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## **SAGIT AND GRDC JOIN FORCES IN SMART TECHNOLOGY**

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SAGIT and GRDC are funding a new project which could revolutionise how the below ground parts of plants are studied.

For years scientists have had to rely on laborious soil sampling and the separation, drying and weighing of roots to understand plant reaction to such things as diseases, fertiliser, water stress, salinity etc.

Early results from trials with ryegrass and sub clover conducted as part of a project funded by MLA / GRDC / AWI, show that the DNA assays detected changes in root DNA levels long before root dry weights changes. Thus the DNA assays have potential to provide a better measure of live root responses to different plant management strategies and environmental stress.

The new project will use the unique technology developed by SARDI Crop Pathology and CSIRO to assess levels of soilborne diseases. In this case, it will use molecular assays to study distribution of crop roots in field trials and how this relates to distribution of Rhizoctonia.

The project will initially focus on barley and is linked to the University of Adelaide barley breeding program which has as one of its aims the reduction in damage from Rhizoctonia. It also includes a project funded by Molecular Plant Breeding CRC which is investigating potential to exploit variation in root architecture as a means to improve plant adaptation.

Soils will be sampled at different depths to determine the levels of barley and Rhizoctonia DNA. We expect the new barley assay will be ready to later this year to process field samples from this seasons trials.

If the assay works as well as we expect, it should revolutionise studies of root systems in the field trials.

It will reduce costs, increase the efficiency and improve the accuracy and will greatly assist in a wide range of plant studies from variety evaluation to disease and weed management, to the impacts of tillage and different farm systems.

This is one of the first joint projects between SAGIT and GRDC and reflects the importance of the work not only to SA, but nationally. It further cements the position of the SARDI Soil Pathology Laboratory as leader in this field.