

# ENVIRONMENTAL connection

THE OFFICIAL PUBLICATION OF THE INTERNATIONAL EROSION CONTROL ASSOCIATION



**Sustainable Erosion  
Control with Wood Wool**  
p. 18

**Creek Rehabilitation in  
The Philippines**  
p. 23

**Managing Stormwater  
With a Wetland Retrofit**  
p. 26



# Sustainable Erosion Control With Wood Wool

By Thomas Wildberger

Climate change and the associated heavy precipitation increase the risk of landslides on newly constructed slopes. The most important protection against landslides is provided by stable vegetation with strong roots. For this reason, slopes should be planted as quickly as possible. Erosion protection products, typically woven or stretched nets or meshes of synthetic or natural fibers, can be used to support the vegetation. Their structure ensures that the seedlings and the soil surface are protected from erosion by wind, rain and snowmelt during the vegetation establishment phase. In the past 10 to 15 years, nets made mainly of imported natural fibers, including coconut, jute, hemp, sisal and cotton, have been installed in Switzerland as erosion control measures on slopes.

In the U.S., the use of geonets made of wood wool has been widespread since the 1960s. Thanks to the development work of the only remaining wood wool manufacturer in Switzerland, wood wool fleeces, known as excelsior in the U.S., have also been available for erosion protection in Switzerland for a number of years. The company produces Howolis wood wool fleeces from various regional wood species such as beech, pine and spruce, according to Swiss wood wool standards. The advantage of using local wood is that, unlike with imported materials, no undesirable organisms can be introduced to the environment. Additionally, wood wool fleeces are not treated with pesticides nor other chemical substances that can be released into the environment after the materials have been laid.

In addition to the advantages mentioned above, the physical properties of wood wool also play a positive role. Compared with other products, wood wool fleeces have better water retention and storage capacity, which better protects developing seedlings against temperature fluctuations and dry phases after sowing.

A research project was undertaken to investigate and further optimize the suitability of wood wool nonwovens in combination with high-quality, locally obtained seed mixtures with regard to their erosion protection effect. A total of 14 newly constructed slopes were selected as experimental sites. For each site, four types of wood wool fleeces were laid according to a uniform design. The four types differed in the types of wood used and in the nets into which the wood wool was embedded.

The water absorption capacities and tensile strengths of the wood wools were measured in laboratory tests.

Two different seed mixtures were used for vegetation. The first was a mixture of autochthonous (indigenous) seeds known as HoloSem. This is a locally harvested, species-rich seed mix that is optimally adapted to the planting area in terms of location and is harvested in species-rich natural meadows within a radius of a maximum of 15 km around the planting site. This seed mixture was compared to a commercially available seed (Swiss standard mixture), which is also composed of a large number of species but comes in part from imports from other countries and is not adapted to the specific location in terms of species and ecotype composition.

As a result, the laboratory tests showed significant differences between the types of wood wool in terms of water absorption capacity and tensile strength. However, the differences did not have a significant effect on the degree of greening or erosion in the field.

In addition to the general protection provided by wood wool and the use of suitable seeds, site factors also had an impact on the success of planting and erosion control, in particular, humus content, slope inclination, exposure, altitude and slope stability.

With regard to the seeds used, the field investigations showed no differences in the degree of germination, but rather in the species composition between the two mixtures used. The autochthonous seed mixture revealed more species and a more local species composition. It was not possible to determine whether, as postulated, the established vegetation would hold up better in the longer term when autochthonous seed was used than with commercial mixtures that were not specifically adapted to local conditions and locations due to the duration of the experiment.

The project results led to the following further conclusions:

- A higher grammage of wood wool nonwovens improves direct erosion control and water retention, but can hinder the establishment of vegetation, especially of dicotyledonous plants. For this reason, the initially used grammages were somewhat reduced over the course of the project.
- Raw soils are typically difficult to vegetate, and a high proportion of gravel, strong exposure to sunlight (i.e.,





Wood wool fleeces provide erosion control on slopes and can help protect seedlings from temperature fluctuations and dry periods.



southern exposure) and an increasing altitude make successful germination even more difficult.

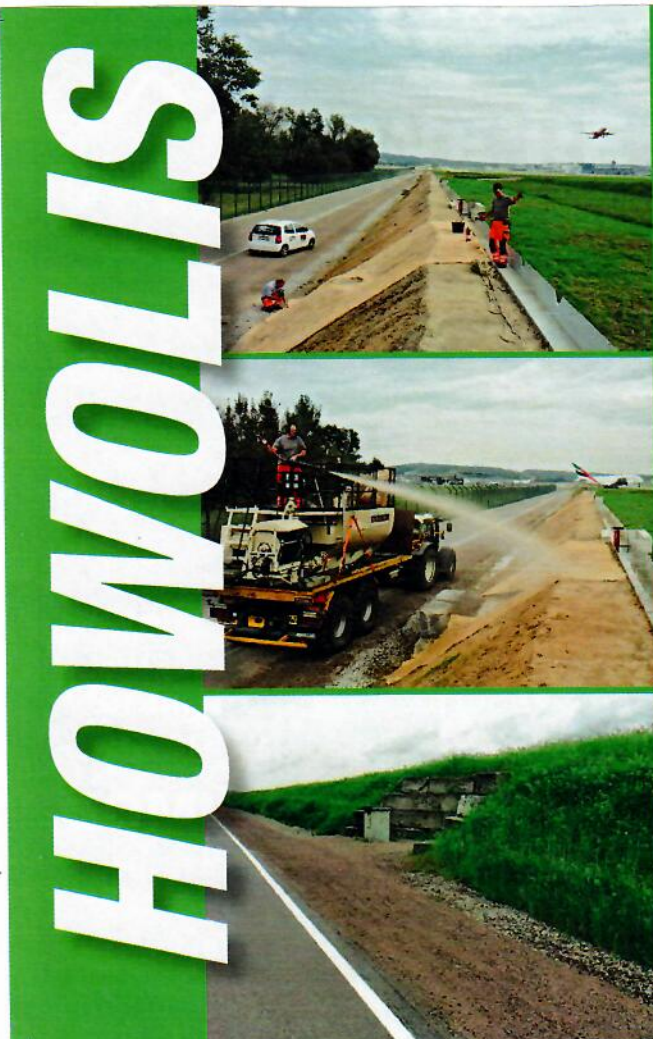
- The wood wool fleeces provided improved water retention and protection of seedlings. In addition, however, it is recommended to add some nutrient-poor humus (A horizon) to the top 10 cm of gravel-rich raw soils when building slopes, or at least to add small amounts of organic fertilizer with long-term effects when sowing. If a hydroseed is used, the use of some compost on humus-free slopes should also be considered in order to

improve the establishment of sowing on raw soils.

- By using different types of wood wool, such as pine, beech or spruce, the duration of the decomposition process can be controlled. Beech wood also acts as a natural fertilizer because it is decomposed by the weather.

#### About the Expert

*Thomas Wildberger, a long-time IECA member, is owner of Lindner Suisse, the only producer of specialized wood wool products obtained from certified Swiss wood.*



## Erosion control blanket

### Ecological protection made of Swiss wood.

Possible areas of application:

- Slope stabilisation and support

Benefits:

- Natural protection against wind and water erosion
- Provides immediate and long-lasting protection from erosion
- Ensures optimal conditions (temperature, light, water) and a balanced microclimate
- Positive impact on seed germination
- Easy to lay
- Biodegradable, rots down to humus
- Unlimited durability

Howolis erosion control blanket is made using 100% Swiss wood, with a sustainable and eco-friendly environmental footprint (FSC®, PEFC, HSH certified).

**Lindner**  
suisse

Lindner Suisse GmbH  
Bleikenstrasse 98  
CH-9630 Wattwil  
Phone +41 (0) 71 987 61 51  
Fax +41 (0) 71 987 61 59  
holzwole@lindner.ch | www.lindner.ch



[www.facebook.com/Howolis](http://www.facebook.com/Howolis)

