

# Banana Guide for the CNMI

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Information in this booklet is provided as general advice only.  
For application in specific cases, contact your  
NMC-CREES Extension Agent

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## Introduction:

Bananas are widely grown in the CNMI and are an important food crop for domestic consumption and are for sale on the local market. Exports of green bananas to Guam are increasing and this business is expected to expand. There is also a growing demand for value added banana products, which command a premium price.

The information contained in this guide has been obtained through variety trials of banana conducted under the USDA approved project awarded to Dr. Dilip Nandwani 'In-vitro Propagation, Conservation and Field Evaluation of Banana in the Northern Mariana Islands'. Field trials of new varieties of banana conducted through out the CNMI from 2007 to 2010. The new varieties, having been tested in several other Pacific islands before, were imported from the regional germplasm center of the Secretariat of the Pacific Community (SPC), and were produced through tissue culture. They were distributed to farmers in Saipan, Rota and Tinian after having been at Northern Marianas College-Research, Extension and Education Service's (NMC-CREES) As Perdido Agriculture Experiment Station. The objective of the research was to investigate the adaptability of new varieties to grow in the CNMI's soil and climate conditions. Varieties were selected for the trials based on their superior agronomic characters such as high yielding, disease and pest resistance, growth and taste. At present, 14 varieties of cooking and dessert banana have been evaluated with two successfully accomplished crop cycles in all the three main islands of the CNMI. Several hundred plants of new banana varieties were distributed to the farming community during the trial period for commercial production .

There are two species of banana, *Musa acuminata* and *M. balbisiana*, and most cultivars are hybrids of these species. The main varieties of banana grown for commercial purposes are Cavendish (*Musa* spp.) and Plantain with increased productions in recent years. Banana cultivars vary greatly in plant and fruit size, plant

morphology, fruit quality, disease and insect resistance. All the large banana and plantain growing areas are in the tropics between 20 0N and S latitude. The CNMI's tropical climate is ideally suited for the production of banana. However, the crop is affected by a host of factors, including increasing incidences of pests and diseases, weeds, soil infertility, poor and lack of availability of planting materials, limited genetic diversity, natural disasters, animal damages, sea water intrusion into water wells.

Agronomic data listed on the following pages are the average of at least 6 plants of each variety.

Results may vary based on farm location, soil and climatic conditions.

For more information contact Dr. Dilip Nandwani, Program Leader (Crop Improvement and Production), at NMC-CREES, phone 234 5498 x1727 or email [dilipn@nmcnet.edu](mailto:dilipn@nmcnet.edu).



# Growing Banana

Banana can be grown easily if some requirements in regards to climate and soil are met. Wind is the banana's biggest enemy. 30 mph wind speeds can break petioles, while a wind blowing with 60 mph can uproot whole plantations. Wind breaks around banana plots provide some protection to the plants. Banana plants are reported to be moderately shade tolerant (up to 50%). Excessive shade produces stunted plants with small, poor quality fruit.

In the CNMI, bananas will do best where the soil is relatively deep, with good internal drainage and a high content of organic matter. The soil should have a pH between 5.6 and 6.0. Bananas are usually planted at the beginning of the wet season but can be planted all year round.

## Planting:

There are two ways of plant banana, either in holes or in pits.

## Hole Planting:

Dig holes 10 x 10 x 10 feet, fill half the depth with compost and any rotten debris. Examples include: wood ashes, compost and along with about 50 pounds of manure and fertilizer.

## Pit-System:

The advantage of the Pit-System is that the organic matter is bulking within the pit, while the banana plants (shoots) are planted on the side of the three to five feet deep 7 feet wide pit. The spacing used in banana production will vary with the cultivar and soil fertility. In general, the higher the soil fertility the greater would be the plant population density.

Commercially, plant spacing of 8 x 8 to 11 x 11 ft result in 360 to 680 plants per acre respectively. Closer spacing results in higher yields and less weeds, but usually also result in slightly less hands per bunch, moderate to much reduced bunch weight and a slight delay in time to bloom.



Banana grown in a narrow pit system

In the CNMI, bananas are grown under rain-fed conditions. Bananas require large amounts of water (about 4-6"/month) and are very sensitive to drought. Severe drought conditions results in increased time to flowering and fruiting, reduced fruit size, fruit number, and crop yields. Mulching around the base of the plant with organic matter can help a great deal to conserve soil moisture. Of the two types of bananas, the cooking varieties (AAB) seem to grow better under dry conditions than the dessert varieties (AAA) on island soils.

There are four different types of planting materials: 1. Maiden suckers, 2. Sword leaf suckers, 3. Peeper, and 4. Water suckers. Sword suckers is the best choice. It is very important in management of bananas to select correct sucker for next crop and quality bunches. Sword suckers are tapered with a large base with small narrow leaves. Water suckers have broad leaves at an early age and also lack the distinctive taper of sword suckers. Water suckers usually develop from the corm of previously harvested plants and unsuitable as they lack a strong attachment with the corm of the plant and thus suffer an early nutritional deficiency causing production of small uneconomical bunches. They take longer till bunching and are also more prone to falling over. Banana is propagated commercially from plantlets derived from tissue culture. The advantage of this system is that plants are



uniform and free of nematodes and most diseases. However it takes one year before plants attain a sufficient size to be planted in the field.

#### **Fertilizer:**

Sustainable agriculture is based on soil management systems built on organic matter additions. Studies in the past have shown that the use of composting, fresh organic matter and animal manure can increase crop production. Organic fertilizers are excellent for improving island soil conditions and provide variable amounts of macro-nutrients (NPK) which must be taken into account if imbalances are to be avoided; they may also supply all the micro-nutrients needed. Organic manures is very valuable in improving the structure of soils and could assist in moisture retention and reduce porosity. Chicken manure at rates of 15-50 t/acre, could be used along with residues such as coconut core fiber along with other crop residues. Copious mulching with grasses or branches could be used also. To achieve high yields in soils, organic matter content in the soil can be improved by returning around 80 t/acre/year of plant residues. Care must be taken to ensure that adequate amounts of all macro- and micro-nutrients are provided. If abundant organic manure is used it may not be necessary to use additional N fertilizer. However, in soils it will be necessary to apply K (potassium) fertilizer since it is easily leached out.

Most fertilizers are hand-spread except when basal dressings are incorporated during land preparation. Applications in practice are often concentrated within a circle of 3-5 feet diameter around the pseudo-stem, or (after flowering) in a crescent shape around the daughter plants. Foliar sprays of Zn (zinc) or Mn (manganese) can be applied at rates 5-10 lb./acre. One to three times a year is sufficient and is better than soil applications which is ineffective because of blocking antagonisms. Alkaline or "limy" soils reduce the availability of a few plant nutrients, especially iron (important for chlorophyll), which limit growth and is difficult to correct. Wind and

salt sprays near shore can also affect plant growth. Apply the following amounts of fertilizer per plant. At planting apply 1.75 oz. Ammonium Sulphate (sandy soil), or 1.5 oz. Ammonium Nitrate (red soil), 1.5 oz. Triple Super Phosphate and 1.75 oz. Muriate of Potash. Repeat every two months applying fertilizer every two months in a circle of 3-5 feet around the plant. This is very important especially after flowering.

#### **Management:**

Remove dead leaves, keep one or two strong suckers and control weeds with hoe or carefully apply herbicide. The primary purpose of leaf pruning is to reduce the amount of leaf disease inocula and minimize the chance of burning. The dry/diseased leaves are cut once a month. For leaves with less than 50% affected, trimming is done. Dry leaves and leaf sheaths are removed and piled at the middle of the row one to two feet away from the mat/hill to eliminate a habitat for insects.

After bunches are beginning to mature cut off the male inflorescence (male bud) six to eight inches below the bottom of the last flower.. The male bud is removed after the last hand appears. This is done to re-channel the food produced by the plants to the developing fruits. Fruits are bagged to protect it from pest damage and injuries. It is done when the last hand in the bunch had fully emerged. Fruit bearing plants must be supported with a forked pole. Mulch around the plant with grass mowing, leaves etc. Intercrop with pumpkin. Watermelon, eggplant, or sweet potato.

#### **Suckering:**

It is possible to produce 8-10 suckers per plant the first year under ideal growing conditions. The number of suckers diminishes in the following years. Some varieties sucker more than others. A high degree of suckering is wanted in cases where it is necessary to increase the planting material of a desirable clone for distribution to farmers and certain techniques are used to increase suckering.

If the banana plant is left alone, it will soon be

surrounded by many suckers. Sucker production must be controlled else they will compete with the mother plant for water and plant food and so the fruit formed by the mother plant will be very small and yields will lessen. All the useless suckers should be cut out before they get too big. To make sure that we have only one or two strong suckers for the next generation, allow only one new sucker to grow every three months.



Preparing sword sucker for transplanting

### **Propping Bunches:**

The fruit bunch appears at the top of the plant when it is about nine to ten months old. About 70 days after the fruit begins to grow. Two things need to be done when the bunch begins to develop and getting heavier: A long piece of wood should be used to put under the stalk of bunch to support (propping). Propping is done to prevent fruit loss by supporting the tree from strong winds and to avoid tipping over when the bunch gets heavy. Bamboos or wooden poles

may be used as props and these are placed as soon as the inflorescence has fully emerged. If this is not done, a strong wind may blow the plant down. Remove leaves touching the fruits and reposition the props to prevent the fruits from injuries.

Depending upon variety the fruit bunch is normally ready for harvest in about 8-10 months on the average. The first crop after planting is called the plant crop and later crops from the suckers are called ratoon crops. The time from shooting to fruit harvest depends upon temperature, cultivar, soil moisture, and cultural practices and ranges from 80-180 days. The banana plant starts to produce flowers in 7 – 12 months after planting and is ready for harvesting about 7 – 11 weeks after, depending on the cultivar. The 'follower' plant (ratoon) will produce 3 – 4 months later, thus about four harvests from 1 clump per year is possible.



Cleaned sword sucker ready to be planted



## Pests and Diseases:

Insect pest and diseases are among the most important factors that affect banana production in CNMI. Planting traditionally from the old crop can spread soil born diseases and pests to the new fields.

Before you use any chemicals, make sure you have read and understood the labels on the package. If in doubt, contact NMC-CREES Entomology lab at 234-5498 x1432

### Insects:



**Banana aphids** occurs in large colonies in the crown and base of tender leaves. The adults, which are all females give live birth without fertilization. Wingless adults are about 1.5 mm in length and may vary in color from reddish to brown to almost black. Winged forms are produced when the colony becomes crowded. It can spread bunchy top virus. Banana aphids can be controlled with insecticide. The population level is usually kept low by predators.

The **Chinese Rose Beetle** attacks several plant species. Year round, these nocturnal beetles feed in groups, devouring the soft part of banana leaves (between the veins), leaving behind a lace-like pattern in what remains. By day, they hide in the soil or beneath fallen leaves.





The **Banana Leaf Roller** is a brown moth that lays its eggs on banana leaves. Once the eggs hatch, the larvae (caterpillars) cut a strip of leaf and roll it into a distinctive leaf roll. The larva, covered in a whitish powder, will evolve into a pupa or cocoon inside the roll. The leaf rolls can simply be squeezed by hand to crush the larvae. Leaves which have been damaged by leaf rollers should not be removed because they are needed to conduct photosynthesis.



Not insects, but **Rats** cause a lot of damage to bananas. They eat single fingers, making the whole bunch unsuitable for consumption. While climbing up the banana plant, their claws can damage leaves and pseudostem.

**Nematodes** are not insects, but rather microscopic worms. They drill tiny holes into the banana's corm and roots to suck plant juices. These holes make the banana plant susceptible for secondary diseases. Additionally, there is the danger that root knots develop on nodes which clog up the xylem and phloem. This will prevent water and nutrients from distributing throughout the plant. The plant will starve.

Nematodes can be avoided by using only clean, healthy suckers, preferably from tissue cultured material. Once your lot is infested by nematodes, don't plant any bananas for at least three years - rotate crops immediately.





**Mealy Bugs** suck the plant sap from the lower surfaces of leaves. Heavy infestations cause the leaf to dry up and die. The honeydew produced serves as a substrate for the growth of sooty moulds.



The **Spiraling Whitefly** sucks sap from the Banana leaves and in heavy infestations may cover the under side of the leaf. Affected mature leaves appear yellowish-red on the upper surface.



↑ The **Coconut Scale** sucks sap from the leaves and fruits. Infested plants show yellow areas on the upper surfaces of leaves.



← Formic acid from **Long Legged Ants** living in banana bunches burns the finger's skin.



## Diseases:

Diseases are coming from fungi, viruses, bacteria and can also be caused by animals. The latter are most often secondary diseases. An animal pierces the plant and opens the gate for inocula to enter the plant.

In the limited space of this book we cannot go into all diseases that can cause harm to your banana. Therefore, we invite you to contact NMC-CREES at 234-5498 x1707 for further information.



The major disease found in banana in the CNMI is the **Banana Bunchy Top Virus** (BBTV). This disease is spread by banana aphids. Aphids suck sap from the plant tissue and can acquire the virus and transmit to healthy plants. Additionally it can be spread by heavy winds.

The virus leads to stunted growth that gives bananas a bunchier than normal look and eventually takes away a plant's ability to produce fruit at all. So far, there is no known remedy against this virus. Fighting aphids helps to slow down its spread. Infected plants should be killed.

**'Mushroom Disease'** is caused by a fungus that actually produces small, white mushrooms at the base of the plant or in the lower dead leaf sheaths. Invasion occurs in dead leaf sheaths near the ground that are clasp the "trunk". When these are pulled off, a white fungal mat can be seen and, with wet conditions, infections will cause a brown wet rot. The outer leaves turn yellow and collapse, much resembling symptoms of Fusarium Wilt. Reducing irrigation, detrash old leaves and remove the outer dead leaf sheaths. The pathogen is *Marasmiellus inoderma*.





**Black Leaf Streak (BLS) or Black Sigatoka** are caused by airborne fungi. Fertilizing and mulching can help the plant to resist infections. It can be controlled by pruning and burning of infected leaves. There are chemical fungicides available (Gavicide 145, Dithane M-45 and Benlate).

**Fusarium Wilt (Panama Disease)** is another fungus that attacks plants with nutritional deficiencies. It attacks the roots and cannot be controlled with fungicides. If possible sterilize the soil and move to resistant varieties.



**Freckle Disease of Banana** is a disease of banana leaves and fruit (freckles). It is caused by a fungus, which has two names, *Phyllosticta musarum* and *Guignardia musae* (the fungus produces two types of spores). Severe infection results in yellowing of the leaf, which withers and dies. Large and small spots are found on leaves and fruits. The most characteristic symptom is a sandpaper feel to the leaf and fruit, caused by the fungal structures protruding through the surface of the leaf. Banana freckle disease is a significant threat to Cavendish bananas in various countries. Banana freckle is reported as being more devastating on Cavendish than Black Sigatoka.



## Tissue culture (micro-propagation)

A major constraint to the expansion of traditional banana production is the scarcity of healthy planting materials. Farmers usually depend on natural regeneration of plants for the supply of planting materials. The multiplication rate of many varieties is low. In many cases one plant produces, depending on the cultivar, 6-8 suckers in a year on average. This is a very slow process that often results in small numbers of planting materials which are usually contaminated by various soil-borne pathogens such as nematodes, bacteria and fungi. These circumstances shorten the life of plantations to only one or two cycles of cultivation. This may prevent production increases. An increased production of healthy planting material can be achieved through a combination of two rapid multiplication techniques, tissue culture (micro-propagation) and macro-propagation.



Preparation of tissue culture plant material in the lab

The tissue culture method produces a large numbers of plantlets derived from shoot tip culture in the tissue culture laboratory. The cultures develop in closed containers within a sealed environment until they have grown roots stable enough to be transplanted into a greenhouse for hardening. The only problem is that it takes on the average one year to develop the protocol of regeneration and multiplication through tissue culture in a given new variety and the first plantlets are ready for planting in the field. However, this method has several advantages, like providing disease free, uniform planting materials with known agronomical properties.

The macro-propagation technique is used in the field to increase the multiplication rate so as to provide large quantities of planting material in a relatively short time. Vigorous sword suckers are ideal for planting a new crop as they originate from deep buds. Their development is well about a feet tall from the parent plant. After desuckering, new suckers develop which are unsuitable for replanting. Trim the leaves and leaves sheath and about 6" planting piece planted in upward orientation in the soil covered by little soil on the top . It is recommended to obtain planting material from nurseries for new plantings rather than suckers collected from young ratoon crops. Digging of large suckers may weaken parent plant and lower yields.

It is very important to collect sword suckers from a healthy, disease-free mother/parent plant, to prepare the sucker and to plant it with the proper method for a healthy and productive crop.





# Local Varieties



The following varieties have been produced locally for a long time. Captions underneath the pictures are explained as follows: Variety, Genome (if known), Common Name or Subgroup, Type and Resistance to Diseases.

Local varieties are known commonly by their country/place of origin.

Not pictured in the list is *var. Guahu*



*var. Long*  
Cooking, Resistant



*var. Galazan*, ABB, Bluggoe  
Cooking, Resistant

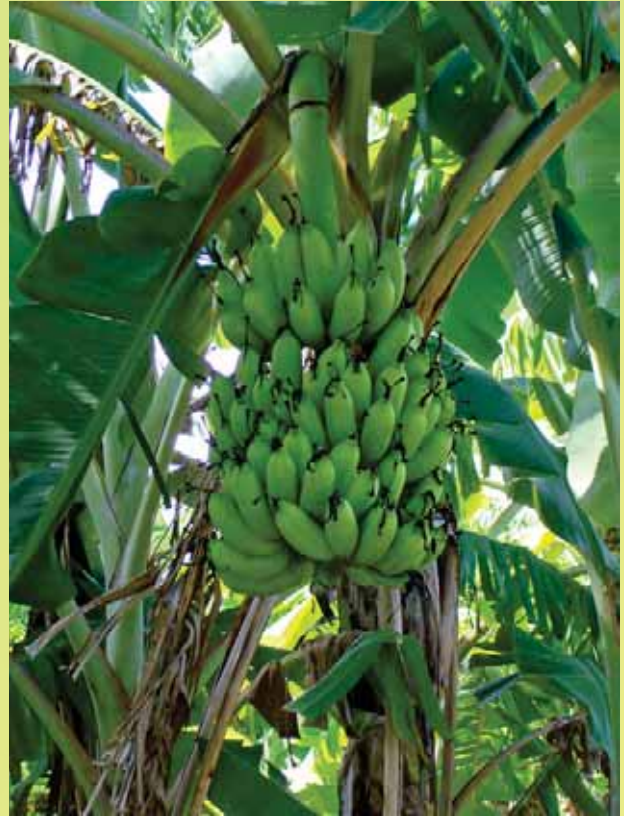


*var. Dama (long)*, BBB, Saba  
Cooking (not preferred), Highly Resistant





*var. Dama* (short), BBB, Saba  
Cooking, Highly Resistant



*var. Manila*, AAB, Silk  
Desert, Susceptible



*var. Tanduki*, AAB, Horn Plantain  
Cooking, Highly Resistant



*var. Fiji*, AAB, Mysore  
Dessert, Highly Resistant





*var. Macau, AAA, Lakatan*  
Dessert, Resistant (Panama Disease)



*var. Chodan Guam, AAA, Dwarf Cavendish*  
Dessert, Resistant



*var. Taiwan, AAA, Williams*  
Dessert, Susceptible



*var. Ice Cream, ABB, Blue Java*  
Dessert, Resistant





*var. Red/Brown Banana*, AAA, Fire Banana  
Dessert, Resistant (Panama Wilt)



*var. Purple Banana*, AAA, Blue Java  
Dessert, Resistant (Panama Wilt)



*var. Banditto*, ABB, Praying Hands  
Dessert, Resistant



*var. Wild Banana*, *Musa* spp.  
Dessert, Resistant



# Saba

**Genome:**

BBB

**SPC-CePCT Accession #:**

Saba

**Common Name/Subgroup:**

Saba

**Type:**

Cooking

**Plant Height:**

12'5"

**Stem Diameter:**

36"

**Maturity (months):**

15.2

**# of Hands/Bunch:**

8

**# of Fingers/Hand:**

16

**Bunch Weight (lb):**

35

**Finger Weight (lb)**

0.4

**# of Leaves:**

7

**# of Suckers:**

6

**Ratoon (next Sucker or Daughter) After:**

8 months

**Pseudostem Color:**

Brown Spot

**Color of Petiole Channel:**

Light Brown

**Taste:**

Good

**Resistance to Diseases:**

Moderately resistant to Sigatoka and Fusarium Wilt.

**Insect/Disease Damage:**

Spiraling White Fly (2%)





# Robusta

**Genome:**

AAA

**SPC-CePCT Accession #:**

MS 28

**Common Name/Subgroup:**

Cavendish

**Type:**

Dessert

**Plant Height:**

5' 9"

**Stem Diameter:**

23.66"

**Maturity (months):**

14.5

**# of Hands/Bunch:**

12

**# of Fingers/Hand:**

102

**Bunch Weight (lb):**

55

**Finger Weight (lb)**

0.2

**# of Leaves:**

10

**# of Suckers:**

6

**Ratoon (next Sucker or Daughter) After:**

4 months

**Pseudostem Color:**

Light Green and Brown Spot

**Color of Petiole Channel:**

Light Red

**Taste:**

Acceptable

**Resistance to Diseases:**

Susceptible to Black Sirotoke and Panama Disease

**Insect/Disease Damage:**

Black Leaf Streak, Red Ants





# Dwarf French Plantain

Genome:

AAB

SPC-CePCT Accession #:

MS 31

Common Name/Subgroup:

Plantain

Type:

Cooking

Plant Height:

6' 6"

Stem Diameter:

19.96"

Maturity (months):

14.5

# of Hands/Bunch:

5

# of Fingers/Hand:

60

Bunch Weight (lb):

35

Finger Weight (lb)

0.2

# of Leaves:

8

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Golden Brown with Spots

Color of Petiole Channel:

Dark Red

Taste:

Good

Resistance to Diseases:

Resistant to Yellow Sigatoka and Fusarium Wilt

Insect/Disease Damage:

Spiraling Whitefly (minor), Black Leaf Streak





# High Noon

Genome:

AAAB

SPC-CePCT Accession #:

MS 32

Common Name/Subgroup:

SH-3640, Pome Hybrid

Type:

Dessert

Plant Height:

7' 8"

Stem Diameter:

27.60"

Maturity (months):

12.5

# of Hands/Bunch:

7

# of Fingers/Hand:

80

Bunch Weight (lb):

25

Finger Weight (lb)

0.3

# of Leaves:

8

# of Suckers:

6

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Green-Brown (light Red-Green when young)

Color of Petiole Channel:

Light Red

Taste:

Acceptable

Resistance to Diseases:

Resistant to Fusarium Wilt

Insect/Disease Damage:

Chinese Rose Beetle (5%), Black Leaf Streak (2%)





## FHIA 02

Genome:

AAAA

SPC-CePCT Accession #:

F02

Common Name/Subgroup:

Mona Lisa

Type:

Dessert

Plant Height:

8"

Stem Diameter:

24.41"

Maturity (months):

11.5

# of Hands/Bunch:

9

# of Fingers/Hand:

78

Bunch Weight (lb):

50

Finger Weight (lb)

0.3

# of Leaves:

9

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Gold-Brown with Spots (Lt. Red when young)

Color of Petiole Channel:

Light Red at Edge

Taste:

Good

Resistance to Diseases:

Resistance to Black Sigatoka and Panama Wilt

Insect/Disease Damage:

Chinese Rose Beetle (1%), Black Leaf Streak (1%)





# FHIA 03

**Genome:**

AABB

**SPC-CePCT Accession #:**

F03

**Common Name/Subgroup:**

SH-3565

**Type:**

Cooking, hardy, semi-dwarf

**Plant Height:**

9' 1"

**Stem Diameter:**

27.72"

**Maturity (months):**

13.2

**# of Hands/Bunch:**

7

**# of Fingers/Hand:**

92

**Bunch Weight (lb):**

45

**Finger Weight (lb)**

0.2

**# of Leaves:**

10

**# of Suckers:**

4

**Ratoon (next Sucker or Daughter) After:**

6 months

**Pseudostem Color:**

Green

**Color of Petiole Channel:**

Light Red

**Taste:**

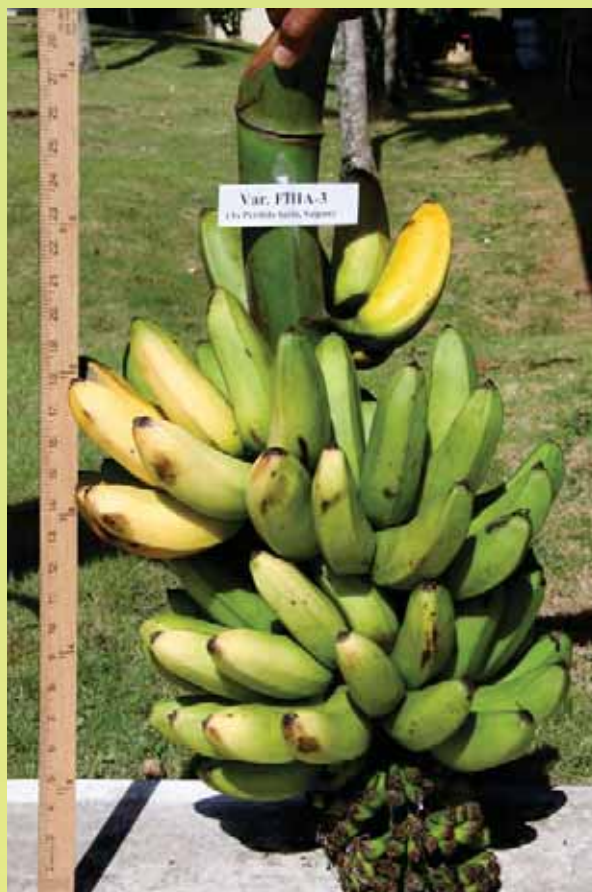
Good

**Resistance to Diseases:**

Resistant to Moko Disease and tolerant to nematodes

**Insect/Disease Damage:**

Chinee Rose Beetle, Spiraling Whitefly





## PA12.03

Genome:

AAAB

SPC-CePCT Accession #:

MS 18

Common Name/Subgroup:

Pioneira

Type:

Dessert

Plant Height:

6' 5"

Stem Diameter:

23.98"

Maturity (months):

12.8

# of Hands/Bunch:

5

# of Fingers/Hand:

53

Bunch Weight (lb):

21

Finger Weight (lb)

0.1

# of Leaves:

10

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

4 months

Pseudostem Color:

Gold-Brown (lt. Red when young)

Color of Petiole Channel:

Light Red at the edge

Taste:

Good

Resistance to Diseases:

Resistant to Black Sigatoka and Panama Wilt

Insect/Disease Damage:

Leafstreak Sigatoka (12%), Chinese Rose Beetle (2%), Spiraling Whitefly (1%)





# Pacific Plantain

Genome:

AAB

SPC-CePCT Accession #:

MS 19

Common Name/Subgroup:

Maoli-Pòpò'ulu, Iholena

Type:

Cooking

Plant Height:

7'

Stem Diameter:

27.87"

Maturity (months):

13.2

# of Hands/Bunch:

6

# of Fingers/Hand:

31

Bunch Weight (lb):

43

Finger Weight (lb)

0.6

# of Leaves:

8

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

8 months

Pseudostem Color:

All Red with dark Red

Color of Petiole Channel:

All Red

Taste:

Excellent

Resistance to Diseases:

Susceptible to Black Sigatoka and Panama Disease

Insect/Disease Damage:

Leafstreak Sigatoka





# FHIA 17

**Genome:**

AAAA

**SPC-CePCT Accession #:**

FA 17

**Common Name/Subgroup:**

FHIA

**Type:**

Cooking, hardy, semi-dwarf

**Plant Height:**

5' 2"

**Stem Diameter:**

16.98"

**Maturity (months):**

14.5

**# of Hands/Bunch:**

11

**# of Fingers/Hand:**

85

**Bunch Weight (lb):**

42

**Finger Weight (lb)**

0.1

**# of Leaves:**

7

**# of Suckers:**

4

**Ratoon (next Sucker or Daughter) After:**

5 months

**Pseudostem Color:**

Light Green/Brown

**Color of Petiole Channel:**

Dark Red

**Taste:**

Acceptable

**Resistance to Diseases:**

Susceptible to Black Sigatoka and Panama Disease

**Insect/Disease Damage:**

Leafstreak Sigatoka (5%)





# Williams

Genome:

AAA

SPC-CePCT Accession #:

MS 04c

Common Name/Subgroup:

Cavendish

Type:

Dessert

Plant Height:

7' 5"

Stem Diameter:

19.88"

Maturity (months):

N/A

# of Hands/Bunch:

N/A

# of Fingers/Hand:

N/A

Bunch Weight (lb):

N/A

Finger Weight (lb)

0.1

# of Leaves:

8

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Lt. Brown with dk. Brown spots

Color of Petiole Channel:

Light Red

Taste:

Good

Resistance to Diseases:

Susceptible

Insect/Disease Damage:

Black Leaf Streak





# Daru

**Genome:**

ABB

**SPC-CePCT Accession #:**

MS 26

**Common Name/Subgroup:**

PNG 13.1, Simoi Kandrian

**Type:**

Cooking/Dessert

**Plant Height:**

13' 9"

**Stem Diameter:**

35.92"

**Maturity (months):**

15.2

**# of Hands/Bunch:**

8

**# of Fingers/Hand:**

123

**Bunch Weight (lb):**

52

**Finger Weight (lb)**

0.5

**# of Leaves:**

10

**# of Suckers:**

6

**Ratoon (next Sucker or Daughter) After:**

8 months

**Pseudostem Color:**

Green w/Brown spot below petiole

**Color of Petiole Channel:**

Light Brown

**Taste:**

Good

**Resistance to Diseases:**

Resistant

**Insect/Disease Damage:**

Chinese Rose Beetle (3%), Spiraling Whitefly (1%)





# Yawa 2

**Genome:**

ABB

**SPC-CePCT Accession #:**

MS 27

**Common Name/Subgroup:**

Pisang Awak

**Type:**

Cooking

**Plant Height:**

12' 10"

**Stem Diameter:**

35.92"

**Maturity (months):**

12.5

**# of Hands/Bunch:**

10

**# of Fingers/Hand:**

142

**Bunch Weight (lb):**

35

**Finger Weight (lb)**

0.5

**# of Leaves:**

10

**# of Suckers:**

6

**Ratoon (next Sucker or Daughter) After:**

9 months

**Pseudostem Color:**

Green w/Brown spot below petiole

**Color of Petiole Channel:**

Light Brown

**Taste:**

Good

**Resistance to Diseases:**

Resistant

**Insect/Disease Damage:**

Chinese Rose Beetle (2%), Leafstreak  
Sigatoka (2%)





# FHIA 21

Genome:

AAAB

SPC-CePCT Accession #:

MS 17

Common Name/Subgroup:

FHIA

Type:

Cooking

Plant Height:

10'

Stem Diameter:

19.80"

Maturity (months):

12.2

# of Hands/Bunch:

N/A

# of Fingers/Hand:

N/A

Bunch Weight (lb):

N/A

Finger Weight (lb)

0.1

# of Leaves:

7

# of Suckers:

4

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Lt. Green-Brown

Color of Petiole Channel:

Dark Red stripes

Taste:

Acceptable

Resistance to Diseases:

Resistant to Panama Wilt

Insect/Disease Damage:

Leafstreak Sigatoka (2%), Banana Leaf Roller (2%)





# MS 01c

Genome:

AAB

SPC-CePCT Accession #:

MS 01c or MS 04c

Common Name/Subgroup:

Pisang Ceylon

Type:

Dessert

Plant Height:

9'

Stem Diameter:

19.84"

Maturity (months):

13.2

# of Hands/Bunch:

5

# of Fingers/Hand:

65

Bunch Weight (lb):

9

Finger Weight (lb)

0.1

# of Leaves:

9

# of Suckers:

2

Ratoon (next Sucker or Daughter) After:

5 months

Pseudostem Color:

Gold-Brown with spots (lt. Red when young)

Color of Petiole Channel:

Light Red at the edge

Taste:

Acceptable

Resistance to Diseases:

Resistant

Insect/Disease Damage:

Chinese Rose Beetle (4%), Spiraling Whitefly (2%), Red Ants





# Banana Workshop

In fulfillment of its extension mandate, NMC-CREES held 2-day workshops on Banana on all three islands of the CNMI in March 2009. For these workshops we had invited Dr. Ivan Buddenhagen from University of California, Davis.

Dr. Buddenhagen shared his encyclopedic knowledge about banana with the farmers of our Commonwealth. He went from banana's history over the introduction of different varieties to tips and tricks on everything related to banana.

His report on his visit to the CNMI can be downloaded from NMC-CREES' website at <http://crees.org/forms.asp>

We just want to share some pictures from the workshop on the next two pages.

**BANANA Workshop**

**Saipan**  
March 16-17 - Pacific Islands Club

**Rota**  
March 18-19 - As Paris Restaurant

**Tinian**  
March 20-21 - Fleming Hotel  
8:00am-4:30pm

Registration Fee: \$5.00 for two days  
Registration Starts 7:30 ea. day

Extension programs are open to all regardless of age, race, color, national origin, gender, religion or disability.

This Workshop was organized in accordance to the Cooperative Extension Acts of May 8 and June 30, 1914 in cooperation with the US Department of Agriculture (USDA).

Funding for this advertisement was provided by ADAP









## Some Final Words

### Banana language

**Finger** – a single banana fruit.

**Finger stalk** – stalk attaching the finger to the hand.

**Hand** – the whole flowering stem (inflorescenc) bearing hands of several fingers of fruit.

**'Stem'** - in marketing, a bunch is called a stem.

A **bunch** is ready to harvest when the fruit is full and round; the remains of the flowers should break off the end of the fruit when rubbed with the fingers.

The fingers are plump, green and almost ready to turn yellow.

Note when the first petal opens. Twelve weeks later, the fruit should be ready to be cut down.

Use a bush knife to cut the bunch stalk high up to leave long "handle" (~ 20").

The fruit ripens best in a dark relatively cool place. Never leave the bunch in the hot sun after harvest.

Always handle the fruit very carefully to stop bruising and marking the fruit.

Never let sea water touch the fruit.

If the fruit is to be packed in boxes, the hands must be removed and packed neatly in layers in the box. A little bit of stalk must be left on each hand so that the fingers of each hand stay together.

The first generation tree will bear fruit once only then die to the ground. After harvesting there is no point keeping the first generation tree. Cut the first generation tree down near to ground level and care for the ratoon in the same way as for the first generation crop.

### Replanting Bananas

A field of bananas can survive for 25 years or longer if properly managed. However the commercial life of a banana stool is about 5 or six years. From the fourth year on, productivity declines. Where the crop is raised without proper maintenance they can become infected with nematodes by the end of the 4th year. For successful commercial production it is advisable to replant the field with disease free planting material about every 5-6 years.

### Yield

Many factors determine the average annual yield of a banana crop: soil and agronomic practices, cultivar planted, spacing, the type of propagating material and the management of sucker succession. For some varieties the average yield for a 3 year-cycle is 9.6 tons per ha. In general, average yield can range from 7 tons for the first year, 12 tons for the second year and 10 tons for the third year per hectare.



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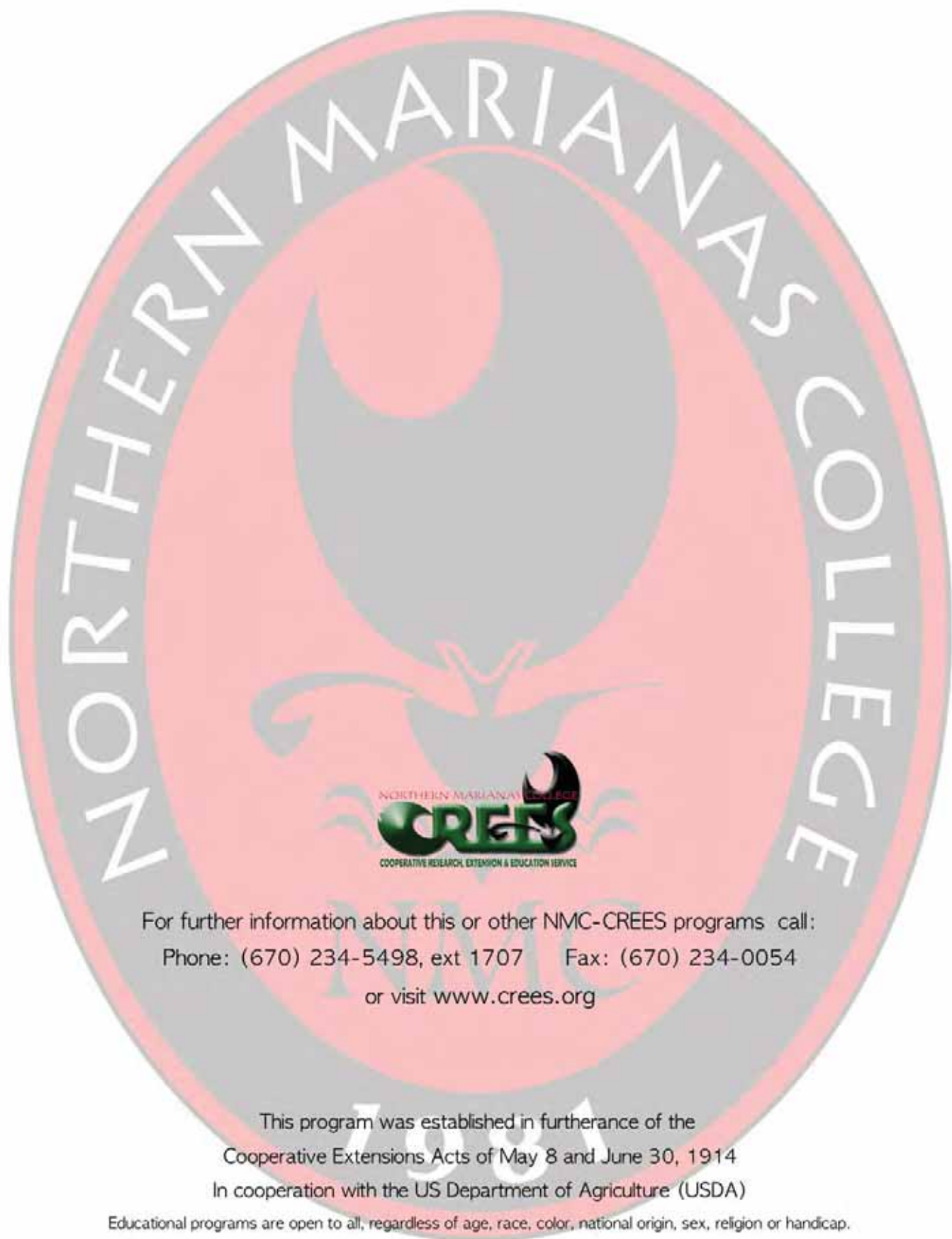
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Joe Guerrero, Saipan

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For further information about this or other NMC-CREES programs call:

Phone: (670) 234-5498, ext 1707 Fax: (670) 234-0054

or visit [www.crees.org](http://www.crees.org)

This program was established in furtherance of the

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In cooperation with the US Department of Agriculture (USDA)

Educational programs are open to all, regardless of age, race, color, national origin, sex, religion or handicap.