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The Biotechnology Debate has United the World against Corporate Rule

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I joined the biotechnology debate in 1994 because my friends from the Third World Network inspired me with their selfless dedication to equity, justice, democracy, compassion, in short, all the human ideals that are severely under threat, especially from the biotech industry. These same ideals have brought us out here in droves today. The biotechnology debate has united the world, and all of society in resisting GM crops. It is not just the Europeans who are refusing to accept them, it is also India, Japan, Brazil, the whole of South Asia, the entire African Region, South Korea, Thailand, Australia, New Zealand. In fact, the more real knowledge people have, the greater their resistance. The debate has captured the imagination of the global civil society, and becoming part of the biggest, most inclusive civil rights movement against the corporate empire and the WTO. We've won the first round: Monsanto is to be split up and sold off, its ag biotech division declared worthless.

I am here on behalf of more than 140 scientists from 27 countries to deliver an open letter to all government delegates at the WTO, calling for the immediate suspension of all environmental releases of GM crops and products on grounds of threats to health and biodiversity and for patents on life-forms and living processes to be revoked and banned because they are deeply immoral.

Patents on life-forms and living processes are thefts from nature. They also expropriate the inventive genius and knowledge accumulated by indigenous communities and by previous

generations of western scientists who have worked entirely for the public good. These patents threaten food security, violate basic human rights and dignity, compromise healthcare, impede medical and scientific research, and are against animal welfare.

There is a lot of misinformation and dis-information put out by the biotech industry and our governments. Contrary to what they would like the public to believe, GM crops are neither needed nor beneficial. They are a dangerous diversion from the real task of providing food and health around the world. To put it bluntly: the existing technologies are crude, unreliable, uncontrollable and unpredictable, they don't qualify as technologies, let alone patentable inventions. And they are inherently hazardous. Moreover, these technologies are misguided by a scientific paradigm which is fundamentally flawed, out of date and in conflict with scientific findings. They call that sound science. But it is the ultimate phoney science.

The promises to genetic engineer crops to fix nitrogen, resist drought, improve yield and to 'feed the world' have been around for at least 30 years. Such promises have built up a multibillion-dollar industry now controlled by a mere handful of corporate giants.

But the miracle crops have not materialised. So far, two simple characteristics account for all the GM crops in the world. More than 70% are tolerant to broad-spectrum herbicides, with companies engineering plants to be tolerant to their own brand of herbicide, while the rest are engineered with bt-toxins from a soil bacterium to kill insect pests. A total of 65 million acres were planted in 1998 within the US, Argentina and Canada. The latest surveys on GM crops in the US, the largest grower by far, showed no significant benefit. On the contrary, the most widely grown GM crops - herbicide-tolerant soya beans - yielded on average 6.7% *less* and required two to five times *more* herbicides than non-GM varieties.

The same GM crops have already given rise to herbicide-tolerant weeds and bt-resistant insect pests. Worse still, the broad-spectrum herbicides not only decimate wild species indiscriminately, but are toxic to animals. One of them, glufosinate, causes birth defects in mammals, while another, glyphosate, is now linked to non-Hodgkin's lymphoma. GM crops with bt-toxins kill beneficial insects such as bees and lacewings, and pollen from bt-maize is lethal to monarch butterflies.

According to the UN food programme, there is enough food to feed the world one and a half times over. World cereal yields have consistently outstripped population growth since 1980, but one billion are hungry. It is on account of corporate monopolies operating under the globalised economy that the poor are getting poorer and hungrier. Corporations already control 75% of the world trade in cereals. The new patents on seeds will intensify corporate monopoly by preventing farmers from saving and replanting seeds, which is what 80% of the farmers still do in the Third World. Christian Aid, a major charity working with the Third World, concludes that GM crops will cause unemployment, exacerbate Third World debt, threaten sustainable farming systems and damage the environment. It predicts famine for the poorest countries.

It is clear that GM crops offer no benefits and cannot feed the world. There are also enormous risks. You know the children's joke of what do you get when you cross impossible things like a spider with a goat? Part of the joke is knowing you can't because there are

biological barriers between species which only allow one to cross closely related species such as horse and donkey, for example. Genetic engineering bypasses all these barriers, so that is not a joke anymore. Genes are being transferred in the laboratory between any and every species. Indeed, spider genes have been transferred into goats in an attempt to make the poor female goats produce silk in their milk, and human genes have been transferred into cows, sheep, mice, fish and bacteria.

The most immediate dangers are random and unpredictable, basically because the genetic engineer cannot control where and how the foreign genes are integrated into the genetic material of the host. Genetic engineering animals are acts of cruelty, there are high failure rates and even the so-called successes are often monstrously deformed. Genetic engineered plants may end up having new toxins and allergens. Dr. Arpad Pusztai, an eminent scientist in the Rowett Institute of Scotland, lost his job when he released findings showing that two GM potato lines were unexpectedly toxic to rats.

A more insidious danger is horizontal gene transfer - the transfer of genetic material directly to unrelated species. In genetic engineering, many viral and bacterial genes are being combined in new combinations that have never existed before, and introduced into organisms by invasive methods that make the foreign genes (or transgenic DNA) more likely to transfer again to unrelated species. Such horizontal gene transfer can give rise to new viruses and bacteria that cause diseases and spread antibiotic and drug resistances among the pathogens.

It was because of these concerns that the pioneers of genetic engineering called for a moratorium in the ’70s. Unfortunately, commercial pressures cut the moratorium short. Since then, drug and antibiotic resistant infectious diseases have returned with a vengeance. New viruses are appearing at alarming frequencies, while life-threatening bacteria are rapidly becoming resistant to all antibiotics and are hence untreatable.

Another hazard is that the transgenic DNA can jump into the genomes of cells, resulting in harmful effects including cancer. In its interim report (May 1999), the British Medical Association called for an indefinite moratorium on the release of GM crops pending further studies on new allergies, on the spread of antibiotic resistances and on the effects of transgenic DNA.

These hazards are acknowledged by sources within our Governments. UK scientists advising the Ministry of Agriculture Fisheries and Food are warning of horizontal transfer of genetically modified DNA.

Unless it changes direction, the whole biotechnology enterprise has little chance of success, not the least among the reasons being that the scientific paradigm promoting and misguiding the technology has been thoroughly discredited at least 15 years before. Genetics has changed out of all recognition, and yet the old paradigm is still dominating the scene. The old paradigm offers a simplistic view that the characteristics or traits of organisms are each tied to specific genes, which are unaffected by one another or by the environment. And that, except for very rare random mutations, the genes are passed on unchanged to the next generation.

Instead, scientific findings within the past 20 years reveal an immense amount of cross-talk between genes. Genes are nothing if not sensitive, dynamic and responsive, to other genes, to the cell or organism in which they find themselves and to the external environment. The layer upon layer of feedback between genes and environment, not only determine whether genes are active or not, but what function and structure they have. Genes can mutate, multiply, rearrange and jump around in response to the environment. They may even jump out of the genome of one organism to infect another one. Geneticists have coined the phrase "the fluid genome" to describe the situation. It is more accurate to see the genes as having a very complicated ecology, and that for genes and genomes to remain constant, you need a balanced ecology. So the new genetics is radically ecological and holistic.

I referred to genetic engineering biotechnology as a hoax back in 1994. This hoax is perpetrated by an unholy alliance between corporate capitalism and the discredited scientific paradigm. Together, they mean to control every aspect of our lives, from the food we eat, to the healthcare we can receive or not, to the babies we can conceive and give birth to, and humans beings we can clone. Yes, the first so-called human clone has already been created by transferring the genetic material of a human being to a cow's egg. Mercifully, they destroyed it at day 14, the current legal limit, before the real Frankenstein monster takes shape. And all done in the name of scientific progress and free enterprise.

Fortunately, the game is up, the bubble has burst. The tidal wave of protest is sweeping across the world and has hit the United States. Your national coalition of family farming groups have taken the lead in demanding a moratorium on GM crops and a ban on patents of life-forms and processes. Support your family farmers. When the farmer dies, so dies America.

While the 'benefits' from GM crops remain illusory and hypothetical, the successes of sustainable, organic farming are well-documented, in the Third World, in Latin America, in Europe and North America. There is also an enormous 'health bonus' in phasing out agrochemicals which are linked to many forms of cancer, to reproductive abnormalities and degenerative diseases. An organic revolution in farming is underway all over the world.

What excites me most as a scientist is that there is also an organic revolution going on in western science, which restores and reaffirms the holistic, ecological perspectives that many traditional indigenous cultures have never lost touch with. This organic revolution in western science will put an end to the dominant culture that treats organisms as machines and life and life-necessities as commodities, that glorifies competition and sanctions exploition in the name of the struggle for survival of the fittest. Instead, we begin to appreciate the universal entanglement of all nature, which will transform the very meaning and texture of our lives. The future looks great. Let's go for it.

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