# Illustrated Guide to the Identification of Banana Varieties in the South Pacific

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Cover photograph: The banana variety Ducasse, currently being evaluated in the South Pacific, is resistant to black Sigatoka and is suitable for dessert or cooking.

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# INTRODUCTION

With the primary objective of introducing and selecting banana varieties with resistance to black Sigatoka (*Mycosphaerella fijiensis*), a very serious leaf disease of bananas in the South Pacific, ACIAR has been funding a project in Western Samoa, Tonga and the Cook Islands in cooperation with the Queensland Department of Primary Industries (QDPI), Australia.

Classification and identification of varieties greatly facilitates their introduction and adoption in new situations. This guide provides keys, descriptions, lists and photographs of the banana varieties in the South Pacific and those being introduced for disease screening.

# INDIGENOUS VARIETIES

Bananas are a staple food in several Pacific island nations. They are either boiled or baked while still unripe and starchy. Cavendish types prepared in this way are particularly important in Samoa. Bananas are also eaten uncooked as a dessert.

Tables 1 and 2 list banana varieties present in those South Pacific island countries for which information is available. Traditional banana varieties in the region, which date from colonisation by Melanesian and Polynesian people, probably belong to the subgroups Mamae, Maia Maoli/Popoulu, and Fe'i (Australimusa). Since the arrival of Europeans and Asians in the region, other types have also risen to prominence including varieties in the Cavendish subgroup, Mysore, Bluggoe and Blue Java/Ney Mannan.

**Table 1.** South Pacific bananas — variety names, synonyms and classification [from Daniells (1990)[a] and modified from Stover and Simmonds (1987)].

| Genome | Simmonds 1966 'groupings' | Australia | Tonga | Western Samoa | Cook Islands[b] | Fiji[c] | Other identification |
|---|---|---|---|---|---|---|---|
| AA | n.a | D1 | – | – | D1 (R) | – | Paka |
| AAA | Gros Michel | Gros Michel | Siaine Fisi | Fa'i Fia Palagi | – | Jainabalavu | |
| | Dwarf Cavendish | Dwarf Cavendish | Siaine Tonga | – | Amoa Taunga Potopoto(A) | Jainaleka | |
| | Giant Cavendish | Williams | – | Fa'i Palagi | Amoa Taunga(R,A) | Veimama Leka | |
| | Robusta | Robusta | Siaine Ha'amoa | Fa'i Palagi | Amoa Kauare(A) | Veimama | |
| | Pisang Masak Hijau | Lacatan | – | Fa'i Palagi | Amoa Kauare(A) | Veimama | |
| | Red | Red Dacca | Misi Peka[d] | Fa'i Niue or Fa'i Suka | Kinaki Tangata(R) Meika Initia(A) | Jainadamu | |
| | Green Red | Green Dacca | Unnamed | – | Tara Puakanio(R) | – | |
| | n.a. | – | – | Unnamed | – | – | Garu? (Papua New Guinea) |
| | | Yangambi km 5 | – | Fa'i Kumakuma or Fa'i Fia Misi Luki | – | – | Ibota, Mamae Initia? |
| AAAA | n.a. | TU8 | – | – | T8(R) | – | Jamaican breeding line (61–882) |
| AAB | Plantain | Horn Plantain | – | – | Tarapuatouro (A) | – | |
| | Plantain | – | – | Fa'i Talua | – | – | P. Tandok |

**Table 1**. South Pacific bananas — continued.

| Genome | Simmonds 1966 'groupings' | Australia | Tonga | Western Samoa | Cook Islands[b] | Fiji[c] | Other identification |
|---|---|---|---|---|---|---|---|
| | Plantain | French Plantain | – | – | Tarapuakanio (A) | – | |
| | n.a.? | Laknau | Hopa Fie Siaine | Fa'i Nifopovi[c], Fa'i Talima | – | – | |
| AAB | Mysore | Mysore | Patele/Misi Peka | Fa'i Misi Luki | – | Liganimarama, Lady's Finger | |
| | n.a. | – | – | – | Meika Initia(R) | – | Mysore subgroup |
| | n.a. | – | – | – | Tara Puakatoro (R) | – | Mysore subgroup |
| | Silk | Sugar | – | – | Miti Ruki (R)<br>Tiki (R,A) | – | |
| | Pome | Improved Lady Finger | Unnamed | Fa'i Fia Misi Luki | Mario (R,A) | Unnamed | |
| | Pome | Santa Catarina Prata | – | – | Ice Cream (A,R) | – | Origin Hawaii |
| | Maia Maoli | Maia Maoli/ Popoulu | Tateau, Tu'tutu'u Kautala, Fetau Hina, Fetau Kula, Puko Kula, Mami Kula, Putalinga Kula, Putalinga Hina, Putalinga Nounou, Hopa Tonga, Hehe Fanga, Molea, 2 unnamed Hopa types | Fa'i Samoa, Pau Manifo, F.S. Puputa, F.S. Aumalie, F.S. Lautele, F.S. Lapa Lapa, F.S. Lapoa | Mangaro Manii(A), Mangaro Torotea(A), Mangaro Aumarei(A), Mangaro Taanga(A), Mangaro Akamou(A), Meika Maori(R) | Vudi group | Hopa group (Tonga) |

**Table 1**. South Pacific bananas — concluded.

| Genome | Simmonds 1966 'groupings' | Australia | Tonga | Western Samoa | Cook Islands[b] | Fiji[c] | Other identification |
|---|---|---|---|---|---|---|---|
| AAB | n.a. | -- | Mamae Hehe Fanga | Fa'i Mamae Fa'i Mamae Ulu | – | – | Iholena, Morpa Yamunamba, Numeijo (PNG) |
| ABB | Bluggoe | Bluggoe | Pata Tonga | Fa'i Pata Samoa | Tarua Matie (A,R) | Jamani | |
| | Bluggoe | Silver Bluggoe | – | – | Tarua Teatea (A) | – | |
| | n.a. | Blue Java | Pata Hina or Pata Lahelahe | Fa'i Pata Sina | Tarua Teatea (A) Unnamed (R) | Vata, Pata, Blue Java | |
| ABBB | n.a. | – | Palakiha | Fa'i Pata Tonga | Rekua (A) | – | Giant Kalapua (Madang, PNG) |
| Wild species | *Musa acuminata* ssp. *banksii* | *Musa acuminata* ssp. *banksii* | – | Fa'i Taemanu | – | – | |
| | *Musa acuminata* ssp. *malaccensis* | – | – | – | Unnamed D2(R) | – | Pahang, IR 296 |
| | *Musa velutina* | *Musa velutina* | – | – | Unnamed (R) | – | |
| Other | Fe'i | Fe'i | – | Fa'i Soa'a | Utu (R) Vei (A) | – | |

[a]Only those varieties personally identified by the author
[b]R = Rarotonga, A = Aitutaki
[c]Stover and Simmonds (1987)
[d]Name unconfirmed
– = not present

**Table 2.** Varieties introduced to Tonga, Western Samoa and the Cook Islands during ACIAR projects.

| Genome | Name | Tonga | W. Samoa | Cook Is. |
|---|---|---|---|---|
| AA | Sucrier | ✓ | ✓ | ✓ |
| | Amas | ✓ | ✓ | ✓ |
| | Figue Sucree | ✓ | ✓ | ✓ |
| | SH-3362 | ✓ | ✓ | ✓ |
| | SH-3142 | ✓ | ✓ | ✓ |
| | Lakatan | ✓ | ✓ | ✓ |
| | Kluai Hom | ✓ | ✓ | – |
| | Tuu Gia | ✓ | ✓ | ✓ |
| | Pisang Berlin | ✓ | ✓ | ✓ |
| | Mambee Thu | ✓ | ✓ | ✓ |
| | NBA14/SF215 | ✓ | ✓ | ✓ |
| | NBC20 | ✓ | ✓ | ✓ |
| | Tubunatar | ✓ | ✓ | ✓ |
| AAA | Grande Naine | ✓ | ✓ | ✓ |
| | Umalag | – | ✓ | ✓ |
| | New Guinea Cavendish | ✓ | ✓ | ✓ |
| | Chinese Cavendish | ✓ | ✓ | ✓ |
| | Williams | ✓ | ✓ | ✓ |
| | Mons Mari | ✓ | ✓ | ✓ |
| | Hsien Jen Chiao | ✓ | ✓ | ✓ |
| | Hochuchu | ✓ | ✓ | ✓ |
| | Americani | ✓ | – | – |

**Table 2.** Varieties introduced to Tonga, Western Samoa and the Cook Islands during ACIAR projects — continued.

| Genome | Name | Tonga | W. Samoa | Cook Is. |
|---|---|---|---|---|
| AAA | J.D. Special | ✓ | ✓ | ✓ |
| | Valery | ✓ | – | – |
| | Veimama | ✓ | – | ✓ |
| | Red Dacca | ✓ | ✓ | ✓ |
| | Pisang Susu | ✓ | ✓ | – |
| | OBb4 (Manodop) | ✓ | ✓ | ✓ |
| | OBb15 (Migea Arizi) | ✓ | ✓ | ✓ |
| AAAA | TU8 | ✓ | ✓ | ✓ |
| | Calypso | ✓ | ✓ | ✓ |
| | SH–3436 | ✓ | ✓ | ✓ |
| | 2390–2 | ✓ | ✓ | ✓ |
| | Buccaneer (T12) | ✓ | – | – |
| | IC2 | ✓ | – | – |
| AAB | Mysore | ✓ | – | ✓ |
| | Improved Lady Finger | ✓ | ✓ | ✓ |
| | Old Lady Finger | – | – | ✓ |
| | Santa Catarina Prata | ✓ | ✓ | – |
| | Pacific Plantain | ✓ | ✓ | ✓ |
| | Pisang Nangka | ✓ | ✓ | – |
| | Pisang Raja | ✓ | ✓ | ✓ |
| | Horn Plantain | ✓ | ✓ | ✓ |
| | Peurto Rican Dwarf Plantain | ✓ | ✓ | ✓ |

**Table 2.** Varieties introduced to Tonga, Western Samoa and the Cook Islands during ACIAR projects — concluded.

| Genome | Name | Tonga | W. Samoa | Cook Is. |
|---|---|---|---|---|
| AAB | Pisang Lampening | ✓ | ✓ | – |
| | Pisang Ramo | ✓ | ✓ | – |
| | NBH10 (Tomnam) | ✓ | ✓ | ✓ |
| AAAB | SH-3481 | ✓ | ✓ | ✓ |
| ABB | Bluggoe | ✓ | ✓ | ✓ |
| | Silver Bluggoe | ✓ | – | – |
| | Ducasse | ✓ | ✓ | ✓ |
| | Monthan | ✓ | ✓ | – |
| | Pisang Gajih Merah[a] | ✓ | ✓ | – |
| | Kluai Niu Mue Nang | ✓ | ✓ | – |
| | Kluai Namwa Khom | ✓ | ✓ | ✓ |
| | Kalapua No. 2 | ✓ | ✓ | ✓ |
| | Kandrian | ✓ | ✓ | ✓ |
| ABBB | Kluai Teparot | ✓ | ✓ | – |
| | Rekua | ✓ | – | – |
| Wild Species | Calcutta IR124 (*Musa acuminata* ssp. *burmannicoides*) | ✓ | ✓ | ✓ |
| | Pahang IR296 (*Musa acuminata* ssp. *malaccensis*) | ✓ | ✓ | ✓ |

✓= Introduced; – = not introduced

[a]Another Saba type (probably Cardaba) was introduced to W. Samoa in about 1989 apparently illegally from the Philippines and has now been spread to a number of locations in Upolu.

# CLASSIFICATION OF VARIETIES

The edible bananas of the world belong to the Eumusa section of the genus *Musa*, except for the Fe'i group of bananas of the Pacific region which belong to the Australimusa section (Fig. 1). The Fe'i bananas are characterised by erect bunches and pink-red sap, and an orange, slimy fruit pulp that requires cooking.

Edible bananas and plantains belonging to the Eumusa section are believed to contain genomes from two wild species: *Musa acuminata* (A) and *M. balbisiana* (B). Most cultivated bananas are triploid and are classified according to characteristics estimating the contribution of the two parent species. Because the binomial Latin nomenclature for edible varieties, e.g. *Musa cavendishii* cultivar (cv.) Williams, proved unsatisfactory, they are referred to as, for example, *Musa* spp. (AAA Group, Cavendish Subgroup) cv. Williams. There are approximately 500 varieties of bananas and plantains. About 150 of these are primary clones, the rest are somatic mutants.

# IDENTIFICATION OF VARIETIES

Identification of banana varieties is difficult but is essential for choosing the correct type for marketing and for gaining understanding of pest and disease relationships.

Identification is made much easier once the observer has developed mental pictures of the different types of bananas. Photographs of varieties are therefore of great assistance and are particularly useful for inexperienced observers trying to identify a variety. Even for experienced observers, they can be a useful additional aid, particularly where large numbers of varieties are being considered and for those varieties not often seen.

This guide attempts to cover most of the banana varieties likely to be encountered in the

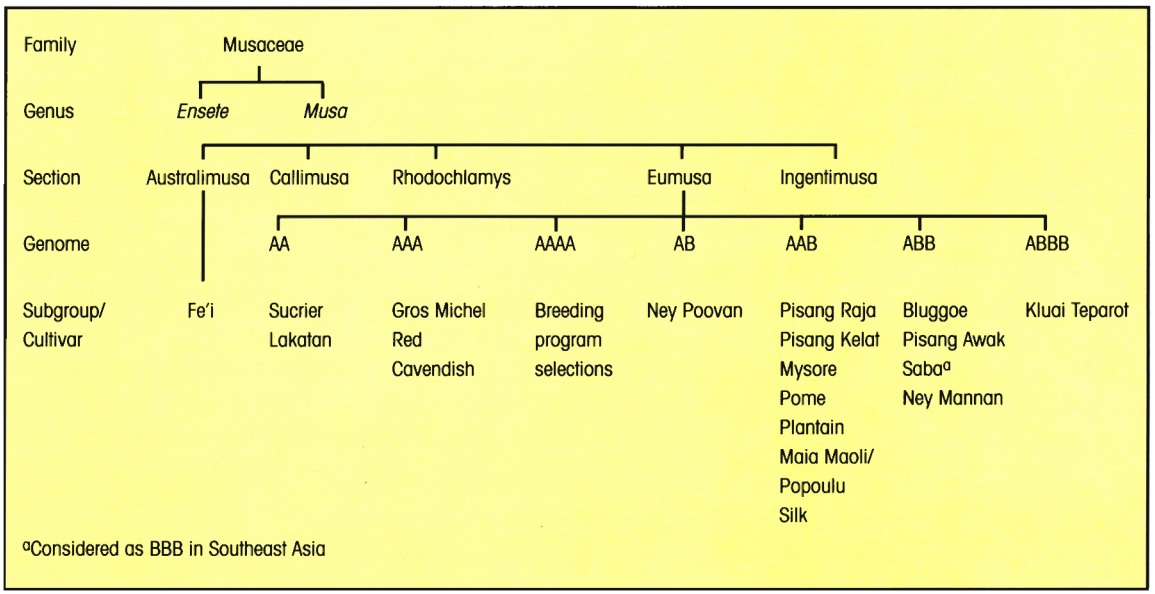


**Figure 1.** Systematic position of banana varieties (modified from Stover and Simmonds 1987).

South Pacific region. With this information, the ability to identify illegally introduced clones or the newer ones being evaluated for resistance to black Sigatoka will be enhanced.

Identifying varieties by deduction is far easier than by induction. That is to say, if the full range of varieties in a locality is known, for example by reference to photographs, then a specimen with unique morphological features can be identified readily.

However, difficulties occur when plants grown in an environment markedly different from that to which the observer is accustomed are presented for identification. Problems in identification also arise when the observer is exposed to a new variety, and no bunches are available for inspection.

To overcome these problems the following steps are proposed. First compare the variety to be identified with the photographs. Next, if further clarification is needed, refer to Table 3 and sequentially work through pseudostem height, distinguishing features, black Sigatoka reaction and bunch characteristics.

**Table 3**. Characteristics of indigenous and introduced banana varieties.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AA | Sucrier | (1) | Dessert | 7–13 | 2.5–3.5 | Res | Bright green leaves |
| | SH-3362 | (5) | Breeding | 20–35 | 3.5–4.5 | Res | 16–24 hands |
| | SH-3142 | (6) | Breeding | 10–20 | 3.0–4.0 | Res | Long stalk below bunch |
| | Lakatan | (7) | Dessert | 20–25 | 3.0–4.5 | Sus | Upright leaves, male bud apex obtuse |
| | Kluai Hom[d] | (4) | Dessert | 10–15 | 2.3–4.0 | Sus | |
| | Tuu Gia | (8) | Breeding | 7–10 | 2.5–3.0 | Res | |
| | Pisang Berlin | (2) | Dessert | 7–13 | 2.0–3.0 | n.a. | Bronze–purple flush on undersides of newly emerging leaves |
| | NBA 14 | (68) | Cooking | 4–6 | 2.0–3.0 | Res | |
| | Tubunatar | (32) | Cooking | 3–7 | 2.0–3.5 | n.a. | Red plant and fruit |
| | Tagamor | (39) | Cooking | 7–12 | 2.5–3.5 | n.a. | Red plant and fruit |
| | Paka | (67) | Breeding | 8–15 | 2.5–3.5 | Res[e] | Yellow–orange male bud |
| AAA | Williams | (10) | Dessert | 25–60 | 2.0–4.0 | Sus | Cavendish type |
| | Dwarf Cavendish | (9) | Dessert | 25–50 | 1.5–2.5 | Sus | Cavendish type, susceptible to Choke Throat |

**Table 3.** Characteristics of indigenous and introduced banana varieties — continued.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AAA | Gros Michel | (11) | Dessert | 25–45 | 4.0–5.5 | Sus | Distinctive curve in male axis below bunch |
| | Red Dacca (Red) | (49) | Dessert | 20–35 | 4.0–5.5 | Sus | Red plant and fruit |
| | Green Dacca (Green Red) | (50) | Dessert | 20–35 | 4.0–5.5 | Sus | Tissue chimera of Red Dacca |
| | Pisang Susu[f] | (17) | Dessert | 10–20 | 3.5–4.5 | n.a. | |
| | Kumakuma | (23) | Dessert | 10–20 | 3.5–4.5 | Res | |
| | Kluai Khai Bonng[g] | (3) | Dessert | 10–15 | 2.0–3.0 | Sus | |
| AAAA | TU8 | (13) | Dessert | 20–40 | 2.5–4.0 | Res[e] | Cavendish-like fruit |
| | Calypso | (14) | Dessert | 20–40 | 2.7–4.2 | Sus | Cavendish-like fruit |
| | SH-3436 | (15) | Dessert | 30–45 | 2.7–4.0 | Res | Light green fruit |
| | 2390-2 | (16) | Dessert | 15–30 | 2.3–4.0 | Sus | |
| AB | Ney Poovan | (55) | Dessert | 10–15 | 3.0–4.5 | n.a. | Subhorizontal bunch |
| AAB | Mysore | (19) | Dessert | 15–35 | 3.0–4.5 | Res | Distinctive pinkish–purple midribs |
| | Meika Initia | (20) | Dessert | 15–25 | 4.0–5.5 | Res | Bronze–purple flush on undersides of newly emerging leaves |

**Table 3.** Characteristics of indigenous and introduced banana varieties — continued.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AAB | Sugar (Silk) | (18) | Dessert | 10–25 | 3.0–4.5 | Sus | Unpleasantly astringent when not fully ripe, thin fruit peel |
| | Lady Finger (Pome) | (21) | Dessert | 10–30 | 3.5–5.0 | Sus | Subhorizontal bunch, thick fruit peel |
| | Santa Catarina Prata (Pome) | (22) | Dessert | 15–25 | 2.0–4.0 | Sus | Subhorizontal bunch, male flower and bract retention |
| | Pisang Kelat | (24) | Dessert | 15–20 | 3.0–4.5 | n.a. | |
| | Mamae | (61) | Dessert/ Cooking | 10–15 | 3.0–4.0 | Sus | Bronze–purple flush on undersides of newly emerging leaves, yellow fruit when unripe |
| | Kofi | (63) | Dessert/ Cooking | 20–35 | 2.0–3.0 | n.a. | |
| | Kumunamba | (62) | Dessert/ Cooking | 15–25 | 3.5–4.5 | n.a. | |
| | Pisang Nangka | (65) | Cooking | 20–35 | 3.0–4.0 | n.a. | Cavendish-like fruit |
| | Pisang Raja | (35) | Dessert/ Cooking | 15–25 | 3.5–4.5 | Sus | Retention of male flowers and bracts below bunch |

**Table 3.** Characteristics of indigenous and introduced banana varieties — continued.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AAB | Pacific Plantain | (25) | Cooking/ Dessert | 25–40 | 2.8–4.0 | Sus | Distinctive dark purple leaf bases |
| | Peurto Rican Dwarf Plantain | (26) | Cooking | 10–20 | 2.5–3.5 | Sus | Maia Maoli/Popoulu subgroup |
| | Mangaro Akamou | (27) | Cooking | 10–20 | 3.0–4.0 | Sus | |
| | Mangaro Torotea | (28) | Cooking | 30–45 | 3.5–4.5 | Sus | |
| | Puko | (29) | Cooking | 5–10 | 3.0–4.5 | Sus | |
| | Fa'i Samoa | (30) | Cooking | 25–35 | 3.5–4.5 | Sus | |
| | Horn Plantain | (33) | Cooking | 15–30 | 3.2–4.0 | Sus | Absence of male flowering axis |
| | Pisang Lampening | (34) | Cooking | 10 -15 | 3.0–4.0 | n.a. | Pale yellow–green fruit |
| | Tarapuakanio | (37) | Cooking | 10–15 | 3.0–4.0 | Sus | French Plantain |
| | Tarapuatouro | (38) | Cooking | 10–15 | 3.0–4.0 | Sus | False-Horn Plantain |
| | N'Jock Kon | (40) | Cooking | 25–40 | 3.0–4.0 | Sus | Male flower and bract retention |
| | Dwarf French Plantain | (36) | Cooking | 20–30 | 2.5–3.0 | Sus | Male flower and bract retention |

**Table 3.** Characteristics of indigenous and introduced banana varieties — continued.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AAB | Pisang Ramo | (66) | Cooking | 5–12 | 2.5–4.0 | n.a. | |
| | Tomnam | (31) | Cooking | 5–12 | 2.5–4.0 | n.a. | |
| AAAB | SH-3481 | (12) | Dessert | 25–40 | 2.7–4.0 | Res | Very high broad shoulders on male bud |
| ABB | Bluggoe | (41) | Cooking | 15–20 | 3.0–4.0 | Res | Very angular fruit |
| | Silver Bluggoe | (43) | Cooking | 15–20 | 3.0–4.0 | Res | Distinctive silvery wax bloom on fruit |
| | Monthan | (42) | Cooking | 20–30 | 3.0–4.0 | Res | Bulbous finger tips |
| | Pelipita | (56) | Cooking | 15–20 | 3.5–4.5 | Res | Male flower and bracts retained |
| | Blue Java | (44) | Dessert/ Cooking | 15–25 | 3.0–4.0 | Res | Distinctive silvery wax bloom on fruit |
| | Ducasse (Pisang Awak) | (Cover) | Dessert/ Cooking | 25–35 | 4.0–5.0 | Res | Wax bloom on fruit, very vigorous |
| | Kluai Namwa Khom | (54) | Dessert/ Cooking | 20–25 | 2.0–2.5 | Res | Dwarf form of Ducasse |
| | Kalapua No. 2 | (46) | Cooking | 15–30 | 3.5–5.0 | Res | Wax bloom on fruit |
| | Pisang Gajih Merah[h] | (45) | Cooking | 20–30 | 4.0–5.0 | Res | Wax bloom on fruit |
| | Kandrian | (47) | Cooking | 20–35 | 5.0–6.0 | Res | Extremely vigorous |

**Table 3.** Characteristics of indigenous and introduced banana varieties — concluded.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| ABB | Dwarf Kalapua | (53) | Cooking | 10–15 | 2.0–2.5 | Res | Wax bloom on fruit |
| ABBB | Rekua | (48) | Cooking | 15–25 | 3.5–4.0 | Res | Enormous male bud, droopy leaves |
| | Kluai Teparot | (51,52) | Dessert | 15–20 | 3.5–4.0 | n.a. | Unstable bunch characteristic (± male bud) |
| Wild Species | *Musa acuminata* ssp. *banksii* | (57) | Breeding | 5–12 | 3.0–4.0 | n.a. | Seeded |
| | *Musa acuminata* ssp. *malaccensis* | (58) | Breeding | 2–6 | 3.5–4.5 | Res | Seeded |
| | *Musa acuminata* ssp. *burmannicoides* | (59) | Breeding | 2–4 | 2.5–4.0 | Res | Seeded |
| | *Musa velutina* | (60) | Ornamental | 0.5–1.0 | 0.5–1.5 | n.a. | Seeded, upright bunch, pink–red fruit |
| Other | Soa'a | (64) | Cooking | 10–20 | 3.0–4.0 | Res | Red sap, upright bunch |

[a]Most varieties can be either consumed raw as a ripe dessert fruit or cooked either ripe or unripe. Major use is indicated.

[b]Bunch weights and pseudostem height are greatly affected by level of management and climatic conditions. Values presented generally obtained from north Queensland (Lat. 17°38'S) with a high level of management.

[c]Sus = Susceptible; Res = Resistant; n.a. = information not available.

[d]Distinct from Kluai Hom Thong (Gros Michel subgroup), Silayoi and Chomchalow (1987).

[e]Susceptible to the `strain' of black Sigatoka at Totokoitu Research Station, Rarotonga.

[f]Distinct from Pisang Raja Sereh/Pisang Rastali (Silk subgroup), Valmayor et al. (1990).

[g]Distinct from Kluai Khai (Sucrier/Pisang Mas), Silayoi and Chomchalow (1987).

[h]Saba type, genome considered as BBB in Southeast Asia. However, isozyme analysis indicates ABB, Jarret and Litz (1986).

**Table 3**. Characteristics of indigenous and introduced banana varieties — continued.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| AAB | Pisang Ramo | (66) | Cooking | 5–12 | 2.5–4.0 | n.a. | |
| | Tomnam | (31) | Cooking | 5–12 | 2.5–4.0 | n.a. | |
| AAAB | SH-3481 | (12) | Dessert | 25–40 | 2.7–4.0 | Res | Very high broad shoulders on male bud |
| ABB | Bluggoe | (41) | Cooking | 15–20 | 3.0–4.0 | Res | Very angular fruit |
| | Silver Bluggoe | (43) | Cooking | 15–20 | 3.0–4.0 | Res | Distinctive silvery wax bloom on fruit |
| | Monthan | (42) | Cooking | 20–30 | 3.0–4.0 | Res | Bulbous finger tips |
| | Pelipita | (56) | Cooking | 15–20 | 3.5–4.5 | Res | Male flower and bracts retained |
| | Blue Java | (44) | Dessert/ Cooking | 15–25 | 3.0–4.0 | Res | Distinctive silvery wax bloom on fruit |
| | Ducasse (Pisang Awak) | (Cover) | Dessert/ Cooking | 25–35 | 4.0–5.0 | Res | Wax bloom on fruit, very vigorous |
| | Kluai Namwa Khom | (54) | Dessert/ Cooking | 20–25 | 2.0–2.5 | Res | Dwarf form of Ducasse |
| | Kalapua No. 2 | (46) | Cooking | 15–30 | 3.5–5.0 | Res | Wax bloom on fruit |
| | Pisang Gajih Merah[h] | (45) | Cooking | 20–30 | 4.0–5.0 | Res | Wax bloom on fruit |
| | Kandrian | (47) | Cooking | 20–35 | 5.0–6.0 | Res | Extremely vigorous |

**Table 3.** Characteristics of indigenous and introduced banana varieties — concluded.

| Genome | Variety | Photograph No. | Use[a] | Bunch weight[b] (kg) | Pseudostem[b] height (m) | Black Sigatoka reaction[c] | Distinguishing features |
|---|---|---|---|---|---|---|---|
| ABB | Dwarf Kalapua | (53) | Cooking | 10–15 | 2.0–2.5 | Res | Wax bloom on fruit |
| ABBB | Rekua | (48) | Cooking | 15–25 | 3.5–4.0 | Res | Enormous male bud, droopy leaves |
| | Kluai Teparot | (51,52) | Dessert | 15–20 | 3.5–4.0 | n.a. | Unstable bunch characteristic (± male bud) |
| Wild Species | *Musa acuminata* ssp. *banksii* | (57) | Breeding | 5–12 | 3.0–4.0 | n.a. | Seeded |
| | *Musa acuminata* ssp. *malaccensis* | (58) | Breeding | 2–6 | 3.5–4.5 | Res | Seeded |
| | *Musa acuminata* ssp. *burmannicoides* | (59) | Breeding | 2–4 | 2.5–4.0 | Res | Seeded |
| | *Musa velutina* | (60) | Ornamental | 0.5–1.0 | 0.5–1.5 | n.a. | Seeded, upright bunch, pink–red fruit |
| Other | Soa'a | (64) | Cooking | 10–20 | 3.0–4.0 | Res | Red sap, upright bunch |

[a]Most varieties can be either consumed raw as a ripe dessert fruit or cooked either ripe or unripe. Major use is indicated.

[b]Bunch weights and pseudostem height are greatly affected by level of management and climatic conditions. Values presented generally obtained from north Queensland (Lat. 17°38'S) with a high level of management.

[c]Sus = Susceptible; Res = Resistant; n.a. = information not available.

[d]Distinct from Kluai Hom Thong (Gros Michel subgroup), Silayoi and Chomchalow (1987).

[e]Susceptible to the 'strain' of black Sigatoka at Totokoitu Research Station, Rarotonga.

[f]Distinct from Pisang Raja Sereh/Pisang Rastali (Silk subgroup), Valmayor et al. (1990).

[g]Distinct from Kluai Khai (Sucrier/Pisang Mas), Silayoi and Chomchalow (1987).

[h]Saba type, genome considered as BBB in Southeast Asia. However, isozyme analysis indicates ABB, Jarret and Litz (1986).

If this proves inconclusive, the ploidy level should be determined, preferably by making a chromosome count. If this is not possible, the following are useful indicators of ploidy.

- Diploids are generally smaller and less robust plants than triploids and tetraploids.
- Leaves of diploids are generally more upright and stiffer than triploids and tetraploids. The leaves of tetraploids are generally quite droopy.
- Leaf thickness, cell size and root diameter increases with increasing ploidy.
- The male bud of tetraploids is often proportionally larger than diploids and triploids.

The genome of triploids can then be determined using the simplified system of Shepherd (1990), the essential features of which are as follows.

- Dark coloured blotches on the pseudostem: the near absence of these usually separates ABB from the other groups, while their discrete form and low intensity often identify AAB to a practised eye; blotches are more or less heavily marked for AAA.
- Attitude of the petiole margins: this generally separates AAA ◡ from AAB ◡ and both from ABB ◡.
- Numbers of ovule rows: can confirm the separation of AAA and AAB from ABB (two basic rows in each loculus in AAA and AAB as against four in ABB).
- Bright internal pigmentation of the male bracts: brightness is an indication of a B genome and distinguishes AAB from AAA where anthocyanin on the inner surface of the latter, if present, is dull.
- Continuity of this pigment to the base of the bract (sometimes paler or with a corner yellow): also indicates a B genome almost invariably and aids in the separation of AAB from AAA.
- Red anthocyanin pigment in the male flower perianth is rarely absent in ABB or *M. balbisiana*, is sometimes absent in AAB, and occurs in AA and AAA only when a mutation imposes a strong anthocyanin pigmentation on all parts of the plant, including the fruits; e.g. AAA Red.

Some subgroups can then be determined using the keys of Stover and Simmonds (1987) reproduced in Table 4.

**Table 4**. Key for subgroups of triploid bananas (modified from Stover and Simmonds 1987).

| Genome | | | | | | |
|---|---|---|---|---|---|---|
| 1. | AAA | | | | | |
| | 1.1 | | | | Fruits slender (5 × or more as long as broad), markedly curved | |
| | | 1.1.1 | | | Fruits bottle-necked, undersheaths green or pale pink, fruits bright yellow at ripeness in tropical conditions | 'Gros Michel' |
| | | 1.1.2 | | | Fruit tips blunt, undersheaths bright red (especially on young suckers), fruits greenish at ripeness in tropical conditions | Cavendish subgroup |
| | 1.2 | | | | Fruits plump (3–4 × as long as broad), not or slightly curved | |
| | | 1.2.1 | | | Petioles, midribs and fruits red | 'Red' |
| | | 1.2.2 | | | Petioles with pink wings only, midribs pink beneath, green above, fruits green | 'Green Red' |
| 2. | AAB | | | | | |
| | 2.1 | | | | Compound tepal yellow–orange in colour; male axis sometimes absent or, if present, sometimes clothed with persistent male bracts and flower relicts | |
| | | 2.1.1 | | | Fruits slender, angular-pointed, flesh starchy at ripeness, unpalatable when raw | Plantain subgroup |
| | | | 2.1.1.1 | | Male axis persistent, usually clothed with persistent relicts of male flowers and bracts | French Plantain types |
| | | | 2.1.1.2 | | Male axis absent or degenerating early | Horn Plantain types |

**Table 4.** Key for subgroups of triploid bananas — continued.

| Genome | | | | | | |
|---|---|---|---|---|---|---|
| | AAB | 2.1.2 | | | Fruits plump, bottle-necked, flesh sweet | |
| | | | 2.1.2.1 | | Male bud slender, bracts deciduous | 'Pisang Kelat' |
| | | | 2.1.2.2 | | Male bud plump, bracts persistent | 'Pisang Raja' |
| | 2.2 | | | | Compound tepal white, variably flushed with pink, with teeth yellow or orange–yellow but not orange–yellow all over; male axis present, bracts and male flowers deciduous | |
| | | 2.2.1 | | | Midribs pinkish purple | 'Mysore' |
| | | 2.2.2 | | | Midribs usually[a] green | |
| | | | 2.2.2.1 | | Fruits blunt | Maia Maoli/ Popoulu subgroup |
| | | | 2.2.2.2 | | Fruits bottlenecked | |
| | | | | 2.2.2.2.1 | Mature fruits with white flesh, tending to split longitudinally and fall from the bunch at ripeness | 'Silk' |
| | | | | 2.2.2.2.2 | Mature fruits with creamy-white flesh not tending to split and fall at ripeness | Pome subgroup |
| 3. | ABB | | | | | |
| | | 3.1 | | | Bunch lax, fruits large, a starchy cooking banana | 'Bluggoe' |
| | | 3.2 | | | Bunch dense, fruits small, palatable when raw | 'Pisang Awak' |

[a]Some variants with purple–black or reddish midribs exist in the Maia Maoli/Popoulu subgroup.

Further assistance in identifying varieties will be provided by a computer program known as MUSAID, whose development by scientists from the Centre de Coopération Internationale en Recherche Agronomique pour le Developpement (CIRAD) in collaboration with the International Network for the Improvement of Banana and Plantain (INIBAP) is nearing completion. The program determines varieties on the basis of measurements of 100 or so taxonomic descriptors made and entered into the computer by the person seeking an identification.

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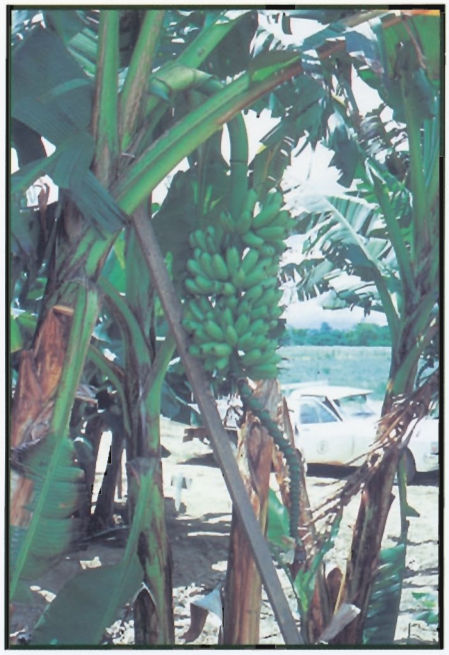
# PHOTOGRAPHS



1.
Sucrier

2.
Pisang
Berlin

3.
Kluai Khai
Bonng

4.
Kluai
Hom

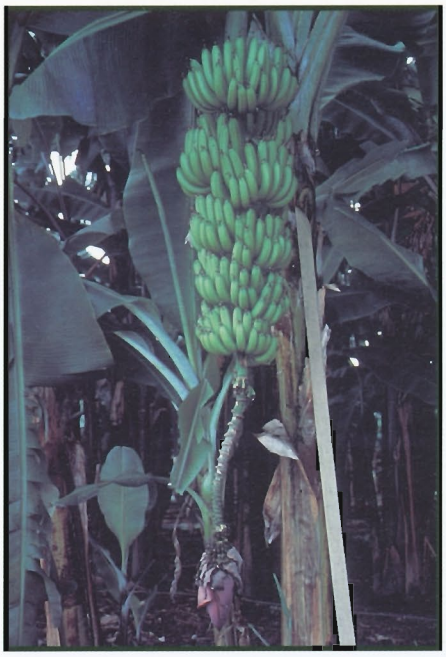
5.
SH-3362

6.
SH-3142

7.
Lakatan

8.
Tuu Gia

9.
Dwarf
Cavendish



10.
Williams

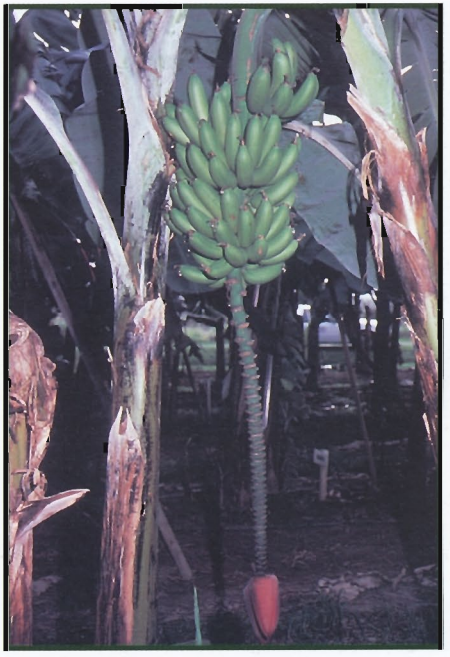
11.
Gros
Michel

12.
SH-3481

13.
TU8

14.
Calypso

15.
SH-3436



16.
2390-2

17.
Pisang
Susu

18.
Sugar

19.
Mysore

20.
Meika
Initia

21. Improved Lady Finger

22. Santa Catarina Prata

23. Kumukuma

24. Pisang Kelat

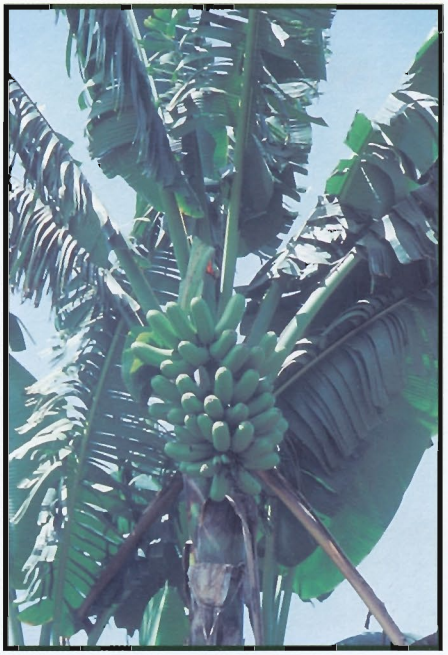
25. Pacific Plantain

26. Peurto Rican Dwarf Plantain

27. Mangaro Akamou

28. Mangaro Torotea

29.
Puko



30.
Fa'i
Samoa

31.
Tomnam

32.
Tubunatar

33.
Horn
Plantain

34.
Pisang
Lampening

35.
Pisang
Raja

36.
Dwarf
French
Plantain

37.
Tarapuakanio

38.
Tarapuatouro

39.
Tagamor

40.
N'Jock
Kon

41.
Bluggoe

42.
Monthan

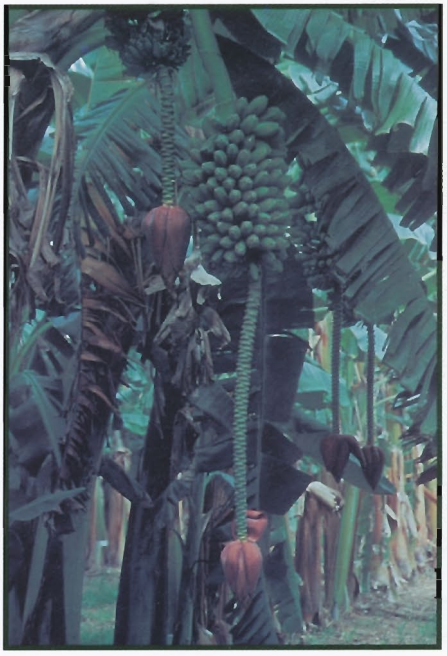
43.
Silver
Bluggoe

44.
Blue
Java

45.
Pisang Gajih
Merah

46.
Kalapua
No. 2

47.
Kandrian



48.
Rekua

49.
Red Dacca

50.
Green
Dacca

51.
Kluai
Teparot
with
male bud

52.
Kluai
Teparot
without
male bud

53.
Dwarf
Kalapua

54.
Kluai Namwa
Khom

55.
Ney
Poovan

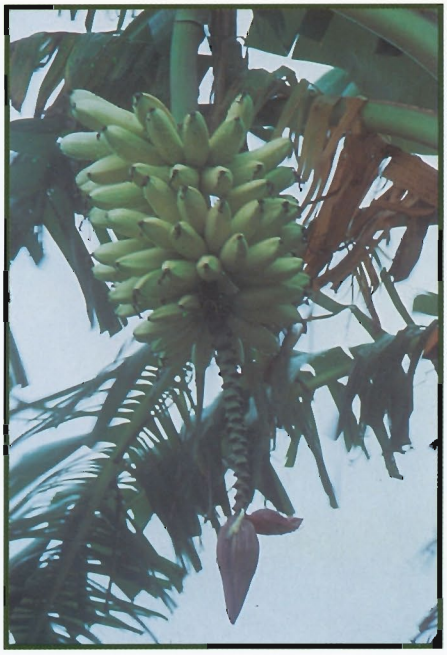
56.
Pelipita

57.
*Musa acuminata* ssp. *banksii*

58.
Pahang IR296
*Musa acuminata* ssp. *malaccensis*

59.
Calcutta IR124
*Musa acuminata* ssp. *burmannicoides*

60.
*Musa velutina*



61.
Mamae

62.
Kumunamba

63.
Kofi

64.
Soa'a

65.
Pisang
Nangka

66.
Pisang
Ramo

67.
Paka (D1)

68.
NBA 14

*Illustrated Guide to the Identification of Banana Varieties in the South Pacific* records and describes the banana varieties of Tonga, Western Samoa and the Cook Islands, including those introduced during two banana projects supported by ACIAR. Information on varieties found in Fiji is also included. The guide, which provides keys, descriptions, lists and colour photographs of the banana varieties, will be a valuable reference for banana research and extension workers in the South Pacific and elsewhere.

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