Title
Joseph (Josy) M. Bové Dedication

Journal
Journal of Citrus Pathology, 4(1)

Authors
Ayres, J
Timmer, L W
Gottwald, T

Publication Date
2017

DOI
10.5070/C441034815

OPEN ACCESS Freely available online

Journal of Citrus Pathology

5th International Research Conference on Huanglongbing, Florida, 2017

Joseph (Josy) M. Bové dedication

J Ayres[1], LW Timmer[2], and T Gottwald[3]

[1]Fundecitrus, SP, Brazil; [2]University of Florida, FL, USA; [3]USDA, FL, USA.

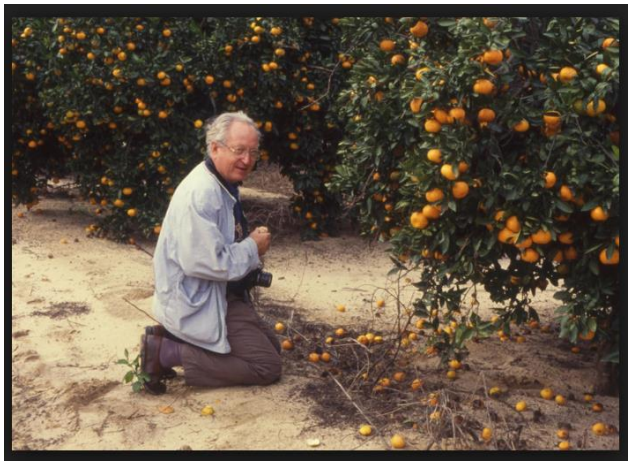
Citation: Ayres J, Timmer LW, Gottwald T. 2017. Joseph (Josy) M. Bové dedication. J Cit Pathol. iocv_journalcitruspathology_34815.

Joseph (Josy) M. Bové was a consummate professional who made many important discoveries that have had a significant effect on plant pathology and on citrus industries worldwide. He was born in Luxemburg, in 1929, moved to France as a boy and became a French citizen in 1968. He did his doctoral work on the in vitro synthesis of plant viral RNA under Jacques Monod at the Pasteur Institute, but most of his career was dedicated to the investigation of systemic prokaryotes infecting citrus. He was Researcher at the French Institute for Citrus and Tropical Fruit Research at Versailles, France (1959-1970); Director of Research at INRA (French National Institute for Agricultural Research) campus of Bordeaux, France (1971-1975) and professor of microbiology at the University of Bordeaux (1976-1997), Head of Laboratory for Cellular and Molecular Plant Biology (1974-1994) and President of INRA-Bordeaux (1984-1994). Two of his most important discoveries were that the agent of citrus stubborn disease was not a virus as thought previously, but a bacterium and, more precisely, a helical mycoplasma to be named *Spiroplasma citri*. Similarly, the agent of citrus greening disease was not a virus, but also a bacterium, to be named *Candidatus* Liberibacter africanus for the disease in Africa and *Ca*. L. asiaticus for the disease in Asia. His group used antibiotic therapy and electron microscopy to demonstrate that the pathogen was a gram-negative bacterium. He also found that witches' broom disease of lime, a disease that was devastating lime production in the Middle East, was associated with a mycoplasma *Ca.* Phytoplasma aurantifolia and transmitted by a leafhopper.

Many colleagues and students were initially intimidated by his strong personality and his self-confidence, and he was often critical of weak papers and statements not supported with good data. But, he was always helpful to all, provided valuable suggestions, and was willing to share his knowledge and undertake projects of international cooperation. One of his major and unusual strengths was his ability to link the latest scientific findings with solutions to agricultural problems in the field.

During his academic career, Bové published over 300 scientific articles in high impact journals. He served as Chairman of the International Organization of Citrus Virology and the International Organization of Mycoplasmology. He organized many scientific meetings and hosted numerous scientists and trainees in his lab and at his home with his wife Collette, who was a great scientist in her own right. Josy was a consultant for FAO on citrus diseases and traveled extensively. He was widely known everywhere and greatly respected for his insight into all types of problems. His list of countries visited was much longer than the ones he missed.

Josy's energy and stamina were truly amazing and he contributed enormously to the advancement of the Brazilian and other citrus industries. Fifty-one of his publications included authors from Fundecitrus researchers in Brazil. The passion and the involvement of Bové to the Brazilian citriculture began when he was still young. His first trip to Brazil was by ship, in 1959, the invitation of Victoria Rossetti. When he first arrived, São Paulo State citriculture was reemerging from the devastating effect of the Tristeza disease which, in the 1940s and 50s, had caused the death of 90% of all orange trees grafted on sour orange rootstock. On that occasion, he visited the Sete Lagoas farm located in Mogi Mirim, São Paulo State that would later be recognized worldwide for its technology and modernity. These two stays in Brazil allowed Josy to establish a solid collaboration and friendship with Dr. Rossetti and Dr. Bittencourt, in addition to other icons of the Brazilian citriculture in those days, such as Dr. Álvaro Santos Costa, Dr. Sylvio Moreira and Dr. Ody Rodriguez.



However, a more effective involvement of Dr. Bové with the Brazilian citriculture would occur from 1989, when, in collaboration with Monique Garnier and Victoria Rossetti, discovered the presence of *Xylella fastidiosa* in the xylem of leaf samples of sweet orange trees affected by Citrus Variegated Chlorosis (CVC), a new disease that, after its first report in 1987, rapidly spread to orchards in the north and northwest regions of the State of São Paulo. Because of its severe symptoms and damage caused to the infected trees, CVC was causing great fear to the citrus sector in those days. In 1993, Dr. Bové and his staff at INRA confirmed that *Xylella fastidiosa* was the causal agent of the disease. Bové returned to Brazil in 1992, at the invitation of Victoria Rossetti and citrus grower Miklos Naday (Director of Sete Lagoas farm) with the mission of leading a team of the renowned international researchers with the goal of determining the local situation with CVC and coordinate an international workshop on the disease at Fundecitrus, and to establish a strategic research plan for CVC to try to elucidate the problem and establish control strategies. Bove's role was vital for the development of the CVC management, which is based on the use of healthy citrus trees from protected nurseries, removal of sources of inoculum, and control of the sharpshooter vectors. The adoption of these measures by most citrus growers allowed the incidence of CVC-affected trees to fall from as much as 40% in 2010 to only 3% in 2016. Bové also made a difference with his arguments at the Council of FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo) in the decision to choose *X. fastidiosa* as the first organism to have the entire genome sequenced by the Brazilian Genome Program. The resulting article published in the journal Nature gave Brazilian science worldwide recognition.

From 1997 to 2016, Dr. Bové had a permanent and decisive involvement in support to the advancement and maintenance of competitiveness of the Brazilian citriculture. By accepting an invitation made by Fundecitrus manager Juliano Ayres, Bové assumed the role of a senior consultant in plant pathology of Fundecitrus, with the central mission to support and give direction to research activities. In these two decades, at the invitation of Fundecitrus, Dr. Bové made more than 50 trips to Brazil, having a fundamental role in staff training, infrastructure updating, and sharing his rich experience with citrus growers.

In 2001 his expertise helped again, this time to solve the problem and to develop a strategy to control the Citrus Sudden Death, a disease of unknown etiology that led to death, in northern São Paulo and southern Triângulo Mineiro region of Minas Gerais State, thousands of adult orange trees grafted on the rootstocks Rangpur lime and Volkamer lemon.

The most relevant contribution to the Brazilian citriculture came, surely, after the detection of Huanglongbing (HLB) in the State of São Paulo in 2004. He was the main proponent of the research and HLB control strategies that were developed by Fundecitrus researchers and partner research institutions in Brazil (an exerpt of his views can be seen here). He championed the three-pronged approach to HLB control – pathogen-free nursery stock, removal of infected trees, and rigid vector control. That approach has been used in many other citrus areas, but has never been as effective on such a large scale as in based on the direction of the leader and strategist Dr. Bové, 'The Big General'. In consideration to the invaluable services rendered to the world and Brazilian citricultures, the deliberative Council of Fundecitrus decided to make a tribute to this brilliant mind and honor Dr. Joseph Marie Bové by placing his name on the institution research center, a facility that was created with his encouragement, who used to say that the largest citriculture in the world should have a research facility appropriate to its grandeur.

Brazilian citrus growers owe much to this man and scientist way ahead of his time. His solid training and international experience combined with the ability to lead and defend his ideas made him an icon. His contribution to the Brazilian citriculture is invaluable, which would not have its main challenges overcome without his scientific mind and courage, a researcher recognized worldwide for being the one who made possible the management of HLB a success.