

Prospects and Challenges for the Future

Zukunftsansichten und künftige Herausforderungen

Prospettive e sfide per il futuro

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Summary

Restoration with the objective of creating a vegetation cover that is similar to nature or site specific, has gained increased importance throughout Europe in recent years. Above all in the restoration of extreme sites, consideration is given to a procedure that is as close to nature as possible and has gained special significance.

Unfortunately failures are repeatedly made in practical realisation, which can be traced back to a lack of knowledge of what is possible. Moreover, there is a lack of uniform terminological definition and extensive knowledge of the latest technological developments. Thus further practical procedure would entail the establishment of an international working group with the objective of drawing up binding guidelines for site-specific restoration in Europe, which reflects the latest technological developments and permits the authorities to issue binding regulations.

Zusammenfassung

In den letzten Jahren erfolgte ein starker Wandel in der Einstellung des Menschen zu seiner Umwelt. Die Bewahrung der biologischen Vielfalt ist zu einem besonderen Anliegen der Agrar- und Umweltpolitik geworden. Gerade bei der Begrünung extremer Standorte kommt der Rücksichtnahme darauf sowie einer möglichst der Natur entsprechenden Vorgangsweise besondere Bedeutung zu.

Leider werden in der praktischen Umsetzung immer wieder Fehler gemacht, die auf einen Mangel an Wissen um das Mögliche zurückzuführen sind. Dazu fehlen einheitliche Begriffsbestimmungen und eine breite Information über den Stand der Technik. Ein sinnvolles weiteres

Vorgehen wäre daher, eine internationalen Arbeitsgruppe zu etablieren, die sich die Ausarbeitung einer verbindlichen Richtlinie für standortgerechte Begrünungen in Europa zum Ziel setzt, die den neuesten Stand der Technik wiedergibt und den Behörden verbindliche Vorgaben erlaubt.

Riassunto

Negli ultimi anni si è verificato un notevole cambiamento dell'atteggiamento dell'uomo nei confronti dell'ambiente. La salvaguardia della biodiversità ha acquisito particolare interesse nell'ambito della politica agraria ed ambientale. L'attenzione a questo tema e l'adozione di modalità di intervento rispettose della natura assumono particolare importanza proprio nel caso del ripristino vegetazionale di siti estremi.

Purtroppo nella realizzazione pratica vengono commessi spesso errori, che sono dovuti alla mancanza di conoscenza di quanto è possibile realizzare. Oltre a ciò mancano definizioni universalmente valide ed un'ampia informazione relativa allo stato dell'arte. Un passo successivo importante sarebbe la costituzione di un gruppo di lavoro internazionale avente come obiettivo l'elaborazione di linee guida vincolanti per il ripristino vegetazionale idoneo al sito in Europa, le quali rispecchino lo stato dell'arte e consentano alle autorità locali di emanare direttive vincolanti.

Introduction

There has been a dramatic change in the attitude of people to their environments in recent years. The maintenance of biological diversity also has become a special concern of agrarian- and envi-

ronmental policy. Above all in the restoration of extreme sites, consideration is given to this biological diversity and a procedure that is as close to nature as possible has gained special significance. Such restoration with the objective of creating a vegetation cover that is similar to nature or site specific, has gained increased importance throughout Europe in recent years. Above all in recultivation activity during the realisation of extensive building projects (roads and tourism infrastructure, areas of opencast mining, areas of erosion, ski runs), this type of restoration comes to the fore in broad spheres of the project areas.

The restoration of extreme high zones, for example, has made enormous progress in recent years (KRAUTZER et al., 2006). Twenty years ago restoration at altitudes of around 2,000 m were considered extremely costly. Restoration identical to nature in areas over 2,000 m were considered impossible. In the meantime, there are numerous excellent examples of ecological renaturalisation in high zones of up to 2,400 m. Even if the techniques used are comparatively costly, they nevertheless create maintenance-free vegetation units that are identical or barely differentiate from nature in these high zones.

Errors in realisation

Experience has nevertheless shown that site-specific restoration, especially at extreme sites or altitudes, can very easily fail (KRAUTZER and WITTMANN, 2006). The most common causes for such a lack of success are listed as follows:

False restoration methods

The more extreme the conditions, all the more specific must be the planning of the restoration or rehabilitation measures. The securing of valuable pieces of vegetation, the gathering, restoration, intermediate storage and expert reapplication of the topsoil, subsequent prevention against erosion, use of special restoration methods, to the



Picture 1: Restoration can easily fail in extreme locations (Lawinenstein 1991, Tauplitzalm, 1,800 m)

choice of donor areas for the combined seed-sward technique or for hay-mulch seeding require planning by appropriately experienced experts. Successful high-location restoration at extreme sites has always been planned and maintained by trained experts.

False seed

A common mistake, even in less than extreme conditions, is the choice of unsuitable seed. Not only the use of non-site-specific species, but also the lack of consideration of decisive criteria, such as the degree of soil acidity or the availability of nutrition are causes of insufficient restoration success. Also here is valid the maxim: the more extreme the conditions, the more unavoidable is the inclusion of trained experts.



Picture 2: The more extreme the conditions, all the more specific must be the planning of the restoration or rehabilitation measures (Rothgraben, Gstatterboden, Austria, 1,500 m)

False fertilisation

As already mentioned, fertilisation at the restoration target and the restoration method used are to be mutually adapted. “Too little” as well as “too much” hinders the success desired. In this way, with the combined seed-sward technique, heavy fertilisation can destroy the vegetation of the replaced swards and the emerging natural seed slumbering in the soil. Fewer mistakes can be made in this respect if one applies the fertiliser in small dosages, slowly and in the long term.

Inexpert work

The grass swards as well as the seed are “living” materials and appropriate, careful handling and expert work is therefore indispensable. Falsely stored grass swards, inexpert fixing of the sward on the soil, a lack of adequate bedding, and the related drying-out phenomenon, can even destroy restoration undertaken with high expenditure. Above all, under difficult conditions one must call in a competent restoration expert.

Lack of subsequent management

In many cases, a certain degree of subsequent management is required for the success of restoration: whether it is mowing to be undertaken, exactly dosed post-fertilisation, additional seeding or necessary fencing against grazing animals is required for the achievement of the projected state of restoration. All of these measures are essential restoration elements, which must not be forgotten if one wishes to achieve appropriate success.

Lack of uniform terms and standards

Another basic problem is that the latest technological developments for site-specific restoration in Europe is defined very differently and the knowledge of special restoration methods is insufficiently known. The legal sphere dedicated to extensive restoration methods also lacks uniformity. What is common in some countries is strictly forbidden in others. Above all, due to the manifested prohibitions, mostly given in nature-

protection laws, the use of vegetation alien to the site is in practice often ignored due to a lack of the knowledge of alternatives. Although in almost all of the affected states, nature-protection permission for building projects are obligatory, realisation of the laws are not or less than strictly controlled. There is also a lack of information among authorities concerning what is technically possible.

Moreover, with such building projects it has repeatedly been seen that many related to site-specific restoration are not exactly defined, and that in this respect there are either no relevant guidelines and also no norms available, or in different countries the most different standards are used and that the “latest technological developments” are generally insufficiently defined. To this is added that scientific knowledge from recent years is still unknown to a great many customers and contractors. This regularly means that utterly insufficient results are accepted, because none of those affected know what is possible, practical and realisable.

An attempt has been made in Austria to improve this situation with the formulation of “Guidelines for Site-Specific Restoration” (OEAG 2000). The expositions contained in the guidelines represent the norm when used properly. They do not include, however, all of the special cases possible in which ongoing or limiting measures could be required. The use of these guidelines does not therefore release one from personal responsibility of action, but compliance does make possible a perfect technical solution.

Also from an overall European perspective it would be urgently necessary to work on a uniform definition of terms and an efficient distribution of the latest technological developments in site-specific restoration processes. Perhaps subsequent to this specialist conference it will be possible to establish an international working group with the aim of drawing up binding guidelines for site-specific restoration in Europe, which reflects the latest technological develop-

ment and permits authorities to issue binding regulations. All European specialists are invited to participate in the drawing up of such guidelines.

References

- KRAUTZER, B. and H. WITTMANN, 2006: Restoration of alpine ecosystems, *Restoration Ecology, The new Frontier*, Blackwell Publishing, edited by Jelte van Andel and James Aronson, 208-220.
- KRAUTZER, B., G. PERATONER, W. GRAISS und M. GREIMEL, 2006: Hochlagenbegrünung mit standortgerechtem Saatgut. Ergebnisse des EU-Forschungsprojektes ALPEROS. Fiebiger G.(editor): *Soil - Bioengineering in Torrent and Erosion Control. Proceedings of an International Workshop of IUFRO (International Union of Forestry Research Organisations) Research Group 8.04 Natural Disasters*, Bolzano/Bozen, Italy (in print).
- OEAG, 2000: "Richtlinie für standortgerechte Begrünungen - Ein Regelwerk im Interesse der Natur", Österreichische Arbeitsgemeinschaft für Grünland und Futterbau (ÖAG), c/o BAL Gumpenstein, A-8952 Irdning, 29 S.
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