GREENPEACE Briefing

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WHO WILL FEED THE WORLD?

Towards diverse, sustainable forms of agriculture as drivers of development

Millions of people around the world are suffering food shortages, unaffordable food prices and hunger. This is due to a number of factors: industrial farming, bad harvests related to climate change, unjust distribution of food, rising oil prices, changes in consumption patterns, financial speculation on agricultural commodities and the rush for agrofuels.

There is no single solution to the crisis. Greenpeace urges all stakeholders to address the underlying causes of the current food crisis by:

- Increasing public investment in research and development on ecological and climate change-resilient farming
- Halting funding for genetically modified (GM) crops and prohibiting patents on seeds
- Eliminating environmentally destructive agricultural subsidies supporting chemical-intensive farming
- Dropping mandatory targets to increase the ratio of agrofuels used in transport

Marco Contiero, Greenpeace EU GMO campaign director, said: "*There is no one-size-fits-all solution to the current increase in food prices. Any claim that a single technology, such as genetically modified (GM) plants, is a silver bullet for our future food supply is plainly false and distracts attention from the real solutions. Modern, bio-diverse, non-GM farming methods that ensure higher yields, that are more climate resilient, which do not destroy natural resources and can provide better livelihoods for farmers around the world are the only way forward.*"

Causes and Solutions:

I. Securing natural resources for future farming generations

The future of farming lies in a biodiversity-intensive agriculture. Industrial agriculture compromises the very resources on which our food supply depends. It has turned regions that were once breadbaskets into dustbowls laden with pollutants leaving land devoid of life. It degrades soil, contaminates water and results in decreasing yields, despite increasing use of harmful pesticides and fertilisers.

Biodiversity-intensive farming reduces the probability of pests and diseases by diluting the availability of their hosts. Millions of farms on all continents prove that organic and sustainable agriculture can increase food security, replenish natural resources and provide better livelihoods for farmers and local communities.

Investment needs to be channelled in research and development in sustainable ecological farming methods, especially those that will increase food production by the poorest in the developing world, focussing on small-scale farmers. On average, small-scale farms have higher yields than large farms. Agriculture needs to move away from chemical-intensive methods and the false promises of genetic engineering.

II. Adapting to climate change

Climate change will increasingly affect agriculture worldwide. Food security, particularly in poorer countries, is under threat from unpredictable changes in rainfall and more frequent extreme weather events. Furthermore, industrial farming is a significant contributor to greenhouse gas emissions, both directly, for example from fertilisers, and indirectly, as a result of forest destruction.

The most effective strategy to adapt to climate change is ecological, bio-diverse farming. Data on farming from around the world provides unequivocal evidence that mixing different crops and varieties is a proven and reliable method of increasing crop resilience to erratic weather changes[i].

By contrast, GM crops are unable to provide security against extreme weather changes. They cannot adapt to the rapid and radical weather changes that will result from climate change. Diversity farming is the single most important modern technology to achieve food security in a changing climate.

GM ≠ Biotechnology

Climate change and advanced breeding techniques

GM technology is a primitive procedure that cannot deliver in today's agricultural reality. Modern breeding techniques merging conventional methods and biotechnology are a better solutions, particularly concerning resistance to climate conditions.

Marker assisted selection (MAS) for instance uses genetic markers to identify existing traits in plants (e.g. drought tolerance), without artificially transferring genes from one organism to another. Stress traits, such as those needed to resist droughts or floods, are generally regulated by multiple genes, tightly controlled by highly complex interactions. MAS facilitates the selection of traits associated with multiple interacting genes. By contrast, genetic engineering can only insert one (or very few) gene(s) without any control over how they interact.

III. Agrofuels and the rise in oil prices

The high price of oil is an important contributor to the food crisis. Not only because our food system is intensely dependent on fossil fuels for fertilisers, farm machinery and transport, but also because any increase in the oil price is an additional incentive to use crops for energy rather than for food.

In 2007, the US diverted 54 million tonnes of maize to produce bioethanol[ii] and the European Union used 2.85 million hectares[iii] of land to grow rapeseed oil and other crops for agrofuels. If the same land had been used to grow maize and wheat for food, it would have yielded an estimated 68 million tonnes of grain, enough to supply food for 373 million people every year.[iv] This equals the combined populations of the 28 least developed countries in Africa.[v]

The rush for agrofuels in international markets is diverting productive land away from growing food to growing fuel and driving up grain prices. In many areas it also drives rainforest destruction, which fuels climate change. As an immediate measure, mandatory agrofuel targets must be suspended and serious fuel efficiency standards adopted in developed countries. Moreover, legislation must be implemented to ensure agrofuel production does not threaten food security, particularly in developing countries.

IV. What about genetic engineering?

GM crops are a threat to food security rather than a solution to the food crisis. Genetic engineering does not increase yields and GM crops have failed under extreme fluctuations in temperature. Rather than increasing critical biodiversity, genetic engineering puts the world's natural biodiversity at risk of contamination in an unforeseeable and uncontrolled way. Since 1996, there have been 216 cases of crops being contaminated by GMOs in 57 countries (www.gmcontaminationregister.org).

> **2008 UN Agriculture Assessment Report**: "*Between 1950 and 1980, prior to the development of GMOs, modern varieties of wheat increased yields up to 33% even in the absence of fertilisers.* […] *the use of GM crops is much more contentious. For example, data based on some years and some GM crops indicate highly variable 10-33% yield gains in some places and yield declines in others.*"

Genetic engineering is also expensive and risky for farmers. Its seeds are subject to patent claims which will indirectly increase the price of food and, as a result, will not alleviate poverty or hunger and pose a threat to food sovereignty. This analysis is shared by the 2008 International Assessment of Agricultural Science and Technology for Development (IAASTD) report[vi]. Initiated by several UN bodies and the World Bank, the report is the first global scientific agriculture assessment. Compiled by over 400 scientists from around the world, the assessment sees no role for GM crops in achieving the Millennium Development Goals or in eradicating hunger.

Some reasons:

- Herbicide-tolerant GM soybeans which are currently on the market are reported to have a 10% lower yield than traditional varieties.[vii]
- Extreme temperature fluctuations caused losses of GM cotton crops in China. Researchers found the extreme temperature changes annulled the GM function, resulting in lower yields than conventional cotton [viii].
- A few multinational companies control all GM crops through patents, including those developed by government research institutions. Patent fees dramatically increase seed prices. In the US, the price for GM cotton seeds has increased by up to four times over the past 10 years.

The lies behind GM crops

No commercially available GM plant developed to date has increased yields or enhanced nutritional qualities, and none is drought-resistant or salt-tolerant.

Currently commercialised GM crops bear only two traits: herbicide-resistant or pesticide-producing.

Planting GM crops does not reduce the use of chemical pesticides on farmland. In fact, from 1996 to 2004, parallel to increasing cultivation of GM crops in the US there was an observed 55.000.000 kg increase in pesticide use, a 4.1% increase.

Traditional and modern conventional breeding techniques can help achieve long-term solutions to the food crisis. They increase plants' ability to withstand the unpredictable and variable weather brought by climate change.

> **2008 UN Agriculture Assessment Report**: "*In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability.* […] *There is particular concern about present IPR* [Intellectual Property Rights] *instruments eventually inhibiting seed-saving, exchange, sale and access to proprietary materials necessary for the independent research community to conduct analyses and long term experimentation on impacts.*"

References

i See www.greenpeace.org/raw/content/international/press/reports/cool-farming.pdf

ii Economist Intelligence Unit, February 2008. World Commodity Forecasts: Food, feedstuffs and beverages. http://www.eiu.com

iii EUROPA press release IP/07/1528, 17/10/2007; http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1528

iv We assume 182.5 kilogrammes (kg) of grain are needed to supply enough staple grain to an active person during a year (source: World Food Program).

v For United Nations list see: http://www.un.org/special-rep/ohrlls/ldc/list.htm.

vi International Assessment of Agricultural Science and Technology for Development (IAASTD) 2008. Synthesis Report, Executive Summary. http://www.agassessment.org

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