



# XIX International Plant Protection Congress IPPC2019



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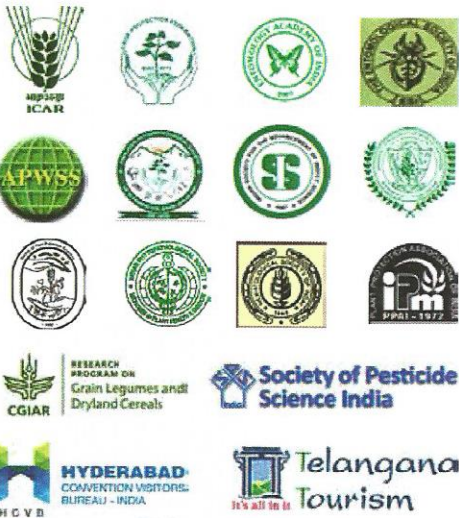
## Crop Protection to Outsmart Climate Change for Food Security & Environmental Conservation

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# Abstract Book

### 37. Integrated pest management (1)

*Organizers: Govind Gujar and Anitha Koduru*

#### Invited

#### O37-1. Biological hypovirulence by hypovirus - CHV1: A Success story of chestnut blight biocontrol in Portugal

**Eugénia Gouveia**<sup>1,2</sup>, Valentim Coelho<sup>1,2</sup>, Jorge Araújo<sup>1</sup>, Luísa Moura<sup>3</sup>

<sup>1</sup>Instituto Politécnico de Bragança, Bragança, Portugal. <sup>2</sup>CIMO-Mountain Research Center, Bragança, Portugal. <sup>3</sup>Instituto Politécnico de Viana do Castelo, Viana do Castelo - Ponte de Lima, Portugal.

Email: egouveia@ipb.pt

The European chestnut (*Castanea sativa* Mill.) is a very important tree on mountain regions in Portugal. Chestnut Blight is associated with the fungus *Cryphonectria parasitica* (Murrill) Barr. This pathogen is an A2 quarantine organism that was introduced in 1989 and establishes in all regions of *C. sativa* in Portugal. In some places, the incidence of the disease may reach the dramatic values of 100%. Hypovirulence is a biological process in which the aggressiveness of *C. parasitica* is reduced by fungal virus infection (Hypovirus), which has been shown to be effective to control the disease by promoting canker healing and chestnut recovery. Based on the rationales of hypovirulence, a program for chestnut blight biocontrol was applied in Portugal. The program lays in a first stage, on the study of the *C. parasitica* population related with vegetative incompatibility system (vic type), and in a second stage, on the application of the compatible hypovirulent strain to each active canker. The program for the chestnut blight biocontrol includes several entities such as the Polytechnic Institute of Bragança, the Chestnut Treatment Organizations and the chestnut producers. Since 2015, the program had the participation of 907 chestnut producers, which treated 32053 chestnut trees in 1813 chestnut orchards. The results obtained in this program, that needs to be continued for a more extended time, point forward for a success story and chestnut blight disease has been controlled by this selective and efficient hypovirulence biological method.

#### O37-2. Copper, chitosan and *Trichoderma* synergy for effective and safe plant protection

**Nandani Shukla** and J Kumar

Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Udham Singh Nagar, Uttarakhand, India.

Email: nandanishukla@gmail.com

Late blight caused by *Phytophthora infestans* is one of the most important diseases affecting organic and conventional production of vegetables like potato, tomato and capsicum etc. The disease can spread very rapidly and cause severe crop losses under favourable environmental conditions. Perilous effects of copper (Cu) containing chemicals for management of late blight of potato (LBP) alarms development of safe and widely adopted novel fungicides. Combination product involving lower doses of Cu, Cu-tolerant *Trichoderma* and Chitosan (Chi) was found highly effective against LBP with improved yields and quality. Investigation revealed higher efficacy of the combination of copper and *Trichoderma* against late blight of potato. Field trials were conducted at GBPUAT, Pantnagar to validate the efficacy of a triple combination of copper, chitosan and chitisanolytic *Trichoderma*. Plant emergence was found maximum in the treatment involving triple combination of the COH (500ppm) + Chitosan (500ppm) +Trichoderma (98%) which was significantly higher than treatment having Mancozeb (89%) and control (60.4%). The lowest disease severity (10%) was observed in COH + TCMS-36 + chitosan treated plots followed by Mancozeb (11%). A significant difference was observed in terms of quality and tuber yield among treatments. The plots treated