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PRELIMINARY CHARACTERIZATION OF YAM (*Dioscorea* spp.) GERMPLASM
CULTIVATED IN DOMINICA

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ABSTRACT

Twenty-three yam accessions cultivated in Dominica were grown at the Botanic Gardens and at La Plaine Agricultural Station to assess their potential for further development. Using the descriptors for yam of the International Board for Plant Genetic Resources, selected data on species, habit, stem and leaf characteristics, underground tubers and disease susceptibility were recorded. Amongst the 23 accessions were three of *D. trifida*, two of *D. rotundata*, one each of *D. cayenensis*, *D. esculenta* and *D. bulbifera*, and 15 of *D. alata*. Anthracnose disease was observed on some of the *D. alata* accessions. On the basis of this preliminary characterization the *D. alata* accessions "White Yam" and "Kaplaou" have been included as local checks in on-farm trials to evaluate imported selections for tolerance to anthracnose.

INTRODUCTION

Yam (*Dioscorea* spp.) is the third most important root crop in Dominica, following dasheen (*Colocasia* spp.) and tannia (*Xanthosoma* spp.). Estimated production of yam in 1983 was 3600 tonnes (Thomas, 1984). The main species cultivated are *D. alata*, *D. rotundata* with *D. trifida*, with *D. cayenensis* grown to a lesser extent.

Traditionally, yams are grown primarily for home consumption at a relatively low level of technology. One constraint to increased yam production in Dominica is shortage of adequate quantities of clean, certified planting material of good quality (Ferguson, 1974). In 1981 the Caribbean Agricultural Research and Development Institute (CARDI) in their Farming System Research and Development Project, addressed this problem with the introduction of virus-tested, clean *D. alata* cv. "White Lisbon" from CARDI-Barbados, and two anthracnose tolerant *D. alata* cultivars (Belep and Kinabayou) from the Institut National de la Recherche Agronomique (INRA), Guadeloupe (Robin et al., 1984). The introduced cultivars, together with all the available local cultivars, are currently being evaluated to assess the relative susceptibility of the former to anthracnose under local conditions, and the potential of the latter for further developmental work. A total of 23 accessions classified into five *Dioscorea* spp. have been characterized at two locations based on descriptors issued by the International Board for Plant Genetic Research (IBPGR, 1980). Selected data on stem, leaf, flowering and tuber characteristics are presented herein.

MATERIALS AND METHODS

There were 23 accessions in the collection, 17 of which were collected from local sources. Imported accessions include *D. alata* cvs. White Lisbon, Oriental and Coconut Lisbon from Barbados, Belep and SEA 189 (Kinabayou) from INRA, Guadeloupe and *D. trifida* cv. INRA 520, from Guadeloupe. The

collections were planted at the Botanic Gardens in the South-west of the island on May 21, 1985 and at La Plaine Agricultural Station in the South-east on March 11, 1985. Nineteen and 18 accessions were grown at the two sites, respectively, and 14 of these were common to both. Rainfall data for both sites during the study are shown in Table 1.

Table 1: Monthly rainfall totals (mm) at the Botanic Gardens and at La Plaine Agricultural Station in Dominica, for the period March 1985 to February 1986.

Month	Botanic Gardens	La Plaine
March	59.0	110.7
April	49.5	343.0
May	25.5	86.0
June	57.5	38.0
July	154.2	159.5
August	329.0	316.5
September	195.1	262.5
October	386.8	496.5
November	212.0	377.5
December	172.3	260.5
January	124.6	173.0
February	124.6	177.5

Eight seed pieces of each accession were planted 20 cm apart in single rows on ridges 2.0 m apart. Seed piece sizes were 100 g-120 g for all accessions, except White Yam, Ladies Yam and Yellow Yam which were 250 g-300 g head setts. Management of the plots included training yam stems on branched stakes 2.0 m high at six weeks after planting, application of 110 g of NPK 16-8-24 fertilizer per plant at six weeks and hand weeding at four and 10 weeks after planting. All seed pieces were treated with Basudin at 1.5 fl. oz per gallon and Benomyl at 300 ppm before planting.

Regular observations were made and data on habit, stem and leaf characteristics, inflorescence, aerial tubers and disease susceptibility were collected on each plant of each accession based on IBPGR descriptors. For length/breadth and petiole/lamina ratios of leaves, ten leaves were randomly selected from each plant and measured. Stem pigmentation and petiole colour were recorded using Munsell Colour Charts for Plant Tissue (Munsell, 1977). Anthracnose and virus susceptibility were recorded using a scale of 0-5 where zero is very resistant and five is very susceptible, on November 7 and December 10, 1985, at the Botanic Gardens and La Plaine, respectively. After harvest at the two sites, on February 12 and 19, respectively, data were recorded on underground tuber characteristics.

RESULTS

Species

Amongst the total of 23 accessions planted, there were three of *D. trifida* (White Cush Cush, Purple Cush Cush and INRA 520), two of *D. rotundata*

(Ladies Yam and White Yam), one each of *D. esculenta* (Yam Soie), of *D. bulbifera* (Adon), and of *D. cayenensis* (Yellow Yam), and the remainder were *D. alata*. White Yam L and White Yam T collected in the La Plaine and TAN-G-TOC areas respectively were classified as *D. alata* and *D. rotundata*, respectively.

Stem Characteristics

Tables 2 and 3 present data recorded on plant type, twining habit, direction of twining, cross section of stem, pigmentation of the stem at emergence and secondary sprouting. All accessions were of the climbing type. All the *D. alata* accessions had angular stems extended as wings in cross section, and lacked spines or hairs on the stem. Direction of twining of all *D. alata* was anti-clockwise except for Coconut Lisbon and Soley. Secondary sprouts were present in 11 of the *D. alata* accessions. *D. trifida* had similar stem characteristics to those of *D. alata*, except for the presence of hairs on the stems and a clockwise twining habit. *D. cayenensis*, *D. bulbifera*, *D. rotundata* and *D. esculenta* were non-twining in habit, round in cross section and had many spines along the entire stems, the latter also displayed profuse stem hairiness. Though 12 of the 19 accessions at the Botanic Gardens had green-yellow pigmentation of the young stem, they were all of different value and chroma. In two of the remaining accessions the pigmentation was yellow; in another three, yellow-red; and in one, red.

Leaf Characteristics

Data were recorded on leaf type, length/breadth ratio, hairiness, pigmentation of the young leaf, waxiness, petiole colour, spininess of lamina and petiole, and pigmentation between veins (Tables 4 and 5). All the accessions had simple leaves, with the exception of *D. trifida* which had lobed leaves. Hairs were present on the upper and lower surface of the leaves of all *D. esculenta* and *D. trifida* accessions. The lamina and petiole of *D. cayenensis*, *D. esculenta* and *D. rotundata* had spines. All the *D. alata* accessions had leaves devoid of hairs or spines. The length/breadth ratio ranged from 1.8 for Coconut Lisbon at the Botanic Gardens and 1.3 for Purple Cush Cush at La Plaine to 2.6 for Coess and White Lisbon at the Botanic Gardens and 3.2 at La Plaine. Generally, leaves were at least twice as long as they were wide. Lamina/petiole ratios were one or more but less than two at both locations for all accessions except for "Babaoule" (*D. alata*) which had a ratio of 0.8 at the Botanic Gardens. None of the leaves had wax except "Purple Cush Cush" at the La Plaine site only. Among the accessions petiole colour was green-yellow except those of "Purple Cush Cush" which were red-purple.

Flowers and Aerial Tubers

As shown in Tables 6 and 7, aerial tubers were produced by eight of the *D. alata* accessions and in *D. bulbifera* and *D. cayenensis*. Those of *D. bulbifera* are eaten after curing. Flowers were produced by "White Yam-T" *D. rotundata*, "Yellow Yam" *D. cayenensis*, "White Cush Cush" *D. trifida*, and "Babaoule" *D. alata* at Botanic Gardens, but of these only the "Yellow Yam" *D. cayenensis*, flowered at La Plaine.

Table 2. Maturity of tubers and stem characteristics of the accessions grown at the Botanic Gardens

Accession Name	Species	Maturity of tuber	Twinning habit	Direction of twinning	Cross section of stem	Density of spines	Stem hairiness	Stem pigmentation	Secondary sprouts
Babacule	<i>D. alata</i>	3	N	A	5	1	1	5YR3/4	P
C. Lisbon	<i>D. alata</i>	2	N	C	5	1	1	2.5GY7/10	P
Choucone	<i>D. alata</i>	3	N	A	5	1	1	2.5GY7/10	P
Coess	<i>D. alata</i>	3	N	A	5	1	1	2.5GY6/10	P
Kaplaou	<i>D. alata</i>	3	N	A	5	1	1	5GY7/8	A
Oriental	<i>D. alata</i>	1	N	A	5	1	1	2.5GY7/10	P
Red Yam	<i>D. alata</i>	3	N	A	5	1	1	5YR3/4	P
Scoley	<i>D. alata</i>	3	N	C	5	1	1	7.5YR4/4	P
SEA 189	<i>D. alata</i>	3	N	A	5	1	1	5Y5/6	A
Violette	<i>D. alata</i>	3	N	A	5	1	1	5R3/6	P
W. Lisbon	<i>D. alata</i>	2	N	A	5	1	1	2.5GY7/8	P
White Yam L	<i>D. alata</i>	3	N	A	5	1	1	N/A	P
Yam Glo	<i>D. alata</i>	3	N	A	5	1	1	5GY4/8	P
Adon	<i>D. bulbifera</i>	1	T		3	1	1	2.5GY6/8	A
Yellow Yam	<i>D. cayenensis</i>	3	T		1	3	1	2.5GY5/6	A
Soie	<i>D. esculenta</i>	1	T		1	3	3	2.5GY7/6	P
White Yam T	<i>D. rotundata</i>	3	T		1	3	1	5GY5/6	A
Cush Cush P	<i>D. trifida</i>	1	N	C	5	1	2	5Y5/6	A
Cush Cush W	<i>D. trifida</i>	3	N	C	5	1	2	2.5GY5/8	A

1=<7 months
 2=>7<10 months
 3=>10 months

T-Twinning
 N=Non twinning
 Wise
 C=C/Wise
 A=Ac/Wise
 1=Round
 2=Square
 3=Round with sides
 4=Angles as thorns as wings

1=None
 2=Some
 3=Profuse

A=Absent
 B=Present

Table 4. Leaf characteristics of accessions grown in the Botanic Gardens

Accession Name	Species	Leaf Type	Leaf L:R Ratio		Hairiness		Nutrient		Leaf Waxiness	Pigment Inter-venal	Spini-ness (Petiole)	Spini-ness (Lamina)	Lamina/Petiole Ratio	Petiole Color
			Upper Surface	Lower Surface	Young Leaf	Leaf								
Babaoule	<i>D. alata</i>	1	1.9	1	1	N/A	N/A	N/A	N/A	1	1	.8	5GY6/8	
C. Lisbon	<i>D. alata</i>	1	1.8	1	1	N/A	N/A	N/A	N/A	1	1	1.4	5GY7/8	
Choucone	<i>D. alata</i>	1	2.1	1	1	1	1	2	1	1	1	N/A	5GY5/10	
Coess	<i>D. alata</i>	1	2.8	1	1	1	1	1	1	1	1	N/A	5GY6/10	
Kaplaou	<i>D. alata</i>	1	2.7	1	1	1	1	1	1	1	1	1	5GY5/10	
Oriental	<i>D. alata</i>	1	2.1	1	1	1	1	1	1	1	1	1.5	5GY5/6	
Red Yam	<i>D. alata</i>	1	2.6	1	1	1	1	1	1	1	1	N/A	5GY6/10	
Scoley	<i>D. alata</i>	1	1.9	1	1	N/A	N/A	N/A	N/A	1	1	1.4	5GY6/8	
SEA 189	<i>D. alata</i>	1	2.7	1	1	1	1	1	1	1	1	N/A	5GY6/6	
Violette	<i>D. alata</i>	1	2.3	1	1	1	1	1	N/A	1	1	1.9	5GY6/6	
W. Lisbon	<i>D. alata</i>	1	2.8	1	1	1	1	2	1	1	1	1.2	5GY5/8	
White Yam L	<i>D. alata</i>	1	2.2	1	1	1	1	1	1	1	1	1.5	N/A	
Yam Glo	<i>D. alata</i>	1	2.6	1	1	1	1	1	1	1	1	N/A	5GY7/8	
Adon	<i>D. bulbifera</i>	1	2.5	1	1	1	1	2	1	1	1	1.1	5GY7/8	
Yellow Yam	<i>D. caymensis</i>	1	2.4	1	1	1	1	1	1	2	2	N/A	5GY5/6	
Sole	<i>D. esculenta</i>	1	2.7	3	3	N/A	N/A	N/A	N/A	2	2	1.5	5GY4/8	
White Yam T	<i>D. rotundata</i>	1	2	1	1	N/A	N/A	N/A	N/A	2	2	1.4	5GY5/8	
Cush Cush P	<i>D. trifida</i>	2	2.5	3	2	2	2	1	1	1	1	1.3	5RP3/2	
Cush Cush W	<i>D. trifida</i>	2	2.6	2	2	2	2	1	1	1	1	1	2.5GY5/8	

1=Single 1=None 1=Absent
 2=D. Lobed 2=Some 2=Present
 3=Compound 3=Profuse 3=Profuse

Table 3. Maturity of tuber and stem characteristics of the accessions grown at La Plaine

Accession Name	Species	Maturity of tuber	Twining habit	Direction of twining	Cross section of stem	Density of spined	Stem hairiness	Stem pigmentation	Secondary sprouts
Babaoule	D. alata	1	N	A	5	1	1	5YR3/4	P
Belep	D. alata	1	N	A	5	1	1	2.5GY5/8	P
Choucone	D. alata	1	N	A	5	1	1	2.5GY7/10	P
Coess	D. alata	1	N	A	5	1	1	2.5GY6/10	P
Kaplaou	D. alata	1	N	A	5	1	1	5GY7/8	A
Scoley	D. alata	1	N	C	5	1	1	7.5YR4/4	P
Scoley R	D. alata	1	N	A	5	1	1	N/A	N/A
SEA 189	D. alata	1	N	A	5	1	1	5Y5/6	A
Violette	D. alata	1	N	A	5	1	1	5R3/6	P
W. Lisbon	D. alata	1	N	A	5	1	1	2.5GY7/8	P
White Yam	D. alata	1	N	A	N/A	1	1	N/A	N/A
Yam Glo	D. alata	1	N	A	5	1	1	5GY4/8	P
Yellow Yam	D. cayenensis	1	T	A	1	3	1	2.5GY5/6	A
Scie	D. esculenta	3	T	1	1	3	1	2.5GY7/6	P
Ladies	D. rotundata	3	T	1	1	3	1	5GY5/6	A
Cush Cush P	D. trifida	1	N	C	5	1	2	5Y5/6	P
Cush Cush W	D. trifida	1	N	C	5	1	2	2.5GY5/8	P
INRA 520	D. trifida	N/A	N	C	5	1	2	2.5GY5/6	P

1=early
 (= <7 months)
 2=medium
 (>7, <10 months)
 3=late
 (>10 months)

T=Twining
 N=Non twin
 A=Anti clockwise
 C=Clockwise

1=Round
 2=Square
 3=Round with sides
 4=Angles as thorns
 5=Angles as wings

1=Absent
 2=Few
 3=Many
 1=None
 2=Some
 3=Profuse

A=Absent
 B=Present

Table 5. Leaf characteristics of accessions grown at La Plaine

Accession Name	Species	Leaf Type	Leaf L:B Ratio Mean	Hairiness		Pigment Young Leaf	Leaf Waxiness	Pigment Inter-Venal	Spini-ness-Petiole Lamina	Spini-ness-Petiole Lamina	Lamina/Petiole Ratio Mean	Petiole Color
				Upper Surface	Lower Surface							
Babaoule	<i>D. alata</i>	1	2.91	1	1	1	1	1	1	1	1.03	5GY6/8
Belep	<i>D. alata</i>	1	3.19	1	1	1	1	1	1	1	1.17	5GY6/6
Choucone	<i>D. alata</i>	1	2.18	1	1	1	1	1	1	1	N/A	5GY5/10
Coess	<i>D. alata</i>	1	2.73	1	1	1	1	1	1	1	1.38	5GY6/10
Kaplaou	<i>D. alata</i>	1	2.11	1	1	1	1	1	1	1	1.00	5GY5/10
Scoley	<i>D. alata</i>	1	2.29	1	1	1	1	1	1	1	1.49	5GY6/8
Scoley R	<i>D. alata</i>	1	2.90	1	1	1	1	1	1	1	1.11	N/A
SEA 189	<i>D. alata</i>	1	1.98	1	1	2	1	1	1	1	1.69	5GY6/6
Violette	<i>D. alata</i>	1	2.45	1	1	1	1	1	1	1	1.31	5GY6/6
W. Lisbon	<i>D. alata</i>	1	2.84	1	1	1	1	1	1	1	1.35	5GY5/8
White Yam L	<i>D. alata</i>	1	2.36	1	1	1	1	1	1	1	1.50	N/A
Yam Glo	<i>D. alata</i>	1	2.78	1	1	1	1	1	1	1	1.07	5GY7/8
Yellow Yam	<i>D. cayenensis</i>	1	2.04	1	1	1	1	1	2	2	N/A	5GY5/6
Soie	<i>D. esculenta</i>	1	2.01	3	3	3	1	1	2	2	1.47	5GY4/8
Ladies	<i>D. rotundata</i>	1	2.40	1	1	1	1	1	1	1	1.42	2.5GY5/4
Cush Cush P	<i>D. trifida</i>	2	1.38	3	2	1	2	1	1	1	1.30	5RP3/2
Cush Cush W	<i>D. trifida</i>	2	1.34	2	2	1	1	1	1	1	1.00	2.5GY5/8
INRA 570	<i>D. trifida</i>	2	N/A	2	1	N/A	N/A	N/A	1	1	N/A	2.5GY5/4

1=Single
 2=Deep Lobed
 3=Compound
 1=None 1=Absent 1=Non 1=Absent 1=Absent 1=Absent
 2=Some 2=Some 2=Present 2=Max 2=Present 2=Present
 3=Profuse 3=Profuse

Table 6. Flower and aerial tuber characteristics of accessions grown at the Botanic Gardens

Accession name	Species	Flowers	Flower color	Aerial tubers
Babaoule	<i>D. alata</i>	Y	N/A	A
C. Lisbon	<i>D. alata</i>	N	0	A
Choucone	<i>D. alata</i>	N	0	A
Coess	<i>D. alata</i>	N	0	P
Kaplaou	<i>D. alata</i>	N	0	A
Oriental	<i>D. alata</i>	N	0	A
Red Yam	<i>D. alata</i>	N	0	P
Scoley	<i>D. alata</i>	N	0	P
SEA 189	<i>D. alata</i>	N	0	A
Violette	<i>D. alata</i>	N	0	P
W. Lisbon	<i>D. alata</i>	N	0	P
White Yam L	<i>D. alata</i>	N	0	A
Yam Glo	<i>D. alata</i>	N	0	P
Adon	<i>D. bulbifera</i>	N	0	P
Yellow Yam	<i>D. cayenensis</i>	Y	Yellow	P
Soie	<i>D. esculenta</i>	N	0	A
White Yam T	<i>D. rotundata</i>	Y	N/A	A
Cush Cush P	<i>D. trifida</i>	N	0	A
Cush Cush W	<i>D. trifida</i>	Y	N/A	A

N = No, Y = Yes, A = Absent, P = Present.

Table 7. Flower and aerial tuber characteristics of accessions grown at La Plaine.

Accession name	Species	Flowers	Flower colour	Aerial tubers
Babaoule	<i>D. alata</i>	N	0	A
Belep	<i>D. alata</i>	N	0	P
Choucone	<i>D. alata</i>	N	0	A
Coess	<i>D. alata</i>	N	0	P
Kaplaou	<i>D. alata</i>	N	0	A
Scoley	<i>D. alata</i>	N	0	P
Scoley R	<i>D. alata</i>	N	0	P
SEA 189	<i>D. alata</i>	N	0	A
Violette	<i>D. alata</i>	N	0	P
W. Lisbon	<i>D. alata</i>	N	0	P
White Yam L	<i>D. alata</i>	N	0	A
Yam Glo	<i>D. alata</i>	N	0	P
Yellow Yam	<i>D. cayenensis</i>	Y	YELLOW	P
Soie	<i>D. esculenta</i>	N	0	A
Ladies	<i>D. rotundata</i>	N	0	A
Cush Cush P	<i>D. trifida</i>	N	0	A
Cush Cush W	<i>D. trifida</i>	N	0	P

N = No, Y = Yes, A = Absent, P = Present.

Underground Tuber Characteristics

Tables 8 and 9 present data on number of tubers per plot, relationship of tubers to each other, tuber shape, tuber length, corm size in relation to tuber size, tuber skin thickness and texture, flesh colour and browning of flesh when cut. Of all the morphological parameters assessed, underground tuber characteristics were the most variable between locations. At the Botanic Gardens the number of tubers per plant in the *D. alata* accessions varied from one in "Babaoule" to seven in "Choucone", with all accessions averaging more than one tuber per plant except for "Babaoule". At La Plaine, in addition to "Babaoule", "Kaplaou", "Red Scoley", "SEA 189", "White Lisbon", "White Yam L" and "Yam Glo", all had only a single tuber per plant. Plants of *D. esculenta* and *D. trifida* accessions averaged more than 10 tubers per plant at both locations. The highest number of tubers per plant, 28, was recorded in Yam Soie at La Plaine. The average number of tubers per plant of "Yellow Yam", *D. cayenensis* and "White Yam T" and "Ladies Yam", *D. rotundata* was one, or slightly more, at both sites.

Mean tuber weight per plant was 3.0 kg in *D. alata*, with highs of 5.1 kg, 4.7 kg and 4.6 kg in "Babaoule", "White Lisbon" and "Red Scoley", respectively, and lows of 1.5 kg, 1.6 kg and 1.8 kg for "Belep", "SEA 189" and "Coconut Lisbon", respectively. Amongst the other species, *D. cayenensis* was the highest yielder, with a mean of 5.3 kg per plant, while the other species produced less than 2.5 kg per plant. Yields were higher at the Botanic Gardens than at La Plaine.

Generally, tubers were fused at the neck to the corm except in "Soie" (*D. esculenta*), and in the *D. trifida* accessions, in which they were completely separate. Corm sizes were small in relation to tuber size except in the case of "Babaoule" and "Yellow Yam", in which they were large, and "Red Scoley", "Yam Glo" and "White Yam", in which they were medium. None of the accessions had tubers more than 100 cm or less than 5 cm in length. *D. alata* accessions, "Coconut Lisbon", "Choucone" and "Violette" had tubers 6 to 20 cm long whereas for the other *D. alata* accessions tuber lengths were 21 to 100 cm. Average length of tubers of "Soie", "Adon" (*D. bulbifera*) and the *D. trifida* accessions were 6 to 20 cm, and for *D. cayenensis* and *D. rotundata*, 21 to 100 cm.

The skin thickness of 15 of the 23 accessions was more than 1.0 mm at the Botanic Gardens and 13 had smooth textured skin. There were various combinations of skin thickness and texture and some differences were observed between locations. Tuber flesh colours were described without the use of Munsell Colour Charts. There were three, four, three and two accessions with white, off-white, cream, yellow and purple flesh, respectively. Severe browning was observed on the freshly cut flesh of "Red Scoley", "Coconut Lisbon", "White Lisbon", and "Adon"; seven others had some and twelve had no browning.

Anthracnose and Virus Scores

With the exception of *D. alata* cv. "Goes" at the Botanic Gardens and "Choucone", "SEA 189", "Violette", "White Yam", "Yellow Yam", "Soie" and "White Cush Cush" at La Plaine, the accessions were all free of virus symptoms (Tables 10 and 11).

Table 8. Underground tuber characteristics of accessions grown at The Botanic Gardens

Accession Name	Species	No. Weight per (Kg per Plant)	Weight per (No per Tuber)	Relation-ship to Corm	Length	Thick-ness	Skin	Texture Tuber	Flesh Colour	Browning Cut	Shape	Corn/ Tuber Ratio
Babaoule	<i>D. alata</i>	1.0	5.1	3	3	1	2	2	Yellow	2	Long	3
C. Lisbon	<i>D. alata</i>	3.8	1.8	3	2	1	2	2	Cream	3	Round	1
Choucone	<i>D. alata</i>	7.0	2.3	2	2	2	1	1	White	2	Round	1
Coess	<i>D. alata</i>	1.8	1.9	3	3	2	2	2	White	1	Round	1
Kapleou	<i>D. alata</i>	1.4	3.7	3	3	2	1	1	White	1	Long	2
Oriental	<i>D. alata</i>	3.3	3.1	3	3	2	1	1	Off. Wh	1	Long	1
Red Yam	<i>D. alata</i>	2.3	3.6	3	3	2	1	1	Cream	2	Long	1
Scoley	<i>D. alata</i>	2.8	3.1	3	3	2	1	1	White	2	Round	1
SEA 189	<i>D. alata</i>	3.4	1.6	3	3	2	1	1	Off. Wh	2	Round	1
Violette	<i>D. alata</i>	1.6	2.5	3	2	2	1	1	Purple	1	Round	1
W. Lisbon	<i>D. alata</i>	4.7	2.9	3	3	1	2	2	White	3	Long	1
White Yam L	<i>D. alata</i>	1.4	3.5	3	3	2	1	1	White	1	Round	1
Yam Glo	<i>D. alata</i>	3.3	2.8	3	3	2	1	1	Cream	2	Flat	2
Yellow Yam	<i>D. cayenensis</i>	1.5	5.3	3	3	1	2	2	Yellow	2	Long	3
Adon	<i>D. bulbifera</i>	2.8	.5	3	3	2	2	2	Yellow	3	Flat	1
Soie	<i>D. esculenta</i>	11.5	1.1	2	2	1	1	1	White	1	Round	1
White Yam T	<i>D. rotundata</i>	1.2	2.3	1	3	1	2	2	Off Wh	1	Round	1
Cush Cush P	<i>D. trifida</i>	14.0	1.9	1	2	2	1	1	Purple	1	Long	1
Cush Cush W	<i>D. trifida</i>	17.2	1.3	1	2	2	2	2	White	1	Long	1

1=Fused 1=1-5CM 1=Thick 1=Smooth
 2=Ctus 2=6-20CM 2=Thin 2=Rough
 3=Dist 3=21-100CM
 4= >100CM
 1=None
 2=Some
 3=vere
 1=Small
 2=Medium
 3=Large

Table 9. Underground tuber characteristics of accessions grown at La Plaine

Accession Name	Species	No. Per Stand	Weight kg per Plant	Weight kg per Tuber	Relationship to Corm	Corm/Tuber Ratio	Length	Skin thickness	Skin Texture	Flesh Color	Browning of Cut Flesh	Bitterness
Babaoule	<i>D. alata</i>	1	4.88	4.88	3	3	3	1	1	Yellow	2	N/A
Belep	<i>D. alata</i>	2	1.49	.83	3	1	3	2	2	White	1	N/A
Choucone	<i>D. alata</i>	6	2.94	.53	2	1	2	2	2	White	2	N/A
Coess	<i>D. alata</i>	2	2.52	1.58	3	1	3	1	1	White	1	N/A
Kapleou	<i>D. alata</i>	1	1.44	1.12	3	1	3	2	1	White	1	N/A
Scoley	<i>D. alata</i>	2	1.81	.91	3	1	3	2	1	White	1	N/A
Scoley-R	<i>D. alata</i>	1	4.6	4.07	3	2	3	1	1	Cream	3	N/A
SEA 189	<i>D. alata</i>	1	1.61	1.29	3	1	3	2	2	Off-White	2	N/A
Violette	<i>D. alata</i>	2	2.08	1.30	3	1	2	2	1	Purple	1	N/A
W. Lisbon	<i>D. alata</i>	1	1.61	1.29	3	1	3	1	1	Off-White	1	N/A
White Yam L	<i>D. alata</i>	1	3.33	2.78	3	2	3	2	1	White	1	N/A
Yam Glo	<i>D. alata</i>	1	2.7	2.70	3	2	3	1	1	Cream	2	N/A
Yellow Yam	<i>D. cayenensis</i>	1	2.75	1.99	3	1	3	1	2	Yellow	1	N/A
Soie	<i>D. esculenta</i>	28	1.78	.06	2	1	2	1	1	White	1	1
Ladies	<i>D. rotundata</i>	1	2.13	1.64	3	1	3	1	1	White	1	N/A
Cush Cush P	<i>D. trifida</i>	20	2.19	.11	1	1	2	2	1	Purple	1	N/A
Cush Cush W	<i>D. trifida</i>	17	2.33	.14	1	1	2	2	1	White	1	N/A
INRA 520	<i>D. trifida</i>	12	1.11	1.0	2	1	2	2	2	White	1	N/A

1=Fused
 2=Club
 3=Dist

1=Small
 2=Medium
 3=Large

1=Thin
 2=Thin
 3=21-20cm
 4=>1mm

1=None
 2=Some
 3=Severe

1=Slight
 2=Medium
 3=High

Table 10. Anthracnose and virus scores for accessions grown at the Botanic Gardens

Accession Name	Species	No. of Plants	No. of Plants Infected	Plot Score	Plant Score	Leaf Score	Per cent Leaves Infected	Virus (Leaf symp.)
Babaoule	<i>D. alata</i>	8	2	2	1	1	3.66	0
C. Lisbon	<i>D. alata</i>	8	4	4	1	2	4.76	0
Choucone	<i>D. alata</i>	8	3	3	1	2	3.33	0
Coess	<i>D. alata</i>	8	3	3	1	1	4.72	1
Kaplaou	<i>D. alata</i>	7	2	3	1	1	2.17	0
Oriental	<i>D. alata</i>	8	4	4	1	3	5.19	0
Red Yam	<i>D. alata</i>	8	8	5	0	4	4.55	0
Scoley	<i>D. alata</i>	8	4	4	1	2	4.68	0
SEA 189	<i>D. alata</i>	8	3	3	1	1	2.11	0
Violette	<i>D. alata</i>	8	2	2	1	1	4.44	0
W. Lisbon	<i>D. alata</i>	8	4	4	1	2	5.67	0
White Yam L	<i>D. alata</i>	8	2	2	1	1	3.63	0
Yam Glo	<i>D. alata</i>	8	1	1	1	1	2.02	0
Yellow Yam	<i>D. cayenensis</i>	4	0	0	0	0	0	0
Adon	<i>D. bulbifera</i>	7	0	0	0	0	0	0
Soie	<i>D. esculenta</i>	8	0	0	1	1	8.03	0
White Yam T	<i>D. rotundata</i>	8	0	0	0	0	0	0
Cush Cush P	<i>D. trifida</i>	6	0	0	1	1	1.61	0
Cush Cush W	<i>D. trifida</i>	8	0	0	1	1	1.11	0

Scale of 0 to 5 where 0 is no infection and 5 is very high level of infection.

Table 11. Anthracnose and virus scores for accessions grown at La Plaine

Accession Name	Species	No. of PIs	No. of PIs Infect	No. Invs Infect/ Plant	Plot Score	Plant Score	Leaf Score	Virus (Leaf sympt)
Babaoule	<i>D. alata</i>	8	8	19	5	1	1	0
Belep	<i>D. alata</i>	8	8	6	5	1	1	0
Choucone	<i>D. alata</i>	8	1	2	1	1	1	1
Coess	<i>D. alata</i>	8	8	16	5	1	1	0
Kaplaou	<i>D. alata</i>	8	3	5	1	1	1	0
Scoley	<i>D. alata</i>	8	8	18	5	1	1	0
Scoley R	<i>D. alata</i>	8	8	29	5	2	3	0
SEA 189	<i>D. alata</i>	8	6	9	1	1	1	3
Violette	<i>D. alata</i>	8	6	35	4	2	2	2
W. Lisbon	<i>D. alata</i>	8	8	43	5	2	3	0
White Yam L	<i>D. alata</i>	8	1	2	1	2	2	2
Yam Glo	<i>D. alata</i>	8	8	17	5	1	1	0
Yellow Yam	<i>D. cayenensis</i>	8	0	0	0	0	0	1
Sofe	<i>D. esculenta</i>	8	0	0	0	0	0	2
Ladies	<i>D. rotundata</i>	8	0	0	0	0	0	0
Cush Cush P	<i>D. trifida</i>	8	0	0	0	0	0	0
Cush Cush W	<i>D. trifida</i>	8	0	0	0	0	0	1

Scale of 0 to 5 where 0 is no infection and high level of infection.

1 = None
 2 = Slight
 3 = Moderate
 4 = Severe
 5 = V. Severe

All the *D. alata* accessions showed symptoms of anthracnose but symptoms were absent in *D. trifida*, *D. esculenta*, *D. bulbifera* and *D. cayenensis* accessions at both locations. Amongst the *D. alata* accessions "Red Yam" was the most severely affected with all eight of the plants showing disease symptoms at the Botanic Gardens; in the other accessions, four or fewer of the plants were affected. More anthracnose was recorded at La Plaine; six or more of the plants were affected by the disease in nine of the *D. alata* accessions. In spite of the high occurrence of anthracnose among the plants of these accessions, the actual number of leaves infected was relatively low to moderate (less than 10 per cent) and the intensity on the leaf and plants (leaf and plant scores) were also low to moderate except for "Red Yam".

DISCUSSION

Using the IBPGR descriptors for yam, taxonomic and morphological data were collected on 23 yam accessions cultivated in the Commonwealth of Dominica. Five species were identified, of which *D. alata* was the most common with 15 accessions. The accessions are all edible and similar ones are found throughout the Caribbean (Ferguson, 1974). A yam market study currently being conducted by CARDI/USAID Farming System Research and Development Project suggests that the different species have different roles in the farm system. Most of the *D. alata* accessions appear to be grown as staples for use by the farm family, but a few are grown for the local market or for export to neighbouring islands. Tubers of *D. rotundata* are most commonly seen in the local market and this is the major species exported. *D. trifida* is preferred by local consumers because of its taste and texture. Cultivation of *D. bulbifera* and *D. esculenta* is negligible.

Accession names were those provided by the farmer. Two accessions had the same local name ("White Yam"), but were classified as different species. More comprehensive identification and classification of other accessions would require confirmation of data by repeating the characterization and including data on the additional taxonomic and morphological parameters described by IBPGR (1980).

Notwithstanding the preliminary nature of this work, two *D. alata* accessions, "+Kaplaou" and "+White Yam", have been included as local checks in on-farm tests currently being conducted by CARDI. These were selected because of low to moderate infection by anthracnose, white tuber flesh colour and large tubers, with attractive shape and acceptable taste. The accessions are being compared with "White Lisbon" and "Oriental" from Barbados, and with "Belep" and "SEA 189" (Kinabayou) from Guadeloupe. "White Lisbon" had been introduced in 1981 as virus-tested and clean planting material, but has suffered severely from anthracnose disease. "Oriental", "Belep" and "Kinabayou" are tolerant to the disease. Satisfactory performance by "Kaplaou" and "White Yam" in these on-farm tests would lead to upgrading of the planting material through cleaning at the CARDI virus test facility in Barbados and subsequent reintroduction to Dominica.

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