

Guidelines for site-specific restoration

System of rules in the interest of nature

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Genetic, and thus biological diversity, disappears dramatically. Increasingly longer Red Lists on which once widely distributed species are to be found are a clear indication. The initial causes are manifold, but in the end the standardisation of the landscape and destruction of habitats have in many cases been the decisive factors for the endangering of species. To maintain genetic and biological diversity, it is therefore necessary for landscape construction restoration, especially on open terrain, to use site-specific seed and plant material.

As before in Austria, it is still standard procedure to use simple seed mixtures to establish restoration following such intervention as road building, mining constructions, landscape construction, the construction of ski runs and tourism infrastructure, etc. The few species contained in the mixtures are either unsuitable for long-term, ecologically high-value restoration, or they lead to biologically impoverished landscape grasslands. Contrary to the requirements of the nature-protection laws in most countries, it is in many cases also common to sow or plant many species during restoration that would be prohibited according to nature-protection law. This is made possible on the one hand by a lack of knowledge of site-specific seed and plant material, and on the other by a lack of knowledge of the possibilities and processes for re-establishing site-specific vegetation.

Guidelines for site-specific restoration

In consultation with the responsible authorities and staff at engineering offices and building firms in operation, it became clear that there is a great need for information in respect of the use of such mixtures, the origin of such materials used, matters of technique and restoration process, definition of terms, projected aims, etc. To counteract the situation, over a

period of three years the “Guidelines for Site-specific Restoration” were drawn up as a system of rules by a group of specialist experts from many affected areas of expertise, such as ecology, agriculture, environment- and nature protection, engineering biology, landscape construction and seed management, which enabled a new state of technology for the realisation of site-specific restoration processes. Above all in recultivation during the realisation of large building plans (opening up ski runs, power station construction, road building, etc.), site-specific restoration in broad spheres of the project area come to the fore. With such large building plans, however, it has been seen that many of the terms applicable to this type of restoration are not exactly defined, that in Austria there are no appropriate gui-

delines in this respect and also no ÖNORM available, and thus the “latest state of technology” is given to only an insufficient degree. This has often resulted – for example in high-zone restoration – in utterly insufficient results being accepted by the customer (and often the contractor) because neither are aware of what is possible, practical, realisable and was actually tendered. This deplorable state of affairs is remedied with this system of rules. The guidelines are thus the basis for the tendering and execution of restoration measures beyond the agricultural sphere. They have a normative character in their implementation. They should be used by the authorities as the basis for the stipulation of site-specific restoration measures, and also offer information to a wide circle of people, from gardening-



Initial situation in 1996



and landscaping firms to nature-protection experts and landscape planners and architects and for the seed industry that offers the necessary information for the realisation of the latest state of technology.

Significance for restoration in high zones

The system of rules in principal only finds use in areas in which agricultural use is not in the foreground. It is therefore to be expected that the guidelines will be used for differing measures, such as the construction of alpine-meadow paths and transport trails, infrastructure improvement, melioration and above all in connection with ski-run construction and the construction of tourism infrastructure. The guidelines will be used only for very extensively used areas with a high nature-protection value on grazing areas.

In respect of the guidelines for site-specific restoration, they apply to high-zone in the region of the eastern Alps above 1,600 metres, and in the central Alps above 1,800 metres. Site-specific restoration of such areas is very difficult. The composition of species in lower zones clearly differs.

Thus one must not use customary commercial seed. As an alternative, one can conserve existing vegetation and replant. Many vegetation species, such as the windy ridge communities or nutrition-poor alpine grasses, do not survive such treatment. Seed mix-

tures of alpine species can be used as an alternative. Such seed mixtures must be composed to meet the requirements of the guidelines. Site-specific seed mixtures are available on the market, above all for the sphere of high zones and ski runs.

Site-specific seed mixtures in respect of the guidelines

The regulations give exact details of the way in which appropriate mixtures must be composed. Site-specific, high-zone mixtures are divided according to their natural area of distribution into main components and subsidiary components. High-zone seed must contain a minimum of **60% weight of main components**. The remaining 40% of weight can be attributed to subsidiary components. Mixtures must be composed of a **minimum of five species**, the share of a single species must not exceed 40% of the weight. Leguminosae must contain at least 10% weight in high-zone mixtures.

In the following is a survey list of main components of available species currently commercially available.

Main components

<i>Avenella flexuosa</i>	Wavy hair grass
<i>Bellardiöchloa variegata</i>	Violet meadow grass
<i>Deschampsia cespitosa</i>	Tufted hair grass
<i>Festuca nigrescens</i>	Alpine chewing's fescue
<i>Festuca picturata</i>	East alpine violet fescue
<i>Festuca pseudodura</i> *	Tough fescue
<i>Festuca varia</i> *	Variable fescue
<i>Festuca supina</i> *	Tufted fescue
<i>Phleum hirsutum</i>	Rough cat's tail

<i>Phleum rhaeticum</i>	Alpine cat's tail
<i>Poa alpina</i>	Alpine meadow grass
<i>Poa supina</i>	Couching meadow grass
<i>Trifolium pratense ssp. nivale</i>	Snow clover

A number of further site-specific species (grasses, leguminosae, special herbs) are more or less regularly offered commercially in small amounts, which may also be used according to the definition of high-zone seed.

Subsidiary components

<i>Agrostis capillaris</i>	Common bent
<i>Agrostis stolonifera</i>	Creeping bent
<i>Cynosurus cristatus</i>	Crested dog's tail
<i>Festuca rubra ssp. rubra/commutata</i>	Red fescue
<i>Phleum pratense</i>	Timothy grass
<i>Poa pratensis</i>	Kentucky bluegrass
<i>Anthyllis vulneraria</i>	Common kidney vetch
<i>Trifolium hybridum</i>	Hybrid clover
<i>Trifolium repens</i>	White clover
<i>Lotus corniculatus</i>	Common bird's-foot trefoil
<i>Achillea millefolium</i> agg.	Common yarrow
<i>Leontodon hispidus</i>	Rough hawkbit

Outlook

The endeavour to make interventions in nature and landscapes as considerate as possible, and to heal the wounds permanently, is ever greater. The "Guidelines for Site-specific Restoration" should provide appropriate aid for tenders, contracts and nature-protection regulations, and be of use for the improvement of knowledge among potential users, and above all benefit nature. The regulations are available to all interested parties free of charge and can be downloaded at www.saatbau.at or www.oeag-gruenland.at.

Recultivation of the Weit Valley erosion area on the Pleschberg near Admont (1,750m) with the use of site-specific seed mixtures and high-zone reforestation with site-specific thickets combined with the necessary avalanche barriers.



First measures begin to take effect



The former Weit Valley erosion area in the summer of 2004

