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Working with regional seed material from semi-natural grassland in Austria

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One of the priorities in the EU Rural Development Programme is the so-called High Nature Value farming: Conservation of biodiversity is maintained by low-intensity farming, with semi-natural grassland (Fig. 1) as a key feature. Economic compensation to restore these types of habitats is available from agri-environmental programmes in many European countries.

Figure 1. Semi-natural grassland in the northern calcareous Alps south of Linz, Austria.

Trends in land use towards intensification, but also complete abandonment, lead to a decline in species richness. With intensification in grassland management mainly in lower lying areas, only species tolerating several cuts and a high nutrient load

survive. Blooming meadows disappear, as many herbs do not regenerate vegetatively. Additionally, periodic reseeding leads to genetic drift and homogenization, and also affects neighbouring, still extensively used areas. Regional genetic diversity is at peril in the near future.

The team of Bernhard Krautzer at the Agricultural Research and Education Centre (AREC) Raumberg-Gumpenstein (Austria) has worked for more than 20 years in the field of ecological restoration with site specific and regional native plant and seed material for improving biological values in production landscapes. Recent work and research at AREC is done at two levels: In cooperation with farmers, spots of intact semi-natural, extensive grasslands are identified and registered. After a species inventory on-site, seed material from the most characteristic species is collected. The material is evaluated in regards to some quality parameters like germination capacity and thousand seed weight, described and stored in the gene bank at AREC. The long term storage is done at -20°C in glass jars with additional silica gel or laminated aluminium foil bags (for small amounts of seeds). The working collection is situated in a walk-in storage unit at +4°C and 50% humidity.

Figure 2. Propagation of collected seed material at the Agricultural Research and Education Centre, Raumberg-Gumpenstein, Austria.

Part of the collected material is propagated (Fig. 2) and therefore available for nature conservation and restoration projects (Fig. 3). The data on species and origin are included in the publicly accessible index of Austrian gene banks

(http://www.genbank.at/en/national-inventory). At the time of this writing, more than 400 origins of different species have already been collected and recorded.

Figure 3. Newly seeded semi-natural grassland, dominated by oxeye daisy (*Leucanthemum vulgare* agg.)

Another important work, accompanying and complementing the above efforts was the development and implementation of an Austria-wide certification system for regional seed material, the “Gumpenstein Certificate of Origin”. The full value of site specific, regional seed material can only be effectively recognized if these properties are transparent, guaranteed and reproducible for all, as a protection for potential customers. The “Gumpenstein Certificate of Origin” was created to provide externally verified information on origin and the fulfilment of certain defined quality criteria, secured by a quality seal. The certification system involves experts for collecting, seed propagating farms, conditioning, and seed companies for distribution, thus making origin, amount, generations of propagation and all linked production steps transparent for the end user. Regional seed material awarded with the “Gumpenstein Certificate of Origin” must originate directly from a collection at a site in one of the Austrian bio-geographical zones of origin, or be directly propagated from a collection that is grown in a certified field (Fig. 4). The seal provides documented evidence for the region of origin and, among other criteria that no intervention occurred at the collection site during the last 30 years. Also all other farms or companies (conditioning, distribution…) involved in the production line must be certified following the “Gumpenstein Certificate of

Origin".
The certificate is available for all producers, companies and farms who sign an agreement with AREC Raumberg-Gumpenstein to accept and abide by the rules and criteria defined in the guidelines for the certificate. Their adherence is evaluated yearly by an external, independent supervisory body. AREC Raumberg-Gumpenstein as initiator for this certificate must also undergo this procedure.

Figure 4. Golden hawk's beard (Crepis aurea) in propagation. This species is typical for extensively used pastures in the higher zones of Austria above 1000 m a.s.l.

Both efforts presented contribute to the conservation of wild, regional seed material from endangered semi-natural grasslands in Austria. They demonstrate that not only the ecological side of conservation and restoration needs to be considered, but also the importance of a framework for practitioners and end users that guarantees the important properties and quality of the material used in order to create the foundation for successful restoration projects.

For more information please visit:

http://www.raumberg-gumpenstein.at/cm4/de/forschung/forschungsbereiche/pflanzenbau-und-kulturlandschaft.html