

## Cultivated Varieties of Banana in Ceylon

BY

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**C**ENTURIES of cultivation have obscured the origin of the banana. Its use by man is over 5,000 years old. Linnaeus who named the species *Musa*\* *paradisiaca* and *M. sapientum*, was evidently familiar with the legend which associated the banana with Eve and the serpent. The fruit is represented in the sculpture of ancient Egypt and Assyria. When Alexander the Great invaded India in 327 B.C., his soldiers saw extensive plantations of bananas in the Indus valley. Early Sinhalese chronicles, including the *Mahavamsa*, mention the plant. In 341 A.D., King Buddhadasa recorded in his *Sarartha Sangrahawa*, the medicinal value of various parts of the plant. The banana filled an important place in the Sinhalese pharmacopeia.

It appears likely that the wild forms of banana arose in Pliocene times, in the rain forests of the Malay Archipelago, India, Ceylon, and Polynesia. The wild bananas possess a normal sexual process, and reproduce freely by seed. The cultivated races are the parthenocarpic, female-sterile, vegetative progeny of derivatives from the wild species. The relation of the cultivated Ceylon bananas to the wild species, *Musa balbisiana* Colla and *M. acuminata* Colla is discussed at length elsewhere by Chandraratna (1951). This paper presents a classification of the cultivated forms in Ceylon.

### MATERIAL INVESTIGATED

The confusing synonymy, the liability of many characters to marked environmental variation, and the difficulty of preserving material satisfactorily in herbaria have made classification difficult. Sinhalese and Tamil names of banana varieties number over a hundred. As complete a collection of varieties in cultivation in Ceylon as was possible has been under study at the Research Station, Katugastota. It was found possible to lump all the material

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\* Linnaeus named the genus after Antonius Musa, a Roman Physician

in the collection into twenty-nine varieties, the greater number of which appear to be indigenous. Several of the varieties seem to have been brought from the South Indian mainland as is evidenced by the persistence of South Indian names, and a few are recognizable commercial varieties with a recorded history of introduction. In the latter class, the best known is the Gros Michel, the variety on which the thriving West Indian banana industry is based. In 1926, Dr. S. C. Harland, during his tour of South-East Asia for the purpose of "gaining information on the original home of the Gros Michel", identified this variety with the *Pisang embon* and the *Pisang bunga* of the Malay Peninsula, and the *Thihmhwe* of Burma. On receipt of Dr. Harland's report in 1927, the Director of Agriculture, Ceylon, secured suckers of *Thihmhwe* from Hmawbi, and of *Pisang embon* from Serdang, Selangor. The wide currency of the name *Embon* in this country suggests the Ceylon material is largely derived from the Malayan introduction. It may be mentioned, in this connexion, that the indigenous *Anamalu* forms show resemblances to the Gros Michel. It is of considerable interest that the Gros Michel type is unrepresented in India (Howes, 1928).

The Red Banana was introduced by Director of Agriculture, Ceylon, from Bassein in the Bombay Presidency, in the same year as the Gros Michel, i.e., in 1927, and was established in Jaffna. A local variety, *Rathambala*, which is evidently identical with this introduction, had existed in Ceylon previously. *Rathambala* appears to be identical also with *Chev-valai* of India *Pisang rajah udang* of Malaya, *Klui naak* of Siam and *Shwehngetpyaw* of Burma (Howes, 1928).

There seems to be little doubt that the dwarf variety, *Binkehel*, is the Cavendish, Canary Island or Chinese Banana, which had in the past, been placed in the species, *M. nana* Lour. (*M. cavendishii* Paxt.), and is now referred to *M. acuminata* Colla. The original home of the Cavendish banana is Southern China. The Ceylon material was possibly derived from an introduction from Mauritius, not later than the first decade of the twentieth century. The pre-eminence of the Cavendish as a commercial banana in Hawaii and in most other countries into which it has been introduced is difficult to reconcile with its unimportance in Ceylon. Its recent introduction and its extreme susceptibility to bunchy top probably explain its comparative rarity in this country. The antecedents of the other introduced varieties are obscure. There are, however, several indigenous varieties which, like *Rathambala*, closely correspond to varieties in other countries. *Alukehel*, a variety indubitably native to Ceylon, is probably identical with *Pisang abu* of Malaya, and *Puwalu* with *Poovan* of South India. *Sapumal-anamalu* appears to be closely allied to *Pisang masak hijau* of Malaya, and to *Kliu hom kieu* of Siam. *Monthan* of Ceylon, *Pisang batu* of Java, *Kliu humuk* of Siam, and *Hpi-gyan* of Burma are possibly the same (Howes, 1928).

A key to the twenty-nine varieties into which the Ceylon material has been lumped is given below. The key is followed by detailed description of the varieties which have been alphabetically arranged. The extent to which we have drawn on Cheesman's work (1947 *et seqq.*) is evident throughout the paper. The descriptions particularly owe much to Cheesman. The

colour names follow Ridgway (1912). The means and their standard errors are recorded in the instance of the quantitative characters.

The common distinction between bananas (dessert varieties) and plantains (cooking varieties) is not emphasized in banana-growing countries, and possesses little systematic justification. The term banana is used by us to cover both dessert and cooking types.

#### RANGE OF VARIATION IN CULTIVATED BANANAS

*The Inflorescence.*—A male bud usually terminates the inflorescence. Two readily recognizable types of male bud exist, viz., the type in which the bracts extend to the apex—the “convolute” bracts of Cheesman—and the type in which the bracts do not reach the apex—the “imbricate” bracts of Cheesman. The nature of the male bud is one of the most constant characters in banana varieties, and is of considerable taxonomic value. “Convolute” bracts point to *acuminata* affinities, and occur in cultivated forms that can be referred to *M. paradisiaca* L. and *M. sapientum* L. “Imbricate” bracts occur in all the four species, *M. balbisiana* Colla, *M. acuminata* Colla, *M. paradisiaca* L. and *M. sapientum* L. No cultivated varieties are, of course, included in *M. acuminata* (Cheesman, 1948).

Striking variations in male bud shape exist. Three main shapes can be recognized on the basis of the position of the greatest diameter, viz., turbinate, ovoid and ellipsoid.

Cheesman (1947) attaches importance to the mode of lifting of the bracts. The lifting of a single bract at a time is an *acuminata* character, and the simultaneous lifting of several bracts characterizes *balbisiana* derivatives. We have, however, observed variation in this character within the limits of the same variety.

The outer surface of the bracts composing the male bud varies in colour from violet to purple. The closeness and depth of longitudinal ribs and the profusion of bloom on the outer surface of the bracts are subject to considerable variation. The colour of the inner surface of the bracts is of greater diagnostic value. A dark crimson colour extending to the bract base indicates *balbisiana* blood. A lighter red paling to the base is an *acuminata* trait (Cheesman, 1947). There is varietal variation in the depth of the transverse corrugations of the inner surface. The raised bracts roll back on fading, the degree of revolution varying with varieties. The bracts in all Ceylon varieties except *Binkehel* are deciduous early. In *Binkehel*, the persistent bracts form an untidy mass covering the rachis.

In rare instances, e.g., in the varieties *Randombe* and *Kochchikehel*, no male bud exists, and the female flowers (and accordingly the fruits) extend to the tip of the rachis. The behaviour of the variety, *Wadanekehel* is variable; in this variety a male bud may or may not occur.

*The Flowers.*—Flowers and bracts are arranged spirally along the rachis. Each bract subtends two transverse rows of flowers. The basal

flowers are female, and except in *Randombe*, *Kochchikehel* and sometimes in *Wadanekehel*, the flowers higher up are male or neuter.

The perianth of the flower consists of an outer, anterior compound tepal or perigonium, and an inner, posterior free tepal or scale. The compound tepal is conspicuously three-lobed at the apex, with two accessory teeth between and within the three main lobes. The inferior, trilocular ovary is surmounted by a single style. The male flowers possess short rudimentary ovaries and are shed early. No pollen has been observed in the male flowers of most of the cultivated varieties in Ceylon. Though these flowers are more appropriately named 'neuter', the term 'male' has been retained on analogy with the wild forms.

Commonly accepted interpretations regard the compound tepal and the free tepal as homologous with the calyx and the corolla respectively, or, in the alternative, consider the outer perianth whorl represented by the three main lobes of the compound tepal, and the inner perianth whorl by the two accessory teeth and the free tepal. Examination of the Ceylon material has revealed the existence of a wide range of hitherto unrecorded variation in flower structure and has compelled a revision of prevailing morphological concepts. Frequently in the varieties *Suwandel* and *Walsuwandel*, and rarely in the variety *Kolikuttu*, the free tepal is replaced by a stamen resembling the five other members of the androecium in all respects but its posterior position and its occasionally reduced size. Moreover, in *Suwandel* and *Walsuwandel*, the free tepal assumes forms intermediate between a typical tepal and a stamen. These aberrant types suggest that the free tepal represents the sixth posterior stamen, and not, as the usual interpretations claim, the corolla or the posterior petal.

Free tepals vary somewhat in size and shape. The apex of the free tepal may terminate in an acute, acuminate or, most commonly, mucronate apicula. A mucronate apicula arising from a markedly emarginate apex may give the free tepal a tricuspidate appearance as in the varieties *Maramthamana*, *Ratakehel*, *Rathambala*, and *Galanamalu*. The free tepal may show conspicuous transverse corrugations below the apicula as in the variety *Walsuwandel*. The flower of *Alukehel* occasionally possesses two or three free tepals.

Most varieties possess a single undivided style and a terminal stigma. *Seenikehel* has a distinctly 3-lobed stigma, and *Ratakehel* has a deeply 3-fid style. Three separate styles occasionally occur in the male flower of *Wadanekehel*, but not in the female. The style is straight in most varieties. In *Honderawala*, the lower half of the style exhibits a sigmoid bend. A bend in the upper half of the style occasionally occurs in *Kolikuttu*.

The distribution of anthocyanin pigment in the flower is of value in classification although colour intensity varies with the degree of shade. Red pigment in the tepals is most pronounced in varieties with *balbisiana* blood.

*The Fruit*: Fruit shape has considerable taxonomic value. Strongly angled and cylindrical fruits are *balbisiana* and *acuminata* traits respectively. Varieties derived from *M. acuminata* possess fruits with a pronounced acumen. A blunt fruit apex is a *balbisiana* character.

Fruit size and pericarp thickness vary widely, and are characters of economic interest. The pericarp may or may not yellow readily when ripe. In rare instances, e.g., in *Rathambala*, the ripe pericarp is pigmented red. The brittleness and thinness of the pericarp determines to some extent the satisfactoriness with which a variety stores and transports.

Flesh colour is limited largely to shades of yellow. There is considerable variation in the sweetness and acidity of the flesh. Good-quality dessert varieties invariably possess *acuminata* blood.

*Fruit Bunch* : The orientation of the bunch and the degree of compaction of the fruit vary. In most varieties, the mature bunch is pendent. In some instances, however, the orientation is horizontal or subhorizontal. In pendent bunches, fruits often show negatively geotropic reflexing of fruits. The rachis and peduncle may be glabrous, or may show a tawny pubescence. Pubescence is an *acuminata* character.

*The Leaf* : The adaxial channel in the petiole is a particularly valuable diagnostic character. *Acuminata*-derived varieties have an open adaxial channel with scarious margins. A closed channel indicates a *balbisiana* ancestor. Both sides of the lamina base may be rounded, or one side may be rounded and the other acute. In the former instance the lamina base may be cordate or the two rounded sides may meet the petiole at different levels. The lamina apex is of less value in classification than the base. The apex may transversely, obliquely or irregularly truncate. The adaxial surface of the lamina is usually darker green than the abaxial surface. In a few instances, the lamina tends to be yellowish green.

The leaf sheath and the pseudostem show brown-black blotches. The amount of blotching varies greatly with the variety and is a measure of the affinity to *M. acuminata*.

*Habit* : Varieties differ in the frequency of stooling, and in the robustness and inclination of the stems. These characters are, however, of little value in classification. The leaf midribs of sword suckers in *acuminata* derivatives stand out stiffly. In *balbisiana* forms, midribs tend to curve.

#### DISEASES AND VARIETAL SUSCEPTIBILITY

*Bunchy Top*.—This virus disease introduced from Fiji in 1913, is the most serious hazard in banana growing in Ceylon. Plants derived from infected suckers remain stunted and develop a rosette of small and somewhat erect leaves—hence the name ‘bunchy top’. When secondary infection of adult plants occurs, the leaves exhibit a characteristic green streaking along the secondary veins. Although the aphid, *Pentalonia nigronervosa* functions as a vector, the use of infected suckers as planting material provides the chief means of spread. All the varieties in Ceylon succumb to the disease, but marked differences in susceptibility exist. The following are the most susceptible varieties: *Alukehel*, *Binkehel*, *Etamura*, *Kithala*, *Kochchikehel*, *Kolikuttu*, *Ratakehel*, and *Suwandel*.

*Panama Disease*.—(*Fusarium oxysporum* Fr.) This disease which ravaged the banana industry in the West Indies, though common, is not

troublesome in Ceylon. The chief symptom is a wilt of the leaves. The vascular bundles in the rhizome are discoloured red, and the pseudostems often split longitudinally. *Hondarawala* and *Suwandel* are the most resistant of the Ceylon varieties.

*Anthracnose* (*Gloeosporium musarum*. Cooke and Masee). This fungus invades the developing fruits of only the cooking varieties, *Alukehel*, *Etamuru*, and *Mondan*. Affected fruits blacken and shrivel, but remain attached to the rachis.

#### KEY TO CULTIVATED VARIETIES OF BANANA IN CEYLON

A. Bracts of male bud not extending to apex			
B Adaxial channel of petiole closed			
C Male bud turbinate	..	..	.. <i>Sudumuwaethi kehel</i>
CC Male bud ovoid			
D Fruit pruinose	..	..	.. <i>Alukehel</i>
DD Fruit not pruinose	..	..	.. <i>Etamuru</i>
CCC Male bud ellipsoid			
D Fruit pruinose	..	..	.. <i>Sambel</i>
DD Fruit not pruinose			
E Peduncle glabrous ; fruit bunch subhorizontal	..	..	.. <i>Hambanpuwalu</i>
EE Peduncle pubescent ; fruit bunch pendent	..	..	.. <i>Mondan</i>
BB Adaxial channel of petiole open			
D Lamina base cordate			
E Petiole channel narrowly open			
F Peduncle glabrous ; styles three..	..	..	.. <i>Wadanakehel</i>
FF Peduncle pubescent ; style single	..	..	.. <i>Walsuwandel</i>
EE Petiole channel wide open			
F Male bud turbinate			
G Flesh white	..	..	.. <i>Wathrupalu</i>
GG Flesh yellow	..	..	.. <i>Puwalu</i>
FF Male bud ellipsoid			
G Dwarf ; bracts persistent	..	..	.. <i>Binkehel</i>
GG Not dwarf ; bracts deciduous..	..	..	.. <i>Ratakehel</i>
DD Two sides of lamina base rounded and meeting petiole at different levels			
E Petiole channel narrowly open			
F Male bud ovoid	..	..	.. <i>Rathkehel</i>
FF Male bud ellipsoid	..	..	.. <i>Suwandel</i>
EE Petiole channel wide open			
F Male bud turbinate	..	..	.. <i>Hondarawala</i>
FF Male bud ellipsoid	..	..	.. <i>Ranel</i>
DDD Lamina base rounded on one side and acute on the other			
E Fruit large about 24 cm. long, angulate	..	..	.. <i>Kithala</i>
EE Fruit small, about 13 cm. long cylindrical	..	..	.. <i>Kolikuttru</i>
AA Bracts of male bud extending to apex			
B Adaxial channel of petiole closed	..	..	.. <i>Seenikehel</i>
BB Adaxial channel of petiole open			
C Male bud turbinate ; lamina base cordate			
D Fruit red	..	..	.. <i>Rathambala</i>
DD Fruit green	..	..	.. <i>Galanamalu</i>
CC Male bud ovoid ; lamina base rounded on one side and acute on the other			
D Apex or free tepal tricuspidate	..	..	.. <i>Marathamana</i>
DD Apex of free tepal mucronate			

E Fruit small, about 11–12 cm. long	..	..	<i>Navari</i>
EE Fruit large, about 16–23 cm. long			
F Midrib pruinose			
G Fruit ripens green	..	..	<i>Meegon-anamalu</i>
GG fruit ripens yellow			
H Vegetative parts pigmented purple	..	..	<i>Pisang embon</i>
HH Vegetative parts unpigmented	..	..	<i>Sapumal-anamalu</i>
FF Midrib not pruinose	..	..	<i>Anamalu</i>
AAA Male bud absent			
B Fruits large, about 33 cm. long	..	..	<i>Kochchikehel</i>
BB Fruits small, about 11–12 cm. long			
C Petiole channel narrowly open ; lamina base cordate		..	<i>Wadanakehel</i>
CC Petiole channel wide open : two sides of lamina base rounded and meeting petiole at different levels	..	..	<i>Randombe</i>

## DESCRIPTIONS OF VARIETIES

### 1. Alukehel

**Synonym :** Neer.

**Habit :** Stools freely, stems inclined to the vertical ; suckers unpigmented,\* mainly maiden.

**Pseudostem :** Grape green, tinged with purple, about 2½ metres high at flowering, about 22 cm. in diameter at base.

**Leaf sheath :** Unpigmented, exposed part pruinose with faint, brown-black markings.

**Petiole :** Pale green,  $45 \pm 0.5$  cm. long ; adaxial channel closed, margins not scarious.

**Lamina :** Pale green,  $156 \pm 3.4$  cm. long and  $53 \pm 0.9$  cm. wide, base cordate, apex obliquely truncate.

**Male bud :** Ovoid ; bracts not extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts Corinthian purple, prominently ribbed ; inner surface acajou red, with transversely elongated pits.

**Male flowers :** About 18 per bract ; compound tepal eugenia red,  $4.6 \pm 0.11$  cm. long and  $1.3 \pm 0.01$  cm. wide ; lobes orange, sometimes reduced to two ; accessory teeth sometimes reduced to one or none, and sometimes displaced to middle of compound tepal ; free tepals sometimes two or three,  $4.2 \pm 0.04$  cm. long and  $1.9 \pm 0.3$  cm. wide with mucronate apicula ; stamens  $4.4 \pm 0.02$  cm. long, filaments white ; style  $5.1 \pm 0.03$  cm. long, white with orange stigma.

**Fruit bunch :** Pendent, very compact ; peduncle yellowish green, glabrous.

**Fruit :**  $13 \pm 0.2$  cm. long,  $4.3 \pm 0.02$  cm. in diameter, slightly curved, with 4–5 prominent angles ; pericarp very thick, about 3 mm., glaucous when unripe, antimony yellow when ripe ; flesh cream ; mean weight per fruit  $2.4 \pm 0.2$  oz.

**General :** The most popular cooking variety in Ceylon. It is very susceptible to anthracnose and succumbs to bunchy top. It is extensively used in ayurvedic medicine, and is the earliest edible variety specifically mentioned in Sinhalese literature.

### 2. Anamalu

(Plate IIg)

**Habit :** Stools moderately ; suckers unpigmented, mostly sword.

**Pseudostem :** Very pale purple-green, about 2½ m. high at flowering, about 20 cm. in diameter at base.

**Leaf sheath :** Unpigmented, with occasional brown-black markings on exposed part.

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\* The pigments referred to are the anthocyanins.

**Petiole** : Apple green,  $45 \pm 1.0$  cm. long, adaxial channel margin curved outward, unpigmented, scarious.

**Lamina**: Abaxial surface bright green, abaxial surface pale green,  $221 \pm 1.9$  cm. long and  $59 \pm 1.2$  cm. wide, irregularly truncate at apex, base rounded on one side and decurrent on the other.

**Male bud** : Ovoid ; bracts extending to apex, lifting one at a time, revolute on fading, outer surface vinaceous purple, longitudinal ribs not prominent, inner surface yellowish green with shallow transverse corrugations.

**Male flowers** : About 12 per bract ; compound tepal unpigmented, translucent,  $4.1 \pm 0.03$  cm. long and  $1.3 \pm 0.04$  cm. wide ; free-tepal  $1.9 \pm 0.03$  cm. long and  $1.2 \pm 0.02$  cm. wide, with a mucronate apicula ; stamen  $4.1 \pm 0.03$  cm. long ; style  $3.9 \pm 0.03$  cm. long.

**Fruit bunch** : Pendent, compact ; peduncle unpigmented, pubescent.

**Fruit** :  $23 \pm 0.2$  cm. long,  $4 \pm 0.3$  cm. in diameter, curved, subcylindrical but with 4-5 recognizable angles ; pericarp very thick, about 3 mm., lemon chrome when ripe ; flesh ivory yellow, soft ; mean weight per fruit  $7 \pm 0.1$  oz.

**General** : A good dessert variety with a sour-sweet flavour, mentioned by Moon (1824).

### 3. Binkehel

(Plate IIf)

**Synonyms** : Naukehel, Pandi, Cavendish, Canary-Island or Chinese Banana.

**Habit** : Stools sparsely ; suckers deeply pigmented.

**Pseudostem** : Shaded deep brown-black, about 1.7 meters high at flowering, about 23 cm. in diameter at base.

**Leaf sheath** : Exposed part grape green with brown-black blotches ; covered part shaded faint purple.

**Petiole** : Pruinose,  $15 \pm 0.07$  cm. long ; adaxial channel wide open, margins erect, scarious, bordered by evanescent purple line.

**Lamina** : Dark green on upper surface,  $123 \pm 2$  cm. long and  $62 \pm 1.6$  cm. wide, acutely truncate at apex, cordate at base.

**Male bud** : Ellipsoid ; bracts not extending to apex, lifting more than one at a time, not revolute on fading ; persistent outer surface of bracts burnt lake with pronounced longitudinal ribs and copious bloom, inner surface yellowish red.

**Male flowers** : About 16 per bract persistent ; compound tepal unpigmented,  $3.9 \pm 0.03$  cm. long and  $1.4 \pm 0.02$  cm. wide ; free tepal white, translucent with mucronate apicula  $2.1 \pm 0.04$  cm. long and  $1.1 \pm 0.02$  cm. wide ; stamens  $3.6 \pm 0.03$  cm. long ; style  $3.5 \pm 0.01$  cm. long tinged purple near the middle.

**Fruit bunch** : Pendent, moderately compact ; peduncle and rachis pubescent ; rachis clothed in persistent flowers and bracts.

**Fruit** :  $15 \pm 0.2$  cm. long,  $4.3 \pm 0.05$  cm. in diameter, curved, subcylindrical with 5 recognizable angles ; pericarp thick 2-3 mm. Scheele's green when unripe, pale yellowish green when ripe ; flesh pale orange yellow ; mean weight per fruit  $5.5 \pm 0.09$  oz.

**General** : An excellent dessert variety, very susceptible to bunchy top.

### 4. Etamuru

**Synonyms** : Karu, Kaddu.

**Habit** : stools freely ; suckers unpigmented.

**Pseudostem** : grape green, covered part tinged faint purple, about 3 meters high at flowering, about 23 cm. in diameter at base.

**Leaf sheath** : unpigmented with sparse bloom on exposed part.

**Petiole** :  $54 \pm 1.1$  cm. long ; adaxial channel covered, margin incurved, not scarious.

**Lamina** : dark green on upper surface,  $166 \pm 2$  cm. long and  $54 \pm 0.2$  cm. wide, acutely truncate at apex, cordate at base ; upper surface of midrib unpigmented with sparse bloom, lower surface bright purple fading with age.

**Male bud** : ovoid ; bracts not extending to apex, lifting one at a time, revolute on fading ; outer surface of bracts Corinthian purple with well-marked ribs ; inner surface acajou red, transversely corrugated.

**Male flowers** : about 18 per bract ; compound tepal eugenia red,  $4.8 \pm 0.02$  cm. long and  $1.5 \pm 0.01$  cm. wide ; free tepal purple  $2.6 \pm 0.03$  cm. long and  $2.0 \pm 0.02$  cm. wide with mucronate apicula ; stamens  $4.1 \pm 0.02$  cm. long, filament pale purple ; style  $4.1 \pm 0.04$  cm. long, pale purple.

**Fruit bunch** : pendent, compact, with very slight pubescence on peduncle.

**Fruit** :  $13 \pm 0.1$  cm. long,  $3.7 \pm 0.2$  cm. in diameter, straight to slightly curved with 4-5 prominent angles ; pericarp very thick, emerald green when unripe, light orange yellow when ripe ; flesh white.

**General** : A cooking variety susceptible to anthracnose and bunchy top. The name suggests that the fruits occasionally contain seeds. We have, however, observed none in the material we examined. Moon (1824) mentions *Aetamburu*.

## 5. Galanamalu

**Synonym** : Singha (?)

**Habit** : stools sparsely.

**Pseudostem** : pale purple-green with brown-black blotches, about  $5\frac{1}{2}$  meters high at flowering, about 109 cm. in diameter at base.

**Leaf sheath** : exposed part coloured brown black, covered part pale purple.

**Petiole** :  $69 \pm 1.3$  cm. long ; adaxial channel wide open, margins outcurved, scarious, with purple border.

**Lamina** :  $338 \pm 6$  cm. long and  $96 \pm 1.0$  cm. wide, acutely truncate at apex, cordate at base ; upper surface of midrib unpigmented, with sparse bloom, lower surface with evanescent pale purple pigmentation.

**Male bud** : turbinate ; bracts extending to apex, lifting one at a time, revolute on fading ; outer surface of bracts dark maroon to purple, with moderately prominent ribs ; inner surface acajou red with deep broad, transversely elongated pits.

**Male flowers** : about 17 in two rows persist longer than bracts ; compound tepal white translucent,  $6.0 \pm 0.6$  cm. long and  $2.2 \pm 0.03$  cm. wide ; free tepal tricuspidate, white,  $3.5 \pm 0.02$  cm. long and  $1.6 \pm 0.03$  cm. wide ; stamens off-white,  $5.2 \pm 0.03$  cm. long ; style  $5.6 \pm 0.05$  cm. long.

**Fruit bunch** : curved, compact, peduncle somewhat pubescent.

**Fruit** :  $13.5 \pm 0.07$  cm. long,  $4.1 \pm 0.06$  cm. in diameter, slightly curved, subcylindrical with 4-5 recognisable angles ; pericarp very thick, ripening lemon yellow,  $4 \pm 0.1$  oz.

**General** : A coarse-flavoured, dessert variety. Suckers of this variety occasionally arise from *Rathambala* rhizomes. Moon (1824) mentions *Singha*.

## 6. Hambanpuwalu

**Synonym** : Suramondan, Diyamondan.

**Habit** : stools freely ; stems slightly inclined to the vertical, suckers unpigmented.

**Pseudostem** : grape green, about 4 metres high at flowering, about 23 cm. in diameter at base.

**Leaf sheath** : unpigmented.

**Petiole** :  $60 \pm 0.9$  cm. long ; adaxial channel closed, margins not scarious.

**Lamina** : pale green,  $154 \pm 3.4$  cm. long and  $50 \pm 0.6$  cm. wide, cordate at base, obliquely truncate at apex ; midrib unpigmented, with sparse bloom on adaxial surface.

**Male bud** : ellipsoid bracts not extending to apex, lifting several at a time, moderately revolute on fading ; outer surface of bracts Corinthian purple, prominently ribbed ; inner surface acajou red, with transversely elongated pits.

**Male flowers** : about 14 per bract; compound tepal eugenia red,  $5.3 \pm 0.3$  cm. long and  $1.5 \pm 0.01$  cm. wide ; free tepal  $3.1 \pm 0.04$  cm. long and  $2.0 \pm 0.04$  cm. wide, with acute apicula ; stamens  $4.7 \pm 0.03$  cm. long ; style  $4.9 \pm 0.04$  cm. long.

**Fruit bunch** : horizontal lax, peduncle yellowish green, glabrous.

**Fruit** :  $18 \pm 0.2$  cm. long,  $4.7 \pm 0.05$  cm. in diameter, slightly curved, angulate, apex blunt, pedicel long ; pericarp very thick 3–4 mm ; turtle green when unripe, light yellow shaded red when ripe ; flesh ivory white ; mean weight per fruit  $5 \pm 0.6$  oz.

**General** : a cooking variety, somewhat resistant to bunchy top.

## 7. Honderawala

(Plate IIIi)

**Synonyms** : Embul, Kadali, Thanekadali.

**Habit** : stools freely ; suckers with purple pigment.

**Pseudostem** : pale purple-green, about  $3\frac{1}{2}$  metres high at flowering, about 23 cm. in diameter at base.

**Leaf sheath** : pale purple-green, exposed part with brown-black blotches and sparse bloom.

**Petiole** : rose pink, pigment accentuated under shade,  $61 \pm 0.8$  cm. long ; adaxial channel widely open, with outcurved, scarious, purple-edged wings.

**Lamina** : dark green,  $241 \pm 3.5$  cm. long and  $67 \pm 0.7$  cm. wide ; base rounded on both sides meeting petiole at different levels ; apex obliquely truncate ; midrib purple-green with copious bloom.

**Male bud** : turbinate ; bracts not extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts pruinose, violet ; inner surface Vandyke red, with transversely elongated pits.

**Male flowers** : about 17 per bract; compound tepal  $4.9 \pm 0.03$  cm. long and  $1.5 \pm 0.3$  cm. wide, orange-tipped, with pale purple lines ; free tepal  $2.3 \pm 0.01$  cm. long and  $1.5 \pm 0.01$  cm. wide ; translucent white, tricuspidate with filiform apicula ; stamens  $3.8 \pm 0.02$  cm. long ; style  $4.1 \pm 0.05$  cm. long, with sigmoid flexure in lower half.

**Fruit bunch** : pendent, compact, peduncle and rachis pubescent.

**Fruit** :  $11 \pm 0.2$  cm. long,  $3.2 \pm 0.05$  cm. in diameter, slightly curved, subcylindrical, with pronounced acumen at apex, and short pedicel ; pericarp thin, about 2 mm., apple green when unripe, apricot yellow at full ripeness, flesh pale orange-yellow ; mean weight per fruit  $1.8 \pm 0.05$  oz.

**General** : A dessert variety mentioned by Moon (1824). The variety covers over half the plantain acreage in Ceylon. The flavour is subacid—hence the synonym *embul*—and the odour is characteristic. The bunches transport well ; ripe fruits do not drop. *Thanekadali* is, as its name implies, a sweeter strain. There are, moreover, slight differences in flesh and pericarp colour. These differences are, however, not sufficiently precise to warrant its separation.

## 8. Kithala

(Plate IIId)

**Habit** : Stools freely.

**Pseudostem** : Reddish purple tinged with green, about  $4\frac{1}{2}$  metres high at flowering, about 23 cm. in diameter at base.

**Leaf sheath :** Exposed part pale purple-green with brown blotches.

**Petiole :** Pale purple,  $62 \pm 0.3$  cm. long, adaxial channel narrowly open ; margins incurved, purple, not scarious.

**Lamina :** Pale green,  $206 \pm 5.1$  cm. long and  $76 \pm 1.2$  cm. wide ; base rounded on one side, decurrent on the other ; apex irregularly truncate ; midrib purple on abaxial side.

**Male bud :** Turbinate ; bracts extending to apex, lifting more than one at a time, not revolute on fading.

**Male flowers :** About 4 per bract, persist longer than bracts ; compound tepal off-white with two purple lines and dark yellow teeth,  $4.9 \pm 0.05$  cm. long and  $1.5 \pm 0.05$  cm. wide ; free tepal  $2.4 \pm 0.07$  cm. long and  $1.5-0.02$  cm. wide, with mucronate filiform apicula, stamens  $4.1 \pm 0.03$  cm. long ; style  $4.2 \pm 0.03$  cm. long, shaded purple ; stigma orange.

**Fruit bunch :** Subhorizontal, lax.

**Fruit :**  $24 \pm 0.5$  cm. long and  $4.2 \pm 0.04$  cm. in diameter, not markedly reflexed on rachis, sickle-shaped, tapering gradually to apex with 3-5 prominent angles and very long pedicel ; pericarp of medium thickness, 2-3 mm., apple green when unripe, light orange yellow when ripe ; flesh hard, orange tinged with purple ; mean weight per fruit  $7 \pm 0.1$  oz.

**General :** A very sweet, dessert variety, extremely susceptible to bunchy top ; it resembles *kochikehel* except in the possession of a male bud, bigger bunches, and more fruits per bunch. Moon (1824) mentions it.

## 9. Kochchikehel

(Plate Ia)

**Synonym :** Nendran.

**Habit :** Stools profusely.

**Pseudostem :** Coral pink shaded green, about 3 metres high at flowering, about 24 cm. in diameter at base.

**Leaf sheath :** Exposed part pale purplish green with occasional brown-black blotches ; covered part faintly purple.

**Petiole :** Pale purple,  $57 \pm 2.5$  cm. long ; adaxial channel narrowly open ; margins incurved, not scarious.

**Lamina :** Light green ;  $230 \pm 1.1$  cm. long and  $58 \pm 1.7$  cm. wide ; base rounded on one side, decurrent on the other ; apex irregularly truncate ; midrib glaucous on abaxial surface.

**Male bud :** Absent.

**Fruit bunch :** Sub-horizontal, lax with very few hands ; peduncle glabrous, with purple pigment.

**Fruit :**  $33 \pm 0.5$  cm. long and  $4.8 \pm 0.14$  cm. in diameter, curved, twisted, tapering gradually to apex and base, with 3-5 mm. somewhat prominent angles and long pedicel ; pericarp very thick, apple green, tinged purple when unripe, buff yellow when ripe ; flesh pale orange yellow, hard ; mean weight per fruit  $10 \pm 0.3$  oz.

**General :** An extremely sweet and relatively, very susceptible to bunchy top. The variety resembles *Kithala* except in the non-possession of a male bud and in the small number of hands per bunch. Moon (1824) mentions it. It is a hard-fleshed variety which is often steamed before eating, is reputed to be aphrodisiac, and is a common source of banana flour.

## 10. Kolikuttu

**Synonym :** Keppel, Cannanore, Calicut, sugar banana.

**Habit :** Stools sparsely ; suckers with pink pigment.

**Pseudostem :** Grape green with brown-black markings, about 3 meters high at flowering, about 26 cm. in diameter at base.

**Leaf sheath :** Exposed part pruinose, rose pink when young, tiber green with occasional brown-black markings when mature.

**Petiole :**  $79 \pm 1.4$  cm. long; adaxial channel open with incurved, scarious, purple-edged margins.

**Lamina :** Dark green on adaxial surface, glaucous on abaxial surface,  $242 \pm 4.5$  cm. long and  $72 \pm 1.2$  cm. wide; base rounded on one side, decurrent on the other; apex irregularly truncate.

**Male bud :** Turbinate; bracts not extending to apex, lifting one at a time, markedly revolute on fading; outer surface of bracts pruinose, mars violet; inner surface vandyke red, with transversely elongated pits.

**Male flowers :** Persist longer than bracts, about 12 per bract; compound tepal translucent white with faint purple shading and orange tip,  $5.6 \pm 0.02$  cm. long and  $1.8 \pm 0.01$  cm. wide; free tepal tinged purple,  $2.7 \pm 0.04$  cm. long and  $2.0 \pm 0.03$  cm. wide, with mucronate apicula, stamens  $5.5 \pm 0.11$  cm. long; style  $5.5 \pm 0.08$  cm. long, orange above and white below, often bent near stigma.

**Fruit bunch :** Pendent, somewhat lax; peduncle pubescent, tinged purple.

**Fruit :**  $13 \pm 0.2$  cm. long and  $4.2 \pm 0.05$  cm. in diameter, with delicate fragrance, slightly curved, cylindrical, with short pedicel and often with persistent style; pericarp thin, about 2 mm., apple green when unripe, yellow with rust red speckling when ripe, characteristically spotted by the fungus, *Macrophoma musae* (Cooks) Berl. & Vogl., and splitting longitudinally when over-ripe; flesh ivory; mean weight per fruit  $4 \pm 0.13$  oz.

**General :** *Kolikuttu* and *Suwandel* are the mostly highly-prized dessert varieties in Ceylon. *Kolikuttu* shows wide variation in the morphology of the free tepal which is often reduced in size, and is occasionally replaced by a staminode. The free tepal is sometimes duplicated or triplicated. The variety succumbs readily to bunchy top. Ripe fruits drop readily from bunch and render transport difficult. Moon (1824) mentions it.

## 11. Marathamana

(Plate IIIk)

**Synonym :** Marathuwa, Nillawela.

**Habit :** Stools with moderate frequency, stems slightly inclined to the vertical, suckers pigmented purple.

**Pseudostem :** Pale grape green with brown-black blotches, about 2.5 metres high at flowering, and about 22 cm. in diameter at base.

**Leaf sheath :** Exposed part grape green shaded purple, with brown-black blotches; covered part pale purple.

**Petiole :** Bice green with pale purple shading,  $43 \pm 0.5$  cm. long; adaxial channel wide open; margins vernonia purple, out-curved, scarious.

**Lamina :** Dark green on upper surface,  $215 \pm 5.3$  cm. long and  $73 \pm 0.7$  cm. wide; base rounded on one side and decurrent on the other; midrib glaucous on adaxial and purple on abaxial side.

**Male bud :** Ovoid; bracts extending to apex, lifting one at a time, markedly revolute on fading, outer surface of bracts burnt lake, shallowly ribbed; inner surface pale purple fading to yellow at base, with shallow, transverse corrugations.

**Male flowers :** About 14 per bract; compound tepal off-white,  $5.8 \pm 0.07$  cm. long and  $2.2 \pm 0.06$  cm. wide; free tepal  $2.9 \pm 0.03$  cm. long, with tricuspidate apex; stamens  $4.8 \pm 0.03$  cm. long with white filaments; style  $4.8 \pm 0.06$  cm., off-white.

**Fruit bunch :** Pendent, lax, peduncle and rachis glabrous.

**Fruit :**  $17 \pm 0.2$  cm. long, and  $4.7 \pm 0.05$  cm. in diameter, slightly curved, somewhat angulate with a short pedicel; pericarp very thick, about 4-5 mm. viridine green when unripe, apricot yellow at full ripeness; flesh cream buff; mean weight per fruit  $6 \pm 0.05$  oz.

**General :** Moon (1824) mentions *Marathamana*. This is used in the Central Province as a cooking banana. *Marathuwa* appears slightly superior, and is used in the Jaffna peninsula as a dual-purpose banana.

### 12. Meegon-anamalu

**Habit :** Stools moderately ; suckers unpigmented.

**Pseudostem :** Chromium green with occasional brown-black markings, about 7 metres high at flowering, about 34 cm. in diameter at base.

**Leaf sheath :** Glaucous, with no brown-black markings.

**Petiole :** Light green,  $56 \pm 0.8$  cm. long ; adaxial channel wide open with outcurved, scarious margins.

**Lamina :** Dark green on upper surface,  $330 \pm 5.3$  cm. long and  $96 \pm 1.4$  cm. wide ; base rounded on one side and decurrent on the other ; apex obliquely truncate ; midrib glaucous.

**Male bud :** Ovoid ; bracts extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts vinaceous purple shaded green, sparsely ribbed ; inner surface yellowish green.

**Male flowers :** About 13 per bract ; compound tepal  $4.7 \pm 0.05$  cm. long and  $1.4 \pm 0.03$  cm. wide, translucent white with yellow teeth ; free tepal translucent white  $2.1 \pm 0.04$  cm. long and  $1.4 \pm 0.02$  cm. wide, with mucronate, filiform apicula ; stamens  $4.1 \pm 0.04$  cm. long with white filament ; style  $4.3 \pm 0.02$  cm. long, white with pale purple shading and yellow stigma.

**Fruit bunch :** Pendent, compact, peduncle purplish green, somewhat pubescent.

**Fruit :**  $23 \pm 0.3$  cm. long, and  $14.9 \pm 0.12$  cm. in diameter, straight except for curvature at base, prominently angulate ; pericarp very thick, about 3-4 mm., grass green when purple, light viridine yellow when ripe ; flesh cream ; mean weight per fruit  $10 \pm 0.12$  oz.

**General :** A relatively rare, dessert variety.

### 13. Mondan

(Plate Ib)

**Synonyms :** Vel, Vel-mondan, Averi-mondan.

**Habit :** Stools freely ; stems slightly inclined to the vertical.

**Pseudostem :** Grape green, about 4 metres high at flowering, about 23 cm. in diameter at base.

**Leaf sheath :** Unpigmented, with sparse bloom on exposed part.

**Petiole :** Light green,  $69 \pm 0.8$  cm. long ; adaxial channel closed, margins incurved and not scarious.

**Lamina :** Dark green on upper surface,  $195 \pm 4.4$  cm. long and  $63 \pm 1.2$  cm. wide, cordate at base, obliquely truncate at apex ; lower surface of midrib pale pink, pruinose.

**Male bud :** Ellipsoid ; bracts not extending to apex, lifting more than one at a time, moderately revolute on fading ; outer surface of bracts Corinthian purple, pruinose ; inner surface acajou red, with transversely elongated pits.

**Male flowers :** About 15 per bract ; compound tepal  $5.4 \pm 0.05$  cm. long and  $1.5 \pm 0.02$  cm. wide ; free tepal pinkish purple,  $3.3 \pm 0.06$  cm. long and  $2.1 \pm 0.04$  cm. wide, acute at apex ; stamens  $4.4 \pm 0.05$  cm. long with purple filaments ; style  $5.1 \pm 0.02$  cm. long with tinge of purple and pale orange stigma.

**Fruit bunch :** Pendent, lax, peduncle and rachis moderately pubescent.

**Fruit :**  $16 \pm 0.2$  cm. long, and  $4.5 \pm 0.08$  cm. in diameter, straight or slightly curved with 4-5 prominent angles and blunt apex ; pericarp very thick, about 3-5 mm., lettuce green when unripe, apricot yellow with brown shading when ripe ; flesh cream ; mean weight per fruit  $5.6 \pm 0.12$  oz.

**General :** A cooking variety, mentioned by Moon (1824) ; fruits occasionally succumb to anthracnose (*Gloesporium musarum* Cooke & Masee).

## 14. Navari

**Habit** : Stools freely, stems slightly inclined to the vertical ; suckers deeply pigmented.

**Pseudostem** : Purple green, about 6 metres high at flowering, about 27 cm. in diameter at base.

**Leaf sheath** : Exposed part with occasional brown-black markings ; covered part tinged purple.

**Petiole** : Dark green,  $58 \pm 1.8$  cm. long ; adaxial channel wide open, margins outcurved and scarious.

**Lamina** :  $285 \pm 2.7$  cm. long and  $69 \pm 1.4$  cm. wide ; base rounded on one side, decurrent on the other ; apex obliquely truncate.

**Male bud** : Ovoid ; bracts extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts dark maroon, sparsely ribbed ; inner surface yellowish red with transversely elongated pits.

**Male flowers** : About 16 per bract ; compound tepal translucent white, yellow tipped,  $3.7 \pm 0.07$  cm. long and  $1.4 \pm 0.27$  cm. wide ; free tepal translucent white,  $2.3 \pm 0.03$  cm. long and  $1.1 \pm 0.02$  cm. wide, with mucronate apicula ; stamens  $3.5 \pm 0.02$  cm. long, filaments white ; style  $3.5 \pm 0.03$  cm. long, white with yellow stigma.

**Fruit bunch** : Pendent, compact ; peduncle glabrous, faint purplish green.

**Fruit** :  $9.5 \pm 0.3$  cm. long,  $2.1 \pm 0.03$  cm. in diameter, very slightly curved, cylindrical ; pericarp thin, brownish yellow when ripe ; flesh orange yellow.

**General** : A dessert variety, apparently endemic to Ceylon, and very rare even in this country. Moon (1824) mentions four forms of *Navari*, viz., *Sudu*, *Kalu*, *Tis*, and *Eta*. *Eta-navari* can be profusely seedy.

## 15. Pisang embon

**Synonyms** : Gros Michel, Bluefields.

**Habit** : Stools moderately ; suckers with purple pigment and heavy black blotches.

**Pseudostem** : Grass green tinged with purple, about 4 metres high at flowering, about 27 cm. in diameter at base.

**Leaf sheath** : Exposed part grape green with black blotches ; covered part yellowish green tinged purple.

**Petiole** : Cress green,  $51 \pm 1.0$  cm. long ; adaxial channel wide open ; margins outcurved, scarious, purple.

**Lamina** : Dark green on adaxial side, light green on abaxial side,  $247 \pm 5.6$  cm. long and  $79 \pm 2.0$  cm. wide ; base rounded on one side and decurrent on the other ; apex obliquely truncate ; midrib pruinose, purple tinged on abaxial side.

**Male bud** : Ovoid ; bracts extending to apex, bracts lifting one at time, outer surface of bracts vinaceous purple, sparsely ribbed ; inner surface pale purple fading to yellow at base with very shallow transverse corrugations.

**Male flowers** : About 15 per bract ; compound tepal dirty white to light yellow,  $5.6 \pm 0.09$  cm. long and  $1.7 \pm 0.04$  cm. wide, teeth yellow ; free tepal translucent white,  $2.1 \pm 0.04$  cm. long and  $1.1 \pm 0.02$  cm. wide, with mucronate apicula ; stamens white,  $5.1 \pm 0.04$  cm. long ; style white below, brownish yellow above.

**Fruit bunch** : Pendent, compact, rachis and peduncle pubescent.

**Fruit** :  $16 \pm 0.2$  cm. long and  $4.1 \pm 0.1$  cm. in diameter, curved, more or less circular in cross section, with acuminate apex and short pedicel ; pericarp of medium thickness, light cress green when unripe, buff yellow at full ripeness ; flesh maize yellow ; mean weight per fruit  $5 \pm 0.1$  oz.

**General** : A dessert variety of excellent quality, introduced by the Department of Agriculture in 1927 from Serdang, Selangor.

## 16. Puwalu

*(Plate IIIh)*

**Habit** : Stools moderately ; suckers unpigmented.

**Pseudostem** : Apple green, about 3 metres high at flowering, about 25 cm. in diameter at base.

**Leaf sheath** : Exposed part light grape green with faint brown-black markings.

**Petiole** : Light green,  $56 \pm 0.6$  cm. long ; adaxial channel wide open, not scarious, bordered by a purple line.

**Lamina** : Dark green on adaxial and light green on abaxial side,  $238 \pm 2.1$  cm. long and  $64 \pm 1.0$  cm. wide, cordate at base, obliquely truncate at apex.

**Male bud** : Turbinate ; bracts not extending to apex, lifting several at a time, well revolute on fading ; outer surface of bracts mars violet, pruinose, prominently ribbed ; inner surface vandyke red, with shallow transverse corrugations.

**Male flowers** : About 14 per bract ; compound tepal white with three purple stripes and orange tip,  $4.7 \pm 0.4$  cm. long and  $2.0 \pm 0.04$  cm. wide ; free tepal translucent white,  $2.3 \pm 0.02$  cm. long and  $1.5 \pm 0.02$  cm. wide, with mucronate  $3.7 \pm 0.04$  cm. long ; style  $4.1 \pm 0.04$  cm. long.

**Fruit bunch** : Subhorizontal, lax ; peduncle purplish green and slightly pubescent.

**Fruit** :  $12 \pm 0.2$  cm. long,  $3.9 \pm 0.05$  cm. in diameter, slightly curved and angulate ; pericarp thick, about 3-4 mm., wax yellow tinged brown when ripe ; flesh straw yellow ; mean weight per fruit  $3 \pm 0.07$  oz.

**General** : A dessert variety, mentioned by Moon (1824).

## 17. Randombe

*(Plate Ic)*

**Synonym** : Muwanetikehel.

**Habit** : Stools moderately ; suckers pigmented pale purple.

**Pseudostem** : Purplish green, about 3 metres high at flowering, about 19 cm. in diameter at base.

**Leaf sheath** : Exposed part light grape green, with occasional brown-black markings.

**Petiole** : Pale purplish green,  $63 \pm 1.1$  cm. long ; adaxial channel wide open ; margins erect or slightly incurved, scarious, pale purple.

**Lamina** : Yellowish green,  $194 \pm 2.5$  cm. long and  $55 \pm 0.07$  cm. wide ; two sides rounded at base and meeting petiole at different levels ; apex obliquely truncate.

**Male bud** : Absent.

**Bracts** : Outer surface perilla purple, sparsely ribbed ; inner surface light red or yellowish red.

**Fruit bunch** : Pendent, compact, peduncle and rachis glabrous.

**Fruit** :  $11 \pm 0.1$  cm. long,  $3.0 \pm 0.08$  cm. in diameter, slightly curved, subcylindrical with pronounced acumen ; pericarp thin, about 1.5 mm., light green when unripe, buff yellow when ripe ; flesh ivory white ; mean weight per fruit  $1.4 \pm 0.05$  oz.

**General** : A dessert variety.

## 18. Ranel

**Habit** : Stools moderately.

**Pseudostem** : Coral pink on yellowish green background, about 3 metres high at flowering, about 21 cm. diameter at base.

**Leaf sheath** : Exposed part yellowish green tinged coral pink, with brown-black blotches ; covered part tinged faint purple.

**Petiole** : Pale purple when young, purplish yellow when mature,  $54 \pm 1.5$  cm. long ; adaxial channel wide open ; margins outcurved, scarious, purple edged.

**Lamina** : Dark green or adaxial, light green on abaxial side,  $192 \pm 1.8$  cm. long and  $59 \pm 0.4$  cm. wide, cordate at base, irregularly truncate at apex ; midrib slightly pruinose, pale purple on abaxial side.

**Male bud** : Ellipsoid ; bracts extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts pruinose, mars violet, ribbed ; inner surface vandyke red, with shallow transverse corrugations.

**Male flowers** : About 10 per bract ; compound tepal translucent tinged faint purple,  $4.1 \pm 0.05$  cm. long and  $1.3 \pm 0.02$  cm. wide ; free tepal translucent white,  $2.0 \pm 0.02$  cm. long and  $1.3 \pm 0.01$  cm. wide with mucronate apicula ; stamens  $3.9 \pm 0.03$  long with white filaments ; style  $4.1 \pm 0.02$  cm. long, tinged faint purple ; stigma dark yellow.

**Fruit bunch** : Pendent, compact, peduncle purplish green, glabrous.

**Fruit** :  $11 \pm 0.1$  cm. long,  $3.6 \pm 0.04$  cm. in diameter, circular in diameter, circular in cross section, with pronounced acumen ; pericarp thin, about 2 mm., apple green when unripe, mustard yellow when ripe ; flesh cream ; mean weight per fruit  $2 \pm 0.1$  oz. ; fruit resembles that of *Honderawala* but is rather better flavoured.

**General** : A relatively rare, dessert variety, mentioned by Moon (1824) over-ripe fruits readily drop.

### 19. Ratakehel

**Habit** : Stools sparsely ; suckers pigmented.

**Pseudostem** : Pale purplish green, about 2 metres high at flowering, about 13 cm. in diameter at base.

**Leaf sheath** : Exposed part yellowish green shaded rose pink, with occasional brown-black blotches.

**Petiole** : Yellowish green tinged rose pink,  $43 \pm 0.9$  cm. long ; adaxial channel wide open ; margins shaded purple, incurved, not scarious.

**Lamina** : Dark green on upper surface,  $132 \pm 2.0$  cm. long and  $44 \pm 0.5$  cm. wide, cordate at base, obliquely truncate at apex ; midrib glaucous.

**Male bud** : Ellipsoid ; bracts reaching apex, lifting one at a time, not revolute on fading ; outer surface of bracts pruinose, burnt lake, with pronounced ribs ; inner surface vandyke red, with shallow, transverse corrugations.

**Male flowers** : About 8 per bract ; compound tepal purple,  $4.6 \pm 0.6$  cm. long and  $1.5 \pm 0.01$  cm. wide ; free tepal, tricuspidate, tinged purple,  $2.2 \pm 0.04$  cm. long and  $1.4 \pm 0.03$  cm. wide ; stamens  $3.6 \pm 0.02$  cm. long with white filaments ; style  $4.1 \pm 0.04$  cm. long 3-fid white with yellow stigma.

**Fruit bunch** : Pendent, somewhat lax ; peduncle and rachis slightly pubescent.

**Fruit** :  $10 \pm 0.06$  cm. long,  $3.2 \pm 0.03$  cm. in diameter ; subcylindrical with pronounced acumen ; pericarp of medium thickness, about 2–2.5 mm., apple green when unripe, mustard yellow at full ripeness ; flesh ivory yellow ; mean weight per fruit  $1.6 \pm 0.06$  oz.

**Remarks** : A relatively rare dessert variety, susceptible to bunchy top.

### 20. Rathambala

**Synonym** : Chev-valai, Ratnavalu, Rathu-Kochchi.

**Habit** : Stools moderately ; suckers pigmented red.

**Pseudostem** : Deep hellebore red tinged green, about 6 metres high at flowering, about 32 cm. in diameter at base.

**Leaf sheath** : Exposed part purplish grey with brown-black blotches ; covered part pale purple.

**Petiole** : Daphne red,  $65 \pm 1.0$  cm. long; adaxial channel wide open; margins outcurved, scarious, purple edged.

**Lamina** : Dark green on upper surface,  $303 \pm 3.2$  cm. long and  $97 \pm 1.3$  cm. wide, cordate at base, obliquely truncate at apex; midrib glaucous on adaxial, Daphne red on abaxial side.

**Male bud** : Turbinate; bracts reaching apex, lifting one at a time, markedly revolute on fading; outer surface of bracts purplish maroon, prominently ribbed; inner acajou red, with shallow transverse corrugations.

**Male flowers** : About 18 per bract; compound tepal white tinged purple,  $6.1 \pm 0.1$  cm. long and  $2.1 \pm 0.04$  cm. wide, teeth dark yellow; free tepal translucent white, tricuspidate,  $3.5 \pm 0.04$  cm. long and  $1.7 \pm 0.03$  cm., wide; stamens  $5.1 \pm 0.04$  cm. long; style  $5.5 \pm 0.04$  cm. long.

**Fruit bunch** : Subhorizontal, compact, peduncle and rachis pubescent.

**Fruit** :  $15 \pm 0.2$  cm. long,  $4.3 \pm 0.02$  in diameter, curved, apex blunt, angulate with short pedicel; pericarp very thick, peach red when ripe; flesh pale orange yellow; mean weight per fruit  $5 \pm 0.2$  oz.

**General** : A coarse, sub-acid dessert variety, occasionally throws out *Gal-anamalu* suckers. It is mentioned by Moon who apparently considers it distinct from *Rathnawalu*.

## 21. Rathkehel

**Habit** : Stools sparsely, stems slightly inclined to the vertical, suckers reddish pink.

**Pseudostem** : Reddish pink, about  $3\frac{1}{2}$  metres high at flowering, about 24 cm. in diameter at base.

**Leaf sheath** : exposed part light green with faint purple tinge and occasional brown-black blotches; covered part purplish green.

**Petiole** : Purplish green,  $64 \pm 1.1$  cm. long; margins outcurved, scarious, purple-edged.

**Lamina** : Dark green on upper, light green on lower surface,  $253 \pm 2.1$  cm. long and  $74 \pm 0.08$  cm. wide; two sides rounded at base and meeting petiole at different levels; apex obliquely truncate; midrib purple, pruinose on abaxial side.

**Male bud** : Ovoid; bracts not extending to apex, lifting one at a time, markedly revolute on fading; outer surface of bracts mars violet, pruinose, prominently ribbed; inner surface dark maroon with deep, transversely elongated pits.

**Male flowers** : About 19 per bract; compound tepal sulphur yellow,  $5.4 \pm 0.04$  cm. long and  $1.7 \pm 0.03$  cm. wide, teeth dark yellow; free tepal sulphur yellow,  $3.3 \pm 0.04$  cm. long and  $2.0 \pm 0.04$  cm. wide; stamens  $4.9 \pm 0.05$  cm. long, white below, and yellowish above.

**Fruit bunch** : Subhorizontal, lax, weighing about 10 lb. with about 6 hands and about 70 fruits; peduncle shaded purple and somewhat pubescent.

**Fruit** :  $7.6 \pm 0.1$  cm. long,  $2.8 \pm 0.2$  cm. in diameter, slightly curved, subcylindrical with short pedicel and pronounced acumen; pericarp thin, apple green when unripe, buff yellow with brown-black markings when ripe; flesh seafoam yellow with minute seeds; mean weight per fruit  $1 \pm 0.04$  oz.

**General** : A dessert variety. The red pigment implied in the name occurs in the vegetative parts and not in the fruit.

## 22. Sambel

**Habit** : Stools moderately, stems inclined to the vertical.

**Pseudostem** : Grapegreen, about 4 metres high at flowering, about 24 cm. in diameter at base.

**Leaf sheath** : Unpigmented, exposed part glaucous.

**Petiole** : Light green,  $54 \pm 1.6$  cm. long; adaxial channel closed; margins incurved, not scarious.

**Lamina** : Dark green on upper surface,  $199 \pm 1.1$  cm. long and  $53 \pm 0.4$  cm. wide, cordate at base, obliquely truncate at apex.

**Male bud** : Ellipsoid ; bracts not extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts Corinthian purple, pruinose, prominently ribbed ; inner surface acajou red with shallow transverse corrugations.

**Male flowers** : About 12 per bract ; compound tepal eugenia red, orange-tipped,  $5.2 \pm 0.04$  cm. long and  $1.2 \pm 0.03$  cm. wide ; free tepal purple, large,  $3.2 \pm 0.03$  cm. long and  $2.0 \pm 0.04$  cm. wide with acute apex ; stamens  $4.9 \pm 0.04$  cm. long with pale purple filaments ; style  $5.0 \pm 0.05$  cm. long white with yellow stigma.

**Fruit bunch** : Subhorizontal, lax ; rachis and peduncle glabrous.

**Fruit** :  $20 \pm 0.2$  cm. long and 5.2 cm. in diameter, strongly angulate, tapering gradually to apex ; pedicel long ; pericarp very thick, 4-5 mm., pruinose, pale olivine when unripe, cadmium yellow at full ripeness ; flesh cream ; mean weight per fruit  $7 \pm 0.2$  oz.

**General** : A good-quality cooking variety common in the Jaffna peninsula.

### 23. Sapumal-anamalu

**Habit** : Stools sparsely.

**Pseudostem** : Grape green tinged pale purple, about  $5\frac{1}{2}$  metres high at flowering, about 25 cm. in diameter at base.

**Leaf sheath** : Unpigmented.

**Petiole** : Light green,  $63 \pm 0.6$  cm. long ; adaxial channel wide open ; margins outcurved, scarious, unpigmented.

**Lamina** : Dark green on upper surface,  $341 \pm 2.9$  cm. long and  $82 \pm 0.9$  cm. wide ; base rounded on side, acute on the other ; apex obliquely truncate ; midrib unpigmented, bloom sparse on adaxial and copious on abaxial side.

**Male bud** : Ovoid ; bracts extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts vinaceous-purple, sparsely ribbed ; inner surface yellowish green.

**Male flowers** : About 13 per bract ; compound tepal translucent white, yellow-tipped,  $4.9 \pm 0.04$  cm. long and  $1.5 \pm 0.04$  cm. wide ; free tepal translucent white,  $2.5 \pm 0.02$  cm. long and  $1.6 \pm 0.04$  cm. wide, with mucronate apicula ; stamens  $4.5 \pm 0.02$  cm. long with white filaments ; style  $4.6 \pm 0.04$  white tinged faintly purple, with yellow stigma.

**Fruit bunch** : Pendent, compact, with sparse pubescence on peduncle and rachis.

**Fruit** :  $18 \pm 0.08$  cm. long, and  $3.9 \pm 0.02$  cm. in diameter, sub-cylindrical ; pericarp moderately thick, about 2-3 mm., apple green when unripe, pale lemon yellow when ripe ; flesh ivory yellow ; mean weight per fruit  $3 \pm 0.04$  oz.

**General** : A good-quality dessert variety, resembles *Anamalu* but has shorter fruits and a more delicate flavour.

### 24. Seenikehel

**Habit** : Stools sparsely, resembles *Alukehel* in habit but has erect stems ; suckers unpigmented, mainly maiden.

**Pseudostem** : Bright green, about  $2\frac{1}{2}$  meters high at flowering, about 24 cm. diameter at base.

**Leaf sheath** : Unpigmented, with faint brown-black markings on exposed part.

**Petiole** : Dark green,  $53 \pm 0.7$  cm. long ; adaxial channel completely closed ; margins incurved, not scarious, unpigmented.

**Lamina** :  $189 \pm 8.0$  cm. long and  $53 \pm 1.5$  cm. wide, cordate at base, obliquely truncate at apex ; midrib with sparse bloom and no pigment.

**Male bud** : Ovoid ; bracts extending to apex, lifting one at a time, markedly revolute on fading ; outer surface of bracts orange red, pruinose, closely ribbed ; inner surface spinel red, transversely corrugated.

**Male flowers** : About 20 per bract; compound tepal large, alizarine pink, orange-tipped,  $5.9 \pm 0.1$  cm. long and  $1.6 \pm 0.02$  cm. wide; free tepal translucent white,  $2.9 \pm 0.04$  cm. long and  $1.4 \pm 0.02$  cm. long; style white,  $5.6 \pm 0.04$ , protrudes considerably beyond stamens, 3-lobed.

**Fruit bunch** : Long, pendent, compact, with glabrous, unpigmented peduncle.

**Fruit** :  $14 \pm 0.09$  cm. long,  $3.2 \pm 0.02$  cm. in diameter, straight or slightly curved, somewhat angulate; pericarp thin, about 2 mm., apple green when unripe, buff yellow when ripe; flesh cream; mean weight per fruit  $2 \pm 0.04$  oz.

**General** : A rare, very sweet, dessert variety.

## 25. Sudumuwa ethikehel

**Habit** : Stools moderately, stems inclined to the vertical.

**Pseudostem** : Yellowish green tinged pale purple, about 3 metres high at flowering, about 24 cm. in diameter at base.

**Leaf sheath** : With neither pigment nor brown-black markings.

**Petiole** : Grape green,  $48 \pm 0.6$  cm. long; adaxial channel completely closed; margins incurved not scarious.

**Lamina** : Light green,  $178 \pm 2.9$  cm. long and  $51 \pm 0.6$  cm. wide, cordate at base, obliquely truncate at apex; midrib with evanescent, pale purple pigment.

**Male bud** : Turbinate; bracts not reaching apex, lifting one at a time, markedly revolute on fading; outer surface of bracts mars violet, pruinose, prominently ribbed; inner surface vandyke red, transversely corrugated.

**Male flowers** : About 10 per bract; compound tepal  $5.4 \pm 0.05$  cm. long and  $1.8 \pm 0.06$  cm. wide, eugenia red with orange teeth; free tepal pale purple,  $2.6 \pm 0.02$  cm. long and  $1.4 \pm 0.03$  cm. wide, with mucronate apicula; stamens  $4.29 \pm 0.04$  cm. long; style  $4.9 \pm 0.04$  cm. long, purplish white terminating in an orange stigma.

**Fruit bunch** : Small, pendent, with glabrous, light green peduncle.

**Fruit** :  $11 \pm 0.5$  cm. long,  $3.9 \pm 0.09$  cm. in diameter, very slightly curved, sub-cylindrical, with acuminate apex and short pedicel; pericarp thin, about 2 mm., apple green when unripe, buff yellow when ripe; flesh cream; mean weight per fruit  $3 \pm 0.07$  oz.

**General** : A rare dessert variety, resembling *Etamura* in vegetative characters.

## 26. Suwandel

(Plate IIIj)

**Habit** : Stools moderately; in suckers, bases of young leaves rose pink.

**Pseudostem** : Grape green with brown-black blotches, about  $2\frac{1}{2}$  metres high at flowering, about 19 cm. in diameter at base.

**Leaf sheath** : Exposed part tiber green with sparse bloom and occasional brown-black markings; covered part with copious bloom.

**Petiole** : Light green,  $54 \pm 1.3$  cm. long; adaxial channel narrowly open; margins slightly incurved, somewhat scarious, purple-edged.

**Lamina** :  $197 \pm 3.1$  cm. long and  $59 \pm 1.1$  cm. wide; two sides of base rounded, meeting petiole at different levels; apex obliquely truncate; midrib unpigmented, bloom sparse on adaxial and copious on abaxial side.

**Male bud** : Ellipsoid, bracts not extending to apex, lifting one at a time, markedly revolute on fading; outer surface of bracts mars violet, pruinose, prominently ribbed; inner surface vandyke red, with shallow transverse corrugations.

**Male flowers :** About 15 per bract ; compound tepal translucent white, orange tipped,  $5.0 \pm 0.02$  cm. long and  $1.6 \pm 0.04$  cm. wide ; free tepal translucent white,  $2.7 \pm 0.05$  cm. long and  $1.7 \pm 0.03$  cm. wide, with acuminate apex ; free tepal occasionally replaced by a staminode ; stamens  $4.5 \pm 0.02$  cm. long ; style  $4.5 \pm 0.03$  cm. long, pale purplish white.

**Fruit bunch :** Pendent, to sub-horizontal, lax ; peduncle yellowish green with faint purple pigment and sparse pubescence.

**Fruit :**  $10 \pm 0.2$  cm. long and  $3.7 \pm 0.03$  cm. in diameter, circular in cross section, with short pedicel and acuminate apex ; pericarp very thin, about 1.5 mm. ; mustard yellow when ripe ; flesh cream ; mean weight per fruit  $2 \pm 0.07$  oz.

**General :** *Suwandel* and *Kolikuttu* are the most popular dessert varieties in Ceylon. *Suwandel* resembles *Kolikuttu* in its extreme susceptibility to bunchy top and in the occasional replacement of the free tepal by a staminode. Moon (1824) mentions both.

## 27. Wadane kehel

**Habit :** Stools sparsely, stems slightly inclined to the vertical ; suckers pigmented purple.

**Pseudostem :** Yellowish green tinged purple, about  $2\frac{1}{2}$  metres high at flowering, about 69 cm. in diameter at base.

**Leaf sheath :** Exposed part yellow tinged purple, with occasional brown-black markings ; covered part faint purple.

**Petiole :** Grape green tinged purple,  $43 \pm 0.2$  cm. long ; adaxial channel narrowly open ; margin incurved, scarious, purple.

**Lamina :** Light green,  $142 \pm 2.4$  cm. long and  $48 \pm 0.7$  cm. wide, cordate at base, obliquely truncate at apex.

**Male bud :** May be absent ; ellipsoid when present ; bracts not reaching apex, lifting one at a time, not revolute on fading ; outer surface of bracts dark maroon, pruinose, prominently ribbed ; inner surface acajou red, with shallow transverse corrugations.

**Male flowers :** About 11 per bract ; compound tepal eugenia red, orange-tipped,  $5.0 \pm 0.03$  cm. long and  $1.4 \pm 0.03$  cm. wide ; free tepal  $2.7 \pm 0.07$  cm. long and  $2.0 \pm 0.01$  cm. wide, pale purple, with acuminate apicula ; stamens  $5.0 \pm 0.03$  cm. long, with white filaments ; styles three in number,  $4.2 \pm 0.05$  cm. long, white with yellow stigma.

**Fruit bunch :** Pendent, lax ; peduncle and rachis glabrous.

**Fruit :**  $12 \pm 0.2$  cm. long,  $3.2 \pm 0.4$  cm. in diameter, straight or slightly curved, subcylindrical, with short pedicel ; pericarp thin ; apple green when unripe, pale orange yellow when ripe ; flesh ivory yellow.

**General :** A rare dessert variety ; succumbs readily to bunchy top.

## 28. Walsuwandel

**Synonyms :** Ratahonderawala, Suduhonderawala, Walwanduru.

**Habit :** Stools moderately, stems slightly inclined to the vertical ; suckers unpigmented.

**Pseudostem :** Rivage green, about  $4\frac{1}{2}$  metres high at flowering, about 22 cm. in diameter at base.

**Leaf sheath :** Unpigmented, with brown-black markings on exposed part.

**Petiole :** Dark green,  $56 \pm 0.8$  cm. long ; adaxial channel narrowly open ; margins unpigmented, incurved, not scarious.

**Lamina :**  $171 \pm 2.4$  cm. long and  $55 \pm 0.6$  cm. wide, cordate at base, obliquely truncate at apex ; midrib unpigmented, with sparse bloom on adaxial and profuse bloom on adaxial side.

**Male bud :** Ellipsoid ; bracts not extending to apex lifting one at a time, markedly revolute on fading ; outer surface of bracts Corinthian purple, prominently ribbed ; inner surface acajou red, transversely corrugated.

**Male flowers** : About 20 per bract ; compound tepal tinged purple, orange tipped,  $4.4 \pm 0.3$  cm. long and  $1.2 \pm 0.02$  cm. wide ; free tepal translucent white,  $2.4 \pm 0.03$  cm. long and  $1.2 \pm 0.03$  cm. wide, with acute apicula, frequently staminodial ; stamens  $3.8 \pm 0.03$  cm. long, with white filaments ; style  $4.1 \pm 0.03$  cm. long, with sigmoid bend in lower half, white with yellow stigma.

**Fruit bunch** : Horizontal, compact, with unpigmented, pubescent peduncle.

**Fruit** :  $12 \pm 0.1$  cm. long,  $3.1 \pm 0.04$  cm. in diameter, subcylindrical ; pericarp about 2 mm. thick, apple green when unripe, light orange blotched brown when ripe ; flesh ivory yellow ; mean weight per fruit  $1.6 \pm 0.07$  oz.

**General** : A dessert variety ; Moon (1824) mentions *Walsuwandel*, *Wahwanduru* and *Ratahonderawala*, but apparently considers them distinct.

## 29. Wathupalu

(Plate II e)

**Synonyms** : Ethari, Ilyayenga.

**Habit** : Stools freely ; suckers unpigmented.

**Pseudostem** : Grape green tinged with purple, about 3 metres high at flowering, about 19 cm. in diameter at base.

**Leaf sheath** : Unpigmented. exposed part pruinose with slight brown-black markings.

**Petiole** :  $50 \pm 0.6$  cm. long. adaxial channel wide open, with margins erect, not scarious, bordered by a purple line.

**Lamina** :  $182 \pm 6.0$  cm. long and  $52 \pm 0.5$  cm. wide, cordate at base, obliquely truncate at apex, midrib unpigmented, with bloom sparse on adaxial side, profuse on adaxial side.

**Male bud** : Turbinate ; bracts not extending to apex, lifting one at a time ; outer surface of bracts mars violet, with bloom and pronounced longitudinal ribs ; inner surface vandyke red, transversely corrugated.

**Male flowers** : About 14 per bract, in two rows ; compound tepal translucent white with 3 purple veins,  $4.6 \pm 0.04$  cm. long,  $1.7 \pm 0.02$  cm. wide, free tepal with obtuse apex, translucent white,  $2.4 \pm 0.02$  cm. long,  $1.5 \pm 0.04$  cm. wide ; stamens  $3.9 \pm 0.03$  cm. long with white filaments ; style  $3.8 \pm 0.04$  cm. long, protrudes slightly beyond stamens, white with orange stigma.

**Fruit bunch** : Pendent, lax, with somewhat pubescent peduncle and rachis.

**Fruit** :  $11 \pm 0.1$  cm. long,  $3.5 \pm 0.05$  cm. in diameter, moderately curved, with long pedicel and blunt apex, somewhat angulate ; pericarp thick, 2-3 mm., lettuce green with black blotches when unripe, mustard yellow when ripe ; flesh ivory ; mean weight per fruit  $2 \pm 0.1$  oz.

**General** : A dessert variety, mentioned by Moon (1824).

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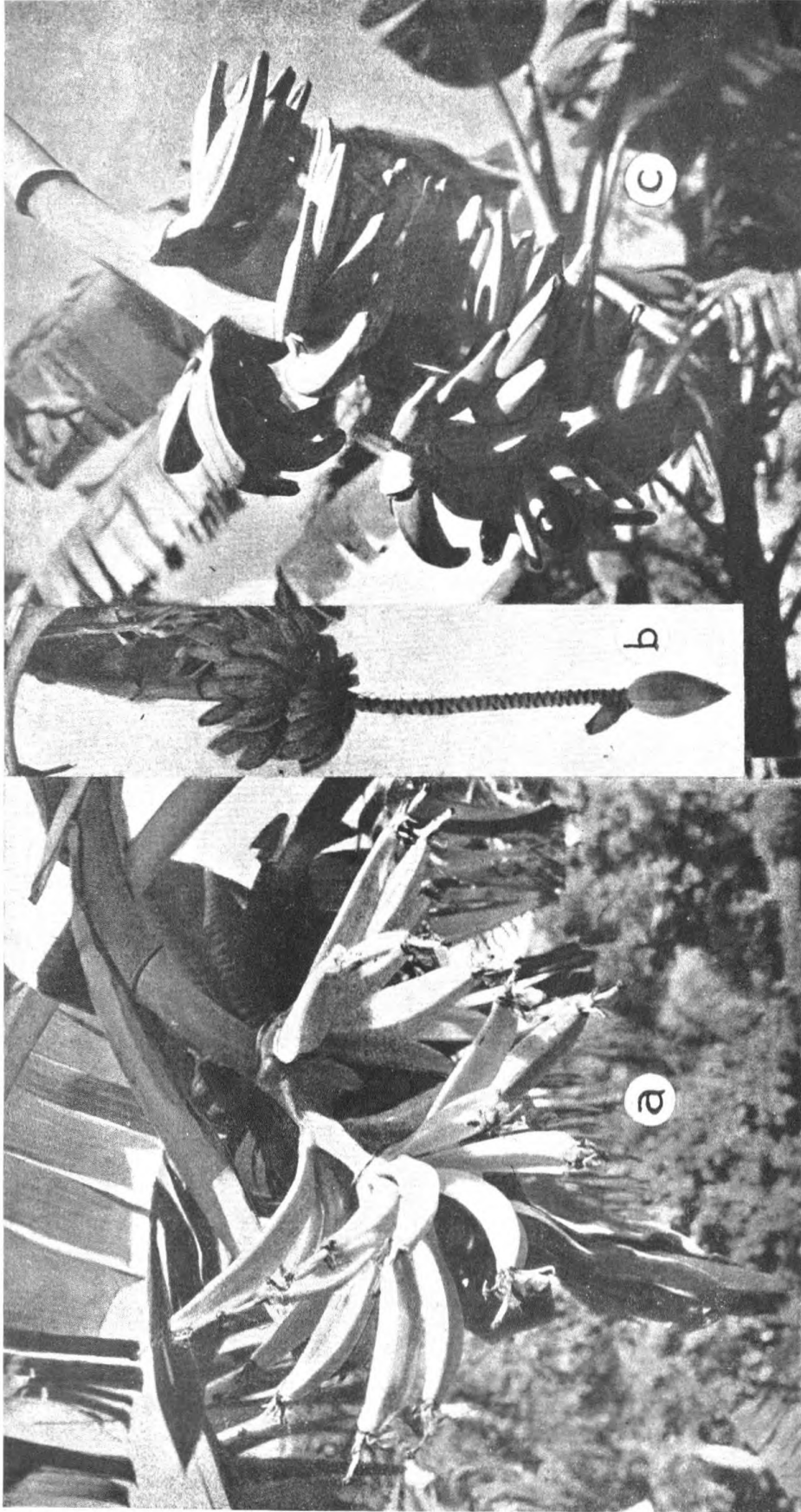


Plate I.—(a) Kochchikehel. (b) Mondan. (c) Randombe.



Plate II.—(d) Kithala, (e) Wathurpala, (f) Binkehel, (g) Anamalu.

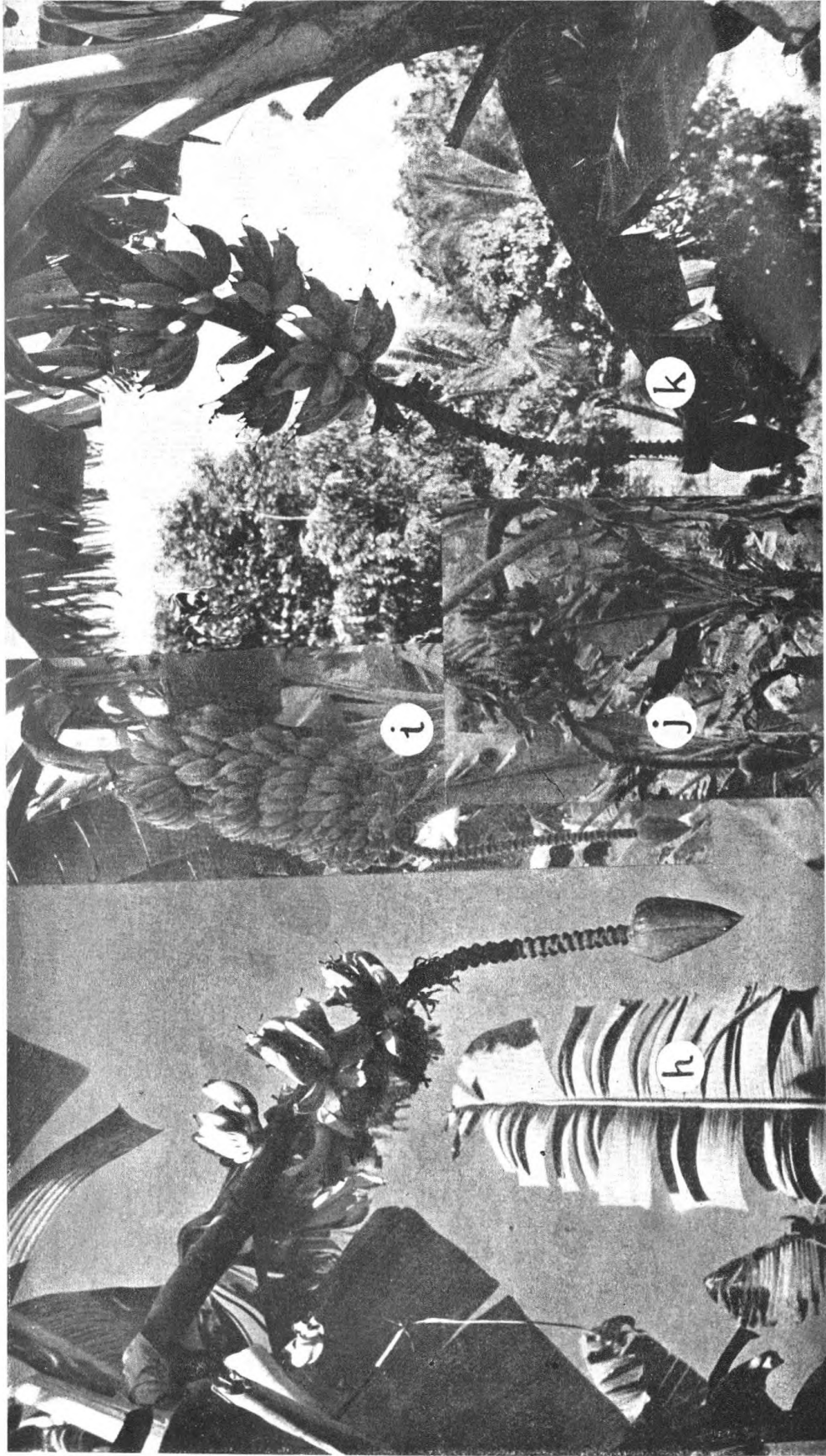


Plate III.—(i) Puwatu. (h) Honderavala. (j) Suwandel. (k) Marathamana.

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## APPENDIX

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### Glossary of Sinhalese and Tamil Terms

- Anai* .. Elephant. The prefix in *Anamalu* indicates large size of fruit.
- Alu* .. Bloom
- Averi* .. Hands
- Bin* .. Ground. The prefix in *Binkehel* refers to the accommodation of the fruit bunch of this dwarf variety in a pit.
- Diya* .. Watery
- Embul* .. Sour
- Eti, eta* .. Seedy
- Gal* .. Stony
- Hamban* .. Moorish.
- Honarawalu* .. Long-clustered (according to Moon, 1824)
- Karu* .. Black
- Kehel, kesel* .. Banana
- Kochchi* .. Cochin
- Meegon* .. Buffalo. The term indicates large size
- Muwanethikehel* .. Banana without a male bud
- Navari* .. Possibly abbreviated from *nama-averi*, meaning "nine-hands"
- Poo* .. Flower
- Ran* .. Golden
- Randombe* .. A place name
- Rata* .. Foreign
- Rath* .. Red
- Sambel* .. Bloom
- Sapumal* .. Flowers of *sapu*. (*Michelia champaca* L.) The reference is to the resemblance in aroma
- Seeni* .. Sugar
- Sudumuwanethikehel* .. Banana with a white (i.e., pruinose) male bud
- Suwandel* .. Fragrant banana
- Thane* .. Honey
- Wadane* .. Wild
- Wanduru* .. Monkey
- Wathupalu* .. Soil-exhausting