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21st International Grassland Congress / 8th  
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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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## Study on AMF in rhizosphere of Vetiver grass in field nursery

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**Key words :** Arbuscular mycorrhizal fungus(AMF), Vetiver grass, offset plant, tissue culture seedlings

**Introduction** Vetiver grass was widely used and even named as the pioneer plant to control soil erosion, stabilize the slope and rehabilitate the ecology in South China, because of its high root tensile resistance and deep penetration. In the application of the vetiver grass, we recently find that it could not only tolerate water submersion and wet condition but also endure a certain degree of drought; meanwhile it could absorb heavy metal so as to reduce the heavy pollution in soil to some extent. In order to explore the internal mechanism of these good characters of the vetiver grass and find out more plants with the ability to resist stress, we made the sample examination on arbuscular mycorrhizal fungus (AMF) in rhizosphere of vetiver grass to make a further study of its biological function in the restoration from the soil degradation and the dependent relationship with plants.

**Materials and methods** Collect the vetiver grass in the breeding base of the vetiver grass and in the pond slope in Baiyun District, Guangzhou. Take the fibres with root tip from the soil 5-30cm from the ground and pot for the tissue culture seedlings. Then wash, dry and cut them into 1cm long. Finally put them into the stationary liquid of FAA and get ready for use. In order to observe the AMF more clearly through the microscope, dye the fibres preserved in the stationary liquid in the normal method of Hayman 1970. Use the method of accounting the infected fibres to observe them after treatments through the microscope. To choose 30 fibres from the samplings, 1cm long for each one, put them into the container glass tidily and cover them by the cover glass. Observe the infection of AMF one by one under the condition of 100-400 times of the microscope. Count the infectious and calculate the infection rate.

**Results** By sample examination on arbuscular mycorrhizal fungus (AMF) in rhizosphere of vetiver grass, at different time and different growing medium treatments in field nursery, the results showed that AMF infection rate in rhizosphere of vetiver grass have no clear relationship with seedling source, but clearly relationship with growing medium. The infection of tissue culture seedlings, at 25 days after planting with the nature forest peat, was up to 93.33%, infection strength as class II. With sterilized forest peat as growing medium, infection rate of the same seedlings was only 20% at 1 months after planting, infection strength as class I, and at 20 months after planting, the infection was 53.33%, infecting strength as class II. Infection rates of the offset plants from vetiver grass, at 3 months after planting in natural soil, was 56.67%, infecting strength as class I, at 22 months after planting, infection rate attained most high peak, 80-83%, infecting strength as class II, and at 33 months after planting, infection rate was no longer increased, but infection strength increased to be class III.

**Conclusions** Vetiver grass can be infected by the AMF in the natural condition; The AMF infection rate in rhizosphere of vetiver grass has no clear relationship with seedling source, but clearly relationship with growing medium. In the early days of the planting, the infection rate of the AMF in rhizosphere of vetiver grass grew as the time goes by. However after 2 years, the rate climbed to the highest point and stayed still, but the infection strength was rising.

### Reference

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