our future through science

Developing a national and international research community in tree breeding through a web-based information system

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CHALLENGE:
Leverage historical datasets

Tree breeding relies heavily on managing and exploiting data. The tree breeding group has extensive records of tree trials, dating back over 80 years. These cover a wide variety of fields, including:

- Tree trials - the physical site and associated environmental history
- Clone/seed data - including the pedigree
- Intellectual property and licensing
- Literature - including papers, reports, publications.

These records are stored in multiple formats - both physical e.g. paper records in filing cabinets - and electronic e.g. specialised databases, spreadsheets, statistical program input files.



RESPONSE:
Develop a centralised database

TreeBase is a modern, relational database system that provides a reality-to-model mapping of the numerous relationships that exist between the different types of data.

Data of each type is stored in one place and can be readily accessed and linked from a variety of other datasets and localities.

CHALLENGE:
Enable sharing of research

The CSIR researchers are located on multiple campuses; Pretoria, Nelspruit and Pietermaritzburg. The tree breeding research group has clients - from large commercial corporates, to small organisations - located across South Africa. International clients and partners are located in more than 20 countries around the world.



RESPONSE:
Develop a web-based interface

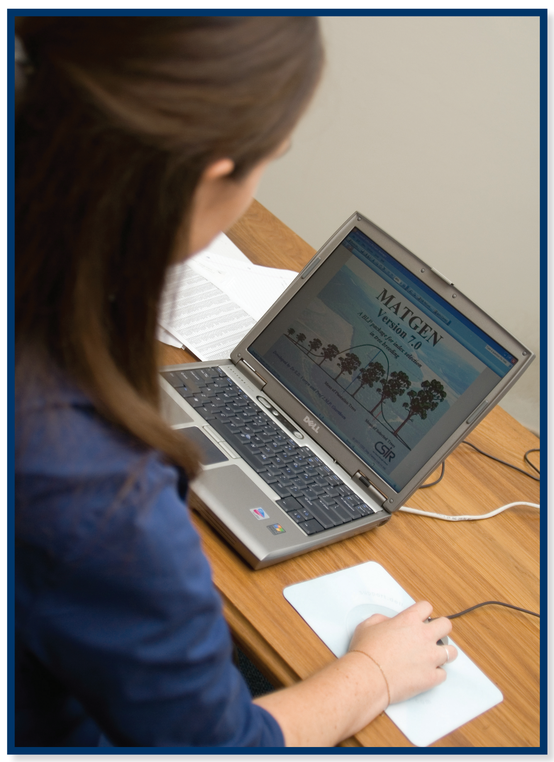
The World Wide Web is now a ubiquitous technology. While access is slow and limited in many poorer countries, it nonetheless remains the most cost-effective mechanism for information sharing.

TreeBase provides a solid web interface, based on open standards and open source tools, that is undergoing continuous expansion, refinement and improvement.

Clients can use **TreeBase** to enter, modify and display their own information, and earmark individual items - such as trials and single clone/seed sources - for display to selected organisations. Information common to all is editable by all.

CHALLENGE:
Minimise rework for researchers

The tree breeding group has, over time, developed a number of customised packages to process data so as to provide meaningful interpretations for clients. Each package typically has it own unique input and output formats for data. Researchers can spend up to 80% of their time formatting and reformatting data to use with these packages, and for other purposes.



RESPONSE:
Develop query-and-extraction routines

TreeBase allows data to be extracted in a wide variety of formats - pre-packaged as required so that existing tools can readily make use of it. Researchers will be able to query the system and get what they need in the format they require.

Existing tools will gradually be expanded to provide direct access to the database, automating the updating of the system, simplifying analysis procedures and helping to minimise tedious manual operations.

INTO THE FUTURE...

A transition from existing tools and ways of working is always difficult. **TreeBase** users have complex and varied demands that require a system capable of expanding to meet their needs. New clients and new partners will bring new challenges. This group has a vision for a platform that will enable timely and effective research, and is committed to continue to grow and develop **TreeBase** into the future.



A CSIR research group has developed a web-based information system on tree breeding, which will link national and international partners, with data dating back more than 80 years.



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