

Alliance



BIRA

## Classification

Ploidy: 3X  
 Genome: AAB  
 Subgroup: Pacific Plantain  
 Clone set: Iholena  
 Type: Cooking  
 Suspected country of origin: Papua New Guinea  
 ITC code: ITC0945

## Status

Bira is a Pacific Plantain believed to originate from Papua New Guinea, and is rich in pro-Vitamin A carotenoids with at least **296 µg Retinol Activity Equivalent** per 100g when raw (on fresh weight basis). This is estimated to meet **74% of the daily recommended intake** of Vitamin A of children under 5 years.

It is being fast-tracked for potential adoption into the agri-food systems of Eastern Africa. It has been assessed on-station and on-farm in Burundi and Eastern Democratic Republic of Congo (DRC). On-station trials are also underway in Tanzania, and Uganda.

## Description

- \* Bira has a tall stature. The underlying pseudostem is light green in colour with pink-purple pigmentation (fig 3)
- \* The leaf petiole is wide with erect margins that are winged, clasping the pseudostem. The petiole margin is green in colour. The petiole base has sparse brown blotches (fig 4,5)
- \* The leaves have an intermediate habit with both sides of the base rounded. The leaf upper surface is green while the under leaf is green yellow with a pink-red tinge (fig 6)
- \* The male bud is intermediate in shape with an obtuse and split bract apex shape. The bracts have an inner red colour and an outer purple-brown colour (fig 7)
- \* The flowers have a pink compound tepal with a yellow lobe. The free tepal is tinted with pink and oval in shape. The style and filament are cream while anthers are yellow (fig 8)
- \* The fingers are slightly curved and slightly ridged. The fruit apex is pointed with only the base of the style persisting as the floral relicts. The peel of mature unripe fruit is light green in colour and tends to yellow early as soon as the bunch is mature (fig 9)
- \* The pulp colour of a mature finger (unripe) is yellow-orange: RHS 9/3 7507U (fig 10)



Fig 1. Bira Bunch



Fig 2. Whole plant



Fig 3. Pseudostem



Fig 4. Neck



Fig 5. Petiole



Fig 6. Leaf



Fig 7. Male bud



Fig 8. Flower



Fig 9. Hand

Agronomic Traits (Average of 8-10 plants for 3 cycles)	Bira
Time from flowering to harvest (days)	131.2
Plant height at flowering (cm)	307.8
Pseudostem girth at base at flowering (cm)	78.9
Number of functional leaves at flowering	9.5
Bunch weight (kg)	11.3
Number of hands	6.2
Number of fingers on bunch	63.1
Weight of hand (kg)	2.4
Fruit circumference (cm)	9.9
Fruit length (cm)	17.3



Fig 10. Finger

## Agronomic Performance

- \* Characteristics of Bira to the left are based on agronomic data from on-station trials in Burundi, North and South Kivu in Eastern DRC
- \* Values are *averages* of 8-10 plants evaluated from over 3 cropping cycles in each site: Burundi– 2 sites; South Kivu– 3 sites; and North Kivu– 3 sites
- \* Bira takes approximately **4.4 months** from flowering to maturity
- \* A bunch of Bira can weigh up to **22 kg**

## Pro-vitamin A carotenoid Content

- \* Bira contains **4,339 µg/100g** pro-Vitamin A carotenoids when *raw and unripe* (on fresh weight basis)
- \* This yields **296 µg to 710 µg Retinol Activity Equivalent** per 100g which can be estimated to meet 74% to >100% of the daily recommended intake of Vitamin A of children under 5 years (400 RAE µg/day) and 42% to 100% of the daily recommended intake of Vitamin A of adult women (700 RAE µg/day)

Values are means of three individual samples on fresh weight basis of bunches obtained from North Kivu, DRC<sup>1</sup>. 100g of banana is approximately one finger.

- \* As a plantain (cooking type banana), Bira can be boiled, fried, roasted or steamed with or without the peel. It can be cooked when unripe or ripe
- \* The pro-Vitamin A carotenoid content increases as the banana ripens
- \* Bira was preferred when fried and roasted in Burundi and Eastern DRC

## References

1. Ekesa, B., Nabuuma, D., Kennedy, G., and Van den Bergh, I. 2017. Sensory evaluation of Provitamin A carotenoid-rich banana cultivars on trial for potential adoption in Burundi and Eastern Democratic Republic of Congo. *Fruits*, vol72, No 5, pages 261-272
2. Ekesa, B., Nabuuma, D., Blomme, G. 2015. Provitamin A carotenoid content of unripe and ripe banana cultivars for potential adoption in eastern Africa. *Journal of Food Composition and Analysis*, Issue 43, pages 1-6.
3. HarvestPlus carotenoid colour strips. 2007. Standardised using Royal Horticultural Society range of accepted colours and Universal Pantone colours.
4. IPGRI-INIBAP/ CIRAD. 1996. Descriptors for banana (*Musa* spp.). International Plant Genetic Resources Institute, Rome Italy; International Network for the Improvement of Banana and Plantain, Montpellier, France; Centre de coopération internationale en recherche agronomique pour le développement, Montpellier, France.

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