

**PROJECT TITLE**

Effects of mycorrhizal inoculation on drought tolerance of African rice – from physiological traits to QTL identification

**CONSORTIUM**

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## SUMMARY OF THE REPORT

In West Africa, the combination of population increase and decrease in rainfall due to climate change will inevitably increase the pressure on water resource for agriculture. Therefore, it is necessary to adapt rice cultivation to less water input and increase its tolerance to drought. Establishment of symbiosis between rice roots and arbuscular mycorrhizal fungi (AMF) improve rice tolerance to drought<sup>1-4</sup>. However, the genetic, molecular and physiological determinants controlling AMF-induced drought tolerance of rice remain elusive.

We used the PHENOARCH platform at INRAE-Montpellier to measure shoot growth dynamics and water use efficiency (WUE) under vegetative drought stress in a panel of 150 sequenced African rice (*Oryza glaberrima*) either AMF-inoculated or non-inoculated. Shoot growth and WUE in the inoculated and non-inoculated treatments are being analyzed separately and in combination (ratios). We are currently in the process of organizing the data for further genome wide association studies at specific dates, within or between treatments. Furthermore, these analyses will allow us to identify African rice genotypes with differential responses to drought stress after inoculation. These genotypes will be used for detailed physiological characterization. Preliminary results revealed a large variability in all traits measured in the different treatments alone or in combination indicating that the data are valuable for genotype-phenotype associations.