

# Wheat research project plans to grow record breaking crop

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**20:20 wheat project British research facility will use wheat DNA to increase biomass, yield and fertility of plant**

British wheat researcher Martin Parry sounds matter-of-fact about growing a 486 bushel per acre winter wheat crop.

He hasn't done it yet, but that is his team's goal at the longest running agricultural research station in the world, which has 170 years of wheat study behind it.

The 20:20 wheat project at Britain's Rothamsted Research refers to 20 tonnes of wheat per hectare, or eight tonnes per acre, within 20 years, which is 254 bushels per acre more than the world record of 232.

Speaking via Skype to those at the Dec. 4 Farming Smarter conference in Lethbridge, Parry said yields of 194 bu. per acre are achieved in the United Kingdom, but yields have flattened out after 60 years of steady increases.

He said wheat accounts for 20 percent of the global daily protein and calorie intake, so it's a good crop to target for yield boosts.

“What we have is really two basic hypotheses. One is that there's existing variation out there in germ plasm that we can exploit, and the other is that in some cases we can manipulate key traits using genetic manipulation and get better yields in that way.”

Areas to explore include wheat biomass, yield and yield stability, fertility, photosynthesis, carbon partitioning, resource use efficiency including water, nitrogen and phosphorus, and the effects of pathogens and pests.

Rothamsted has more than 11,000 plots on just one of its three research sites and considerable experience with genetically modified wheat field trials, said Parry. “One of the other things that we're trying to do is take information that we might get from other crop species, put them into wheat plants, and what of course we're interested in is not just the performance of individual wheat plots but the performance of whole canopies.”

The wheat genome has not been completely sequenced, but Parry said that work is near completion and will aid his team's research.

Among other avenues, it will aid the exploration of increasing wheat's biomass, which will be necessary so plants can support more grain.

"The first green revolution was built around introduction of dwarfing genes to our crops. They had two effects. They increased the harvest index but they also allowed us to use more nitrogen," he said.

"If we want to increase the biomass, then we need to increase the resource use efficiency. And if that's what the next green revolution is going to be about, that's what we're going to have to do, and that means we're really going to need to increase photosynthesis."

A farmer listening to Parry's talk asked about the wisdom of vastly increasing wheat yields, which would drive prices down.

"I don't need to feed the world. I need to feed my family," he said.

Parry said the research goal is to provide society with choices not only on how much is produced but also on how it chooses to use fertile land.