

THE FUTURE OF FOOD – Vandana Shiva

A talk given at the 2010 Annual Conference of the National Justice and Peace Network of England and Wales entitled ‘Our Daily Bread – Food Security, People and Planet’.

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Chair: Sean McDonagh SSC

I am a Columban missionary and it is my great privilege to introduce Vandana Shiva. I think it was Newton who said, when asked about his own work, that he was aware that he stood on the shoulders of giants. I can really say that Vandana is one of those giants. I have been following her work and it has been inspiring me since the 1980s, and not just on a single subject. On many subjects - Third World Debt, Uruguay Round, GATT, TRIPs, Biotechnology - she has a wonderful ability to analyse complex issues clearly. Very often people who deal at that analytical level may not have the data. She has a huge ability in a world where you have more and more specialisation and less over-arching narrative. She has that ability to go deep and yet to be connected. Over to you Vandana and I am sure we are going to have an extraordinary and interesting presentation.

Talk: Vandana Shiva

Thank you Sean.

My journey in ecology began with this beautiful movement in my region called ‘Chipko’. ‘Chipko’ means to hug, and women came out to protect the forests which provided the water and the fodder and the fuel. These forests were disappearing because of logging. I was a student then but I had grown up in these forests and I had seen them disappear. When the movement started I decided to spend all my holiday time volunteering for the movement. I was a Physics student. I had not had a single lesson in Biology. I ran away from my first biology lesson because it involved chopping up cockroaches. So, all my biology is self-taught much later, and a lot of it is taught by the women in rural areas. That’s where I learnt my lessons about biodiversity.

What I could do and they couldn’t was two things: One - English, that my convent education taught me, and when you’ve been a colonised country, the language of the coloniser is treated as more serious as if knowledge is in that language. We have 6000 languages in India and all the 6000 language speaking communities have their knowledge which they communicate in their language. But the language of domination is English and the language of countering domination has become English, so I was able to write reports for them in English, basically translating what they were saying. And the second thing - my Physics education has taught me is to make graphs. It is amazing how just making a graph is made to look like there is something extra out there. You know it is just a summary way of communication. Of course it has now reached the stage where you can cook up graphs, and unfortunately that is a lot of what Monsanto does.

I would have kept protecting forests, fighting against dams – those were the big issues in the early 80s. I had a left a university career to start the Research Foundation for Science, Technology and Ecology as a way to do participatory research in support of grassroots ecology movements, and it was making a difference. In 1982 we shut down mines in my valley, we changed the paradigm of forestry from eucalyptus; everywhere eucalyptus used to be planted in those early days. We showed that natural forests were much more productive – and forest protection rather than forest conversion was our real task.

1984 was for me a major shock therapy. In the summer of ‘84 our army invaded the Golden Temple which was the sacred shrine of the Sikhs, and this was done because the leader of the extremist movement, called Bhindranwale, was in there. The movement Bhindranwale led in the years before was basically built on the frustration and anger of the youth of Punjab. And what is called the Green revolution – which is not green and is not revolutionary – it was basically just applying chemicals to farming - was the introduction of industrial agriculture to third world countries, beginning with India. The Green Revolution got a Nobel Peace Prize and the narrative was that farmers will use new chemicals

and new seeds and they'll get prosperous and prosperous farmers will be peaceful farmers. And the Green Revolution was offered as an alternative to the Red Revolution that was taking place in China, and was spreading through the countryside of Asia. Of course there wasn't peace in Punjab. In my count 30,000 people were killed in that period of extremist violence. In fact, that was the first modern day terrorism - the extremism that grew in Punjab - and by that winter we had the Bhopal disaster which has killed another 25,000 people.

And by the end of the year I was asking myself a very basic question – why is agriculture so much like war? Why is agriculture killing so many people? And I did a major study at that time on the Green Revolution. I was doing a United Nations study on conflicts over natural resources – on water conflicts, forest conflicts and land conflicts. And I said to the UN, something is going on in Punjab related to natural resources and it has been presented as if it is about religion, but something else is going on and I'd like to really go to the roots of it.

So I did my book called 'The Violence of the Green Revolution' and what I really found out in that study was two things: one – that chemical agriculture/industrial farming had been promoted as a miracle. And the arrogance of it was that Borlaug, who did the dwarf varieties, sent out his 12 students as his 12 apostles. And the wheat they distributed they called them the 'miracle seeds'. Nothing miraculous about those seeds – they were just bred to respond to chemicals and even the United Nations has had to say that the term 'high yielding variety' is wrong. It should be termed 'high response variety' because if you don't have the right amount of water and you don't have the right amount of chemicals then these crops do very, very badly. And we saw this last year when we had a rainfall failure. The Green Revolution farming absolutely collapsed – it was down to zero - whereas the native crops and organic farms had an output because they were resilient to drought. The increase in rice and wheat which has been made to look like a miracle totally distorted India's food and agriculture policies. First, we were told that the rest of the country can be completely neglected – Punjab will grow food for the rest of the country. But food was now reduced to rice and wheat which is a recipe for malnutrition. But that centralisation also meant that huge amounts of money were being spent to get a centralised production system across the country.

Just one figure – the subsidies for chemical fertilisers last year in India were 1.3 trillion rupees. I think it is nearly as much as our defence budget. And this price will continue to grow because fossil fuels are running out and chemical fertilisers are made from fossil fuels. Phosphate fertilisers from minerals are running out. I was told there are just 20 years of deposits left. So unless we shift to a renewable source of nutrients we are not going to be able to do farming 20 years down the line. And yet there is this assumption that soil fertility comes from fertiliser factories which are actually left overs of the war. Chemical fertilisers are made in factories that used to make explosives. I recently met someone who was talking about the Oklahoma Bombing in the US which was from a fertiliser bomb. I was told that so much of the bombing in Afghanistan right now is from fertilisers that US Aid distributed. These are not weapons like Saddam Hussein's big armouries. These are fertilisers. The pesticides came out of warfare. They were meant to kill people, which is why when the gas plant leaked in Bhopal they kill people. It isn't an accident, it is a design. That was the original purpose of pesticides. Even herbicides that are deployed now to kill weeds, were deployed as a warfare tool – Agent Orange, you remember, now it is deployed as 2,4-D in the fields.

So, whether its fertilisers, pesticides or herbicides - they are coming out of the war industry and therefore they have converted agriculture into warfare. And this warfare is against the land, it's against biodiversity, it's against the farmers themselves and finally, because we eat the stuff, it's against our bodies. So now from Punjab there is a train that leaves everyday called the cancer train. The Punjab farmers have such high levels of cancer that they have to go to Rajasthan, to a charitable hospital to get treatment. All that pesticide has run off into the groundwater, and from the groundwater they're drinking it all in the spray. I remember being called to Punjab about 10-12 years ago because suddenly suicides had become very, very intense – farmer suicides. I saw this old man with a huge spray can behind him and I just said "Do you know what you are carrying?" He said "medicine". When they translate it into local languages it is called medicine for the plants. I said "No, it is poison" and I explained to him and he said "O, no wonder I get so dizzy when I spray that I have to go home and lie down for 3-4 hours after

spraying”. And then he added “Now I understand why even our mango trees have stopped flowering – because all our pollinators have died”. Then he made the connection, because as long as he saw it as medicine he thought it was beneficial and nobody is told that this is a lethal toxic.

So in 1984 I decided to do sustainable farming and promote sustainable agriculture. We built up a network. 1987 is when I decided to start saving seeds. The reason I was compelled to start saving seeds was this. Because of my book on the Green Revolution I was invited to attend a biotechnology conference in Geneva. The conference was called ‘Laws of Life’ and it was about the emerging biotechnologies. In 1987 there were no commercial products. There were no GMOs on the market. The industry was talking about releasing GMOs, and they said there were three tools which they needed.

The first was they needed was a global trade treaty to remove any restriction on consolidation. These were big giants – you know the big pharmaceutical giants which were also the big agrochemical giants which were now becoming the biotech giants and the seed giants. But they all pleaded smallness. “We are too small, we have to become bigger.” Ciba-Geigy and Sandoz were separate, they became Novartis; Astra AB and Zeneca became AstraZeneca. Now that big group of four giants is Syngenta. Monsanto, which used to be purely a chemical company in the 80s, today controls the largest sector in the seeds supply and in GM seeds controls more than 95 percent of commercially sold seeds. More than 95 percent! So when people say - why do you target Monsanto, I have to say Monsanto is targeting the world. So, wherever farmers respond they end up dealing with Monsanto. People aren’t choosing Monsanto. Monsanto is the seed monopoly.

The second thing the industry said at that time was that they needed to do genetic engineering because without genetic engineering they could not get to their real objective which was patenting of life forms and patenting seeds. That was where the growth would come from: collecting rents from God’s creation. Seeds reproduce, seeds give rise to seeds. That’s the nature of Creation, but that is a problem for the industry. There are two ways in which they are trying to prevent creation from doing its work – the first is patents, patents make it illegal for anyone else but the patent holder to use, distribute, modify the patented product or the process that is being patented. So when a seed is patented, then any farmer saving seed on their farm becomes a thief. A farmer exchanging seed with their neighbour becomes a thief. And I said this is so wrong because seed is not an invention of Monsanto. Monsanto doesn’t invent seeds. Monsanto adds a toxic gene to seed. That is polluting seed, not creating seed. Seed makes itself and makes the next generation, so a patent on seed and a patent on life is wrong because you don’t invent it. It is wrong because you’re claiming to play God. You are now positioning yourself as the inventor.

You remember this big thing about Dolly the Sheep. *Newsweek*, *Time*, *The Economist* - everyone had a cover story: *The Sheep and Ian Wilmut*. And below was ‘*The Creator and the Created*’. I call it ‘The Illusion of Creation’. Of course, poor Dolly is now in a museum – quite dead – as is the company. So every time they say they are going to play God they actually have a very bad performance because you can’t play God. And yet failure after failure they lie.

We are very privileged to have Dr Mae-Wan Ho here. Let’s look at the results. You know in medicine there is not one genetic therapy. In agriculture genetic engineering has given us only two applications so far: herbicide resistance and BT toxin crops. I mentioned them yesterday. One kind of crop allows the company to spray more herbicides, and, if you don’t buy their seed and there’s herbicide being sprayed you lose your crop. This is what has happened in Argentina. You know they spray Roundup from the air and the small farms and kitchen gardens are being finished. The second kind of crop you put a toxin into the plant, taking it out from a soil organism. And now every cell of the plant is producing pesticide. The industry has another very, very interesting construction. I call it ‘ontological schizophrenia’ because when they put the poison gene into the plant they say: “We are the inventors; We made it; We created it; This is novel; We own it and others should pay us rent”. And when it comes to people asking, “OK, you put something new, you put a toxic gene, what does it do? We need biosafety laws. We need biosafety assessments.” They say: “No, no no, it’s just like nature made it.” So, when they have to own it for property it is new. And when they have to be irresponsible to its impact on the environment and on

health, it is natural and like nature made it. You can't have it both ways. They're trying to have it both ways. And even though these are the only two applications, they are failing in and of themselves.

We talked about weeds. The US has 5.4 million acres this year overtaken by superweeds. Instead of controlling weeds, genetically engineered crops have created superweeds. And instead of controlling pests, genetically engineered crops are creating superpests. The bollworm has evolved resistance. BT was meant to control the bollworm in cotton, it is now resistant. And for Monsanto this is not a problem because what they do is sell BollGuard 2, a seed with two toxic genes. For Roundup they are selling Roundup 2 and they're charging double the price. For the US this year they have a caption 'Creating a captive customer base for our octo stack seed' – octo stack is eight toxic genes.

The interesting thing is genetic engineering is such a crude technology. It is not a science. Science tells you genes are interrelated and I would strongly recommend to you Dr Mae-Won Ho's books on this issue. No other scientist puts it that clearly: about the genome being a fluid genome, constantly changing and inter-reacting; about the risks of horizontal gene transfer. We know genes move across and yet there is this very false presentation of working as if you were working with engineering in totally predictable ways. Another very big distortion that is introduced is the idea that because you are working at the genetic level you are working with higher accuracy than traditional farming. This is not true. There is no accuracy. You don't even know where you're shooting the gene, or where in the genome it is landing. You don't know how it is going to function. And because you don't know if it has been absorbed you add antibiotic resistance markers which then can move into our gut. They add viral promoters. They never tell you about these additional genes. These additional genes are evidence of very bad technology. If it was accurate you would not need to add antibiotic resistance markers. If it was predictable you would not need to add viral promoters to pump up the performance. So you are adding a lot of risk into a bad technology which is working against the science of biology at the genetic level.

And one of the indicators of how serious this is is the fact that any scientist who independently does genetically engineered GMO impact research – for example Arpad Pusztai in this country is targeted. He was asked by the UK government to do the research; but when he did it and he sought permission to go public because he found the results were really serious with the brains of the rats having shrunk, the pancreas expanded, the immunity weakened, he was thrown out of his work.

Any scientist who does is targeted. We have managed to get a ban on BT egg plant. Dr Seralini, who is a scientist in France, has done some of the best research in recent years, including the research showing egg plant testing being inadequate. They're after him now because his research is counting. The Austrians did research, they went after that research. I think the reason they can't go after Mae-Won and me is that Mae-Won retired from the Open University and they couldn't take that job away and I left my university teaching in 1982. So there is nothing they can take away. I work from my mother's cow shed.

The second tool for preventing farmers from having their own seed, which also includes preventing nature from doing her work, is 'Terminator' technology, deliberately creating sterile seeds, preventing life from evolving into the future. I call this an evil technology, an evil thought and an evil technology. We managed to have it banned through the United Nations Convention on Biological Biodiversity. But more and more farmers tell us they're getting no crop from the seeds they are planting. And because the companies have total secrecy - not only do they have intellectual property through patents they have trade secrets and they don't tell governments what they are doing - no one else has the tools to test what they are doing but them. And then they are throwing out the scientists who have access to labs.

So we are reaching very far and very fast to very, very serious consequences. The first consequence is that we are losing our biodiversity. We have just had this wonderful presentation on the local distribution and a plant based diet. We ate 8,500 plant species as humanity. GM has reduced our cultivation to four crops: corn, soya, canola and cotton. These are the crops into which they manage to do the GM technology and that is why these are pushed. And everything is being made into corn and soya. It is so strange. Soya was not eaten by anybody as a food. It was eaten as fermented food in the East Asian countries, but never eaten as a staple. Not only is it the biggest component of industrial food systems, it

is also the biggest component of cattle feed and it the biggest component of biofuels. So human beings are having to compete with cars and factory farm animals. And humans are last in the line, because their purchasing power, especially for the poor, is last in line. And wherever there has been a spread of GM crops you have seen a growth of a debt crisis, I have mentioned the farmers' suicides in India, and you see the growth of hunger. Argentina again is a very good example. There today every inch is covered by Roundup Ready Soya and the people are in soup kitchens – people who had adequate food. Argentina used to have the same standard of living as Europe and today half of Argentina is begging for food.

So, it isn't a solution to hunger and it isn't a solution to poverty. In fact it is at the root of new hunger and new poverty. In addition, because the GM technology is introduced in the old industrial agricultural system of monocultures, of fertilisers, of water intensity, of huge fossil fuel use, for anyone who says GMOs will solve the climate problem it is a big lie. They won't for two reasons. One, the way we mitigate climate change is having the sun help with higher rates of photosynthesis. Which means the more biodiverse your system is and the more biomass you are producing, the more you are taking the carbon out of the air and putting it into plants and finally into the soil. Herbicide resistant cultivation means you are killing the green, you are destroying your capacity to return carbon to the soil. You are just killing off the plants. And for some reason, reducing your green cover is treated as a carbon solution.

There is another trick they play increasingly. They call it conservation tillage. Instead of the wonderful horses that Victor is using, they say "use Roundup to kill the weeds". And I can tell you weeds like that won't be killed by Roundup. They tried to get rid of the Parthenium and it doesn't work. The stubborn weeds are stubborn against Roundup. The argument that by not using a plough you are saving carbon in the soil has been proven again and again to be a false claim. But the tragedy is the real science, the good science and the knowledge of our farmers doesn't have the propaganda machinery that Monsanto has.

And you know Richard Feynman, the eminent physicist has said that for a successful technology reality must take precedence over public relations for nature cannot be fooled. But Monsanto is assuming nature can be fooled and public relations can replace science. And that's why when people say we have got to follow science, I say: yes follow science, but don't follow the public relations that is distorting science. And public relations domination cannot be solved through science; it can only be solved through democracy, by a vigilant public calling the bluff.

Now Europe is getting ready to push GMOs. I have been very involved in the India movement as well as the European and worldwide movement. This year they are going to really push for GMOs. The European Commission has basically said countries can decide, which means in England the fight will be in England. I think it is very, very important that those of you who care for peace and justice get involved. Get involved, because there is so much material out there that you don't have to hesitate.

Read the book called 'Failure to Yield' from the United States, from the Union of Concerned Scientists, showing there is no yield gain. For anyone who says it lowers cost: how can it lower cost if there is a royalty component. A 7 rupee cotton seed is now costing 3, 600 rupees, of which 2,400 rupees is going as royalty. And in other crops the royalty will be even bigger. Royalty collection is the main reason this is being done. So when they say "we will give Golden Rice for free". I say, if you really want to give it for free, strike down the 80 patents that are associated with it. They don't strike down the patents. They talk about giving it for free like the fertiliser was given for free the first two years. Anything addictive, you give it for free for the first two years like drugs then you have a market forever. Chemicals are ecological narcotics.

GM seeds become a source of dependency because the GM companies destroy alternative seed supply. They go into communities and tell them to give up their old seed. They call it seed replacement, as if seed was dirty socks. But it's not. Seed is a basis of life. The reason we have built up the community seed banks is because I knew that if seed is patented and there is only GM seed we won't have options. So in 1987 we started to save seeds. In 1991 I created the legal entity called Navdanya. We've created 54 community seed banks around India because we believe seed is our commons. It has to be shared. It has

to be saved for the future. And the pledge our farmers take - and we have 500,000 members in our network - is a simple one:

'We have received these seeds from Creation and from our ancestors and it is our duty to pass them on in all their richness and diversity to future generations. Therefore we will not allow them to go extinct. Therefore we will not respect any law that prevents us from saving seed. We will respect the freedom of the seed and our own freedom.'

And this is our seed sovereignty. This is the foundation of food sovereignty, that with our own seeds we have the capacity to produce our food. If you don't have your seeds there is no way you can be food sovereign. Then food sovereignty is just a term, it is no more a practice. And because, if we've saved these seeds, these seeds must find eaters, we've built up the distribution networks through fair trade and direct marketing. And we have farmer run shops in India.

At the current moment, industrial agriculture, agro-weighted with the GM component, is giving us five very serious problems. The first is the agrarian crisis that no where in the world can a farmer make a living in this model. There are foreclosures here, and indebtedness in India and farmer's suicides. No where is honest farming able to survive, and the reason it is not able to survive is because we have two instruments that are distorting the market place and creating the myth of cheap food. The first is the subsidies. \$400bn in the rich countries, of which my guess is about 10-20% of people in Europe harvest the subsidies of the Common Agricultural Policy, not the small farmer; so it is a distortion. The second distortion is the monopoly. If I am a monopoly buyer or if I am a monopoly supplier then I dictate the prices. So when Monsanto is a monopoly supplier of seed they will raise the price of seed. When Cargill or the supermarkets are the buyers from the farmers they will depress the price of food that they buy. It is in the logic of the structure. Against this distortion an honest hard-working farmer cannot survive. So we need to get rid of the distortion.

The big international distortions is what the WTO fight is about. This is why the Doha round hasn't been able to move, which is why the WTO is in intensive care and I think it should be buried quietly. But of course the big players know this as well and they're giving up the multilateral system and going for bilateral pressure. There is a huge India free trade agreement being negotiated right now. There is a US-India agricultural agreement which has put Monsanto, Wall-Mart and ADM on the board of making policy decisions for India. So, of course we have Monsanto pushing GM seeds and we have Wall Mart saying, "Corporate retail is the only way to go" - and saying this in a country where at least 400 million people are involved one way or the other in small scale retail, including the farmers themselves who carry their produce to the village markets to sell on a weekly basis.

Hunger is a direct consequence of this system. First, because we are actually producing less nutrition per acre. We are not producing more food if we look at food, not at commodities. We are producing more commodities, and less food. And commodities don't feed people; they feed the profits of corporations. Food feeds people. It is also a hunger-creating system because it costs more to produce than you can ever earn back, and farmers are constantly on a debt treadmill along with being on a chemical treadmill. It is a public health disaster. A billion people without food, two billion people cursed with diseases linked to bad food. And it is all related to the way food is being produced. It is hugely water demanding and is destroying our capacity to produce food by destroying the water. And finally, it is destroying our capacity to produce food by destroying climate stability, as my book 'Soil not Oil' said - 40 percent of greenhouse gas emissions are coming from a globalised industrialised food system.

If we ate local and fresh and organic for most things then this would help. If you can't grow, say coffee, locally then get it by fair trade. But coffee is not a staple (even though for some it is... becoming). Some people say we can't. You know I debated recently with someone who said we had to do engineering of the planet because we have to cheat nature in order to solve the climate crisis. I said isn't it high time you realised that you can't cheat nature. But the most important point is this desperation that is being created. It is just not the ethical response. It justifies unethical action.

We have to take seriously the crisis of climate change but we have to respond to it on the human scale and with our full ethical consciousness. That's why for me ecological agriculture is a climate solution. It

is vital, not just because it's the biggest component. It's not just solving the problem of climate. It is also solving the problem of hunger. It's also solving the problem of unemployment. Can you imagine if we could start putting into policy the creative actions of people. 50% of the young people who are not getting jobs and will not get jobs will have livelihoods on the land. Definitely in the third world that is the most significant livelihood. But with the economic crisis of the north, instead of having austerity plans that privatise the public systems in England, they should have plans for transition to ecological agriculture. That is where the money should be getting put just now. All of the problems are solved by ecological farming: biodiversity-based organic farming produces more food per unit acre and produces more incomes for rural families. It produces healthier food, it reduces water use, and both through absorbing carbon dioxide out of the atmosphere, as well as building up more carbon. So, it is both a mitigation and adaptation strategy for climate change.

To wrap up I want to say several things. On 31st May I was in Norway to launch a Monsanto disinvestment project. You remember when the South Africa Apartheid regime would not give up, it was the disinvestment campaigns that contributed to the weakening of that regime. Today, Monsanto doesn't think there is any level of corruption and immorality or criminality too high for it to stop and it has to be warned by citizens. And I know church activists have been very, very good at dealing with corporate responsibility and I would encourage your group to initiate at whatever level possible a Monsanto disinvestment programme.

The second is – you know we have built up Navdanya in India over the last 25 years and at every point the challenges are becoming bigger. Our need to respond is becoming bigger. The big things on which we could do with support from any and all of you is expanding our network of seedbanks, expanding our capacity to help farmers convert to organic farming, and most importantly working in the areas where the farmer suicides are happening. We need to create seedbanks called 'seeds of hope' and organic cotton – production and distribution systems. We are in a very, very serious situation. You can't find cotton seeds that are not GM. We are doing a lot of searches but it needs a lot of people going out to remote areas to find the one cotton seed which we then have to multiply.

So we would love to continue to work with this group here. To find out more about Navdanya, go to our website – www.navdanya.org. It's not a scramble of my name. It means 'nine seeds' and also the 'new gift' and is a very significant word in our culture.

Thank you again for having me here.

Chair: Sean McDonagh SSC

We thank Vandana for a wonderful, insightful presentation that actually touches both people in the global south - the majority world - and also the concerns of agriculture here. I myself am very worried about what is happening here in Europe in terms of GM.

I will just make one point – everyone is at stake in this. Unfortunately, the leadership of the Catholic Church, particularly in the Pontifical Academy of the Sciences - it is not actually a constitutive body of the leadership, but it has been stacked with pro-GMO scientists – has regularly put pressure to support GMOs. The last President of the Pontifical Council for Justice and Peace – a different body – actually accused me of running a personal campaign against him. I began to smile because it meant that the people we were asking to write letters were actually doing it. This is a crucial period. The GM companies have no interest in the Catholic Church. What they have an interest in is the possibility of the Catholic Church being seduced by this promise of greater yield of which there is none – as Vandana made clear from this 'Failure to Yield' document. In countries that are majority Catholic - in the Philippines and many African countries and in many South American countries - Monsanto will use any moral support the Church offers.