



A DEVELOPER'S CATALOGUE OF EAST AFRICAN HIGHLAND BANANA HYBRIDS

**Developed by the
National Banana Research Program,
National Agricultural Research Laboratories (NARL),
National Agricultural Research Organisation (NARO).**



CATALOGUE OF BANANA HYBRIDS

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INTRODUCTION

Banana is an important staple food crop in Uganda for more than 70 million people in the Sub-Saharan Africa. Uganda is the third largest producer of bananas in the world, with an annual per capita consumption of 250-400kg and the highest in the world. It is the third largest cultivated staple food and is grown by more than 75% of the farmers.

Despite the importance of banana in the country, banana production has significantly reduced from 10 million metric tonnes to about 5 million metric tonnes. Also, the current banana productivity is less than 30% of its potential of about 70 tons/ha/yr with short plantation life cycles of less than 5 years. This is largely attributed to pests and diseases ravaging banana plantations, declining soil fertility and changes in climate patterns.

Pests and diseases can be controlled by cultural, biological and chemical control methods on farmer fields. However, these methods have not been able to effectively eradicate these challenges. Use of chemicals to control the pests and diseases is not a recommended practise because chemicals are harmful to the environment as well as human health. Besides, these chemicals are quite expensive for our average farmers.

The most recommended method to control pests and diseases is use of host plant resistance because it is durable, cheap, sustainable and easy to adopt by small scale farmers. Therefore, the National Banana Research Program has developed and deployed banana hybrids that are resistant to pests and diseases but also yielding 4 - 6 times the local varieties.

HISTORICAL BRIEF OF BANANA RESEARCH IN UGANDA

Genetic improvement of bananas in Uganda was initiated by National Agricultural Research Organisation (NARO) and International Institute of Tropical Agriculture (IITA) in the early 1990s, with medium- and long-term breeding strategies. In the medium-term strategy, banana hybrids were introduced in Uganda from International breeding programs such as FHIA and INIBAP (now Bioversity International), evaluated for agronomic performance, pest and disease resistance, consumer acceptability and subsequently four introduced hybrids were released in Uganda.

For the long-term breeding strategy, NARO and IITA embarked on improving triploid East African highland bananas (EAHBs) for yield, disease and pest resistance. The first step was to evaluate the EAHBs for male and female fertility, which resulted into identification of female-fertile clones. These were crossed with a wild diploid (Calcutta 4) to generate synthetic tetraploids with EAHB attributes in their background. The synthetic tetraploids were further crossed with improved diploids to generate secondary triploid hybrids that were evaluated for agronomic, disease and pest resistance. This resulted into the release of seven resistant and high yielding banana hybrids.



CATALOGUE OF BANANA HYBRIDS

Developed by the National Banana Research Program,
National Agricultural Research Laboratories (NARL), Kawanda

Variety Name: KABANA 1H
Code: FHIA 01
Year of release: 1999
Developer: FHIA
Maintainer: NARO



Optimal production altitude range: 1000-1600
Duration to maturity (days): 133
Yield: 39 tons/ha/yr
Bunch weight: About 45.6 Kilograms
Fruit Circumference: 14cm
Fruit Length: 24.0cm
Fruit weight: 121.7 grams
Peel: 44.0%
Shelf Life: 7.6 (days)

Best for: Dessert & Juice

Juice yield and characteristics

Juice yield: 63.4%
Pulp weight: 2 kgs
Brix: 20.08%
Taste: 2.5
Colour: 2.0
Mouthfeel: 1.8

Special Attributes:

- Resistant to black sigatoka
- Resistant to banana weevils
- Tolerant to nematodes
- Tolerant to drought

Variety Name: KABANA 3H
Code: FHIA 17
Year of release: 2000
Developer: FHIA
Maintainer: NARO



Optimal production altitude range: 1000-1600
Duration to maturity (days): 124
Bunch yield: 44 t/ha/yr
Bunch weight: 43.9 Kilograms
Fruit Circumference: 14.3 cm
Fruit Length: 23.0 cm
Fruit weight: 116.3 grams
Peel: 41.6%
Shelf Life: 7.6 (days)

Best for: Dessert

Sensory Characteristics (Hedonic scale of 1 to 6)

Taste: 3.4
Flavour: 4.4
Colour: 4.8
Texture: 2.6
Acceptability: 4.0

Special Attributes:

- Resistant to black Sigatoka
- Resistant to banana weevils
- Tolerant to nematodes
- Tolerant to drought.

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Variety Name: KABANA 4H
Code: FHIA 23
Year of release: 2000
Developer: FHIA
Maintainer: NARO



Optimal production altitude range: 1000-1600
Duration to maturity (days): 128
Bunch yield: 40 t/ha/yr
Bunch weight: 45.4 Kilograms
Fruit Circumference: 13.2 cm
Fruit Length: 23.3 cm
Fruit weight: 113.0 grams
Peel: 44.5%
Shelf Life: 7.6 (days)

Best for: Dessert

Sensory Characteristics
(Hedonic scale of 1 to 6)

Taste: 3.0
Flavour: 4.0
Colour: 4.8
Texture: 2.7
Acceptability: 4.0

Special Attributes:

- Resistant to fusarium wilt
- Resistant to black Sigatoka
- Resistant to banana weevils
- Tolerant to nematodes
- Tolerant to drought.

Variety Name: KABANA 5H
Local name: Yangambi
Year of release: 2000
Developer: FHIA
Maintainer: NARO



Optimal production altitude range: 1000-1600
Duration to maturity (days): 148
Bunch yield: 20 t/ha/yr
Bunch weight: 27.2 Kilograms
Fruit Circumference: 13.1 cm
Fruit Length: 19.6 cm
Fruit weight: 129.0 grams
Peel: 29.8%
Shelf Life: 6.0 (days)

Best for: Juice production

Juice yield and characteristics

Juice yield: 67.1%
Pulp weight: 2.0 kgs
Brix: 20.92%
Taste: 2.3
Colour: 2.3
Mouthfeel: 2.0

Special Attributes:

- Resistant to fusarium Wilt
- Resistant to black sigatoka
- Resistant to banana weevils
- Resistant to nematodes



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Variety Name: KABANA 6H
Code: M9/NARITA7
Local name: Kiwangaazi
Year of release: 2010
Maintainer: NARO
Collaborator: IITA
Pedigree: '1201k-1' ('Nakawere' AAA ×
'Calcutta4' AA) with 'SH3217' AA

Yield: 60.0 tons/ha/yr
Use of fruit: Cooking

Plant descriptors:

Bunch maturity (days): 124
Bunch Weight: 57.7 Kgs
Plant height: 341.0cm
No. of hands: 9.7
Plant girth: 54.6cm
Fruit position: Strongly re-curved toward rachis
Color of leaf upper surface: Medium green
Pseudostem color: Medium green with fewer blotches
Color of midrib dorsal surface: Red
Color petiole base: Tint of pink
Fruit shape (longitudinal curvature): Cucumber shaped
Immature fruit peel color: Light green
Flesh texture: Soft textured



Best for: Cooking

Sensory Attributes
(Hedonic scale of 1 to 6)

Taste: 4.1

Aroma: 4.2

Mouthfeel: 4.4

Colour: 3.3

Overall acceptability: 4.0

Special Attributes:

- **Resistant to black Sigatoka** (leaf spot disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).



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Variety Name: KABANA 7H
Code: M2
Year of release: 2010
Maintainer: NARO
Collaborator: IITA

Best for: Cooking

Bunch maturity: 132 days
Yield: 35 tons/ha/yr
Bunch Weight: 33.3 Kgs
Pseudo stem Girth at base: 74.7cm
Girth at 1 m: 54.9cm
No. of hands: 9
Fingers per hand: 8



Sensory Attributes
(Hedonic scale of 1 to 6)

Taste: 3.8
Flavour: 3.7
Colour: 3.8
Texture: 3.7
Acceptability: 3.5

Special Attributes:

- **Resistant to black Sigatoka** (leaf drying disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).



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Developed by the National Banana Research Program,
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Variety Name: NAROBan1
Code: M19
Year of release: 2017
Pedigree: '917K-1'('Enzirabahima'
'Calcutta4') . 'SH3217'

Best for: Cooking

Yield: 54.9 (tons/ha/yr)

Plant descriptors:

Plant height: 281.1cm

Plant girth: 48.0cm

Average pseudostem height: 81.1cm.

Leaf habit: Drooping

Pseudostem color (with sheath): Green

Underlying color of the pseudostem: Pink-Purple

Blotches at base of petiole: Large blotches

Bunch position: Hanging at an angle

Bunch shape: Conical

Bunch compactness: Medium

No. of hands: 10.5



Fruit attributes

(Hedonic scale of 1 to 6):

Taste: 5.1

Aroma: 4.8

Mouth feel: 4.8

Colour: 4.8

Overall acceptability: 5.0

Special Attributes:

- **Resistant to black Sigatoka** (leaf spot disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).

Fruit Shape: Straight in the distal part

Fruit Apex: Bottle-necked

Rachis orientation of male phase:

Hanging vertically

Male bud peduncle color: Green

Male bud shape: Ovoid

Shape of bract apex: Slightly pointed

Persistence of floral organs: Absent.



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Developed by the National Banana Research Program,
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Variety Name: NAROBan2
Code: M20
Year of release: 2017
Pedigree: '365K-1' ('Kabucuragye'
'Calcutta4') . 'SH3362'

Best for: **Cooking**

Yield: 60.4 (tons/ha/yr)

Plant descriptors:

Plant height: 320.0cm

Plant girth: 55.4cm

Average pseudostem height: 320.0 cm

Leaf habit: Spreading

Pseudostem color (with sheath): Green-yellow

Underlying color of the pseudostem: Pink-purple

Blotches at the petiole base: Large blotches

Bunch position: Hanging at an angle

Bunch shape: Cylindrical

Bunch compactness: Lax

No. of hands: 10.1



Fruit attributes
(Hedonic scale of 1 to 6):

Taste: 5.2

Aroma: 4.8

Mouth feel: 4.9

Colour: 4.5

Overall acceptability: 4.9

Special Attributes:

- **Resistant to black Sigatoka** (leaf spot disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).

Fruit Shape: Straight in the distal part

Fruit Apex: Blunt tipped

Rachis orientation of male phase:

Inclined at an angle

Male bud peduncle color: Dark green

Male bud shape: Triangular

Shape of bract apex: Pointed

Persistence of floral organs: Absent



CATALOGUE OF BANANA HYBRIDS

Variety Name: NAROBan3
Code: M25
Year of release: 2017
Pedigree: '917K-2' ('Enzirabahima'
'Calcutta4') 'SH3217'

Best for: Cooking

Bunch yield: 64.7 (t/ha/yr)

Plant descriptors:

Plant height: 339.9cm

Plant girth: 53.8cm

Average pseudostem height: 339.9 cm

Leaf habit: Drooping

Pseudostem color (with sheath): Green

Underlying color of the pseudostem: Pink-purple

Blotches at the petiole base: Large blotches

Bunch position: Hanging at an angle

Bunch shape: Cylindrical

Bunch compactness: Lax

No. of hands: 10.3



Fruit attributes
(Hedonic scale of 1 to 6):

Taste: 4.2

Aroma: 4.3

Mouth feel: 4.5

Colour: 3.2

Overall acceptability: 4.1

Special Attributes:

- **Resistant to black Sigatoka** (leaf spot disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).

Fruit Shape: Slightly curved

Fruit Apex: Pointed

Rachis orientation of male phase:
Hanging vertically

Male bud peduncle color: Dark green

Male bud shape: Lanceolate

Bract apex shape: Pointed

Persistence of floral organs: Absent



CATALOGUE OF BANANA HYBRIDS

Variety Name: NAROBan4
Code: M27
Year of release: 2017
Pedigree: '246K-1' ('Kabucuragye'
Musa balbisiana) ·
'TMB2X7197-2'

Use of fruit: Cooking
Bunch yield: 68.8 (t/ha/yr)

Plant descriptors:

Plant height: 341.8cm
Plant girth: 56.3cm
Average pseudostem height: 341.8 cm
Leaf habit: Spreading
Pseudostem color (with sheath): Red-purple
Underlying color of the pseudostem: Red-purple
Blotches at the petiole base: Large blotches
Bunch position: Hanging at an angle
Bunch shape: Conical
Bunch compactness: Medium
No. of hands: 11.0



Fruit attributes
(Hedonic scale of 1 to 6):

Taste: 4.87
Aroma: 5.33
Mouth feel: 5.23
Colour: 5.53
Overall acceptability: 5.13

Special Attributes:

- **Resistant to black Sigatoka** (leaf Spot disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).

Fruit Shape: Slightly curved
Fruit Apex: Bottle-necked
Rachis orientation of male phase:
Inclined at an angle end
Male bud peduncle color: Dark green
Male bud shape: Ovoid
Bract apex shape: Pointed
Persistence of floral organs: Absent



CATALOGUE OF BANANA HYBRIDS

Variety Name: NAROBan5
Code: M30
Year of release: 2019
Pedigree: '660K-1' AAAA ('Enzirabahima' AAA x 'Calcutta 4' AA) and '1345K-1' AA ('Nakawere' AAA x 'Calcutta 4' AA).

Bunch yield: 54.5 (t/ha/yr)

Best for: Cooking

Plant descriptors:

Plant height: 332.8cm

Plant girth: 53.6cm

Average pseudostem height: 339.9 cm

Leaf habit: Intermediate

Pseudostem colour (with sheath): Medium green

Underlying colour of the pseudostem: Pink-purple

Blotches at the leaf petiole base: Sparse blotches

Mature fruit peel colour: Green-yellow

Pulp colour: Yellow (at maturity)

Leaf blade length: 171-220 cm

Leaf blade width: 71-80 cm

No. of hands: 9.1

Bunch position: Slightly angled

Bunch shape: Cylindrical

Bunch appearance: Compact

Bunch maturity time: Mature green - 170 days



Fruit attributes (Hedonic scale of 1 to 6):

Taste: 5.6

Aroma: 5.3

Mouth feel: 5.7

Colour: 5.9

Overall acceptability: 5.7

Special Attributes:

- **Resistant to black Sigatoka** (leaf drying disease).
- **Tolerant to banana weevils** (insects that reduce plantation longevity).
- **Tolerant to nematodes** (invisible worms that cause root rotting and toppling).

Rachis orientation of male phase: Falling vertically

Fruit shape: At harvest - Straight (or slightly curved)

Fruit apex: Blunt tipped

Fruit circumference: 13.1cm

Fruit length: 16.6cm

Persistence of floral organs: Absent

Bract apex shape: Obtuse

Persistence of floral organs: Absent



CATALOGUE OF BANANA HYBRIDS

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Clean corm



Diseased corm



Clean root



Diseased roots



Clean leaf



Diseased leaf



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