

Restoring Ecosystems in Mine Closures



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Utilizing Side Streams as Growth Media

Waste rock sites are covered and landscaped during mine closure.

Till helps reduce the leaching of water and oxygen, while the addition of organic matter promotes vegetation growth.

The *Biopeitto* studies explore covering solutions that utilize regional circular bioeconomy side streams.

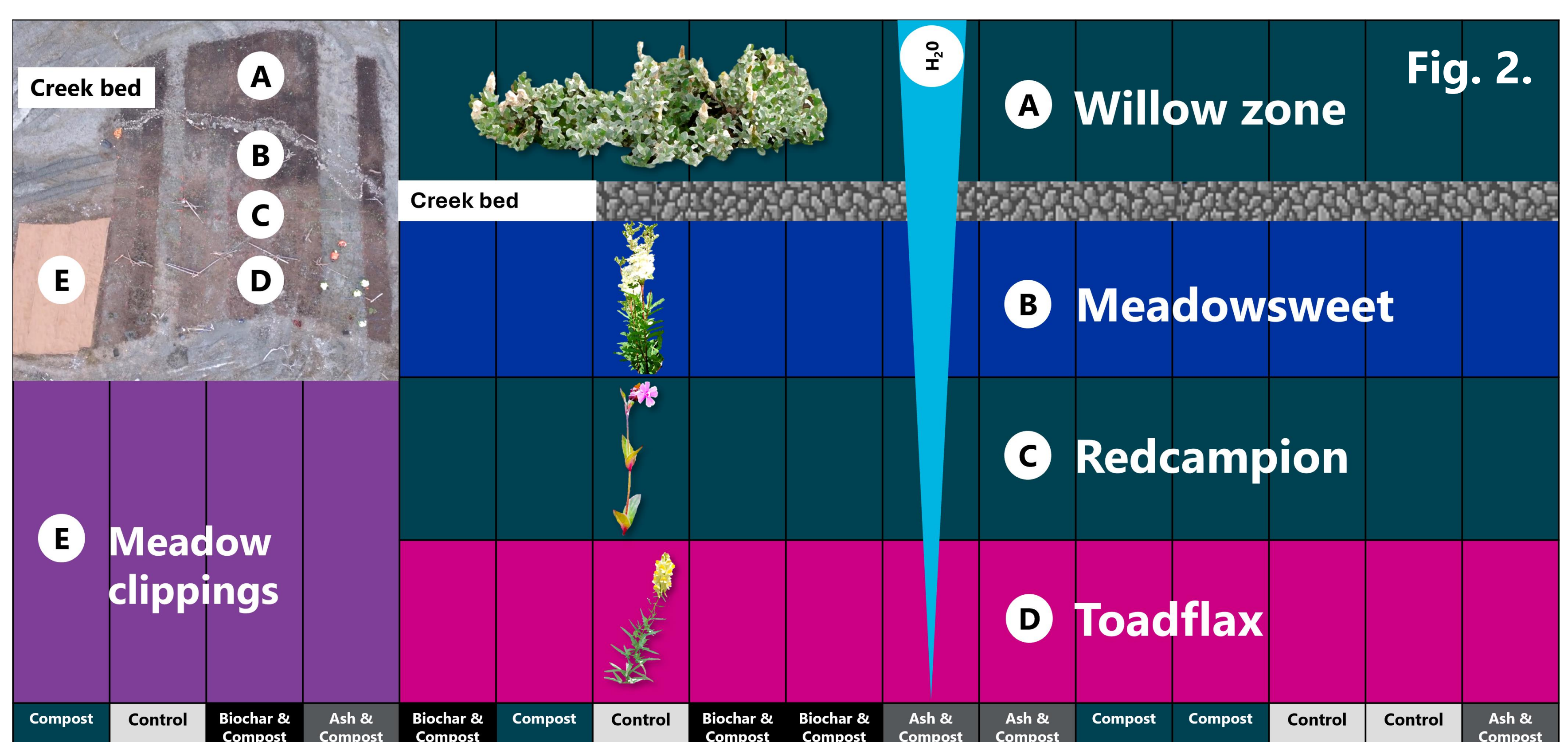
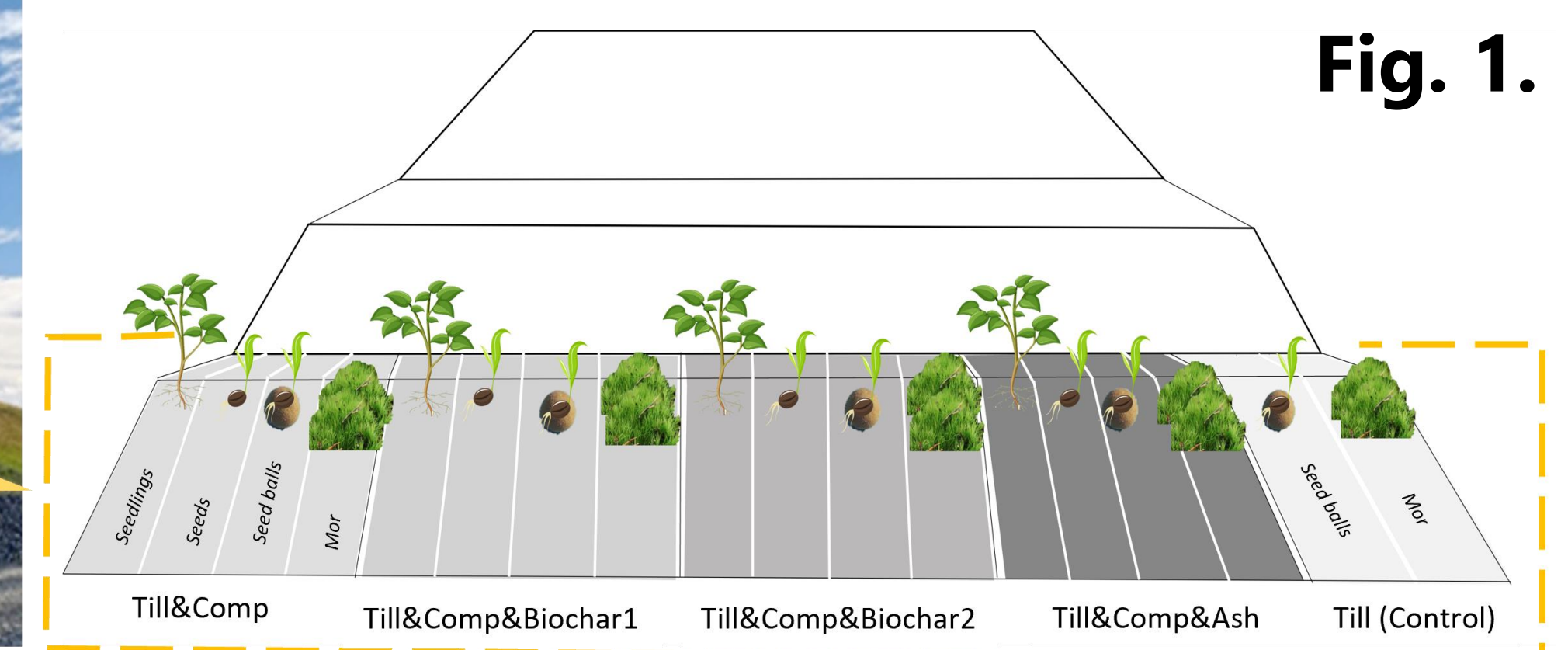
We test plant species adapted to northern conditions, as well as different establishment methods: seedlings, seeds, meadow clippings, and mor (Fig. 1).

Study sites: Kevitsa and Pahtavaara in Sodankylä



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We are testing sewage sludge compost, biochar made from various feedstocks, along with ash from energy production, as components of growing media.



Restoration Enhancements

The substrates improve plant germination, growth, and spread, e.g., *Silene dioica* and *Galeopsis bifida* (seeds), as well as *Trifolium pratense* and *Ranunculus acris* (clippings). The soil microbiome also plays a role in vegetation development.

The biodiversity of a waste rock site can be further enhanced by utilizing geomorphology and micro-topography to support successful restoration (Fig. 2,3).



Figure 1. A steep waste rock site was landscaped in Kevitsa.

Figure 2. Various meadow species are being tested at the Pahtavaara tailings site.

Figure 3. The ecosystem restoration study at Pahtavaara includes decaying wood and rocks collected from the surrounding area.

Local meadow clippings, decaying wood, and rocks can be used to support ecosystem restoration.

More info: <https://www.luke.fi/fi/projektit/biopeitto3>
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