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Science City (Guangzhou) Environmental Protection Industry Investment Group Co., Ltd.

“Vetiver Technology System” – Application

“Vetiver Technology System” - Application Situation

2024 Yingde City Baisha Town Rare

一、香根草的形状 (The shape of vetiver)

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Vetiver Grass Characteristics

Plant characteristics	Data and features	Data source	Issuing agency	Applicable scope
Biological characteristics	Leaf height 80-150cm, effective root length 2-2.5 meters, maximum crown width 80cm	Many research institutions and universities in Indonesia, Thailand, Australia, China, etc.	International Vetiver Organization (TVNI)	Food and medicinal food, forage feed, biofuel, handicrafts, pulp raw materials, essential oil Raw materials for extraction
Physiological characteristics	pH range 3.0 to 11.0, with strong salt resistance, alkali resistance and acid resistance, and strong resistance to heavy metals and toxic substances such as Pb, Zn, Fe, Cu, Hg contained in the soil	Data reports from many research institutions, universities and experts around the world. International Vetiver Organization (TVNI	International Vetiver Organization (TVNI)	Rehabilitation of vegetation in quarries and tailings ponds, and remediation of soil contaminated by heavy metals and toxic substances
Physical characteristics	The average tensile strength of the root system is 75 MPa, which can withstand the impact of 3.65m/s water flow; the evaporation of groundwater can reach: 279.20t/ha/d	China, Australia, Thailand, etc.	International Vetiver Organization (TVNI)	Ecological reinforcement and management of various types of slopes and coastlines in reservoir drawdown zones;

Chemical properties	The removal rate of NH4-N is 97.1%, and the adsorption rates of TN and TP are 91.2% and 96.7% respectively.	% Data reports from multiple research institutions, universities and experts around the world	International Vetiver Organization (TVNI)	Ecological adsorption and filtration of various domestic sewage, aquaculture wastewater, industrial and medical tail water and landfills, as well as biological control

二、香根草技术应用原理

The principle of vetiver technology application

- Using the well-developed root system of vetiver, we can stabilize the soil and retain water on the leveled slopes to prevent shallow landslides.
  In order to meet the requirements of slope collapse, **a biological wall (piles, nails) with** a certain width (40-60cm) and shear strength is formed in the 2-3m underground soil layer in a relatively short period of time to prevent soil erosion and landslides caused by scouring and soaking of rainwater. Then, the roots of various wild plants and vetiver are crisscrossed to form a high-density underground network structure to intercept the loose soil layer layer by layer. On the surface, the plant (hedgerow) is fully utilized to buffer and divert rainwater, **reduce surface**

runoff gullies , and intercept related nutrients. The dense vetiver leaves discharge underground saturated water through their huge " transpiration " effect to **form a complete biological circulation chain**, fundamentally solving the ecological environment and engineering reinforcement problems of slope soil erosion and landslides.

3. Ecological reinforcement and soil restoration routes

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Route of ecological reinforcement and soil remediation

- Using **the "well-developed root system of vetiver"** as a pioneer plant and **the "special microbial flora"** as a support, under extremely harsh conditions, through artificial short-term nutrient supply, first consolidate the soil, retain water and protect the slope, and at the same time repair the soil, so that organic matter and water can be deposited as much as possible, and then provide conditions for other plants to take root.
- When other plants survive, the nitrogen fixation of leguminous plants, the clumping principle of gramineous

plants, and the wild properties of ferns drive the growth and development of other plants, forming a self-reproducing **"biological cycle chain"** model.

- the goal of permanent ecological restoration of **"original" vegetation.**

四、香根草技术边坡加固应用设计

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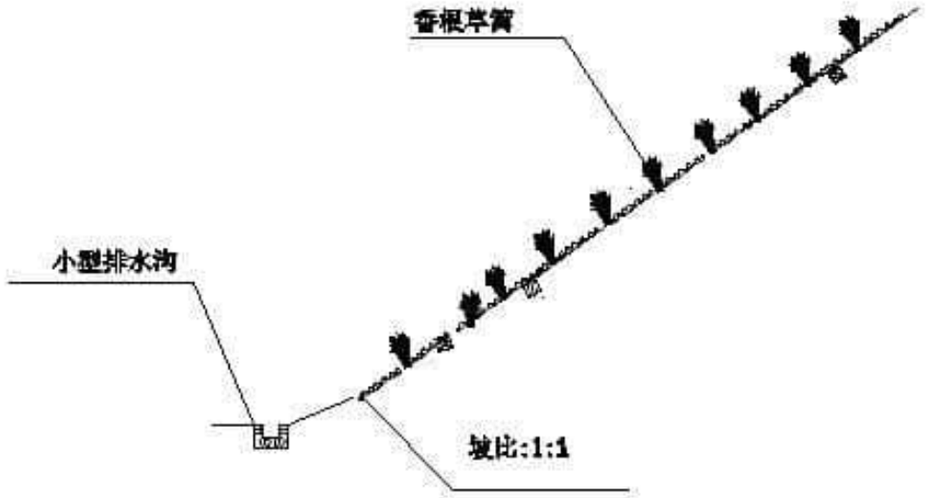
Design of Vetiver Technology for Slope Reinforcement Application



香根草技术在45°边坡上的应用剖面图

五、香根草技术应用案例（一）

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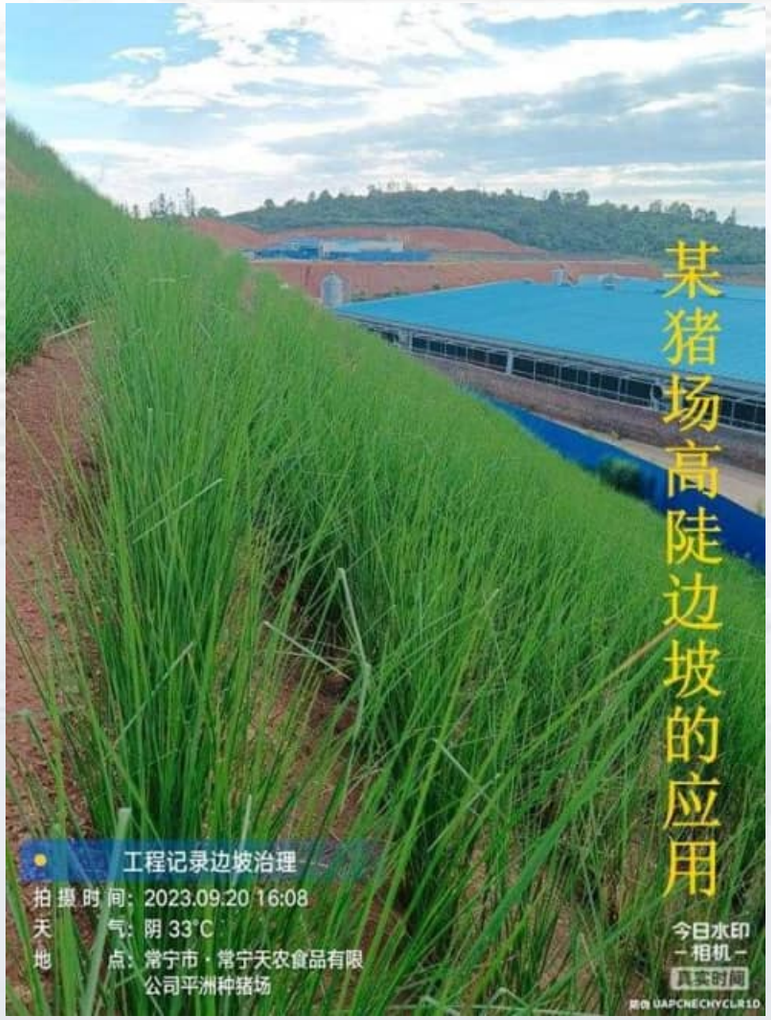
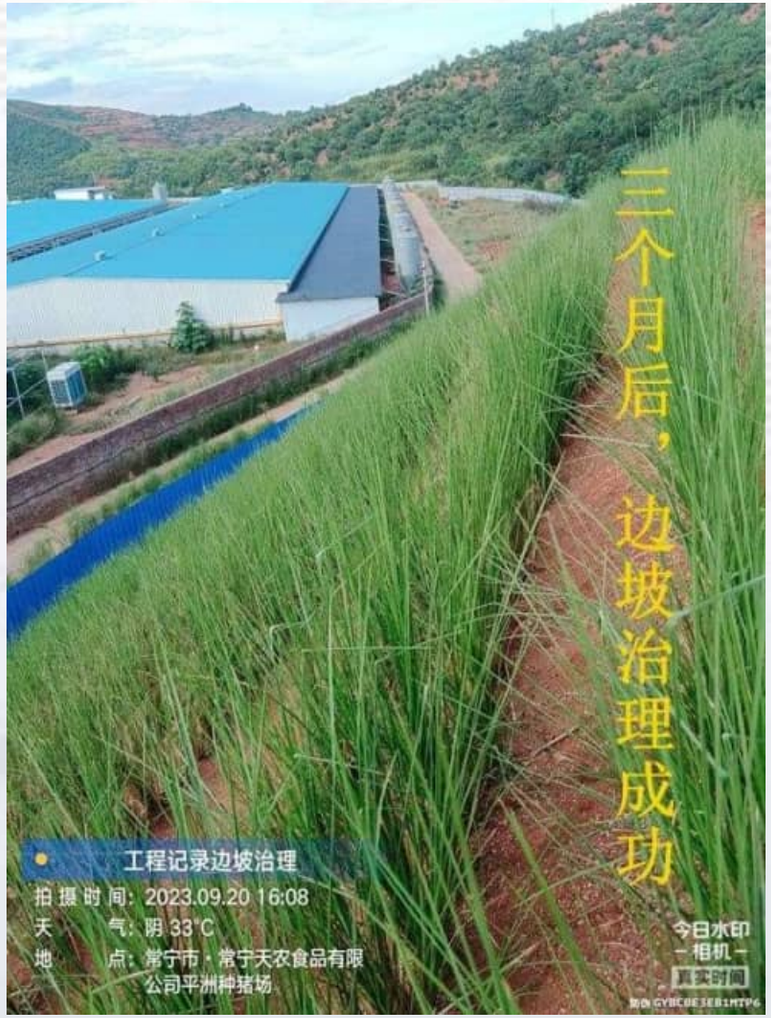
- 深圳抽水蓄能电站道路边坡加固

应用案例（二）

- 湖南常宁养殖场的边坡加固





应用案例（三）

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- 花都羊石水库植被恢复

应用案例（四）

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- Ecological Management of Tailings Reservoir in Dingnan, Jiangxi

应用案例（五）

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- Vegetation restoration of tailings pond at Lechang Iron Mine

应用案例（六）

- Tailings pond management at Kaiyang Phosphate Mine in Guizhou

VI. Actual situation of this project

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The actual situation of this project

- Condition before land remodeling

土地重塑前（二）

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- Serious Gully situation

土地重塑过程

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- Mechanical operation

边坡等高线建立

Microbial seedling soaking and organic fertilizer production

Microbial Seedling Soaking and Organic Fertilizer Production

种植香根草

Soil improvement and spraying of microbial agents

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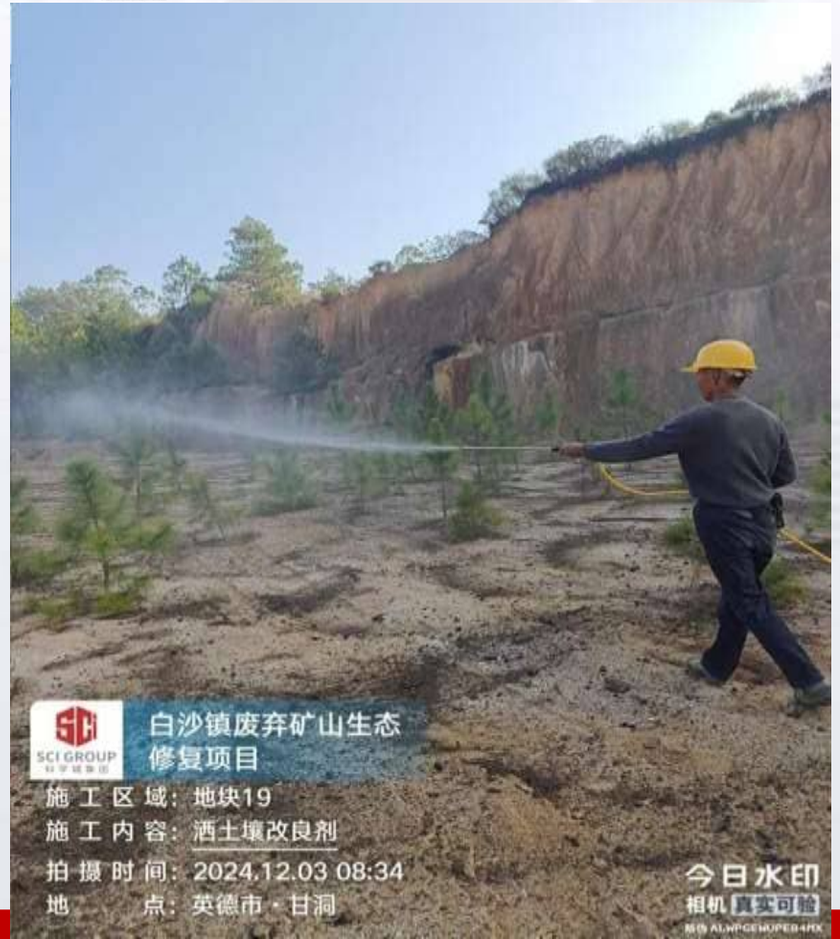
Soil Improvement and application of microbial inoculants



种植后的养护管理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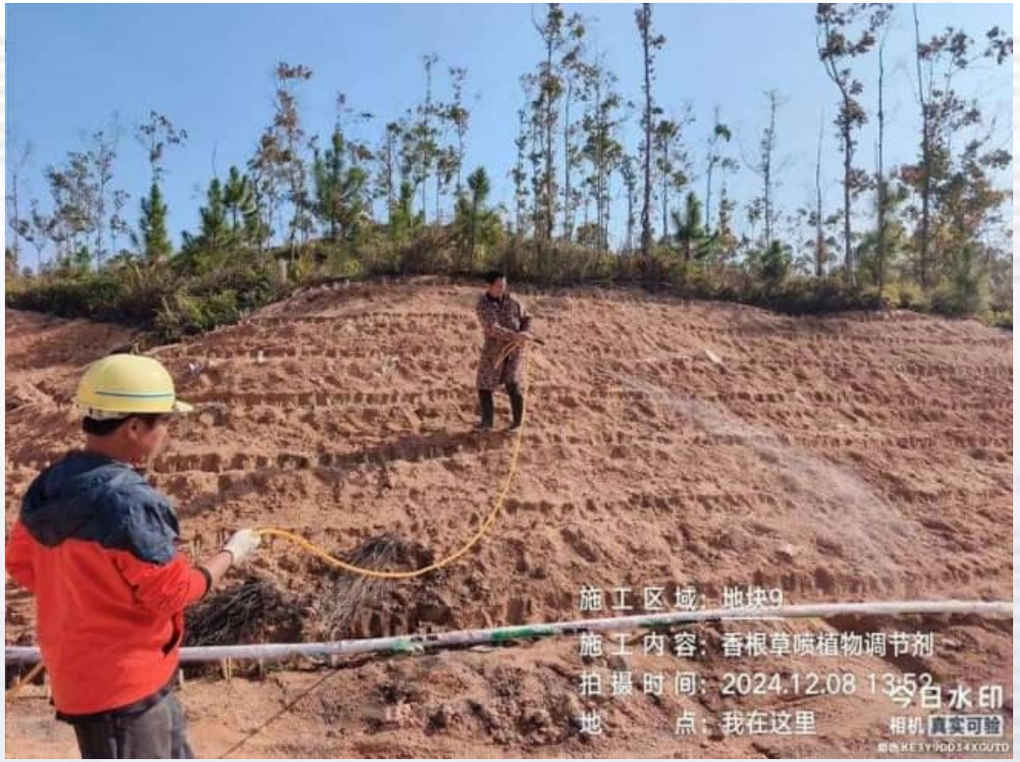
今日水印
相机真实可验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Expectations after the application of

“ Vetiver Technology ”

Expectations after the application of "Vetiver Technology

- 1. Establish a demonstration base for the application of the " Vetiver Technology System "
- 2. Promote the role of “ Vetiver Technology ” in ecological governance
- 3. Establish a technical standard system for ecological management of tailings ponds in Guangdong Province.

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We sincerely invite leaders and experts to criticize and correct us.

Thanks for watching!