Technology Offer

Invasive knotweeds: from biogenic waste to nutrient-rich organic fertiliser

Potential use cases and/or markets (applications):
Biotechnology Food and Agriculture

Current state of technology:
TLR 5 - technology validated in a suitable environment

Intellectual property:
Patent application

Developed by:
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Reference:
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Background

Knotweeds are known for its many uses. However, as a fast-growing invasive species, it causes ecological and economic problems and affects both urban and rural landscapes. It reduces the diversity of native plant populations, increases soil erosion, and reduces the availability of nutrients in the soil. It poses an economic and organisational challenge for the maintenance of green spaces, as urban green areas infested with knotweeds, due to their fast growth, need to be maintained more frequently. Organic material infested with knotweeds ends up unused in landfills. Mechanical, chemical and biological approaches have already been tested to prevent the growth of the invasive plant. Mechanical approaches have proven to be labour-intensive. Although herbicides can slow down the growth of knotweed, they are ecologically unsuitable for riparian areas in Europe, where the knotweeds are most commonly spread. Biotic control is partially effective, but is rarely systematically used.

Description of invention

Studies have shown that knotweeds are highly capable of accumulating nitrogen from the immediate environment in the aboveground parts of the plant (15 kg/t). A process of fermenting with the help of efficient microorganisms has been developed to convert the knotweed into a safe, nutrient-rich, and user-friendly organic fertiliser suitable for organic food production . The result is an innovative product that partially replaces animal manure or commercial organic fertilisers, which are mainly used by gardeners, organic farmers, fruit growers, winegrowers, and hobby gardeners.

Benefits

In urban environments, knotweeds can serve as a nutrient-rich organic fertiliser with good mechanical properties (easy to spread), mild odour and the possibility of storage at room temperature, replacing less attractive fertilisers with lower nutrient content, such as manure or other organic fertilisers. It is rich in nitrogen and comparable to chicken and rabbit manure in terms of nutrient content. This means that knotweed fertiliser is competitive with similar products on the market. By using local raw materials, the production of fertilisers from knotweeds supports circular bioeconomy, meaning better resource and eco-efficiency, a smaller greenhouse gas footprint, less dependence on fossil resources, and the valorisation of by-products and waste materials. The innovation promotes the development of green jobs. It creates a closed material flow between the nutrients from the maintenance of areas infested by knotweeds and the need for local and safe nutrients for urban food production.