GREEN FACTS

INFOSERVICE
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“The dark side of biodiversity”

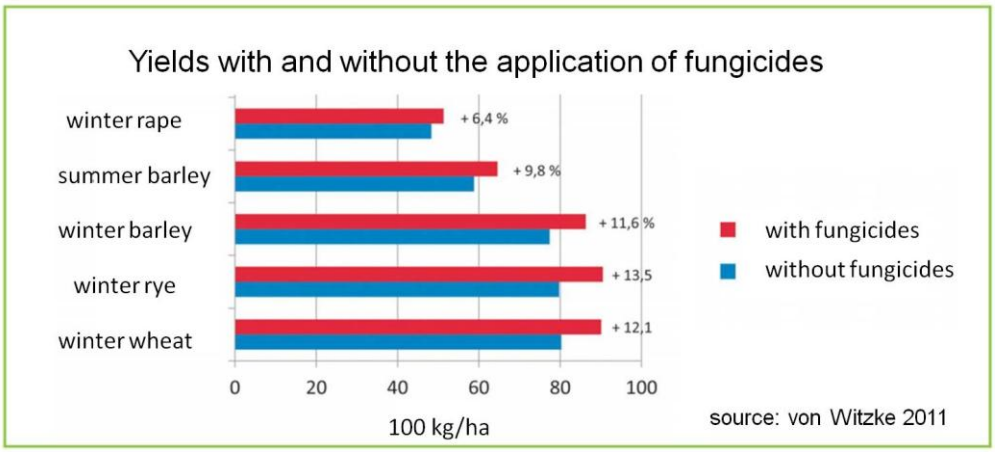
The United Nations Convention on Biological Diversity (1992) defines biodiversity as “the variability among living organisms from all sources (...); this includes diversity within species, between species and of ecosystems.” Biodiversity covers live on earth as a whole and at the same time all associated interactions. In Germany for example, about 48,000 animal species, 9,500 plant species, 14,400 species of fungi and an abundance of microorganisms make up biodiversity in its entirety.

Agricultural and forestry operations have led to unique cultural landscapes with rich biological diversity in wild as well as cultivated plants. Not only does agriculture influence biodiversity directly; at the same time agriculture is one of its important elements and benefits from the diversity of life in fields and pastures – hence directly interacting with this diversity, i.e. bees and butterflies for example.

On the other hand, biodiversity also stands for negative interactions. Fungi, bacteria or viruses can be pathogenic to plants, some potentially even producing toxic substances, which especially can have detrimental effects on humans or livestock.

Ergot is one example: the parasitic fungus increasingly can be found in the ears of cereals in moist years, and particularly affects rye. The fungi infest the plant during flowering, leading to the elongated, dark violet to black ergot kernel instead of the healthy grain kernel. Hundreds of thousands of people died in the Middle Ages as a consequence of being poisoned by ergot-soiled grain. The chronic disease symptoms were called ergotism or St. Anthony’s fire. Strong alkaloids are the cause of these toxic effects of ergot; they are used in low doses to treat migraine in human medicine for example. The alkaloid contents of ergot averages 0.2%, and ingestion of 5 to 10 grams of fresh ergot may already be lethal for adults.

When cereals are grown in modern agriculture, however, an infestation with pathogens such as ergot or other fungi can be reduced considerably by means of preventative cultural measures. Beyond grain cleaning, breeding, choice of varieties and seed treatment, also the application of effective fungicides plays an important role (see graph).



“The dark side of biodiversity” challenges users and beneficiaries of the biological diversity in cultural landscapes used by agriculture. Today, science and research allow for the development of measures, which help to minimise natural dangers of the environment whist safeguarding biodiversity of fauna, flora and microorganisms at the same time.

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