FTA-Kunming Scientific Conference 2021

Restoration and management patten of typical degraded alpine ecosystem

Research of degraded alpine land restoration and macrofungi in alpine forest ecosystem

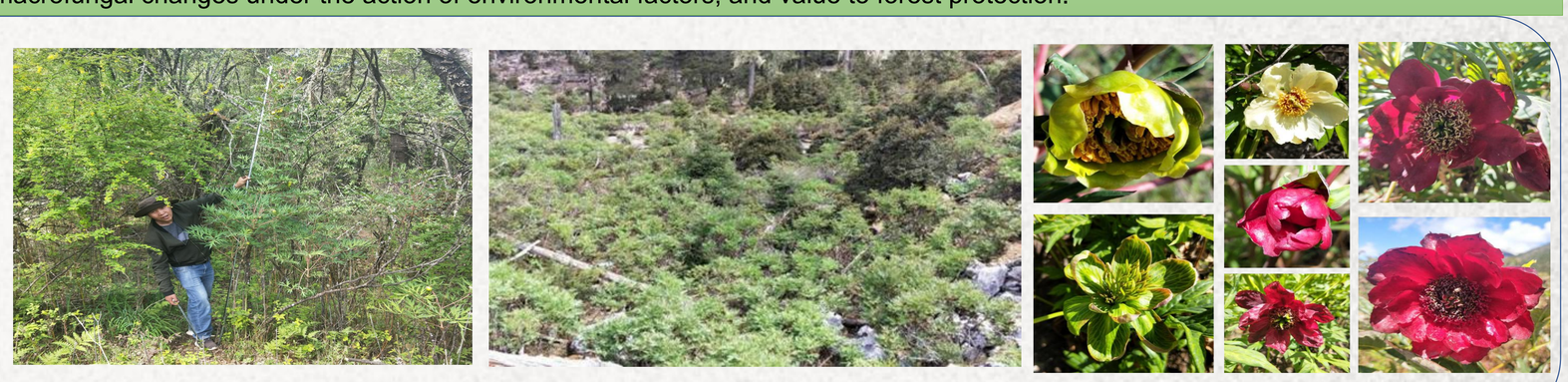
Lei Ye, Zhaoguang Li, Zhijiang Hou, Guiqing He, Wengao Yang, Yang Cao

Team of Alpine Ecological Restoration and Landscape Innovation, Institute of Alpine Economics and Botany, Yunnan Academy of Agricultural Sciences：

The research team, founded in 2019, is composed of 9 professional scientists and technicians. The main work is to carry out the collection of wild germplasm resources, seed and seedling breeding and product development of *Paeonia delavayi* in Northwest Yunnan. The typical degraded alpine ecosystems (burned land and abandoned land) in Northwest Yunnan were studied, the compound ecological restoration model of "tree (*Abies fabri*) - shrub (*Paeonia delavayi*) - herb (lily)" was explored, which has good ecological, economic and social effects.

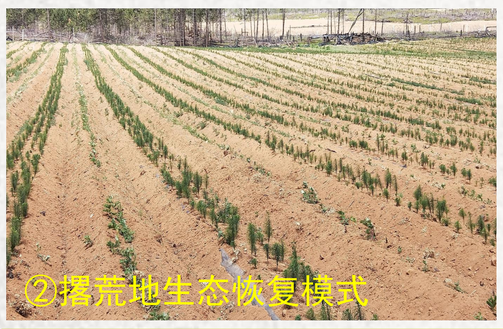
We also plan to study the Macrofungi in alpine forest ecosystems in Northwest Yunnan, obtain precious medicinal and edible mushroom resources, and to study ecological functions of various macrofungal communities in the forest ecosystem, and expounds macrofungal changes under the action of environmental factors, and value to forest protection.

Typical degraded alpine ecosystem in Northwest Yunnan



Investigation, collection and evaluation of germplasm diversity of *Paeonia delavayi* in field

Seedling/breeding techniques of *Paeonia delavayi*



To construct a complex ecological restoration model of "tree (*Abies fabri*) - shrub (*Paeonia delavayi*) - herb (lily)" in fragile and degraded alpine ecosystem

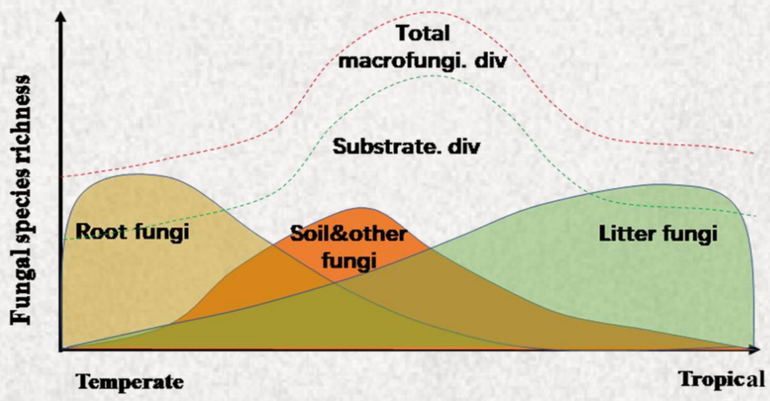
Research & Development products and Patent Achievements

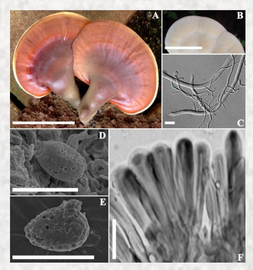
Restoration of forest land ecosystem by planting mixed alpine plants
Planting precious resource plants in alpine lands and producing practical benefits

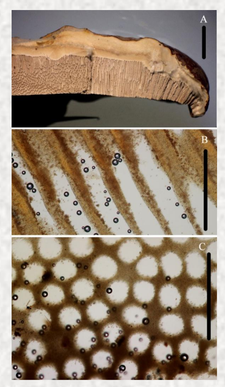
Macrofungal survey

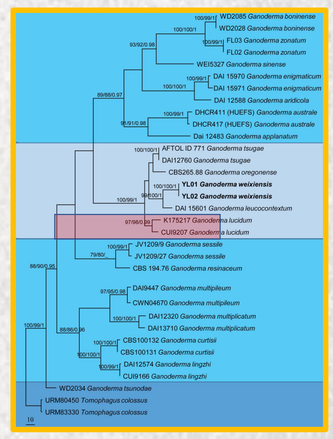
Field collection——fruiting body observation——Specimen——macro / micro description ——microstructure shooting ——Mapping—— DNA extraction—— molecular biological data analysis —— phylogenetic tree

Conceptual diagram of the distribution patterns of substrate-specific fungi in secondary forests across latitudinal gradients. The x-axis represents climate zones ranging from the temperate to the tropical zone. The y-axis represents macrofungal species richness.



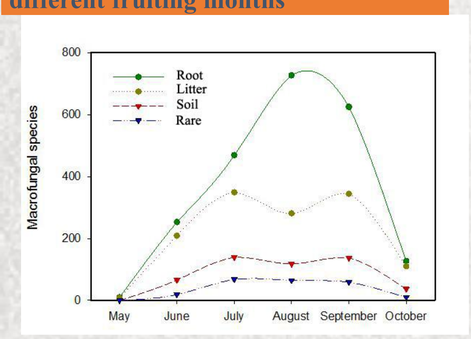


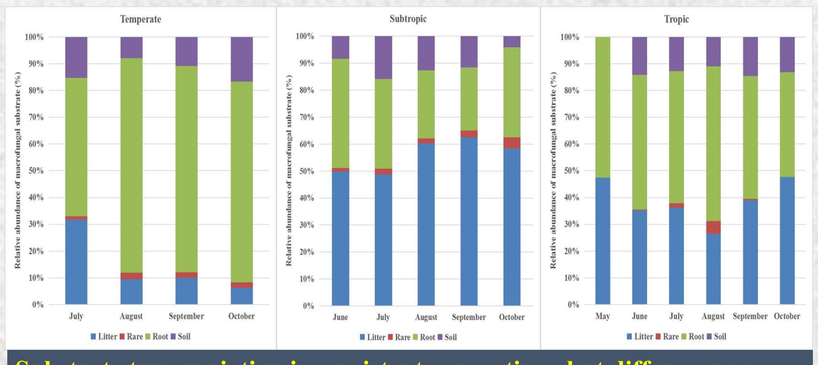




***Ganoderma weixiensis* sp. nov A Macrofungual species with high medicinal value found in alpine forest of Northwest Yunnan**

Macrofungal substrate composition in different fruiting months





Substrate type variation is consistent across time, but differs across climate

Macrofungi in mountain forest ecosystem
Diversity, Resources, Ecology and Phylogeny

RESEARCH PROGRAM ON Forests, Trees and Agroforestry