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Modern Agriculture
The Scourge of Environment and People

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Abstract: *We are incessantly made to believe the "rising global prosperity" because of trade liberalization and globalization but in reality, the number of the hungry in the world is increasing. Landless and poverty are age-old problems but in recent times, the development especially in agriculture, and trade policies promoted by international financial institutions and World Trade Organization (WTO) have made the problems more acute. In addition to food crisis, crops for making bio-fuels, genetically modified crops and hybrid rice are contributing less in feeding the hungry and more in exacerbating damage in environment, destroying the bio-diversity, soil degradation and last but not the least, aggravating the global climate change vis-à-vis global warming. Urgent actions are needed to stop the scourge of environment and people resulting from 'modern' agriculture.*

Introduction:

Through all the raucous debates and controversies raging over the global food crisis, two basic issues need to be remembered: to have food, one must have enough land to produce her/his own food and, one must have enough money to buy food from the market. The swelling ranks of the hungry in the world have neither, or have very little land or money.

"People are hungry because they are poor, not because the earth is running out of food... and poverty should be addressed by policy changes," wrote the Economist, of London, just before the World Food Summit (WFS) of the United Nations Food and Agriculture Organization (FAO) in Rome 1996.[1] The FAO itself, in its preparatory document for the Summit, noted: "Some 30 million in the developing countries are landless and an additional 138 million are near-landless, and the number in this category is growing throughout the developing world... Landless and near-landlessness are primary determinants of food security in rural areas."[2]

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[1] The Economist, London, 16 November 1996.

[2] FAO. Technical Background Documents 1-5, Vol. 1 for the World Food Summit, Rome, 1996.

Apparently, it is not the shortage of food, but the politics of how we distribute land and other natural resources and, how we produce and distribute food that is now playing out on such a massive scale.

Of the millions of the hungry worldwide, nearly 80% are small-scale or near-landless farmers (50% with inadequate land, 20% rural landless workers and, 10% fishers and herders); the rest, which comprises 20%, are the urban poor whose number is now growing. Our lop-sided global and national agricultural and trade policies have something to do with this.

Landlessness and poverty are age-old problems but in recent times, the development especially in agriculture, and trade policies promoted by the International Monetary Fund (IMF), the World Bank and the World Trade Organizations (WTO) and the national governments have made the problems more acute.

In the past few decades, these policies have been creating a crisis for small-scale farmers who form the majority in agriculture in the developing world and who produce much of the world's staple food (rice, wheat and corn). The policies are the root cause of these farmers' loss of livelihoods and the land through unfair competition with big farmers and agribusiness corporations in the developed world. The consequences of these policies are further aggravated by their governments' support for the Transnational Corporations (TNCs) and neglect of the poor.

Unable to cope with the crisis, the small-scale farmers are forced to migrate to cities and compete for tentative low paying jobs in the informal sector and hence, adding to the ranks of the urban poor. Food, for most of them, has become unaffordable in a system where food security is based on international trade and not on local production. The market has turned food, a basic biological need, into a commodity for willful profiteering and speculative trade and investment, and for this reason, pushed the small-scale farmers out of its ambit.

We are incessantly made to believe the "rising global prosperity" because of trade liberalization and globalization but in reality, the number of the hungry in the world is increasing. The number actually increased- from 800 million in 1995 to 850 million in 2005, adding five million every year. And this is the reversal of the world trend seen in the first half of the 90s.[3]

[3] Windfuhr, M. and Jonsen, J. Food Sovereignty: Towards Democracy in Localized Systems, ITDG Publishing House, Warwickshire, 2005.

Impacts of Food Crisis: Losers & Winners

According to estimates made by the World Bank, the new food crisis will add another 100 million to the swelling ranks, most of them are women and children among the poor. It could even be more. Based on the number of the poorest who are living on less than US $1 a day in 53 countries, Oxfam International, a non-government organization (NGO) that has been closely monitoring recent developements, estimates that the crisis "threatens the livelihood of around 290 million people"[4] . According to the United Nations World Food Program (WFP), which helps feed the needy around the world, the poor in about 40 countries is at a risk of "serious hunger or are already suffering from it".

"A community of the newly needy is emerging", warns the WFP. With its resources severely strained, the WFP finds it hard to meet their needs. Eventually, these newly needy will "end-up selling their productive assets and that pretty much mean they will remain economically destitute even when things come back to normal".[5] And things are not going to come back to normal too soon. As a coping mechanism to limited incomes and mounting food expenses, poor families have no choice but to curb other rights, services and privileges. This means less food and health care for children and women (expecting and nursing mothers included) that lead to stunted growth of millions of children, and the sacrifice of education unless the already burdened governments intervene. The WFP's meal programs for children in schools have been curtailed in many poor countries because of ballooning costs.

The dependence on imported food is putting a tremendous strain on poor countries. Nearly 70% (105) of the 149 developing countries are now net food importers, and the less developed countries account for half of the world's food importers. As a result price increases are steep in these countries. In Sri Lanka and Cote d' Ivoire, the price of rice doubled and in Bangladesh, it rose by 60%.

One would have thought that the farmers, as food producers, would have gained from the high food prices. But no. The bulk of the food producers in the world are small-scale farmers but they have not benefited. The subsistence farmers among them have no surplus to sell and may have to

[4] Oxfam International. The Time is Now: How World Leaders should Respond to the Food Price Crisis, Oxfam Briefing Notes, 3 June 2008.

[5] Sanders, E. and Wilkinson, T. A Perfect Storm of Hunger, Los Angeles Times, 1 April 2008, retrieved from Global Policy Forum.

buy food at a high price, or go without food if the produce does not last till next harvest.

On the other hand, most developed countries and some food exporting Latin American countries are gaining from increased exports. US agricultural exports are estimated to touch a record of US$ 101 billion this year (2008) 23% higher than the year 2007, New York Times (March 2008) reported.

Large transnational agribusiness corporations, who have come to dominate world agriculture and food markets, have been licking the cream off the market, making enormous profit. Cargill, the world's largest food grains dealer, which had 36% higher profit (US$ 2.3 billion) in 2007 (over that in 2006) from commodity trading, saw its profit spurt 86% in the first quarter of 2008 (compared to the same period the previous year). Archer Daniel Midland (ADM) of the US, world's second largest grain dealer, saw its profit grow by 67% to a record of US$ 2.2 billion in 2007.

Fertilizer costs had nearly doubled in 2007, Cargill's associate, Mosaic (US), which manufactures fertilizers had 141% higher profit (US$ 708 million) in 2007. Seed and pesticide companies are also profiting enormously. The world's largest seed company, Monsanto, which ran a loss of US $ 2.3 million in 2003, pocketed a profit of nearly US$ 1 billion in 2007 (44% more than in 2006) and Syngenta, world's top pesticide company and the third largest seed company, had 75% higher profit (US$ 1.1 billion) in 2007.

Thus, the real winners are transnational agribusiness corporations. Today, only a few transnational corporations (TNCs) control the global food trade, with five companies accounting for nearly 90% of the grain trade. In recent times, these powerful integrated corporations that deal with seeds, fertilizers and pesticides, grains and processed foods, have been shaping global agriculture and food policies to their benefits and advantages through their influence in the international finance institutions and trade organizations.

Bio-fuel: Boon or a Crime against Humanity

Cereal use patterns during this decade show an interesting trend. Since 2000, cereal use for industrial uses, which include bio-fuels, rose by 25% compared to 4% and 7% respectively for food and animal feed.[6] More

[6] OVon Braun, J. The World Food Situation- New Driving Forces and Required Actions, International Food Policy Research Institute, Washington DC, December 2007.

than half the food produced in the world is now used for animal feed and industrial raw materials; including bio-fuels.

The US and Brazil are the leaders in bio-fuel (bio-ethanol) production. The US uses corn while Brazil uses sugar cane. The European Union (EU) uses wheat and oil seeds to produce biodiesel. The US has an ambitious plan to replace 15% of the gasoline used (or 132.5 billion litres against the current use of 34 billion litres) in transport vehicles with bio-fuel by 2017. To promote bio-fuel production, the US offers incentives in the form of subsidies to its farmers to grow corn for bio-fuel. Prompted by this subsidy, farmers have been rushing to convert cropland to corn for bio-fuel. In 2006, the US used about 55 million tones of corn, or 20% of its total production, for bio-fuel. In 2007, this went up to 20%. The EU used 4.5 million tones of grains for bio-fuel in 2007, and this is set to increase several folds in the next decade. This prompted the UN Special Rapporteur on the Right to Food, Oliver de Schutter, to call the US and EU "ambitious goals" for bio-fuel production "irresponsible" and the bio-fuel rush was a "scandal that only serves the interests of a tiny lobby".[7] Bio-fuels now offer big trading opportunities in the international market, which has drawn corporations such as Monsanto, Syngenta, DuPont, Bayer, BASF and Dow to invest in corps specially designed for bio-fuels as also grain traders such as Cargill, ADM and Bunge.

According to a confidential World Bank report obtained by the Guardian, bio-fuels have forced global food prices to soar by 75% and the rising food prices have pushed 100 million people world wide below the poverty line. The united Nation's independent expert on the right to food, Jean Ziegler, has called bio-fuels a "crime against humanity" (Source: The Daily Star, 1 May 2008).

Two reasons are advanced for the increasing bio-fuel production: energy security and efficiency; and the need to cut down environmentally harmful carbon emissions from vehicles to meet the challenge of global warming. But a series of recent scientific studies refute these claims: making bio-ethanol from corn using current technologies takes more energy than it saves, and the environmental reasons are also not quite sound. Cutting down swathes of rain forests to plant sugar cane or oil palm to produce bio-fuel, as is being done in several Asian and Latin American countries like Indonesia, Malaysia, and Brazil will have a greater environmental impact than burning oil, i.e. they lead to greater

[7] Agence France Press, Food Crisis Payback for '20 Years of Mistakes': UN Expert.

carbon loss than what bio-fuels can save. Bio-ethanol from corn poses another environmental problem. The process by which corn is currently converted to bio-fuel (ethanol) demands heavy use of water (1,900 litres of water per minute, typically), mainly for heating and cooling, putting a tremendous strain on local water resources.[8]

Bio-fuels have not mad a dent on the fuel problem either. One-fifth of the US corn production that went to making ethanol in 2006 could only replace about 3% of its fuel consumption, points out the World Development Report 2008.

Climate Change:

In 2006, bad weather- drought in Australia and heat waves and floods in Europe- led to many crop failures and partly lowered global food production (around 2.5% less than in 2005). Floods, droughts, erratic monsoon, sea level rise and coastal flooding, water scarcity, etc., could increase with the rise in global temperature and climate change and affect crop yields and production, warned the Intergovernmental Panel on Climate Change (IPCC).[9] Though much of the so-called greenhouse gases (GHG) or carbon emissions that cause global warming are emitted by the industrialized developed countries, it is the developing countries in Sub-Saharan Africa and Asia which face greater risks of damage from climate change. Global average temperature is estimated to rise by 1.8 to 4 degrees Celsius this century compared to only 0.74 degree over the past century. Rice yields are likely to be affected in Asia over the long term. In Africa, land degradation and water scarcity are additional threats.

Profligate energy use, highly energy-intensive industries and chemical based industrial agriculture, particularly export-oriented crop production, etc. are the major contributors to climate change. Chemical-based agriculture is estimated to contribute 15% to 25% to greenhouse gas emissions, mainly from the use of chemical fertilizers. In this context, local production of food by non-chemical methods and emphasis on local markets can help cut down carbon emission.

Genetically Modified Crops Not the Answer

The food crisis has prompted some looks towards genetically modified (GM) food production as a solution. That in turn has led to stronger

[8] Ethanol and Water: Don't Mix, The economist, 1 March 2008.

[9] Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007: Impacts and Adaptation and Vulnerability.

warnings over the consequences of such food for health and the environment. Feeding the debate, scientists, farmers and environmental activists in many countries continue to warn that GM agriculture presents a risk, and not a contribution, to food production.

In fact, most of the genetic modifications introduced in crops aim at making them resistant to pests or weeds but not to increase yields. The crop around which there has been most controversy has been Bt cotton. Despite the hype around the "wonder crop", an investigation by GRAIN (a non-government organization which tracks and studies developments in agriculture) revealed no consistent pattern of increased yields for Bt cotton compared with conventional varieties. Moreover, the cultivation of Bt cotton made farmers much more susceptible to contracting crippling debts.[10]

Genetically modified organisms (GMOs) also failed to deliver the promised reduction in pesticides outlay, which was the main reason for their intervention. Although pesticide expenditure often declined in the early years, it bounced back to its former level- or even higher- as farmers sought to deal with new, resistant 'super weeds'. In France organic farmers are complaining that GM plants are poisoning their plantations. GE technology also hampers the pest-predator balance. While transferring a particular pest-resistance gene it often ends up destroying other beneficial insects. Bt toxin, a soil bacterium, has been particularly toxic to the butterflies and moths.

Several scientists and environmental activists say that the idea that the GM agriculture could help feed the world is part of the propaganda that biochemical industry has used for years, but it is false. It will not solve the world's hunger problem.

.... Nor is Hybrid Rice

Despite the fanfare about soaring yields, hybrid rice has not been a successful crop. Three decades of subsidies and research have failed to bring it into mass production, except in China.

The consequence of a large-scale shift from conventional rice to corporate-friendly hybrids would be devastating not only for small farmers but also for future rice production and environment.

The few studies of it have painted a bleak picture. Official statistics from 2003 for one town in Isbela Province in the north-west of the Philippines

[10] Seedlings, GRAIN, July 2008.

show that for every hectare of hybrid rice that yielded above the national average for the conventional inbred varieties, currently 4.2 million tones, seven hectares of same variety yielded well below it.

Hybrid gives superficial profit to the farmers. The cost of inputs (fertilizer, seeds, pesticides, labor wage, cattle manure, renting charge of irrigation pumps and diesel) are much higher than that of the indigenous rice varieties. Rampant use of chemical fertilizers and pesticides is the major cause of soil depletion, infertility and lower production. According to the experts and think tanks, fertility level of 70% of the arable lands of Bangladesh has been reduced by the unrestricted use of chemical fertilizers in the cultivation of hybrid rice.

Hybrid rice seeds are not self-pollinating. They cannot be saved from the harvest, so farmers have to buy new seeds every year. And hybrid seeds are supplied almost exclusively by private seed companies. Indeed, the whole logic behind hybrids is to make profits for corporations. It is the key to corporate controlled market for rice.

Recommendations:

1. Promote and support biodiversity-based ecological food production through the enactment of a strong policy.
2. Stop the indiscriminate conversion of agricultural land to other uses, and also stop the conversion of food crops to other uses such as bio-fuels.
3. Ensure fair price for farm/farmers' produce.
4. Promote and support community-based seed and grain storage systems to restore farmers' control over seeds and protect local varieties from extinction.
5. Strengthen public procurement, distribution and stocking systems for food.
6. Take WTO out of agriculture.

Conclusion:

The WTO, by formalizing and supporting agriculture trade system, has played havoc with the lives of millions of small-scale farmers and workers around the world, as experienced with the WTO system for over a decade now has shown. And there is not much hope for changing the WTO trade rules rigged in favor of the powerful developed countries and

TNCs as recent developments in trade negotiations at the so-called Development Round or the Doha Round of talks to correct these distortions have shown.

Besides, much of the fertile agricultural land has been, is being, converted to other uses such as industries, urban infrastructure and large scale recreational centres, special economic zones, and now to crops for making bio-fuels. This has limited the land available for agriculture and restrained expansion of agricultural production.

"Modern" chemical-based mono-crop agricultural systems are not only unsustainable but have destroyed the natural resource base agriculture and biodiversity (which is a basic element in providing food security to the poor), global climate change, displaced small-scale and marginal farmers and created economic and social inequalities. For sustainability and food security, we need to focus on biodiversity-based ecological agriculture, centered on small-scale farmers. These systems also offer higher productivity and income than mono-crop systems, and help improve and create rural livelihood by spurring diverse economic activities. However, these systems need strong institutional support.

Meanwhile, the international climate change negotiations to reduce global warming and tackle climate change have been dragging on for years. As the UNDP (United Nations Development Program) Human Development Report 2007 noted: "The world's poor and future generations can not afford the complacency and prevarication that continues to characterize international negotiations on climate change".

While agricultural science and technology has made it possible to greatly increase productivity in the last 50 years, the sharing of benefits has been far from equitable. Furthermore, progress has been achieved in many cases at a high social and environmental cost. Agricultural science place greater emphasis on safeguarding natural resources and on "agro-ecological" practices. These include using natural fertilizers and traditional seeds, intensifying natural processes and reducing the distance between agricultural production and the consumer. The need for action is urgent.

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