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Gai, Jingping; Dai, Yan; Li, Guizhen; Zhou, He; Li, Xianglin; Zhang, Yunwei; and Yang, Fuyu, "Root Colonization by Arbuscular Mycorrhizal Fungi in Plants of Lhalu Wetland" (2020). *International Grassland Congress Proceedings*. 5.

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**The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China in 2008.**

Edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

**Presenter Information**

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## Root colonization by arbuscular mycorrhizal fungi in plants of Lhalu Wetland

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**Key words:** Arbuscular mycorrhizal colonization, Mycorrhizal status; Fens plants; Wetland

**Introduction** As a typical highland marshland type wetland, Lhalu wetland is the highest and biggest urban wetland in the world. It plays an important role in the improvement of Lhasa's ecological environment and is regarded as the lung of Lhasa City or its kidney. But in the past, it was strongly disturbed by human activities. Arbuscular mycorrhizal fungi (AMF) have been proved to have potential of increasing plant diversity (van der Heijden et al., 1998), and it is also ubiquitous in wetland habitats (Cooke and Lefor, 1998). It follows that mycorrhizal associations forming might be an essential part of wetland biological functions. We undertook this study as an initial survey of AMF colonization in fens plants of Lhalu wetland.

**Materials and methods** The survey was conducted at Lhalu wetland (91°03'48.5"~91°06'54.4"E, 29°39'46.3"~29°41'05.5"N), which is located in the northwest of Lhasa city. Soil cores (6-cm diameter) were collected to a depth of 20-30 cm from 16 most common plant species within the wetland on August 10th, 2006. Three individuals of the same plant species were randomly selected. Healthy (white, turgid) roots were picked from each of the soil cores for AM fungal colonization.

**Results and discussion** Of the 16 species surveyed, 10 formed fully developed arbuscular mycorrhizas, with arbuscules (and/or coils) and vesicles in at least one individual. An additional three species hosted aseptate hyphae and vesicles characteristic of AMF, but contained no arbuscules or coils. Three species (*Hippuris Vulgaris*, *Polygonum hydropiper*, and *Phragmites australis*) contained no AMF structures. Total colonization ranged from 0 to 82.6%, and arbuscular colonization ranged from 0 to 55.6%. In this survey, plants in the wetland belong to Cyperaceae, Polygonaceae and Juncaceae, which were presumed to be nonmycorrhizal or rarely mycorrhizal (Muthukumar et al., 2004), were colonized at different level. This result is similar to the report of Cooke and Lefor (1998).

**Acknowledgements** We thank the National Natural Science Foundation of China (30260073) and Scientific Research Foundation for the new teachers, China Agricultural University (2005) and the British Council with the UK Department for International Development through their Development Partnerships in Higher Education (DelPHE 64) program for financial support.

### References

- Muthukumar T., Udaiyan K., Shanmughavel P. 2004. Mycorrhiza in sedges: an overview. *Mycorrhiza*, 14: 65-77.
- Cooke J.C. and Lefor M.W. 1998. The mycorrhizal status of selected plant species from Connecticut Wetlands and transition zones. *Restoration Ecology*, 6: 214-222.
- van der Heijden M.G.A., Klironomos J.N., Ursic M., et al. 1998. Mycorrhizal fungal diversity determines plant biodiversity, ecosystem variability and productivity. *Nature*, 396: 69-72.