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Drug Producing Rice Threatens Food Security

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The news that a California based biotechnology company is planting two genetically modified rice varieties to produce drugs for diarrhea should set alarm bells ringing in rice growing regions of the world. Particularly those like India, which are also centers of origin. A center of origin is the region from where a particular crop originated a few thousand years ago when indigenous communities developed edible crops from the wild plants found in the forest. The maximum diversity of crops is therefore found in their centers of origin.

The cause for alarm at the planting of a drug producing rice in far away California is due to the near certain likelihood of contamination of natural rice gene pools by the genetically engineered ones. The American company Ventria Bioscience has produced GM varieties of rice in Sacramento that have been engineered to produce two compounds called lactoferrin and lysozyme, which are used as drugs to treat diarrhea. The plan is to extract these compounds from the GM rice since that would be much cheaper than setting up a factory.

As with many other industrial products, the question is 'cheaper' for whom? The Ventria GM rice poses a serious hazard to rice growing regions because as we have seen in the past, crops produced in one region easily land up in other regions either through the trade channels or because people just carry the produce to another country.

The American Starlink corn, which is a GM corn carrying a Bt gene was not approved for use as human food since it had an allergy producing tendency. Starlink corn was however approved by the US Department of Agriculture for use as animal feed. And to no one's surprise, Starlink corn was found mixed up in food items in Japan! The reason is simple and therefore

worrying. It is very difficult, if not impossible, to segregate two versions of the same product in real life. One can make complex segregation plans on paper, as Ventria is undoubtedly doing but the likelihood of mix-ups is high because field operations over hundreds of hectare are not like the tightly controlled conditions of laboratories. Contamination of one type of crop produce with another is almost certain. And if American corn could land up in Japan, what is there to prevent American rice from landing in India, especially when California is a large exporter of rice.

Another corn contamination episode should have taught us a lesson about the importance of centers of origin. Whether through international trade or through human traffic, GM corn has landed up in Mexico and contaminated the natural gene pool of corn there. Mexico, which is a center of origin for corn, has had a ban on the planting of GM corn since 1998, yet GM corn found its way there and has crossed with Mexican corn. The contamination is assumed to have come from two sources, one, from American exports of corn to Mexico and two, from Mexicans bringing in American seeds for planting. This has caused great distress in Mexico where corn is not just the staple food but also plays a central role in the cultural heritage of the local people, like rice in India. Mexico moved to take strong action after the contamination was detected and has banned even research on GM corn to cut down all sources of contamination. It is however proving difficult since corn exports to Mexico are not being stopped due to American pressure.

In the case of the Ventria rice, US rice exports (US is the second largest exporter of rice in the world and California is the major rice-growing region in the US) will ensure that it is carried to other countries. A contamination scenario similar to the Mexican corn case would be a highly likely event in rice growing countries and centers of origin, with consequences that cannot be predicted. At the very least, the pharmaceutical rice could end up in the food chain and people could end up eating rice with diarrhea drugs in it.

Rice is the staple food of over half the world's population. For about two billion people in Asia alone, rice and rice products are the main source of food. Recognizing the centrality of rice to global food security, the UN has declared 2004 as the International Year of Rice. This is meant to focus on the threats facing rice production across the world and to develop a strategy for ensuring that sufficient rice is produced for the growing world population. The issue of genetic contamination, in the natural gene pools of rice is therefore a serious one. It is the genes found in centers of diversity like India, that enable rice cultivation to remain viable, despite the natural stress of disease and drought. If such genes were to be lost or silenced, the future of rice cultivation could be in jeopardy.

The threat of genetic contamination from alien genes like those producing diarrhea drugs is the last thing that stagnating rice productivity needs. So little is known about the long-term consequences of foreign genes moving into crop species and almost nothing is known in the case of rice. It would be foolhardy to take risk with a crop that feeds over half the world. May be nothing will seriously go wrong now, but if we were to discover 50 years down the line that foreign genes had resulted in the silencing of important genes in rice, there is nothing we could do to rectify the situation then.

The UN must protest America's diarrhea drug rice, as a challenge to its efforts to secure the future of rice and point out the potential threat of such developments to rice producing regions and global food security. India and other countries in Asia must take the lead in orchestrating such a protest. America's economic interest in producing cheaper drugs cannot be allowed to jeopardize the food security of half the world.

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