

## **Breeding of ‘Fenza No. 1’, a new high-quality banana variety with high resistance against *Fusarium oxysporum* f. sp. *cubense***

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### **Abstract**

**[Source of parents]** ‘Fenza No. 1’ (*Musa*×*pradisiaca* ABBB) is a hybrid progeny of ‘Guangfen No. 1’(ABB)×*Musa balbisiana* (BB). **[Breeding procedure]** One seedling plant was obtained in 2000. After being planted in the field for successive two cycles, the suckers of the plant were used as explants to obtain tissue-cultured plantlets through adventitious bud proliferation. Comparative trial of ‘Fenza No. 1’ and ‘Guangfen No. 1’ was conducted in April 2004. It was observed that ‘Fenza No. 1’ is highly resistant to *Fusarium* wilt of banana. The multilocation trails were then conducted in Guangdong (including Guangzhou, Zhongshan, Dongguan, Zhuhai, Shantou, Chaozhou, Huizhou) and Hainan Province, respectively. **[Botanical character]** Compared with ‘Guangfen No. 1’, ‘Fenza No. 1’ is relatively higher and characterized by middle vigorous plant, drooping leaves, relatively small canopy breadth and less-developed root system. The pseudostem of newly planted and ratoon cropped ‘Fenza No. 1’ are 325 cm and 410 cm in height, respectively. The pseudostem base girth (30 cm above the ground) and middle girth are 76.7 cm and 52.5 cm, respectively. The pseudostem is shiny and medium green in color with purple-black pigmentation. The underlying pseudostem is light green in color with pink-purple pigmentation. The leaf blade length is 205 cm, leaf blade width is 59 cm, and leaf ratio is 3.47. Both sides of leaf blade base are rounded but asymmetric. The leaf upper surface and lower surface are green in color and dull. The color of midrib upper surface is green, the color of midrib lower surface is light green. There is very little wax on leaf lower surface and leaf sheath. The petiole length is 57 cm. The petiole margins are green in color, winged and not clasping the pseudostem. The margins of petiole canal are overlapping. There are sparse brown-black blotches at the petiole base when the plant is bearing fruit. The rachis of ‘Fenza No. 1’ is hairless and falling vertically. The male bud is ellipse in shape and 27 centimeters long till harvest. The male bract is ellipse in shape and waxy. The bract external and internal face are pink-purple and red in color, respectively. The bract apex is tinted with yellow. The compound tepal is closed, and its basic color is pink or pink purple. The lobe color of the compound tepal is yellow. The free tepal is oval in shape and translucent white in color. The free tepal margins are serrated. The free tepal apex

is triangular. The style is straight in shape, and its basic color is white, with purple pigmentation. The stigma is cream in color. It is occasionally observed that individual male flowers have pollen, and ovules in a few specific female flowers could develop into seeds after artificial pollination. **[External character]** Fruits are straight and slightly curved towards the stalk. Positioning of fruits on the crown is biseriate and occasionally fused. Fruit shape is basically ellipse and fruit apex is blunt-tipped and there are remains of the dead style and petal. There is no pronounced ridges on the transverse section of the fruit. The average length of finger is 13.6 cm. Fruit pedicel is hairless and 2.0 cm in length, and fruit pedicels of neighbored fruits are occasionally fused. Immature fruit peel is light green in color, and pulp color before maturity is cream. The fruit peel turns yellow in color and is not adherent to pulp at maturity. Mature fruits are persistent and don't fall from hands. The outer pulp zone near the skin of fruit is cream in color, while the central carpellary zone is yellow in color. The texture of flesh is soft and smooth, pulp ratio at maturity is 74.2%, predominant flavor is pleasant sweet and sub-acidic, with mild aroma. **[Inner index]** The soluble solid content of fruit is 25.72%, the titratable acid content is 0.45%, the soluble sugar content is 21.06%, the reducing sugar content is 18.31%, and the vitamin C content is 14.46 mg·100g<sup>-1</sup>. **[Habit of growth and fruit]** The plant crop cycle is around 14-16 months, and the yield for 666.7 m<sup>2</sup> is approximately 1800 kg. In some high-yield plantations, the average bunch weight is 20 kg and the yield for 666.7 m<sup>2</sup> is approximately 3000 kg. **[Resistance]** 'Fenza No. 1' is highly resistant to *Fusarium oxysporum* f. sp. *cubense* race 4, and the incidence rate is < 5% in a severely infected field. **[Storage]** At the late stage of maturity, there is no anthracnose spot on the surface of fruit peel. The shelf life of 'Fenza No. 1' is 4-6 days, which is 2-3 days longer than that of 'Guangfen No. 1'. **[Suitable cultivation area]** 'Fenza No. 1' is suitable to be planted in areas with severe *Fusarium* wilt of banana.