



ARCHE NOAH

# *Our heart beats for diversity*

ARCHE NOAH ASSOCIATION



We preserve  
rare vegetables &  
delicious fruits.



**Preserving diversity, developing diversity –  
quality of life for us and future generations!**

ARCHE NOAH - Seed Savers Association in Central Europe

Diversity  
for Life!



## WHAT WE'RE ABOUT

### The Seed Savers Association ...

ARCHE NOAH ("Noah's Ark") is an Austria- and Brussels-based not-for-profit Seed Savers' association founded in 1990, which currently conserves and disseminates about 5,500 endangered cultivated plants. Our activities are financed through donations and through our members, which comprise 14,000 gardeners and farmers from numerous European countries. Our mission is to maintain and spread agricultural plant diversity. We successfully put traditional and endangered plants back into gardens, fields, and the market. Furthermore, ARCHE NOAH actively advocates for European policies that stand up for biodiversity, celebrate and safeguard consumer choice in nutritious and tasty food of high quality, while also championing small scale farming.

### Crop diversity ...

... has materialised over countless generations.

People have cultivated plants for thousands of years, resulting in an incredible diversity of locally-used and adapted plant genetic resources. In contrast to wildlife biodiversity protection, the maintenance and development of cultivated biodiversity solely depends on human interaction with plants, as genetic diversity bears the high risk of becoming extinct without **repeated and present cultivation**: use them or lose them.

... actively feeds the world.

Small-scale farmers today still actively use **locally-adapted plants and landraces**, either for their own consumption, or for their local and regional markets. These plants provide a stable yield in their ecological environment of choice, and do not rely on external inputs such as pesticides and artificial fertilisers.



... means life.

Biodiversity is a source of life, and it is as essential as air and water. Crop biodiversity is a **life insurance** – it safeguards agriculture's ability to adapt to changing environmental conditions, climate change, and new diseases or pests. Even modern breeding methods (incl. genetic engineering) depend on existing genetic material found in nature and on farms; industrial gene pools owe their success in part to traditional plant varieties or wild relatives.

#### Did you know?

Preserving crop diversity is a necessity.

Preserving crop diversity is neither a luxury, nor a charity case reserved to nostalgic plant lovers. It is a necessity for cultivators, breeders, and humankind.

It is impossible to say which plant species, varieties, populations or types, so called **"plant genetic resources"**, will be critical in the fight against **future biotic and abiotic stresses** such as hunger, disease or climate change.

An example illustrates this: In the 1970s, the grassy stunt virus (*Nilaparvata*) destroyed the rice harvest of over 116,000 hectares of arable land in India, Sri Lanka, Vietnam, Indonesia, and the Philippines. Around **17,000 varieties of rice were tested** before a corresponding natural virus-resistant genotype was finally found in the local plant *Oryza nivara*. As a result of crossbreeding for disease resistance, the spread of the virus could be stopped. The resistance is now included in numerous modern cultivars. Had this variety no longer existed, it would have been very difficult, perhaps even impossible, to halt the epidemic.

# Raise the Alarm!



## The loss of crop diversity...

...is undeniable and systematic.

According to the Food and Agriculture Organisation (FAO), due to the industrialisation of agriculture, 75% of all crop varieties have become extinct during the last century alone, mostly due to the homogenisation of high-yielding plant varieties. It's an established and sobering fact: the **loss of crop biodiversity is growing exponentially**, and comes with alarming negative environmental, economic and social consequences linked to the destruction of ecosystems, resilience and livelihoods. What might be less evident is that this loss did not just "happen". Over past decades, European policies have accepted the loss of biodiversity as **collateral damage** to the hailed "Green Revolution" approach, i.e. industrial farming, mechanisation, corporate interests and subsidisation of the decline of small-scale farming. In other words, government efforts to halt the loss of crop biodiversity are – if and when they exist at all – cosmetic, making "corrective" changes to a path leading in a wrong direction, without a sound strategy or coherent policies.

...is recognised by the European Union.

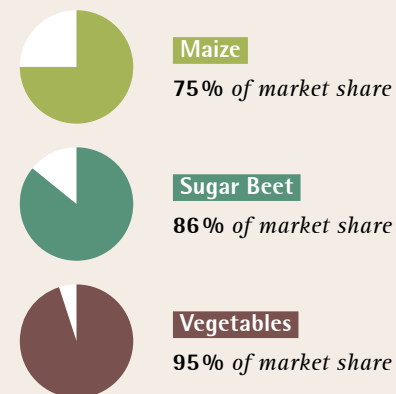
According to The Economics of Ecosystems and Biodiversity (TEEB) study, in 2050, the loss of biodiversity, both wild and crop, will cost EUR 1.100 billion per year.

The European Union has committed itself to the tremendous task of halting this loss. In 2011, the European Commission adopted the **Biodiversity Strategy 2020**. The commitment is "[to halt] the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and [to restore] them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss". The strategy is also in line with the **Nagoya Protocol (2010) to the Convention on Biological Diversity**.

The European Union is also a party to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The "Seed Treaty" is a comprehensive international agreement in harmony with the Convention on Biological Diversity, which

aims to guarantee 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 sharing of the benefits that arise from their use.

### EU seed market shares controlled by the top 5 companies of the sector



Source: Ivan Mammana, "Concentration of market power in the EU seed market", January 2014

### Did you know?

Crop biodiversity loss is alarming.

The true diversity of crop species is found in subsistence farming systems. Industrial or large-scale farming uses remarkably few of available plant species and varieties: **Only about 100 crop species** of more than 4,800 known and 7,000 estimated edible species are economically relevant at an industrial scale and have become global commodities.

According to the *State of the World's Plant Genetic Resources for Food and Agriculture* (1997), over 67% of the wheat fields in **Bangladesh** were planted with the same cultivar (*Sonalika*) in 1983. By the 1990s, in **Ireland**, 90% of the total wheat area was sown with just 6 varieties.

81 %  
of tomato varieties

Of the 7,098 apple varieties that were documented in the **U.S.** at the beginning of the twentieth century, approximately 96% have been lost. Similarly, 95% of cabbage; 91% of field maize; 94% of pea; and 81% of tomato varieties are lost. In **Mexico**, only 20% of maize varieties reported in 1930 are known today; while in the **Republic of Korea**, only 26% of the landraces of 14 crops cultivated in home gardens in 1985 were still present in 1993.

Source: Vandana Shiva, "The Law of the Seed", 2013.

95 %  
of apples

91 %  
of maize



## CHALLENGE:

### Stop the ongoing loss of crop diversity

Different strategies have been put in place to stop the loss of biodiversity. All European Member States run public “Gene Banks”, where crop diversity is preserved by **storing seed samples and other plant reproductive material**. The world’s largest seed storage is the private Crop Diversity Trust’s “Seed Vault” on the Norwegian island Svalbard, with its capacity of several million seed samples. There, seeds are literally kept on ice – also freezing off their development.

This is a problem because conserving seeds or plants “*ex situ*” (“off-site”), as valuable as it may be for future generations of breeders and cultivators, is just half the job. **Yearly cultivation** is also an essential aspect of the management of agricultural biodiversity, since it allows plants to continually evolve hand-in-hand with changing climatic and biotic conditions. Complementary to “*ex situ*” conservation, this **more dynamic and effective strategy** is known as “*in situ*” or “on site” biodiversity management. Without such complementary approaches, conservation is unlikely to be effective.

## OUR ANSWER:

### Manage biodiversity through conservation and sustainable use

ARCHE NOAH implements both biodiversity management strategies: plants are conserved “*ex situ*” in our Seed Archive, and more importantly also “*in situ*”, through ongoing cultivation and further development of regional varieties, on our premises and within the network of Seed Guardians.



### A Network of Seed Guardians

! The cooperation with seed guardians allows ARCHE NOAH to decentralise the management of endangered old and local varieties. It ensures the continuous flow and use of those plants.

Hundreds of members of ARCHE NOAH act as private “seed guardians” by cultivating endangered varieties in their home gardens and farms, and taking **long-term care** of them. They multiply accessions from the ARCHE NOAH seed archive, as well as local varieties they have collected in their local area and planted in their home gardens or fields. These guardians provide seeds to other seed savers, while also carefully studying and developing varieties. Such a network of active gardeners ensures that diversity is **managed through usage**. Cultivating plants in every vegetation period indeed makes sure that they continuously evolve by adapting to changing environmental conditions.



### Fruit collections

! Fruit trees live for a long time, but not forever! Only collection missions, careful characterisation, maintenance in several places and the passing-on of knowledge can prevent very rare, local varieties from becoming extinct.

Due to the long life span of fruit trees, many local varieties have survived over time, although little attention has been granted to them. Indeed, most trees today are ancient and urgently need to produce “offspring”. ARCHE NOAH **pomologists** – as fruit experts are called – research, document, advise, and graft, in order to halt the impending loss of old varieties.

The ARCHE NOAH fruit collection currently encompasses several **fruit conservation orchards** with hundreds of trees and berry bushes in different regions, as well as a fruit database with more than 900 varieties and 3,200 mapped trees.



### Seed archive

! This is where seeds take a break: in the ARCHE NOAH seed archive, more than 5,500 different cultivated plants are waiting for their next performance.

Starting with the first collections of early ARCHE NOAH pioneers such as Nancy Arrowsmith and Reinhild Frech-Emmelmann, **one of the largest private crop seed banks in Europe** was established starting from the 1980s through regional research as well as through active exchanges between members and with other collections. The ARCHE NOAH seed archive preserves seeds, bulbs, and parent plants of more than 5,500 endangered vegetables, grains, and other crop plants, with about 300 in living field collections. Our seeds’ rejuvenation (since seeds can’t keep their germination power forever in jars) takes place in ARCHE NOAH’s certified organic gardens, where they are planted and harvested for their new generation of seeds.



**CHALLENGE:**

## Develop plants fit for organic and low-input agriculture

A look into the European Common Catalogue of Varieties might give the impression of a rich abundance of varieties in Europe. This impression is wrong, as a **variation of product names cannot be equalled to genetic diversity**. Today, by law, plants and their plant reproductive material (PRM) have to be distinct, uniform and stable (DUS) to be marketed in the EU – a policy model that prevents many local varieties from being marketed – plants which might be very useful for certain local conditions, markets or farming models.

In real life, **one size does not fit all**: seed users can and do have a wide array of demands when it comes to plants. This is why seed users' needs are at the heart of the participative plant breeding programme run by ARCHE NOAH.



**Did you know?**

Big companies own patents on seeds.

Patents are supposed to foster innovation. But when patents are applied to plants or animals, the effect is detrimental. Seed patents lead to **privatisation of nature**, with negative consequences for **the conservation of biodiversity and consumer choice**. Patents on seeds accelerate market concentration, ignore farmers' and breeders' rights, and hinder innovation.

The European Patent Office erased the border between inventions and discoveries in 2015 by allowing patents on conventional (i.e. non-genetically modified) plants and animals. This went against the intention of the relevant legislation and existing exceptions to patentability. ARCHE NOAH advocates for legislation that clearly prohibits patents on plants and animals.

**OUR ANSWER:**

## Research & Participatory plant breeding



The development of newly adapted crops from genetic resources complements and contributes to our goal of satisfying seed users' needs, while also ensuring the long-term survival of underutilised crops. Forgotten varieties will best survive if they answer to users' needs. A variety from the previous century might not be entirely suited to today's environmental conditions (climate, soil degradation), agronomic factors (farming methods) or usage requirements (storage, cooking).

ARCHE NOAH is therefore dedicated to **developing "new" varieties from "old seeds"** that are adapted to our modern needs. Careful observation, selection and the use of traditional breeding techniques, and close collaboration with gardeners and farmers contribute to the development of useable and marketable varieties.





**CHALLENGE:**

## Satisfy consumers' appetite for diversity

The demand for "diversity-products" is steadily growing. Seed users – home gardeners and farmers – pioneered this trend. Consumers have followed: They are less and less satisfied with the quality and choice of vegetables, fruits and cereals offered to them in mainstream supermarkets. Consumers are hungry for product quality, taste, sustainability or specific nutritional value.

A growing number of farmers and producers supply this market. They make a good living with crop diversity - their income being based not on quantity but on the quality of their products.



**OUR ANSWER:**

## Make crop diversity available

ARCHE NOAH supports the trend towards crop diversity by **providing knowledge and facilitating the exchange of innovation know-how** in seminars and workshops as well as by facilitating access to plants and seeds. Only an ongoing use of crop diversity and its integration into value chains will sustainably halt its loss.



## Markets and events

- ARCHE NOAH events attract more than 30,000 visitors every year.
- Springtime is traditionally dedicated to the plant markets, where diversity farmers make available young plants and the seeds of vegetables, fruits and berries can be bought or swapped. The best way to protect crop diversity is to... eat it!



## Farmers for diversity

- ARCHE NOAH cooperates with organic farmers to bring diversity back into agriculture and markets.
- A growing number of farmers and producers support the crop diversity market. Small farmers often cannot compete in quantity and yield. Instead, they make a living with crop diversity, their income being based on the quality and diversification of their products. Only the integration of crop diversity into value chains will guarantee its existence.



## Seminars and workshops

- Through ARCHE NOAH seminars and workshops we share knowledge and experience and develop innovative ideas.
- We offer a range of **practical seminars**, ranging from basic seed-saving techniques and gardening skills to advanced grafting courses or the development of strategies for producers who want to market heirloom varieties.

**Did you know?**

Local systems could feed the world.

According to the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD, 2008), small scale farms make up for 85% of the world's farms and produce the biggest share of food worldwide.

Most of them do not purchase commercial seeds, but are part of informal seed systems based on locally-adapted plants that often provide stable yield and depend less on pesticides and fertilisers. The agrochemical industry – the producers of chemical inputs, industrial seeds and fertilisers – would like to exploit this market potential. To achieve this goal, the agrochemical industry contends that Europe has to feed the world by exporting commercial seeds. The *IAASTD* and the *Trade and Environment Review* (UNCTAD, 2013) disprove this claim: **Hunger can only be overcome in a sustainable way on the local level.**



**CHALLENGE:**

## Improve policy coherence



For decades, **European policies have given priority** to industrial farming and mechanised cultivation methods, supporting thereby corporate interests and subsidising the decline of small scale farming, and consequently propelling and sustaining the loss of crop diversity. Moreover, the European Union **exports these policies** to developing countries, e.g. through trade agreements, destroying as a result local rural socio-economic structures. These realities are even more distressing since public efforts to halt **crop biodiversity loss** cost almost nothing compared to the **consequences** of such loss, which have to be borne by society and taxpayers.

As a **cross-cutting issue** falling within the competence of different legislative and executive actors, the management of crop diversity needs to constantly be borne in mind and not detrimentally set aside in a wide range of policies. Those which impact crop diversity the most are:

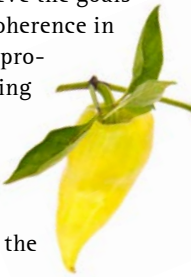
- The Common Agriculture Policy (CAP)
- Food quality schemes (Geographical Indications, Organic Agriculture)
- Seed and Plant Marketing Laws
- Intellectual Property Rights (Plant Variety and Patent Protection)
- Biosafety Law (Breeding Techniques, GMOs)
- Biodiversity Policies



## OUR ANSWER: A voice for diversity

**Consultation and coherence** between these various law-making areas is key to achieve the goals set out in environmental but also social and economic policies. To improve policy coherence in such a way that favours crop biodiversity, ARCHE NOAH **stands up for policies** that promote biodiversity, ensure nutritious and tasty food and champion small scale farming in Europe and beyond.

We wish to prevent that these concerns get “swallowed up” by other agendas and priorities, and that crop biodiversity, which is vital for human survival, and essential for future research and development efforts, regains back its rightful place on the balancing scale.



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**Did you know?**

A Seed Commons is the answer.

The Nagoya Protocol is an international agreement with the aim of combatting bio-piracy through regulating

the access to genetic resources and ensuring the fair sharing of benefits arising from their use. It obliges all EU Member States to counteract the unlawful use of genetic resources. It also brings new rights and obligations for seed users. We believe that, despite the Protocol's structural weaknesses, these new rights enable civil society to establish a global seed commons and to counterbalance industry's attempts to privatise plants by patents or do genetic modification.

- 1: In Brussels, ARCHE NOAH speaks up for crop biodiversity.
- 2: Key note by Benny Härlin (Save our Seeds) at the "Diversity feeds the world" ARCHE NOAH symposium.
- 3: More than 800,000 signatures against patents on plants and animals have been collected in Europe.

The bottom line?



## Preserve your cultural heritage

The cultural heritage that is food can only be preserved to the extent that it is consumed! EU laws and policies need to **promote the conservation and cultivation of traditional and local varieties** as opposed to criminalising these practices, putting them into “niches” or letting them be privatised by big companies, as they currently do or threaten to do. What’s more, the only way to **guarantee future food supplies** is to preserve the diversity of cultivated plants developed during our history.

## You can take action!

There are many things you can do to preserve crop biodiversity for future generations.

### ♥ If you are a dedicated citizen

- Whenever possible, buy your food directly from a farmer or at a farmers’ market. Give priority to organic, seasonable and regional products.
- Ask for food produced from **rare plants and breeds**, as well as manufactured by food-artisans.
- Vote for politicians that stand up for sustainable agriculture **free of GMOs**.

### ♥ If you are a gardener or farmer

- Make your own garden a **shelter** for rare fruits and vegetables.
- Get into **seed growing**. Carry on the almost forgotten knowledge. Accompany your plants throughout their entire lifecycle – from seed to seed.
- **Pass on** seeds and plants to your neighbours and friends – to promote the spreading of endangered varieties.

### ♥ If you are a decision maker

- **Stand up for policies** that promote biodiversity, ensure nutritious and tasty food and champion small scale farming in Europe and beyond.
- Make biodiversity-serving **policy coherence** a priority.
- Use all the arenas available to you to **speak up** for crop diversity.



ARCHE NOAH

## A piece of history

♥ More than a quarter of a century of ARCHE NOAH: from a couple of pioneers to a network of 16,000 members and sponsors.

A new approach to crops, fields, garden and kitchen has always been at the heart of the non-profit association ARCHE NOAH. House-gardeners and farmers started their own initiative to preserve old, increasingly vulnerable commercial grade and local varieties. Many had experienced the disappearance of such crop varieties from the market and gardens themselves.

The popularity of the association has risen rapidly through plant markets, the sale of seeds, and the ARCHE NOAH network catalogue. Other areas of activity include the ARCHE NOAH visitor garden in Schiltern, educational programs, and international advocacy work to promote the right policy framework for crop diversity. In 2017 – for long-term hedging reasons – the non-profit Foundation Diversitas was established.

Today ARCHE NOAH is one of the largest preservation-organisations in Europe.

*Beate Koller*







ARCHE NOAH



## ARCHE NOAH - contact

ARCHE NOAH – Seed Savers Association in Central Europe

### Brussels Office

Ms. Fulya Batur, PhD  
Policy Officer  
fulya.batur@arche-noah.at  
advocacy@arche-noah.at

### Vienna Office

Ms. Katherine Dolan  
Head of Policy Unit  
katherine.dolan@arche-noah.at  
saatgutpolitik@arche-noah.at

### Visit our Garden

Obere Straße 40, 3553 Schiltern, Austria



### Visit our Website

[www.arche-noah.at](http://www.arche-noah.at)

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