experimental infections, and differences between isolates likely contribute to explain observed RYMV population evolution.
The implications of these results, including the potential consequences of co-occurrences and co-infections for the evolution of pathogen populations, will be discussed.

EVALUATION OF THE BEHAVIOR OF 49 LINES OF RICE (ORYZA SATIVA L) INTROGRESSED WITH KNOWN RESISTANCE GENES AGAINST RICE BLAST IN IRRIGATED AND RAINFED RICE GROWING SYSTEMS IN BURKINA FASO

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Text
Rice blast caused by Magnaporthe oryzae is one of the major rice diseases in Burkina Faso with losses up to 77% under favorable disease conditions. For the management of this disease, the use of resistant cultivars remains the most economical, and most protective method for the environment. This study focuses on the evaluation of the resistance of 49 lines of rice resulting from crosses between popular cultivars of different countries of Sub-sahara against blast. The experimental design used is a 7 x 7 Alpha lattice with 3 repetitions. The study was conducted in two rainfed sites (Farako-Bâ and Karfiguela) and two irrigated sites (Bagré and Tengrela) in Burkina Faso. The results showed that the rice genotypes developed the disease differently depending on their developmental stages andRice growing systems. In rainfed rice cultivation, 32 genotypes were resistant to leaf blast and 03 (AR-67, IR 130412 and CSR 36) were resistant to leaf and panicle blast. In irrigated conditions, 44 genotypes were resistant to leaf blast and 06 (TZLR-74, IR 133136-B, NERICA 4, NERICA 10, NERICA 11 and CSR 36) were resistant to leaf and panicle blast. The genotype (CSR 36) was disease resistant in both ecologies. The results of this study will make it possible to choose the best rice cultivars, tolerant or resistant to blast, and to identify the effective resistance genes in their genomes.

THE SUSTAINABILITY OF THE RESISTANCE OF ORYZA SATIVA VAR CHHOMRONG DHAN TO PYRICULARIA ORYZAE AND ITS IMPACTS ON RAINFED RICE CULTIVATION IN THE VAKINANKARATRA REGION.

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Text
In Madagascar, rice is the staple food of the population. With the increase in population, rice cultivation in lowlands has become insufficient. Therefore, rainfed upland rice farming has

gained importance.
Since the 1990s, different varieties of rainfed upland rice have been made available to farmers. Unfortunately, their resistance to blast disease was overcome by Pyricularia oryzae populations after a few years of cultivation. But since 2006, a Nepalese variety called Chhomrong Dhan (ChD), which was first tested at the FOFIFA Antsirabe research station in the mid-1990s, has been massively deployed. Thanks to its resistance to blast disease, it was quickly adopted by farmers and covers 85% of the land dedicated to rainfed upland rice in 2017.
Studies conducted by Raveloson et al. from 2014-2017 suggest that ChD displays resistance to P. oryzae, that the strains attacking ChD panicles come from neighboring varieties by spill-over at late stage, but no pathogen population has yet adapted to ChD.
The resistance of ChD reduces the pressure of the disease on rainfed upland rice cultivation in the Vakinankaratra region. Rice blast incidence survey on ChD and neighboring varieties will be continued. The genetic diversity of P. oryzae will be characterized to monitor the evolution of its population structure over the years, on ChD and neighboring varieties. Finally, the genetics of resistance of ChD will be characterized by crossing with susceptible varieties and genetic mapping.

GENE PYRAMIDING FOR ENHANCED BLAST RESISTANCE INTO SPANISH RICE CULTIVARS

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Text
Blast disease, caused by the fungus Magnaporthe oryzae, greatly reduces yield and grain quality and can ruin field crops. Blast disease is a complex trait and preventive treatment with fungicides is the most common method to control the disease, but this is coming to an end due to the restrictions in the use of phytosanitary products and the increasing social demand for a healthier agriculture. Integrated management of crop diseases relies on varietal resistance, agronomic practices, and application of pesticides. In this sense, varietal resistance has a crucial role. Race specific resistance is mediated by R-genes. Breeding for resistance is carried out for a long time and there are a few examples of durable resistance to blast, combining several specific resistance genes and some level of partial resistance. Results from previous research projects allowed us to identify effective R-genes in Spain and served as the basis for a breeding program to introduce R-genes into local varieties. We have generated two highly yielding varieties, displaying long and medium grain size each, by pyramiding the R-genes Pi-ta, Pi-b and Pi-km. Field trials under favourable infection conditions during several years in two different regions of the country, showed that these new varieties are resistant to the blast races present in Spain. These new varieties will contribute to reduce the impact of disease by minimizing the use of fungicides and to the sustainability of the crop.

DISTINCT ALLELIC AND GENOTYPIC STRUCTURES FEATURED BY XIAN/GENG TYPE RESISTANCE GENES RESPONSIBLE FOR RICE BLAST BETWEEN THE SOUTHERN AND NORTHEASTERN REGIONS OF CHINA