Pollen size - Ordered (later)
39	Percent stained - Ordered (later)
40	Pollen surface - Simple 1 - smooth 2 - spinose
41	Self compatibility (in P. R.) - Ordered - Matrix
42	Cross compatibilities (in P. R.) - Ordered - Matrix
43	Chromosome numbers n (PMC) - Probably simple
44	Chromosome numbers 2n (Root tips) - Probably simple
45	Self seed set - Ordered
46	OP seed set - Ordered

Ipomoea Species for Numerical Taxonomic Study

Accession No.	Source
62.19 - I. trichocarpa -	Tift Co., Ga. - 1962
62.78 - I. ramoni -	Received from E. M. Hildebrand as I. gracilis - 1962 - origin unknown but types should be in this study
62.85 - I. triloba -	From Universitets Botaniske Have., Kobenhaven, Denmark, 1962 - original seed - increase available
62.96 - I. trichocarpa -	Louisiana - Dr. W. J. Martin - 1962
62.98 - I. lacunosa -	Louisiana - Dr. W. J. Martin - 1962
63.22 - I. triloba? -	Louisiana via Japan - from Dr. Nishiyama, Kyoto Univ., Kyoto, Japan as K61a (Seed increased at Tifton)
*63.23A. - I. triloba? -	Mexico via Japan - from Nishiyama as K-67
*63.23B. - I. triloba? -	Hawaii via Japan - from Nishiyama as KH-14
63.36 - I. lacunosa -	Oklahoma from H. B. Cordner, Oklahoma (Seed increased at Tifton, 1963)
63.50 - I. lacunosa -	Virginia - from H. L. Smith - original seed increase available - if these fail to germinate
63.60 - I. lacunosa -	Waco, Texas - from M. P. Mauldin Herbarium (Seed increased in Tifton)
63.69 - I. pandurata -	Gallion, Alabama - St. Andrews Church yard by M. T. Deonier 1963 (Seed increased at Tifton, 1966)
*64.8 - I. tiliacea -	Mayaguez, P. R. - F. W. Martin - 1964 (Only 2 seed available - please send seed increase to Tifton)
64.9 - I. ramoni -	Mayaguez, P. R. - F. W. Martin - 1964
64.15 - I. pandurata -	Tifton, Georgia - Alfred Jones - 1964 (Seed increased at Tifton, 1967)
65.2 - I. trichocarpa var. torreyana -	Texas - L. H. Shinners

*Seed for only 1 packet - please send seed increase to Tifton.

(Cont'd.)

Ipomoea Species (Cont'd.)

Accession No.	Source
65.18 - I. ramoni -	Guanica, Puerto Rico - F. W. Martin - 1965
65.19 - I. ramoni -	Mayaguez, Puerto Rico - F. W. Martin - 1965
65.21 - I. sp.(ramoni)	Mona Island - F. W. Martin - 1965
65.23 - I. tiliacea -	Las Mesas, Mayaguez, P. R. - F. W. Martin - 1965
65.24 - I. tiliacea -	Mayaguez type, P. R. - F. W. Martin - 1965
*65.25 - I. tiliacea -	Toro Negro, P. R. - F. W. Martin - 1965
*65.26 - I. tiliacea -	El Yunque, P. R. - F. W. Martin - 1965
66.3 - I. lacunosa -	Dallas, Texas - G. W. Lowe, 1966
*67.30 - I. batatas (trifida) -	Mexico via Japan - M. Kobayashi - called T_{11} in Japan - Prob. similar to K-123.
67.36 - I. sp. (lacunosa?)-	18 miles NE Hattiesburg, Miss., near Talahala Stream - Belton Walters - 1967
67.37 - I. sp. (ramoni-lacunosa)-	Tift Co., Georgia - A. Jones - 1967
67.38 - I. trichocarpa -	Tift Co., Ga. - A. Jones - 1967
67.39 - I. trichocarpa -	Tift Co., Ga. - A. Jones - 1967
*67.41 - I. trichocarpa -	Fernandina Beach, Fla. - 1967
67.42 - I. trichocarpa -	4 miles NE (Rt. 17) Yulee, Fla. - A. Jones - 1967
67.43 - I. trichocarpa - (segregating for white corolla)	Jekyll Island, Ga. - A. Jones, 1967
67.44 - I. sp. (trichocarpa) -	Hwy. 82, 5 miles E. Pearson, Ga., A. Jones - 1967
*67.50 - I. gracilis -	Mexico via Chapman via D. B. Williams via Martin [1B-14(201)] (the only collection of this type I have seen) - Please send seed increase to Tifton.
67.51 - I. sp. (triloba)-	Guayanille, P.R. - F. W. Martin - 1967 (Martin's 1B-3(201))
67.52 - I. sp. (triloba) (May = 65.21?)	Mona Island - F. W. Martin - 1967 [Martin's 1B-1(170)]
67.53- I. sp. (triloba)- (May = 65.19)	Mayaguez, P. R. - F. W. Martin - 1967 - [Martin's 1B-2(1)]

(Cont'd.)

Ipomoea Species (Cont'd.)

Accession No.	Source
67.58 - I. sp. (lacunosa - ramoni)	Tift Co., Ga. - A. Jones, 1967 (More than 1 flower color likely)
67.60 - I. sp. (lacunosa) -	Tift Co., Ga. - A. Jones, 1967
67.62 - I. tiliacea -	Non Repos, (East Coast) Demerara, Guyana, S. Amer. Miss D. H. Davis via F. W. Martin - 1967
67.65 - I. sp. (tiliacea) -	Gurabo, Provincia de Santiago, Dominican Republic - Dr. Vosede J. Jimenez via F. W. Martin - 1967
67.66 - I. sp. (triloba) -	Indian Ruins, St. John, U. S. Virgin Islands - F. W. Martin-1967
*67.67 - I. sp. (yellow flower) -	Above Koshin, Hagghier Mts., Socota Island, South Africa - Collected by Mr. John Lavranos via Dr. J. W. Dodson, Curator, Succulent collections, Univ. Calif. Bot. Garden (UCBG # 67.954) via Dave Rogers - Please send seed increase to Tifton.
67.68 - I. sp. -	Ras Hazira Muqadrihun (Near top of pass) Socota Island, South Africa - by Mr. John Lavranos via Dr. J. W. Dodson, Univ. Calif. Bot. Garden (UCBG # 67.955) via Dave Rogers.
67.69 - I. sp. -	Agaba Hazira, Muqadrihun (Near cave) Hagghier Mts., Socota Island, South Africa - John Lavranos via J. W. Dodson (UCBG # 67.956) via Dave Rogers.
67.70 - I. trichocarpa -	Mauldin Garden, Waco, Texas - M. P. Mauldin via Dave Rogers - 1967
67.71 - I. lacunosa -	Waco, Texas - M. P. Mauldin via Dave Rogers - 1962
68.3 - I. wrightii -	North Louisiana (in soybean field) - W. J. Martin 1967 - seed increased in LSU greenhouse.
68.4 - I. sp.-	San Nicolas de Cartago, Costa Rica (elevation 4117) - Edilberto, Camacho V. Institute Interamericano de Ciencias Agricolas, Turrialba, Costa Rica - via F. W. Martin.
68.5 - I. tiliacea -	Mayaguez, P. R. - F. W. Martin
68.6 - I. tiliacea -	La Hulera, Turrialba (600m.) Edilberto Camacho V. - Centro de Ensenanza e Investigacion, Turrialba, Costa Rica - via F. W. Martin.
68.7 - I. sp. -	San Juan Bautista, Villa Bonmquen, Missionis, Paraguay - Dr. Juan A. Vincenty.

(Cont'd.)

Ipomoea Species (Cont'd.)

Accession No.	Source
68.8 - I. sp. -	P. I. 326189 - 5 miles NE Cuernavaca on toll road to Mexico (6,400 ft. elevation) - H. S. Gentry
68.9 - I. sp. -	P. I. 326190 - 5 miles E Iguala, Guerrero (3000 ft.) - H. S. Gentry
68.10 - I. sp. -	P. I. 326191 - 8 miles S. Taitisio, Michoacan (3000 ft.) - H. S. Gentry

4 March 1968

Dr. Howard S. Irwin
c/o New York Botanical Gardens

Dear Howard:

In the course of a new piece of work that I am cooperating on with a geneticist from the USDA we are trying to round up wild species of Ipomoea related to section batatas. There is "one species" known as I. nitida which may grow in your area. It has a sweet potato looking flower (rather globose at the base of the corolla tube) and round leaves with considerable pubescence. The plant has an enlarged root. If you could get seeds as well as specimens of this plant I'd be happy to have them.

I look forward to contacting you about computer activities on your return to New York. Things are well here.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

U. S. DEPARTMENT OF AGRICULTURE

SPEED-MEMO

PART NO. 2

DATE 2/9/68

FROM

Alfred Jones
USDA-ARS-CR

SUBJECT

Denver Itinerary

TO

Rodger E. McClain, Adm. Aid
USDA-ARS-SA

MESSAGE

I have this date established reservations as follows:

February 26 - Depart Albany via Southern Airlines Flight #290 at 8:10 a.m., arriving Atlanta at 9:02 a.m. Depart Atlanta via Eastern Airlines Flight #240 at 10:05 a.m., arriving Chicago at 10:41 a.m. Depart Chicago via United Airlines Flight #359 at 12:00 noon, arriving Denver, Colorado, at 1:18 p.m.

March 1 - Depart Denver via TransWorld Airlines Flight #704 at 1:25 p.m., arriving St. Louis, Mo., at 4:08 p.m. Depart St. Louis via Eastern Airlines Flight #273 at 5:00 p.m., arriving Atlanta at 7:14 p.m. Depart Atlanta via Southern Airlines Flight #299 at 8:20 p.m., arriving Albany at 9:10 p.m.

The total cost of the entire round trip is $193.40. (This is tax-exempt)

Rodger E McClain

SIGNATURE Rodger E. McClain, Adm. Aid

REPLY

Dave,
here is copy
of my itinerary.
Al

SIGNATURE

DATE

FORM AD-311 (REV. 10-66)

JAN 24 1968

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

January 22, 1968

Dr. David J. Rogers
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

I received a letter from Bob Akeley today giving me the go ahead on the proposed trip to Boulder.

Would three days in the last week of February, February 26-29, be satisfactory with you? I could leave here on Sunday, February 25 or Monday, February 26, and return on either Thursday, February 29 or Friday, March 1.

In my request for this trip, I was not very explicit and said merely that I was planning this trip for the last of February or the first of March. My approval was quite specific however, February 25 through March 1.

I am looking forward to this trip in order to conduct our business and also to see the operations of your laboratory.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

JAN 2 9 1968

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

January 18, 1968

AIR MAIL

Dr. David R. Rogers
Taximetrics Laboratory, Dept. of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

You must feel a long ways from the Ipomoea in your snow covered burrows of Colorado. However, the seeds do continue to come in, a few at a time, and we shall be able to make a very good start this coming growing season. As winter is my busiest season, I haven't pushed the program very much, but I shall soon have to push Al a bit to get the first draft of the list of characters to be scored. We shall probably grow these during the late summer and fall. Although I shall not be here, I'll have a good man acting for me.

I am glad to hear that you have some data to work with, and shall look forward to your results.

I only obtained 5 shriveled seeds from the flowers you sent me. I shall try to germinate them here, and get a multiplication of seeds before sending them to Al Jones. With our short days, we can count on anything blooming for another 3 months or so.

Because of the Hawaii trip, I surely won't be attending the meetings in Trinidad. I hope you will be thinking of a trip here, however, in the winter of 1969-70, when Ipomoeas will be at their best.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

Feb. 1, 1968

Dr. Alfred Jones
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al:

We'll be glad to see you on the data you recommend. I suggest that if at all convenient, you plan to be here til Friday, March 1, so that we can actually work over some of the results with you, after a run on the computer.

Let me know your plane schedule, flight no., etc., to Denver, where I'll plan to pick you up. We'll have a bed for you at our house.

Looking forward to seeing you.

Sincerely,

David J. Rogers

2 January 1968

Dr. Franklin W. Martin
USDA, ARS, CRD
Federal Experiment Station
Mayaguez, Puerto Rico 00708

Dear Frank,

The enclosed inflorescence heads were collected from a pink flowered Ipomoea which I am ashamed to say I cannot name. It is probably the same weedy species we examined growing along ditch and railroad banks in Georgia last September. It is a very common weed in the fields just about sea level in the state of Vera Cruz. These plants were collected about eight miles south of the city of Vera Cruz on roadsides. I am not sure there are any viable seeds contained herein.

I have received Al's recent data for a preliminary run on the computer so that he can get some idea about the methodology we now have available. I hope the results will be shortly forthcoming..

What news have you? I hope to be here in Boulder without running around the world at least till next summer. Do you plan by any chance to be at the Caribbean meetings of the American Horticultural Society in Trinidad? We might plan on that as a meeting to get together for further discussion on our mutual project.

Best wishes for a Happy New Year.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

DEC 1 1967

Dear Dr. Rogers: 11/29/67

Under separate cover you will receive a mailing tube of 3 Ipomoea spp. with white or (pink) magenta flowers, the only species which I have found in this area. The I. lacunosa is rather old seed for this area, but perhaps a few are hard-seeded and have retained their vitality. My later collexion of this species is not available at present,- if and when I locate it, it will be sent. I did not see it this year in usual habitats. The other 2 species are 1967 seed.

Yours truly,

M.P. Mauldin

Sorry for delay. Was hoping to collect fresh I. lacunosa.

12 December 1967

Dr. Alfred Jones
USDA, ARS
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al,

Your data has come. From a hurried perusal it looks in very good shape. As soon as we have had a chance to punch up the data and run it (it may take three weeks to be done) we will let you have the results.

Thanks, and a Merry Christmas.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

NOV 7 1967

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO — SANTA BARBARA • SANTA CRUZ

BOTANICAL GARDEN
DEPARTMENT OF BOTANY

BERKELEY, CALIFORNIA 94720

31 October 1967

Dr. David J. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dr. Rogers:

In reference to letter from Dr. Frank W. Martin of U.S.D.A. in regard to seed of Ipomoea.

We have just received some seed from the Island of Socota. The collector is Mr. John Lavranos of South Africa.

Unfortunately the collection of seed was rather limited and we are sending you the entire supply.

We would appreciate one or two plants should you have them to spare at a later date and such identification data as you might determine.

Three packages of seed are as follows:

Ipomoea sp. (UCBG Nos. 67.954, 67.955, 67.956)

Sincerely yours,

Dr. J.W. Dodson

Dr. J.W. Dodson
Curator,
Succulent Collection

JWD/deb

8 November 1967

Dr. J. W. Dodson
Curator, Succulent Collection
Department of Botany
University of California
Berkeley, California 94720

Dear Dr. Dodson:

Thank you for the Ipomoea seeds. When they are grown and identification made we will send them to you posthaste.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

CC: Dr. Frank W. Martin + seeds
Dr. Alfred Jones

Dr. Franklin W. MARTIN
Federal Experiment Station
P. O. Box 70
Mayaguez, PUERTO RICO (00708)

LD/mj 453

6 Octobre 1967

Ipomoea batatas

Dear Dr. MARTIN,

I am very glad to know the way your research on Ipomoea is going on.

At seed harvest time which will be in the coming dry season you will received a sample of each cultivar or wild material entering in our nursery.

Sincerely yours,

L. DEGRAS
Station d'Amélioration des Plantes

cc.: Dr. Alfred JONES
Dr. David J. ROGERS

10 Oct 67

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

October 5, 1967

AIRMAIL

Dr. David Rogers
Taximetrics Lab. Dept. of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

Thanks for the list of address. The letters will go out immediately. I agree that there is little value in contracting persons in the old world tropics.

If any more names come to mind, just send out one of the letters that I sent you.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

October 11, 1967

Dr. David J. Rogers
Taximetrics Laboratory
Armory 101
University of Colorado
Boulder, Colorado

Dear Dave:

Just a line to let you know that I haven't forgotten the data we discussed. I have been out of town for a week and have not had time to prepare this information for you.

I enjoyed your visit and am looking forward to our association.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

Reprinted from Economic Botany, Vol. 21, No. 2, April-June, 1967

Should Nishiyama's K123 (*Ipomoea trifida*) Be Designated *I. batatas*?[1]

ALFRED JONES[2]

An interesting *Ipomoea* was collected and designated K123 by Nishiyama (9) while he was on tour in the United States and Mexico in 1955. It has since been extensively discussed (10, 11, 12, 13). Following preliminary observations, K123 was tentatively considered as *Ipomoea commutata* Roem., and, because of its 90 somatic chromosomes, possibly an ancestral species to the sweet potato, *I. batatas* (L.) Lam. (9). In this first report of K123, Nishiyama recognized that it may actually be a direct prototype of the modern cultivated sweet potato. In subsequent reports, it has been considered to represent *I. trifida* (H.B.K.) G. Don and has received considerable attention in phylogenetic discussions of the sweet potato (4, 10, 11, 12, 13).

Observations of K123 (very graciously supplied to me by Dr. Nishiyama) lead me to the inescapable conclusion that it should be considered an extreme segregate of the sweet potato rather than a different species as previously postulated. This paper presents information relative to that conclusion.

Morphological Considerations

As reported by Nishiyama et al. (9, 10, 11, 12, 13), K123 exhibits a twining or climbing characteristic. However, this character is not peculiar to wild species of section *Batatas* as they state (11). Groth described the sweet potato stem in 1911 as, "Variable in habit, depending on the variety, strongly twining or not at all. . . ." (3, p. 48). He further cited Merian's observation of twining sweet potatoes in 1705. In seedling[3] populations grown by me (6), approximately 4% of the plants exhibited a twining habit (Fig. 1).

Another basis of comparison previously used to separate K123 from *I. batatas* is its slender pubescent stem which has been compared with thick glabrous sweet potato stems (11). However, the stem size of K123 does not differ much from that of any twining sweet potato (Fig. 2). Pubescence on sweet potato stems was described by Groth in 1911 and more recently by Yen (16) and Jones (6). The pubescence of K123 certainly illustrates the extreme of that expected in the sweet potato, but I have observed (6) comparable pubescence on every plant part in a population of only 485 seedlings (Fig. 3).

No edible roots are produced by K123, but this is also true of about 6% of all sweet potato seedlings (6, 8). The root skin and flesh color of K123 is well within the limits of variability of the sweet potato. As noted by Nishiyama and Teramura (11), there are no fundamental differences in the leaf form and color of K123 and *I. batatas*.

The sweet potato exhibits considerable variability in corolla size, shape, and coloration (Fig. 4), and comparison of K123 to one or a few plants does not constitute a valid criterion of relationship (9, 11, 12, 13). The corolla of K123, as described by Nishiyama and observed by me, falls well within the range of types found in the sweet

[1] University of Georgia, College of Agriculture, Coastal Plain Experiment Station Journal Series Paper No. 262.

[2] Research Geneticist, Crops Research Division, Agricultural Research Service, United States Department of Agriculture, and the University of Georgia, Coastal Plain Experiment Station, Tifton, Georgia.

Received for publication September 30, 1966.

[3] Plants from true seed as opposed to vegetatively reproduced plants.

OCT 9 1967

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

October 4, 1967

Dr. David J. Rogers
Taximetrics Laboratory
Armory 101
University of Colorado
Boulder, Colorado

Dear Dr. Rogers:

Enclosed please find reprint, "Should Nishiyama's K123 (Ipomoea trifida) Be Designated I. batatas?" by Alfred Jones.

Dr. Jones is out of the office for two weeks harvesting potatoes but will answer your letter as soon as he returns.

Sincerely,

Al Jones (JG)

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jg

Enclosure: Reprint

2 October 1967

Dr. Alfred Jones
USDA, ARS
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al,

I am sorry to have delayed so long in thanking you for your most generous hospitality. Please be sure to tell your wife that I did indeed enjoy our dinner together.

I have just sent the list of names to Frank, but will possibly be able to augment it greatly. I am very excited about our opportunity to work together; with the relation that you, Frank and I have, we can go a long way, I am sure, to solving the problem of the origin and relationships of the sweet potato.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

2 October 1967

Dr. Frank W. Martin
USDA Federal Experiment Station
P. O. Box 70
Mayaguez, Puerto Rico 00708

Dear Frank,

Enclosed are some suggested names for the collection of Ipomoea seeds. The letter you sent to me seems O.K. to do the job. I am very excited about the whole process and came away from the meeting with you and Al very pleased. with the chance to work with you. We should have lots of fun.

The enclosed list does not necessarily cover a wide range of Old World tropics. I was not sure whether it would be useful to ask people from Africa, Asia and the islands of the Pacific to send seeds. If you think it is useful to ask for seeds from the Old World tropics I have a few more names to add.

Best regards,

David J. Rogers
Professor of Biology

DJR:GM
Enc.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

SEP 25 1967

September 21, 1967

AIRMAIL

Dr. David J. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

I surely appreciated the cooperation developed by you and Al. Next time we have a meeting I hope it can be down here.

Enclosed are copies of the letter I intend to send out to solicit seeds. The general idea is to send me your address list first, and I shall send out the letters. Then, if further names come to mind, send one of these letters directly. Also, I am enclosing a copy of a memorandum to my chief which summarizes our agreements.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

Enclosures

September 20, 1967

To: Murray H. Gaskins
Officer in Charge

From: Franklin W. Martin
Plant Geneticist

Subject: A cooperative study involving the sweet potato

I have just returned from a short trip to Tifton, Georgia, where I met with Dr. Alfred Jones, Georgia Coastal Plain Experiment Station, and Dr. David Rogers, University of Colorado, Boulder. In our meetings, we planned a collaborative study, without exchange of funds, of the relationship of the sweet potato to other species of the section Batatas, genus Ipomoea. This memorandum summarizes and makes an official record of our agreements, but does not concern certain proposed studies of Dr. Jones with Dr. Rogers, nor of Dr. Jones with myself.

In brief, in the proposed study we wish to restudy the taxonomic relationships of the section Batatas, using computer techniques. The object of our studies is to determine the origin of the sweet potato and other polyploids of the section Batatas, with respect to the diploid species. In order to do so, we will attempt to collect relevant materials from the wild, grow them in Tifton and Mayagues, observe certain characteristics, and submit data for analysis in Boulder. Details and responsibilities are outlined below:

1. I shall have the responsibility of developing a letter asking for help in collecting seed. The letter will be sent to all possible contacts in countries where the species in question are believed to grow wild. This letter will outline briefly our purposes and request seed of pink and white flowered Ipomoea species.

2. On arrival, each seed lot will be given an accession number by Dr. Jones. The seed will be divided into two lots (if sufficient) and plantings will be made in Tifton, and in Mayagues.

3. Dr. Jones and I will cooperate in the development of a list of characteristics to be measured or scored. Dr. Jones will develop the initial list from one used for his sweet potato studies. We shall both make additions or changes as necessary. The list of characters and their attributes will be reviewed by Dr. Rogers for suitability for the computer studies.

4. I shall prepare voucher specimens to be sent to Dr. Rogers for study purposes. These will eventually be placed in the U. S. National Herbarium.

5. Dr. Rogers will furnish a graduate student who will study the taxonomy of the section Batatas by conventional techniques. This student may have reason to work at Tifton and Mayaguez during his studies.

6. Dr. Jones will observe and count the chromosomes of the introductions. He will also work with the chromosomes of hybrids produced in later phases.

7. Dr. Jones will suggest the hybridizations to be attempted, and I shall help with these as necessary.

8. I shall work with the hybridization failures to determine causes, the nature of barriers between the species, etc.

9. Data will be sent to Dr. Rogers at various stages. Dr. Rogers will develop the computer techniques and advise on the taking and preparation of data.

10. Stages at which data will pass to the computer include:

a. When variation with sweet potato is to be analyzed. This phase covers data already developed by Dr. Jones, and does not include collaboration with me.

b. When introductions have been studied.

c. When F_1 hybrids have been produced.

d. When F_2 hybrids have been produced.

11. Any investigator of the 3 may submit to the others an outline of a proposed publication (including proposed authorship). Authorship may involve a single investigator or any combination of investigators. In general, each investigator will lead in his own specialty, and authorship will be contingent on genuine contribution.

The origin and evolution of the sweet potato is still quite obscure, due in part to our poor knowledge of the relatives of the sweet potato. In an effort to expand our knowledge and to provide plant material of possible value in further improvement of the sweet potato, we are undertaking cooperative morphological, taxonomic, biosystematic, and cytogenetic studies of the section Batatas, genus Ipomoea. This letter is written to solicit your help in obtaining seeds of these species.

Seeds of any pink-flowered or white-flowered Ipomoea (morning glory) will be appreciated. Seeds need not be identified, except by geographic source. We would like to know also if the seeds come from wild or cultivated plants. Seeds can be sent to:

Dr. Alfred Jones
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dr. Franklin W. Martin
Federal Experiment Station
P. O. Box 70
Mayaguez, Puerto Rico 00708

Dr. David J. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Receipt of each seed lot will be acknowledged. Species will be identified, and identification data will be sent on request. Persons interested in our current publications may receive them, on request. We shall be glad to assist cooperators in any reasonable fashion.

To solve the problems we are studying, the widest possible collection of seeds is desirable. We hope you will be able to help us in this endeavor.

Sincerely yours,

_____

Purveyors of Ipomoea seeds for Frank Martin

Sr. Rafael Girard
11 Avenida "A" 8-03 Zona 2
Guatemala

Dr. Marshall C. Johnston
University of Texas Herbarium
Biological Laboratories Building
The University of Texas
Austin, Texas 78712

Mr. P. H. Haynes
Dept. Of Agricultural Crop Production
University of the West Indies
St. Augustine
Trinidad, W. I.

Mr. Emmanuel V. Doku
Faculty of Agriculture
University of Ghana
P.O. Box 68
Legon, Ghana

Dr. Grady L. Webster
Department of Botany
University of California
Davis, California 95616

Mr. G. H. de Bruijn
Centre Neerlandais
Orstom B.P. 20
Abidjan, Cote d'Ivoire

Sr. Alvaro Montaldo
Facultad de Agronomia
Universidad Central de Venezuela
Maracay, Venezuela

Sr. Luis A. Montoya
Associate Horticulturist
Instituto Interamericano de Ciencias Agricolas
de la OEA
Londres 40, 1er Piso
Mexico 6, D. F.

Dr. M. L. Magoon, Director
Central Tuber Crops Research Institute
'Iran Villa'
Kowdiyar, TRIVANDRUM - 3
Kerala, India

Dr. Jerome H. Maner
Apartado Aereo 58-13; Apartado Nacional 32-79
Bogota, Colombia

Dr. Peter H. Raven
Division of Systematic Biology
Stanford University
Stanford, California 94305

Dr. Walter H. Lewis
Director of the Herbarium
Missouri Botanical Garden
2315 Tower Grove Avenue
St. Louis, Mo. 63110

Sr. Milton de Alburquerque
Seccao de Fitotecnia
IPEAN
C.P. 48
Belem, Para, Brasil

Mr. Sammie Sides
Biology Department
Pan American College
Edinburg, Texas

Dr. Jose de Js. Jimenez
Calle Maximo Gomez 34
Santiago de los Caballeros
Republica Dominicana

Dr. Carl Moh
IICA Centro de Enseñanza y Investigacion
Turrialba, Costa Rica

Dr. Annetta Carter
University of California
Department of Botany
Berkeley, California 94720

Dr. Jacques Barrau
Sous-directeur au Museum National d'Histoire
Naturelle
Laboratoire d'Ethnobotanique
57, rue Cuvier
PARIS, 5, France

Dr. Richard E. Schultes
Botanical Museum of
Harvard University
Oxford Street
Cambridge, Mass. 02138

over

Dr. Harold C. Conklin
Department of Anthropology
Yale University
Box 2114, Yale Station
New Haven, Conn. 06520

Dr. Frederick G. Meyer
U. S. National Arboretum
Washington, D. C. 20025

Dr. Thomas W. Whitaker
U.S.D.A., A.R.D
U.S. Horticultural Field Station
P.O. Box 150
La Jolla, California 92038

Sr. Gastón Bejarano
Corp. Boliviana de Fomento
Casilla Correo No. 1124
La Paz, Bolivia

Dr. Louis O. Williams
Chief Curator, Dept. of Botany
Chicago Natural History Museum
Roosevelt Rd. & Lake Shore Drive
Chicago, Ill. 60605

Dr. Gererdo Reichel-Dolmatoff
Apartado aereo 11313
Bogota 2, Columbia

AUG 8 1967

ARS, CRD, VEG & ORN. R.B.
UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

August 4, 1967

Dr. Frank W. Martin
Federal Experiment Station
USDA, ARS, CRD
P. O. Box 70
Mayaquez, Puerto Rico

Dear Frank:

The proposed meeting in September should be very valuable to the coordination of our efforts in study of Ipomoea. The dates mentioned (14 and 15) will be fine with me.

Tifton is not the easiest place to get to by air. It may be best to come to Albany, about 40 miles from Tifton, and I will meet you there. Of course I will need to know your flight and arrival time.

We have a guest room with double bed and would be pleased to have you and Dr. Rogers stay with us. If you should prefer a motel there are several good ones convenient to the station and I will be glad to make reservations for you.

Sincerely,

A Jones

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

cc: Dr. David Rogers

Please excuse the carbon, my secretary is off today and typing is a real chore for me. I'm looking forward to your visit and our cooperation -

A.J.

Instructions for collecting specs.
of S.P.
Herbarium specimen housing in my
shop -
Grad Student

Get names and addresses of Ipomoea collectors

to Frank soon - primarily in N. + S. Am
+ Centr. Am. -

5 September 1967

Dr. Alfred Jones
Agricultural Research Service
Georgia Coastal Plain Experiment Station
Tifton, Georgia 31794

Dear Al,

My schedule is now firmed up and here are my times of arrival and departure. I will arrive in Albany via Southern #289 at 5:07 P.M. on the 13th September. My scheduled departure date is 15th September via Southern #296 at 4:17 P.M. I trust that you can have someone meet me at the Airport.

Looking forward to seeing you.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

Taximetrács Laboratory

Armory 101 10 August 1967

Mr. Alfred Jones
Agricultural Research Service
Georgia Coastal Plain Experiment Statéin
Tifton, Georgia 31794

Dear Al,

~~How about~~ Okay for September 14 and 15?

Thank you for the invitation to put me up, but maybe you'd better reserve me a motel room.

More details later when I have made up my itinerary.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

August 1, 1967

AIR MAIL

Dr. Alfred Jones
Georgia Coastal Plain Expt. Sta.
Tifton, Georgia 31794

Dear Al:

It appears that various letters crossed paths concerning the date of our prospective meetings. I cannot attend the AIBS meetings, and you appear to be occupied then. I suggest we meet September 14 and 15 (travel on the 13 & 16th). As host, could you give us an official confirmation of this date?

I have been away on vacation 2 weeks, and thus an a little disorganized, but I hope during these meetings to be able to talk to you about all of the work we are doing or contemplating with sweetpotato or Ipomea.

Sincerely yours,

Franklin W. Martin
Plant Geneticist

cc: Dr. David Rogers

FWMartin:lgg 8-1-67

Travel - Wash to Tifton, Ga
to Denver

Go - 13 Sept

	Lv	Ar
Wash	~~8~~ 8 50 Natl AP	
Atlanta Ga	Eastern AL	~~9~~ 10 17 Southern AL
	~~11~~ 11 00	11 52
Albany Ga	8 10 am	
	Return 16 Sept 9 07	
~~Atlanta~~		
~~Denver~~ Chicago	10 00	10 50
	1 00	
Denver		12 10 am

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

July 11, 1967

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado

Dear Dr. Rogers:

I would like to apologize for the delay in answering your last letter.

I have been out of town and otherwise busy and could not study the information you sent concerning taximetrics until today. The approach is quite interesting and reasonably straightforward and I think offers tremendous possibilities in the study of the sweetpotato and its relatives.

I believe you are reasonably up-to-date on the correspondence between Dr. Frank Martin and me. Frank has suggested that we meet sometime in August or early September to discuss further cooperative studies. Any time after August 28 will be agreeable with me. I expect to be collecting data in North Carolina and Maryland the two weeks immediately prior to that date.

I am sure that some of the information already collected will be useful for a preliminary trial study and I will be glad to do whatever possible in collecting additional information. We also have a sizeable collection of species which are available for use if desired.

I am looking forward to this conference with you and Dr. Martin with great expectations.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jjg

cc Frank Martin
Fog Index Readability Appraisal

Taximetrics Laboratory

Armory 101

July 12, 1967

Dr. Franklin W. Martin
Agricultural Research Service
Crops Research Division
Federal Experiment Station
Mayaguez, Puerto Rico 00708

Dear Frank,

Would it be reasonable to expect you and Al Jones will be down to the ABIS meeting in Texas the last of August? I have a symposium to give there and if you two will be there that would be a good meeting place. If you are not planning to be there, then I suggest that we aim toward the middle of September in Tifton. I will have to be on the east coast for about a week and a half in the beginning of September and could come down to Tifton on the completion of that activity. I hope that we can make one of these two arrangements go.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

Copy to Al Jones

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

June 29, 1967

AIR MAIL

Dr. David J. Rogers
Taximetrics Laboratory, Dept. of Biology
Armory 101
University of Colorado
Boulder, Colorado 80302

Dear Dave:

I agree that we have reached a stage where face-to-face talks would be useful, and I have suggested to Al Jones that we meet with him in Tifton, Georgia, in late August or early September. My reasoning is that Tifton is between you and I, the sweet potatoes should then be available, and Puerto Rico can be saved for a winter visit.

I think your suggestions are good, and we are all seeing eye-to eye on this thing now.

If Jones' data are to be tackled first, you and he will undoubtedly want to correspond in more detail in this area. Meanwhile, I shall begin to look for the Ipomoea species needed for my part.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

cc: Alfred Jones

Sweet Pot

JUL 17 1967

July 12, 1967

AIR MAIL

Mr. Howard Hyland
New Crops Research Branch, ARS
Crops Research Division, USDA
Plant Industry Station
Beltsville, Maryland 20705

Dear Mr. Hyland:

In cooperation with Dr. David Rogers, University of Colorado, Boulder, Colorado, and Dr. Alfred Jones, Georgia Coastal Plain Experiment Station, I would like to begin a study of the relationships of the species of the section batatas of the genus Ipomoea to the sweet potato, Ipomoea batatas. The origin of the sweet potato remains a mystery, and although several excellent papers have been published in this field in recent years, all studies have been limited by the relative scarcity of good collections from the wild. The taxonomy of this section is a mess, and probably cannot be straightened out by studies of present collections. This may be because the species exist as intergrading clines. Our interest in this is not primarily taxonomic, in the narrow sense of the word. We want to dig out relationships to understand the sweet potato, and we want to use experimental approaches, including hybridization, chemical methods, and the computer. I believe that we can make some real headway in this program-- if we can get the seeds.

I confess to being ignorant of plant introduction procedures, and I am therefore writing to see whether I can get some sound advice from you. I had planned to write a letter to contacts in Mexico, Central America, the United States, and Northern South America

1. Explaining the problem

2. Asking for wider distribution of the letter.

3. Asking for seed of pink or white Ipomoea species identified by geographical source, only.

4. Requesting that the seed be sent directly to me.

I would treat the seed on arrival with sulphuric acid to scarify the seed coat, and would plant the introductions first in a greenhouse, and later in the field.

I would appreciate your suggestions with respect to the proposed collection, and in particular, I would appreciate any addresses of contacts that would help me broaden the coverage.

Sincerely yours,

Franklin W. Martin
Plant Geneticist

cc: A. Jones
D. Rogers

- Taximetrics Laboratory

June 23, 1967

Dr. Franklin W. Martin
United States Department of Agriculture
Agricultural Research Service
Crops Research Division
Federal Experiment Station
Mayaguez, Puerto Rico 00708

Dear Frank:

In response to your letter of June 19, perhaps it has not been clear in my correspondence to you what my role could be or should be in a potentially collaborative effort on Ipomoea. If it is your choice to proceed as you suggested in your last letter, then certainly that is the most appropriate procedure. Clearly, that which grabs you as a specialist should be the area in which we work, and ideally you should not take dictation from a computernik type as to what direction is most significant in the studies. My role should be to aid in establishing the most useful way to do computer studies on the data of interest to you. In this respect, I will be glad to follow any direction of interest to you.

I think perhaps we should consider at first only a smaller sector of the total job in order that we get our feet on the ground before a large effort is made. I think we can get some ideas about how the work will progress from a preliminary study. I have Dr. Jones' papers and would suggest that there are some data already accumulated which (with a little more added) might provide a satisfactory "test case" of the computer methods. If you are satisfied with these runs, then perhaps we can proceed to a full-blown operation. I don't believe that it is clear on what I can do and cannot do and we should proceed with caution in expending large quantities of yours and Dr. Jones' time until we have seen what we might accomplish.

If my suggestions are meaningful, then I recommend that we have a three-way face to face talk about these problems some time in the near future. I think we could probably arrange to meet at some central point convenient to all to go ahead with planning. In the meantime, I am sending both to you and Dr. Jones copies of our methodologies with the computer to give some idea of how our programs work.

I am very pleased that you have decided that we can make some reasonable collaboration.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR/cu
cc: Alfred Jones

Enclosures: J. Theoret. Biol. (1966) 12, 297-310
Systematic Zoology, Vol. 15(1): 59-69
Use of computers in studies of taxonomy and evolution. In EVOLUTIONARY BIOLOGY
Taxon, Vol. 16: 86-97 (1967)
BioScience 16(11): 789-793.

P.S. Please note my new address after July 1, 1967 will be:

Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado 80302

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

June 19, 1967

AIR MAIL

JUN 22 1967

Dr. David J. Rogers
Professor of Botany
Department of Botany
Colorado State University
Fort Collins, Colorado

Dear Dave:

Since my last letter to you, I have written to Dr. Alfred Jones, as you know, and have received letters from him, and of course, a copy of your letter to him. I was hoping to hear from him once more before writing you, as I requested that I could send you a copy of his letter to me. Anyway, I think I have made up my mind in this affair, and I am in a good position to discuss the matter with you.

It would appear to me that the sweet potato is a highly selected cultivar in which the variation expressed among varieties is only a small part of the potential variation of the species. Much of the variation has been suppressed by the conscious or unconscious selection by man for types more useful to him. Studies of the cultivars themselves would thus give a distorted view of the nature of the species. On the other hand, the varieties represent transient phases of expression of the species, and studies of varietal characteristic per se are liable to be of rather short term value. Thus, I conclude that a taxonomic classification of varieties of sweet potato would not be valuable at this time.

On the other hand, an important and persistent problem with the sweet potato is understanding its origin with respect to closely related species of the section Batatas. This problem has its taxonomic and its cytogenetic aspects. Although Jones has been working on the cytology, without a doubt the taxonomic phase needs study and clarification. The principal entities of this section are widely dispersed around the southern U.S., Mexico, northern South America, and the Caribbean. They may exist as intergrading species, or possibly as clines. Nomenclature, as one might expect, is confusing.

I am prepared to work with you on this project, but I would like to coordinate my efforts with Jones. In the first place, we are part of the same organization. Secondly, my work with the sweet potato came into being in cooperation, and as a complement to his work. Thirdly, Jones has taken the initial steps in studying sweet potato variation, in unselected populations, and has developed hybrids of some of the "species" of the section batatas. I am sure Dr. Jones will be very cooperative.

It would seem to me that the studies would involve several phases. The first phase would involve the collection of materials through the entire areas involved. The second phase would be the elucidation of the relationships of the species by classical or computer techniques. The third phase would involve a study of variation within species and their hybrids, and an attempt to synthesize an account of natural relationships, evolution, etc., in the section Batatas.

I am in a good position to collect the species of the Caribbean. I can grow materials here under field and greenhouse conditions, and provide herbarium specimens. Finally, we could make the hybridizations, and grow the various generations. The materials and/or information concerning sweetpotato could be supplied by Jones.

The information we could develop from these studies would have permanent value, and be exceedingly valuable in understanding the sweet potato and its relatives. I shall appreciate your comments, and upon hearing from Dr. Jones, we can continue with more detailed plans.

Sincerely yours,

Frank

Franklin W. Martin
Plant Geneticist

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

May 29, 1967

Dr. David Rogers
Department of Botany
and Plant Pathology
Colorado State University
Fort Collins, Colorado

Dear Dr. Rogers:

In a letter dated May 22 from Dr. F. W. Martin, Puerto Rico, I learned of your interest in taximetrics. As requested by Dr. Martin, I am enclosing a copy of my letter to him giving my views on certain aspects of this project. I am also enclosing some reprints of my work with sweetpotatoes for your information.

The Computer techniques classifying plant variability are of great interest to me and I think can be very useful in breeding programs especially if biochemical ratings can be associated with horticultural characteristics.

I would like to offer you the best of luck in this endeavor and would be glad to cooperate with you in any manner possible.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jjg

Enclosures: Letter
Reprints

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
GEORGIA COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA 31794

May 26, 1967

Dr. F. W. Martin
Federal Experiment Station
USDA, ARS, CRD
P. O. Box 70
Mayaquez, Puerto Rico

Dear Frank:

I will be looking forward to receipt of seed from the sweetpotato population you are growing for me. I will have no other need for these plants and it will be OK with me for you to destroy them.

The idea of using computer techniques for studying sweetpotato classification is quite intriguing and I think has some merit. I would favor natural classification rather than an artificial one as I feel this would be of more use in our studies of origin and improved breeding procedures.

Artificial classification of varieties has very limited value — similar work has been done in the past and it very quickly becomes outdated. The other problem is that no matter how well a variety is defined in an artificial system, another plant which keys to this variety is not necessarily that variety. For instance, I could use the bulletin, "Group Classification and Varietal Descriptions of American Varieties of Sweet Potatoes" by Thompson and Beattie, USDA Bulletin No. 1021, for classifying seedlings from my populations and find some seedlings that fit some varietal descriptions. However, I know and you know these seedlings would not be the described variety. Such keys are useful only for contemporary varieties which the breeders know by sight anyway.

The natural classification, to be of any lasting value, would have to be based on seedling populations to avoid the biases introduced by selection of varieties.

With these general comments, I will now try to answer your questions.

1. A world-wide collection of sweetpotato varieties would have potential value if adequately tested and classified. The job would be tremendous with very little reward. Maintaining large numbers of sweetpotato varieties vegetatively from year to year without misclassifications arising would be a very thankless task. Such classification would be of little value unless the plants were made available on request from breeders. Quarantine problems become sizeable and my opinion is that in general the value would not be worth the trouble and expense involved. Also, I feel it would be very difficult to find someone to carry on such a project.

2. A natural classification would be possible providing seedling populations were used preferably two or three generations away from selected varieties. In other words, the unselected material from breeders projects would be much more valuable than their selected material. Information from varieties would again have limited value.

3. My concept of what you call "cryptic" variation is not too clear but I feel that physiological variation including resistances to diseases and insects, enzyme discolorations, and other biochemical variations would be the most important part of such a system. We would need a flexible system allowing addition of new and different information as obtained. The physiological and biochemical information could eventually be correlated with such things as disease resistances and contribute to indexes for selection.

   Your term "cryptic" variation bothers me some. In term of quantitative genetic studies, I would think of variation as being genetic, environmental or an interaction of the two. The genetic variation would be that variation revealed by breeding, the environmental variation would be that due to the variations within a given selection in different localities. With computer techniques the studies would be essentially of a quantitative nature. Thus, it seems to me that quantitative genetic terms would be suitable.

4. I don't think that the variation found in sweetpotatoes presents evidence contrary to Edgar Anderson's concept, since we are working with selected individuals within a given species, and in a sense, we are simply defining the variation of that species. A study of this variation may indeed give some idea as to what the parental species was like. This could be especially true if we are not blinded by economic characteristics which are probably not the most important characters phylogenetically. Of course, we have with sweetpotatoes an additional effect, that due to polyploidy in the derived species. I think the variation present in sweetpotato has already defined the progenitor species in some ways. It could very well be a twining plant with small, or nonenlarged, roots but with a perennial habit. Man's selection can be considered responsible for the nontwining habit of the stems and the very large roots. Certainly man's selection has not affected the flower and seed characters appreciably; therefore, we can expect a progenitor type to have flower, capsule, and seed characters similar to the sweetpotato. Likewise, because of the general effects of polyploidy, the progenitor species may have had flowers smaller than those of sweetpotato.

Finally, I feel that classification of varieties, as mentioned previously, has little value.

I am quickly developing an opinion regarding the related species to the sweetpotato that would indicate to me that perhaps similar study of the variability of the species would be even more useful. In looking at various taxonomic descriptions for different areas of the world, it appears possible that we have some widely variable species that are generally self-fertile and easily fix local varietal types, sometimes quite different, which are classified as different

species by the taxonomist. The very fact that these varietal types have similarities from location to location, as well as differences, has contributed to the extreme confusion of the taxonomist. This variable species would occur generally as a diploid type but occasionally as a tetraploid type. My collections indicate that one such variable species could fix types presently classified as I. lacunosa, I. triloba, I. trichocarpa, I. ramoni, I. tiliaceae, I. commutata, and others. I am sure no taxonomist would agree in combining all of these, but from a genetic standpoint it seems quite possible. Certainly, the ease with which local types are fixed by the high self-fertility of some Ipomoea species accounts for much of the variation now classified as different species.

I would like to be able to discuss these matters with you personally and perhaps we will have an opportunity should you visit the U. S.

Sincerely,

Alfred Jones, Geneticist
Vegetables and Ornamentals
Research Branch

AJ:jjg

- Taximetrics Laboratory

May 29, 1967

Dr. Alfred Jones
Georgia Coastal Plain
Experiment Station
Tifton, Georgia

Dear Dr. Jones:

My letter is prompted by Frank Martin's letter, a copy of which he sent to me. My letter is a sort of follow up, along the lines of the questions which he asked. Dr. Martin's questions indicated that he has given deep thought to the process and are of the most critical importance. It is for this reason that I go ahead and comment on them now.

The computer program which we have developed gives us the opportunity to test as many different ideas about classification as an individual cares to follow through on. For example, if you wish to make a classification solely on characters developed from plant breeding studies, this can be done. If you care to make a classification based solely on functional characters, this can be done. If you want to develop a classification which incorporates all of the above information, plus the time-honored morphological characters, this likewise can be done. It is this latter classification which I believe to be the same as what Dr. Martin has called a natural classification. It is the classification which will have the most information about the plants indicated and the one which I believe comes closest to reflecting the "true" relationships of the varieties.

I believe that properly selected morphological characters used as a basis for classification will be valuable to plant breeders. We assume, of course, that the morphology is a reflection of the genetic action. It would be possible using the computer to test many different morphological features and discover which of them gave us the best chance of prediction for the cryptic variation.

Our experience with Manihot gives us some very intriguing potentialities for the discovery of similar geography related to similar genetic contents. We are not in a good position with Manihot to test the validity of our suggestions, however, because the number of experimental efforts with M. esculenta are much fewer than those with Ipomoea batatas.

Dr. Martin's third question involves the value of the inclusion of cryptic variation. I would say in response that if you have the information it definitely should be used, otherwise the computer will not have any chance of making correlation of that information and all others.

Frank's fourth question (which turns out to be a comment) considers the variability in sweet potatoes to be more complex than the "spindle" which Anderson postulates for wild plant species. As far as the ability of the computer classification to discover or predict new variation outside the range of parental types, I suggest that the plants can only go so far and still be sweet potatoes, and if we have included information about a very large range of variation in the computer program, then we will have a better chance of predicting the results of new crosses. Let me emphasize, however, that we are embarking upon a method of classification and kind of classification very different from that which has ever been done before. We look upon our efforts as experimental, and must not consider the first output to be some sort of finalized classification.

Remember that my efforts have been directed over the past years to the production of a scheme precisely tailored to the classification of groups of cultivated plants. We have good hints that the method is useful from our studies in Manihot esculenta. I am optimistic that the same methodology will be productive for sweet potatoes, If we can combine your knowledge and skills about Ipomoea, with our knowledge about methodology with the computers, I think we will have a good chance of success. I look forward to a continuing round of discussions and eventual collaboration.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR/ch

cc:. Dr. Franklin W. Martin

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
Crops Research Division
Federal Experiment Station in Puerto Rico
Mayagüez, Puerto Rico (00708)

May 22, 1967

AIR MAIL

Dr. Alfred Jones
Georgia Coastal Plain Experiment Station
Tifton, Georgia

Dear Al:

We are making a final harvest of seed from your sweet potato population this week, and will soon send you all seed available. Actually, these plants have yielded better in the late than the early season. Unless there are reasons to hold on to these plants, we shall soon destroy them.

I am writing specifically to discuss with you a matter that came up during the Root Crops Symposium. Dr. David Rogers, Department of Botany and Plant Pathology, Colorado State University, Fort Collins, Colorado, who was once editor of ECONOMIC BOTANY, and now is pioneering in taximetrics, has worked out a classification of cassava varieties based on computer techniques. He discussed with me the possibility and potential usefulness of applying such techniques to the sweet potato. We have since exchanged a couple of letters on the subject. Because of your interest and work in the area of variability in sweet potato, I thought you would want to hear about this, and as we have worked together very well, I shall not start anything in this area without completely discussing it with you.

A classification can of course be natural or artificial. If artificial, the classificatbn might be useful to a person trying to identify varieties. It would not be of much value, in my opinion, to breeders, for the classification would not reveal that potential variation so important in breeding, that is revealed among the offspring upon self- or cross-pollination. A natural classification, on the other hand, while not helping solve the problem of bound-up, or cryptic variation (above), would presumably help in understanding the origins and distributions of the varieties.

So, I have a few questions to ask you. I hope you will send a copy of your reply, and reprints of your papers, to Dr. Rogers.

First, would a classification of sweet potato varieties based on morphological characteristics be of value to plant breeders? I assume here that the materials would be drawn from world-wide sources, but tested and measured in a few locations.

Secondly, from your study of variation in the sweet potato, do you believe that a natural classification is possible? Would any classification tend to reveal only associations of characteristics fixed by man's selection, or could other, basic differences, similarities, and especially, pathways of distribution be revealed?

Thirdly, in making a classification of varieties, how important would it be to take into account the cryptic variation (that variation revealed by breeding, before selection), and the physiological variation, including resistances to diseases, enzyme discoloration, etc.?

Fourthly, in view of the fact that new variation outside the range of parental types, occurs in sweet potato crosses, have we not some evidence already contrary to the generalizations of Edgar Anderson's concerning the variation of progeny of wild species occupying a "spindle" between parental extremes, due to genetic linkage? If, as you have postulated, the present sweet potato varieties represent rather rare recombinants in which much epistasis is expressed, what does this do to Anderson's ideas? These latter comments may not be as closely related to the proposal to do some machine classification, but probably merit some attention as we develop our thinking.

Finally, as sweet potato varieties are not stable in their characteristics, unless assiduously reselected and preserved systematically, how valid, and how enduring would a classification of both primitive and modern varieties be?

I'm sure your discussion will help in developing our thinking along these lines.

Sincerely yours,

Franklin W. Martin
Plant Geneticist

cc: David Rogers

- Taximetrics Laboratory

May 17, 1967

Dr. Franklin W. Martin
Federal Experiment Station
Crops Research Division
Agricultural Research Service
United States Department of Agriculture
Mayaguez, Puerto Rico 00708

Dear Frank:

I don't know that I can really make a good answer to the questions on (1) what can variation among sweet potato varieties hope to tell us about relationships, origins, etc., and (2) what part should the "cryptic variation" play in such an analysis? In stabbing at question (1), it is my estimation that Anderson's spindle is an oversimplification. We are dealing with the variance of cultivated complexes. If you recall, Anderson's methodology was carried out on populations of wild species. Though they were somewhat complex, the complexity of many of his studies falls very short of those variations which exist in a crop as old as sweet potatoes. Anderson assumed a complete sexuality with no barriers (or very few). With sweet potatoes like other root crops, very frequently the vegetative route of reproduction does interesting and different things when mixed with the sexual reproduction.

Now all this comment does is say that we need to extend some of Anderson's ideas with methodologies which permit analysis of variance along multidimensional routes (rather than a simple spindle). As far as origins are concerned, it is not clear that any methodology can give us a satisfactory picture. But I do believe that we can get a much better hypothesis given the computer aided studies. This has been the case with my work with the cultivars of Manihot esculenta and our knowledge of this group is much more primitive than that for sweet potatoes.

We have come some distance in the analysis of data since Andy's work and we feel pretty sure that even though we fail to achieve a perfect classification, we can get an information-carrying classification of great value to people interested in breeding.

With respect to your second question on "cryptic variation", I am not just sure I know what you mean. I can't get much of a definitive answer under these circumstances. Let me know in a few descriptive words what you have in mind there.

I am pleased to hear that you are planning to get the Krochmal collection of cassava at Mayaguez. I hope I will have a chance to see it sometime.

Sincerely,

David J. Rogers
Professor of Botany

DJR/ch

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
FEDERAL EXPERIMENT STATION
MAYAGUEZ, PUERTO RICO 00708

May 12, 1967

AIRMAIL

Dr. David J. Rogers
Colorado State University
Fort Collins, Colorado, 80521

Dear Dave:

Thanks for the letter, and the suggested publication. I have written for it.

I am now beginning to work out my long term program, with reasonable assurance of a year in Hawaii (1968-69), after which I expect to return to Puerto Rico. I think it is a good time to start thinking about the possibility of some meaningful work on sweet potato classification. Thus, the questions in this letter, and the discussions they can lead to, could set the stage for a joint effort. We are in a good position to do the field work here, and I shall particularly need some large, routine projects for my assistants during my absence.

As you know, the subject of variability in sweet potato has been tackled by Yen and by Alfred Jones. If you do not know Jones, you might want his publications as a background:

Dr. Alfred Jones
Georgia Coastal Plain Experiment Station
Tifton, Georgia.

Briefly, what Jones has found is that the crossing of sweet potato varieties results in the production of a vast range of new types that could not have been predicted from the parental types. The sweet potato offspring apparently do not fall into what Edgar Anderson described as a spindle between opposite parental poles. Thus, my first questions to you are these: What can variation among sweet potato varieties hope to tell us about relationships, origins, etc.? What part should the "cryptic variation" play in such an analysis? I hope we can discuss this at some lengths before we go into any serious study.

We are making efforts to bring to Mayaguez the collection of cassava varieties developed by Krochmal on St. Croix. We shall eventually want

to introduce still other materials. I hope to do some work with the breeding system eventually.

Sincerely yours,

Franklin W. Martin
Plant Geneticist