AgriWeedClim: Identifying Emerging Weeds

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Objectives

I. Analyse changes in Central European Weed flora and their drivers.
II. Identify Top 20 emerging weed species.
III. Predict future range and impact.
IV. Derive methods for management.
V. Combine information in "Emerging Weeds Management Toolkit".

Definitions

- weeds = vascular plant species that cause „substantial“ damage to crops, livestock or humans (i.e. enough to warrant intervention)
- emerging weeds = (new) weed species increasingly spreading and/or increasing impact due to changes in land use, climate etc.
- arable flora = segetal flora = flora of agricultural habitats

Scope

Emergence of New Weed Species

CLIMATE
- warming
- change in water regime
- extreme weather events

BIODIVERSITY
- biological invasions
- extinctions

LAND USE
- mechanization
- agrochemicals
- new varieties
- new crops

Habitats:
- fields & fallows
- orchards
- vineyards

Temporal Scope:
- 1900
- Present
- 2100

Project Steps

I. Data Collection

Almost 60,000 relevés were collected from databases, individual data holders and digitization efforts. These were screened, processed and standardized, resulting in a collection of 32,889 vegetation plots.

II. Identifying Emerging Weeds

Species classified according to their past success in Central Europe into 3 categories:
1. increasing/emerging
2. decreasing
3. intermediate

III. Environmental Preferences

Environmental preferences predicting success provide insight into the differences of groups 1-3 as well as changes in the selection pressures of arable habitats.

IV. Future Risk

Combining predictions of species distributions under different scenarios of climate and land use change combined with mitigation measures will reveal areas of overall high risk for emerging weed species.