Data in Brief 17 (2018) 671–680

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

The 'Plantain-Optim' dataset: Agronomic traits of 405 plantains every 15 days from planting to harvest

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ARTICLE INFO

Article history:
Received 24 August 2017
Accepted 23 January 2018
Available online 2 February 2018

Keywords:
Banana
Plantain
Experiment
Agronomic trait
Growth
Development
Variety

ABSTRACT

The 'Plantain-Optim' dataset (came from the 'Plantain-Optim' experiment conducted from 2009 to 2011 at CARBAP experimental station in Cameroon. The main objective was to describe agronomic potential of nine plantain varieties, including five natural plantains commonly cropped in Cameroon, and four plantain-like hybrids. A completely randomized bloc permitted to compare growth, development and yield of 45 plants per variety split between five replicates. Cropping practices guarantied non-limiting and homogenous conditions. Each plant was measured every 15 days. Data described aerial organ sizes, foliar structure and bunch characteristics of the mother plant. The 'Plantain-Optim' dataset includes the complete individual growth of each studied plantain of the 'Plantain-Optim' experiment with a 15-day accuracy. It is a useful standard of plantain varietal diversity for comparison with others datasets. Varietal growth and development homogeneity, biomass production or foliar and bunch structures could be further investigated. Moreover, these accurate data on plantain growth could be valuable for plantain 3D modelling.

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https://doi.org/10.1016/j.dib.2018.01.065

Specification Table

Subject area	*Agronomy, Crop modelling, Plant growth and development*
More specific subject area	*Banana, Plantain*
Type of data	*Tables*
How data was acquired	*The 'Plantain-Optim' dataset came from the 'Plantain-Optim' experiment: data are raw measures from experimental field. Leaf areas were calculated from measured data with the Murray formula* (Murray, 1960) *and the OTO model* (Dépigny, 2015).
Data format	*Raw data*
Experimental factors	*Experimental field was a fallow during more than one year. Plantlets were choose homogeneous and healthy.*
Experimental features	*The 'Plantain-Optim' experiment was a completely randomized bloc with on factor. The factor was the plantain variety with nine modalities. Each variety was represented by 45 plants split into 5 replicates.*
Data source location	*CARBAP experimental station, Njombé, Cameroon GPS: 4°34'N; 9°38'E; 79 m a.s.l.*
Data accessibility	*Cirad Dataverse* http://dx.doi.org/10.18167/DVN1/CBUVWU

Value of the data

- The 'Plantain-Optim' dataset describes aerial organ sizes, foliar structure and bunch characteristics of 405 plantains from planting to harvest with a 15-day accuracy.
- The 'Plantain-Optim' dataset allows comparing growth and development of nine plantain varieties, included five natural plantains of three different plantain subgroups, and four plantain-like hybrids.
- The 'Plantain-Optim' dataset is a useful standard of plantain varietal diversity growth and development for comparison with others plantain datasets.
- The 'Plantain-Optim' dataset includes accurate and helpful data to deepen biomass production and allocation, and foliar and bunch structures.
- The 'Plantain-Optim' dataset could be basis for plantain 3D modelling.

1. Data

1.1. Background

Plantain is one of the most important staple food in West and Central Africa. Like others *Musa* species, plantain (*Musa acuminata* × *Musa balbisiana*) is a giant monocotyledon [1] with an underground corm that supports leaves. Leaf sheaths form the pseudostem. A terminal bud leads the inflorescence, and then the bunch, that is compound by hands of bananas. Bananas are called "fingers". Farmers commonly cropped a large varietal diversity in West and Central Africa. At this time, varietal explorations led more than 135 plantain varieties, which are preserved in the collection of CARBAP (African Centre for Banana and Plantain Researches) experimental station. This diversity represents a large panel of morphologic traits, which are basis of the existing botanical classification into fours subgroups (French, French horn, False horn and True horn) and three plant sizes ('small', 'medium' and 'giant') [2,3]. Hypothesis is that this diversity also represents agronomic potential variations. Alongside this botanical knowledge, very few studies explored agronomic differences between plantain varieties, as yield potential, nutrient and water needs or pest and disease sensitivity. Thus, there is a real lack of knowledge and data concerning agronomic potential to benchmark varieties for farmers [4], even more to choose the best suitable varieties for integrating into