

South Against Genetic Engineering: An Inception Workshop On Is Biotechnology a Farming Answer for Human Health and Nutrition

Co-organised by
Deccan Development Society, Hyderabad
Institute for Cultural Research and Action (ICRA), Bangalore

Ashirvad, Bangalore on 6th & 7th January, 2006

BACKGROUND TO THE MEETING

South Against Genetic Engineering (SAGE) as a network was launched at a workshop held in Hyderabad on the issue of *Southern Encounters* in the month of April 2005. As part of this network NGOs and civil society representatives from southern Indian states of Andhra Pradesh, Karnataka and Tamil Nadu came together in agreement that they will work against genetic engineering (GE) in agriculture.

The sustained struggle of Deccan Development Society (DDS) and many other local groups against the Bt Cotton in Andhra Pradesh (AP) has resulted in banning of Monsanto seeds by the Genetic Engineering Approval Committee (GEAC) of the Government of India and the operation of Monsanto are banned from the state of AP by the Government of Andhra Pradesh. Both these are tremendous morale boosters and they signify that if one works consistently and sustainably, one can enlarge our campaign base by including more number of NGOs, farmers groups, academicians, media people and consumer groups. And in this way one can be assured of a far better chance of success. Besides, if one can ensure continuous monitoring and attempt small research on GE crops in our area it will add a great deal of sustaining value to our effort.

Against this background and keeping all these points in view, SAGE had thought of organizing its inception workshop in Bangalore in December 2005. But a new situation came its way in the form of a USAID promoted collaboration between the University of Agricultural Sciences [UAS] Bangalore on what they call *Biotechnology approaches for alleviating malnutrition and human health* (<http://www.nutritionforall.org/>).

USAID has continuously played a death dance in Africa in the cause of GE through which they have the vision of completely controlling world agriculture and provided a huge market for the US multinationals all over the world. With European Union rejecting genetically engineered foods repeatedly, the only option open to US genetic engineering agriculture is Asia and Africa. Therefore USAID will intervene more and more on behalf of its agricultural industry and will hold huge temptations to policy makers, academicians and other influential institutions. The UAS collaboration will be one of the first in the chain.

What is USAID?

The US Agency for International Development (USAID) has been the principal U.S. agency for providing economic and humanitarian assistance to developing and "transitional" countries since 1961, though it spends less than 0.5% of the federal budget. It is "*an independent federal government agency that receives overall foreign policy guidance from the Secretary of State*". US foreign assistance has always had the furthering of America's foreign policy interests, which includes supporting the US economy, US agriculture and US trade, as a key part of its remit.

The USAID website candidly states, "*The principal beneficiary of America's foreign assistance programs has always been the United States. Close to 80% of the USAID contracts and grants go directly to American firms. Foreign assistance programs have helped create major markets for agricultural goods, created new markets for American industrial exports and meant hundreds of thousands of jobs for Americans.*"

The head of the agency Andrew Natsios has aggressively attacked critics of GM, accusing environmental groups of endangering the lives of millions of people in southern Africa by, he claimed, encouraging governments in the region to reject the US's GM food aid. "*The Bush administration is not going to sit there and let these groups kill millions of poor people in southern Africa through their ideological campaign,*" he said.

Promoting GM is an official part of USAID's remit - one of its roles is to "*integrate GM into local food systems*". USAID launched a \$100m programme for bringing biotechnology to developing countries (when?). USAID's "*training*" and "*awareness raising programmes*" will, its website reveals, provide companies such as "*Syngenta, Pioneer Hi-Bred and Monsanto*" with opportunities for "*technology transfer*". Monsanto, in turn, provides financial support for USAID.

Source: Text from [GMWatch](http://www.gmwatch.org/profile1.asp?PrId=165) (<http://www.gmwatch.org/profile1.asp?PrId=165>)

SAGE members in their first meeting decided to come together to boldly express opposition to the above collaboration. This was felt to be a moral responsibility as people and organizations as well as an occasion where the network should effectively exhibit their strength against GE.

Therefore the members of the network thought that it would be very apt to hold the inception workshop in Bangalore for a day or two before the USAID-UAS event in Bangalore itself, which is being organized on 9th and 11th January 2006. Through this the group wanted to make it evident for everyone that biotechnology is no answer for malnutrition and health. There are thousands of home grown solutions in ecological agriculture which most of us are practicing. If one doesn't amplify this response, it will be making the arena clear for the agents of genetic engineering in India.

Annexure 1 is the call for the UAS-USAID Symposium in Bangalore. Some comments have been made in blue colour. This explains the objective of USAID and the need for us to build a quick opposition to it.

PROCEEDINGS OF THE WORKSHOP

Day 1: January 6th, 2006

SAGE: A START

The first day's proceedings began with P.V. Satheesh from Deccan Development Society, introducing the chairperson and speakers of the first session. He welcomed all the participants of the workshop including farmers, civil society activists, representatives of farmer's organizations, academicians, media persons and scientists, who would need to be the frontline against the new fight against Genetic Engineering (GE). He also introduced some veteran farmers who were present at the meeting and who have for years shown that neither Green Revolution nor GE agriculture is needed to address the problems of hunger in the world. On the contrary their work exemplifies the faith and the necessity for reviving traditional agricultural practices, in order to resolve the same.

INAUGURAL SESSION

Chaired by: *G. S. Aurora, Chair, Permaculture Association of India and formerly Dean Of Social Sciences, University of Hyderabad, Professor Emeritus, Institute for Social and Economic Change*

- **SAGE: An Introduction by P V Satheesh, Convener, SAGE**

This presentation highlighted the context in which SAGE has come to be organized and what are its goals. P.V. Satheesh highlighted that GE has given several promises to people across the globe. These include it being weed resistant or with no pesticide use or so on. However, in the recent years these myths have been completely busted. The United Kingdom Farmers Weekly Interactive dated 28th October 2004 clearly states that "GM maize, soybeans and cotton have led to a 55,000 tonnes increased in pesticide use since 1996... The study is based on official US Department of Agriculture data on pesticide use over 670m acres of GM maize, soya and cotton."

In India, there is evidence that Bt Cotton (commercialized in India by Monsanto-Mahyco) farmers have lost heavily, which has been brought out through a phenomenal study conducted by Dr. Abdul Qayum and Dr. Kiran Sakkhari (http://www.ddsindia.com/www/PDF/BT_Cotton_-_A_three_year_report.pdf). Amongst other things the study clearly points out that, under rainfed conditions, non-Bt farmers benefited heavily vis-à-vis Monsanto hybrids to an extent of Rs 3177/- per acre.

"Even Monsanto as a company promoting GE has said in its research of May 2005 that rats fed on a diet rich in genetically modified maize developed abnormalities in internal organs and changes to their blood. This clearly indicates that GE is toxic. Yet, Poison is Called Nectar in their terms."

In December 2005, dozens of goats died mysteriously in Warangal District of Andhra Pradesh, where Bt Cotton is under cultivation for the last three years. Investigations show that all of them have eaten substantial quantities of Bt cotton leaves and stalks.

What is Bt Cotton?

Bt Cotton is a transgenic variety of cotton genetically modified to contain a gene of *Bacillus thuringiensis* (Bt) foreign to its genome. Bt is a naturally occurring bacteria in soil which otherwise is not normally found in cotton. The US registered MNC Monsanto first developed Bt cotton. In India, it was first marketed by Mahyco Monsanto Biotech Ltd. Three Bt cotton varieties MECH 162, MECH 12 & MECH 184 were permitted for commercial cultivation in India in March 2002. The company claims that the seeds have the strength to fight bollworms within the plant; reduce insecticide use; gives higher yield and so on.

Though facts like the above are prevalent all over the world there are hardly any studies to show the impacts of GE on human health and nutrition. Therefore there is tremendous lack of research on this aspect. Infact often when studies begin to show stunning problems, they are terminated midway. Dr. Arpad Putzsai a world renowned toxicologist and nutrition expert, says, "Rather few well-designed studies published to date show potentially worrisome biological effects of GM food, which the regulators have largely ignored."

Globally, there is an academic reluctance to look at other options in food and farming and there is a strange lack of confidence in time tested practices. There is a complete drive towards privatization and often institutions are helpless or fall into this trap and sell themselves out to the GE agenda. There is little or no intellectual freedom in these institutions then and there is a rush for the GE Bandwagon and to share the *moolah* it brings.

It is the above background that gives a context to SAGE. SAGE is not born out of any funding compulsion, but a strong concern among the civil society activists, concerned academicians, scientists and farmers. Consultations around the need for a network like SAGE have been on since 2003 and today it has come together with the desire to form the network among a number of farmers, civil society groups, networks and individuals who are working on the issue of ecological agriculture, genetic engineering, food sovereignty.

The discussions have been taking place amongst representatives of the south Indian states of AP, Tamil Nadu, Karnataka and Kerala since these are regarded as the vanguard states in India especially in biotechnology. Groups and individuals have been meeting informally for a long time and have been increasingly concerned with issues around Bt cotton and GE agriculture.

As it is envisaged, SAGE will include Farmers, Civil Society Groups, Scientists, Academics, Consumer Groups, Media practitioners from the four southern Indian states and Maharashtra. Their key components of the SAGE activities will include, campaigns, workshops, developing public education materials, undertaking research studies, organising media meets, experience sharing workshops and field level documentation.

SAGE will also receive financial, logistical and technical support from international organizations like, HIVOS, InterPARES, International Institute for Environment and Development (IIED), MISEREOR, EED, and GRAIN.

SAGE believes that it will continue to strive towards its objectives and thrive as a network till Genetic Engineering dies its deserved death.

- **USAID, Genetic Engineering and their Interrelationship by Shalini Bhutani, GRAIN, Asia**

"As much as we are happy to be together, we are extremely angry with what brings us together. Let us hope in the coming time the GE industry faces the Rage of SAGE... in this entire scenario where do we locate our fight? It has to be within our fields and farms. In the case of GM, prevention is better than cure."

Shalini Bhutani began her presentation by giving a brief background to GRAIN and its work. She said that in her presentation she would share the research on USAID that has been done by some of her colleagues in GRAIN along with some other relevant issues. She highlighted that GE is being promoted by USAID all over the world in the same fashion as the way the solutions for AIDS are being offered. These are expensive, patented and inaccessible options.

The presentation went on to highlight the main carriers of the GE agenda. These include *donor agencies* like USAID, World Bank, Rockefeller Foundation; *advocacy groups* like International Service for the Acquisition of Agri-biotech Applications (ISAAA) and International Food Policy Research Institute (IFPRI); or private players like Monsanto, Syngenta, DuPont etc. GE is also being promoted through bilateral agreements which determine which technology gets transferred to which countries and how. There are also inter-governmental processes like United Nations-Food and Agriculture Organisation (FAO) programmes and so on.

What this is leading to are dangerous liaisons between governments, domestic industry, local scientists, research institutes and the development sector; all pushing GE in agriculture.

Shalini Bhutani further explained the background to USAID and the kind of GE politics that it is perpetrating in different parts of world ([See Box: What is USAID?](#)). USAID's programmes in Asia and Near East are targeted at helping farmers compete in world markets and also towards supplying supermarket chains like WAL MART, Cargill etc. All this is aimed at a mythical world market with clean competition. This is nothing less than a mirage.

The USAID India, Country Strategic Plan, 2003 – 2007 aims to:

- Restart US assistance to the agriculture sector, shifting from past production oriented interventions of the Green Revolution, to policy analysis and advocacy on marketing and distribution;
- Establish and convene national forums and dialogues on promoting & sustaining Indian agriculture in a global economy;
- Encourage the use of cutting edge technologies.

The Country Strategic Plan also states that USAID has considerable comparative advantage to respond to India's needs and that (USAID) "has recognized experience in agricultural policy analysis and access to an outstanding system of agricultural science and expertise in biotechnology and agribusiness. This experience includes a history of successful collaboration with India to launch the Green Revolution"

The presentation went on to look at some of the elements of the USAID Mission India, FY 2005 Programme which aims to *Increase Agricultural Productivity* for which USAID will promote collaborative ventures that generate and adapt technologies in agriculture (biotechnology, improved production methods & marketing). The principal contractors/grantees include the World Bank (prime); CIMMYT (sub); and Cornell University (prime).

In this context, it is important to keep in mind who is the primary beneficiary of such programmes, the donor or the recipient. The principal beneficiary of United States of America's (USA) foreign assistance programs has always been the United States (US).

The next focus of the presentation was the US Biotech Policy. It questioned as to how be that it is in USA, 60% of the Genetically Modified (GM) crops are grown? The fact is that in the USA there are very relaxed regulations towards GE. The premise is that GM is quite similar to Non-GM and therefore it is safe to grow it. There is no real risk assessment carried out. It is presumed that if at all there is risk it needs to be managed. In the US, GM clearances are based on a compositional similarity of GM & non-GM crops. Infact these clearances are lot cheaper and less stringent than when it comes to seeking clearances for a pesticide or pharmaceutical.

The presentation then delved into details of the two prominent USAID GM programmes. These are the Agriculture Biotechnology Support Project (ABSP) I which was undertaken from 1991 to 2003. This programme was redesigned as the Collaborative Agriculture Biotechnology Initiative (CABIO) in 2002. Currently CABIO has three components i.e ABSP II looking at the research aspects and Program for Biosafety Systems (PBS) which is aimed at changes in Biosafety regulations and also more stringent Intellectual Property Right (IPR) regimes. It works on the premise that because corporations and private companies need patents and plant variety protection to recover their investment and get profits. The third component of CABIO is of Biofortification of crops to induce 'nutritional' elements. Headquarter of ABSP I was Michigan State University and that of ABSP II is Cornell University.

The target countries for USAID in Asia are Philippines, Bangladesh and India. In Philippines the focus is promotion of Bt aubergines (eggplant) with the Institute of Plant Breeding and in India it is pushing the GE agenda through Monsanto's subsidiary Mahyco. Other plans include GM Papaya in Thailand; GM Tomato in Indonesia and also GM Potato.

The India collaborators of the ABSP II programme for Asia is Sathguru Management Consultants Pvt Ltd. a large consulting firm based in Hyderabad, India Through this partnership Cornell University is promoting grants and fellowships as well as organizing workshops and trainings on Intellectual Property Rights (IPR), Agriculture Biotechnology and so on. Another initiative is the TIDCO biotech park. The Centre for Life Sciences (TICEL) has undertaken a 5yr Technical Services Agreement with Cornell for which TIDCO will pay INR 2 crores per year for technical assistance.

As part of ABSP I, Monsanto, Michigan State University (MSU) and Tata Energy Research Institute (TERI) collaborated for the Golden Mustard Project.

The presentation also looked at the activities of advocacy groups like ISAAA and IFPRI, which are promoting GM. International Service for the Acquisition of Agri-biotech Applications (ISAAA), is a pro GM organization and funded by the GM industry. It supports GM crop projects. ISAAA has recently opened its South Asia Knowledge Centre opened in India (See: <http://www.isaaa.org/>). Ironically, ISAAA filed for a US Trademark for the words "GoldenRice" and "Golden Rice," to "ensure that the name GoldenRice remains in the public domain for the benefit of resource-poor farmers."

It further highlighted the core areas of work under the Program for Biosafety Systems (PBS) which is:

- Establish infrastructure developing countries need to use biotechnology safely
- Build policies and capacity for science-based regulations
- Examine biosafety in the broader context of economics, environment, science, and trade issues

PBS does not focus on environmental concerns but primarily on trade concerns. It is important to keep in mind that the US government has not signed the Biosafety Protocol (<http://www.biodiv.org/biosafety/default.asp>) and would also like the biosafety regulations not to be very stringent. This is the background to pushing for single window clearances in countries like India. As Lawrence Kent, the key person of PBS states, "... (PBS) is an important and essential initiative that must become effective as soon as possible to provide an alternative to the anti-technology "precautionary principle"...by the UNEP & NGOs throughout the world."

USAID has also been promoting pro GM farmers networks like Asian Regional Farmers Network (ASFARNET- <http://www.bic.searca.org/asfarnet/>). Also solutions are being offered in the form of Terminator Technology in which the seeds harvested don't germinate again. It is being argued that since these seeds don't germinate, they would not contaminate. It is important to understand whether these are solution or a problem in its self.

Another such context that is being used are the targets of the UN Millennium Development Goals (MDGs), one of which is to reduce hunger by 2015. The governments all across the globe are under pressure to achieve these goals, which is what the GM industry is cashing in on. They are promoting GE agriculture as a solution to hunger and nutrition (See: <http://www.un.org/millenniumgoals/>). The USAID has a Millennium Challenge Account through which they give money and support to achieve the MDGs.

In this context what is happening in a country like India is causing deep concern to many. There are doubts in many minds that the Indian government is promoting a Pro GM policy and a tailored Biosafety Regulation. GE clearances are being facilitated quickly. There is also a reorganization of the Indian Council of Agricultural Research (ICAR) that is underway which might facilitate an easy entry to GE.

So with this entire scenario where do we locate our fight? It has to be within our fields and farms. In the case of GM, prevention is better than cure.

- **Clarification by G.S. Aurora**

Following the above presentation, the chairperson sought a clarification and at the same time posed a question before the participants. This was, are biotechnology and GM co-terminus? Are Biotech and GE being confused in India? He highlighted that the confusion between the two can be dangerous. Biotechnology is a larger concept is primarily technology that uses biological resources. GE is one kind of biotechnology related to research and applications being undertaken in the science of genetic modification/engineering. Biotechnology has a tremendous future particularly in the field of pharmaceuticals. It is important to see where biotechnology might be useful and where it should not be introduced at all.

The discussion that was generated highlighted that there is no confusion in the USAID about biotechnology and GE. The biotechnology being promoted there is GE. It is the third generation biotechnology that SAGE is concerned about. In this there is merging of elements which would otherwise never be brought together, for instance, introducing a fish gene in a tomato and other such uncontrolled modification.

- **How shall we liberate farming from Genetic Engineering? By D D Bharama Gowdra, President, Organic Farming Association of India**

"I outright declare my opposition to GE. I have not studied IT or BT but based on my experience I can say that it not a solution that is needed"

Bharama Gowdra brought to the attention of the participants that GE crops have been rejected by farmers and consumers in Europe and other part of the world, Therefore it is important to be careful and not allow them to spread in India. He then pointed to the 3 year Bt Cotton study in Andhra Pradesh and said studies such as this have pointed to the false truths that the seed companies are spreading about GE agriculture.

He highlighted that he himself has spoken to farmers who are cultivating Bt Cotton and asked them whether they are using pesticides. The answer has been yes. If this is the case then why use GE crops as they falsely claim that no pesticides will be required. What is the difference between GE and pesticide driven agriculture?

He then referred to a meeting in Agriculture University that he attended where there were 500 farmers from the state. None of them knew about Bt Cotton and were also afraid of the technology. At this meeting there were presentations by scientists from USA, but none of them highlighted the ill effects of GE Agriculture. Bharmegowdra questioned the scientist at that meeting as he had collected a lot of newspaper cuttings on the issue.

The presentation further highlighted the failure of Bt cotton which was being promoted as *Chamatkar* crop (magic crop). The failure is the magic of GE crops. It was further added that many farmers are initially attracted to GE crops because of the claim that there would not be any need to spray pesticides. But as they go along they realize that this is a false claim.

In agriculture, GE is not good for crops, soil, animals or humans. The introduction of GE leads to the loss of agro biodiversity in cotton and other crops. Bt Cotton where the seeds and special pesticides cost very high. It is expensive for farmers and does not give returns. Since farmers are not literate they believe whatever the companies tell them. They are also taking on GE crops because they want short term gains and want to become rich soon. But it is clear that these crops have no nutrition, only water and pesticides. It is like, if one eats seedless fruits and vegetables, one will also become seedless.

Session II

SAGE: ROLES AND RESPONSIBILITIES Facilitated by P. V. Satheesh

The session was introduced by P.V. Satheesh. He highlighted that it is envisaged that SAGE would be a participatory, transparent and as self motivated group as possible. There would not be any centralized secretariat though little coordination would need to take place for which a small group would be required. However, most of the programmes and activities would be self determined.

In this session the different sectors that are part of SAGE would make brief presentations on what they envisage their role and responsibilities in SAGE and how they could contribute to the network. It is through this that SAGE would get its form and structure. The presentations would need to focus not on what the work that has already been done but can be done as part of this network.

Farmers

- **G. Nammalwar, Organic Farmers Network, Tamil Nadu**

Nammalwar began his presentation stating that he is speaking to the participants of the workshop also as a member of Organic Farmers Association India (OFAI). He shared his experience of campaigning, writing and continuously working towards making people aware of the fact that what farmers have in the form of traditional agriculture, is indisputable and incomparable. However, after coming to the workshop and listening to what is in store with USAID-UAS kind of collaborations, he is clear that the work being done is not sufficient.

If one goes deep into understanding the plans of American companies one can be sure that they are trying to drive farmers to suicide. They are making all attempts at destroying our agriculture. All this will lead to a re-colonization of India.

In Tamil Nadu there are several organizations that can come together for planned and concrete action aimed towards the death of GE.

- **Venkatarama Reddy, AP Rytu Sangham**

Venkatarama Reddy started by emphatically stating that today the participants of the workshop are gathered together to protect their own selves. Just as the Indian princes invited foreigners before India was colonized, pseudo scientists and pseudo governments are inviting imperialistic countries and their GE agenda to the country. These are the companies which are manufacturing or distributing pesticides in India, and at same time saying in the global market, that Indian products are pesticide ridden.

Though they are producing and commercializing seeds such as Bt cotton, one is not sure whether they would be ready to buy it. The basic fact is that they need a market in India. Therefore we need to safeguard the interests of our own people and farmers of the country.

- **Kumaraswamy, Farmer from Andhra Pradesh**

Kumaraswamy shared with the participants that he had cultivated Bt Cotton for two years and had suffered failure. In the last year he cultivated non-Bt cotton and has got a good yield. He also shared that in his village, cattle died because of the consumption of fodder from the Bt Cotton crop. All this has led to the farmers being extremely distressed.

He said that as part of SAGE, he would like to take his experience to fellow farmers and share it with people in order to stop the spread of Bt Cotton.

- **Shanthakumar, Farmer's Association, Karnataka**

Shanthakumar expressed his sadness that farmers are being impacted by the plans and policies of Multi National Companies and the government. He said that as SAGE one will have to fight both. Today, farmers are desperate and that is why they are being pushed to grow Bt Cotton as they are looking for choices and options.

The role of USAID must be explained to all farmers and farmer's organizations in Karnataka. He assured that he would take up the issue in the meeting of the farmer's association being held in Mysore on 11th January 2006, which will bring together various farmers from different parts of Karnataka. He would use this opportunity to spread the word, and the learning from the present meeting.

- **Suresh Desai, Farmer from Karnataka**

Suresh Desai initiated his presentation by terming BT (Biotechnology) as *Bekaar* (useless) Technology. It offers more problems than solutions. Today Europe is looking at natural biodiverse systems and GM food has no market there. In India we are doing the opposite.

He then explained the technology of harvesting the sun and wind energy which he has developed and which can challenge any claims made by the proponents of GE. The technology does not lead to any disease in the crops, the soil is there to use and the sun energy is always available.

As part of SAGE this technology can also be used.

- **H R Jairam, Organic Farmer**

Jairam expressed before the participants that even after completion of his education, he wanted to return to his village for agriculture. Since this was not possible due to the compulsions of his profession, he bought two acres of land closer to Bangalore. When he started farming he was shocked to know the problems that faced modern day agriculture. At that point he decided to go back to traditional agriculture methods.

It is important to understand who is promoting organic farming and who is talking about GE agriculture. GE is not being pushed by farmers or consumers, but by large companies who are producing pesticides, hybrid seeds and who seek to monopolise the agricultural system. Their aim is to make money.

Modern day agriculture has failed. Pesticides have polluted and poisoned our food. GE agriculture requires and takes away more nutrients from the soil, just like hybrids do.

Large companies are also pushing to make amendments to the Seed legislation which will restrict farmers to be able to use seeds that they have been saving on their farms. This is totally against the traditional rights of the farming community. It is this systematic opposition that one needs to build together as SAGE. It is important to ensure that farmers use local seeds and that the cost of agriculture comes down.

- **Sunanda Jairam, KRRS, Karnataka**

The presentation highlighted the disasters following the coming into being of the World Trade Organisation (WTO). Post WTO, markets were opened up in the agriculture sector and thereby it threatened household security. Household security cannot be ensured in the present day globalized regime.

"All International treaties are going against ensuring the security (not just food security) of households. The markets have also snatched away from the women the traditional roles they played around the seed, including that of seed saving."

When farmers realized the implications of the above, they waged a war against the Multi National Corporations (MNCs). But why are the intellectuals keeping quiet? Why is it that only farmers have to struggle?

Sunanda Jairam clearly stated that it is important to get back to the basics of traditional agriculture. It is important to understand what is happening to our food systems. Our traditional foods are being sold at a heavy price in 5 star hotels. It is important to fight against the marketization of our food cultures for which it is important to come together and work in solidarity.

Scientists

- **Abdul Qayum, Former Joint Director for Agriculture, AP**

In this presentation Abdul Qayum highlighted that Bt Cotton is a problem especially for developing countries. Therefore it is important to act fast, practicably and with sound data. He also shared with the participants the efforts by Kiran Sakkhari and himself in carrying out the three-year study on Bt Cotton cultivation in Andhra Pradesh.

The presentation went on to say that it is our responsibility to save nature. Further, the role of the scientist should have been to carry out honest research along with the farmers, which has not happened. Trials of GE crops have taken place clandestinely and it has never been revealed to the farmers. It was only in 2004 when a major crop Bt Cotton failed that the ICAR gave a report, which clearly stated that there was non-performance of the crop. Infact this was a 2002 report that was made public in 2004.

He further stressed that a scientist should be honest to the society, to farmers and to nature. If scientists don't expose the problems of a technology and facts around non-performance of crops, then the damage will continue. He also suggested to NGOs, that they should come together with scientist to reveal the real facts.

- **Kiran Sakkhari, Scientist, Andhra Pradesh**

Kiran Sakkhari highlighted the importance of making farmers and local communities a part of the research that scientists take up. This is what was instrumental in defeating companies like Monsanto in Andhra Pradesh.

He said that colonization of India took place 250 years ago with weapons, today it is happening with Intellectual Property Right (IPR) regimes.

A scientist should have respect for nature, ecology and indigenous knowledge systems. As part of SAGE he would join hands with civil society representatives and farmers to alert farmers about the dangers of GE technology.

- **P.R. Sheshagiri Rao, Karnataka**

The presentation began with Sheshagiri Rao saying that for him science is a hobby. Also that he would focus his presentation on the potential use of science in SAGE, or what science can do for SAGE.

He then went on to describe the political economics of GE and said that the strength of GE is the IPR regime that protects it. This includes Union for the Protection of Plant Varieties (UPOV), the Plant Variety and Farmer's Rights Act, 2001 and Article 27a of GATT. Therefore, it is important to attack this regime and if this support is removed, then GE will die naturally.

In SAGE scientific tools, approaches and methodologies can be used to objectively evaluate the benefit claims of the GE; certain risks, as well as impacts of this technology and thereby demystify and counter the claims.

As part of the specific areas of application, there can be an inter-comparison of the different options available in terms of the costs, benefits and risks of GE and other technologies. Science can help do better what farmers do intuitively.

In its protection regime, GE technology is able to restrict access to certain genes and genetic resources through the IPR regimes. If this continues then people will not be able to use the genes to improve their crops. This is another thing that sound science can help challenge.

Science can also help with field level studies like what has happened with the performance of Bt Cotton in Andhra Pradesh. This can be towards monitoring and understanding of risk posed by GE crops and generating realistic impact assessments. Any farmer tries to evaluate the benefits and costs of cultivation before choosing what he/she wants to cultivate. Science can help farmers evaluate this.

He then shared the work of participatory research with rainfed farmers in Pavagada in Karnataka, to design appropriate farming strategies. Groundnut is major crop in the area. Discussions with farmers and scientific analysis have indicated that looking at the rainfall unpredictability and other agro-climatic factors of the region; groundnut is not the crop that would get best results for the farmers. By using various tools and risk assessment methods to realize that early sowing of pigeon pea would be a better alternative.

Sheshagiri Rao ended his presentation by stating that he would be happy to share and use these tools as part of SAGE.

- **Ramprasad, Centre for Sustainable Agriculture, Hyderabad**

Ramprasad clarified that he was not a farmer, but more a person who had studied science and was working with farmers. He highlighted that he was convinced of the ill effects of GE technology.

As a scientific researcher, the first opposition that people like him have to face are his fellow researchers. Fellow researchers have claimed that GE crops are good. However, when questioned they have gone back on this claim.

Today GM Brinjal is ready and might get permission for marketing. There has been news that trials for GM Okra are going on without any permissions or regulations and no one knows about it (See: <http://www.csa-india.org/>).

He warned the participants that we need to be prepared for eating all toxins in our food. Before that happens we need to play an active role in educating our families, fellow researchers, farmer's organizations, government functionaries and politicians on the ill effects of GE agriculture. There is need to work with concerted efforts at all levels.

He further highlighted that technology should be for the benefit of the people. It is not that one is against technology. There is a need to counter the false and mega advertising that is taking place to promote GE. There is also need for celebrity support just as large companies are using.

He finally assured his support and participation in SAGE activities and efforts.

"The tremendous amount of manipulation by Multi National Companies is eye opening. We should have learnt from GM technologies which have been the cause of pollution of seas, rivers and our fields. One is unable to accept this and go back to organic farming. GM foods are the next step in the extreme commercialization and don't allow us to go back to a system where we were living in harmony with nature." G.S.Aurora

Civil Society

- **Suresh Kanna, KUDUMBAM, Tamil Nadu**

Suresh Kanna shared the work of KUDUMBAM with resource poor farming communities in Tamil Nadu and also efforts of the Low External Input and Sustainable Agriculture (LEISA) network. He said that he is fully convinced about the objectives of SAGE for two reasons. Firstly because GE prevents the farmers to have their fundamental rights over seeds and the impact it has on traditional knowledge. Secondly, GE also threatens the self reliance of farming communities.

He highlighted that the KUDUMBAM can play a meaningful role as a member of SAGE. There are 82 NGOs as part of the LEISA network in 9 districts of Tamil Nadu. KUDUMBAM is also part of several other livelihood based networks in India, Asia and Latin America. These networks can be used to create awareness amongst consumers in almost all districts of the state. The organization also has a magazine in Tamil language through which information can be disseminated at the grassroots level. There is also a cultural team which can help create awareness through street plays, dramas and so on. Some efforts can also be towards educating children and through them the parents.

- **Y.M.M. Srikar, Telangana Natural Resources Management Group, Andhra Pradesh**

The presentation highlighted that there are 15 NGOs working in the Telangana region. It further went on to endorse SAGE and highlighted its importance.

Srikar highlighted that there is a need to create awareness at all levels, including that of donor agencies. Often activities which go against the government or question government actions are not supported. He went on to talk about the work of his organization since 2003 against the cultivation of Bt Cotton. Similarly the group can help SAGE in trainings, documentation, advocacy and lobbying and also in taking forward the movement at the grassroot and regional level.

He finally questioned, how long do we keep talking about this? We need to tackle the fundamental issues. There is a need for more in-depth studies like the Bt cotton study and Andhra Pradesh. He also expressed his solidarity to SAGE and highlighted that farmers and movements must work together.

- **K Damodar, Convenor, Warangal Against Genetic Engineering (WAGE), Andhra Pradesh**

Damodar highlighted the work carried out by WAGE on the campaign against GE. It was a collective effort of farmers, farmers associations and NGOs.

He said that in Warangal district of Andhra Pradesh, farmers were attracted to Bt Cotton. There is once again severe loss that farmers have faced even in the current cropping year. The previous year farmers were angry and were out on the streets. This year they are completely helpless. At the same time companies are selling the same products in different names, and continue to attract farmers.

He further added that to fight MNCs, there is a need for a much larger and multi-dimensional force. This force needs to include academicians, students, consumers and so on. There is a need to disseminate information on a large scale which highlights the bitter facts. It is important to reach out to colleges and universities and organize many meetings.

- **S.C. Rajesh, Karnataka Democratic Protection Committee**

S.C. Rajesh began his presentation by stating that most of the population in India is practicing agriculture. But there is a farming crisis in the country. MNCs are bringing GE into agriculture, and it is important to fight this. It is only in speeches that farmer's interest is thought of. India, with its rich traditional agriculture should be a model for the world, but instead aping western agriculture. MNCs are using this opportunity and making inroads into Indian agriculture.

Therefore, it is important to strengthen an organization and join hands in order to encourage innovative technology into agriculture.

Media

- **Harishchandra Bhat, Scientist & Writer, Bangalore**

Harishchandra Bhat shared with the participants that he used to be the head of the Biotechnology Department in a Government Science College. He was instrumental in initiating the biotechnology in the college. He added that today, he writes regularly on the issue of biotechnology in a Kannada language paper.

He highlighted that one big question around biotechnology is that of monitoring. The government is supposed to monitor the effects and impacts of the introduction of any technology in agriculture, but it is not doing so. It should also see that only good innovations should be allowed to be tried out on the field, however, that too is not happening.

He further added that biotechnology is not GE, but merely technology that uses biology. For instance, tissue culture is critical for developing medicines. However, GE takes the biotechnology a little too far. The critical point is why we should accept something, which is not good for us. GM crops are being allowed to come into India, without testing whether they are good for our agriculture and soil. All the decision-making is in the hands of bodies, which comprise of bureaucrats. These bodies are highly corruptible.

The media has an important role to play. However today, there are a section of journalists who merely report what people tell them, without developing an opinion about it. There is also a lack of scientific personnel or expertise amongst the journalists, which is a big gap. Journalists should be taking up investigations at the grassroots level and highlight the reality. This is very important for generating awareness.

- **R Uma Maheshwari, Freelance Journalist, Andhra Pradesh**

Uma Maheshwari began her presentation by saying that she continues to practice journalism and at the same time continues to learn from and about the issues. She further went on to add that it is important for SAGE to keep in mind a communication strategy.

In the recent weeks there have been messages in the newspapers in the form of the Prime Minister asking for a Second Green Revolution or the Mahyco Chairman claiming that in the coming year there would be a an increase in the acreage under Bt crops (See: <http://www.thehindubusinessline.com/2006/01/04/stories/2006010403570100.htm>). This is the context in which the agriculture sector is being reformed today.

There is a visible lack of understanding of these issues amongst the media. But, one should at the same time respect a section of the media, which is continuing t work on creating awareness about the real dangers and issues. It is one thing to blame the media but it another to also understand what the media cannot do.

“It is a fact, that a lot of the development sector tends to keep the knowledge it has generated to itself and do not share it. This way it fails to reach out to a larger audience. Media is more often than not a part of the local researches; it is only seen as tool to highlight the findings. This is not a way to have active campaigns. ”

The presentation went on to emphasise that it is important to expand the inner circle, which is not happening presently. Further it is also critical to integrate larger issues in the GE debate and not talk in isolation. While looking at the impact of Bt Cotton, it is important to highlight the socio-economic and demographic issues as well. It is also significant to look at how GE is impacting not just the agrarian but other population.

At the same time it is critical to keep track of other developments in the rural sector. For instance ICICI has in an advertisement announced its Rural Development Banking, directed towards development services. One doesn't know what these services will include and need to take cognizance of it.

It is also important to move towards building a coalition within the media sector, something on the lines of Media Against GE. There is a need to engage sensitive media persons and work continuously with them. Further, it is the regional language media, which should be the focus. This implies working with district correspondents, who otherwise have very little access to knowledge and discussions that are taking place in the present meeting.

The presentation finally stated that one cannot talk about GE for nutrition. If we look at the issue of malnutrition, there are issues of the lack of equitable access to nutrition. This dialogue needs to be instilled in the media and media needs to be driven to write about this.

- **Shivaram Pailoor, Centre for Alternative Agricultural Media**

“We live in an era where editorials are sponsored. When issues are raised against companies in the media, there are counter campaigns promoting their products.”

The presentation highlighted that the media today is unable to understand the issues around GE in agriculture. It also pointed out the need for relevant material to be available in local languages. There is material available in Telugu, which needs to be translated into Kannada.

Another strategy could be requesting newspapers/ media houses, to lend a journalist to be trained on GE related issues for about a year and then could write. The Centre for Agricultural Media has a diploma course on farm journalism where a subject on Biotechnology and GE could be introduced. The issues can also be raised on the www.farmed.org website.

Consumers

- **Muralidharan, CREAT, Karnataka**

The first point in the presentation was towards highlighting that all the participants of the workshop are consumers themselves. It is important therefore to target the demand of GM food. Boycotting GM food can be a major tool in the campaign. Consumers enjoy a few rights and the Right to Boycott needs to be added to those.

"When it comes to GE food, it is not safe; there is no labeling and no redressal mechanism for consumers. It violates all rights of consumers. So why should consumers buy it? But, how is the question?"

Common consumers are just fence sitters. If they are told that GM food is good they will buy it and if told otherwise, they won't. A lot depends on the amount and extent of influence. This is what SAGE needs to do.

However, consumers are highly disorganized therefore three things are important: there is a need for an expert group that can constantly inform consumer groups with latest material; the entire GE debate needs to be opened up to consumer organizations keeping in mind the larger questions of food security/sovereignty and for this capacity will need to be developed; and finally more number of people need to raise concerns about GE for which there is a need to develop lobbying techniques on how best it can be argued before law makers and politicians.

The presentation concluded by saying that translation of relevant material into local languages on GE is essential.

DISCUSSION

Following the various presentations the session was opened up for discussion and clarifications. There were several interesting deliberations that took place. Following is a summary of these:

- a) While it is important to say no to GE, it is also important to look for alternatives. While rejecting GE, it is critical to provide options to farmers.
- b) The issue of the amount of water required for cultivating Bt Cotton needs to be looked at while aiming to understand the issues. Down to Earth magazine has reported several pro-Bt articles. However in one article they have said that a huge amount of water is required in the cultivation of Bt Cotton.
- c) It is important to counter false information given in a magazine like Down to Earth. For this SAGE should look at a rapid media response team.
- d) While media has a limited and definite role to in the campaign against GE, it is not that it cannot take on the role of an activist and a change maker.

HOW WILL SAGE OPERATE? AN INTERACTIVE SESSION: Facilitated By P Babu, ICRA, Karnataka

The facilitator began the session by highlighting that in the entire process of industrialization, agriculture had till recently escaped this regimentation and this is to large extent because seed can't be totally owned. It is a different scenario today. In countries like Iraq, American government and agencies are determining the entire scenario, including the kind of agriculture that should take place in the country.

At another level there is also the question of intellectual freedom in a University. There is a need to have a group of scientists who speak on behalf of people's science. This should not be

curbed. However, the environment that is developing today there is no intellectual freedom for people who would want to do so. This is what SAGE needs to take cognizance of.

P. Babu highlighted that several aspects and need for work has been spoken about during the day, it is now important to see how it can be operationalised. What is possible in the realm of our capacities? What is exactly that SAGE can or cannot do? One needs to address the question that despite all evidence against Bt Cotton, why is there is no stoppage in its cultivation? Why is there no single voice of dissent?

The session went on to look at how SAGE would operationalise itself what is the kind of activities it could take on. The participants also discussed the need to initiate a steering committee (SC) and who would be its members. Some aspects for planning for the future were also looked at. Below are some of the key discussion points of this session:

- a) To address the present challenge, it would be good to select a few districts in the southern states of India and prepare a concrete action plan to tackle the issues there. In this plan it would be important to address both supply and demand side issues. This action plan should have the following elements:
 - Farmer to farmer exchange/s
 - Work with agriculture extension officers towards their awareness. This should be in the form of seminars, discussions and direct dialogue. Regularly interaction will ensure some response from them.
 - Campaign towards changing the food habits of consumers. Deccan Development Society has started this with their Sangham Shop and Café Ethnic in Zaheerabad. This should be replicated.
 - Disseminate information to the local level and work on practical alternatives.
- b) Over the next six months to one year it is important to generate more specific information on the GM trials going on in the country.
- c) It would be important to focus on generating awareness amongst farmers on these issues in order to be able to build a movement. Farmers are not thinking of which technology is good or bad. One needs to generate this discussion amongst them and have an organized response against it.
- d) SAGE should narrow down and limit its focus to GE. One task of SAGE should be to document the experiences of the farmers in areas like northern Karnataka and use it to influence state policy, starting with countering the existing policies.
- e) It is important to provide the right kind of information at the right time. One example is that of E –Chaupal which is being used by the corporate sector. It is a commercial venture which is being used to reach out to farmers making it a 'social cause'. SAGE needs to take lessons from this. It is significant to understand the existing gaps and take necessary steps to fill it.
- f) One should focus on pushing the kind of crops one would want to cultivate. It will automatically help in throwing out Bt. This should be the emphasis rather than campaigning against Bt.
- g) Developing tools to lobby with policy makers is a critical aspect. It would be important to trace developments and collect information at various points of agricultural practice, from sowing to harvesting, so that the information can be used for advocacy and campaigning.
- h) Folk media needs to be used just before the sowing season to generate awareness amongst farmers on the ill effects of GE.
- i) A small cell should be established which should start working in all language zones towards collecting information. This information should be pooled from different states, and also different countries. This should be followed by NGOs coming together and thinking of strategies suitable for their respective areas in order to be able to trace the performance of crops through surveys. These should be reliable and acceptable surveys and can also indicate the productivity and production trends of the crops.
- j) There is a need to comprehensively understand all the problems associated with GE.
- k) SAGE and the campaign can focus on two concrete activities:

- Join hands with the International Campaign to Ban Terminator (See: <http://www.banterminator.org/>) targeted to mid March when there is Convention on Biological Diversity meeting which will discuss the terminator technology. Simply put, in the Terminator technology, a seed does not germinate for the next planting season. So even if the farmer saves a seed it cannot be used and a new seed would need to be bought from the market. This technology was introduced around 5 years ago and was opposed by everyone including M.S. Swaminathan. Governments are using the terminator technology to build a pro-GE argument to say when the seeds will not germinate; they will not cause any genetic pollution. This technology is presently banned in India. However, with the current trends there is no guarantee when this would get reversed.
 - Observe the International Day in Opposition of GE which is sometime in June. SAGE can organize some activities on and around this day in India in solidarity.
- l) The discussion around GE and its issues need to be popularized with farmers. It needs to be discussed that during the transition phase from hybrid to traditional agriculture or GE to traditional agriculture, the productivity might go down marginally, but it will be beneficial in the long run.
 - m) It is critical to spread the message of the impacts of biotechnology and GE entering into the human food chain. Further Ministry of Health needs to have a say in the approval of GE crops.
 - n) As a follow up to the workshop there is a need for a press note and sign on petition expressing the common thoughts of the participants. There should be a signature campaign with it and sent to the local administration in various districts. This will have an impact.
 - o) There needs to be a consolidated and coordinated study with facts and figures on GE crops for Karnataka, Maharashtra and Andhra Pradesh. This should be submitted to academicians and policy makers. Sound data is needed to fight with policy makers.
 - p) It is important to look for support within the administration and government as well as the academicians. The supportive personnel in these sectors might not be able to go directly against the government but would certainly be able to help indirectly.
 - q) To direct a campaign, it is important to figure out what is the target of the campaign. Who are the people the campaign is trying to reach out to? Accordingly the message and direction of the campaign can be determined.
 - r) It is important to maintain seed banks in villages to be able to counter GE.
 - s) It is important to also have a logo for SAGE. Further, it is essential for core committees to be established at regional, state and local levels to carry out the SAGE mandate.
 - t) Information around GE should be translated into local language and put into audio CD format. Messages should also put in the form of songs and played at public gatherings. Also wall newspapers highlighting the issues around GE should be prepared and put up in local tea stalls. Further, instead of depending on mainstream radio, community radio should be used to spread the message.

During the discussion concerns were also raised about how farmer's aspirations and goals are towards higher yields and more money. This continues to be there despite campaign efforts. Concerns were also raised around the setting up of the Biotechnology Regulatory Authority (See: <http://pib.nic.in/release/release.asp?relid=1912>) and how it can be monitored. What role can SAGE play in this regard?

The facilitator P. Babu went on to the concluding session by stating that the key points of discussion can be essentially clubbed under the following categories:

- 1) Strengthening information base/resource pool and production of appropriate and simple campaign material.
- 2) Awareness amongst farmers with the right information on alternatives
- 3) Bring together responsible scientists/academicians

The main point is how these can be operationalised. SAGE is a loose network and it can essentially facilitate activities of the campaign. One of these activities is how to instill certain responsibility amongst scientists. This has been seen as a terrible collapse within the scientific community. The question is where is the intellectual freedom? People are scared to speak out. It is critical to recover the real scientific tradition as a long term goal in this campaign.

ESTABLISHING THE SAGE STEERING COMMITTEE

P. V. Sathesh initiated the discussion around the steering committee. He highlighted that it would be important for the group to keep in mind that the steering committee is not a big and unmanageable body. Also it needs to include both state wise and sector wise representation. A small regional steering committee could meet more regularly every three months than the larger SAGE network. He cautioned that the more committees that are formed, the more resources would be required to administer these committees.

Following this the representatives from the four states, Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu split into small state-wise groups to discuss the representation on the SAGE steering committee. The following names were put forth:

TAMIL NADU

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2. Mr G Nammalwar, **Tamil Nadu Organic Farmers Movement**, 79, Elancheran Nagar, Nagapattinam – 611 001 Cell: 09443124589 gammalvar@yahoo.co.in
3. Mr Oswald Quintal, **LEISA Network**, No. 17, Highways Colony, Subrahmanyapuram, Trichi – 620 020, Tamilnadu Ph: 0431-2331879, 2331842 / Cell: 09842449125 Email: kudumbamtry@eth.net
4. Ms Sheelu Francis, **Tamilnadu Women's Collective**, No. 10, Kolathur, Chennai - 99 Tamil Nadu Ph: 044 25501257 Cell: 09444015851; Email sheelu1@vsnl.com
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6. Ms Revati, **OFAI**, 79, Elancheran Nagar, Namblar Nagar Road, Nagapattinam – 1, Tamil Nadu Ph: 09443343336
7. Mr Ramasamy Selvam, **Erode District Organic Farmers Network**, Thalavumalai, Arachaloor, Erode District, Tamil Nadu Pin : 638 101 Ph: 0424-2357537; Cell: 094436 63502,. Email: thulir@rediffmail.com

MAHARASHTRA

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2. Dr. Vijay [full address not yet received]
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KARNATAKA

1. Dr P Babu. **ICRA**, #28, Michael Palya New Thippasandra Post, Bangalore; Ph: 080 25283370 icra@bgl.vsnl.net.in
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3. Mr K Boraiah, **KRRS**, Gopalapura, Mandya District, Karnataka – 571 470 Ph: 08232-224584 / 09845154587

4. Mr Ashok Kumar Shetti, **Nagarika Seva Trust**, At & Po Guruvayanakere Dakshina Kannada District-574217. Ph: 08256-232019 Email: nstgkere@sancharnet.in
5. P R Keshava Murthy [full address not yet received]
6. Mr Bharama Gowdra, President, OFAI, **Dharitri**, Yalavatti Post, Shirhatti Taluk Gadag Dt, Karnataka- 582117; Ph: 08487-264313 (R) Cell: 09448007447
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3. Mr Kumaraswamy, **Farmer**, Narlapur Village, Warangal District
4. Ms R. Uma Maheshwari, **Journalist**, 302, Sheshadri Apartments, 6-1-132/21, Skandagiri, Padmaraonagar, Sitaphalmandi (PO), Secunderabad - 61 Cell: 9440718310 Email: umamaheshwari_1999@yahoo.com
5. Mr Malla Reddy, Director, **Rural Development Trust (RDT)**, Mallareddy, Bangalore Highway, Anantapur Ph: 958554 246884 actionf@sancharnet.in
6. Mr Y M M Srikar, President, **Telegana Natural Resource Management Group (TNRMG)**, 1-5-932, Road No2, New Maruti Nagar, Dilsukhnagar, Hyderabad 500 060 Ph : 040-24140461 Cell:9849510577, macord_5@rediffmail.com, tnrmg2000@yahoo.com
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8. Ms. Salome Yesudas, **Food and Nutrition Scientist**, Hyderabad Ph: 27613066, 27014730(o) Cell: 9440259465 salomeyesudas@hotmail.com
9. Dr. Sagari Ramdas, Secretary, **Anthra**, B-135, Sainikpuri, Secunderabad - 500 094 Ph: 27113167/ 27110977 anthra.hyd@gmail.com
10. Mr Visweswara Reddy, Anantapur District Secretary, **A.P. Rytu Sangam (CPM)** 1-1-9/10, Jowahar Nagar, RTC 'X' Roads, Hyderabad - 20, Ph: 27605413; Cell: 9393725562
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12. Mr R Murali, Secretary, **Modern Architects for Rural India (MARI)**, H.No. 1-8-499, Behind Ekasila Park, Balasamudram, Hanamakonda, Warangal (Dt.) Phone No.0870-2571208, 2552928 Cell:9849649051 marimail@rediffmail.com
13. Mr. K. Jogi Naidu, Secretary, **Sustainable Agriculture Network**, Thummapala, Anakapalli Mandal, Visakhapatnam Dt. - 531 032 9440622893 Ph: 08924 -223161(o) 9347260022 svds_org@yahoo.com

Each state also established their preliminary State Steering Committee with larger representatives. From the above, central steering committee was formed.

The **Central Steering Committee** consists of

Tamil Nadu:

- Mr G Nammalwar, President, **Tamil Nadu Organic Farmers Movement**
- Mr Oswald Quintal, Director, **LEISA Network**
- Ms Sheelu Francis, Secretary, **Tamilnadu Women's Collective**
- Mr Ramasamy Selvam, **Erode District Organic Farmers Network**

Karnataka:

- Dr P Babu, Joint Convenor, **SAGE**
- Mr K Shantakumar, Secretary, **Kabini Farmers Association**
- Mr Muralidharan, President, **CREAT**
- Mr Bharama Gowdra, President, **OFAI**

Andhra Pradesh:

- Mr K Damodar, Convenor, **WAGE**
- Mr Visweswara Reddy, **A.P. Rytu Sangam (CPM)**
- Dr Rama Prasad, Scientist, **Centre for Sustainable Agriculture**
- Ms R. Uma Maheshwari, **Journalist**

Maharashtra:

- Dr Tarak Kate, **Dharamitra**,
- Dr. Vijay [full address not yet received]
- Mr Vijay Jawandhia, **Sheatkari Sangathana**,

Day 2: January 7th, 2006

HUMAN NUTRITION AND HEALTH: IS BIOTECHNOLOGY THE ANSWER? SHARING OF CONCERNS AND EXPERIENCES

Chaired by *Dr Dwarakinath, Chair, Agriculture, Man, Ecology, Bangalore. Formerly Vice Chancellor, Agriculture University, Bangalore & Chairperson, Agriculture Commission, Karnataka*

1. What does biotechnology mean by nutrition?

- **K.C. Raghu, Editor, Food & Nutrition, Bangalore**

This presentation focused on the relevance of biotechnology in the context of human nutrition. It highlighted that it is important to know that where the nutrition science stands today *vis a vis* its relation with biotechnology.

The science of nutrition is new. Vitamins were discovered around 100 years back. Today we have some understanding of which nutrients are important for us. Yet it is still very limited. Therefore one needs to think of what Socrates has said, "Let Food Be Thy Medicine" or what George Bernard Shaw said, "Doctors give medicines about which they know nothing to a body about which they know something."

Our knowledge of food is much older than our knowledge of nutrition. We need to look back at the knowledge of the older generation who has a better sense than what we can get out of reading books.

Science has recognized essentially five kinds of nutrients including proteins, carbohydrates, minerals and so on. However, the knowledge of nutrition cannot just be confined to these. It is way beyond it. Therefore it is important to shift from looking at nutritional value of foods to health value of foods and focus not just on disease prevention but on health promotion.

Health of a human being depends on how broad and diverse is the food basket. Today, the fundamental basis of our food has been narrowed down.

Any dietician who does not understand agriculture and culture is not good.

Food has become a pawn of politics. In the 1960s in the garb of the protein fiasco, skimmed milk powder was dumped all over the world. There has never been a holistic approach in nutrition policies and programmes within the country. These have instead always been fine tuned around the needs of power and politics.

"There is a lot of politics in food. It is a major blunder to go from nutrition to food rather than from food to nutrition. It is very easy to take people for a ride by giving them the wrong messages. An Aquafina mineral water bottle describes energy and protein to be zero, but does that mean that it is not the same in tap water? Does Aquafina have a special technology?"

Today there is also medicalization of food that is taking place. Further there is sponsored research in Universities. In the Agricultural University in Karnataka researchers are working on Soya for years, and it is funded by DuPont.

When it comes to GE food, private research cannot be trusted unless the civil society is involved and there is public debate on it.

What does biotechnology aim to do for nutrition? E.g. Golden Rice, there is confusion about how much Vitamin A is there in this rice. It is also argued that 9 kilograms of rice is the adequate quantity for a person to consume during one day. This is the problem if one confines to a single grain to get out nutrition. It is important not to get nutrition from such narrow confines of food but should try and derive it from different foods.

Another critical issue is that without one's knowledge there is already consumption of GM foods in India and that too without any permission. This is through potato chips or many other products available in the market.

Forget about the good or bad about GM food, there is sheer illegitimacy around its trade. There are ethical issues of inducing potatoes with frog genes or pig genes in poultry. Since food has a great cultural context for the people, such practices have a great psychological bearing on them.

The baseline of genetics is that DNA makes RNA, RNA makes protein and protein makes money. That is the bottom-line.

- **Shalini Bhutani, GRAIN, Asia**

Shalini Bhutani initiated the presentation by pointing to the need to situate the debate of biotechnology and nutrition in the realm of the political economy. How is the biotechnology industry working in the political business of nutrition? It is selling solutions for health and disease. Whether it is AIDS or malnutrition, it is a big business.

The relationship between GE and nutrition has five aspects which is what gets the biotech industry interested. First, it helps build a public image as it is supposedly directed towards a social cause; second it allows for profit; third it also allows for certain acceptability towards patents. Patents are justified as being compensation for the investment that the company has made in developing the solution for the larger benefit. Fourth, by offering such solutions the industry is able to establish the link between the public and private sector; and fifth, it is the Vitamin M (oney) factor.

When the industry offers solutions to hunger, their concentration is more on the 'hidden hunger' and not on real starvation. The focus is towards making up for the inadequate nutrition from the existing crops and not towards dealing with the fundamental reasons that lead to hunger, which include the induced crisis in agriculture, access to food etc. Ironically the largest numbers of people suffering from micronutrient malnutrition live in South Asia, a region otherwise rich in fruits and vegetables.

The industry through its medicalisation of food is shifting the focus from farms and households to pharmacies. This equally applies to GE crops. The biotech industry today offers Techno Fix II, where the Techno Fix I was the Green Revolution, which never addressed the problem of micronutrient malnutrition. The same template is followed in GE by introducing the 'missing elements of nutrition.'

Technical fixes only treat the symptoms of micronutrient deficiency whilst reinforcing the underlying problem, which is caused by the decline in the diversity of food that is being grown, produced and consumed. Even the International Rice Research Institute (IRRI) admits that the Green Revolution may have actually increased micronutrient malnutrition among the poor. Therefore it sees the Gene Revolution as the answer to micronutrient malnutrition in engineering the missing elements back into Green Revolution crops.

This is what brings to the focus the concept of Biofortification of crops. It is a high cost, high technology driven and piece meal approach to 'enrich' food. Biofortification is a Consultative Group on International Agricultural Research (CGIAR) Initiative coordinated by Centro

International de Agricultura Tropical (CIAT) and International Food Policy Research Institute (IFPRI). It is funded by The Bill and Melinda Gates Foundation; Danish International Development Assistance (DANIDA); Swedish International Development Assistance (SIDA), the World Bank and the U.S. Agency for International Development (USAID) (See: www.cgiar.org/pdf/biofortification.pdf).

It is interesting however at one level the biotech industry pushes GE crops to increase yields and at the same time USAID which is one major promoter of GE itself states that there is more food stock than required. In its 'Unrestricted Version' of its Country Strategic Plan 2003-2007, USAID India states, "Food grain stocks may soon reach 80 million tons, more than four times India's emergency needs."

So the focus has shifted from Grow More to Grow Better. As William F. Kirk, Senior Vice President, DuPont says in *Feast or Famine: Impact of Biotechnology on Global Food Markets/Trade as part of World Bank Meeting in Washington, DC September 28, 1999*, "The benefit of "more food" is a difficult one to sell today in the midst of oversupply and historic low prices." (See: http://www.dupont.com/biotech/thoughts/feast_famine.html; <http://www.corpwatch.org/article.php?id=571>)

Till now GE was not into food crops but more used for Animal feed, Oils, Drugs, Cotton and Additives and inputs for food industry. It would be important to look at the history of food processing to understand the entry of the industry into the food arena. There is a history of epidemics of beri-beri in people subsisting on polished rice. The argument is that removing the outer layer of rice by polishing it removes with it the essential vitamin thiamine, causing beri-beri. Also there is the instance of development of scurvy among infants in the late 1800's in the US, the vast majority of sufferers being fed milk that had been heat-treated to control bacterial disease.

As a reaction to this, in 2005 Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) discontinued research into a type of GE field pea that had been shown to be 100% protected against attack by pea weevils, a type of insect. The GE field pea's protein was found to have a slightly altered structure which caused an allergic-style reaction in the lungs of mice and led scientists to believe it could have similar effects on human lungs.

It is in this context that one needs to look at the grand entry of *Golden Rice*. Golden Rice is GE rice made to produce beta carotene to cure Vitamin A Deficiency in poor countries. Through this the industry is convincing agencies like Food and Agriculture Organisation (FAO) that Golden Rice is the solution for hunger. But is that really so?

It is important to bear in mind that a single micronutrient deficiency does not occur in isolation. Golden Rice cannot address the underlying issues of abject poverty, environmental depravity, and social disparity.

But then why is Golden Rice being pushed? Firstly it is good for the public image of the biotech industry. Secondly, it is in the light of the 2015 Millennium Development Goals (MDG) and to encourage public-private partnership. The UN MDGs towards reducing hunger by half is being used to push for the acceptance of GE. The United Nations Standing Committee on Nutrition (SCN) has also been convinced of this argument. The FAO has also endorsed biotechnology as a solution to hunger. The USAID micro-nutrient programme is to be viewed within this context.

"What really need to be fortified are small farm agricultural systems and their diverse cropping systems that guarantee wholesome food"

2. What can our own agriculture offer in terms of nutrition and health?

- **Salome Yesudas**, Food and Nutrition Scientist, Hyderabad, AP

Salome Yesudas began her presentation by clearly stating that once we remove the words, "Is Biotechnology" from the title of the workshop, the solution would be before us. She added that is also what is going to be the focus of her presentation.

She then went on to highlight the key findings on the nutrition of crops which was arrived at following a study of 40 villages in Deccan Andhra. During the study it emerged that there is a tremendous variety and diversity of food crops available in the region. This list of free foods indicates that there are 28 varieties of food grains, 80 varieties of green leafy vegetables, 30 kinds of roots and vegetables, 18 kind of spices, 27 kind of pulses, 18 varieties of nuts and oilseeds, 49 fruit varieties, 39 kinds of animal foods and 17 kinds of drinks and ready to eat foods. Further, these are grown without chemicals and represent a form of sustainable and ecological agriculture.

There are a number of green leafy vegetables or roots and tubers which in modern day agriculture are termed as weeds or unwanted crops. These are high capsules of minerals and vitamins. These are all components of the traditional farming system which are ignored today.

The presentation then highlighted the nutrient value of some of the millets; green leafy vegetables; roots, tubers and vegetables; spices; nuts and oil seeds; fruits and so on. For instance finger millet has Protein 7.3 gms, Energy 328 k.cal, Calcium 344 mg and Iron 3.9 mg; or a green leafy vegetable like *Jonna chemchali (Digera arvensis)* has Calcium 3237 mg, Iron 111.3 mg, Beta Carotene 5360micro g and Vitamin -C 64.68 mg. It finally presented a table which highlighted the nutritional vitiation in nutrient composition among crops and stated that today's agriculture is ignoring solutions within our own knowledge systems and looking for answers from outside.

The presentation also pointed to a yearly calendar of the availability of uncultivated foods. It brought to light that even though in the dry months the availability might be lesser than in the monsoon and winter, it is not that there is no food available on the farms and near villages. The problem is that one has forgotten one's own uncultivated foods and begun considering them as weeds.

Salome Yesudas went on to add that red soils are the poor farmer's soil and is considered to be infertile. However if one looks at the Vitamin C and Iron content in the red soil is much higher than the highly fertile black soil.

The people's perception on the relation of food and nutrition is mainly that it gives them nutrition, is safe, economical, and also has medicinal qualities. It should be diverse with a variety to choose from and also should be culture specific.

"Sorghum contributed 29% of energy, 33% of protein, and 53% of iron, and green leafy vegetables contributed 21% of vitamin C and 38% of vitamin A. Our results indicate that traditional food such as sorghum, pulses, and green leafy vegetables are major sources of energy, protein, iron, vitamin C, and vitamin A, and that mothers from **villages with the traditional food intervention**, had higher intakes of energy, protein, and iron."

The knowledge comes from the people. Traditional farming system provides nutrition and at the same time also livelihoods to the village community. It also offers a great diversity in agriculture and culture.

- **G.G. Gangadharan**, Foundation for Revitalisation of Local Health Traditions (FRLHT), Bangalore

Gangadharan pointed out that he is neither a farmer nor a nutrition scientist. However he has been working on traditional medicine and farming basically with the focus of it being important for the health security of the country.

All Indian sciences are based on certain basic principles. These are unique and as the basic foundation of Indian sciences and believe in how can one relate to nature and fellow beings. The first stanza of the *Ishavasya Upanishad* states, that we don't own the nature. We can use it without disturbing its basic premises. Don't steal from it but work in partnership with it as nature is too complex to comprehend.

The presentation further highlighted that combination is infinity. One cannot cure an element of the body to cure another as the body is also complex as nature is. Further, each geographical area is made up of its own unique nature.

There are certain concepts which are forgotten in modern nutrition science, one of them being that of *samskar*. Each stage of life the body has its own needs which we are trying to change artificially. In Ayurveda, the nature is left uninterrupted.

"We need to understand food according to different seasons. Traditionally there was different food for different times of the year and also for different physical conditions. Today this is all forgotten. In our western ethnocentric worldview, we have forgotten Indian science. Indian and Chinese knowledge systems are 5000 years old and are a great storehouse of information. Even many agricultural practices are based on this indigenous science."

The presentation went on to highlight that in their work FRLHT is trying to see how this knowledge system can be put back into practice. Unfortunately today the best yoga practitioners or Ayurveda practitioners are in America.

DISCUSSION

Some of the key points that emerged during the discussion are:

- a) There was a clarification sought as to if the extra vitamins which were one is trying to get through GM are consumed then will the traditional food be acceptable by our body or will it be discharged? How will it be dangerous? The answer was that what one eats also depends on ones physiological condition and also on the availability. In GE/GM all of it is in the market in the interest of profit. Since nutritional science is new it entirely depends on biological availability and also on the body condition.
- b) A point was raised on the fact that in the discourse, one needs to also look at non farming communities who don't have access to food. One kind of universal answer of GE should not be countered by another universal argument of traditional agriculture even for landless. The response to this was that there was space for even the landless in the traditional farming system as it provided livelihoods and also scope for exchange of labour or products for grain (barter). The problem is that his production system has been destroyed and therefore there is increased dependency on the market for food. Therefore it is important to revive our food and food production system.
- c) A question was raised on what is the impact of GM food on IQ? The response was that there is not one single solution for the nutrition problem in the country. 22% of the people are landless and there are socio-political issues connected with issues of food security. There is a need for a multi-pronged approach. Ultimately all the nutrients should come from the soil but with degradation today soils in India don't have the complete nutrition. Another response indicated that our food systems give complete nutrition and are there for one to use. However it is upto us whether one wants to use it or not.

- d) It was also highlighted that in the discussion on health and nutrition in agriculture, livestock is completely forgotten. There is a great variety of traditional livestock breeds in the country which are integral to traditional agricultural practices. There are also a variety of breeding practices amongst different communities. While talking of GE in agriculture, the livestock issues should not be ignored as they are an integral part of the traditional Indian agricultural system.
- e) Concern was raised on while crops like sorghum are so high on nutrition; they have completely vanished from agricultural fields. As a result of this, animals who would feed on the nutritious fodder from this crop, are also deprived of it and are disappearing.
- f) The big dilemma today is that life sciences are consumer driven. Without changing the life sciences regime, one will not be able to keep alive the traditional wisdom/science and agriculture.

3. What are our experiences in producing sustainable food systems?

Chaired by *Mr. Mallareddy, Rural Development Trust and Member of the Andhra Pradesh Farming Commission*

- **Tarak Kate, Maharashtra**

The presentation highlighted that the nutritional value of the so called coarse grains/dryland cereals is quite high and the same would apply to legumes like black gram, green gram. Statistical information to substantiate this fact was presented in table form.

"In my childhood, Sorghum was the main staple food. With the Green Revolution, wheat grown from Punjab and Haryana was made available through the Public Distribution System at very low cost as compared to sorghum which was available at Rs. 5 per kilogram. How would it be possible for people to buy it? Ignoring the importance of sorghum has led to its complete disappearance today."

The presentation also brought to light the net availability of cereals and pulses all over India. This was based 2003 data of the Directorate of Economics & Statistics, Department of Agriculture & Cooperation. It then went on to look at the issue of economics in agriculture. The proponents of modern agriculture talk about high productivity. However what they don't look at is the high cost of production. So, higher production does not always mean there would be higher profit, which is essentially what a farmer would desire. This is a reality that needs to be highlighted to the government.

If one looks at the economics of cotton cultivation, the expenditure under chemical system per acre (including external inputs of pesticides, labour as well as interest on loan) is about Rs.3000-3600. The productivity is 2-2.5 quintal (qt) per acre. The Income (from 2.5qt/ acre @ Rs. 2000/qt) Rs. 5000 and the net gain only Rs. 1400-2000. Under traditional agriculture, the productivity of Cotton was 1.5-2.0 qt and the income from 1.5 qt (Rs. 2000/qt) is Rs. 3000.

What was further highlighted by Tarak Kate was the loss of crops and crop diversity in the farmer's field in Vidarbha region of Maharashtra. Prior to the Green Revolution, the crop biodiversity during Kharif season in Central Vidarbha included 11 crops: Sorghum, cotton, pigeon pea, green gram, black gram, *mooth* bean, sesame, linseed, *Barbati*, *Ambadi*, sun hemp. Post Green Revolution, it has come down to only 4: Cotton, pigeon pea, sorghum, and recently introduced Soybean.

He further described the work of Dharamitra in Ghatanjee block of Yeotmal district. Due to the economics of the cotton cultivation as they operate in Vidarbha, there is an outflow of approximately Rs.5-6 lakhs per village. In their involvement in the region, Dharamitra has attempted to address this issue. The methodology adopted includes, formation of farmers'

study groups; introduction of package of organic practices based on use of local resources; introduction of crop diversity; active involvement of women for close monitoring.

The impacts of the work have been that the yields of cotton and sorghum (non- legumes) in organic system lower in the 1st year, but profits higher; yields as par with the chemical system in the 3rd year. The legumes attained almost the same yields in organic system in the 1st year it self. Soil condition improved and crop diversity has improved which has improved the nutrition for the families. Indebtedness of the village community has reduced.

- **Suresh Kanna, Kudumbam, Tamil Nadu**

Suresh Kanna presented the experience of Kudumbam (which means family) in their work with resource poor farmers (RPF) towards producing sustainable food systems. He highlighted that the main problem that had to be tackled was that of chemical farming. Chemical farming requires high external inputs; recommends High Yielding Varieties (HYVs); depends on heavy doses of chemical pesticides and fertilizers; requires heavy farm mechanization; leads to the destruction of natural resource base and encourages cash crop and mono crops.

The impact is that there is destruction of traditional seeds; destruction of agro-biodiversity and loss of crops like millets and pulses; increased soil salinity; pollution and exploitation of groundwater; damage to the environment; disappearance of cattle; and increased health hazard to humankind.

Today, the main threats to the agricultural system are the complete destruction of habitat and agro-ecosystems; prevalence of monoculture which is leading to the narrowing down of the variety base; and finally the introduction of GE seeds.

Kudumbam is working towards developing model farms as demonstrate alternatives of ecological agriculture. The focus is to create sustainable agriculture alternative models that can be replicable for RPF. Further to make these farms centers of learning for farmers and NGO field staff and finally to conduct farm based research on sustainable agriculture alternatives under rain fed conditions. The presentation then highlighted the details of the work being carried out in Kolunji Ecological Farm since 1990 using methods of Farmer Field Schools and Agro Eco System Analysis (AESAs). It also brought forth the work of the organization with children and around awareness building. Kudumbam is also has a bimonthly magazine "Pasunthalir, in which agriculture related issues are highlighted.

"We play the role of facilitators and don't give any ready answers to farmers; neither do we take decisions on what should be grown on the farms. There is heavy emphasis is on discovery and exploration of knowledge in the field. "

- **G Nammalwar, Organic Farmers Network, Tamil Nadu**

Nammalwar initiated this presentation by sharing with the participants that because of his age he has gone through three stages in agriculture, ranging from practicing traditional agriculture then that based on modern science and finally returning to the natural way of farming.

"I first worked on my fathers land practicing traditional agriculture. Then I went to Agriculture College and with so called scientific knowledge worked on modern agriculture in research stations. However I saw that that the end of the day with the farmers are struggling and are unable to pay back their loans. No farmer was willing to ask their children to continue with farming activity. Then instead of telling farmers what to do, I started learning from them."

He highlighted that the mistake of Green Revolution and the Second Green Revolution is that they ignore biodiversity. The natural way of farming is an integration of crop and livestock into the agro ecosystem. It keeps in mind that what is also important is the yield of straw for the

animals and not just the yield of the crop. Cattle are renewable energy sources in agriculture and they play a major role in reduction of cost of cultivation. At the same time cattle depend on the by-products of farming activity for their existence.

This kind of farming believes in mixed cropping.

Organic farming has enhanced productivity and reduced the potential for negative environmental impacts such as nitrate leaching and erosion.

The presentation clearly stated that crop diversity and healthy soils are very important. Also, millet crops provide minerals to our diet. They grow under less moisture condition. Selection of crops is based on cultural diversity also. So, in order to fulfill the food security there is a need to maintain genetic diversity.

Natural farming also enhances employment for rural people.

It believes that each element on the farm is part of the agro ecological system. For instance, earthworms are bio-indicators. The presence of earthworm is an indication of healthy soil. Earthworms convert plant and animal waste into plant nutrients in available forms. They bring the leached out elements to the surface of the soil. Therefore, earthworm is treated as friend of the farmer in traditional farming practices. Insects are also helpful to the farmers as they act as pollinators. Therefore killing of insects results in loss of crop production.

Bio fertilizers play major role in supply of elements without damaging the soil health. AZOLA is one of such bio fertilizers which contain rich edible proteins. It is easy to grow and used as animal feed and human food also. Also, AZOLA is useful in suppression of weeds in paddy fields.

The presentation concluded by stating that not only genetic material but also knowledge needs to be passed on to the younger generation. It is important to work very fast to counter GE in agriculture.

- **Murali, Modern Architects for Rural India (MARI), Andhra Pradesh**

In this presentation, Murali shared with the participants how MARI is trying to organize the farmers in Warangal district of Andhra Pradesh to counter the pressure of GE agriculture. At the same time work is being done to towards reviving the sustainable food production system and also the sustainable production of cotton.

MARI began its work in the district in 1991 on issues of school education and so on. By 1995 the group realized that no progress can be made unless the issues in agriculture are addressed. For this MARI members also needed to look into their own capacities of being able to work agriculture related issues.

In the initial period of its work the farming crisis was obvious and visible. There were dubious seeds, pesticides and heavy investment in agriculture. It was difficult to figure out where to start from.

As a strategy it was thought that it would be best if farmer's take the lead in attempting to address farming issues. With this began the work of organizing farmers in *Krishi Vedikas*. The focus of the work was four-fold. Firstly, institution building of farmers so that they were able to collectively respond to all issues. Secondly, building the capacity of farmers and giving adequate attention on reviving the traditional knowledge systems. Thirdly, developing the critical infrastructure to achieve the above, including restoration of tanks, traditional livestock breeds etc. Fourthly, help with providing the basic capital support to reduce the exploitation of farmers.

As a conscious strategy MARI is working with small and marginal farmers. However in the process other farmers in the village also get to be a part of the work through interaction, sharing and observation. In the process of the work, farmers collectively decide on the kind of cropping system they would like to follow in the village. MARI is now also focusing on federating the farmer's institutions.

Can there be a Non-Market Approach to Agriculture?

The main point of that was discussed following the last session was whether or not there can be a non-market approach to agriculture.

The responses that emerged highlighted that the existence of market may be inevitable, but it is important to understand what kind of market agriculture should operate within.

It was highlighted that post Green Revolution farmers were being forced to go into commercial cropping as a solution to Green Revolution.

Those who are in power are changing policies and promoting corporate driven GE and single cropping throughout the world. It was also pointed out that with a market driven approach in agriculture, farmers will be forced to compete in an inequitable international market. Therefore it is important to concentrate on local markets for selling agricultural produce. Organic farmers need to develop their own markets and perhaps even take lessons from barter system, instead of looking towards a monetised market.

Participants also pointed out that they don't accept the valuation of the contemporary market. It is important to look at ecological accounting. The question however is whether one has the capacity or ability to get ecological/ biodiversity accounting into the mainstream accounting system of the market.

A related question was raised that if there is no failure of a crop like Bt Cotton and the cost of cultivation goes down, will one accept it? How does one approach the issue of GE in agriculture? The responses highlighted the findings of the three year Bt Cotton study in Andhra Pradesh. The study mainly focused on the economic aspects and though the data generated has international acceptability, there is some vacuum. There are ethical and moral issues around GE.

Even if the market is inevitable, in the discourse on GE, the economic aspect and market should take a backseat. It is important to look at which are the other perspective that need to be highlighted.

Today the farmers are trying to influence markets which are otherwise influenced by politics. It might not be a possible to get away from that. Therefore, the focus should be more on local markets where these influences are not as obvious. When the problematic market is spoken about in this forum is it more with a reference to the globalised and highly commercialized market. It is important to understand that there is a certain politics of the market that is taking place today. It is controlled by a few people in the world who determine its ways. That is the main issue.

It was also highlighted that since markets are seen as necessary evil, there is a need for a two-three day brainstorming only on this subject.

A response pointed out a major concern for looking for international markets for organic produce. Today, there is a global conspiracy of pushing GE foods as organic by terming them as green foods as they don't use pesticides. The United States Department of Agriculture (USDA) and FAO are part of this. Therefore there needs to be clarity amongst those working on GE issues, as to what our stand and focus is.

4. Is biotechnology a farming answer for human health and nutrition? A VIEW FROM FARMERS

Chaired by: Gopal Kadekodi, Director, Institute for Social & Economic Change, Bangalore

- **Vijay Jawandhiya, Maharashtra**

Vijay Jawandhiya a farmer from Maharashtra clearly stated in his presentation he does not see biotechnology as an answer for human health and nutrition. He highlighted that today the problem is not of production but of distribution. The fact is that people are not getting food or nutrition because of the high cost attached to it. Due to increased unemployment there is no purchasing power.

Further, it is a reality today that it is the land owner that who is committing suicide. So while one is trying to address the issue of land distribution, it is also important to understand what is the plight of the land owners?

He then question why is GE being advocated in India? It is important to think of this in the context of WTO and globalization and its influence on the national planning process. In India, the approach of the policies in agriculture is still as they were during the time of the British regime, with the focus on capitalism and exploitation. The food producers are being treated as slaves.

Globalisation had promised that there would be increase in exports. However since 1994 the prices in the global market are going down and the rich countries continue to provide subsidies to their farmers. This makes the competing in a global market an unfair proposition. Indian farmers don't know ho the global economy is working.

"The global prices of wheat are Rs.6 per kilogram and Sugar Rs. 12 per kilogram. How can a farmer actually produce at this cost? Can any technology help them do it? The answer is no. This is only the case as farmers in the western countries get heavy subsidies and therefore are able to sell their produce at this price."

GE is being promoted today in reaction to Green Revolution. The acreage of Bt Cotton is increasing only because of the heavy advertising and the celebrity support. Today the farmer has become like the character *Abhimanyu* from Mahabharata and is stuck in the *charkravyuh* of GE.

If one has to solve the problem of hunger and nutrition, it is important to look at the solutions in our own agriculture and not in imported technology. It is important also to influence policy and fill the lacunae there. It critical question is how to fight the false propaganda and push for whatever one believes in?

- **D. D Bharama Gowdra, Dharitri, Karnataka**

Bharama Gowdra pointed out that there is a huge propaganda around GE sponsored by the biotech industry. At the time of the Green Revolution, farmers were being told of its great benefits being encouraged to adopt the practice. However the end result was negative. Today the same thing is happening with GE. There are so many promises.

"It is not what we get or produce out of Bt crops. It is a larger question of ecology. The organic cotton that I grow gives me a good yield and does not take away essential nutrients from the soil. Organic agriculture is aimed towards food security. I myself grow a variety of crops on my field which give me different kinds of food, like *jowar*, *bajra*, onion, chillies and so on."

At one level the government has been promoting monoculture in the farms and at another level the Public Distribution System adopted the same approach and distributed only rice and that too one which was rotting in the government godowns for years. How can it be healthy and nutritious?

The concept of food security is not something that should only look at the requirements of today but also storing for the future. Bharmegowdra highlighted that as a farmer he does not only look at this own food security but also of his community. In a village there are people of all professions, not necessarily those engaged in agriculture. There are blacksmiths, potters with whom grain is exchanged for goods that they produce. But today, even a farmer has become helpless. They are unable to give the grain from their own fields, but buy inferior quality grain from the market for exchange (See: <http://www.ofai.org/interview/kaint.htm>) .

A lot of seed companies have entered states like Karnataka and many farmers have fallen into their trap by agreeing to become seed farmers. These farmers save and store the seeds for the company but the company refuses to buy them by questioning their quality and other excuses.

It is therefore important to go back to ones own self sufficient agricultural system.

- **Vishveshwara Reddy, AP Rytu Sangham**

Vishveshwara Reddy concentrated his presentation on the statement of the All India Kisan Sabha, in which the sabha had made its stand clear against the National Biotechnology Policy. He primarily read out the statement to the participants of the workshop. It highlighted that there should be no biotechnology in agriculture because of the risks that are involved. It is important to take appropriate measures to reduce the risk in the use of science.

He also pointed out that in Andhra Pradesh the leaders of the Rytu Sangham fought against the introduction and failure of Bt Cotton, as it was introduced without any evaluation. He further stated that the state sector should take over the agriculture sector and the dominance of the private sector and MNCs should not be there.

Suggestions were also made on the role of the National Biotechnology Regulatory Authority.

- **Suresh Desai, Belgaum, Karnataka**

"Agriculture is nothing else but 'Agree' ment with 'culture'. It is a culture which agrees with everything in the farm. Biotechnology is a killing technology. It believes in killing everything in field including weeds, pests which have a role to play."

Suresh Desai in his presentation highlighted that it is important to work with natural elements in agriculture. How do we harvest sun, air, and moisture (not water)? If this is understood then a whole lot of magic can happen in this country.

He pointed out that an important system of cropping is plantation of the seed in the North-South direction. He then explained the importance of a three-tier system of agriculture. This way there can be maximum use of sun and air. He explained the technology that he is using on his own field, in which he grows a combination of crops which complement each others nutrient requirements from the soil. He also explained he series of extremely intelligent modifications to the conventional package of practices associated with sugarcane farming (See: <http://www.ofai.org/misc/sucafarm.htm>, for details of the technology).

He emphatically stated that he considered biotechnology as rubbish and emphasized that India has its own traditional technology in agriculture. He also highlighted the importance of the

linkages of farm to the kitchen. In a farm it is always good to sprinkle some crops which can be directly used in the kitchen.

- **P.R. Sheshagiri Rao, Pavgada, Karnataka**

Sheshagiri Rao began his presentation by saying that most of what he was to talk about has already been highlighted by Suresh Desai. He would therefore only try and put it more systematically.

He pointed out that if one is able to give the farmers a much better alternative to GE, they will surely take it on. This alternative needs to be 200-800% better to be able to challenge the pressures of GE.

Sustained production needs to be in a context. It is important to remember that agro ecological and climatic conditions are different in Belgaum where Suresh Desai comes from and in Pavgada where Sheshagiri Rao practices agriculture. This was therefore the focus of the presentation.

“The productivity in an agro-ecosystem and its sustainability depends on climate, soil, cropping patters, pests and diseases. Amongst these climate is the only factor which can not be altered. Therefore crop management and farming strategy for each region needs to be built depending on the above influences and factors.”

The case study of Pavgada was then used as an illustration to highlight this concept and its use. In Pavgada, groundnut is the main crop under cultivation. However a scientific analysis based on the above facts and prices of groundnut internationally, indicate that in Pavgada cannot produce enough to compete in a global market, even if the best science and best land are combined. What is more suitable is the early sowing of pigeon pea crop.

It was pointed out that a fact that most farmers know is that pigeon pea and groundnut have a strange relation. When pigeon pea thrives, there is a failure of the groundnut crop and vice versa.

Therefore it is important for farmers to be strategic. It is not enough to copy the traditional system of agriculture. It is more important to borrow elements from it and adapt it to today's market conditions. Sheshagiri Rao shared in detail the Adaptive Farming Trial experience from Pavgada and benefits it has accrued for farmers. He highlighted that such models should be available for farmers to see for themselves as they don't want theoretical information.

OPEN FORUM

Two key points that emerged during the Open Forum discussion were:

- a) The Biotechnology Industry loves the concept of the variability in the climate. This is what they are using as a tool to promote the Trait technology which has the switch on and switch off components. In the Trait technology a seed would only germinate if an external input owned by the company also 'owning' the seed, were to be added. This is something that SAGE might want to talk about.
- b) Though it is important to keep throwing up alternatives for farmers. At the same time it is also critical to continue to keep focus on the larger processes. SAGE would need to take on both.

▪ Chairperson's Remarks

Gopal Kadekodi concluded the session by highlighting that that agriculture is one sector which cannot be driven by monoculture technology. It is not like using the same technology to manufacture steel in India and Venezuela.

The WTO is monster that is come in, in the same way as the colonial rule.

Kadekodi highlighted that he was at this point reminded of P.R. Mishra who always said that is important to have walking seminars and rather than restricting them to meeting halls.

In his remarks, Kadekodi summed up the key points that were brought out by all the farmers in the session. He also pointed out that agricultural practices need to support livelihoods. Further, he brought to light that unlike many of us, farmers have no social security. What are the safeguards if after putting in the best practices, there is a market failure? Therefore the livelihood support component has to be strengthened.

He also pointed out to a rule of physics which says that the faster one tries to change anything, the faster it would bounce back. In GE this is what is happening. It is being hurriedly introduced and promoted without reconciling the basic facts. The solutions being offered by Biotechnology are shortcuts. It aims at fast answers within short time frames.

"It is not that we are not open to or not interested in change. But it should not be the kind which is risky and one that is ecologically unsustainable."

CONCLUDING SESSION

In the concluding session P.V. Satheesh, Convener of SAGE shared with the participants some of the key discussions of the Steering Committee on the previous day. The main points that he highlighted were:

- 1) A few members like P. Babu, ICRA who were otherwise not nominated on the steering committee were co-opted keeping in mind the critical role that they have played in the formation of SAGE. Similarly Warangal Against GE (WAGE) who has played an important role in challenging Bt Cotton in Andhra Pradesh was also brought on board.
- 2) SAGE would have two kinds of Steering Committees (SC). First which is the Core SC which will meet once in three months and Second State level SC, which can meet less infrequently but this can be decided independently by the members.
- 3) As its immediate activities SAGE will concentrate on two things:
 - Observe the International GE Opposition day in June 2006. Details would need to be worked out
 - Join hands with the International Campaign to Ban Terminator (See: <http://www.banterminator.org/>). Terminator seeds are far more dangerous than GE seeds. For this the goal would be to collect about a million signatures against the use of terminator seeds by the 1st March 2006. These can be compiled and sent to the Convention on Biological Diversity Secretariat. The third meeting of the Conference of Parties (COP) is going to discuss the issue of terminator technology (See: <http://www.biodiv.org/doc/meeting.aspx?mtg=MOP-03>). For this material relevant material will be sent to the state partners by Deccan Development Society within ten days following the workshop. This can then be translated and used to generate signatures.
- 4) The State SCs would meet before 10th January 2006 to discuss more details on the campaign.
- 5) SAGE would mutually decide on what is the kind of relevant publication material that should be produced.
- 6) A web forum for SAGE will also be developed, initially using the Deccan Development Society website.

- 7) Based on a suggestion from the participants OFAI agreed to consider sponsoring some farmer's exchanges to discuss issues around GE.
 - 8) A note on communication strategy with the media will be developed by Uma Maheshwari.
 - 9) SAGE would also attempt to look at the issue of genetic contamination. How does one deal with contamination on the field, done deliberately or clandestinely?
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Annexure 1

Biotechnology approaches for alleviating malnutrition and human health

[Source: <http://www.nutritionforall.org/>]

India, in spite of remarkable accomplishment towards self-sufficiency in food, is yet to alleviate the problems associated with extreme levels of malnutrition that exists in both rural and urban population. Women and children are most vulnerable to nutrient deficiency disorders. There is a need for improving the nutrient quality of food and dietary intake of rural Indian population, which is largely comprised of vegetarians. The proposed International symposium explores the ways in which technology can help to improve human nutrition. The potential of biotechnology and educating the rural masses, especially women and children to alleviate the nutritional deficiencies of rural India will be explored.

The symposium will be conducted under the USAID-ALO sponsored higher educational partnership between Purdue University and University of Agricultural Sciences, Bangalore whose objectives are:

- Enhance institutional capacity through the development of collaborative programs in Biotechnology Education and Research at University of Agricultural Sciences, Bangalore

This is always the façade. You are only enhancing the institutional capacity even while your intention is only to promote GE which brings huge business and control over agriculture to the US multinationals such as Monsanto, Delta and Pineland

This is the line they have taken in Africa by establishing biotech research centres, attracting African scientists and governments to work on it and trapping them in the arguments for GE.

- Development of integrated research and educational training program to generate genetically modified plants for improving human health and nutrition in India and

USAID has continuously made Africa Hungry for GE Crops through a series of promotional, collaborative, public policy influencing and infusing large funds into universities and public research bodies. Now it is trying to make a foray into India openly. It had worked clandestinely all these years but has gathered enough courage now to put its name out in the open. Probably it feels that opposition to GE in Karnataka has died down with the death of Prof Nanjunda Swamy and therefore it can enter the scene without any fear.

- Increase the awareness of (a) nutrition among the rural population, **particularly women and children**, and (b) farmers and policy makers about the potential of biotechnology in improving nutrient value of food.

This is how entries are made, public funds are justified and an acceptable mask for biotechnology [read Genetic Engineering] is put on.

University of Agricultural Sciences is the premier institute in state with distinct vision of achieving excellence in agricultural education, research and outreach activities.

It is good to remember that the UAS has been completely sold out to the biotech industry. So much so that it sent a suspension notice to one of its senior faculty members who committed the crime of translating a research done on Bt Cotton in

neighbouring AP [which had documented and analysed in detail, the failure of Bt Cotton over three years of its cultivation] into Kannada and published it in a local newspaper. This gives out the real nature of UAS which does not even want to hear a truthful account of the failure of GE. The same university has no compunctions whatsoever in collaborating the biggest pusher of GE technology in the world : the USAID.

University of Agricultural Sciences is located at Gandhi Krishi Vignana, Kendra (on Bangalore-Hyderabad National Highway) Bangalore. Bangalore is well known as Garden City and Information Technology capital of India. Bangalore is said to be an air- conditioned city, which enjoys ideal weather conditions through out the year. Purdue University has a long-term commitment for development of International collaboration and promoting the use of cutting edge technology in improving agriculture and human health.