'FHIA-21' is a French Plantain-type hybrid produced by the breeding program of the Fundación Hondureña de Investigación Agrícola (FHIA) in 1987. It was bred to be high yielding and resistant to black leaf streak.

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Distribution and economic importance

'FHIA-21' is grown commercially in several countries including Cuba, Honduras, Nicaragua, Guatemala, Venezuela, Ecuador, Perú, México, Dominican Republic and Colombia.[1]

Uses

'FHIA-21' fruit is usually consumed green; it is boiled or processed into chips.[1] When ripe, it is fried or baked. When over-ripe, it is used for making marmalade and liqueurs. Its acceptance for specialty recipes and by the chips processing industry has been favorable based on its texture, color, taste and the fact that it absorbs less oil and remains crisp longer at ambient conditions.

Morphological characteristics

In good conditions, 'FHIA-21' will grow to 3.5-4.0 m high. The plant has drooping leaves.[1] The glossy pseudostem is conically shaped and tapered towards the top. The bunch is asymmetric and hangs at a slight angle. It is like that of French Plantain cultivars, with up to ten hands with slender
fingers when left to develop naturally\[2\]. The fruit is light green to yellow when ripe, straight, with a slightly pointed flower end\[1\].

**Agronomic traits, yield and fruit characteristics**

Most agronomic characteristics of 'FHIA-21' are very similar to those of False Horne Plantain \[2\]. Time from planting to flowering is usually 240-280 days, and time from flowering to harvest is typical 177-112 days; the ratoon crop flowers 540-570 days after planting\[1\].

Yield of 'FHIA-21' is about double that of False Horne Plantain. Average bunch weight is 22-35 kg with 120-150 fingers per bunch before hand pruning. However, after hand pruning, 65-80 large fingers can be harvested with a bunch weight of 20-30 kg. Individual finger weight after hand pruning is 250-350 grams.

'FHIA-21' has a short shelf life, but it can be increased with proper harvesting by age and calibration. The fruit is easier to peel than that of False Horn Plantain, but it is also more susceptible to bruising. It has excellent processing qualities.

'FHIA-21', like most tetraploid Plantain hybrids, produces abundant pollen, which would result in an occasional fruit with seeds if the male bud is not removed \[2\].

Days from planting to flowering: 359\[3\], 388.9\[4\], 11.3, 11.4, 11.5 months\[5\]

Days from flowering to harvest: 138\[3\], 178.9\[4\]

Days from planting to harvest: 496\[3\], 529.0\[4\], 14.7, 15.1\[5\]

Height at shooting (cm): 280.2\[4\], 337\[3\]

Height at harvest (cm): 240.6, 253.8, 269.1\[5\]

Girth at shooting (cm): 66.4\[4\], 69.4\[3\]

Functional leaves at shooting: 8.8\[4\]

Total leaves at shooting: 9.6\[4\], 12.8, 13, 13.7\[5\]

Height of tallest daughter sucker (cm): 121.5, 138.4, 166.3\[5\]

Mean bunch weight (kg): 24.3\[3\], 19.2, 25.5\[4\]

Number of hands: 7.3, 7.7\[5\], 8.8\[3\]

Total number of fruits: 98, 100, 107\[5\], 134\[3\]

Number of fruits on second hand: 16.9\[3\]

Finger length (cm): 24.7\[4\]

Finger girth (cm): 12.3, 12.4\[4\]

Finger weight (g):

Yield (t/ha): 26.1\[3\], 33.7, 37.1, 39.8\[5\]

**Reaction to pests and diseases**
Fungal diseases

*Fusarium wilt* (*Fusarium oxysporum f. sp. cubense*)

'FHIA-21' is considered to be resistant to Foc race 1 and 2\(^1\).

*Black leaf streak* (*Mycosphaerella fijiensis*)

'FHIA-21' is considered to be resistant to black leaf streak\(^1\).

Nematodes

*Burrowing nematode* (*Radopholus similis*)

'FHIA-21' is considered to be susceptible to *Radopholus similis*.

*Lesion nematode* (*Pratylenchus spp.*)

'FHIA-21' is considered to be susceptible to *Pratylenchus coffeae*.

Recommendations for cultivation

**Agroecological requirements**

'FHIA-21' grows well from sea level to up to 1200 meters above sea level\(^1\). Well-drained loamy soils are recommended, but 'FHIA-21' does well in heavier or lighter soils if moisture and nutrient levels are adequate. 'FHIA-21' needs approximately 2000 mm/year of rainfall, evenly distributed over the year. Irrigation is recommended where the dry season exceeds 2 months. Optimum growing temperature is 28ºC. Growth slows down substantially below 17ºC, and stress symptoms may appear depending on the duration of the cold conditions.

**Crop management**

High-density planting (2500-3200 plants/ha), as annual cropping system or for maximum one ratoon, is more profitable than more permanent, lower-density planting\(^1\). Planting can be done in single rows with 2.5-3.0 m between rows, or in double rows 1 m apart with spacing between double rows 4.0-5.0 m. Fertilization is best done based on soil analysis results, but a general recommendation based on plant requirements in average soils is the application of 300-350 kg/ha.yr of N and 250-500 kg/ha.yr of K\(_2\)O. P\(_2\)O\(_5\) requirement is around 100 kg/ha.yr; soils can usually supply this amount, but when an application is required, it is best done at planting using rock phosphate or an 18-46-0 formulation. Leaf pruning is a good practice to reduce levels of *Mycosphaerella* spp. and to prevent scarring of the fruit. It should be done every 4 weeks, eliminating broken leaves, (parts of) leaves in contact with the fruit and (parts of) leaves with more than 50% advanced or necrotic Mycosphaerella leaf spot infection. Sucker pruning should be done at 4 months after planting and then every 8 weeks. In annual cropping systems, all suckers are removed, while in one-ratoon plantings, the primary follower should be left for the ratoon crop.

**Bunch care**

'FHIA-21' produces bunches that are quite heavy for its tall, tapered pseudostem\(^1\). This makes it necessary to support bunches using propping poles or a "tieback" anchor system using twine. Because of the large number of hands produced per bunch, pruning of apical hands is recommended in order to obtain a finger length and girth comparable to the traditional False Horn plantain. For the export market, approximately five hands should be left per bunch, while for the chips industry or local markets, up to seven hands can be left per bunch. A single finger of the last hand (usually the false hand) should be left to prevent stalk rot. The male bud should be removed.
to prevent the occasional formation of seeds, leaving approximately 10-15 cm of stalk below the single finger of the false hand.

**Harvesting**

'FHIA-21' has a shorter green life than False Horn Plantain when harvested at full maturity (100-105 days after the first visible tip of the emerging bunch appears); however, a longer green life for marketing can be obtained by not harvesting bunches with fingers beyond 3/4 full (90-95 days)\[2\]. This can be controlled by harvesting by age and calibration. The fruit will be ready for harvesting 85-100 days after flowering\[6\] depending on growing conditions, especially minimum temperatures and day length\[1\]. 'FHIA-21' calibrates at a range of 54-57\[7\] depending on soil conditions and available sunlight.

**Post-harvest handling**

To prevent bruising, the heavy 'FHIA-21' bunches should not be marketed as whole bunches. Selected and trimmed clusters of 'FHIA-21' hands are marketed with excellent appearance using plastic crates or carton boxes\[1\]. The use of a plastic lining or sheath is also recommended for special quality markets. Before packing, washing of the fruit in tanks filled with running water is recommended to prevent latex stain and bruising. It is recommended to transport boxes of fresh fruit in closed container trucks for long voyages or in trucks covered with a tarp for shorter deliveries. Transportation of fruit in dry or refrigerated containers should be considered depending on the length of the journey and green life requirements, or if holding of the fruit is necessary before delivery. Peeled fruit for the processing industry should also be washed in tanks with running water to prevent latex staining and packed in clean, plastic crates using a plastic lining in order to optimize hygienic handling. Peeled fruit should always be transported in closed container trucks.

**References**

6. Plantain FHIA-21. FHIA.
7. Standard girth measure expressed in 1/32 of an inch, where a 1-inch girth would be expressed as a 32-caliper girth or calibration.

**See also on this website**

Lessons from introducing FHIA-21 in the July 2011 issue of InfoMus@

Photos of 'FHIA-21' in Musarama

Articles on 'FHIA-21' in Musalit

Local names for 'FHIA-21' in the cultivar checklist

Musapedia pages on FHIA hybrids:

FHIA-01
Musapedia pages on improved materials:
BITA-2
BITA-3
BRS Platina
CRBP-39
FHIA-01
FHIA-02
FHIA-03
FHIA-17
FHIA-18
FHIA-20
FHIA-21
FHIA-23
FHIA-25
FLHORBAN 916
FLHORBAN 920
Formosana
GCTCV-105
GCTCV-119
GCTCV-218
Goldfinger
Kabana 6H
Kiwangaazi
M9
NARITA 1
NARITA 10
NARITA 11
NARITA 12
NARITA 13
NARITA 14
NARITA 15
NARITA 16
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NARITA 21
External links

To browse accession-level information on 'FHIA-21' in MGIS
'FHIA-21' patent

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