

USE OF BIO-MATERIAL IN RENOVATION OF CARPET AND PLANT IMPROVEMENT

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Barren land in Vietnam currently has about 8.5 million hectares. Because there is no vegetation cover or the vegetation is very poor, the annual risk of soil erosion and degradation is serious. The development of urban areas, industrial parks, construction of hydroelectric dams, climate change, etc. have all reduced the area of agricultural and forestry land and degraded vegetation. Uncovered land is the cause of erosion, causing floods in the headwaters, reducing the area of arable land leading to waste of land resources; In addition, the habitat of many species has been lost, causing biodiversity loss. Therefore, it is necessary to study the greening of bare land and hills, reducing the area of eroded land and improving soil fertility in order to enhance soil reproductive capacity.

On the basis of the key project level, project code T2012-04-03TĐ: "Research on biological materials to regenerate vegetation to cover bare land and bare hills", the research team has successfully produced the material. biology is used to regenerate greening vegetation to create landscapes and protect sloping land, restore forests, ...

Using the endosymbiotic mycorrhizal fungi Arbuscular Mycorrhizae (AM) and native Rhizobium and suitable materials available to produce biological materials, improve technological processes to suit the conditions of Vietnam. and conduct applied research based on practical requirements of regenerating vegetation and forest cover to protect and improve soil, prevent erosion, protect watershed forests, help conserve biodiversity and improve the ecosystem, especially in the context of increasing bare land and bare hills in Vietnam and the vegetation cover and biodiversity are increasingly degraded and seriously degraded. In addition, the development of urbanization, paving the way for tourism, the construction of hydroelectric dams, river embankments, maintenance of golf courses, grass fields, etc. all need the regeneration of greening vegetation to create landscape, operation guarantee, preventing landslides or just creating mini landscape for office premises, even the family.

Application of microbiological technology using biological materials containing symbiotic mycorrhizal Mycorrhizae fungi (MF) in regenerating vegetation and forests for extremely high and friendly economic and social efficiency to the environment. This technology to regenerate vegetation can be 100% successful even in conditions of nutrient depletion, acidification or destruction after natural disasters.

Existing products in Vietnam are just limited to biological or chemical preparations that moisturize soil and stimulate crop development. At present, Vietnam market has never had any kind of biological material with similar features to be used to recreate TTV. TTV regeneration technology (biological materials and technology) will be an advance in scientific and technological research, with the ability to retain high soil moisture, improve soil fertility, stimulate and ensure growth. and the development of both seedlings and symbiotic microorganisms, helping to successfully replicate vegetation and forests in Vietnam.

The product was displayed during the 60th anniversary of the establishment of the Vietnam Academy of Agriculture (2016), at the Academy's Science and Technology supermarket and at trade shows attended by the Institute's Agricultural Technology Incubation Center. at the fair of products with potential for commercialization in 2017, organized by the College of High Technology and Market Development Department, Ministry of Science and Technology. VLSH products together with food technology product group won 3rd prize at this trade fair.

After displaying the biological products at the Academy's Science and Technology supermarket, there were businesses buying all the products at the supermarket.

*** Quality of biological materials**

The quality of biogas after mixing is shown in Table 1.

Table 1. Some properties of biological materials

Time	Physical properties		Chemical properties				Biological properties
	pH _{H2O}	Humidity	OC	N	P ₂ O ₅	K ₂ O	Density AM/100g
		%					Spore
Immediately after production	5,35	23,5	0,86	0,28	0,04	1,00	1010
After 3 months	5,27	21,8	0,83	0,26	0,03	0,98	1005
After 6 months	5,39	20,3	0,82	0,26	0,04	0,99	1008

After production, the moisture content of biological materials reaches about 25%, rich in N and K total. The nature of the biological material is completely in accordance with the requirements of AM growing conditions and meets the provision of nutrition for seedlings in the early stage of growth. After 3 and 6 months of mixing, the physical and chemical properties of the material do not change much, still ensuring the conditions for mycorrhizal fungus and seedlings to grow.

In the biological materials, there are sufficient ingredients such as nutrition, mycorrhizal fungus, Rhizobium, moisturizing materials, suitable seeds to ensure the development of the seedlings without additional care and other costs. As with conventional farming, it ensures the regeneration of vegetation in all terrain conditions and problem land (especially nutrient-poor soil).

After 3 and 6 months of production, the physical and chemical properties of the material have not changed much, still ensuring the conditions for mycorrhizal fungus and seedlings to grow, meeting the normal quality standards of probiotics. learn.



Figure 1. Biological materials used for vegetative rehabilitation and soil improvement

The authors have submitted an application for a utility solution patent at the National Office of Intellectual Property and have accepted the application in July 2016, in the process of appraising for granting a certificate.