

R7379

Marker-assisted improvement of pearl millet downy mildew resistance in elite hybrid parental lines for Africa and Asia

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Pearl millet is the staple food and fodder crop of millions of poor farm families living in the hottest, driest dry-land agricultural environments in Asia and Africa. Downy mildew (DM) epidemics, caused by *Sclerospora graminicola* (Sacc.) J. Schrot., constitute the major risk associated with its cultivation that can be reduced by effective crop improvement research. This project broadens the range of identified host plant resistance genes for pearl millet DM available to plant breeders where pearl millet hybrids are grown (principally the arid and semi-arid regions of India) or are likely to be grown in the near future (arid and semi-arid regions of southern and western Africa). It also explores strategies for more cost-effectively and efficiently mapping and transferring disease resistance using a combination of conventional and marker-assisted backcrossing. A direct result of this will be a wider range of host plant resistances available in the genetic backgrounds of economically important pearl millet hybrid parental lines in India, and seed parent lines of potential importance as topcross hybrid parents in Africa (initially in Mali, Niger and Namibia). When used as parents of new hybrid cultivars, including backcross derivatives of currently important commercial hybrids, the disease-resistant parental lines produced from this project will contribute substantially to increasing genetic diversity for host plant resistance - and other traits - deployed in farmers' fields, markedly reducing the probability of another economically devastating pearl millet DM epidemic.