



Media Release

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Big productivity gain for Australian pine plantations

In collaboration with the forestry industry, CSIRO has completed a \$6m research initiative estimated to help generate between \$400m and \$800m of additional income from Australia's one million hectares of pine plantations, used in building and construction industries.

The JWI project has greatly advanced the understanding of the interplay between genetics and environment in controlling juvenile wood quality and the transition from weak juvenile wood to the stronger mature wood.

"Dissecting the genetic causes of juvenile wood formation is essential to the forestry industry's ability to design new ways to reduce or improve juvenile wood in radiata, slash and Caribbean pines," says project leader, CSIRO Plant Industry's Dr Harry Wu.

"Pines had been bred for two generations focusing mainly on growth and tree form. The improved growth-rate has reduced rotation age (the time required for trees reaching harvest size) for Australia's radiata pine plantations from about 40-45 years to 27-30 years with an increase of productivity between 30 and 40 per cent.

"However, the problem with shorter rotations is that a higher proportion of juvenile wood is produced. Compared with mature wood, juvenile wood is not strong enough for structural products such as home building."

The JWI project, which began in 2003, has tackled this critical problem by integrating wood science, quantitative genetics, molecular biology, and bioinformatics.

"The increase in juvenile wood in pines bred for faster growth has caused concern in many countries," Dr Wu says. "A result of this is the decision by ArborGen – a joint venture of three international companies– to become a partner in the initiative."

Australian partners in the project were: the Southern Tree Breeding Association (STBA) and its members, which manage the national breeding program for radiata pine; Forest Plantation Queensland, which manages breeding programs for slash and Caribbean pines; and Forest and Wood Products Australia (FWPA). These partners contributed a total of A\$2.56 million to the project.

The project has generated several significant new challenges for further research. For example, during juvenile wood formation there are complex relationships between growth and wood-quality depending on site conditions and management decisions that can generate undesirable results. New strategies are under development to address these technical challenges in progressing pine breeding.

"Tree breeders may need to balance their desire for rapid production and greater quantities of wood with their need to produce strong wood to meet modern demands," Dr Wu says.

The project's 15 primary scientific findings and examples of their adoption by the industry were presented recently at a workshop involving representatives from the pine plantation industry, FWPA, STBA, national tree breeding organisations and scientists from CSIRO.

Image available at: <http://www.scienceimage.csiro.au/mediarelease/mr09-45.html>

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To find out more about this research go to:

<http://www.csiro.au/resources/JuvenileWood.html>

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