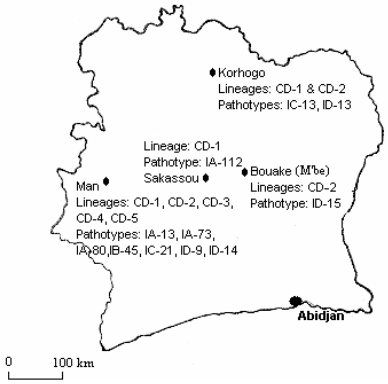
Blast Off for Rice in West Africa

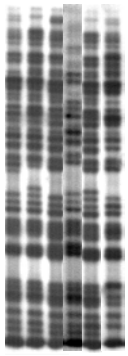
In West Africa, the demand for rice is growing fast, but average yields are low and a wide range of biophysical constraints reduces the yield potential of the crop. Blast disease is a primary constraint, causing yield losses of up to 80%. The use of resistant varieties is the most effective means of combating the disease, but breakdown of resistance is common because of the pathogen's ability to adapt to the host genotype and environment. Understanding the diversity and dynamics of the pathogen populations is critical to the development of blast resistance in crops that will be stable over space and durable over time.



Diversity and distribution of the rice blast pathogen lineages and pathotypes in Côte d'Ivoire

The CPP has funded collaborative projects on rice blast involving Horticulture Research International (HRI) in the UK, the West African Rice Development Association (WARDA), and the Savannah Agricultural Research Institute (SARI) and Crops Research Institute (CRI), both part of the National Agricultural Research System (NARS) in Ghana. As part of an earlier project (R6738), these institutes undertook research on characterisation and identification of sites suitable for blast resistance screening in West Africa. Baseline data on the diversity and distribution pattern of the pathogen populations were gathered, and key sites for resistance screening were identified.

The outputs generated have been disseminated to WARDA and the NARS collaborators as well as to other NARS through the Integrated Pest Management-Task Force (IPM-TF) of the West and Central Africa Rice Research and Development Network (ROCARIZ) for adoption into their programmes.



Blast pathogen isolates from six rice varieties at two sites show similar DNA fingerprints and belong to a dominant lineage in West Africa

Project R7552, managed by HRI, builds on the previous project by undertaking research to:

- understand the dynamics of the pathogen populations
- develop technologies suitable for long-term local monitoring of blast
- identify sources of resistance to characterised pathogen groups
- develop appropriate blast management strategies.

The pathogen characterisation data will also help to fill knowledge gaps in the West African section of the Rice Blast Database, an international initiative providing a global atlas to track the inter-continental diversity and distribution of the blast pathogen populations.

Linkages have also been established with NARS in India undertaking complementary rice blast research, and development work funded by the Asia Rice Biotechnology Network managed by the International Rice Research Institute (IRRI) and other donors. This provides the opportunity for exchange and effective utilisation of knowledge between Africa and Asia to develop resistance gene rotation, gene pooling and/or gene pyramiding technologies for blast management.

***R7552**: Strategies for development and deployment of durable blast resistance in West Africa, Dr Sreenivasaprasad, HRI*