

For GM food and vaccinations, the panic virus is a deadly disease

September 23 2013, by David Tribe & Richard Roush



In places like Indonesia, where white rice is a staple food, vitamin deficiency is a serious problem – especially for children. Credit: Shreyans Bhansali

Most readers are aware of the benefits of using vaccines to boost the immune system and prevent infectious disease. Many readers will not be aware of a very different disease prevention tool: supplementing vitamins in crops through genetic modification (GM).

Anti-science opposition to both is rife; to save lives, that opposition has to stop.

The [disease-prevention](#) benefits of [supplemental vitamin A](#) were

[accidentally discovered in 1986](#) by public health scientists. They were working to improve nutrition in the villages of Aceh, Indonesia, where families are heavily dependent on rice as their main source of nutrition.

These scientists discovered that simple supplementation of infant diets with capsules containing beta-carotene (a [natural source](#) of vitamin A) reduced [childhood death](#) rates by 24%.

White rice is a very poor source of vitamin A, so the people of Aceh (like millions of poorer people in large regions of the world) suffered from vitamin A deficiency. This impaired proper development of their biological defences against infection.

We now better understand vitamin A deficiency as a disease of poverty and [poor diet](#), responsible for near two million [preventable deaths](#) annually. It is mostly children under the age of five and women who are affected.

[Many other studies](#) carried out in several Asian, African and Latin American countries reveal the health benefits of beta-carotene supplementation in the diets of people subsisting on vitamin A-deficient staple foods.

Rejecting science

Small wonder then that scientists internationally were outraged at the recent wanton sabotage of field trials to evaluate new varieties of rice called [Golden Rice](#). This rice is genetically modified to contain nutritionally beneficial levels of beta-carotene.

In an [editorial](#) in the journal *Science* last week, prominent scientific leaders, including three Nobel prize winners, expressed their dismay and outrage at unethical anti-scientific efforts to prevent introduction of

Golden Rice to smallholder farmers in the Philippines:

If ever there was a clear-cut cause for outrage, it is the concerted campaign by Greenpeace and other non-governmental organisations, as well as by individuals, against Golden Rice.

Trenchant [opposition](#) to vaccines, and opposition to genetically modified crops, are examples of the disturbing and strong anti-scientific sentiment in many modern countries. They share some common features.



Golden rice can save lives. Credit: IRRI Images

Both movements flourish among those who reject mainstream science. They rest on misuse and misinterpretation of badly designed experiments, such as those taken to falsely indicate that mercury

preservatives in vaccines cause autism.

They include false detection of proteins from GM plants in tissues of pregnant women using invalid protein measurements.

They flourish in news media, which report ill-founded comments. Examples include British medical researcher Andrew Wakefield's disastrous 1998 press conference about the measles [vaccine](#), and the anti-GM Safe Food Foundation's press releases about CSIRO's genetically modified wheat.

These would not pass muster in the professional scientific literature.

Selective 'evidence'

Conspiracy theory abounds in both movements. Anti-GM extremists think support for GM crops results from money by Monsanto. Anti-vaccine true believers say support for vaccines among public health professionals is fuelled by money from manufacturer Merck.

In that sense, both the anti-vaccine and anti-GM extremists are anti-science. Where they part company is in the willingness of anti-GM extremists to actively sabotage and destroy legal scientific experiments designed to address exactly the questions to which activists demand answers.

Even anti-GM activists who profess to respect the scientific method pick and choose which scientific-sounding claims to accept, depending on whether they are compatible with their own personal cultural beliefs and social affiliations.

The hundreds of studies unpinning GM crop safety are ignored. The few studies raising questions about GM crops, almost invariably of

questionable quality, are the sole focus of activist attention.

Jessa Latona, the young woman convicted of sabotaging the CSIRO GM wheat trials said that she is a huge fan of what the CSIRO does in many areas, and particularly on climate change and ... yes ... but I believe that not all science is equal.



Some clinics, such as this one in Haiti, provide vitamin A capsules to children, but they can't cater to the whole developing world. Credit: Bread for the World

This cultural bias about which science is acceptable is at the root of now considerable harm being caused by unscientific rejection of GM crops and vaccines. Nutrient fortified crops and vaccines can save lives if they are given a fair opportunity.

Long-term effects

Anti-scientific opposition to vaccines is promoting the re-emergence of diseases such as measles and whooping cough in developed countries such as the USA and United Kingdom, but anti-scientific opposition to GM crops is largely hurting developing countries.

It is denying them much needed opportunities for improvements in health and human welfare, including by reducing risky pesticide use.

Some may say that the movements cause little harm, and that a precautionary approach is needed to prevent harm.

But the history of the anti-vaccine movement, spelt out marvellously in several books by paediatrician Paul Offit and journalist Seth Mnookin, underlies the fallacy of this attitude.

As Paul Offit [says](#) in relation to people against vaccination:

doing nothing is doing something.

Doing nothing about vitamin and micronutrient-fortified staple foods in the face of widespread deficiencies in the staple diets of many developing countries is condemning many people to disease-impooverished and tragically shortened lives.

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