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**Seeds — Foundation of global food security**

Access to seeds is a fundamental right of farmers

**Las semillas — base de la seguridad alimentaria mundial**

El acceso a las semillas, un derecho fundamental de los agricultores

**Les semences — fondement d'une sécurité alimentaire globale,**

l'accès aux semences est un droit fondamental des agriculteurs.



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# Seeds — Foundation of global food security

## Access to seeds is a fundamental right of farmers

Seeds aren't just another patented technology, they are the foundation of global food security. Farmers have been saving seed from their harvest for 12,000 years. According to the UN, more than 1.4 billion people, mainly resource-poor farmers, depend on farm-saved seed and seeds exchanged with their neighbors as their primary seed source. Plant genetic resources are essential to a sustainable agriculture and food security. FAO estimates humans have used some 10 000 species for food throughout history. However, only about 120 cultivated species provide around 90% of food requirements and 4 species (Maize, Wheat, Rice and Potatoes) provide about 60% of human dietary energy for the world's population. Of the myriad of varieties of these crops developed by farmers over millennia, which form an important part of agricultural biodiversity, more than 75% have been lost in the past 100 years.

When farmers „save“ seed, they are doing much more than storing it for the next season. They also select seeds. In essence, farmers are plant breeders who adapt their crops to specific farming conditions and needs. Since most of the world's poor farmers live in marginal farm environments (e.g., poor soils, little rainfall) and have little money to buy commercial seeds, fertilizers and pesticides, they depend on plants that survive and produce under adverse conditions year after year. In the process, resource-poor farmers serve as stewards of genetic diversity. Poor farmers in the tropics and sub-tropics not only produce 15 to 20 percent of the world's food supply, they also maintain diverse crop varieties that are a source of genetic diversity for the world's plant breeders and genetic engineers. If farmers lose the right to save seed, they lose the ability to select seed and adapt crops to their unique farming conditions. If farmers eat or abandon their traditional seeds in the process of adopting Terminator seeds, centuries of crop genetic diversity could be lost forever. Indeed farmers are not just „growers“, but have multiple and complex interactions with the farming system of which they are part. Such interactions include activities as different as selection, storage, production, diffusion and exchange of seeds.

Most food in the world is grown, collected and harvested by more than a billion small-scale farmers, pastoralists and artisanal fisherfolk. This food is mainly sold, processed, resold and consumed locally, thereby providing the foundation of peoples' nutrition, incomes and economies across the world. In sub-Saharan Africa, for example, women produce 70 percent of the food, mainly for local consumption.

Yet, the rules that govern food and agriculture at all levels – local, national and international – are designed a priori to facilitate not local, but international trade. This reduces diversity and concentrates the wealth of the world's food economies in the hands of ever fewer multinational corporations, while the majority of the world's smallscale food producers, processors, local traders and consumers including, crucially, the poor and malnourished, is marginalized.

### Corporate Control on Seeds

Today, the top 10 seed corporations control 30 percent of the \$23 billion seed market worldwide. Monsanto itself – take control of the global seed industry and as public sector plant breeding declines. Monsanto – the new private owner of the Terminator technology – has in the last few years itself become one of the world's largest seed companies, and is therefore in position to make direct use of the Terminator technology across the globe. In 1998 alone, Monsanto swallowed two of the world's top 10 seed companies (Dekalb Genetics and Cargill's international seed division). Of the estimated 26 million hectares of genetically engineered crops grown worldwide in 1998, approximately 80 percent of the total (20 million hectares) will be planted in Monsanto's bioengineered seeds. Global picture obscures a much stronger market concentration in specific segments. For example, four companies control over three-quarters of the world's commercial maize seed market, excluding China. Seven companies control 86% of commercial maize germplasm worldwide.

### The International Treaty on Plant Genetic Resources for Food and Agriculture

The International Treaty on Plant Genetic Resources for Food and Agriculture, popularly known as the *International Seed Treaty*, is a comprehensive international agreement in harmony with Convention on Biological Diversity, which aims at guaranteeing food security through the conservation, exchange and sustainable use of the world's plant genetic resources for food and agriculture, as well as the fair and equitable benefit sharing arising from its use. It also recognises Farmers' Rights: to freely access genetic resources, unrestricted by intellectual property rights; to be involved in relevant policy discussions and decision making; and to use, save, sell and exchange seeds, subject to national laws. The Treaty came into force on 29 June 2004. There are 116 Parties to the Treaty (115 countries and the European Community).

The International Treaty on Plant Genetic Resources for Food and Agriculture is crucial in the fight against hunger and poverty and essential for the achievement of Millennium Development Goals 1 and 7. No country is self-sufficient in plant genetic resources; all depend on genetic diversity in crops from other countries and regions. International cooperation and open exchange of genetic resources are therefore essential for food security. The fair sharing of benefits arising from the use of these resources has for the first time been practically implemented at the international level through the Treaty and its Standard Material Transfer Agreement.

#### The Treaty aims at:

- recognizing the enormous contribution of farmers to the diversity of crops that feed the world;
- establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials;
- ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have been originated.

### The Convention on Biological Diversity

The *Convention on Biological Diversity*, known informally as the *Biodiversity Convention*, is an international treaty that was adopted in Rio de Janeiro in 5 June 1992 and entered into force on 29 December 1993. The Convention has three main goals: conservation of biological diversity (or biodiversity); sustainable use of its components; and fair and equitable sharing of benefits arising from genetic resources.

In other words, its objective is to develop national strategies for the conservation and sustainable use of biological diversity. The convention recognized for the first time in international law that the conservation of biological diversity is „a common concern of humankind“ and is an integral part of the development process. It also covers the rapidly expanding field of biotechnology through its Cartagena Protocol on Biosafety, addressing technology development and transfer, benefit-sharing and biosafety issues.

### Cartagena Protocol

The Cartagena Protocol on Biosafety of the Convention, also known as the Biosafety Protocol, was adopted in January 2000. The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. The Biosafety Protocol makes clear that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits. It will for example let countries ban imports of a genetically modified organism if they feel there is not enough scientific evidence the product is safe and requires exporters to label shipments containing genetically altered commodities such as corn or cotton.

### Genetically modified organisms (GMOs) – Risk and burden for small scale farming communities

GMOs, or genetically modified organisms, are plants, animals, micro-organisms and other living things that have been altered, modified, transformed, manipulated by a technique in biotechnology called genetic engineering, to contain genes from other species or organisms that express desired traits or characteristics. The particular trait is then expressed in the recipient organism and will be passed on to its offspring. „GMOs are also referred to as 'transgenic plants,' 'transgenic animals,' etc. depending on the organism that has been engineered“. The terms „GMO“, „transgenic organism“ and „genetically engineered organism (GEO) are often used interchangeably but they are not technically identical.

GMOs have completely led to the phasing out of the indigenous seeds. Today what is being experienced are the rising costs for the rural farmer in buying seeds for planting, as it hardly offer GMOs better seeds for replanting. GMOs have left rural communities with no indigenous food which is culturally acceptable and preferred by the people. This exposes the people to foreign foods which sometimes lack nutritional values.

The argument that GMOs are pest-resistant is far from the truth, to the farmers detriment. Today the farmers are experiencing even new crop pests and diseases which did not exist before the evolution of GMOs. Such new diseases and crop pests attack and destroy all the crops hence leading to very poor yields for the farmers. In Africa such diseases include the Banana wilt, Cassava Mosaic to mention but a few. The farmers are today advised to desist from using GMOs and fall back to the traditional seeds and maintain seed banks. The pesticide industry was the driving force behind the emergence of GM crops in agriculture. Most GM technology is aimed at high-tech farms, rather than the low-tech traditional methods used by resource-poor farmers in the South. GM crops also generally need more expensive agrochemicals; many are even designed not to function without the use of chemical inputs. Third World farmers do not need this expensive technology, as their communities' food security can be assured by other, more appropriate technologies and sustainable production systems. It is a scientific fact that the process of genetic engineering can give rise to unanticipated side effects. GM Crops threaten biodiversity and poses risks to the environment.



### GMO use in Brazil and in India

In Brazil, more and more farmers use the transgenic soybean which resists an herbicide called glyphosate. This GMO allows them to cultivate soybean without ploughing. For destroying the weeds, or the rest of the previous crops, they use the glyphosate instead of ploughing. Then, using the transgenic soybean, the farmers have less labour. But, after several years of transgenic soybean cultivation, more and more weeds become resistant to the glyphosate. At present many Brazilian farmers have to face the weeds invasion. They have to use more powerful herbicide for growing their crops. This increases the environmental risks, and also increases costs for the cultivation. Hence now most of the farmers are quitting GMO's.

In India, some cotton producers have used the transgenic cotton, which produces a toxic protein that destroys one butterfly that is harmful to the cotton plant. Using that GMO, they don't have to buy insecticide against this pest. But, after several years of transgenic cotton cultivation, the farmers have noted that some other pests have spread instead of the butterflies. This leads them to buy some other insecticides for these new pests. Besides, Indian farmers are accustomed to get their goats to graze their cotton fields after the harvest, for eating the rests. Now many goats reveal some strange diseases, and more and more kids are born with malformations.

GMOs are being promoted 'to feed the hungry'. While it is true that enough food to feed the world is currently being produced, there are other problems that cause hunger which could never be solved by technology. GM crops do not address the root causes of hunger, which are due to lack of access to land, seed, water, energy, affordable credit, local markets and infrastructures. Greater investment in agriculture and rural development, true commitment to agrarian reform, participatory and democratised decision-making processes within institutions, fairer rules governing international agricultural trade and regulations on corporations, are some of the key changes needed to address these com-

plex causes of hunger. GMOs are therefore contrary to the food sovereignty which takes these key issues into account. Millions of farmers have improved crop production using sustainable agriculture practices that are based on renewable and locally available materials, and builds on the farmer's indigenous knowledge.

#### We can enumerate the following examples for sustainable practices:

Integrated pest management processes, Composting techniques, Vegetal rotations and associations and cover crops for improving the soils fertility, Agroforestry, Bacterial symbiosis optimization

### First and Second Green Revolutions in India – A comparison

The first Green Revolution produced technologies that belonged to the people. Improved crop varieties were bred with public money to fulfill a public need – increasing food production – and create public goods to which everyone had access. There were no intellectual property rights or patents. If anyone „owned“ the Green Revolution, it was the farmer. They chose where to plant the seeds produced by public research institutions. So despite some faults such as increasing soil salinity and water logging, the Green Revolution addressed farmers' needs, and India's food production began to rise.

By contrast, the Second Green Revolution initiative centres on privately owned technologies – genetically modified (GM) plants. Six multinationals – BASF Plant Science, Bayer CropScience, Dow, DuPont, Monsanto and Syngenta – control almost all research in this field, and their products and research methods are shackled in patents. The technology creates private goods that can only be accessed at significant cost: a bag of

„Bt“ GM cotton seeds produced by the Monsanto-Mahyco joint venture, costs 1,850 rupees (US\$41) in India, compared to US\$6.60-8.80 for superior local varieties.

The seeds belong to the company, which strictly controls their movement. „Terminator“ seeds, which produce sterile adult plants, would further reduce farmers to being even more helpless consumers – not partners, as they were during the Green Revolution. Back then, scientists bred high-yield varieties in research stations and worked with farmers to produce enough high quality seeds for widespread distribution.

#### What is Terminator Technology?

The „terminator technology“ involves the insertion of certain genes into seeds that make the resulting plants unable to reproduce seeds of their own. Seeds that have been genetically altered to produce high yields or to resist insects and droughts cannot be reproduced without the corporation's permission. Such technology, however, has come under heavy criticism worldwide since small-scale farmers, particu-

larly in developing countries, who depend on saving seeds fear the new technique will force them to buy expensive seeds each year.

#### Agricultural Biodiversity

Agricultural biodiversity encompasses the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agroecosystem, its structure and processes for, and in support of, food production and food security.

A seedbank stores seeds as a source for planting in case seed reserves elsewhere are destroyed. It is a type of gene bank. The seeds stored may be food crops, or those of rare species to protect biodiversity. The reasons for storing seeds may be varied. In the case of food crops: many useful plants that were developed over centuries are now no longer used for commercial agricultural production and are becoming rare. Storing seeds also guards against catastrophic events like natural disasters, outbreaks of disease, or war.

## Dynamics Action for better access to seed

#### We engage ourselves to:

- train young people on seed issues,
- raise awareness on negative aspects of GMOs and privatisation of seeds
- develop projects that respect the environment
- fight against the privatisation of seeds
- reinforce the role of women to have a better access to seeds
- Establish projects for seed and cereal banks

#### Seed and cereals within my village:

Lot of people in your village involved in the agricultural production.

You and your group ask your neighbours and friends:

1. What are the main seeds you are using?
2. Have you bought them or have you cultivated the seeds on your own? And why?

In the next step, you are collecting all the arguments and put it together. Make a list and show the list to people you have asked. You will see that the arguments for cultivating by oneself are better.

By presenting this list, you propose to set up a small seed/cereal bank in your village: everybody spend a part of his seed and as a return, he/she gets another seed. So everybody has different seeds and all will contribute to a kind of biodiversity. Please think of involving people, who have not the possibility to contribute for the first time, but after the next harvest they will be able to contribute!

#### You and your group can do additionally:

- propose activities to raise awareness on seed issues
- inform yourself about the business conducts of seed enterprises
- organise a public demonstration about the problems around seed
- organise a debate with young people of your area about the problems in relation to access to seed.
- invite peasants with experience in the struggle for productive resources and organise a debate.
- analyze together the picture of the poster and organise a debate on this.
- write a declaration of your local group in relation to access to seeds for young people in your village or area, make it public and organise a debate with the local population.
- create an information desk in the next city during 16<sup>th</sup> of October and discuss with urban population
- meet local and national government representatives, politicians in general, farmers organisations and NGOs and debate with them about the situation of young people.
- organise a press conference and present your opinion to the public!

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