

THE SEED GAME - GLOSSARY

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Italicized words indicate other glossary terms or variations thereof.

Biodiversity: the diversity of plants and living organisms. Small-scale farmers rely on the diversity of plants and crops to match the climate they are in and care for their soil and environment. Through *seed selection*, seed trading, and the sharing of knowledge, small-scale farmers protect and cultivate plants to adapt to changing conditions. This also ensures reliable crops for the generations that follow.

Diversity of Seeds: a variety of different seeds allows for *seed selection* and success of crops in diverse regions without altering the soil or climate.

Agricultural (or farmer's) cooperative: a group of farmers who pool their resources, (including land, seeds, fertilizer, machinery etc.) and agree to cooperate for their mutual socio-economic benefit.

Food Security: the knowledge that you and your family will have enough to eat, to meet your nutritional requirements.

Food Sovereignty: a concept and practice of justice in the life-sustaining systems of food production and distribution. It includes, but is not limited to the following rights:

- The right of peoples to sufficient, healthy and culturally appropriate food;
- The right of people and communities to define their own sustainable and ecologically sound food production systems;
- The right of small-scale farmers and peasants to independently manage land, livestock and water resources;
- The right of small-scale farmers and peasants to determine the best seeds, crops and farming methods to use based on their intimate knowledge and relationship with the land

If fulfilled, these rights ensure that people are put before profit and that small-scale farmers are restored to their rightful status in the food production and distribution system.

Genetic Engineering: high-technology laboratory processes that manipulate and combine the DNA molecules – the genetic information – of different species that could never breed under natural conditions. Scientists continue to experiment and are combining genes from plants with those of animals and bacteria to produce desired traits in seeds.



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Genetically Modified (GM) Seed: Unlike *hybrid* and *heritage seeds*, GM seeds are produced through *genetic engineering*. They typically require large inputs of money for *technology packages* and farm machinery to ensure the success of their crop. Companies that develop GM seeds patent their scientific creations, so farmers must either 1) keep buying the seed each year, or 2) pay *royalties* for each use of the seed. Some GM seeds are even bred to be self-terminating which means that they will not produce a plant that has viable seeds for the following year. Other names include transgenic and genetically engineered seeds.

Good Growing Season vs. Poor Growing Season: A Growing season is the time of year during which plants and crops can be grown. A good growing season produces a bountiful harvest caused by the right combination of rain and sunlight. By contrast, a poor growing season can be caused by drought, pests, blights, flooding or other natural disasters – all of which can destroy crops so farmers cannot harvest what they planted.

Heritage (or Heirloom) Seeds: Unmodified seeds that are native to a region and are produced from open-pollination which occurs naturally by way of wind, birds and insects. Unlike *hybrid seeds*, heritage seeds produce plants with the same characteristics of the parent plant from year to year.

Hybrid Seeds: A cross between different plant varieties of the same species often produced in nature when two related plants cross-pollinate. Plant breeders control this cross-pollination process, in low or high technology settings, to produce a desired characteristic in a plant, such as drought resistance. However, this characteristic only appears in the first harvest, and not thereafter, so that farmers have to purchase this seed annually.

Industrial Agriculture: A mechanized system of farming increasingly developed after World War II that mass-produces food through livestock and poultry production facilities and using huge swaths of land for *mono-cropping*. This type of agriculture depends heavily on farm machinery and high inputs of capital for seeds, chemical pesticides, herbicides and fertilizers. Most of the food in our supermarkets today is produced in this way, and it is the predominant form of agriculture in 'developed' nations. Due to the ecological, social and health impacts, industrial agriculture is recognized by a growing number of farmers and scientists as unsustainable. Unfortunately, it is increasingly being pushed on 'developing' nations by *multinational corporations* through development and aid programs, seed *patenting* and *plant variety protection laws*.



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Mono-cropping: a practice of *industrial farming* whereby single crop is grown year after year on the same piece of land. This method has damaging ecological impacts because it depletes the soil of essential nutrients and increases crop vulnerability to parasites and other insects; this vulnerability makes the farmer dependent on using toxic chemical fertilizers, herbicides and pesticides on the land.

Multinational Corporation: a company that operates facilities in one or more countries other than its home country where it is headquartered. Typically, a large corporation, the company often both produces and sells products and/or services in several countries.

Patent: A patent is the legal right given only to the inventor for a defined period of time to make and sell the patented product. A seed patent gives a company property rights over a seed their plant-breeders have produced, so that only the company can sell it. Many patented seeds are *hybrids* or *genetically modified* organisms. Seed patents prevent farmers from saving and trading seeds.

Plant Breeding: The use of scientific techniques to develop new varieties of crops that are meant to be *industrially farmed* and produce a consistent and bountiful harvest for large markets. This often entails crossing plants so that they are adapted to machinery, processing, and industrial distribution.

Plant Variety Catalogue: the registration of plant varieties for the commercialization of seeds in an increasing number of countries that use *Plant Variety Protection laws*. To be registered, plant varieties have to be homogeneous and stable, meaning that seeds must produce identical plants, year after year. In this way, small-scale farmers are either: 1) excluded from the market because their seeds are adaptable and therefore cannot be registered, or 2) required to either purchase certified seeds each year or pay royalties to use certified seeds.

Plant Variety Protection Laws: These laws protect new varieties of seeds based on their homogeneity and consistency and give the companies doing the research intellectual property rights over them. A government issued plant variety certificate and inclusion in the Plant Variety Catalogue formalizes these property rights. The laws serve to block uncertified seeds from the market, which prevents farmers from reusing the seeds of that crop or demands *royalty* payments for replanting. These laws have been imposed in many countries as part of international trade agreements and aid programs. However, the laws actually disadvantage small-scale farmers, who seek to preserve *biodiversity* and natural, adaptable seeds, rather than switch to *industrial farming* techniques.



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Royalties: amounts of money paid to the creator of a product. Through the system of *Plant Variety Protection laws* or patents, royalties are payments that companies charge each time the seeds that they produced are used.

Seed Cycles (GMO vs. Farmer's Seed): The following shows a contrast between the planting and harvesting cycles of GM seeds and *heritage seeds*, using the example of corn.

GM Seed	Heritage Seeds
<ul style="list-style-type: none"> The GM corn seed was created by combining the DNA of different species on an industrialized farm. 	<ul style="list-style-type: none"> The seeds of traditional farmers are grown using sustainable agriculture.
<ul style="list-style-type: none"> Farmers buy GM corn seeds from a seed corporation. 	<ul style="list-style-type: none"> Farmers sows their own corn seeds that they have stored from their last harvest.
<ul style="list-style-type: none"> Farmers sign a stewardship agreement with the seed corporation. 	<ul style="list-style-type: none"> Farmers observe the germination, development, and flowering of the plants.
<ul style="list-style-type: none"> Farmers plant the seeds and apply the seed corporation's pesticides and herbicides. These kill every plant and insect that does not have the gene that was inserted into the seed, so only the corn survives. 	<ul style="list-style-type: none"> Farmer weed their fields, and use natural pest control methods.
<ul style="list-style-type: none"> Farmers sell the crop to a large food processing company. 	<ul style="list-style-type: none"> Farmers select the best corn plants to use for seeds for the following crop.
<ul style="list-style-type: none"> Farmers must buy seeds for the next crop from the seed corporation. 	<ul style="list-style-type: none"> Farming families eat the corn. Any surplus is sold for extra income for the families.
	<ul style="list-style-type: none"> Farmers store the seeds, ready for the next sowing season.

Seed Selection: A practice of *small-family farmers* whereby they nurture the qualities in the plants best suited to the soil, climate and eco-system of their farm by saving the seeds from the strongest plants of the harvest for the crop of the next year. The natural adaptation of seeds to their environment and the practice of seed selection give the farmers confidence that their seeds will be able to adapt to climate change and ensure viable seeds for the future. Other seeds are often traded between farmers, who seek different characteristics to adapt to the different conditions in which they farm, such as variation in soil make-up, irrigation abilities, changing climate, or the desired use of the crop.

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Small-Family Farmers: a farmer whose grains, vegetables, fruit and livestock are grown on small plots of land and are mainly used to support the family's basic needs. These farmers sell surplus produce in order to send their children to school, get medical care, improve their homes, etc. Subsistence farmers may also be referred to as small-scale farmers, family farmers or peasant farmers.

Standardized Crops: the crops produced by *industrial farming* that yield consistent harvests of fruits, vegetables and grains year after year. The practices of *standardization of crops*, *mono-cropping* and *industrial farming* threatens the natural adaptation of seeds that happens when farmers select the best seeds for their particular conditions.

Supply & Demand: an economic model whereby the price of a particular product or good is determined by the quantity demanded by consumers versus that supplied by producers

The four basic laws of supply and demand are:

1. If demand increases and supply is unchanged, a shortage occurs, leading to a higher price.
2. If demand decreases and supply is unchanged, a surplus occurs, leading to a lower price.
3. If demand is unchanged and supply increases, a surplus occurs, resulting in a lower price.
4. If demand is unchanged and supply decreases, a shortage occurs, resulting in a higher price.

Technology Package: A set of products from a company to use with their patented seeds. These packages include: 1) fertilizers, which puts particular artificial nutrients into the soil, 2) as well as pesticides and herbicides which protect the plant from industrial machinery, and kill all plants that do not carry the defensive gene of the patented seed, as well as insects.

Violation of Seed Patent: Violation of patent can happen in a variety of ways. Examples include the following: 1) Perhaps the farmer selected seeds whose characteristics were too similar to patented seeds; 2) perhaps patented seeds from a neighbour's field crossed with the farmer's seeds; 3) perhaps patented seeds found their way into the farmer's field by theft or were bought second-hand without authorization to plant. Any of the above could and have resulted in a lawsuit against the farmer.



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