

Improving wheat yields for global food security

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With the world's population set to reach 8.9 billion by 2050, CSIRO scientists are hunting down and exploiting a number of wheat's key genetic traits in a bid to substantially boost its grain yield.

The rate of wheat-yield improvement achievable through conventional plant breeding and genetic engineering alone is not fast enough to compete with a rapidly growing global population, changing climates and decreasing water availability in the battle for accessible and affordable food and fuel.

“To avert future [food security](#) catastrophes we must accelerate the rate of wheat yield improvement,” says the leader of a CSIRO wheat research team dedicated to crop adaptation and improvement, Dr. Richard Richards.

“Scientists need to quickly identify the traits and management practices responsible for capturing key resources such as light, water and nutrients, and converting them to grain.”

Locating genes of agricultural importance within the complex wheat genome is challenging but possible using new high-tech equipment such as that being developed by the High Resolution Plant Phenomics Centre (HRPPC) in Canberra.

CSIRO's Dr. Richard Poiré is studying Brachypodium – a type of grass similar in many ways to wheat – at the HRPPC to identify the function

and location of the genes responsible for important traits such as shoot growth, biomass accumulation, photosynthesis and root growth.

By studying a model plant and applying the findings to cereals, scientists can accelerate the breeding of next-generation food and biofuel crops.

Another member of the team, Dr. Anton Wasson, is investigating root growth in Australian and Indian wheat crops.

His aim is to identify new wheat varieties with faster-growing, deeper root systems that can capture more water during flowering and grain development. If successful, the research will enable [wheat](#) breeders to produce improved varieties for the water-limited environments of both Australia and India.

Provided by CSIRO

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