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’Golden rice is a powerful symbol to stop anti-GMO campaign’

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A strong supporter of GM food, transgenic and biotechnology in agriculture, Patrick Moore is vehemently propagating Golden rice consumption to overcome Vitamin A deficiency among the children, which causes diseases, blindness and death.

Claiming to be one of the founders of Greenpeace, the claim that is denied by Greenpeace, Moore was its member from 1971 to 1986. But later, he became its sharp critic and left it saying 'they went on a bad direction on science'. A PhD in Ecology from the Institute of Animal Resource Ecology, University of British Columbia, Moore has differed with many policies of major environmental groups. He claims to be a centrist on environment issues as he feels environmentalism should not be Left or Right. Moore, who was in India recently, talked to NuFFooDS Spectrum on a broad range of topics concerning food, agri technologies, nutrition and environment. Exceprts:

With increase in world population and fall in arable land what are your views on meeting the challenge of possible food shortage?

It had always been predicted that the population would die because of starvation as population grows exponentially and food production grows arithmetically. Still, we always have been able to meet food needs. This will continue to be the case due to numerous factors.

The first factor is biotechnology which can increase food production greatly. We see how BT cotton has almost doubled cotton production per hectare from 300 to 500 tonnes. This will continue in different crops. Secondly, greenhouse technology will make the difference. In many countries greenhouse technology is being used on a large scale. Greenhouse growers are purposely diverting CO2 to increase carbon dioxide levels for plants they are growing. Every green plant needs CO2 in order to produce sugars that are primary energy source for every plant and animal. Without CO2 life on this planet would not exist.

But, we were in the period of the lowest CO2 in the history of life. CO2 used to be 2,000, 3,000,

4,000 parts per million and now it’s only 400. CO_2 levels in the atmosphere have rarely been as low as they are today over the entire 3.5 billion years of life on earth, and particularly during the past 500 million years since modern life forms evolved. But, with our consumption of fossil fuels we have reversed the 150 million year trend of CO_2 going down in global atmosphere. With CO_2 level going up a little by burning fossil fuel plants will grow faster. It is called CO_2 fertilisation effect.

We already see it happening. For example in Germany an experimental forest, which has been monitored since 1870, is growing 40% faster now than it was 50 years ago and it is only because of CO_2 fertilisation and may be little bit because of 0.5 degree Celsius rise in temperature. But most of it is probably because of Carbon Dioxide. Plants will like the CO_2 level to be 2,000 and plants will keep growing faster if you increase it from present day 400 to 2,000 and even beyond. But 2,000 is kind of what you get optimum CO_2 level for plant growing. So, with these two factors, we will be able to feed 10 billion people with no problem.

Another important point is mechanisation of agriculture in developing countries. If you look at the world it is very clear that mechanisation of agriculture is the initial key, not an addon effect, but initial primary factor in reducing poverty and population growth, both together. Wherever agriculture has been mechanised less than 5% of population is growing food. That is the future. If you have 80% of the people growing food only 20% can do something else. When you have only 5% of the people growing food, the other 95% can manufacture goods and provide services and create a modern economy. But, when you have 80% of the people growing food, there is no way you can have a modern economy. There are not enough people to do other things. Mechanisation of agriculture, GM, transgenics will increase the farmers’ income.

How will agriculture mechanisation control population growth?

In subsistence agriculture economy in old days a family used to have eight children in order to have two to live as diseases used to kill the children. Families used to have more children also to have them to work as farm labour. A lot of time women used to go in giving birth to more

number of children. Population explosion happened due to a combination of people still having lots of children and medicines reducing deaths. That will be balanced now with mechanisation of agriculture.

With mechanisation of agriculture two developments take place. First is that the people move to cities. The other benefit is more freedom to women. Firstly because they have less number of children. Secondly when women move to cities they can get educated. There children become liability rather than an asset so they only have two or so and then they can get a job and be a part of the workforce. It's a big change. Hope mechanisation of agriculture happens fast enough to level the population off. It shouldn't keep growing obiviously. Mechnaisation of agriculture is a way to stop it. So this is my vision of how we will be able to grow enough food for 10 billion people.

You vehemently support introducing BT tools in food crops to make them nutritious to reduce malnutrition. But many countries are not allowing marketing of GM foods. Your views?

On social issues I am on left. On economic issue I am quite conservative. But on environment I am straight in the middle. I think we should borrow the best from the Left which is good regulation policy to protect poor, innocent, consumers etc, but on the right I believe in free market system of economy to distribute wealth in the most effective way to everybody. So, I am a centrist on environment. And I don't think environmentalism should be Left or Right because everybody needs environment, from poor to rich.

I wish to analyse the environmental issues from science and logical ways and not with sensationalism, misinformation and fear, which some people try to do. There are some groups and people, like Greenpeace, who push pessimistic view of the future. They live in a fantasy world. The whole anti-GMO campaign is based on fantasy. in nuclear energy atleast there is radiation to be concerned about. Hence, though I support nuclear energy, I know we have to be careful. But in GMO what is there to be careful? There is nothing toxic, there is nothing

poisonous, there is no way any harm could come.

Actually most plants are poisonous. That's because they create defense for animals not to eat. The food we eat is not poisonous. But we had to work with some of them for a long time to make them consumable. Original potato was poisonous. Somehow in South America they figured out how to get the poison out of it. Same story about rapeseed, which we now call Canola. So to me transgenic is one of the most important advances in the 10,000 years' history of agriculture and so much good can be done with it. You take negative things out to put positive things into our food and medicine. But people don't realise that.

Many of our medicines are now transgenic. Insulins are transgenic. Every beer, wine, yoghurt and milk is made with transgenic yeast and culture. And yet nobody even notices it. So, it's all perception, emotion and scare tactics to make people afraid of what they are eating. And because it is invisible like radiation, it is easy to make people fear because they can't feel it, they can't taste it. It is zero risk basically. If there was some risk it would be good to know. But critics call it, 'unforeseen negative results'. When they say unforeseen what they really mean is they don't know anything. But it sounds scary. There is nothing there that is why they use the word unforeseen. If there was something they could say what it is.

There is a long list of groups that support GMO. Biotech crop offtake is already 10% of world agriculture in short time since 1996, in less than 20 years. It is one of the fastest offtakes of the new technology in the history of agriculture. In Philippines 3,70,000 small farmers are growing GM maze on less than two hectares each. They are making better money now. Income has increased by 150 million a year, pesticide use down by more than 50%.

In India BT cotton has been a great success. Because of GM crops there is an all across the world average 21.6% increase in yield, 37% reduction in pesticide quantity, 39% reduction in pesticide cost and 3% increase in total production cost because seeds cost more. Still there is 68% increase in profits to the farmers. Which farmer would not want this picture? Every farmer would want it and that is why GM is so successful and farmers around the world are wanting these seeds. The only thing stopping them is government ban and restrictions.

When many countries are restricting GM crops, how the message should go to the people and farmers that they should try GM food and biotechnology in farming?

Philippines has GM maize, Bangladesh has GM brinjal, India has GM cotton. Vietnam has just approved GM maize. Why in this region three different GM swith only one in each country. Why can't they have all of them? Is GM maize ok in Philippines and not ok in India and Bangladesh? That is completely ridiculous. If there were no bans I believe 50% of farmers in the world would have gone for biotech crops. And within 20 to 30 years it would be close to 100% because every crop can be improved either by removing something negative or having something positive in it. There are number of areas where incredible changes will occur in productivity and help nutrition.

All pasta is made from radiation mutation. Nobody puts a radiation symbol, nobody even talks about it. It has been going on for long time. Marker assisted breeding is because we know the DNA. We can very carefully choose which plants to breed with each other. Earlier, we could only look at plants and watch them grow. Now we know what is inside like transgenic, which is recombinant DNA biotechnology. They say it is not natural to move genes from one species to another. But, it has been happening all through life. Bacteria carry piece of genetic material from one species to another. All through life it has been going on in evolution. Genes crossing species boundaries.

You are campaigning for Golden rice. Many organisations and individuals are opposing it?

There are these groups like Greenpeace and others, who deny golden rice to starving children. They are using GMO and Golden rice as a front for political agenda. They don't work thorough science. They work through politics and legal system. I left Greenpeace because I felt they took a wrong direction on science. Golden rice campaign began in 2013 with me, my wife and brother sitting around a table in my house in Vancouver, Canada, when we learnt about the destruction of Golden rice field trials in Philippines and the Greenpeace said it was the farmers

who did it.

We campaign for Golden rice due toVitamin A deficiency across the tropical world. All through Asia, Africa, Mexico and a part of South America Vitamin A deficiency affects huge percentage of children. Over 250 million school children are short of Vitamin A, two million die from diseases related to Vitamin A because it affects the immune system. 2,50,000 to 5,00,000 go blind, half of them die in one year after going blind.

Golden rice contains essential nutrient Beta Carotene to overcome the Vitamin A deficiency. That is the only difference between normal rice and golden rice. Farmers will get it for free and they are allowed to save their seed. Nutritionists prove that Golden rice is as good as Vitamin A pill in providing Vitamin A to children.

What are the positive points of Golden rice?

It is the most simple, effective and affordable way to bring Vitamin A to the people who need it. The people are already eating rice everyday and that is the problem, they are only eating rice and not a balance diet. If you have a choice between rice and vegetables, you have to give rice because if you eat only vegetable you die from lack of energy. You need calories. So it is a clear and simple choice. If you are so poor, you can only afford rice then you eat rice but then you die of Vitamin A deficiency. Another good thing about Golden rice is that it will be the same price that of normal rice.

Rice is the cheapest calorie in the world making 70% of the poor use rice as their main food. And that is why many organisations agree that this is the best avenue to a sustainable solution. Unicef is spending a billion dollar a year delivering Vitamin A capsules. It is not sustainable to spend a billion dollar a year forever and it is not reaching everybody. Golden rice can reach everybody. That will be a sustainable solution that will breed over and over again forever with only sunshine, water, soil and farmer.

It maybe in future that Golden rice will have other traits put in. For instance, drought tolerance, flood tolerance, may be even other vitamins and minerals. International Rice Research Institute is now breeding a rice which is higher in zinc. So, you can stack Golden rice with iron and zinc. You can also put Vitamin E. Golden rice is only the beginning. You can put this gene in other plants too. You can have golden potato. Golden bananas are already coming, which are high in Beta Caromene. Many crops can be improved.

The reason we are focusing on Golden rice is because it is the first GM which is directed at humanitarian and consumer benefit. But others will come once golden rice is approved. And we think as soon as Golden rice is approved and proved effective, the anti-GM movement will start to go away. We think people should recognise this that the Golden rice is a power symbol to stop this nonsense about GMO. We are only focused on Golden rice, we understand how important it is in the larger context.

World is losing biodiversity with natural flora and fauna becoming extinct. What measures do you suggest to overcome this?

Intensive agricultural production with higher yield per hectare allows you to save more nature. It is very obivious. It is really important that we focus on high yield. Because the more food you grow per hectare the less land you need to clear of nature. Some people are making false statements when they say that the purpose of agriculture is to preserve biological diversity. No. The purpose of agriculture is to grow food for people. Biological diversity is preserved in parks and wilderness areas and stream side reserves.

Biodiversity is not preserved in farms. They say we should not allow GM crops because it will displace biodiverse crops which exist now. They are not biodiverse, they are also monoculture. They are also specific varieties. As soon as the better variety comes, the farmer throws away the old one like garbage. They don’t care to keep it. They are not preserving its biological diversity. It is for seed banks to keep the seeds as it is a kind of museum. All through the history of agriculture the story is not protecting biodiversity of any particular variety, it is throwing that

variety away when better one comes along. What we need to focus is land use planning. So you have mozaic of all needs across the land, including protection of biodiversity in natural areas.

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