

Metalplant's Proposal Awarded \$1.72m by ARPA-E to Enhance Hyperaccumulators and Spur Nickel Phytomining in the USA

Metalplant and Verinomics Will Develop a Sterile, High-Yield Phytomining Plants That Produces Low-Carbon, Environmentally Friendly Green Nickel from USA Soils

SAN FRANCISCO, CA, UNITED STATES, September 19, 2024 /

EINPresswire.com/ -- [Metalplant](#), a leading [phytomining](#) startup, and partner, Verinomics, a plant genetic editing firm, have been awarded \$1.72 million by the U.S. Department of Energy (DOE) Advanced Research

Projects Agency-Energy (ARPA-E) as part of its PHYTOMINES Exploratory Program. The project has a goal of developing sterile, higher-nickel yielding hyperaccumulator cultivars that will enable the development of a nickel phytomining industry in the United States.

“

We're thrilled to receive this support from ARPA-E, which will allow us to help develop a sustainable domestic nickel industry that benefits the environment, the US economy, and our national security.”

Eric Matzner, CEO of Metalplant

PHYTOMINES SELECTEE

Metalplant & Verinomics

Developing a Sterile, High-Yield Phytomining Platform to Bring Low-Carbon Nickel Production to the United States



Learn more about
PHYTOMINES



Metalplant and Verinomics are Selectees for ARPA-E's PHYTOMINES Program

Phytomining is the process of farming low-grade nickel soils with hyperaccumulator plants and then recovering pure nickel products from biomass using metallurgical processes. It is essentially mining with plants, allowing photosynthesis to power the purification of the nickel from low to high grades.

Nickel hyperaccumulators accumulate nickel in their tissues at rates greater than 0.1% of dry weight. Metalplant utilizes a species that can already accumulate above 2% nickel by dry weight. When the biomass is harvested and then processed with thermal treatment, the resulting ash can be as high as 20% nickel, comparable to some of the richest nickel ores in the world.

Nickel was classified as a critical mineral by the DoE in 2023 because it is a crucial component in stainless steel production and is increasingly important for electric vehicle (EV) batteries. With the rapid growth of the EV market, demand for nickel is expected to surge in the coming years.

The US has limited conventional nickel resources and only one active primary nickel mine, which is scheduled to close by the end of the decade. However, the US has vast swaths of soils bearing nickel that could be recovered economically through high-yield phytomining if a suitable hyperaccumulator were able to be utilized.

A suitable hyperaccumulator is a species that is fast-growing, has high biomass and a high percentage of nickel. The most widely studied and optimal plants known to date are from the Brassicaceae family, and are native to Albania, where Metalplant (a US-domiciled company with an Albanian subsidiary) operates phytomining farms.

Twenty years ago, a plant species related to the one Metalplant utilizes was brought to the United States, and successful trials were carried out, however, the plant was declared invasive, leading to a cessation of operations.

Metalplant's selected proposal involves working with Verinomics to genetically modify the plants by means of a non-GMO method, to introduce sterility in order to prevent invasive behavior, and to allow for modifications that can significantly increase nickel yields.

The production of sterile, high-yielding nickel hyperaccumulator plants that can be safely cultivated on American soil is a breakthrough that could pave the way for a new, environmentally friendly nickel industry in the US. Unlocking previously uneconomic, domestic sources of nickel addresses national security risks in the critical mineral supply chain by reducing dependence on foreign sources.

The potential impact of this technology extends beyond just nickel production. The same principles could be applied to other critical metals, offering a blueprint for sustainable metal extraction that could shift global balances by opening up unconventional and even waste resources for use.

Metalplant thanks the DOE and ARPA-E for their foresight in developing this program that provides crucial support to spur phytomining technology in the USA to develop a secure, low-carbon domestic nickel supply chain. This program ensures that the United States can again become a leader in a technology originally developed here, but that was no longer being implemented commercially, and Metalplant is excited to onshore their technology and lead in the successful commercialization of nickel phytomining.

For more information about Metalplant and its phytomining technology, please visit www.metalplant.com.

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