Pamela Ronald: Why GMOs are crucial in an era of global warming

Virginia Gewin, a writer with Beacon Journal, spoke with Pamela Ronald, a rice geneticist at the University of California at Davis who helped develop a variety of flood-tolerant rice, about the role that genetically modified crops can play in addressing sustainability concerns as climate change challenges our planet. Here are some highlights:

Can you explain how modern genetic approaches contribute to sustainable agriculture and higher yields?

Together with my colleagues, David Mackill and Kenong Xu, we isolated a gene in the ancient variety, called SUB1, that conferred the flood tolerance trait. Then, using that genetic information and a technique called marker-assisted breeding, breeders at the International Rice Research Institute (IRRI) were able to introduce the SUB1 gene precisely into varieties preferred by farmers without destroying the other important plant characteristics.

IRRI has developed several flood-tolerant varieties that have been rapidly adopted by farmers because their yields increase 300 percent compared to conventional varieties following a flood. For 70 million people who live on less than $1/day, these types of advances are crucial for food security.

Have GMOs delivered on the promise of reduced pesticide use?

Genetic techniques, such as introducing a bacterial gene into a crop, have helped reduce insecticide use. Bt stands for *Bacillus thuringiensis*; it's a naturally-occurring bacteria used by organic farmers for over 50 years to control insect pests. A recent US Department of Agriculture report noted that farmers have been able to reduce the amount of insecticides sprayed on corn tenfold due to planting of the Bt corn seed.

Read full, original article: Is genetic engineering crucial to food security in the era of climate change?