

A survey of *Hemileia vastatrix* physiological races emerged in the coffee germplasm collections located in the main coffee regions of China

Le Li¹, Weihuai Wu², Mengfeng Zhu², Pereira Ana Paula^{3,4}, Chunping He², Jionglong Zheng², Yanqiong Liang², Silva Maria do Céu^{3,4}, Kexian Yi⁵, Várzea Vítor^{3,4}

1. NHC Key Laboratory of Tropical Disease Control / Key Laboratory of Tropical Translational Medicine of Ministry of Education/ School of Tropical Medicine and Laboratory Medicine, Hainan Medical University, NO.3 of Xueyuan Road, Haikou City, Hainan Province, P. R. China 2. Key Laboratory of Tropical Agriculture Pest Monitoring and Control, Hainan Province/ Environment and Plant Protection Institute, Chinese Academy of Tropical Agricultural Sciences, No.4 of Xueyuan Road, Haikou City, Hainan Province, P. R. China. 3. Centro de Investigação das Ferrugens do Cafeeiro (CIFC)/ Instituto Superior de Agronomia/Universidade de Lisboa (ISA/UL), Oeiras, PORTUGAL. 4. Linking Landscape, Environment, Agriculture and Food (LEAF), Instituto Superior de Agronomia, Universidade de Lisboa, Lisboa, Portugal



Introduction

The Yunnan Province, the main coffee region in China, has been responsible for more than 90% coffee annual production of China. The first report of the coffee leaf rust (CLR) in China, a disease caused by the fungus *Hemileia vastatrix*, took place in 1998. In 1990's the traditional susceptible coffee cultivars were replaced by cultivars S. 288 and Catimor. Over the past few years the main coffee cultivar Catimor in China has become susceptible to CLR and the physiologic race XXXVII ($v_{2,5,6,7,9}$) was identified as predominant in the main coffee regions. Most of the important coffee germplasm resource nurseries, which involve some genotypes collected from worldwide and some newly breed resources are located in the main coffee cropping regions of China. In this way, these coffee germplasm nurseries can increase the adaptative evolution of *H. vastatrix* through a high selection pressure.

Conclusion/Perspectives

The occurrence of the new race $v_{2,5,6,7}$ indicates the coffee germplasm nurseries can be a potential threat to development of new rust races to the current coffee cultivars. Monitoring the occurrence, dynamics, distribution and pathogenicity of *H. vastatrix* is essential to quickly detect and track new races as well as provide a necessary information for resistant variety breeding.

Materials/Methods

Rust samples were collected on 4 representative coffee germplasm collections distributed in the southern of Yunnan Province during epidemics of CLR in 2018. Their spectra of virulence were evaluated on a set of coffee differentials at Centro de Investigação das Ferrugens do Cafeeiro (Oeiras, Portugal).

Results/Discussion

A total of 57 CLR samples were divided into 4 groups: Group1, WS-MLPCB (23° 11'N 104° 55'E, 550m) ; Group2, PE-YAUCB (N 22° 47'45", E 100° 58'59", 1320m) ; Group3, PE-ACB (N 22° 37'36", E 100° 59'50", 1010m) ; Group4, from RL-MACB (24° 01' N 97° 51' E, 1260m). Twenty-seven new pure cultured isolates were derived from single rust pustules taken from the contrasting sub-groups. In this sampling, the races XXXIV ($v_{2,5,7}$ or $v_{2,5,7,9}$) and XXXVII ($v_{2,5,6,7,9}$) predominated. Moreover, a new race with the virulence genes $v_{2,5,6,7}$ was characterized.

References:

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Figure 1: CLR samples from the germplasm collections

