

Genetic Resources Communication

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SUMMARY

The characteristics of a collection of 322 accessions of buffel grass (Cenchrus ciliaris) and related species grown in the field at the Cooper Laboratory, Lawes (Lat. 27°34'S) are detailed. Twelve morphological and agronomic attributes were measured and the data are presented as an aid to research workers intending to carry out further evaluation.

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INTRODUCTION

Buffel grass (Cenchrus ciliaris) and two related species, Cloncurry buffel (C. pennisetiformis) and Birdwood grass (C. setiger), are native to drier regions of Africa, through Saudi Arabia to India (Clayton and Renvoize 1982). Buffel grass was introduced to Australia by accident in the harnesses of Afghan camels on the north-west coast of Western Australia between 1870 and 1880 (Marriott 1955), and Birdwood grass was introduced from India in the 1920's (Barnard 1969). Since then, over 300 accessions of these three species have been introduced into Australia. Buffel grass is the most widely sown pasture grass in Queensland, with 2.4 million hectares already established, and a potential area in excess of 16 million hectares (Cavaye 1988).

Buffel grass is suited to areas receiving an average annual rainfall of 350 to 800 mm. It prefers light textured soils, but can be grown on the self-mulching clays, scrub and forest soils.

As the number of collections held by genetic resource centres increases, it becomes increasingly difficult for researchers to test all accessions over a wide range of environments. This problem can be alleviated by introducing some form of classification, which reduces the whole set to a number of subsets, in each of which the members possess similar characteristics. Burt *et al.* (1971) illustrated how numerical methods could be used to analyse agronomic and morphological data in order to achieve meaningful classifications. Other authors have used similar methods to classify large data sets, e.g. Edye *et al.* (1974), Bishop *et al.* (1988), Blumenthal *et al.* (1989) and Harding *et al.* (1989). Classification of buffel grass (including C. pennisetiformis and C. setiger) is simplified in that it is an obligate apomict and hence there is no within-line genetic variation.

Pengelly *et al.* (1992) used a numerical approach in the classification of 322 accessions of buffel grass and related species. The current paper presents the database which provides the source information for that analysis. This data is of potential value to researchers concerned with selection within groups of specific accessions for further study.

CULTURAL DETAILS

Seed of all accessions was pre-germinated and the seedlings transferred to peat cups filled with a sand/peat mixture to which a complete fertilizer mix had been added. At approximately 5 weeks of age, the seedlings were transplanted to the field in a randomized complete block design with two replicates. Planting commenced on December 16, 1985 and was completed by January 17, 1986. Plots were single rows of eight plants at 0.5m spacings, with 1.5m between rows. The experimental site at the Cooper Laboratory, Lawes (Lat. 27°34'S, Long. 152°20'E) was a fertile prairie soil developed on alluvium. No fertilizer was applied. Irrigation was applied as required to ensure satisfactory establishment, and the plots were hand cultivated to remove "rogues" and/or other weeds. Relevant climatic data for the period December 1985 to January 1987 is summarised in Table 1.

Plants were cut back on February 13, September 11, October 6, November 11 and December 22, 1986 to a height of c. 10cm. Seed for fascicle/caryopsis measurements was harvested during Autumn 1986.

Table 1. Meteorological data for Cooper Laboratory, Lawes, for the period December 1985 to January 1987.

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan
Mean rainfall (mm)	132.0	30.8	59.6	8.0	0.7	102.3	0.1	35.0	59.0	13.5	78.4	87.5	65.7	121.5
Evaporation (mm)	204.6	215.6	185.2	168.1	144.5	92.4	93.5	88.2	99.0	160.6	171.0	186.4	209.2	210.1
Mean max. temp (°C)	31.8	32.9	33.1	30.4	29.5	24.1	21.8	21.0	20.9	26.3	27.5	28.6	30.5	33.9
Mean min. temp (°C)	18.6	18.6	18.6	16.5	14.3	12.4	7.7	7.7	7.3	10.6	13.8	15.1	17.3	21.7

ATTRIBUTES

Data were recorded on 12 attributes for all 322 accessions. Most measurements were taken from plants in the field using the fourth and fifth plants in a row to avoid any border effect.

The data recorded were of three attribute types: disordered multistate, ordered multistate and numeric. Disordered multistate attributes are those to which a consistent, but arbitrary value is applied to each of the states, e.g. fascicle colour. Ordered multistate attributes imply an order only, the coded value "3" being larger than "1", but not necessarily three times larger than "1", e.g. rhizome and yield ratings. Numeric attributes imply a linear scale and recognize a true zero value, e.g. plant height, leaf size and seed weight.

Table 2 lists the attributes recorded, the attribute type and the states specified. The attributes are generally self explanatory, however the following notes are given for clarification.

- a) Habit
The ratings recorded for plant habit were the sums of two individual scores per replicate.
- b) Dry matter rating
The value recorded for dry matter rating was the mean of two ratings per replicate.
- c) Fascicle colour
Fascicle colour was scored on the dominant colour/colours of the fascicle hairs of seeds from one replicate only.
- d) Caryopsis number
Total number of caryopses from 25 fascicles selected at random from a bulk seed sample from one replicate only.

DATA

The data recorded for 322 accessions and 12 attributes are given in Table 3. The accession number is, in most cases, the Commonwealth Plant Introduction (CPI) number. The prefix "P" or "Q" denotes accession numbers issued by the New South Wales Department of Agriculture or the Queensland Department of Primary Industries respectively. In those cases where no CPI, P or Q number had been issued, accessions were registered with the "CQ" prefix.

Origin generally denotes the country where the accession was originally collected. Those origins marked with an asterisk (*) indicate a donor country.

The group number refers to those groups as established by numerical classification and described in Pengelly et al. (1992).

Unless stated otherwise, the values listed in Table 3 are the means of both replicates. In those

cases where the means of ordinal attributes are non-integer values, this indicates a different rating between replicates.

GROUP CHARACTERISTICS

Group 1. A group of short, decumbent, very early maturing plants with relatively low dry matter (DM) yield. They have few, if any, rhizomes. This group includes cv. West Australian and Cloncurry buffel.

Group 2. Early maturing plants of moderate height, decumbent habit and few rhizomes. DM yields are average. This group includes cv. American and cv. Gaydah.

Group 3. Plants in this group are tall, have high DM yields and medium maturity. Habit is semi-erect and rhizome numbers are moderate. There are no cultivars in this group.

Group 4. A group of tall, erect plants of average DM yield and medium maturing. Rhizome numbers are moderate. As with group 3, there are no cultivars in this group.

Group 5. Plants are tall, semi-erect and have high rhizome numbers. They are of medium maturity and have high DM yields. This group includes cv. Molopo.

Group 6. Plants in this group are very tall, of upright habit and have many rhizomes. DM yields are high and they are late maturing. The cultivars Biloela, Nunbank and Tarewinnabar are included in this group.

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Table 2. Attributes measured for 322 accessions of buffel grass and related species.

Attribute Name		States
Maturity (ordered multistate)	(18.3.86)	1. Not yet flowered 2. Early flowering only 3. Fully in flower/some ripe seed 4. Mature
Leaf length (cm) (numeric)	(4.4.86)	(2nd leaf below flag leaf)
Leaf width (mm) (numeric)	(4.4.86)	(2nd leaf below flag leaf)
Height (cm) (numeric)	(9.4.86)	(to base of flag leaf)
Head length (mm) (numeric)	(10.4.86)	
Head width (mm) (numeric)	(10.4.86)	(width, excluding bristles)
Habit (ordered multistate)	(11.4.86)	1 to 10 (prostrate to erect)
Rhizome rating (ordered multistate)	(27.5.86)	0 to 5 (nil to dense rhizomes)
Dry matter rating (ordered multistate)	(18.3.86)	1 to 10 (low to high)
Dry matter rating (ordered multistate)	(27.5.86)	1 to 10 (low to high)
Dry matter rating (ordered multistate)	(11.9.86)	1 to 10 (low to high)
Dry matter rating (ordered multistate)	(6.11.86)	1 to 10 (low to high)
Dry matter rating (ordered multistate)	(27.1.87)	1 to 10 (low to high)
Fascicle colour (disordered multistate)		1. Purple 2. Straw 3. Purple/ straw 4. Purple/ green 5. Straw/ purple 6. Straw/ green 7. Green/ purple
Caryopsis number per 25 fascicles (numeric)		
Caryopsis weight (mg/ 100 caryopses) (numeric)		

Table 3. Data collected for 322 accessions of buffel grass and related species.

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ⁹	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary-opsis No.	Cary. Wt mg/100
<u>GROUP 1</u>																		
West Aust.	ciliaris	Unknown	3.0	17.0	5.0	53.0	64.5	8.0	8.5	0.0	4.5	4.0	7.0	3.8	3.2	4	32	46.88
Cloncurry	penniset	Unknown	3.0	18.0	7.0	56.5	74.0	11.0	9.0	0.5	5.2	4.0	6.5	4.0	3.5	2	38	57.89
CQ3134	setiger	*Australia	3.8	15.5	6.5	44.0	77.0	9.0	3.5	0.0	4.5	4.0	4.5	4.5	4.5	2	29	75.86
CQ3136	setiger	*Australia	3.2	16.5	6.0	60.0	67.0	5.5	10.0	1.0	4.5	4.0	3.8	3.5	4.2	4	36	63.89
CQ3146	setiger	*Australia	4.0	17.5	7.5	58.0	79.0	7.5	6.0	0.5	4.8	4.5	4.5	3.5	4.0	4	39	61.54
CQ3149	setiger	*Australia	4.0	24.5	6.0	52.0	66.0	8.0	4.0	0.5	6.5	6.0	2.8	3.8	4.8	1	38	63.16
CQ3150	setiger	*Australia	3.5	32.0	8.0	63.0	67.5	8.0	4.0	0.5	6.8	6.0	4.5	4.2	5.2	2	34	88.24
CQ3154	setiger	*Australia	4.0	21.5	8.5	67.0	73.5	7.5	7.0	1.5	6.0	4.0	5.5	4.2	4.2	7	64	73.44
CQ3156	setiger	*Australia	3.5	21.0	6.0	57.5	75.0	7.0	4.0	0.5	7.0	5.0	3.0	4.2	5.0	6	29	41.38
CQ3165	setiger	*Australia	3.5	29.5	6.5	62.5	82.0	9.5	4.0	0.5	6.5	5.5	4.5	4.5	5.2	1	43	67.44
CQ771	setiger	*Australia	4.0	20.0	6.0	30.0	71.0	7.5	3.0	0.5	4.2	4.0	3.8	4.8	4.5	1	53	83.02
P1366	setiger	Unknown	4.0	29.0	8.5	56.5	77.0	6.5	5.5	0.0	5.8	6.0	4.5	3.8	4.5	5	76	56.58
36883	ciliaris	*India	3.8	28.5	7.5	72.0	111.0	9.5	7.5	0.5	5.2	5.0	5.8	3.8	4.0	2	37	59.46
36884	setiger	*India	4.0	9.5	5.5	37.5	35.0	8.0	5.5	0.5	2.5	3.0	2.8	3.0	2.2	1	44	77.27
36885	setiger	*India	4.0	12.5	5.0	44.5	44.0	6.0	5.0	0.0	3.0	3.0	2.8	3.2	2.5	1	36	83.33
36886	setiger	*India	3.5	27.5	5.0	59.0	83.0	6.5	6.0	0.0	3.0	5.0	5.8	4.5	4.8	2	28	60.71
36888	setiger	*India	4.0	13.5	5.0	33.0	51.0	7.5	6.5	0.0	2.5	4.0	3.2	3.5	2.8	1	38	78.95
36889	setiger	*India	4.0	14.0	5.0	36.0	47.0	7.0	5.5	0.0	2.5	4.0	3.2	3.2	2.0	1	41	82.93
57278	setiger	*India	4.0	14.5	6.5	41.5	54.5	6.5	3.0	0.0	4.5	2.0	3.0	3.0	2.2	1	40	115.00
57279	setiger	*India	4.0	18.0	6.5	54.0	57.5	7.5	3.5	0.0	4.8	2.0	2.5	2.8	3.0	1	42	102.38
57280	setiger	*India	4.0	10.0	4.5	29.0	47.0	8.5	3.5	0.0	2.5	2.0	2.5	2.5	2.0	1	35	97.14
57281	setiger	*India	4.0	15.0	6.0	50.5	56.0	6.5	6.5	0.5	4.2	2.5	3.8	3.5	3.5	1	50	64.00
57282	setiger	*India	3.8	28.0	5.0	45.5	58.5	6.0	6.0	0.5	5.0	4.0	4.0	3.5	2.2	1	56	89.29
57283	setiger	*India	4.0	20.5	6.5	33.0	61.5	5.5	2.0	0.5	3.8	5.0	2.8	4.0	3.0	5	55	58.18
57284	setiger	*India	4.0	14.5	5.0	37.5	51.5	10.0	4.5	0.0	2.8	3.0	2.2	2.8	1.8	1	37	91.89
61135	(hybrid)	*USA	4.0	34.5	8.5	90.5	95.0	8.5	7.5	1.5	7.0	4.0	5.5	4.0	4.2	1	40	65.00
61144	ciliaris	Djibouti	3.0	13.5	3.5	39.0	61.0	9.0	7.0	0.5	4.5	2.0	5.0	4.0	3.2	8	51	52.94
71916	ciliaris	Somalia	3.5	27.0	7.0	79.0	87.5	9.5	6.0	0.5	7.5	5.0	5.5	4.2	5.2	1	41	56.10
71918	ciliaris	Somalia	3.5	22.0	9.0	64.5	80.5	9.5	5.5	0.0	7.2	5.0	5.5	4.5	6.0	1	30	70.00
77319	ciliaris	India	4.0	16.0	5.0	57.0	53.0	7.5	4.5	0.0	5.8	4.0	3.8	3.5	3.5	6	50	78.00
77320	ciliaris	India	4.0	23.0	6.5	51.0	71.5	9.0	4.0	1.0	4.2	4.5	3.5	3.2	3.2	1	35	62.86
77321	ciliaris	India	4.0	17.5	5.0	54.0	75.0	9.5	5.5	0.5	4.5	2.5	3.5	3.5	4.0	1	27	51.85
77323	ciliaris	India	3.5	18.0	7.5	59.0	71.0	7.5	6.5	0.0	5.0	4.0	4.5	3.5	3.5	1	52	65.38
77324	ciliaris	India	4.0	22.5	6.5	73.0	71.5	8.0	7.5	0.0	5.8	5.0	5.0	4.5	4.8	1	53	62.26
77325	ciliaris	India	3.8	21.5	7.5	55.0	71.0	9.5	4.5	0.5	4.0	3.0	4.2	3.5	3.8	1	42	88.10
77326	ciliaris	India	4.0	27.0	8.0	63.0	82.0	9.5	8.0	1.0	5.0	4.0	5.0	4.2	4.0	7	42	78.57
77327	ciliaris	India	3.5	31.0	8.5	74.5	90.5	11.0	7.0	1.5	5.2	6.0	6.0	4.5	4.5	7	47	82.98

* denotes donor country
(a) plants dead

Accession No.	Species	Origin	Matu- rity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ⁹	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary- opsis No.	Cary. Wt mg/100
77328	ciliaris	India	4.0	18.0	6.0	46.0	64.5	7.5	4.0	0.0	4.5	4.0	4.0	4.0	3.5	1	46	69.57
96887	ciliaris	Oman	3.0	13.5	4.0	45.5	54.0	6.5	6.5	0.0	4.0	2.0	2.5	2.5	2.0	1	47	63.83
96893	ciliaris	Oman	3.8	10.0	4.5	52.0	65.0	6.5	8.5	0.0	4.5	2.0	1.5	2.5	7.0	1	66	75.76
96898	ciliaris	Oman	3.0	11.0	3.5	43.0	56.5	7.0	8.0	0.0	4.0	2.0	1.5	1.8	6.5	5	45	71.11
96899	ciliaris	Oman	3.0	16.5	5.0	56.5	58.0	7.5	6.5	1.0	6.0	3.0	4.8	4.0	3.8	8	38	57.89
96900	ciliaris	Oman	3.5	10.5	3.5	52.0	51.5	9.5	10.0	0.5	4.5	2.0	3.8	4.5	4.0	6	34	91.18
96902	ciliaris	Oman	3.2	12.5	5.5	49.5	53.5	8.5	10.0	0.0	4.8	2.0	1.8	2.5	(a)	5	65	72.31
<u>GROUP 2</u>																		
American	ciliaris	Unknown	3.0	30.5	7.0	95.0	118.5	9.0	6.0	0.0	7.8	6.0	6.0	5.5	5.5	4	39	51.28
Gayndah	ciliaris	Kenya	3.0	29.0	7.5	69.5	95.0	11.5	4.5	0.5	6.5	4.0	4.2	4.8	4.8	6	40	52.50
CQ3133	setiger	*Australia	2.8	30.5	8.0	72.0	75.5	8.0	3.0	0.0	6.5	6.5	5.2	5.0	5.2	1	40	77.50
CQ3135	setiger	*Australia	3.0	26.5	12.0	71.0	85.0	8.5	8.0	0.5	6.2	4.0	5.2	4.8	6.2	1	31	100.00
CQ3137	setiger	*Australia	3.2	27.5	7.5	87.5	93.0	6.5	6.5	1.5	7.0	6.0	5.8	4.8	5.8	2	34	82.35
CQ3138	setiger	*Australia	3.0	28.5	8.0	81.0	97.5	8.5	5.5	1.5	7.0	4.5	5.8	5.2	5.0	2	18	66.67
CQ3139	setiger	*Australia	3.0	25.0	7.5	71.5	80.5	6.5	4.0	0.5	7.0	4.0	4.2	4.0	5.2	7	36	100.00
CQ3141	setiger	*Australia	3.0	30.5	10.0	91.0	105.0	10.5	6.0	0.5	6.5	2.5	4.0	4.5	6.0	2	11	63.64
CQ3144	setiger	*Australia	3.0	35.0	11.0	68.0	86.0	7.0	3.0	0.0	7.0	4.0	3.5	3.5	4.0	1	52	121.15
CQ3145	setiger	*Australia	3.0	23.0	8.5	71.0	75.0	7.0	6.5	1.0	7.0	5.5	4.5	4.8	5.5	6	21	71.43
CQ3147	setiger	*Australia	3.0	27.0	10.0	96.5	81.0	8.5	6.0	1.5	7.2	5.0	4.2	5.0	5.5	2	34	67.65
CQ3151	setiger	*Australia	2.8	35.5	9.5	90.5	110.0	8.5	6.0	1.0	7.5	7.0	5.8	5.5	6.2	7	26	88.46
CQ3152	setiger	*Australia	3.2	29.5	7.5	88.0	78.5	7.0	6.0	1.5	7.2	5.0	4.2	5.0	5.5	2	38	65.79
CQ3158	setiger	*Australia	3.2	28.0	8.5	72.5	110.0	10.0	5.0	1.0	7.0	6.0	6.2	5.5	6.0	5	35	60.00
17655	setiger	Kenya	3.0	36.5	5.5	83.5	104.5	7.5	5.0	0.5	6.8	5.0	7.8	5.5	5.2	2	35	88.57
33100	ciliaris	Uganda	3.0	32.0	7.0	91.5	117.0	13.0	5.5	0.5	6.5	5.0	5.0	5.5	6.0	2	29	86.21
36125	ciliaris	*Algeria	3.0	22.5	4.0	64.0	90.0	11.0	7.0	0.5	5.2	5.0	8.2	4.5	4.8	7	27	70.37
36439	ciliaris	*Nigeria	3.0	34.5	7.0	77.5	107.5	11.5	4.0	0.0	7.0	4.0	6.2	5.0	5.8	1	53	54.72
36887	setiger	*India	3.0	32.5	6.0	82.5	115.0	7.0	5.0	0.0	7.0	5.5	6.5	5.5	5.0	2	22	68.18
37181	ciliaris	*Mexico	3.0	26.0	6.0	87.0	104.5	10.0	4.5	0.5	7.0	5.0	6.2	4.5	5.0	1	51	47.06
39153	ciliaris	*Kenya	2.8	27.0	9.0	78.5	94.0	9.5	4.5	0.5	5.5	5.0	4.2	5.0	3.8	5	45	35.56
40611	ciliaris	Sudan	3.0	17.0	7.0	59.5	88.0	12.0	4.0	0.0	1.8	2.0	(a)	(a)	(a)	4	34	176.47
45158	ciliaris	*Zimbabwe	3.0	25.5	8.5	91.5	109.5	8.5	5.0	1.5	6.0	5.0	4.8	5.8	4.5	6	31	61.29
45164	ciliaris	*Zimbabwe	3.0	17.5	7.0	94.0	99.5	14.0	7.5	1.0	5.5	3.0	3.2	5.2	5.8	5	43	55.81
45165	ciliaris	*Zimbabwe	3.0	26.0	8.0	78.5	98.0	12.5	8.0	0.0	5.8	5.0	4.5	4.5	5.2	7	32	46.88
47042	ciliaris	Tanzania	3.0	25.0	11.0	86.0	110.0	13.0	2.0	0.0	5.5	4.0	3.5	5.5	4.5	5	44	56.82
47044	ciliaris	Tanzania	3.0	20.0	7.5	106.0	107.0	11.0	6.0	2.2	7.5	8.0	6.0	6.0	6.8	6	25	76.00
48180	ciliaris	Tanzania	3.0	26.0	8.0	88.0	134.0	11.0	2.0	2.0	7.0	6.0	4.5	6.5	4.5	2	47	57.45
48182	ciliaris	Tanzania	3.2	32.0	8.5	94.5	138.0	11.5	4.0	1.5	5.8	6.0	4.8	6.0	5.5	6	38	50.00
48184	ciliaris	Tanzania	3.0	32.5	7.0	87.0	129.5	12.0	3.0	0.5	5.5	6.0	6.0	7.2	6.5	7	39	56.41
48198	ciliaris	Tanzania	3.0	28.0	6.0	67.0	80.0	10.0	7.0	2.0	6.0	6.0	6.0	6.5	4.8	2	23	65.22
48201	ciliaris	Tanzania	3.0	37.0	8.0	99.0	104.0	12.5	5.5	2.0	7.5	7.0	6.5	6.0	6.0	4	23	95.65

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary-opsis No.	Cary. Wt mg/100
48204	ciliaris	Tanzania	3.0	29.5	8.0	90.5	93.0	10.5	6.5	1.0	6.8	8.0	5.8	5.5	5.5	6	20	55.00
48205	ciliaris	Tanzania	2.8	34.0	8.0	92.0	94.0	13.0	6.0	0.5	7.0	9.0	7.0	6.8	6.5	2	26	80.77
48209	ciliaris	Tanzania	3.0	37.5	8.5	98.5	114.5	13.0	5.5	1.5	6.8	8.0	7.2	6.2	7.2	2	20	70.00
48220	ciliaris	Tanzania	3.0	32.0	9.0	93.5	138.5	12.5	4.0	2.5	6.5	6.0	5.8	6.5	5.0	7	41	53.66
48229	ciliaris	Tanzania	3.0	27.5	7.5	105.5	98.5	13.0	6.5	1.2	6.8	6.0	5.0	5.5	6.5	2	25	72.00
48230	ciliaris	Tanzania	3.0	41.0	8.0	102.0	109.0	12.0	4.0	0.5	8.0	8.0	6.5	5.8	5.5	7	44	72.73
48274	ciliaris	Tanzania	3.0	25.0	6.0	78.5	95.0	12.0	7.0	0.8	6.8	6.0	5.5	5.8	6.0	2	32	62.50
48286	ciliaris	Tanzania	3.0	39.5	9.0	90.0	119.0	13.0	3.5	1.0	7.2	9.0	6.0	6.0	6.0	4	36	75.00
48316	ciliaris	Tanzania	3.0	30.5	8.5	106.0	120.5	12.5	4.0	2.0	7.0	5.0	5.2	6.0	6.0	7	34	52.94
48328	ciliaris	Tanzania	3.0	35.0	9.0	104.0	105.0	15.0	5.0	0.0	8.0	6.0	6.0	6.0	7.0	6	25	72.00
48329	ciliaris	Tanzania	3.0	33.5	8.5	94.0	114.5	12.5	4.0	1.0	7.8	7.0	6.8	6.8	5.2	4	42	66.67
49108	ciliaris	Uganda	3.0	20.5	7.0	101.0	84.5	11.0	6.0	1.5	7.2	5.0	5.2	7.0	6.2	2	25	64.00
49127	ciliaris	Kenya	3.0	27.0	8.5	78.5	115.0	10.5	2.0	1.0	6.0	5.0	5.0	5.2	4.5	5	22	68.18
59626	ciliaris	Kenya	3.0	28.0	6.5	102.0	102.5	13.0	6.0	1.5	7.5	5.5	5.5	6.0	6.2	7	27	66.67
59626B	ciliaris	Kenya	3.0	24.0	6.5	104.0	103.5	14.0	6.0	1.0	7.0	6.0	6.2	5.8	6.5	7	26	92.31
59630	ciliaris	South Africa	3.0	29.0	8.5	95.5	111.5	11.0	4.0	1.5	7.0	6.0	4.8	5.8	4.8	2	40	97.50
61136	(hybrid)	*USA	3.0	32.0	8.5	97.0	99.0	7.5	7.5	0.0	7.0	6.5	6.0	4.8	6.0	4	38	68.42
61138	(hybrid)	*USA	3.0	31.0	9.5	77.5	107.0	9.5	5.5	1.5	6.5	5.0	6.2	5.2	6.5	7	36	72.22
61139	(hybrid)	*USA	3.2	26.5	7.5	76.5	99.0	9.0	7.0	2.0	6.0	4.0	5.0	4.2	5.0	4	31	77.42
61141	(hybrid)	*USA	3.0	33.5	8.0	91.5	99.0	8.5	7.0	1.2	6.8	6.0	5.5	4.2	5.5	4	32	68.75
71912	ciliaris	Somalia	3.0	21.0	7.0	77.0	82.5	10.5	5.5	2.5	6.5	4.0	6.8	4.5	5.0	6	39	46.15
71913	ciliaris	Somalia	3.0	27.0	6.0	79.0	82.5	7.5	4.5	0.5	7.0	6.0	3.5	4.2	3.2	1	36	44.44
71914	ciliaris	Somalia	3.0	28.5	6.5	78.5	117.0	10.0	4.0	0.5	6.5	4.0	4.2	4.5	5.2	6	33	51.52
71915	ciliaris	Somalia	3.0	22.0	6.0	73.5	82.0	11.5	5.0	1.5	5.5	5.0	4.8	4.0	3.2	7	43	39.53
71919	ciliaris	Somalia	3.0	28.0	7.0	74.0	118.0	11.5	5.0	2.0	6.8	4.0	4.8	5.2	5.2	6	40	50.00
73379	ciliaris	South Africa	3.0	35.0	7.0	92.5	104.0	13.0	5.0	1.0	7.5	5.0	6.2	5.0	5.8	5	42	52.38
73386	ciliaris	South Africa	3.2	37.0	8.5	84.5	121.0	12.0	5.0	1.0	6.5	4.0	4.8	4.0	4.5	1	30	70.00
73390	ciliaris	South Africa	3.0	31.5	8.0	92.5	107.0	11.5	7.5	1.0	7.2	4.5	5.0	5.8	5.2	7	34	58.82
84162	ciliaris	India	3.0	33.0	7.0	100.0	109.5	9.5	6.0	0.5	8.0	5.5	5.8	4.8	5.0	5	44	59.09
91918	ciliaris	Sudan	3.0	27.5	9.0	83.0	91.0	10.0	6.0	0.0	8.0	4.0	4.2	3.5	4.2	6	51	82.35
GROUP 3																		
CQ3148	setiger	*Australia	2.2	20.0	9.0	75.0	91.0	10.0	5.5	1.0	5.0	2.5	4.5	4.0	5.8	4	35	60.00
CQ3153	setiger	*Australia	3.0	32.5	8.5	97.0	112.0	11.5	8.0	1.5	8.0	5.0	5.2	5.5	7.0	4	41	104.88
CQ3162	setiger	*Australia	3.0	36.5	8.5	79.0	126.0	9.5	7.0	2.0	7.5	5.0	5.8	6.2	7.0	2	40	90.00
CQ3163	setiger	*Australia	2.5	38.0	9.0	98.0	89.5	7.0	8.5	2.5	7.8	5.0	5.2	5.0	6.0	4	54	92.59
CQ3166	setiger	*Australia	2.5	40.0	9.0	86.0	104.0	8.0	6.0	2.0	7.0	6.0	5.0	5.0	7.0	2	24	50.00
Q10077	ciliaris	Ethiopia	2.5	20.5	4.5	89.0	89.5	11.0	5.5	0.5	5.2	4.0	5.2	5.0	5.2	6	23	39.13
36201	ciliaris	*South Africa	2.2	32.0	8.0	96.5	94.5	11.0	7.5	2.0	7.0	6.0	5.0	5.0	6.5	6	41	70.73
45159	ciliaris	*Zimbabwe	2.8	29.0	9.0	107.5	113.0	12.5	7.0	2.0	6.8	5.5	5.8	5.2	5.2	7	44	43.18
48175	ciliaris	Tanzania	2.2	33.0	8.0	113.5	129.5	13.0	5.5	2.0	7.0	6.5	5.5	6.5	6.8	7	37	64.86

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary-opsis No.	Cary. Wt mg/100
48186	ciliaris	Tanzania	2.2	37.0	9.0	98.0	110.5	11.0	5.5	1.5	7.5	9.0	6.8	5.5	5.5	6	29	58.62
48196	ciliaris	Tanzania	2.8	39.5	7.5	99.5	113.5	12.0	5.0	1.0	7.5	10.0	6.8	7.2	7.2	5	41	68.29
48199	ciliaris	Tanzania	3.0	32.5	10.0	102.5	128.5	13.5	6.5	2.5	8.2	6.5	7.5	6.8	7.0	8	53	54.72
48202	ciliaris	Tanzania	2.8	28.0	9.0	105.0	115.0	10.0	8.0	2.5	8.8	5.0	6.0	5.5	5.2	7	39	41.03
48203	ciliaris	Tanzania	3.0	26.5	8.5	96.0	108.0	11.5	7.5	2.5	7.0	7.5	5.8	6.0	5.8	2	50	46.00
48206	ciliaris	Tanzania	2.5	33.0	9.0	88.5	112.5	10.5	5.0	1.5	7.8	7.5	7.5	6.2	5.5	7	20	50.00
48207	ciliaris	Tanzania	2.8	36.0	8.0	98.0	119.5	13.5	6.0	1.5	7.8	7.0	8.2	7.0	6.5	6	47	65.96
48210	ciliaris	Tanzania	2.5	39.5	9.5	102.5	136.0	16.5	6.5	3.0	7.5	7.0	7.8	6.8	7.8	8	46	84.78
48214	ciliaris	Tanzania	2.2	37.0	9.5	98.5	125.5	11.5	6.0	2.5	8.2	10.0	6.8	6.5	6.5	7	30	43.33
48222	ciliaris	Tanzania	2.8	34.5	9.5	83.0	136.0	15.0	6.0	1.8	7.5	7.0	8.5	7.0	7.5	4	53	100.00
48223	ciliaris	Tanzania	2.8	32.5	10.0	91.5	130.5	15.5	6.0	2.0	7.2	7.0	8.5	7.2	7.5	6	35	88.57
48226	ciliaris	Tanzania	2.5	31.5	8.5	110.5	110.0	12.5	7.0	1.5	8.0	6.0	4.8	5.5	5.8	6	36	52.78
48233	ciliaris	Tanzania	2.5	24.5	8.0	105.0	109.5	13.0	6.0	1.5	7.5	4.5	6.2	5.2	7.2	6	47	61.70
48234	ciliaris	Tanzania	2.5	33.0	7.5	114.0	118.0	10.0	7.0	1.0	8.2	5.0	6.2	5.8	7.0	2	41	63.41
48238	ciliaris	Tanzania	2.5	40.5	9.0	112.0	114.0	13.0	6.5	2.0	7.8	6.0	6.5	7.0	7.2	8	36	88.89
48245	ciliaris	Tanzania	2.8	39.5	9.0	104.0	134.5	14.0	7.0	2.0	7.5	5.0	6.8	6.8	6.2	7	37	83.78
48246	ciliaris	Tanzania	2.5	40.5	8.5	103.0	118.0	14.0	6.0	1.2	7.5	6.0	7.2	6.5	7.0	7	40	75.00
48247	ciliaris	Tanzania	2.5	40.5	9.5	103.0	125.5	13.5	6.0	2.0	7.5	5.0	7.5	7.2	7.0	6	42	85.71
48248	ciliaris	Tanzania	2.8	39.5	9.5	97.5	134.0	14.5	7.0	2.0	7.5	6.0	7.5	7.2	7.8	5	45	95.56
48249	ciliaris	Tanzania	2.5	39.0	8.5	99.0	142.0	15.5	7.5	1.5	8.0	7.0	6.8	6.5	8.0	7	43	90.70
48250	ciliaris	Tanzania	2.5	38.5	10.0	102.0	141.0	14.5	6.0	2.5	7.2	5.0	7.0	7.2	8.2	8	46	63.04
48251	ciliaris	Tanzania	2.5	40.0	11.0	100.0	119.0	16.0	6.0	1.0	8.0	5.0	7.5	7.5	8.5	7	59	94.92
48252	ciliaris	Tanzania	2.5	44.5	9.5	110.0	136.5	15.5	6.0	2.0	8.2	4.0	7.0	6.5	7.5	7	48	75.00
48254	ciliaris	Tanzania	2.5	36.0	10.0	118.5	154.0	15.0	7.0	1.2	8.5	4.0	7.5	7.0	7.5	8	47	72.34
48264	ciliaris	Tanzania	2.5	41.5	9.5	109.0	129.0	13.0	7.0	1.0	8.2	5.5	6.2	7.5	8.0	8	55	69.09
48273	ciliaris	Tanzania	2.8	36.0	8.0	103.5	138.0	16.0	6.5	1.5	7.2	7.0	6.0	6.5	7.2	6	39	79.49
48279	ciliaris	Tanzania	2.5	34.5	8.5	107.5	110.0	10.0	7.0	2.5	9.0	6.0	6.5	5.8	6.0	2	35	51.43
48280	ciliaris	Tanzania	2.5	38.0	10.0	96.0	111.0	11.5	6.5	2.5	7.8	9.0	8.2	7.0	7.0	2	25	60.00
48317	ciliaris	Tanzania	2.5	38.0	9.5	111.0	134.0	12.0	6.0	2.5	8.2	7.0	6.2	7.0	6.5	2	36	58.33
59633	ciliaris	South Africa	3.0	29.0	6.0	93.0	77.5	12.0	7.5	2.0	7.0	5.0	6.8	6.0	5.8	6	39	79.49
60629	ciliaris	Namibia	3.0	28.5	6.0	92.0	53.5	11.5	8.5	1.0	5.8	5.5	6.2	5.8	6.0	7	64	137.50
61137	(hybrid)	*USA	3.2	37.5	9.0	90.0	98.5	9.0	8.5	2.5	6.8	5.0	6.0	4.0	5.2	1	48	77.08
73385	ciliaris	South Africa	3.0	34.0	8.5	101.5	96.5	12.5	8.0	2.0	7.2	5.5	5.8	4.8	6.0	7	37	72.97
73387	ciliaris	South Africa	3.0	33.0	10.0	107.5	116.0	14.0	8.5	2.0	7.5	6.5	7.2	6.5	7.0	7	40	85.00
73391	ciliaris	South Africa	2.8	27.0	8.0	92.0	104.5	12.5	5.5	2.5	6.2	6.0	5.2	6.8	6.5	7	48	56.25
73392	ciliaris	South Africa	3.0	36.0	9.0	111.0	112.0	14.0	7.0	1.0	7.0	5.0	6.8	5.5	6.0	7	53	77.36
89315	ciliaris	Somalia	2.2	36.0	10.0	88.5	125.0	12.5	6.0	0.5	7.5	4.0	5.0	5.0	6.0	1	32	53.13
<u>GROUP 4</u>																		
CQ3140	setiger	*Australia	2.8	31.0	10.0	102.0	106.5	9.0	8.5	2.0	7.0	6.0	5.8	5.2	6.0	2	30	70.00
CQ3142	setiger	*Australia	2.8	39.5	11.0	99.5	116.5	10.0	7.5	2.0	7.5	6.0	6.2	5.8	6.5	2	16	93.75

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. CoL.	Cary-opsis No.	Cary. Wt mg/100
CQ3143	setiger	*Australia	2.8	28.0	10.0	82.5	111.0	9.5	8.0	1.5	7.0	5.0	6.0	7.0	6.5	2	5	60.00
CQ3155	setiger	*Australia	3.0	35.0	10.0	96.5	116.0	9.5	8.5	2.0	6.8	4.5	6.0	5.8	5.8	2	26	73.08
CQ3157	setiger	*Australia	2.8	36.0	9.5	109.0	114.5	10.0	7.0	1.5	6.8	3.0	4.0	4.5	5.5	2	19	78.95
CQ3159	setiger	*Australia	2.5	34.5	7.0	92.0	96.0	9.0	8.5	2.0	7.2	5.0	6.0	5.0	5.5	2	34	61.76
CQ3161	setiger	*Australia	3.0	28.5	9.5	92.0	74.5	6.5	8.5	0.5	7.5	5.5	5.0	4.8	6.0	8	43	79.07
Q10087	ciliaris	Zimbabwe	2.8	28.0	7.5	93.0	107.0	14.0	7.0	1.5	6.2	5.0	5.0	5.5	6.0	6	38	65.79
29023	ciliaris	South Africa	2.8	29.5	8.5	101.0	109.0	9.5	9.5	3.0	6.5	7.0	7.5	6.8	6.2	2	21	71.43
29026	ciliaris	South Africa	3.0	27.0	7.0	103.0	103.0	9.0	10.0	0.5	6.5	4.5	6.8	6.8	6.5	7	19	73.68
29028	ciliaris	South Africa	3.0	24.0	7.0	81.0	90.0	11.0	8.0	2.0	5.0	4.0	5.5	6.5	7.5	2	22	90.91
29029	ciliaris	South Africa	3.0	22.5	6.0	88.5	84.0	12.5	8.0	1.5	5.2	3.0	5.8	6.0	7.0	2	22	77.27
29030	ciliaris	South Africa	3.0	25.0	6.5	99.5	109.0	12.5	9.0	1.5	6.2	4.0	6.2	6.5	6.2	7	23	73.91
29031	ciliaris	South Africa	3.0	25.0	6.0	100.0	110.0	14.0	8.0	2.0	6.5	6.0	7.5	8.0	6.8	2	17	70.59
29034	ciliaris	South Africa	2.8	33.5	8.5	104.5	101.5	13.0	10.0	1.5	7.2	6.5	7.2	6.2	6.8	2	43	74.42
29035	ciliaris	South Africa	3.0	34.0	8.5	89.5	129.5	14.0	7.0	2.5	6.8	4.5	6.5	6.8	7.5	8	10	30.00
32840	ciliaris	Kenya	3.0	16.5	5.5	73.0	88.0	8.5	9.0	2.8	5.8	4.0	6.0	6.0	6.8	2	19	63.16
45163	ciliaris	Zimbabwe	2.2	27.5	6.0	104.5	86.0	9.5	8.0	2.0	7.2	6.0	6.0	5.8	5.0	7	15	73.33
45166	ciliaris	Zimbabwe	2.8	36.5	8.5	104.5	116.0	12.5	7.0	1.5	5.0	8.0	7.5	7.2	6.8	8	32	59.38
45167	ciliaris	Zimbabwe	2.8	28.0	9.5	92.0	109.5	12.0	8.0	2.5	6.0	7.0	5.5	4.8	5.2	8	37	67.57
48172	ciliaris	Tanzania	2.5	29.0	7.5	87.0	82.0	11.5	6.5	1.5	6.0	5.0	5.2	6.2	5.2	2	30	76.67
48213	ciliaris	Tanzania	2.8	31.0	8.0	94.5	85.0	11.0	8.5	2.8	7.2	6.0	5.5	5.8	5.2	7	24	58.33
48241	ciliaris	Tanzania	2.8	33.0	9.0	93.5	110.5	14.0	9.0	4.0	7.2	7.0	6.2	8.0	7.0	7	26	61.54
48243	ciliaris	Tanzania	3.0	31.0	12.0	95.0	102.0	16.0	9.0	4.0	7.0	6.0	7.0	7.5	6.0	7	18	66.67
48267	ciliaris	Tanzania	2.8	38.0	10.0	101.0	124.5	14.5	9.0	3.5	8.0	5.0	5.5	6.8	6.8	7	19	52.63
48319	ciliaris	Tanzania	2.8	43.5	10.0	116.5	138.5	14.0	8.5	0.5	9.0	4.0	6.5	6.5	6.8	5	45	84.44
48320	ciliaris	Tanzania	2.5	30.5	9.0	120.0	101.0	9.5	8.5	2.0	8.5	6.0	6.5	5.2	6.8	4	38	63.16
59631	ciliaris	South Africa	2.5	30.0	7.0	108.0	95.5	12.0	9.0	1.5	6.0	5.0	5.8	4.5	6.2	2	28	60.71
59636	ciliaris	South Africa	3.0	24.5	9.0	98.5	107.5	12.0	9.5	1.5	6.2	4.0	5.8	4.8	5.2	7	37	64.86
59644	ciliaris	Botswana	3.0	40.0	10.0	108.5	136.5	14.0	9.5	1.5	8.2	4.0	6.2	6.0	6.0	6	32	87.50
59645	ciliaris	Botswana	3.0	34.0	9.5	117.5	133.0	13.5	9.5	2.5	8.5	5.0	6.5	6.5	6.8	7	41	73.17
59646	ciliaris	South Africa	3.0	34.0	8.0	101.5	102.5	12.0	9.0	3.0	6.0	3.0	6.0	7.0	6.2	2	21	80.95
61140	(hybrid)	*USA	3.0	29.5	9.5	85.5	90.0	9.0	8.5	0.5	6.8	3.0	5.0	3.8	4.5	4	30	80.00
61143	(hybrid)	*USA	3.0	29.0	9.5	90.5	83.0	9.0	9.0	3.5	6.8	5.0	6.2	5.5	6.2	1	24	66.67
73374	ciliaris	South Africa	2.8	34.5	8.5	103.0	124.5	11.0	9.0	0.5	6.8	5.0	5.2	5.0	5.8	6	34	70.59
73376	ciliaris	South Africa	2.5	29.0	8.0	95.0	107.5	13.0	9.5	1.0	6.2	4.0	6.5	4.8	6.2	7	28	85.71
73377	ciliaris	South Africa	2.8	25.5	8.0	106.0	104.5	12.0	7.5	2.0	6.5	4.5	4.8	5.0	5.8	7	30	66.67
73380	ciliaris	South Africa	3.0	24.5	7.0	106.5	112.0	12.0	10.0	1.0	7.2	6.0	6.0	5.8	6.2	7	22	68.18
73381	ciliaris	South Africa	3.0	27.0	8.5	109.0	105.5	13.5	10.0	1.0	7.0	5.0	5.5	5.0	6.5	2	32	75.00
73382	ciliaris	South Africa	3.0	28.5	9.0	110.5	104.5	13.0	10.0	1.5	6.8	4.5	5.2	5.0	6.0	2	24	70.83
73383	ciliaris	Namibia	3.0	30.5	7.0	102.0	107.5	13.5	9.0	0.5	6.5	5.0	5.8	5.2	6.0	2	20	90.00
73384	ciliaris	South Africa	3.0	28.0	7.5	103.0	113.5	12.5	8.5	1.0	7.0	4.0	6.2	5.2	6.5	2	25	68.00

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary-opsis No.	Cary. Wt mg/100
<u>GROUP 5</u>																		
Molopo	ciliaris	South Africa	2.8	33.5	8.0	105.0	114.5	12.5	6.5	4.0	7.8	8.0	6.5	6.8	7.0	2	22	31.82
CQ1411	ciliaris	Australia	2.8	32.0	8.0	112.5	121.5	10.0	6.0	3.0	7.5	6.5	6.0	5.5	5.5	2	31	51.61
29024	ciliaris	South Africa	2.8	27.5	9.5	138.5	139.0	11.5	7.0	2.5	7.8	5.5	7.8	7.0	6.8	7	29	65.52
32740	ciliaris	P.New Guinea	3.0	28.5	10.5	108.5	120.0	13.5	6.0	4.0	7.0	7.0	6.2	7.5	8.5	2	21	80.95
33099	ciliaris	Uganda	3.0	22.5	7.0	94.5	98.0	12.5	6.0	3.5	6.0	6.0	6.2	6.8	6.5	7	37	67.57
36200	ciliaris	*South Africa	3.0	38.5	8.0	103.5	123.0	14.5	8.0	2.5	7.5	3.5	6.5	5.8	6.8	7	31	77.42
48166	ciliaris	Tanzania	3.0	17.0	8.0	59.0	52.0	14.0	6.0	2.5	4.0	4.0	4.0	6.0	6.0	2	10	90.00
48167	ciliaris	Tanzania	3.0	17.5	6.5	88.5	50.0	11.0	6.5	3.5	7.0	5.5	5.0	5.8	5.2	2	21	61.90
48168	ciliaris	Tanzania	3.0	17.5	7.0	85.5	76.5	12.5	6.0	3.0	6.8	4.0	4.5	6.5	6.0	5	33	54.55
48171	ciliaris	Tanzania	3.0	20.5	5.0	71.0	104.0	12.0	6.0	3.0	6.0	5.0	5.0	5.2	5.2	7	34	50.00
48173	ciliaris	Tanzania	3.0	25.5	6.0	70.5	109.5	10.0	5.5	2.5	6.8	7.0	5.5	5.5	4.2	2	29	62.07
48183	ciliaris	Tanzania	3.0	38.0	9.5	102.0	133.0	15.0	6.0	2.0	7.8	6.0	6.5	7.2	7.0	8	37	62.16
48197	ciliaris	Tanzania	3.0	32.0	9.0	90.5	104.5	13.0	6.5	3.0	6.8	5.0	6.0	7.0	6.2	2	28	71.43
48208	ciliaris	Tanzania	3.0	33.0	8.0	90.0	104.5	12.5	6.5	4.2	7.5	8.5	7.5	7.2	7.5	8	27	40.74
48212	ciliaris	Tanzania	2.8	32.0	9.0	100.0	106.5	13.0	6.5	3.5	7.0	5.0	6.0	5.8	5.8	7	20	75.00
48215	ciliaris	Tanzania	3.0	27.0	7.5	97.0	93.5	12.5	6.5	4.0	7.0	5.0	6.5	6.8	5.5	2	31	74.19
48217	ciliaris	Tanzania	3.0	24.5	7.0	70.5	88.0	12.0	5.5	3.0	6.2	6.0	6.0	6.0	5.5	2	25	72.00
48218	ciliaris	Tanzania	3.0	21.0	8.0	89.0	95.0	11.5	6.0	4.2	7.2	6.0	6.5	7.0	5.0	2	16	87.50
48219	ciliaris	Tanzania	2.8	40.5	11.5	107.5	145.5	10.5	5.0	3.0	7.8	9.0	6.5	6.2	6.2	5	42	80.95
48221	ciliaris	Tanzania	3.0	28.0	7.5	82.5	124.0	12.0	7.5	2.5	6.8	6.0	6.2	5.8	7.0	2	29	75.86
48224	ciliaris	Tanzania	3.0	31.0	7.0	100.0	108.5	10.0	8.0	1.8	8.0	9.0	5.2	6.5	6.8	7	29	62.07
48227	ciliaris	Tanzania	3.0	28.5	8.0	89.0	83.5	13.0	6.0	2.5	6.8	6.0	4.8	6.2	5.8	7	19	73.68
48240	ciliaris	Tanzania	3.0	28.5	8.5	97.0	98.0	12.0	6.5	2.0	7.8	6.0	5.8	7.8	7.2	7	25	56.00
48244	ciliaris	Tanzania	3.0	29.5	11.5	110.0	119.0	14.5	9.0	4.5	7.5	8.0	7.0	8.5	7.8	7	24	75.00
48255	ciliaris	Tanzania	2.8	33.0	11.0	98.0	125.5	15.0	7.0	4.5	7.5	5.5	6.5	7.2	6.8	7	19	57.89
48256	ciliaris	Tanzania	2.8	32.0	9.0	105.5	118.0	12.5	8.5	4.5	7.2	5.0	5.0	6.2	6.0	2	18	77.78
48262	ciliaris	Tanzania	3.0	33.0	8.5	99.5	129.5	14.5	6.0	4.0	6.8	5.0	6.5	6.8	7.0	2	20	30.00
48263	ciliaris	Tanzania	3.0	32.0	8.0	119.0	124.5	16.5	6.0	4.5	7.0	5.0	5.0	6.5	7.0	7	29	51.72
48266	ciliaris	Tanzania	3.0	27.0	7.5	109.5	98.0	13.5	5.5	4.0	7.2	4.5	6.0	7.8	7.0	6	20	70.00
48268	ciliaris	Tanzania	3.0	32.0	10.0	102.0	110.0	14.0	6.0	3.0	8.0	4.0	6.5	6.5	6.0	7	18	66.67
48271	ciliaris	Tanzania	3.0	37.0	9.0	98.0	140.0	19.0	6.0	3.0	8.5	4.0	8.0	7.0	7.2	8	34	70.59
48275	ciliaris	Tanzania	3.0	25.0	6.0	68.0	136.0	15.0	4.0	4.0	5.0	3.0	3.0	6.0	5.5	7	11	54.55
48277	ciliaris	Tanzania	3.0	24.0	7.5	87.0	78.0	12.5	5.5	4.0	6.8	5.0	5.5	6.5	5.8	2	22	63.64
48278	ciliaris	Tanzania	2.8	37.5	8.5	91.0	109.5	13.5	6.0	2.5	7.5	4.0	6.0	6.8	6.5	6	32	71.88
48281	ciliaris	Tanzania	3.0	28.0	7.0	83.5	102.5	11.0	6.5	3.0	7.0	5.5	7.0	5.5	6.5	2	28	78.57
48283	ciliaris	Tanzania	2.5	25.0	8.0	99.0	103.0	10.5	5.5	5.0	7.0	5.0	5.5	6.0	6.0	2	20	80.00
48284	ciliaris	Tanzania	3.0	27.0	8.5	98.5	101.0	11.0	6.5	3.0	7.5	5.0	6.0	6.0	5.8	2	10	90.00
48285	ciliaris	Tanzania	2.5	29.5	9.0	91.0	97.5	12.0	6.0	3.5	7.0	4.0	6.0	6.5	5.8	2	21	61.90
48287	ciliaris	Tanzania	3.0	30.5	8.5	100.5	80.0	15.0	7.0	2.8	7.8	5.0	5.8	6.5	6.5	2	27	66.67
48288	ciliaris	Tanzania	3.0	22.5	7.5	104.0	96.0	11.5	5.5	4.0	6.8	5.0	5.2	6.5	5.8	2	23	100.00

Accession No.	Species	Origin	Matu- rity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary- opsis No.	Cary. Wt mg/100
48289	ciliaris	Tanzania	2.8	34.0	8.0	110.5	124.0	11.5	4.5	3.0	7.5	4.0	5.0	6.2	6.0	2	25	88.00
48290	ciliaris	Tanzania	2.8	25.5	8.5	108.0	129.0	15.5	6.0	5.0	7.0	5.0	6.0	7.0	7.0	2	25	76.00
48291	ciliaris	Tanzania	2.8	32.5	9.5	119.0	121.5	13.0	6.0	5.0	7.2	5.0	6.0	6.2	6.0	2	22	86.36
48292	ciliaris	Tanzania	3.0	34.0	9.0	120.5	121.0	14.0	6.5	4.5	7.5	4.0	5.2	6.8	6.5	7	35	91.43
48293	ciliaris	Tanzania	2.8	31.5	9.5	106.5	116.5	13.0	7.0	3.8	7.0	4.5	5.8	6.2	6.5	2	23	82.61
48294	ciliaris	Tanzania	2.8	29.5	8.5	108.0	96.5	15.0	6.0	5.0	6.8	4.0	5.8	6.8	6.2	2	22	109.09
48295	ciliaris	Tanzania	2.5	25.5	8.0	106.0	117.0	11.0	5.0	5.0	7.0	4.5	6.0	6.0	6.5	6	24	108.33
48297	ciliaris	Tanzania	3.0	24.5	8.0	103.5	101.0	12.5	5.0	5.0	7.5	5.0	5.5	6.8	6.0	6	23	108.70
48298	ciliaris	Tanzania	3.0	25.0	9.0	87.5	116.5	14.0	4.0	4.5	7.0	5.0	7.2	7.5	6.5	7	21	57.14
48300	ciliaris	Tanzania	3.0	24.5	8.0	97.0	117.5	12.5	7.5	5.0	6.5	2.5	4.8	5.5	4.0	7	24	62.50
48301	ciliaris	Tanzania	2.8	31.0	7.5	99.0	112.5	13.5	7.0	5.0	6.5	3.5	4.8	5.5	4.5	2	23	78.26
48303	ciliaris	Tanzania	2.8	32.5	10.0	117.0	144.0	13.5	5.5	5.0	7.8	4.0	5.2	6.8	6.2	2	30	83.33
48305	ciliaris	Tanzania	2.8	28.5	9.0	118.5	127.0	15.5	6.0	4.0	7.5	4.0	4.8	6.0	6.0	2	23	65.22
48306	ciliaris	Tanzania	2.8	32.0	9.0	118.0	130.5	14.0	6.0	3.5	7.8	6.0	5.5	6.0	6.8	7	18	77.78
48308	ciliaris	Tanzania	3.0	30.0	8.0	94.0	121.0	12.5	6.5	4.5	7.2	4.0	6.2	6.8	6.5	7	28	78.57
48312	ciliaris	Tanzania	3.0	22.0	9.0	93.0	128.0	14.0	7.0	5.0	8.0	4.0	5.5	6.0	6.0	7	22	54.55
48313	ciliaris	Tanzania	3.0	32.0	8.5	116.0	120.5	12.0	6.0	4.5	8.2	5.0	6.0	6.5	7.0	7	33	87.88
48314	ciliaris	Tanzania	3.0	31.0	8.5	113.5	125.5	15.0	6.0	4.5	7.2	5.0	5.0	5.5	6.2	2	23	69.57
48315	ciliaris	Tanzania	2.8	29.5	9.0	100.0	91.0	10.0	6.0	2.5	7.8	5.0	5.2	6.5	6.0	2	22	72.73
48318	ciliaris	Tanzania	3.0	29.5	8.0	105.0	96.0	10.0	7.0	3.5	7.8	4.0	4.5	7.2	7.0	7	25	64.00
48324	ciliaris	Tanzania	2.8	34.0	10.5	97.5	120.5	14.0	7.0	4.5	7.5	7.0	6.8	7.8	7.2	6	23	78.26
48327	ciliaris	Tanzania	3.0	35.0	8.0	110.0	119.5	12.5	7.0	2.0	8.2	6.5	7.2	6.5	7.0	2	33	69.70
59623	ciliaris	Kenya	3.0	23.5	6.0	97.0	117.0	12.5	8.0	4.5	6.5	5.5	6.0	6.0	6.0	7	27	74.07
59626A	ciliaris	Kenya	2.8	27.0	7.5	100.0	110.5	12.0	6.0	4.5	7.5	5.5	4.8	5.8	5.5	6	22	72.73
59628	ciliaris	Zimbabwe	2.8	31.0	9.5	123.0	111.0	12.0	8.0	3.0	7.0	6.0	5.0	5.8	6.0	2	30	46.67
59629	ciliaris	Zimbabwe	3.0	27.0	10.0	97.0	98.0	10.5	6.5	2.5	7.0	5.0	5.8	5.5	6.5	7	34	73.53
73375	ciliaris	South Africa	3.0	18.5	7.0	98.0	108.0	14.5	7.0	2.5	6.0	3.5	6.0	5.2	6.0	8	26	65.38
73378	ciliaris	South Africa	2.5	30.0	10.0	110.0	117.0	12.5	6.0	3.0	7.0	5.0	5.5	5.5	6.2	7	31	70.97
73389	ciliaris	South Africa	3.0	39.0	9.5	139.0	127.0	11.0	6.0	3.0	8.2	5.0	5.2	7.0	6.8	7	35	71.43
73393	ciliaris	South Africa	2.8	35.0	9.5	105.5	117.5	9.5	5.0	2.5	7.8	6.0	5.0	5.5	5.5	6	21	61.90
73394	ciliaris	South Africa	2.5	36.0	10.0	109.0	114.0	8.0	4.5	3.5	7.5	7.0	5.5	5.0	6.0	2	23	52.17
<u>GROUP 6</u>																		
Biloela	ciliaris	Tanzania	2.5	35.0	10.0	126.5	128.0	12.5	7.5	4.0	8.5	5.0	5.2	6.5	6.5	7	34	76.47
Nunbank	ciliaris	Uganda	2.0	35.5	8.0	95.5	99.0	11.5	6.0	4.2	7.8	8.0	5.2	6.0	6.8	2	27	81.48
Tarewinnabar	ciliaris	Kenya	2.2	26.5	8.0	122.5	116.0	12.5	8.0	3.0	7.0	6.0	6.5	5.8	6.8	7	32	87.50
CQ727	ciliaris	*Australia	2.8	36.5	10.5	124.0	116.0	10.5	6.5	4.0	8.2	6.0	5.8	6.2	7.5	6	37	78.38
6934	ciliaris	*Tanzania	2.0	33.5	9.5	115.5	116.5	14.0	6.0	4.5	8.0	5.0	4.2	5.8	6.5	2	21	85.71
12778	ciliaris	*Uganda	2.0	38.0	9.5	101.0	109.5	11.0	7.5	4.0	7.8	4.0	3.0	5.0	5.5	2	26	80.77
13246	ciliaris	*Kenya	2.5	28.0	8.0	97.0	108.0	10.0	6.0	3.5	6.5	8.0	6.5	8.5	7.2	2	30	83.33
18019	ciliaris	*Zimbabwe	2.2	31.5	8.5	106.0	107.0	11.0	6.5	4.0	7.2	5.5	6.0	6.0	6.5	2	28	71.43

Accession No.	Species	Origin	Maturity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary-opsis No.	Cary. Wt mg/100
24165	ciliaris	*USSR	2.0	29.0	7.5	90.0	88.5	9.0	8.0	4.8	6.5	5.0	5.8	6.8	6.2	2	22	36.36
27132	ciliaris	Ghana	2.5	37.0	13.0	101.0	113.0	14.0	6.0	4.0	6.5	8.0	7.5	9.0	7.8	2	27	85.19
31704	ciliaris	*Philippines	2.2	28.0	9.5	131.5	117.5	11.5	7.0	2.5	7.8	7.0	7.0	8.0	7.2	2	31	77.42
32092	ciliaris	*Italy	2.5	38.5	11.5	120.0	130.0	12.5	6.5	4.0	7.8	8.0	6.2	7.8	7.2	2	35	74.29
34654	ciliaris	*Uganda	2.2	35.0	9.0	109.5	123.5	13.0	8.0	3.2	7.8	4.0	7.0	6.0	6.2	2	23	82.61
36440	ciliaris	*Nigeria	2.2	36.5	9.0	115.0	105.0	13.0	6.5	4.5	7.5	5.5	6.5	6.5	7.0	2	31	80.65
36441	ciliaris	Ghana	2.0	33.0	10.0	110.5	112.0	11.0	6.0	3.0	7.0	5.5	5.2	5.2	6.5	2	23	73.91
45160	ciliaris	*Zimbabwe	2.0	34.5	9.5	112.5	107.5	12.0	6.5	5.0	7.5	5.0	6.0	5.8	6.2	2	32	81.25
45161	ciliaris	*Zimbabwe	2.5	36.5	9.0	109.5	127.5	10.0	6.5	3.2	8.0	6.0	7.0	7.0	7.8	2	22	77.27
45162	ciliaris	*Zimbabwe	2.2	37.5	9.0	111.0	114.0	11.5	6.5	3.0	7.8	6.0	7.0	7.2	7.5	2	18	77.78
48174	ciliaris	Tanzania	2.2	34.5	8.0	110.0	126.0	15.0	6.0	3.5	7.5	6.0	6.2	6.5	7.0	7	26	57.69
48194	ciliaris	Tanzania	2.5	33.0	9.0	105.0	139.0	18.0	5.0	3.5	7.5	6.0	7.5	8.5	8.0	7	17	100.00
48211	ciliaris	Tanzania	2.0	32.0	8.0	65.0	98.0	11.0	5.0	5.0	5.5	4.0	5.0	6.5	6.0	2	21	71.43
48225	ciliaris	Tanzania	2.2	26.0	6.0	90.5	108.0	12.0	5.0	4.0	6.8	6.0	5.8	7.0	6.5	2	20	105.00
48231	ciliaris	Tanzania	3.0	32.0	9.5	115.0	110.5	13.0	8.0	3.5	8.2	4.0	6.0	6.2	6.5	2	28	89.29
48232	ciliaris	Tanzania	2.5	39.5	12.0	127.5	128.0	12.0	7.0	4.0	8.8	7.0	6.5	7.8	6.8	2	26	96.15
48242	ciliaris	Tanzania	2.8	35.0	12.0	126.5	131.0	13.0	7.5	4.0	8.5	6.0	5.8	6.5	6.0	2	23	78.26
48257	ciliaris	Tanzania	2.5	36.0	11.5	108.0	137.0	9.0	8.0	3.8	7.8	7.0	6.5	6.5	6.2	2	34	61.76
48265	ciliaris	Tanzania	2.5	31.0	10.0	95.0	122.0	15.0	8.0	5.0	7.0	4.0	7.5	9.0	7.5	2	17	47.06
48296	ciliaris	Tanzania	2.8	29.5	10.0	112.5	128.5	14.5	7.0	4.5	8.0	5.0	5.5	5.8	5.8	7	24	95.83
48307	ciliaris	Tanzania	2.5	35.0	8.5	128.5	133.0	15.5	6.5	4.5	7.0	4.0	5.0	5.8	5.2	2	24	95.83
48309	ciliaris	Tanzania	2.5	32.5	9.0	117.5	122.5	14.0	7.0	4.0	7.5	4.5	5.5	6.2	6.0	7	30	93.33
48310	ciliaris	Tanzania	2.5	33.5	8.5	116.5	120.5	13.5	7.0	4.0	8.0	4.5	6.0	6.0	6.2	7	23	78.26
48311	ciliaris	Tanzania	2.2	33.5	9.0	113.0	128.0	15.0	6.0	3.5	7.2	5.0	6.0	6.0	6.0	7	32	78.13
48322	ciliaris	Tanzania	2.2	39.0	12.5	126.5	126.0	11.5	6.0	3.5	8.5	6.0	5.5	6.5	6.0	7	26	80.77
59624	ciliaris	Kenya	2.2	40.0	10.0	130.5	133.0	14.0	10.0	4.5	8.0	6.0	7.5	7.2	7.5	7	17	70.59
59625	ciliaris	Kenya	2.5	36.5	12.0	132.0	117.0	11.5	9.0	4.0	8.8	6.0	5.2	6.5	6.8	7	43	83.72
59627	ciliaris	Tanzania	3.0	29.5	7.0	126.0	131.0	11.5	8.0	4.0	8.0	5.0	5.8	6.0	6.2	2	14	71.43
59634	ciliaris	South Africa	2.0	33.0	9.0	126.5	118.5	13.5	10.0	5.0	8.0	7.5	5.8	5.5	4.8	2	22	54.55
59635	ciliaris	South Africa	2.0	33.5	9.5	119.0	103.5	10.5	9.5	4.5	7.5	8.0	6.0	5.8	5.5	2	20	45.00
59894	ciliaris	Zimbabwe	2.5	37.0	11.0	124.0	113.5	12.0	6.5	4.5	8.0	5.0	5.2	5.5	6.2	7	40	72.50
60728	ciliaris	*South Africa	2.0	38.5	11.5	131.0	117.0	12.5	9.0	5.0	8.5	7.0	5.8	6.2	6.5	2	24	50.00
60729	ciliaris	*South Africa	2.2	33.5	11.0	124.0	124.0	13.5	8.0	5.0	7.5	7.0	5.8	6.2	7.0	2	21	38.10
60730	ciliaris	*South Africa	2.8	36.5	12.0	123.5	119.5	12.0	6.5	4.5	8.2	5.0	6.2	6.0	7.2	8	32	59.38
60731	ciliaris	*South Africa	2.0	36.0	9.5	117.5	119.0	12.0	7.0	3.5	7.8	6.0	5.8	6.0	5.8	2	29	55.17
60732	ciliaris	*South Africa	2.2	33.0	9.5	131.0	113.0	11.0	8.0	5.0	8.5	8.5	6.8	7.0	6.5	2	30	53.33
60733	ciliaris	*South Africa	2.5	38.5	11.5	127.5	134.5	12.0	6.5	4.5	8.5	5.5	6.0	6.5	7.2	7	30	60.00
60734	ciliaris	*South Africa	2.8	39.0	11.0	132.0	131.5	13.0	7.0	4.0	8.8	6.0	5.5	6.0	7.0	7	28	78.57
60736	ciliaris	*South Africa	2.5	32.0	11.0	131.5	120.0	13.0	8.0	4.0	9.0	6.0	5.8	5.8	6.0	7	28	75.00
60737	ciliaris	*South Africa	2.0	38.0	9.5	121.5	120.5	12.0	9.0	5.0	8.2	6.5	5.8	6.0	6.2	2	20	50.00
61570	ciliaris	South Africa	2.0	35.0	11.0	114.5	114.0	12.0	9.0	4.0	8.2	8.0	5.5	6.2	6.8	7	26	50.00
61571	ciliaris	South Africa	2.8	36.0	11.5	124.0	116.0	11.5	8.0	4.8	8.5	8.0	7.8	6.8	7.0	2	32	84.38

Accession No.	Species	Origin	Matu- rity	Leaf Lth (cm)	Leaf Wth (mm)	Height (cm)	Head Lth (mm)	Head Wth (mm)	Habit	Rhiz. Rat ^g	Yield 18.3	Yield 27.5	Yield 11.9	Yield 6.11	Yield 27.1	Fasc. Col.	Cary- opsis No.	Cary. Wt mg/100
65411	ciliaris	Botswana	2.2	33.0	10.0	126.0	116.5	12.0	9.0	4.5	7.8	6.0	6.8	6.2	5.5	2	35	51.43
73388	ciliaris	South Africa	2.5	36.0	11.0	124.5	119.0	12.0	6.0	3.5	7.8	5.5	6.0	6.8	7.5	7	30	80.00