

# PubliFarm Research Days: Chewing cows, apple trees and earthworms

## An on-farm science experience for the public

Sabina Keller and Nina Buchmann, Grassland Sciences, ETH Zürich

During the last three years, the Agora project PubliFarm invited the public to do their own agricultural research in the context of biodiversity and climate change. Visitors could carry out hands-on experiments on farms in the German-speaking part of Switzerland.



Young scientists coached visitors and put their findings in the context of sustainable agricultural production. The hosting farmers presented their farm and production methods during farm tours and could answer many questions of the visitors.

With Research Days and Exhibits at public fairs (OLMA, OBA, Kulinata, etc.), PubliFarm raised public awareness for agricultural practices and their influence on biodiversity and climate change, and transported research approaches, scientific methods and findings to lay people. We discussed possible consequences for future agriculture in regard to its contribution to food security by encouraging lay people to critically reflect on their own consumer behavior.

„How many earthworms live in this soil?“



### Methods to explore:

- Expelling with mustard flour
- Identifying of different ecotypes

The more earthworms are found in an agricultural soil, the better is soil fertility. Visitors could observe that soils differed in the number of earthworms and their species richness depending on crop species, soil tillage, fertilization and plant protecting products applied. The findings were discussed with young scientists and the farmer.



„Is this insect beneficial or a pest?“

### Methods to explore:

- Examining with magnifier *in vivo*
- Beating tray for closer inspection
- Identifying with pictures



When an apple tree is infected with pathogens and pests, this is usually visible from the outside. Visitors could search for visible damage or markings on leaves or orchard trees. Sometimes, one could detect tiny or well camouflaged pests or beneficial organisms. The findings were compared with experiences from the visitors' own gardens and discussed with a young scientist.

„Are these cows climate killers?“



### Methods to explore:

- Examining cattle chewing activity *in vivo*
- Physical analysing on manure



Ruminants are able to use grass for their nutrition due to their specialized digestive system. We benefit from their milk, meat and manure. But cows are also considered a burden on climate. Since biofermentation of cellulose in the digestive tract produces CH<sub>4</sub> and CO<sub>2</sub>. Visitors discussed this trade-off with a young scientist.