

Without Fungicides, World Banana Exports Would Collapse

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Global output of bananas exceeds 200 billion pounds annually of which about 20% are exported primarily to the U.S., the E.U. and Japan. Bananas are harvested green and unripe.

Sigatoka is the most important disease of banana worldwide. The disease takes its name from the Sigatoka Valley in Fiji where it was first recognized in 1912 [1]. During the next 40 years the disease spread to all banana-growing countries. Sigatoka appeared in Central America in 1934 and in two years destroyed more than 22,000 acres of bananas in Honduras and Surinam [2]. By 1936, fungicide spray programs utilizing Bordeaux mixture (copper and lime) were developed to control the disease.

Infection occurs on the leaves of the plant during and immediately after unfurling. The first symptoms, small flecks, appear on the leaves 10-15 days after infection. The flecks elongate into narrow streaks which enlarge and darken to give the characteristic black streaking of leaves [1]. The affected areas collapse. In extreme cases, all leaves can be destroyed before the bunch is mature, and the bunch may fall from the plant [1]. Both growth and yield are affected because of the reduction of photosynthetic area [3]. The size of bunches and individual fingers are reduced. The fungus produces a complex of toxins that appear to cause premature ripening of the fruit, probably leading to the greatest cause of yield loss [3]. Premature fruit cannot be sold and is simply dumped.

Sigatoka is well controlled in export plantations with fungicides [4]. Typically 25-35 fungicide applications are made annually [5]. Without the frequent use of fungicides, the export trades could not control black Sigatoka and, thus, would be unable to produce profitable quantities of high quality fruit [6]. The export plantations are usually vast monocultures. These huge plantings lend themselves to highly mechanized harvesting and packing operations, but, since they are uniformly susceptible, are also prone to devastating outbreaks of black Sigatoka [6].

References

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2. Trujillo, E.E., et al. 1964. The distribution of Sigatoka disease of bananas in Hawaii. *Hawaii Farm Science*. 13:10-12.
3. Marin, D.H., et al. 2003. Black Sigatoka: an increasing threat to banana cultivation. *Plant Disease*. 87(3):208-222.
4. Ploetz, R.C. 2003. "Yes. We won't have bananas." What realistic threats do diseases pose to banana production? *Pesticide Outlook*. April.
5. Vargas, R. 2006. Biodiversity in humid tropical banana plantations where there has been long-term use of crop protection products. *Agronomia Costarricense*. 30(2):83-109.
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Premature ripening due to black Sigatoka infection



Banana leaf treated with fungicide



Untreated leaf with Sigatoka infection



Defoliation of banana tree from fungal infection



Aerial application of fungicides