



Slow Food's Position Paper on Seeds



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1. Introduction

Two models of agriculture exist these days. One is actually oriented towards the production of food, while the other is instead focused on producing commodities for the global market.

Slow Food promotes the first of these models, which is economically, socially and environmentally sustainable, sensitive to the needs of local communities, attentive to quality, respectful of the environment, democratic and based on grassroots participation. The production and selection of seeds by the local communities themselves is the cornerstone of this agricultural model. The industrial production of seeds, conversely, is the foundation of an agriculture that looks only towards the global market. Over the last century, this industrial agricultural model has led to a significant weakening of Earth's life support system.

The history of human use of seeds has ancient roots, dating back to around 10,000 years ago, when people began abandoning hunter-gatherer lifestyles in favor of permanent settlements and started dedicating themselves to agriculture. Aside from planting, fertilizing, irrigating and harvesting, farming communities around the world have always selected and saved seeds, and shared them amongst themselves as well.

Selecting and producing seeds means continuing the fertility cycle and ensuring the availability of crops for the subsequent year. Since the selection of seeds entails choosing the best fruits, the process helps to improve plant and seed varieties which, year after year, will continue to develop in terms of weight and capacity to germinate. Farmers have always experimented with this practice, using their knowledge and wealth of experience for the benefit of their crops, the land and local communities.

During the 20th century, with the increase in knowledge about genetic improvement, the Green Revolution in the 1950s and the transformation of the agricultural sector into agroindustry in the 1970s, something changed. The continuous rise of industrial agriculture, with its need for uniformity and standardization and focus on profit, has resulted in a concentration of the number of cultivated species and a reduction in the number of varieties, leading to a terrible loss of plant biodiversity.

A look at the numbers is all it takes to better understand this trend: Of the 80,000 edible species available for food production, only 150 are actively cultivated, eight of which are sold on a global scale. This agricultural depletion inevitably coincides with a gastronomic loss, which results in a diet based on an increasingly restricted number of species and varieties. Today, 60% of the calories in our food supply are based on just three cereals: wheat, rice and corn.

We therefore have a duty and a responsibility towards seeds: to protect and preserve them in order to guarantee richness and variety in our meals, but also to safeguard their biological and cultural heritage of diversity. Seeds of all different varieties are the present and future of life; they should be protected irrespective of cost effectiveness as they could be carriers of fundamental characteristics potentially useful in the future.



2. Seeds: definitions and types of seeds

Slow Food believes it is vital to distinguish between two main categories: rural heirloom seeds and industrial seeds.

2.1 Rural heirloom seeds

Agriculture as a human activity has existed for about 10,000 years. Over the millennia, rural communities around the world over have been selecting, saving, multiplying and developing seeds, all tasks predominantly carried out by women, following principles of traditional wisdom. They have helped to improve yield, taste, nutritional value and other characteristics of crops, in harmony with the resources and diversity of their land.

The work of farmers has always been based on complex agricultural knowledge passed on and perfected over the seasons and the generations. The principle of free exchange amongst communities has been a long-standing value based on cooperation and reciprocity. Farmers often exchanged equal amounts of seeds amongst themselves, thus contributing to preserving biodiversity.

For farmers, seeds are much more than an instrument of production. Seeds are a language, a series of rituals, gastronomic heritage and an expression of a culture that has consolidated itself over time, deeply rooted in the land.

They are also the founding element of food sovereignty and a guarantee of food security. It is crucial to give farmers the right to freely select, produce, save, exchange or sell the seeds they grow. The genetic diversity of crops is of vital importance to managing environmental changes and an unpredictable climate, while guaranteeing more stability for production and protecting the natural environment.

What's more, seeds and their diversity are an integral part of many cultures, with a number of foods having a sacred role. They are also an element with which people identify themselves, and a source of joy and economic development.

2.2 Industrial seeds

Over time, industrial seeds have replaced those produced by farmers. These seeds are produced by seed companies and are designed to be used in industrial agriculture. They respond to the criteria of novelty, distinction, uniformity and stability demanded by the different forms of plant breeders' rights and promoted by the market, which the farmers' seeds cannot satisfy.

According to the FAO, in the 1970s there were over 7,000 seed companies, none of which had yet reached the global market. Today, the three biggest (Monsanto, Pioneer Dupont and Syngenta) hold 53% of the global market and the top ten companies hold 76%. According to a study commissioned by the Greens/EFA Group, 75% of the maize seed market in the European Union is in the hands of the top five companies operating in the field, with even higher numbers for sugar beets (86%) and vegetables overall (95%).

These companies are also leaders in the production of fertilizers, pesticides and herbicides. There is an indissoluble link between those who produce seeds and those who make weedkillers and insecticides. One example is the RoundUp® herbicide, produced by Monsanto, and the RoundUp® seeds developed to tolerate this product.

2.2.1 Hybrids

A hybrid is often the result of a cross between species that are different, but compatible and interfertile.

In the case of vegetables, F1 hybrids are varieties obtained through a cross carried out artificially to obtain the maximum genetic expression in the first generation after the union between the two individuals used as parents.

F1 hybrids have excellent characteristics in terms of the plant and its yield, but are very expensive—these are plant varieties protected and covered by royalties. The seeds obtained from the plants cannot be resown for cropping, because self-produced

seeds obtained from hybrid plants will no longer give the same growth and productive results. The seeds must be bought again. On the one hand, the royalties protect those who have invested in these seeds. After all, in the case of woody plants, creating an F1 might mean investing for 20 years. On the other, seed investors inevitably take advantage of the rich heritage preserved for millennia by generations of farmers.

In Europe, work on hybrids was mostly carried out by public researchers until the 1970s. Some programs would take as long as 20 years to develop a new fruit variety. As public funding dried up, the work shifted to the private sector, which advanced the selection costs and then recouped them with royalties. It is normal that these businesses have to cover their costs, but it is part of a vision of agriculture that is moving towards a few private companies controlling living material, and towards industrial agriculture on a mass scale. Unsurprisingly, there are very few organic F1 hybrids, because they would require additional investment. Multinationals are not interested in producing an organic F1, at least as long as organic producers can take advantage of an exemption and use conventional seeds. Currently, an Italian farmer who wants to produce organic Piccadilly tomatoes, for example, can buy non-organic seeds or seedlings and then ask the ENSE (Ente Nazionale Sementi Elette, the Italian national seed certification agency, now incorporated into the CRA, the agricultural research council) for an exemption, stating that as organic plants are not available, they have to opt for seedlings conventionally produced in a nursery, even though the field cultivation will later be certified as organic. As long as this EU-approved exemption exists, no-one will be seriously interested in producing organically certified propagation material.

The case of durum wheat in Italy

Italy produces 75% of Europe's durum wheat. By law, Italian farmers are not allowed to reproduce durum wheat seeds, but are forced to buy certified seeds from seed-producing companies. Reproducing the seeds would be very simple, because the durum wheat varieties are stable. So the requirement to use certified seeds was introduced only to protect the seed-producing companies. In 2011 and 2012, an exemption was introduced for seeds reproduced on the farm, and seed-producing companies saw their sales fall by 50%. The requirement was reintroduced in 2013.

3. The link between seeds, biodiversity and the resilience of Earth's life support system

In one century over 250,000 varieties of plants have become extinct, and they continue to vanish at the rate of three species every hour (or 27,000 a year). According to the FAO, 75% of edible plant varieties have been irreversibly lost.

Since the 1950s agricultural production has gradually orientated itself to depend on an ever-smaller number of species and varieties, selected to respond to the needs of the global market. These crops have no connection to individual geographic areas, but can instead be produced in many possible environments, tolerate handling and transport, and have a uniform taste. Conventional agriculture demands uniformity and high yields.

By contrast, native varieties represent a great potential for the future of our agricultural systems. The varieties defined as native or local are the result of selections (natural or man-made) in specific areas. Such "landraces" are not limited to plants and animals—local varieties of yeasts for brewing and bacterial cultures for cheese and yogurt making are also important. All of these varieties are characterized by being well adapted to the environmental conditions of their local area. This means they tend to need fewer external inputs, like water, fertilizers and pesticides. They are hardier than most "standard" varieties and resistant to environmental stresses. This makes them vital to any climate change resilience strategy. Their potential to thrive in their original territories (like in the mountains) makes them important agricultural resources and essential tools for food sovereignty. It is not a coincidence that these varieties are often connected to the culture of a local community (through customs, recipes, knowledge, dialects and so on).

4. The link between seed and place

The quality of a food starts from the seed and its reproduction. The varieties defined as native or local are the result of selections (natural or man-made) in specific areas. Local varieties share a deep connection with the land where they are grown and produced, and with the type of climate and soil and the abundance or scarcity of water there. Every variety evolves with the land, making them well adapted to the different local dynamics of climate, soil and culture.

Historically seeds have always travelled far. Over time and away from the place where the species was first domesticated, they adapted and developed new characteristics in response to the different areas where they were sown.

For example, the brown beans grown on the island of Öland, in Sweden, will have different qualities and characteristics if sown in other areas, especially over the long term. The genetic characteristics will change because they are primarily determined by environmental pressures.

The genetic link with the place of origin (its climate, air, soil, etc.) has been shown by a large body of literature (among the useful texts, we would mention in particular Raymond A.T. *George's Vegetable Seed Production*, 1985) and is an essential aspect of Slow Food's vision. Every species, but most of all every variety or ecotype, has certain characteristics that depend on the place where the seed is produced.

Seeds reproduced outside of their own area will, in the medium to long term, be subject to genetic drift. This is something very different from the normal genetic variability that exists in in-situ production.

Slow Food believes in promoting internal variability, but not genetic contamination and genetic drift.

Drift is the gradual but potentially irreversible shift away from the original ecotype's intrinsic genetic characteristics and increases the risk of genetic erosion.

Variability is a natural phenomenon linked to natural pollination and fertilization. It determines a series of gene modifications that are imperceptible but useful for adaptation to the local area.



The link between seeds and land has a strong cultural and economic relevance. It is crucial to local foods, which are an expression of cultural identity for communities and can become a source of income for farmers.

Valuing local products from a specific area is a strategy symmetrical to the standardization of industrial production.

The link between seed and place is less significant for hobby gardeners, who can grow any seeds wherever they think best without any particular cultural or economic consequences; they are producing limited quantities of food that will mostly be consumed at home.

5. Registration

First of all, it is important to distinguish between:

- ▶ registration as defined by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), approved by the FAO in 2001.
- ▶ registration in national or union variety registers, required for the commercial sale of new varieties and based on an official description showing compliance with the requirements of distinctiveness, uniformity and stability (DUS), and, for some crops, the VCU test (value for cultivation and use). These tests often must be paid for and are based on information that is useful for commercialization or in order to release new varieties coming from genetic improvement, but not necessarily for the protection of agricultural biodiversity.

5.1 Seed registration as defined by the International Treaty on Plant Genetic Resources for Food and Agriculture

Registering a variety means understanding it, describing it and protecting it. Registration (note 3) is a way of culturally and commercially protecting seeds and therefore biodiversity. In other words it is a very useful tool, and not an imposition on small-scale producers or a limitation of their freedom. Excluding small-scale production from registration obligations would be a mistake. On the contrary, it is important to invite communities to report native varieties. If their country does not have a register, the authorities should be lobbied until one is established.

Registration should be free, public and consultable online. Registers should be established following a common methodology, so that information from different regions or countries can be compared, and there must be a constant dialog between the public administrations who coordinate them.

Slow Food believes the registers should contain information about morphological and biometric characteristics (a useful way of differentiating between ecotypes) as well as comprehensive information about the area where the variety (accession or ecotype) was first identified and its spread, so that its link with a specific place is unambiguous.

Registration must be encouraged. However, it is important to clarify that cultivating unregistered seeds must not be forbidden. Otherwise we risk losing an important slice of biodiversity.

Anyone can propose the registration of a variety. For example, in Italy, the regional authorities often involve their own experts and/or rely on agricultural institutes, universities, etc. to create registers of varieties. Whoever asks for a variety to be included in the register must also be willing to help preserve it, becoming a guardian of that variety.

Custodian farmers—a category often well defined by local, regional or national laws—commit to applying a preservation protocol to the variety, through targeted sowing and cultivation. They reproduce the seed and preserve it for the following seasons, making it available to other local farmers, who are united in a network.

The custodian farmer's activity is for the sake of preservation, not commercial purposes. This engagement can be interesting for educational farms. In other cases, seed preservation might be managed by scientific institutions.

Along with the lists of registered varieties, the names of those who are preserving them are also published online. Usually they are “seed savers” or scientific institutions engaged in conservation.

Conservation must always happen in the area where the variety has evolved, the place where it has developed its most distinctive sensory characteristics.

5.2 Seed registration required for the commercialization of new varieties

The inclusion in national registers required for the commercial sale of new varieties (resulting from genetic improvement activities) involves DUS tests (to guarantee that these varieties are distinct, uniform and stable) and, for some crops, the VCU (value for cultivation and use) test. These tests must be paid for and are based on information that is useful for commercialization, but not necessarily for the protection of biodiversity.

This type of registration should not be extended to traditional varieties. A measure like this would work against the protection of biodiversity. Indeed, heirloom varieties are often not sufficiently stable, and never can be, precisely because they are the result of traditional cultivation which is almost exclusively based on the self-production of the seeds and therefore the knowledge of individual farmers.

Biodiversity preservation involves maintaining the genetic characteristics of the species and the variety, but a certain variability must also be guaranteed in order to respect the natural adaptive evolution of the species.

Small-scale producers involved in the commercialization of seeds must only guarantee that the seeds produced have not been subjected to genetic contamination from different varieties.

6. Plant breeders' rights

It is essential to separate seed registration from plant breeders' rights. Not only are they two completely different things, but one excludes the other. What has been registered cannot be protected by plant breeders' rights, especially if its link to tradition and the local germplasm emerges clearly.

New varieties can be protected as they are obtained following genetic improvement procedures, but registered native varieties cannot be protected through plant breeders' rights.

The European Parliament's resolution of May 10, 2012 placed various restrictions on the patentability of “essential biological processes,” moving towards a substantial ban on the patentability of traditional varieties, accessions and ecotypes. Patentability limits the freedom of small-scale farmers, so we welcome the direction the European Parliament is taking.

7. Seed certification

Slow Food believes that seed producers should have to give guarantees about the traceability and healthiness of their seeds, but that small-scale farmers should not be equated with seed-producing companies. The same bureaucratic burden and hygiene regulations must not be imposed on them.

Any certification system imposes payment for a service provided by external agencies, who in most cases do not directly follow the activities in the field but simply enforce production protocols and demand extensive documentation. Small-scale farmers cannot submit to this certification system because it is disproportionate to their activity (in terms of costs and the bureaucratic burden). The risk is that they are cut out of any seed production system.

Farmers know their own varieties very well and can perfectly distinguish between the growth and production of healthy and unhealthy plants. They have also learnt how to deal with new emerging diseases and are well aware if a plant is reasonably healthy and able to produce seeds for the next year. Making a good selection is advantageous first and foremost for the producer.

Slow Food proposes a system of self-certification, whereby farmers have the right (and the duty) to self-certify the seed they produce and sell, guaranteeing its healthiness (the seed must be free from quarantine diseases and any symptom sets that could be ascribed to any recognizable pathology) and traceability (farmers must communicate the quantity of seed produced and who sold it).

Introducing self-certification and traceability means asking farmers to assume an important responsibility towards civil society and those who will use the seed in the future, but also towards their own business, without creating additional unsustainable costs.

When it comes to the production of seeds by small-scale farmers, a regulatory gap currently exists in Europe which risks being filled by overly restrictive regulations, oriented towards the industrialization of seed production.

It is very important to safeguard farmers' knowledge about seed selection, recovering and valuing the wisdom that has been preserved by farmers for millennia.

8. Barriers to plant diseases

To register a new variety, it is currently necessary to demonstrate that it is free from viruses. If it is an heirloom variety, it is sufficient to guarantee that it is healthy (because it comes from healthy plants or from fruits without anomalies; usually a visual check is sufficient, and specific analyses are rarely needed). The health of the seed is important because the risks are very high. Until a few decades ago, agronomists were convinced that seeds did not pass on viruses. Now, however, we know that viruses can also be transmitted via seeds. In fact, viral diseases can also be carried by pollen and transmitted during pollination and fertilization.

The bacterial disease that destroyed 60% of the kiwi crop in Italy spread from an infected plant that had arrived in a nursery.

It is important to support the strengthening of barriers against plant diseases for products coming into the EU, which means checking the material that enters member states. The material must be certified as healthy or, if it is not, it must be quarantined before being subjected to proper checks. Laws do exist in this area, but they are not adequately applied.



However, it should be underlined that the approach to traditional species, varieties and ecotypes, cultivated on a small scale and in very defined areas, must be different, when it comes to health as well. An ecotype with a limited spread also has very limited potential for spreading diseases and viruses. The regulations must take these differences into account and set different certification and safety requirements.

9. Seed exchanges

Currently small-scale producers can reproduce seeds themselves, to exchange freely with other farmers, but also to resell, without having to be registered as a seed-producing company. Slow Food believes it is essential to preserve this right.

The exchange of traditional seeds must be free, but the participants in the exchange must have a good level of knowledge and take responsibility for their seeds, especially in terms of their health.

Whoever gives away or exchanges seeds must be aware that they are handling something delicate and alive. More information must be provided, especially to hobby gardeners.

10. Hobby gardeners

In farming, though knowledge about the selection of seeds is weakening, it does persist. But hobby gardeners and families who buy seeds to plant at home rarely have such knowledge.

The message to hobby gardeners does not have to be dogmatic: Everyone must be able to do whatever they want. However, it is important that they are aware that native varieties are linked to a specific place and, if cultivated elsewhere, results can vary. At the same time, they should be informed that buying seed packets is not their only option (seeds can also be produced) and that the type of purchase they make has important political implications. Buying a packet of F1 hybrid seeds has certain implications; new plants cannot be reproduced from the seeds generated by hybrids.

It is important to support hobby gardeners, giving them more information and advice about where to find seeds, for example putting them in touch with small-scale producers and explaining which packets—or seedlings—they should buy in order to be able to select their own seeds and resow them the following year.

11. EU regulation on plant reproductive material

On May 6, 2013, the European Commission presented the Proposal for a regulation of the European Parliament and of the Council on the production and making available on the market of plant reproductive material. This new law would have replaced current EU legislation on the marketing of seed and plant propagating material (SPPM), consisting of 12 directives. Many of these directives date back to the 1960s and '70s.

The Commission's proposal was voted down by the European Parliament in March 2014, with MEPs judging it inadequate and contrary to the interests of the farmers, who would have had to face a heavy administrative burden. The proposal was formally withdrawn by the Commission in February 2015.

Towards the end of March 2015, the Commission announced it will work on a new proposal and is considering two options: a reform which would renew some of the articles already included in the previous reform or the development of a new concept.

No work on the issue is however foreseen in 2016 according to the recently published Commission work program.

12. Slow Food's proposal for seed regulation

Slow Food envisions a new regulation on plant reproductive material, which would:

- ▶ combine the production and availability of seeds of high sanitary quality with effective protection of agro-biodiversity.
- ▶ pay specific attention to traditional seeds and to their link with a local area, allowing exchanges between small-scale producers and between producers and hobbyists, as well as commercialization on the basis of suitable and non-penalizing requirements.
- ▶ promote the work of those who cultivate diversity by identifying appropriate actions to support farmers who safeguard registered varieties, in consideration of the role they play in the production and conservation of agricultural biodiversity.
- ▶ promote conservation varieties, subject to the necessary controls to give guarantees to end users.

In particular, Slow Food demands that the regulation:

- ▶ respects the international obligations signed by the European Union, and in particular the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), approved by the FAO in 2001.
- ▶ safeguards diversity through the voluntary and free registration of seeds.
- ▶ guarantees the health and traceability of commercialized traditional seeds, by introducing requirements that are appropriate for different agricultural and seed production models and do not harm small-scale farmers.
- ▶ does not limit the freedom to exchange traditional seeds, but promotes an assumption of responsibility by those who handle seeds, both in terms of quality and hygiene.
- ▶ includes the European Parliament's resolution of May 10, 2012 which placed restrictions on the patentability of "essential biological processes," so as to impose a ban on the plant breeders' rights for traditional varieties, accessions and ecotypes. What has been registered cannot be patented, especially if its link to tradition and the local germplasm is clear. Furthermore, plant breeders' rights limits the freedom of small-scale farmers.
- ▶ guarantees the freedom of choice to farmers and consumers through more complete labeling.

13. Slow Food in action

Slow Food's work on food is based on a coordinated set of actions that see interconnected advocacy, awareness raising and grassroots projects all feeding into each other. Our approach intends to simultaneously encourage:

- ▶ consumers, so that they change the market with their choices, become active about policy issues and gain awareness of the importance of the element that is at the root of our food: seeds.
- ▶ producers, so that they adopt sustainable models of production and become guardians of biodiversity.
- ▶ institutions, so that they incorporate measures to safeguard biodiversity in policies.

Reaching out to only one of the abovementioned groups cannot be effective, as their actions are closely interrelated. Slow Food organizes local, regional and international events (the international events have an average of 250,000 visitors), launches campaigns and develops networks and creates space for dialog to engage stakeholders and decision-makers.

Slow Food projects on seeds

Presidia

While cataloguing over 2,700 products at risk of extinction with the Ark of Taste project, which launched in 1996, Slow Food decided to take the next step, entering the world of the production process, to learn about areas of origin, meet producers and promote their products, skills and knowledge. Over the years the Slow Food Presidia project has become one of the most effective tools for putting Slow Food's policies on agriculture and biodiversity into practice.

The Presidia support quality production at risk of extinction, protect unique regions and ecosystems, recover traditional processing methods and safeguard native breeds and local plant varieties. The producers of each Presidium work together to come up with a shared production protocol. In the case of native plant varieties, this protocol will also define the reproduction, selection and conservation methods used for seeds.

Today, over 450 Presidia involve over 13,000 producers in 62 countries. Of these, 326 Presidia are in the EU. Among them, over 100 are Presidia aiming to safeguard and promote traditional plant varieties.

Food gardens

The Slow Food network promotes the creation of school, urban and community food gardens around the world. It has launched 500 school gardens in Italy, 300 school gardens in the US and 2,000 in Africa. The Slow Food gardens are founded on the knowledge and promotion of local resources, starting with the soil, seeds and the biodiversity of local plant varieties.

Information and education

Slow Food has produced communication material aimed at the general public and available for free online (www.slowfood.com/sloueuropa) in a number of languages:

- ▶ the booklet "Seeds According to Slow Food"
- ▶ the video "Seeds"



Slow Food is a worldwide association involving millions of people dedicated to and passionate about good, clean and fair food. This includes chefs, youth, activists, farmers, fishers, experts and academics in over 150 countries. Slow Food proposes linking the pleasure of good food with a commitment to local communities and the environment. According to Slow Food, food must be:

- ▶ **Good.** The flavor and aroma of a food, recognizable to educated, well-trained senses, is the result of the competence of the producer and the choice of raw materials and production methods, which should in no way alter its naturalness.
- ▶ **Clean.** The environment has to be respected, and sustainable practices of farming, animal husbandry, processing, marketing and consumption applied throughout the food chain. Every stage in the agrifood production chain, consumption included, should protect ecosystems and biodiversity, safeguarding the health of the consumer and the producer.
- ▶ **Fair.** Social justice should be pursued through the creation of conditions of labor respectful of humans and their rights, and capable of generating adequate rewards; through the pursuit of balanced global economies; through the practice of sympathy and solidarity; through respect for cultural diversities and traditions.

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