

Japanese researchers using particle accelerator to breed salt resistant rice

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Cambodia, Kratie: A worker is removing the rice seedlings. Image: Wikipedia

(Phys.org) -- Japanese researchers at the Riken Nishina Centre for Accelerator-Based Science have been using their particle accelerator to cause mutations in rice for over two decades with the aim of breeding rice that is more resistant to saltwater. Up to now their results have been limited; just one new salt resistant rice variety has been created and it faced mixed reactions regarding taste. But now, because of the tsunami in that country last year that contaminated a lot of farmland with seawater, efforts there have picked up and researchers are reportedly coming close to developing a whole host of new saltwater resistant strains.

The idea isn't all that novel, breeding new varieties of plants has been done for centuries. What the researchers at the [accelerator](#) facility are

doing is speeding up the process. All breeding is based on mutations that occur in plant cells. Those mutations that create positive results in plants are favored over those that don't. Over time successive generations result in plants that are ever closer to what is desired. With the [particle accelerator](#), the research team at Riken, led by Tomoko Abe, fire an ion beam at grains of rice, creating a huge variety of mutations in their genes; afterwards the grains are planted and tested to see which are more resistant to saltwater. Those that are go through testing and are sometimes bred with other varieties with the hope of finding the perfect mix of salt resistance and good taste. In so doing the team is able to create new strains of rice in just a few years that normally would take decades using natural mutation methods.

Developing strains of rice that are resistant to the salt in seawater is important, not just for Japan, which saw yields drop by over half in areas where the sea inundated [farmland](#), but for many other countries in the world as well. With both rising populations and ocean levels, land that is occasionally flooded by the sea could be made useable if strains of rice can be developed that are able to grow there.

The researchers at Riken have already developed strains that see yields drop by just twenty percent when inundated with [seawater](#), and are hoping to improve that number as more research continues. They expect to see fully resistant rice strains as soon as four years from now.

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