

5) Preserving diversity in my food garden

Problematic trend n°6: with more standardized foods, we are losing varieties

When we enter a supermarket, we are surrounded by full shelves of all kind of food, coming sometimes from far away countries. It gives the impression that there is a large choice, and an ever increasing diversity of food available, but appearances can be misleading.

The United Nations agency on food, called the Food and Agriculture Organization (FAO) explains that although, 7000 species of plants have been cultivated in human history, presently, 75 percent of the world's food is generated from only 12 plants and five animal species¹. Four crop species (rice, wheat, maize and potato) are responsible for more than 60% of human energy intake². Due to people's dependency on this relatively small number of crops for their food, it is crucial to maintain a high genetic diversity within these crops through the preservation of varieties. But the FAO warns about the serious problem that for each crop species (for instance wheat), the world has already lost a big number of varieties (the crop species wheat count thousands different varieties but we plant less and less varieties of them).

Over 100 years (1900-2000), 75 percent of the agrobiodiversity has been lost because farmers worldwide have abandoned numerous open-pollinated varieties³. Due to a move to industrial farming methods and also due to complex laws, farmers have turned more and more towards commercial hybrid varieties. These have helped to reach biggest yields, uniform size, look, or taste. They also met the demand of consumers who ask for cheap food of predictable quality.⁴ But the down-side is that farmers have been growing considerably less diverse wheat, tomatoes or potatoes- varieties. This loss weakens our capacity to grow enough food for all tomorrow. Learn in the following story why preserving agrobiodiversity is important.

Definition corner

Biodiversity: the amount of diversity between different plants, animals and other species

Agrobiodiversity: the biodiversity among agricultural crops or livestock such as wheat varieties or cattle breeds. Agrobiodiversity is a vital part of biodiversity, which is developed and managed by farmers, herders and fishers.

Food security: when all people in the world have sufficient access to safe and nutritious food at all time.

Open-pollination: when pollination occurs by insect, bird, wind, humans, or other natural mechanisms. Open pollinated plants adapt to local growing conditions and climate year-to-year.

Hybridization: a controlled method of pollination in which the pollen of two different species or varieties is crossed by human intervention. The first generation of a hybridized plant tends to grow better and produce higher yields than the parent varieties but the following generations produce low yields, therefore gardeners who use hybrid plant varieties must purchase new seed every year.

The story

A mysterious animal

It was about the middle of the afternoon when the first drop of rain fell on the cheek of Tereza.

“O-oh... we should better quickly find somewhere to hide before the storm starts“

A flash ray of light appeared in the grey sky. Tereza and Jana started to pedal faster on the muddy path as the rain was now pouring on them. Their bikes were sliding on the wet soil. „Look! There! What about we get over there?“ Jana was pointing in direction of a white building after the turn of the path. A few meters from the building, they could smell the odor of wet straw and understood that the place was a farm. They passed an open fence, dropped their bikes on the ground, and pushed the first door they could reach. The air was warm inside and the ground was soft. When their eyes got used to the darkness, they wondered if they were dreaming...

-Is it a sheep, or... a pig? mumbled Jana? A few seconds later, the hairy animal surprised by the two intruders, made some sound that left no doubt...

-A pig!

A second later, someone entered the stable. It was a tall woman, with a raincoat, who was smiling at them.

-„Hello young ladies. I saw you coming in, so I thought I would offer you some hot tea while waiting for the rain to stop. Come with me to the kitchen“. Jana and Tereza gladly accepted the invitation. The girls entered in a kitchen where smells of herbal tea were mixed with something baking in the oven. They sat down quietly, both hoping to learn more about the mysterious pig that looked like a sheep.

-You must have been a bit surprised to meet Rubby“ said the lady farmer

-Rubby?...that s the name of the pig?“ asked Tereza

-Yes, it is, smiled the lady. Ruby is a pig from the breed named Mangalitsa. As it mostly lives outside, it gets wooly like a sheep, especially during winter. This breed was under threat of extinction but has been saved. That’s because in Hungary, they started to seriously raise more of them again.

- Extinction? You mean that it could disappear forever? How is that possible?

- Because nowadays, farmers are asked to produce a lot for little money, so most of them choose amongst the five most raised breeds that grow fast and give a lot of meat. Large intensive farms are replacing small scale farmers like me that usually go for more diverse breeds. Here, I also keep other pigs from the breed Turopolije⁵, originating from Croatia, and that breed is almost extinct. It is a pig that can be raised sustainably outside but needs time to grow.

- The disappearance of diversity is not only the problem of animals it is also a problem of fruits, cereals and veggies! said a men who just entered the kitchen. Water was dropping from his hat. While he placed it on the hook behind the door, he said: Hello here, I am Petr!

-Good afternoon, said Tereza and Jana in one voice

-I heard you were talking about diversity. Would you like to taste our carrot cake?

A sweet smell spread all over the room when Petr opened the oven.

- You make it from your own carrots? asked Tereza

- Yes, I harvested the first ones yesterday. Petr brought a carrot that was of red colour, and had no regular shape. „That is surprising, isn't it? I am growing fifteen different varieties of carrots here. Every year I collect the seeds and replant them the year after. I am exchanging my seeds with other people as well. The loss of varieties is a global problem, but solutions start locally.

- It is the first time I see such funny-looking carrot. It gives a beautiful color to this cake. Is that why you say it is important to preserve crop diversity or there are other reasons? questioned Jana

Petr stopped cutting the cake and looked at her.

-That's a very important question. Well, there are at least 3 reasons why to preserve old varieties. First of all, it helps me to keep my food garden healthy. I realized it when my cabbage was being attacked by insects for the second year in a row. So, I planted two old varieties of cabbage. They were smaller but I observed that the problem disappeared. Then I started to look for more open-pollinated seeds of other crops that can adapt on their own to my local environment. Maybe you learnt in history class about the big Irish potato famine from 1845?

-When all the Irish potatoes got destroyed by some pest? said Tereza. It lasted several years. Thousands of people were starving and had no other choice than migrating to survive. Many moved to USA.

-Yes, said Petr, they were cultivating only 2 or 3 varieties of potato that got attacked by mold and potatoes rotted in the fields. Thus, that crisis was clearly linked to low number of cultivated varieties.

-The second reason why to preserve crop diversity, continued the lady farmer, is that it is our best chance to adapt to climate change. You probably have seen how the river was low this summer, right? It was very hot. In the future, average temperatures will keep rising and there will be more frequent droughts or flash rains like today. Some varieties better cope with droughts, some with humid climate. If today we lose some varieties forever, we might miss them tomorrow. Preserving crop diversity is essential for our own future. If agriculture won't adapt to climate change, neither will we!

- That sounds very serious, I never heard this before, said Jana

- Yes, we are probably not looking at it seriously enough, added Petr. It is important to start developing solutions. For instance, I have a friend in India who plants five different varieties of rice in the same field, just to make sure that there will be at least some that will grow, no matter if it was too hot or not.

-That's clever! Especially since rice is the basis of diets in Asia, reacted Tereza

-Petr added: To stop the extinction of varieties that are not much cultivated, a gigantic seed vault has been built in the ice of the island of Svalbard in Norway. You should learn more about this.

- And the third reason, added the lady, is that, diversity of plants and animals is part of our cultural heritage. Behind each traditional apple or pig there are stories of farmers, families, regions who gave their name to the variety they helped nature to create. It is an heritage that should be seen as valuable as our castles, monasteries or temples!

-But the most concrete reason of all, concluded Petr, you will understand it when you will taste a piece of this cake or one of the delicious yellow tomato I picked just before the rain! Enjoy!

Question to explore further:

- What was the Irish potato famine about?
- What is the Svalbard seed vault and why was it created? (Visit it [here](#))
- How many different varieties do we grow in the school garden? Do we have a seed bank (also called seed library) in the school?
- What are the varieties and breeds of my region? Why to keep growing and raising them today?



On the left pig from the breed Mangalitsa (foto: Robinson). On the right, pig from the breed Turopolije

WHY CONSERVE FARM ANIMAL DIVERSITY?

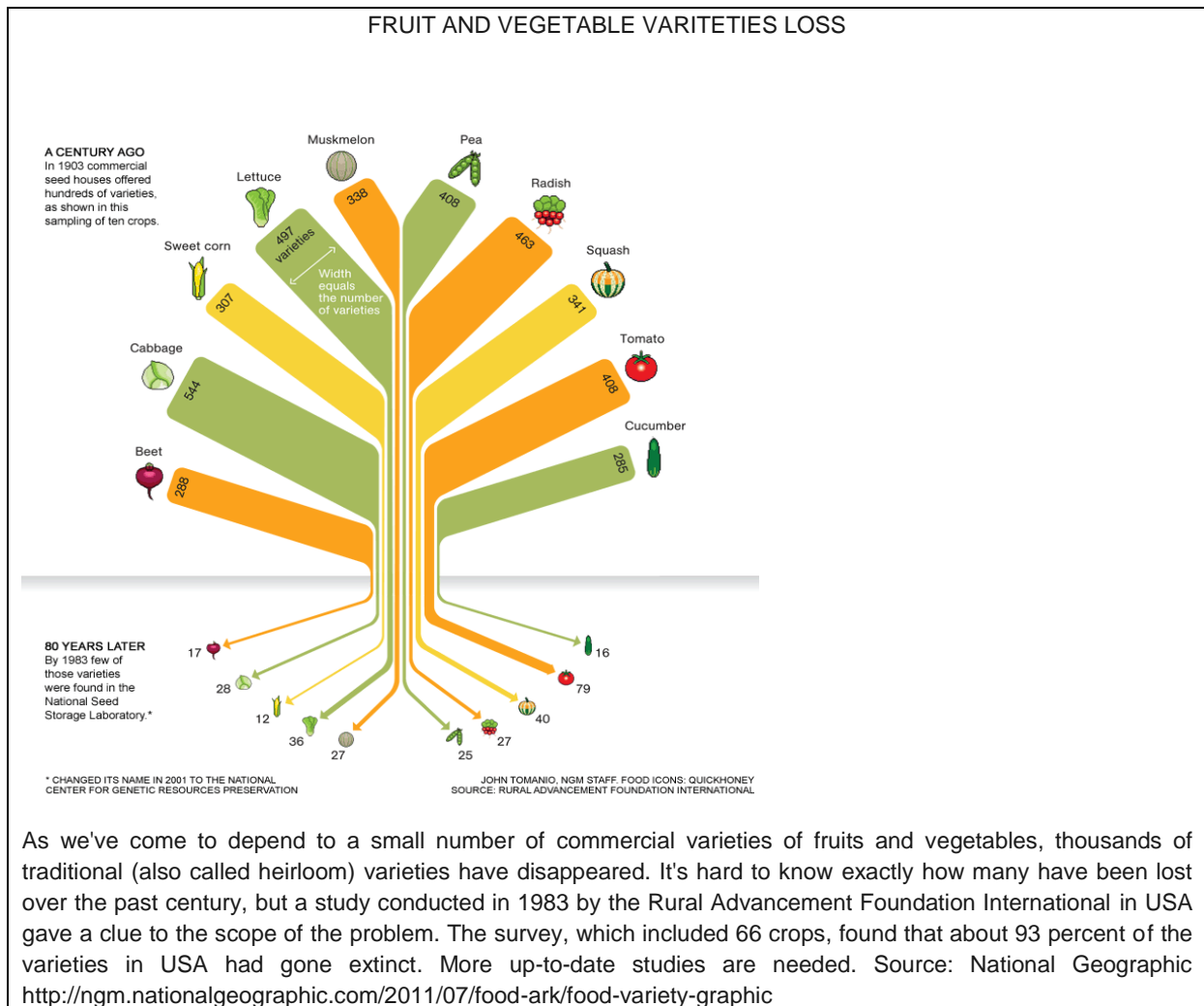
The conservation of domestic animal diversity is essential to meet future needs. The earth comprises a vast range of environments in which agriculture must be practised. These environments are not static but are dynamic and may change through seasons, years and decades. Maintaining genetic diversity is an insurance package against future adverse conditions. Due to diversity among environments, nutritional standards and challenges from infectious agents, a large number of breeds are required. Maintaining diversity also provides stability. If more than one breed or species is kept, given the failure of one to produce under certain conditions, others can be drawn upon. By maintaining more breeds and species, farmers are thus spreading risk.

In addition, with increasing global human population pressures, the quantity of food and other products must increase. Indeed, it is predicted that more than a doubling of meat and milk production will be required over the next 20 years. The increasing demand for a broad range of products, both locally and globally, requires a dynamic, adaptable, adjustable livestock system.

Extract from FAO, Worldwatch list for domestic animal diversity, 3d edition, 2007
<ftp://ftp.fao.org/docrep/fao/009/x8750e/x8750e.pdf>, p 22



On the left, diverse varieties of carrots, on the right, diverse varieties of maize.



Connecting the dots:

- ✓ Preserving food crop varieties and animal breeds contributes to preserve biodiversity as a whole
- ✓ Planting local varieties helps our food system to adapt to climate change
- ✓ Consuming diverse varieties helps to maintain a healthy and tasty diet



To explore further

- Video on preserving biodiversity from Slow Food (9min) : https://www.youtube.com/watch?v=JvNG986_3RU
- Video on food diversity loss from Cary Fowler, ex-director of the Global Crop Diversity Trust (20 min) <https://www.youtube.com/watch?v=UwI012o8P7I>
- Video on how seed laws reduce biodiversity from the Greens/EFA (3min): <https://www.youtube.com/watch?v=NEztiaM2vF4>
- Short text on preserving seed diversity, quartet course from the University of Chicago <http://foodsecurity.uchicago.edu/research/preserving-seed-diversity/>
- Short text on agriculture and biodiversity <http://www.sustainabletable.org/268/biodiversity>
- Study from FAO on Sustainable diets and biodiversity, 2010 <http://www.fao.org/docrep/016/i3004e/i3004e.pdf>
- Campaign against factory farming by Compassion in World Farming http://www.ciwf.org.uk/factory-farming/?gclid=Cj0KEQjwtaexBRCohZOAoOPL88oBEiQAr96eSJmuJbOXjoMN3YPE5sxFzLxI8ADB0O_jRL1kH-4UXAkaAhjq8P8HAQ

¹ FAO, What is happening to agrobiodiversity? <http://www.fao.org/docrep/007/y5609e/y5609e02.htm>

² FAO, biodiversity, <http://www.fao.org/biodiversity/components/plants/en>

³ FAO, What is happening to agrobiodiversity? <http://www.fao.org/docrep/007/y5609e/y5609e02.htm>

⁴ FAO, State of the World's Plant Genetic Resources <http://www.fao.org/docrep/013/i1500e/i1500e01.pdf>, p 4

⁵ FAO, Worldwatch List for domestic animal diversity, <ftp://ftp.fao.org/docrep/fao/009/x8750e/x8750e.pdf>, 2007, p 186