Organic Erosion Control Blankets & Plant-Care Products
Since 1972, GREENFIX Range of Products have been making lives of civil engineers easier by supplying and supporting a complete line of reliable, cost-effective erosion control blankets. The GREENFIX Group has developed the most comprehensive range of products and systems to combat the complex and diverse problems associated with erosion control. With own offices and representatives in more than 50 countries worldwide, the GREENFIX Group provides a professional and tight sales network. We have been responsible for pioneering and developing today’s erosion control solutions with natural fibre blankets.
## Contents

**Greenfix Soil Stabilisation & Erosion Control**  
5 The Hayloft, Farpeak  
Northleach, Cheltenham  
Gloucestershire  
GL54 3AP  

Tel 01608 666027  info@greenfix.co.uk  www.greenfix.co.uk

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>4-5</td>
</tr>
<tr>
<td>Covamat plus</td>
<td>6</td>
</tr>
<tr>
<td>Covamat fresh</td>
<td>7</td>
</tr>
<tr>
<td>Eromat</td>
<td>8-9</td>
</tr>
<tr>
<td>Covamat &amp; Eromat</td>
<td>10</td>
</tr>
<tr>
<td>Greenfix f³</td>
<td>11</td>
</tr>
<tr>
<td>Rockmat</td>
<td>12</td>
</tr>
<tr>
<td>Greenfix Type 75 &amp; Embankment Mat</td>
<td>13</td>
</tr>
<tr>
<td>Choice of Nettings</td>
<td>14</td>
</tr>
<tr>
<td>Product Application Guide</td>
<td>15</td>
</tr>
<tr>
<td>Bio-Netting</td>
<td>16-17</td>
</tr>
<tr>
<td>Fixing Materials &amp; Accessories</td>
<td>18</td>
</tr>
<tr>
<td>Installation Guide</td>
<td>19</td>
</tr>
<tr>
<td>Greenfix Recultex</td>
<td>20</td>
</tr>
<tr>
<td>Bio-Logs &amp; Wattles</td>
<td>21</td>
</tr>
<tr>
<td>Bio-Mulchmat</td>
<td>22-25</td>
</tr>
<tr>
<td>Plant-Care Products</td>
<td>26</td>
</tr>
<tr>
<td>Greenfix &amp; More</td>
<td>27</td>
</tr>
</tbody>
</table>
Introduction

Greenfix

EROSION CONTROL BY GRASS ESTABLISHMENT

Erosion is the process of wearing away lands and structures by wind, running and falling water, by flow of water and sediment moved along by the water, waves, glaciers etc. It can be moderated and mostly avoided by creation of vegetative structures. Since vegetation establishment is not possible in unprotected areas, it is necessary to protect these vulnerable spots subject to destruction by erosional impacts. Old fashioned protective methods up to the 1970’s included complete soil sealing with concrete, plastics and other unorganic materials. GREENFIX developed the “soft-engineering” method with blankets from organic fibres which protect from erosive forces and enhance vegetative establishment at the same time.

Fig. 1: Erosion process
Particles displaced by external energy source e. g. rainfall!

Fig. 2: Erosion protection
Energy absorbed by GREENFIX erosion control layer

Fig. 3: Vegetation protection
Grasses & plants absorb impact

4.1 Erosion control with GREENFIX Eromat Type 4

4.2 Slope was lightly seeded with customer’s specific seed mix prior to blanket installation
Introduction

Greenfix

THE GREENFIX METHOD

GREENFIX blankets consist of a top layer of organic, decomposable natural fibres such as coir, straw, hay stitched to a bottom layer of seed holders and a top and bottom supporting lightweight polymer or biodegradable sandwich type netting. The organic fibres as main part of the blanket gradually disintegrate into the soil and as the mat structure disappears, the vegetative cover develops. The GREENFIX philosophy was born!

5.1 failed hydroseeded motorway slope

5.2 motorway slope prepared with Greenfix Covamat, vegetation established within 6 weeks

Banks

When the hydroseeded grass sward failed there was soil erosion and silting-up of the road drain. Although it was winter, the worst possible time, GREENFIX ready-seeded biodegradable mats (Covamats) were quickly installed.

Current uses include

- Freshly top-soiled embankments
- Protecting tidal zone reinstatements
- New slope cuttings
- Protecting natural monuments
- Lining new water courses
- Facing reinforced soil structures
- Establishing wild flowers
- Landfills and open-cast mining
- Balancing ponds
- Lake edging
- Road ditching
- Ski-run vegetation
Covamat plus

EROSION CONTROL AND VEGETATION ESTABLISHMENT IN ONE STEP!

GREENFIX is Europe’s leading provider of erosion control and soil stabilisation systems. Our unmatched products and excellent service has led to the development of the bench mark Covamat plus range which has been specifically designed for erosion control on freshly soiled slopes and new cuttings.

The standard Covamats are 10-15 mm thick quilted straw/ hay and/ or coir fibre mats with added mulches and a choice of seeds incorporated during manufacture. Covamat plus improves poor soil conditions due to the incorporation of specially developed organic fertilizers and dry micro-organisms. This combination of seed, fertilizer and microorganism helps to guarantee the best possible germination results for the grass seed within our Covamats. Once the GREENFIX Covamat has been laid and irrigated, the dehydrated and granulated (fertilizer) material serves as a natural slow-release nutrient source.

We can incorporate any seed mix into our Covamat blankets supplied by you or our specialized suppliers. We will be pleased to advise specific seed requirements for any soil type and vegetation requirements from grasses to wildflowers.

Covamat plus Composition

1. Already established grass sward
2. Seeded matrix during mat production
3. Seed retaining paper
4. Natural fibre layer
5. Sandwiching PP- or Jute mesh
6. Vulnerable soil
7. Protected soil

This section features our experience! Between the natural fibre layer and the seed retaining paper we incorporate:
- mulch layer
- fertilizer SOF-A-100
- seed mix selection
- dry micro-organisms
THE FASTEST GERMINATION SPEED FOR PRE-SEEDED EROSION CONTROL BLANKETS

Newly developed organic erosion control blankets with all the benefits of Covamat plus and the added component of 5mm top soil. The soil layer allows the incorporated seeds to start to germinate almost immediately which means the blankets must be installed on delivery to site. GREENFIX Covamat fresh has the fastest germination speed for pre-seeded erosion control blankets in our industry as a result of the soil addition.

The ‘fresh-series’ are available in various fibre combinations and nettings for short-, medium- and long-term degradation. As with the Covamat plus standard or specific seed mixes can be incorporated during mat production.

Take the advantage of these Covamat fresh products into your project!

Covamat Plus & Covamat fresh in use …

7.1 Approx. 60,000 sqm of GREENFIX Covamat fresh have been installed at the ring road of Antwerp/ Belgium

7.2 Motorway slope protection with GREENFIX Covamat plus in Lisbon/ Portugal

7.3 Protection of a road side channel with GREENFIX Covamat plus

7.4 Strong root development and full vegetation establishment within 2-3 weeks after installation
Organic erosion control mats without seeds for slope and embankment stabilisation in various versions of fibre combinations for short-, medium- and long-term degradation and different supporting net incorporation to meet specific tensile strength requirements. These mats require underseeding for fast vegetation establishment. Eromats are approximately 7 mm thick quilted straw/ hay and/ or coir fibre mats for separate seeding or planting. With our own manufacturing facilities we are constantly developing and upgrading, enabling us to produce the GREENFIX Eromat blankets with balanced fibre distribution of a very high quality giving the best possible results in erosion control.

**Eromat Composition**

1. Sandwiching PP – or Jute mesh
2. Natural fibre layer
3. Sandwiching PP – or Jute mesh

---

8.1 Ask for GREENFIX Eromats individual roll lengths for fastest installation.

8.2 Slope protection with GREENFIX Eromat on a steep rail-road slope

8.3 Application of GREENFIX Eromat for a retention reservoir (during installation)

8.4 Marram grass transplants established through GREENFIX Eromat to stabilize dunes

8.5 Landfill application with Eromat Type 5

8.6 Immediate erosion protection with GREENFIX Eromat
Rainfall was applied at 95 mm/hr. Soil type was sandy loam. Runoff was generated naturally as plot length.

(Cranfield University, Silsoe/Berks., England, 1992)
Rivers, Streams and Ditches

Engineers required a new river channel due to regular overflows. Natural features were achieved within weeks by applying GREENFIX Covamats to protect the flooded embankment sections from water scour.

GREENFIX Covamats & Eromats

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Up to 10 mm of a dense natural fibre matrix allows water to percolate.</td>
<td>· Erosion causing energies are absorbed while offering instant 100 % soil protection. Can be installed in running water trapping sediment fines.</td>
</tr>
<tr>
<td>· Randomly arranged fibres create air spaces and moisture-retaining mulches.</td>
<td>· Seeds and indigenous plants can establish from within and below the blankets, generating a natural range of plants.</td>
</tr>
<tr>
<td>· Mats seeded during manufacture with seeds of your choice.</td>
<td>· Seeding and erosion control in a single operation.</td>
</tr>
<tr>
<td>· Unseeded mats for overlaying broadcast seeds.</td>
<td>· Mulching effect of the matting improves all-year round establishment.</td>
</tr>
<tr>
<td>· Choice of polymer or jute mesh as outer layer sandwiching the inner biodegradable matrix.</td>
<td>· Choice between medium-term stabilization of surface root matrix or a totally biodegradable system.</td>
</tr>
<tr>
<td>· Manageable roll sizes and weights.</td>
<td>· Mats can be placed manually, often concurrently with the soiling operation. They are simple to install and especially valuable for complicated situations.</td>
</tr>
</tbody>
</table>
All natural fibre blankets have the disadvantage that in sunny periods the fibres quickly become dry and can catch fire by just a cigarette.

The new product range GREENFIX f³ combines all the benefits of Covamats, Eromats, Mulchmats, Rockmats, as well as GREENFIX Type 75 and provides additional fire protection according to DIN 4102-1.

The new GREENFIX product range offers more than just a competition to coir fibre products!

· Covamat plus
  Ready-seeded-blankets

· Covamat fresh
  Ready seeded blankets with 5 mm top soil

· GREENFIX Type 75
  Permanent turf reinforcement mats

· Rockmats
  Long-term erosion control solution

· Mulchmats
  Weed control and plant protection without seeds
The patented GREENFIX **Rockmats** combine the benefits of **Eromat** with additional steel wire reinforcement and long-term protection to vulnerable slopes. Superb vegetation establishment is possible due to the **Eromat** blanket shielding young seedlings.

**GREENFIX Rockmats** provide a highly effective vermin protection layer where rabbits and foxes etc. are likely to create slope instability due to burrowing activities. Additional steel wire reinforcement ensures slope face degradation from water run-off or frost impacts.

The **GREENFIX f³ Rockmats** made of our unique special fibre mix are in addition giving fire proof according to DIN 4102-1.

The f³ (Fire Free Fibres) **Rockmats** have been specially designed to be used in situations where fires present a risk as a result of cigarettes, matches or other fire sources. Highways, Railway, Petrol Stations and vulnerable public areas can benefit from using the new **GREENFIX f³ Rockmats**.

**Rockmat Applications**

- Calcareous and rock slopes
- Temporary cuttings
- Windy sites
- Coastal & dyke protection
- High energy erosion area
- Vermin protection

12.1 GREENFIX **Rockmat**
Type 5D installation on 65° steep slope

12.2 Erosion protected slope after six weeks

12.3 Preparation of a collapsed slope due to heavy rainfalls

12.4 Successful installed **GREENFIX Rockmat** Type 6D in New Caledonia
Greenfix Type 75

PERMANENT TURF REINFORCEMENT MAT

The GREENFIX Type 75 Composite Turf Reinforcement Series features a three-dimensional mat structure which permanently anchors. It reinforces the root and stem systems of vegetation under high shear stress while the matrix materials provide effective immediate erosion control. GREENFIX Type 75 mat offers exceptional mulching characteristics through all three phases of vegetation development.

<table>
<thead>
<tr>
<th>Typical Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Roadside Ditches</td>
</tr>
<tr>
<td>· Stream Bank Protection</td>
</tr>
<tr>
<td>· Shoreline Protection</td>
</tr>
<tr>
<td>· Golf Course Swales</td>
</tr>
<tr>
<td>· Areas with high flow volumes</td>
</tr>
</tbody>
</table>

13.1 Shoreline protection with GREENFIX Type 75 C

13.2 Vegetation establishment within weeks

Embankment Mat

HIGH REINFORCEMENT AND 100 % BIODEGRADABLE

Special Embankment Mats with high strength coir nettings. Two different mesh sizes of coir nettings are stitched to soil separating coir fibre layer. This heavy duty mat consists entirely of coir fibres. It is the ultimate answer to combate extremely high erosion potential or high velocity of water flow. The Embankment Mats are available in pre-seeded or unseeded version.

13.3 Ready installed Embankment Mat Type 700

13.4 Successful germination of the incorporated seed mix
Choice of Nettings

GREENFIX erosion control blankets provide effective and all-natural erosion control and vegetation establishment in an environmentally- and wildlife-friendly manner.

Products can be supplied with organic or synthetic nettings depending on their application.

**Jute Mesh**

100% organic fibre blankets are stitched on both sides (top and bottom) with Jute Netting H65. The fibre blanket is 100% decomposable. Since jute netting is of short endurance (< 12 months) vegetation should establish within one germination period.

**Oxygrid**

Oxygrid is a supporting/reinforcing PP-netting subject to mechanical decomposition. It is absolutely environmentally safe. Decomposition period depends on moisture, heat, and oxidation conditions. Oxgrid is an excellent alternative to Jute Mesh. Stitching consists of PP-Multifilament stitching threads.

**Standard Netting**

Basically all fibre blankets are stitched with non-UV resistant PP-Nettings and PP-Multifilament stitching threads. The supporting/reinforcing netting destabilizes and decomposes during the years and will be covered by vegetation. It is not recommended for hydraulic constructions and areas which are later on to be used as pasture land.

**Reinforced Netting**

For extremely steep slopes and high wind energy sites we offer special reinforced PP-nettings to meet customer’s specified tensile strength.
### Product Application Guide

<table>
<thead>
<tr>
<th>Product</th>
<th>Functional/Longevity</th>
<th>Material</th>
<th>Primary Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>12 months</td>
<td>100 % straw/hay fibres, seed mix embedded in mulch layer, top and bottom degradable PP-mesh</td>
<td>3:1 - 2:1</td>
</tr>
<tr>
<td>Type 1B</td>
<td>12 months</td>
<td>100 % straw/hay fibres, seed mix embedded in mulch-layer, top and bottom biodegradable Jute-mesh</td>
<td>3:1 - 2:1</td>
</tr>
<tr>
<td>Type 2</td>
<td>18-24 months</td>
<td>50 % coir fibres - 50 % straw/hay, seed mix embedded in mulch-layer, top and bottom degradable PP-mesh</td>
<td>2:1 - 1:1</td>
</tr>
<tr>
<td>Type 2B</td>
<td>12 months</td>
<td>50 % coir fibres - 50 % straw/hay, seed mix embedded in mulch-layer, top and bottom biodegradable Jute-mesh</td>
<td>2:1 - 1:1</td>
</tr>
<tr>
<td>Type 3</td>
<td>36 months</td>
<td>100 % coir fibres, seed mix embedded in mulch-layer, top and bottom degradable PP-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type 3B</td>
<td>12 months</td>
<td>100 % coir fibres, seed mix embedded in mulch-layer, top and bottom biodegradable Jute-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type 4</td>
<td>12 months</td>
<td>100 % straw/hay fibres, top and bottom degradable PP-mesh</td>
<td>4:1 - 3:1</td>
</tr>
<tr>
<td>Type 4B</td>
<td>12 months</td>
<td>100 % straw/hay fibres, top and bottom biodegradable Jute-mesh</td>
<td>3:1 - 2:1</td>
</tr>
<tr>
<td>Type 5</td>
<td>18-24 months</td>
<td>50 % straw/hay and 50 % coir fibres, top and bottom degradable PP-mesh</td>
<td>2:1 - 1:1</td>
</tr>
<tr>
<td>Type 5B</td>
<td>12 months</td>
<td>50 % straw/hay and 50 % coir fibres, top and bottom biodegradable Jute-mesh</td>
<td>2:1 - 1:1</td>
</tr>
<tr>
<td>Type 6</td>
<td>36 months</td>
<td>100 % coir fibres, top and bottom degradable PP-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type 6B</td>
<td>12 months</td>
<td>100 % coir fibres top, and bottom biodegradable Jute-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type 7</td>
<td>36-48 months</td>
<td>100 % heavy duty coir fibres, top and bottom degradable PP-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type 5D</td>
<td>18-24 months</td>
<td>TYPE 5 stitched together with a galvanized wire mesh acc. to DIN1200, mesh-width 25 mm, wire dia. 0.8 mm</td>
<td>up to 65°</td>
</tr>
<tr>
<td>Type 6D</td>
<td>24-36 months</td>
<td>TYPE 6 stitched together with a galvanized wire mesh acc. to DIN1200, mesh-width 25 mm, wire dia. 0.8 mm</td>
<td>up to 70°</td>
</tr>
<tr>
<td>Type 7D</td>
<td>30-40 months</td>
<td>TYPE 7 stitched together with a galvanized wire mesh acc. to DIN1200, mesh-width 25 mm, wire dia. 0.8 mm</td>
<td>up to 75°</td>
</tr>
<tr>
<td>Type F³-1</td>
<td>36-60 months</td>
<td>100 % unique European grass fibres, seed mix embedded in mulch-layer, top and bottom degradable PP-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type F³-2</td>
<td>36-60 months</td>
<td>100 % unique European grass fibres, top and bottom degradable PP-mesh</td>
<td>1:1 or &gt;</td>
</tr>
<tr>
<td>Type F³-2D</td>
<td>36-60 months</td>
<td>100 % unique European grass fibres, TYPE F³-2 stitched together with a galvanized wire mesh acc. to DIN1200, mesh-width 25 mm, wire dia. 0.8 mm</td>
<td>up to 70°</td>
</tr>
<tr>
<td>Type 75 SC</td>
<td>≥ 36 months</td>
<td>3D PE-Netting, 10 mm thick + 400 g/sqm, stitched together with a 50 % straw/hay and 50 % coir fibre mat (Type 5), top strong + bottom light weight PP-Netting</td>
<td>1:1 and high flow channels</td>
</tr>
<tr>
<td>Type 75 C</td>
<td>≥ 48 months</td>
<td>3D PE-Netting, 10 mm thick and 400 g heavy stitched together with a 100 % coir fibre mat, top strong + bottom light weight PP-Netting</td>
<td>&gt; 1:1 and high flow channels</td>
</tr>
<tr>
<td>Type 100 P</td>
<td>84 or &lt; months</td>
<td>3D PE-Netting, 10 mm thick + 400 g heavy stitched together with a 100% PP-fibre mat, top strong + bottom light weight PP-Netting</td>
<td>&gt; 1:1 and high flow channels</td>
</tr>
</tbody>
</table>
This wide-meshed GREENFIX Jute Netting is made from unbleached Jute fibres without any chemical treatment. The loose and soft yarn twist guarantees a big strand diameter and thus a high stretch elasticity. This is important for high water absorption required from erosion control mesh (absorbs 500 % of its dry condition) in combination with the optimal mesh size.

The netting adapts extremely well to soil surface structures when loosely laid. The mesh strings function like „mini-walls“ so that daily impacting water is not erosive anymore and turnes into harmless leaking water. Soil surface and seed material is protected against run-off. Moreover the open size mesh guarantees with only 35 % soil coverage sufficient open space for germination. Other advantages are protection of seedlings against temperature variations, shadowing and water storage within the coarse mesh strands.

A so-called micro climate is created which allows fast germination also under unfavourable climatic conditions.

Application of Jute Netting is recomended for slopes with inclination ratio 1:1.5. GREENFIX Jute Netting is decomposing fast due to its high contents of cellulose (85 %) and only 15 % of longer endurable lignins. Under favouroble decomposing conditions which are moisture, heat and oxygen the GREENFIX Jute Netting looses its stability latest within the second vegetation phase, loosing its effectiveness against erosional influences. Due to these facts GREENFIX Jute Netting should only be applied for vegetative establishments which can be realized within one single vegetation period. General methods with GREENFIX Jute Netting are pre-dry-seedings prior to netting installation or the hydro-seeding method after the netting has been installed.
COIR NETTING

GREENFIX Coir Nettings are made of 100 % non-chemically treated coir fibres, woven as basket weave in different mesh sizes. Coir fibres have a high lignin content and are thus resistant to fast decomposition. They endure much longer compared to other fibre blankets. In addition they are much more resistant to tear. Due to these facts, Bio-Engineering methods for surface stabilizations use GREENFIX Coir Nettings if the germination period applies for more than one vegetation period. All GREENFIX Coir Nettings are reliably recommendable for dry land and hydraulic applications. Horizontal net strands minimize vertical water flow and the water trapped in the netting is forced to slowly penetrate the soil. Surplus water runs off over the surface. The smaller the size of mesh, the more it can hold the soil within, holding the soil particles inside the mesh.

For hydraulic application the netting slows down flowing speed giving more surface roughness to the waterbed. Waterbed and embankment applications call for small mesh sizes (KG0900/KG0700).

Larger mesh sizes (KG0400) should be applied on higher embankment zones and all slopes with average erosion possibility. Wet Seeding/Hydroseeding is recommended after installation for nettings type KG0400/KG0700.

17.1 GREENFIX Coir Netting KG0900 in use on a tidal area of a river

17.2 10 weeks after installation and hydroseeding

17.3 Shoreline Protection with Coir Netting KG0700

17.4 Installation of Greenfix Coir Netting KG0700 on a 50° slope
Fixing Materials & Accessories

FIXING MATERIALS

Various mat fixing products made of steel or wood are available for effective mat fixing. They avoid lift-up and thus removal of the mats from the area to be protected or vegetated.

For the best performance of the mats, utmost attention is required for effective securing and fixing.

The wooden pins are made of 100 % biodegradable durable natural wood / mostly hard wood (Oak or Beech). The wooden pins have a top cross to ensure good soil contact.

We recommend to use approximately 1-3 pins per m² for all erosion control blankets and for the mulchmats 3-4 pins per m² depending on quantity of plants per m².

GREENFIX Fertilizer

GREENFIX Fertilizer SOF-A-100 is an organic slow-release additive which provides soil improvement. SOF-A-100 is made of the mycelia of the soil fungus Penicillium chrysogenum.

Due to its biological nature (decomposed biomass of a soil fungus) GREENFIX Fertilizer SOF-A-100 is a well balanced combination of nutrients and therefore well adapted to a microbiological decomposition process in the soil.

Benefits of the GREENFIX Fertilizer SOF-A-100

- Activates soil organics
- Stimulates the root development
- Increases soil vitality and leaching
- Regenerates the soil
- Contributes to humus formation
- Long term benefits
- Resistant to frost
- No fertilizer-burn
- Organic natural biodegradable material
Installation Guide

Slope Installation Detail

1. Dig a 15 cm x 15 cm trench both up-slope, down-slope and along the top side of the channel. Prepare the slope soil surface (raking, seeding and fertilizing).

2. Begin by placing the center blanket a minimum of 30 cm down-slope of the up-slope trench. Secure the blanket at the bottom of the trench with staples placed 30 cm apart. Backfill and compact the trench. Apply seed and fold the blanket over soil, secure with a row of staples placed 30 cm apart across the width of the blanket (Letter A).

3. Roll the blanket vertically down the slope. Secure using the appropriate staple pattern below, specified by slope. 4. Parallel blankets must be overlapped by a minimum of 10 cm and secured with a row of staples placed approximately 30 cm apart (Letter B).

5. The direction of water flow. Connect the blankets by placing staples approximately 30 cm apart across the width of the blankets.

6. The end of blanket must be secured in a 15 cm x 15 cm trench with a row of staples placed at 30 cm intervals (Letter E).

Channel Installation Detail

1. Dig a 15 cm x 15 cm trench both up-slope and down-slope of the area the matting is to be applied. Prepare the slope soil surface (raking, seeding and fertilizing).

2. Begin by placing the blanket a minimum of 30 cm down-slope of the up-slope trench. Secure the blanket at the bottom of the trench with staples placed 30 cm apart. Backfill and compact the trench. Apply seed and fold the blanket over soil, secure with a row of staples placed 30 cm apart across the width of the blanket (Letter A).

3. Roll the blanket vertically down the slope. Secure using the appropriate staple pattern below, specified by the slope.

4. Continue placing blankets up the slopes on both sides with a minimum 10 cm overlapping (Letter B), and securing each blanket in the beginning trench (Letter A).

5. Additional horizontal blankets can be joined using a minimum 10 cm overlapping or shingle style in the direction of water flow. Connect the blankets by placing staples approximately 15 cm apart across the width of the blankets (Letter C).

6. The end of the blanket must be secured in a 15 cm x 15 cm trench by a row of staples placed at 30 cm intervals (Letter E).

7. At the top edge of the side slope, fasten the blanket in a 15 cm x 15 cm trench by a row of staples placed at 30 cm intervals (Letter E).

Down-slope Trench Installation Detail (Letter E)

Up-slope Trench Installation Detail (Letter A)
**Greenfix Recultex**

**Natural Cellular System**

**Recultex Erosion Control Fabrics** are made of natural coir fibre tissue as warp-knitted fabric with tear resistance of not less than 20-25 kgs per thread. It enables slope installation independent from seasonal influences and combines the advantage of an organic fibre tissue manufactured on an industrial basis. The Recultex fabrics guarantee high stability and resistance to tear, while offering minimized weight and volume during transportation. Recommended for efficient installations and maximum labour cost savings.

The **Recultex Erosion Control Fabrics** are the economic alternative to wooden branch fascines and willow braidings. Main application methods are creation of supporting walls for top soil spreadings to virgin soils. All installation designs may be applied such as diamond, diagonal or parallel shapes.

20.1 Recultex installation in diamond shape

20.2 Filling the shapes with topsoil
European manufactured GREENFIX Coir-Logs are used as organic logs surrounded with PP or Coir netting. These are used as edgings for river and channel embankment sections, in particular to absorb wave impact as well as for revegetation and colonisation projects.

The natural product combination will support the development of plants in disturbed wetland areas. By the eco-friendly application of natural materials, we are able to restore nature which has been disturbed by other forces.

The less cost effective GREENFIX Wattles are made of 100% Europe’s finest quality agriculture straw fibres surrounded with an outer high strength, white PE netting with UV inhibitors. Placed on slopes to help capture sediment, promote revegetation, control stormwater runoff and provide channel and shoreline stabilization.

Straw integrates with the soil in time, adding organic material to the soil and retaining moisture for vegetation.

**Advantages of Straw Wattles**

- GREENFIX Wattles are relatively low-cost-solution to solve erosion problems.
- GREENFIX Wattles store moisture for vegetation.
- They can replace silt fences or straw bales on steep slopes.
- Netting will photodegrade, eliminating need of waste collection after straw has decomposed.
Bio-Mulchmat

WEED CONTROL, MULCHING AND EROSION PROTECTION

Where landscape planting is required, particularly on slopes, GREENFIX Mulchmats provide mulching, moisture control, non-chemical weed control, soil erosion protection and soil temperature balance in one single product. Nursery-like conditions can be achieved easily and by environmentally friendly means.

GREENFIX Mulchmats enhance growth without the need of further mulching, chemicals or large scale maintenance. The natural upper layer blends with landscaping, protects the bottom membrane from ultra-violet light, controls water shed from gradients and regulates soil temperature. The bottom membrane prevents loss of moisture, controls erosion and provides non-chemical control of weeds. The bottom membrane is a twin sheet with offset slittings to allow water penetration.

GREENFIX Mulchmats provide weed control and mulching typically for at least 3 years. Mulch spats are available for individual plant protection in ready cut versions with a centre hole for plant insertion.

GREENFIX Mulmat example

1. New plants.
2. Photodegradable mulch-foil with perforation provides full weed control.
3. Soil moisture retained.
4. 7 mm natural-fibre matrix permits solar heating of soil and subsequent heating retention for maximum growth rates.
5. Plant insertion by flap method.
6. Plant insertion by edge method.
7. Protected soil.

Highway slope application

GREENFIX Mulchmats being installed on a highway slope as a full-surface covering method with slit insertion for plant settings, after GREENFIX Mulchmats have been laid. The civil engineers have required maximum plant establishment and growth rates for visual and acoustic barriers. The GREENFIX Mulchmat system features all requirements for modern engineering solutions.
Bio-Mulchmat

THE NATURAL WAY TO CARE FOR YOUNG PLANTS

23.1 Highway on Cyprus: Economizing of irrigation water and less maintenance for reduced accident risk of workers

23.2 Nursery application: Faster and stronger plant growth

23.3 Creative roof-greening: Solution with Mulchmats never requires maintenance again

23.4 Norwich Bypass/ England: Individual plant protection with ready-slitted GREENFIX Mulchpats

Private Gardens

Professional landscaping in private gardens. GREENFIX Mulchmats are available in different roll sizes and widths in order to fit in every garden. Save up to 90% on irrigation water for an environmental friendly future.

Public Areas

GREENFIX Mulchmats application on sports ground. Especially public areas require less maintenance for the planting areas. Our Mulchmats helping the authorities to spend time on other public works by having nursery like results.
The following table shows the influence of various test materials for tree protection from weeds development during the above mentioned growth periode (Test period: April 1990 to February 1991).

<table>
<thead>
<tr>
<th>kind of material applied or weed suppression</th>
<th>stem circumference increased by cm</th>
<th>branch growth in length (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREENFIX Mulchmat</td>
<td>1,8</td>
<td>424</td>
</tr>
<tr>
<td>cover-up Geotextile</td>
<td>1,5</td>
<td>346</td>
</tr>
<tr>
<td>cover-up Plastic-Vleece</td>
<td>1,4</td>
<td>274</td>
</tr>
<tr>
<td>Mechanical treatment</td>
<td>1,2</td>
<td>306</td>
</tr>
<tr>
<td>Chemical spraying</td>
<td>1,2</td>
<td>291</td>
</tr>
<tr>
<td>cover-up with tree bark</td>
<td>1,2</td>
<td>287</td>
</tr>
<tr>
<td>cover-up with wood chips</td>
<td>1,1</td>
<td>310</td>
</tr>
<tr>
<td>sowing-in with white clover</td>
<td>0,8</td>
<td>151</td>
</tr>
</tbody>
</table>

**Test Result**

“GREENFIX Mulchmat Type 9 had an excellent influence on the development of growth for the tested young trees. Due to the coirfibre layer the soil temperatures remained stable and moisture was abundantly conserved due to the off-set perforated double bottom foil layer.”
Bio-Mulchmat

### Features

**Soil fertility:** The biodegrading upper layer is separated from the soil by a membrane.

**Economical:** Easy to install. No special labour. Non-chemical weed control for many seasons.

**Weed control:** Backing membrane smothers unwanted plants and prevents weed germination.

**Soil temperature:** 7-10 mm thick fibre quilted construction.

**Mulching:** Special twin mulch-foil prevents moisture loss but allows water into soil.

**Specification:** Easy to specify and available in roll widths or square sizes to suit the planting scheme.

### Benefits

- Less plant stress and reduced plant losses.
- Allows solar radiation to raise and maintain the soil temperature for fast growth.
- Avoids nitrogen sink effect experienced with bark mulches.
- Simple to control that correct material has been supplied.
- Mat dimensions ensure economic labour expense.
- Low installation and maintenance cost.

---

**GREENFIX Mulchmats**

---

25.1 established planting at a bridgehead

25.2 row crops with GREENFIX Type 9 along motorway

25.3 Mulchmat Installation in Sweden

25.4 watercourse design with Mulchmat Type 9
THE GREENFIX BURLAP SYSTEM

GREENFIX Rootball-Mat was developed to allow all-year round supply for trees and shrubs from containerized plant stocks. The Rootball-Mat consists of a double layer of natural fibres with an inbetween stitched biofoil. By being stitched it is air and water penetrable and holds with its unique fibre/foil structure sufficient moisture within the rootball, thus avoiding well known dry-out if not sufficiently irrigated.

This GREENFIX Burlap-System has been successfully tested in nurseries for several years and is well accepted!

GREENFIX cost-saving and plant-friendly burlapping method replaces presently applied system of additional work steps like taking plants out of the soil, potting-in plants, wrapping for transportation, taking plant out of container before replanting.

THE GREENFIX STEM PROTECTION SYSTEM

GREENFIX Stem Protection Sleeves made from air-penetrable coir fibre mats for temperature control on tree bark. Protection Sleeves are also available with additional wire mesh inlay so that young stems are protected by wild animal attacks. Developed as two-piece sleeve specially for nurseries it accomodates stem growth.

With just one action the flexible Jute-Sleeve can be quickly openend and closed to allow stem growth increase measurements simply and fast. GREENFIX Stem Protection Sleeves reduce development of undesired wild stem twigs and thus reduce tree maintenance cost.

Advantages

| · Excellent air penetration   | · Coir fibre layer offers best thermo-protection | · Simple control of stem growth increase |
| · Wild attack protection     | · Protection during construction phases          | · Reduction of tree maintenance cost    |

26.1 Measuring the benefits of GREENFIX Stem Protection
26.2 The Rootball-Mat stays with the trees when planting it in
26.3 Strong and healthy plant growth
26.4 Combination of Stem Protection System and Rootball-Mats
Greenfix & More

SPECIAL APPLICATIONS

Special Applications are always welcome and create our daily business. Our engineers are able to support you from start of your design up to the end of construction. Our distribution network guarantees a worldwide site support. We welcome all enquiries for an environmental solution.

27.1 Gabion Construction at jobsite

27.2 GREENFIX Plant Mats for flowers in greenhouses

27.3 Spagnum Rearing on Greenfix Floating Mat

27.4 Sound Barrier Wall with GREENFIX Vegetation Mats

27.5 GREENFIX Hydromulch

27.6 Stem Protection with GREENFIX Reedmat and GREENFIX Coir Rope

27.7 GREENFIX Covamat installation at a new Ski-Jump in RUHESTEIN

27.8 XEROFLOR GREENROOF SYSTEM / Detroit - USA copyright © by Ford Motor Company