DRuID: An informed-Decision platform to reduce the risk of RIce Diseases

## Description: Brief, simple and engaging; must be easy for any audience to understand.

In ancient times, druids were knowledge-keepers that provided members of the community with advice on health matters. In the same way, we are proposing to implement a web platform to advise decision-makers on which rice varieties should be promoted in the next season to grow a healthy crop. The tool will allow us to manage rice disease in real-time and to define breeding priorities for specific regions. In order to do this, the platform will integrate early-season pathogen diagnostics, modeling of weather patterns, and disease resistance profiles of local rice varieties. The platform will provide advice after solving three main questions: What is the predominant pathogen population on the area? Which areas have higher risk of disease? What is the host resistance spectrum that is needed for that area? We expect that the tool will allow public and private enterprises to make informed decisions on rice. To feed the DRUiD platform with field and environment data, we have developed new technologies that will be integrated for the first time. For instance, we created PathoTracer, a molecular test that can identify pathogen races directly from infected leaf sample. We are also building up a catalog of resistance factors in released varieties to determine the best fit. Using data from PathoTracer, we will be monitoring the pathogen races in-real time and linking them with weather and environmental data, disease model outputs and other and localized informatio using GIS.

## The need: Explain the need/the problem that needs to be solved - stats, case examples, infographics are welcome

Rice diseases, such as bacterial leaf blight, represent a serious limitation for rice production in most areas of Asia. The disease prevails in the paddy field because farmers use susceptible varieties where weather conditions favor disease development. In that scenario, the risk of having an outbreak the next season is higher.

## Impact: What is the proposed impact? How will you solve this problem

We expect to empower rice farmers by providing seasonal advice. If farmers know which variety is less likely to suffer in the following season, it will reduce the risk and increases their income. Upscaling this principle can result in effective management of large rice areas or targeting breeding by national programs working in rice.

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