

Yellow Shoot Disease (or Huanglongbing) on Citrus: A Dangerous Disease Threatening Citrus Crops of the Mediterranean Region

Bouزيد Nasraoui*

Department of Plant Protection, National Research Agronomic Institute of Tunisia (INRAT), University of Carthage, Tunis-Menzah, Tunisia

***Corresponding author:** Bouزيد Nasraoui, Department of Plant Protection, National Research Agronomic Institute of Tunisia (INRAT), University of Carthage, Av. Hedi Karray, 1004, Tunis-Menzah, Tunisia, Tel: (+216) 71 755 985 / (+216) 98 29 29 17; E-mail: nasraouibouزيد2012@gmail.com

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Editorial

In many countries in the world exists a citrus bacterial disease, due to a bacterium from the genus '*Candidatus Liberibacter*', that is very dangerous and hard to control. Even this disease had been known by the name 'Greening', this appellation is presently quite abandoned because it does not reflect exactly symptoms caused by the disease. Symptoms that characterize this disease are [1] yellowing of the tree top shoots, [2] appearance of blotched mottle on leaves, and [3] a reverse yellowing of the fruit which started from the fruit basis attached by the petiole and not from its top as when fruit is safely ripening. And since this disease was firstly identified in China, especially by shoot yellowing symptoms, it was called and largely known by its Chinese name "Huang-Long-Bing" (abbreviated as HLB).

The disease is caused by the bacterium species '*Candidatus Liberibacter africanus*', '*Candidatus Liberibacter asiaticus*' and '*Candidatus Liberibacter americanus*'. These three bacteria (African, Asian and American species) live in the host plant inside the phloem tissue [3], after their introduction in the plant by two insect species feeding on citrus tree: African citrus psyllid (*Trioza erytreae*) that naturally carries the African bacterium and Asian citrus psyllid (*Diaphorina citri*) that naturally carries the Asian and American bacteria. By looking to the HLB disease dispersal in the world, we find the African bacterium existing in the Eastern coast of Africa continent from South-Africa to Ethiopia, and in some areas of Western Africa in Cameroon and Zaire. Regarding the Asian bacterium, it is dispersed in most of the Southern regions of the Asian continent. Both these two species of bacteria are disseminating in the South-West region of the Arabic peninsula (Yemen and Kingdom of Saudi Arabia) and the North of Ethiopia. In the American continent, especially in areas of Florida in USA and some other areas in Brazil, two bacterial species exist which are American and Asian bacteria [4]. With regard to the psyllid vectors of the bacteria, they cover

all regions where HLB disease exists, but also in other regions where the disease does not occur yet, among which, the closest one to the Mediterranean region are the Spanish Canary islands (West of Morocco), where the African bacterium was reported since 2002, but the most danger situation presently is the discover of this vector in August 2014 in the Pontevedra region [5], then in the Coruna region, both in the Galicia district in the North-West of Spain. Moreover, the insect was also found in January 2015 in the North of Portugal in Porto region from which it is currently spreading in the coastal areas of the Northern Portugal. This situation threatens by the dissemination of the disease vector inside whole Spain and Portugal and then to Southern Europe regions as well as North-Africa regions, invading hence whole the Mediterranean countries.

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