

impact

of the College of Agriculture and Life Sciences



Competitive Agricultural Systems in Global Economy Corn Gene Identification Project

Issue

Cereal crops are the staple of most human diets worldwide. To improve crop yield and improve nutritive features in cereal crops, plant breeders need to know more about how specific genes work. Until recently, no one has ever attempted to characterize all of the genes in a single cereal crop.

What has been done?

In 1998 plant scientists from the UA and five other universities won a 5-year, \$12 million grant from the NSF to discover all 50,000 genes in corn, the nation's most important economic crop.

The scientists are using a new method for discovering and sequencing genes in corn, and are sharing project findings and material resources with public and private researchers working to develop improved traits in corn and many other agronomically important grasses, such as wheat, barley, rice and oats. Additional tools developed by this project will enable scientists to learn where and when each gene is active and how the gene functions. The corn genomics project is expected to lead to greater fundamental genetic understanding of cereals that worldwide contribute roughly 70 percent of the calories in the human diet.

Impact

University of Arizona molecular geneticists have prepared slides containing about 25,000 corn genes, which are being used in over 80 research laboratories to examine gene expression in maize. As the sequence of each targeted gene is characterized, researchers have entered this information into a computer database where plant breeders, plant genetic engineers and researchers in basic biology around the world are accessing this information so they can use these genes to learn more about how plants work. Slides, gene libraries and seed containing the mutated genes are available to the scientific community. The project is already having major benefits for plant research around the world, according to the researchers. Several thousand people are requesting these genes, and other resources.

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