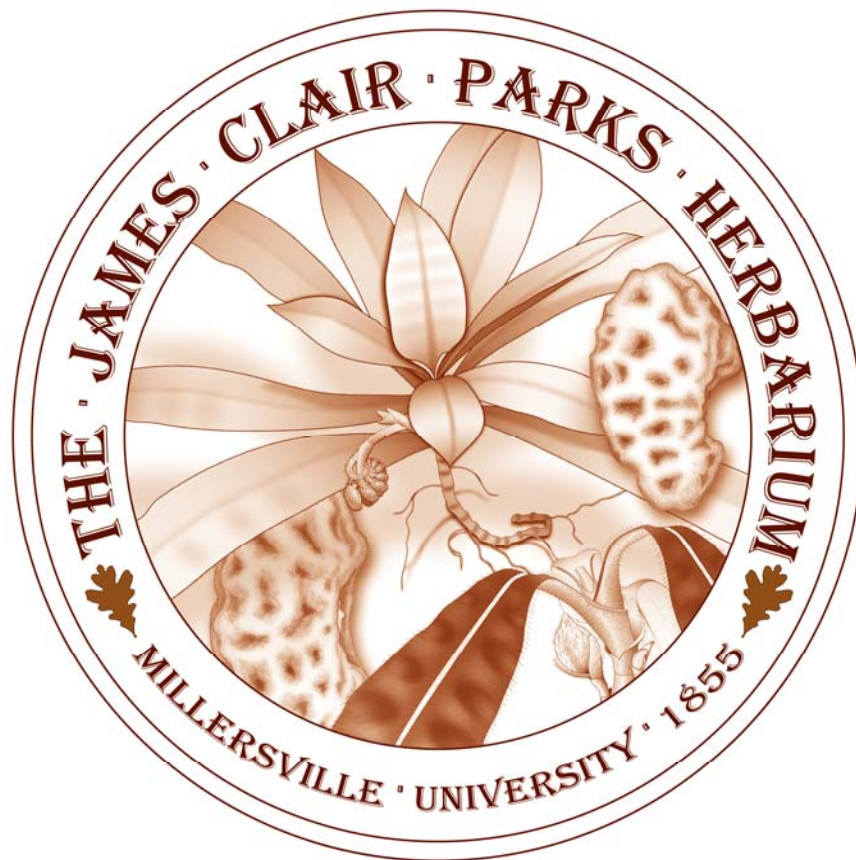


PARKSIA

The Journal of the James C. Parks Herbarium

Volume 1

2011



A journal dedicated to the dissemination of
useful information regarding plants.

PARKSIA

Editor

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About Parksia

Parksia is published periodically by the James C. Parks Herbarium of The Department of Biology, Millersville University of Pennsylvania. It is dedicated to publishing short encyclopedic articles and essays containing useful information about plants in our world. *Parksia* is available for free, on the Web at <http://herbarium.millersville.edu>. The street mailing address for the Herbarium is James C. Parks Herbarium, Department of Biology, Millersville University of Pennsylvania, 288 Roddy Science Building, 50 E Frederick St, Millersville, Pennsylvania, 17551, United States of America.

Contributions

If you are interesting in contributing to *Parksia*, please send correspondence to the *Editor* at the address above.

HOW WILL THE BANANA PANAMA DISEASE AFFECT THE BANANAS I GET AT MY GROCERY STORE?

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A lethal fungal disease of bananas is sweeping through banana plantations in southeast Asia and threatens to do the same in American plantations. The following is a bit of the history and current state of knowledge regarding this disease.

Panama Disease, also known as Fusarium wilt of banana, is a lethal disease of bananas caused by any of four strains or “races” of the soil-borne fungus *Fusarium oxysporum* subspecies *cubense*. It is thought to have originated in Southeast Asia (thus “Panama Disease” is a bit of a misnomer), but is now found in 80% of the growing regions of the world. These regions include Honduras, Costa Rica, and Panama, which produce most of the bananas exported for sale in North America, as well as other parts of the world. This disease first became known in the 1940s, when the Gros Michel banana cultivar was the primary banana cultivar of commerce. The disease then was caused by a single race (Race 1, also known as Tropical Race 1), which wiped out many plantations exporting the banana and forced its replacement by the current Cavendish cultivar that we are so familiar with at our local grocery stores.

The Cavendish seemed to be resistant to the fungus until the 1990s, when the more recently evolved Tropical Race 4 was detected. Tropical Race 4 is an aggressive and highly lethal race that affects not only Cavendish, but also many other cultivars such as plantains. Race 4 originated in the eastern hemisphere, from a particular area in Southeast Asia from growers of the Cavendish, and it is spreading to the western hemisphere. This is a big problem for the trade of bananas because it is easily transmitted through infected rootstock used to start new plantations, through tools and even from soil on the bottom of a shoe carrying the disease. There is no ready replacement for the Cavendish cultivar, as many types similar to the Cavendish, as well as the plantain, are susceptible. If the spread of Tropical Race 4 into American plantations is not stopped, in the short term there will certainly be price increases experienced by both local growers and consumers in the Tropical American countries in which bananas are grown, as well as consumers in North America. In the long term, the Cavendish may, like the Gros Michel before it, even go extinct if a remedy to the spread of Race 4 remains elusive.

Research has been done with chemicals for the banana plants and the soil bananas grow in, but there has been no significant progress in this area. Research is currently being conducted into breeding genetic resistance into the banana, which so far has been met with limited success in terms of resistance, but with negative effects on the look and taste of the banana. It is hoped that a solution will be found before the banana we know goes the way of the dodo bird.

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HOW TO CITE THIS ARTICLE

Raczka NC. 2011. How will the banana Panama Disease affect the bananas I get at my grocery store? *Parksia* 1: 7-8. Available at <http://herbarium.millersville.edu>.

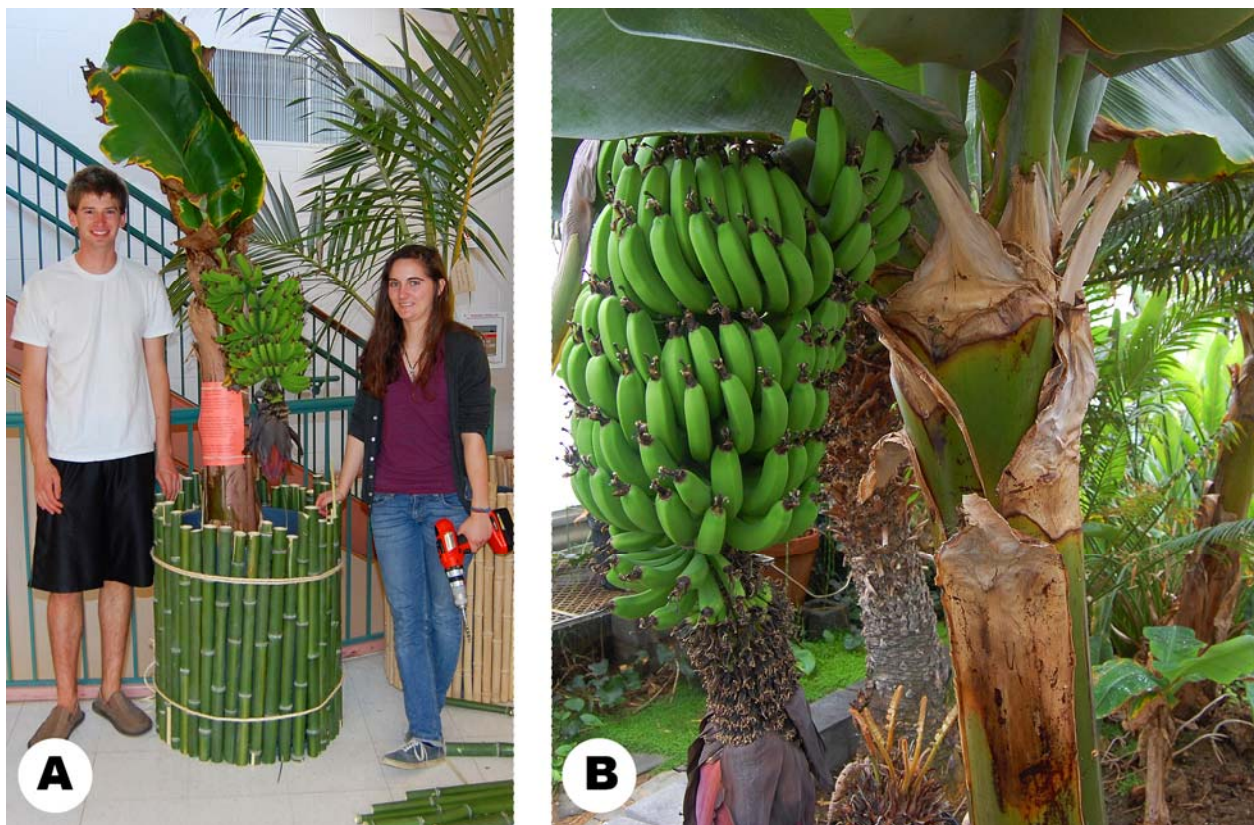


Figure 1. Cavendish banana “trees” on display and in flower and fruit at Millersville University (May 2011). A, Mason Small (MU Biology - Botany '14) and Brittany Guidos (F&M Biology '14) next to the living Cavendish banana exhibit they helped install in the Roddy Science Building. B, A close up of a Cavendish infructescence on a tree growing in the MU greenhouse.

Published May 16, 2011