



*Innovative  
Ideas for the  
Operation,  
Maintenance,  
& Repair of  
Army Facilities*

## Cost-Effective Revegetation in Cold Regions

### **BEFORE...**

*Bad weather prevents vegetation from growing on these Fort Drum training grounds.*



### **...AND AFTER**

*Two years later, well established grasses cover the same grounds.*

## Keep Grasses Alive in Bad Weather at Low Cost

**PROBLEM:** When cold weather and drought damage grass stands on Army cantonments and training lands, rehabilitation is expensive and difficult.

**TECHNOLOGY:** Cost-effective revegetation is possible:

- Special grass species tolerate poor soil conditions caused by cold and drought
- Low-cost "soil amendments" such as peat moss and sewage sludge improve existing soils, nutrients, and moisture-holding capacity

**DEMO SITES:** Fort Devens, MA; Fort Drum, NY; Fort Richardson, AK—FY89-91

**BENEFITS:**

- Does not require expensive topsoil
- Costs little to maintain
- Prevents erosion

# New Techniques Mean Low Maintenance Costs

## Revegetate Without Expensive Topsoil

Cold weather and droughts at Army installations can damage grasses. Topsoil would provide the best environment for plan growth in a reseeding process. However, topsoil is prohibitively expensive. Lower cost alternatives are needed to revegetate large areas with poor soils.

To eliminate the need for topsoil, researchers at the U.S. Army Cold Regions Research and Engineering Laboratory (USACRREL) designed revegetation methods for installations in cold regions. First, they field-tested various grass species and different fertilizer and mulch applications. These tests identified grasses that tolerate a poor growing environment. They also showed that applying fertilizer and good quality mulch from 1½ to 2 times the normal amount helped replace topsoil. This provided nutrients and holding moisture until the newly seeded grasses were permanently established.

## Demo Sites Show Best Methods

Researchers demonstrated low-maintenance revegetation techniques on a 4-acre sandy site at Fort Drum, NY, and a 7-acre capped landfill site at Fort Devens, MA. Because the optimal planting seasons for warm and cool season grass species differ, researchers sowed both types — with and without hay mulch — to determine their effectiveness at each site.

Also, on a hillside at Fort Richardson, AK, researchers demonstrated newly developed native seed cultivars on disturbed, shallow, and compacted alpine soils. Several erosion control methods were used because of the slopes at the test sites.

The positive effects of hay mulch for moisture retention were usually evident for the cool season grasses but not always for the warm season species. Cool season grasses had the best soil cover and established quicker than warm season grasses when sown in the fall. Warm season grasses — mainly switchgrass — were more successful than cool season varieties when sown in the spring. The birdsfoot trefoil legume established well at Fort Drum. This species is valuable because it adds nitrogen to the soil, providing nutrients for the grasses.

## New Grasses and Amendments Help Savings Grow

The use of newly developed grass varieties and available soil amendments will help reduce seeding costs and improve grass stands at Army installations in cold regions. Application costs for the new grasses are \$200 per acre for seed, \$50 per acre for fertilizer, and \$80 per acre for mulch, with additional costs for equipment and labor.

Because no topsoil is required for these revegetation methods, potential savings are high. A 4-year research program conducted by USACRREL at Picatinny Arsenal, NJ, starting in 1978 showed that eliminating topsoil application could save at least \$8,000 per acre (depending on cost of topsoil) for installations in the Continental United States. That figure does not include reduced labor costs from avoiding topsoil application.

## Procurement Information

The grasses and amendments, as well as information on their application, are available from USACRREL. The grasses and amendments can also be purchased commercially through feed stores, seed catalogs, or nursery businesses.

Two reports are also available: *Fort Richardson Off-Road Vehicle (ORV) Revegetation Project*, State of Alaska, Department of Natural Resources, Alaska Plant Materials Center, May 1992, by N.J. Moore; and *Fort Drum Revegetation Research Progress Report*, FY91, USACRREL, October 1991, by A.J. Palazzo and R.N. Bailey.

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