



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

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

Jeff Daniells

Department of Primary Industries  
South Johnstone,  
Queensland, Australia

Australian Centre for International  
Agricultural Research  
Canberra 1995

The Australian Centre for International Agricultural Research (ACIAR) was established in June 1982 by an Act of the Australian Parliament. Its mandate is to help identify agricultural problems in developing countries and to commission collaborative research between Australian and developing country researchers in fields where Australia has a special research competence.

Where trade names are used this constitutes neither endorsement of nor discrimination against any product by the Centre.

### **ACIAR Monograph Series**

This peer-reviewed series contains the results of original research supported by ACIAR, or material deemed relevant to ACIAR's research objectives. The series is distributed internationally, with an emphasis on developing countries.

© Australian Centre for International Agricultural Research, GPO Box 1571,  
Canberra ACT 2601, Australia.

Daniells, J. 1995. Illustrated guide to the identification of banana varieties in the South Pacific. ACIAR Monograph No. 33, 43p.

ISBN 1 86320 138 6

Technical editing, typesetting and layout by Arawang Information Bureau,  
Canberra, Australia.

Printed by CPN Publications, Canberra, Australia

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.

# CONTENTS

Introduction	1
Indigenous Varieties	1
Classification of Varieties	8
Identification of Varieties	8
References	19
Further Reading	20
Photographs	21–39



# INDEX TO PHOTOGRAPHS

	<i>page</i>		<i>page</i>		<i>page</i>
1. Sucrier	23	28. Mangaro Torotea	29	54. Kluai Namwa Khom	36
2. Pisang Berlin	23	29. Puko	30	55. Ney Poovan	36
3. Kluai Khai Bonng	23	30. Fa'i Samoa	30	56. Pelipita	36
4. Kluai Hom	23	31. Tomnam	30	57. <i>Musa acuminata</i>	37
5. SH-3362	24	32. Tubunatar	30	<i>ssp. banksii</i>	
6. SH-3142	24	33. Horn Plantain	31	58. Pahang IR296	37
7. Lakatan	24	34. Pisang Lampening	31	<i>Musa acuminata ssp.</i>	
8. Tuu Gia	24	35. Pisang Raja	31	<i>malaccensis</i>	
9. Dwarf Cavendish	25	36. Dwarf French Plantain	31	59. Calcutta IR124	37
10. Williams	25	37. Tarapuakanio	32	<i>Musa acuminata ssp.</i>	
11. Gros Michel	25	38. Tarapuatouro	32	<i>burmannicoides</i>	
12. SH-3481	25	39. Tagamor	32	60. <i>Musa velutina</i>	37
13. TU8	26	40. N'Jock Kon	32	61. Mamae	38
14. Calypso	26	41. Bluggoe	33	62. Kumunamba	38
15. SH-3436	26	42. Monthan	33	63. Kofi	38
16. 2390-2	26	43. Silver Bluggoe	33	64. Soa'a	38
17. Pisang Susu	27	44. Blue Java	33	65. Pisang Nangka	39
18. Sugar	27	45. Pisang Gajih Merah	34	66. Pisang Ramo	39
19. Mysore	27	46. Kalapua No. 2	34	67. Paka (D1)	39
20. Meika Initia	27	47. Kandrian	34	68. NBA 14	39
21. Improved Lady Finger	28	48. Rekua	34		
22. Santa Catarina Prata	28	49. Red Dacca	35		
23. Kumukuma	28	50. Green Dacca	35		
24. Pisang Kelat	28	51. Kluai Teparot	35		
25. Pacific Plantain	29	with male bud			
26. Peurto Rican	29	52. Kluai Teparot	35		
Dwarf Plantain		without male bud			
27. Mangaro Akamou	29	53. Dwarf Kalapua	36		

---

# 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)<sup>a</sup> and modified from Stover and Simmonds (1987)].

Genome	Simmonds 1966 'groupings'	Australia	Tonga	Western Samoa	Cook Islands <sup>b</sup>	Fiji <sup>c</sup>	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'amaa	Fa'i Palagi	Amoa Kauare(A)	Veimama	
	Pisang Masak Hijau	Lacatan	—	Fa'i Palagi	Amoa Kauare(A)	Veimama	
	Red	Red Dacca	Misi Peka <sup>d</sup>	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)
AAAA		Yangambi km 5	—	Fa'i Kumakuma or Fa'i Fia Misi Luki	—	—	Ibota, Mamoe Initia?
	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 <sup>b</sup>	Fiji <sup>c</sup>	Other identification
AAB	Plantain	French Plantain	—	—	Tarapuakanio (A)	—	
	n.a.?	Laknau	Hopa Fie Siaine	Fa'i Nifopovi <sup>c</sup> , Fa'i Talima	—	—	
	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) 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 <sup>b</sup>	Fiji <sup>c</sup>	Other identification
AAB	n.a.	—	Mamae Hehe Fanga	Fa'i Mamae Fa'i Mamae Ulu	—	—	Iholena, Morpa Yamunamba, Numelijo (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 Lahelaha	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	<i>Musa acuminata</i> ssp. <i>banksii</i>	<i>Musa acuminata</i> ssp. <i>banksii</i>	—	Fa'i Taemanu	—	—	Pahang, IR 296
	<i>Musa acuminata</i> ssp. <i>malaccensis</i>	—	—	—	Unnamed D2(R)	—	
	<i>Musa velutina</i>	<i>Musa velutina</i>	—	—	Unnamed (R)	—	
Other	Fe'i	Fe'i	—	Fa'i Soa'a	Utu (R) Vei (A)	—	

<sup>a</sup>Only those varieties personally identified by the author

<sup>b</sup>R = Rarotonga, A = Aitutaki

<sup>c</sup>Stover and Simmonds (1987)

<sup>d</sup>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	✓	✓	✓
	Grande Naine	✓	✓	✓
AAA	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	✓	–	–
	Ducassee	✓	✓	✓
	Monthan	✓	✓	–
	Pisang Gajih Merah <sup>a</sup>	✓	✓	–
	Kluai Niu Mue Nang	✓	✓	–
	Kluai Namwa Khom	✓	✓	✓
	Kalapua No. 2	✓	✓	✓
	Kandrian	✓	✓	✓
	Kluai Teparot	✓	✓	–
	Rekua	✓	–	–
Wild Species	Calcutta IR124 ( <i>Musa acuminata</i> ssp. <i>burmannicoides</i> )	✓	✓	✓
	Pahang IR296 ( <i>Musa acuminata</i> ssp. <i>malaccensis</i> )	✓	✓	✓

✓ = Introduced; – = not introduced

<sup>a</sup>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.

---

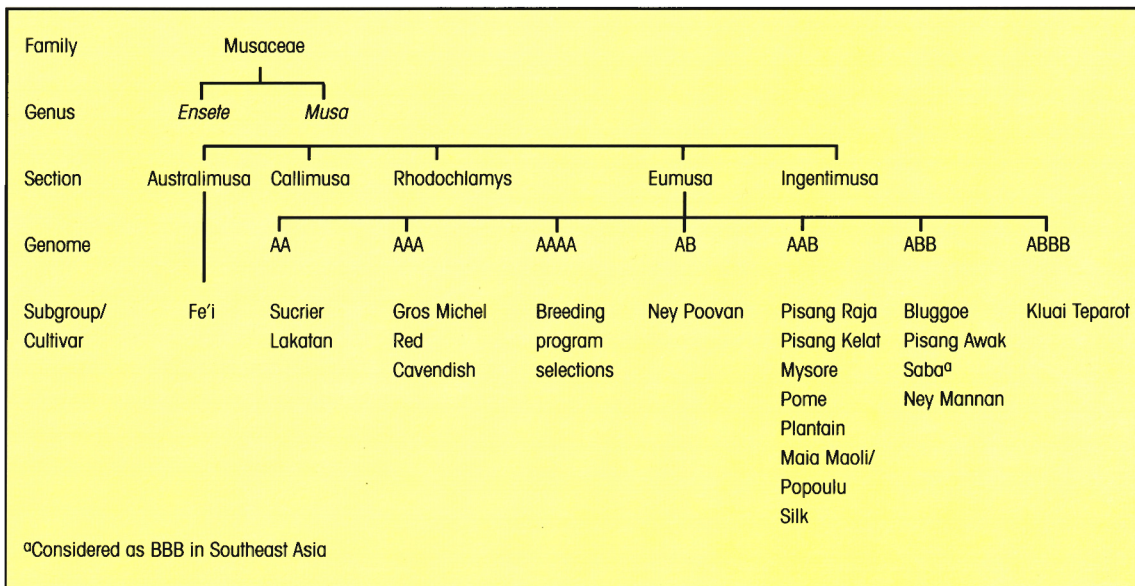
# IDENTIFICATION OF VARIETIES

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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 <sup>d</sup>	(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 <sup>e</sup>	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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 <sup>f</sup>	(17)	Dessert	10–20	3.5–4.5	n.a.	
	Kumakuma	(23)	Dessert	10–20	3.5–4.5	Res	
	Kluai Khai Bonng <sup>g</sup>	(3)	Dessert	10–15	2.0–3.0	Sus	
AAAA	TU8	(13)	Dessert	20–40	2.5–4.0	Res <sup>e</sup>	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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 Torolea	(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
	Tarapuatoouro	(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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 <sup>h</sup>	(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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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	<i>Musa acuminata</i> ssp. <i>banksii</i>	(57)	Breeding	5–12	3.0–4.0	n.a.	Seeded
	<i>Musa acuminata</i> ssp. <i>malaccensis</i>	(58)	Breeding	2–6	3.5–4.5	Res	Seeded
	<i>Musa acuminata</i> ssp. <i>burmannicoides</i>	(59)	Breeding	2–4	2.5–4.0	Res	Seeded
	<i>Musa velutina</i>	(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

<sup>a</sup>Most varieties can be either consumed raw as a ripe dessert fruit or cooked either ripe or unripe. Major use is indicated.

<sup>b</sup>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.

<sup>c</sup>Sus = Susceptible; Res = Resistant; n.a. = information not available.

<sup>d</sup>Distinct from Kluai Hom Thong (Gros Michel subgroup), Silayoi and Chomchalow (1987).

<sup>e</sup>Susceptible to the 'strain' of black Sigatoka at Totokoitu Research Station, Rarotonga.

<sup>f</sup>Distinct from Pisang Raja Sereh/Pisang Rastali (Silk subgroup), Valmayor et al. (1990).

<sup>g</sup>Distinct from Kluai Khai (Sucrier/Pisang Mas), Silayoi and Chomchalow (1987).

<sup>h</sup>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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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 <sup>h</sup>	(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 <sup>a</sup>	Bunch weight <sup>b</sup> (kg)	Pseudostem <sup>b</sup> height (m)	Black Sigatoka reaction <sup>c</sup>	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	<i>Musa acuminata</i> ssp. <i>banksii</i>	(57)	Breeding	5–12	3.0–4.0	n.a.	Seeded
	<i>Musa acuminata</i> ssp. <i>malaccensis</i>	(58)	Breeding	2–6	3.5–4.5	Res	Seeded
	<i>Musa acuminata</i> ssp. <i>burmannicoides</i>	(59)	Breeding	2–4	2.5–4.0	Res	Seeded
	<i>Musa velutina</i>	(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

<sup>a</sup>Most varieties can be either consumed raw as a ripe dessert fruit or cooked either ripe or unripe. Major use is indicated.

<sup>b</sup>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.

<sup>c</sup>Sus = Susceptible; Res = Resistant; n.a. = information not available.

<sup>d</sup>Distinct from Kluai Hom Thong (Gros Michel subgroup), Silayoi and Chomchalow (1987).

<sup>e</sup>Susceptible to the 'strain' of black Sigatoka at Totokoitu Research Station, Rarolonga.

<sup>f</sup>Distinct from Pisang Raja Sereh/Pisang Rastali (Silk subgroup), Valmayor et al. (1990).

<sup>g</sup>Distinct from Kluai Khai (Sucrier/Pisang Mas), Silayoi and Chomchalow (1987).

<sup>h</sup>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 <sup>a</sup> 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'

<sup>a</sup>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 Développement (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.

---

## REFERENCES

- Daniells, J.W. 1990. The banana varieties of Tonga, Western Samoa and the Cook Islands. *Musarama*, 3, 6–10.
- Jarret, R.L. and Litz, R.E. 1986. Determining the interspecific origins of clones within the 'Saba' cooking banana complex. *HortScience*, 22, 1433–1435.
- Shepherd, K. 1990. Observations on the Simmonds–Shepherd system of genomic classification of banana cultivars. In: *Musa conservation and documentation: proceedings of a workshop held in Leuven, Belgium, 11–14 December 1989*. International Network for the Improvement of Banana and Plantain, 47p.
- Silayoi, B. and Chomchalow, N. 1987. Cytotaxonomic and morphological studies of Thai banana cultivars. In: Persley, G.J. and De Langhe, E.A., ed., *Banana and plantain breeding strategies: proceedings of an international workshop held at Cairns, Australia, 13–17 October 1986*. ACIAR Proceedings No. 21, 157–160.
- Stover, R.H. and Simmonds, N.W. 1987. *Bananas*. London, U.K., Longman.
- Valmayor, R.V., Jones, D.R., Subijanto, Polprasid, P. and Jamaluddin, S.H. 1990. *Bananas and plantains in Southeast Asia*. Montpellier, France, INIBAP.

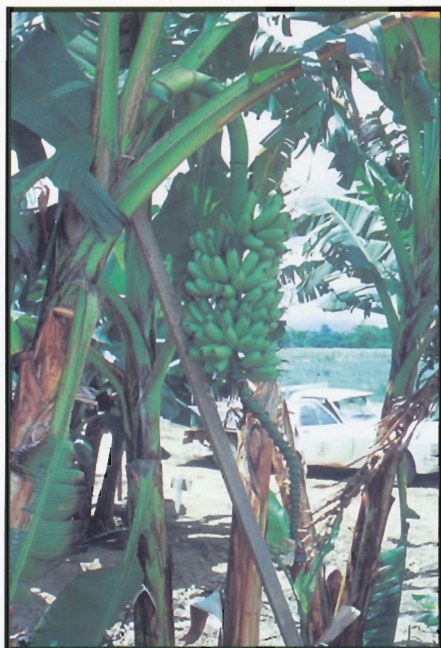
---

## FURTHER READING

- 
- Cable, W.J. 1983. Les bananes à cuire des îles Samoa. *Fruits*, 38, 351–353.
- Christopherson, E. 1935. Flowering plants of Samoa. *B.P. Bishop Museum Bulletin*, 128.
- Daniells, J.W. 1986. Banana cultivars in Australia. *Queensland Agricultural Journal*, 112, 75–84.
- Hotta, M. 1964. The edible bananas in Tonga. *Acta Phytotaxonomy and Geobotany*, 21, 1–7.
- MacDaniels, L.H. 1947. A study of the 'Fe'i' banana and its distribution with reference to Polynesian migrations. *B.P. Bishop Museum Bulletin*, 190.
- Pope, W.T. 1926. Banana culture in Hawaii. *Hawaii Agricultural Experiment Station Bulletin*, 55.
- Simmonds, N.W. and Shepherd, K. 1955. The taxonomy and origins of the cultivated bananas. *Journal of the Linnaean Society of London Botany*, 55, 302–312.
- Watson, B.J. 1993. Major banana cultivars in Pacific atoll countries. *Infomusa*, 2(2), 19–20.
- Wilder, G.P. 1931. Flora of Rarotonga. *B.P. Bishop Museum Bulletin*, 86.

# PHOTOGRAPHS





1.  
Sucrier



2.  
Pisang  
Berlin



3.  
Kluai Khai  
Bonng



4.  
Kluai  
Hom



5.  
SH-3362



6.  
SH-3142



7.  
Lakatan

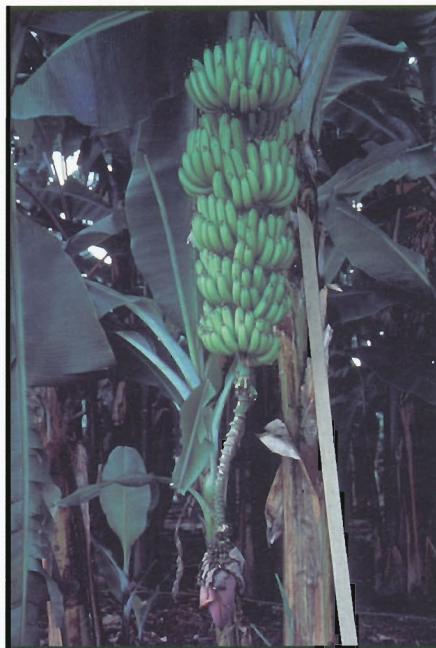


8.  
Tuu Gia





9.  
Dwarf  
Cavendish



10.  
Williams



11.  
Gros  
Michel



12.  
SH-3481



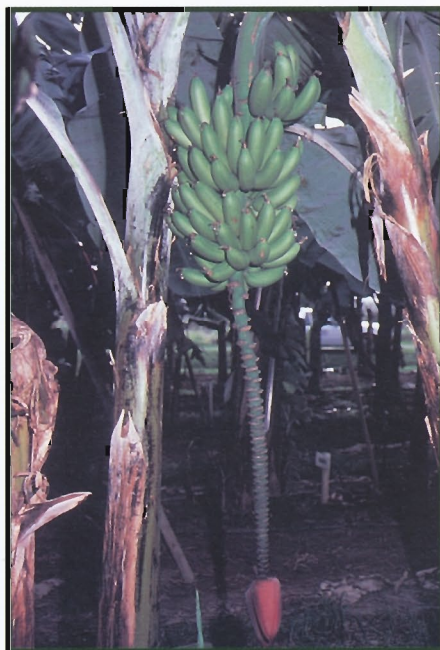
13.  
TU8



14.  
Calypso



15.  
SH-3436



16.  
2390-2





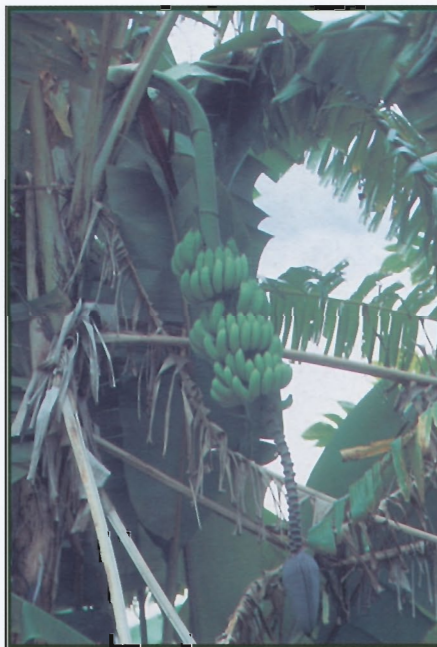
17.  
Pisang  
Susu



18.  
Sugar



19.  
Mysore



20.  
Meika  
Inifia



21.  
Improved  
Lady  
Finger



22.  
Santa  
Catarina  
Prata



23.  
Kumukuma



24.  
Pisang  
Kelat





25.  
Pacific  
Plantain



26.  
Peurto  
Rican  
Dwarf  
Plantain



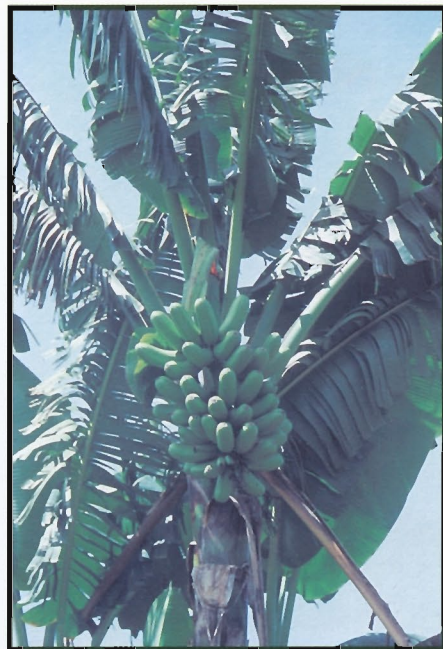
27.  
Mangaro  
Akamou



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.  
Tarapatouro



39.  
Tagamor



40.  
N'Jock  
Kon





41.  
Bluggoe



42.  
Monthan



43.  
Silver  
Bluggoe



44.  
Blue  
Java



45.  
Pisang Gajah  
Merah



46.  
Kalapua  
No. 2



47.  
Kandrian



48.  
Rekua





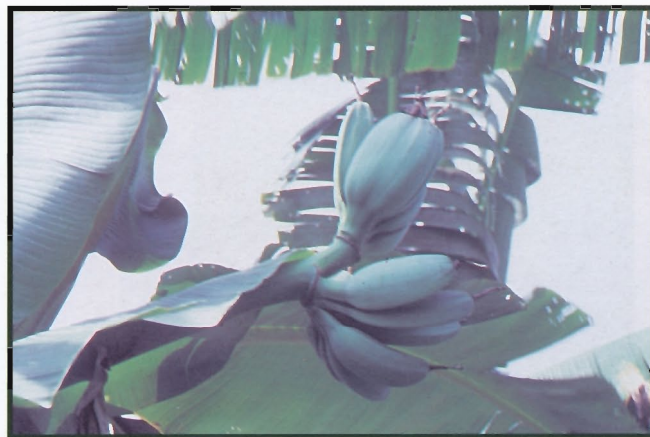
49.  
Red Dacca



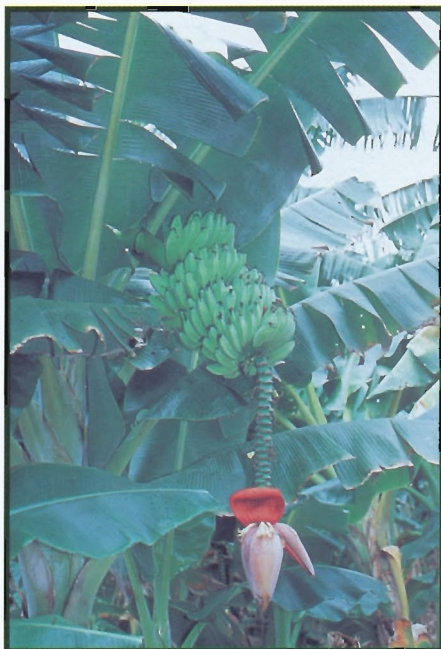
50.  
Green  
Dacca



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.



The Australian Centre for International Agricultural Research