



Biological characteristics of Juncao grass species and planting technique

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✕ **Grass species & characteristics**

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✕ **Scientific researches**

✕ **Biosafety Assessment**





1. *Pennisetum purpureum* Schumach.







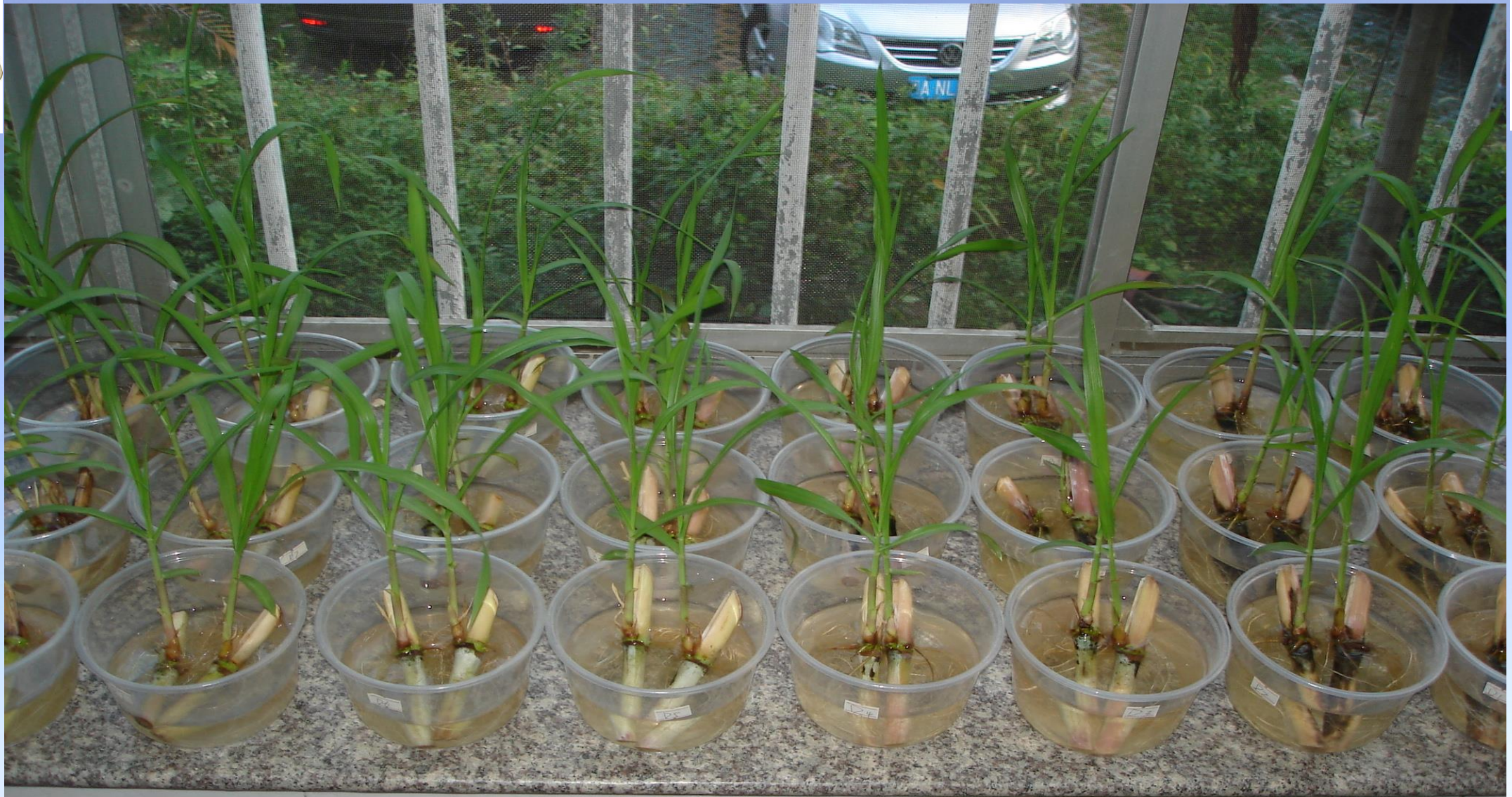
Biological characteristics



- **Root: fibrous roots and well-developed roots; the deepest reaches is 4m.**
- **Stem: height 3-4m, stem erect, coarse hard, caespitose, round, diameter 1-3cm; tillering is up to 50-100.**







March

April



May



June



July



August



September



October





2. Giant Juncao





Biological characteristics

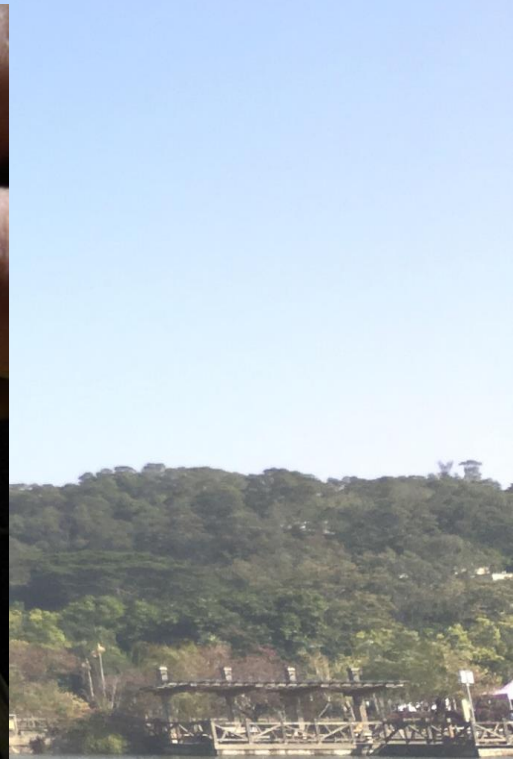
- It is a tall, erect, bushy perennial plant, which has strongly developed root system. The stem can be up to 7.08 m, but is normally 4-5 m in height and the diameter of stem is usually 1.5-2.5cm.
- Typical four carbon plants with high photosynthesis efficiency



1681 g in weight for a single clump

The diameter of stem is 3.15 cm

The average height is 4.43 m



Well-developed root system

In Ulanbuhe desert, Giant Juncao grew for 115 days, with plant height of 2.5 m and 68 tillers. Aboveground and underground fresh weight were 12.71kg and 11.04kg. The root penetration depth was 1.2 m.



water and soil conservation

Juncao technology model

Traditional agricultural model



Tall plant with large biomass



High 7.08 m/plant



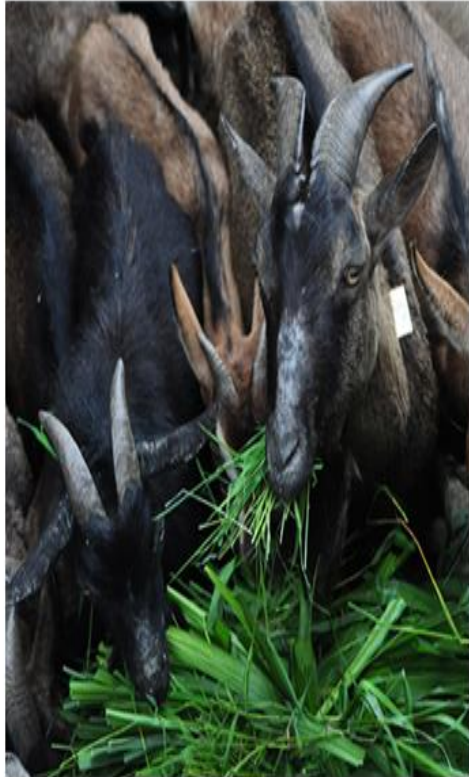
Fresh weight 852.9 t/ha



Rich nutritious



The crude protein content of Giant Juncao is 8-17%





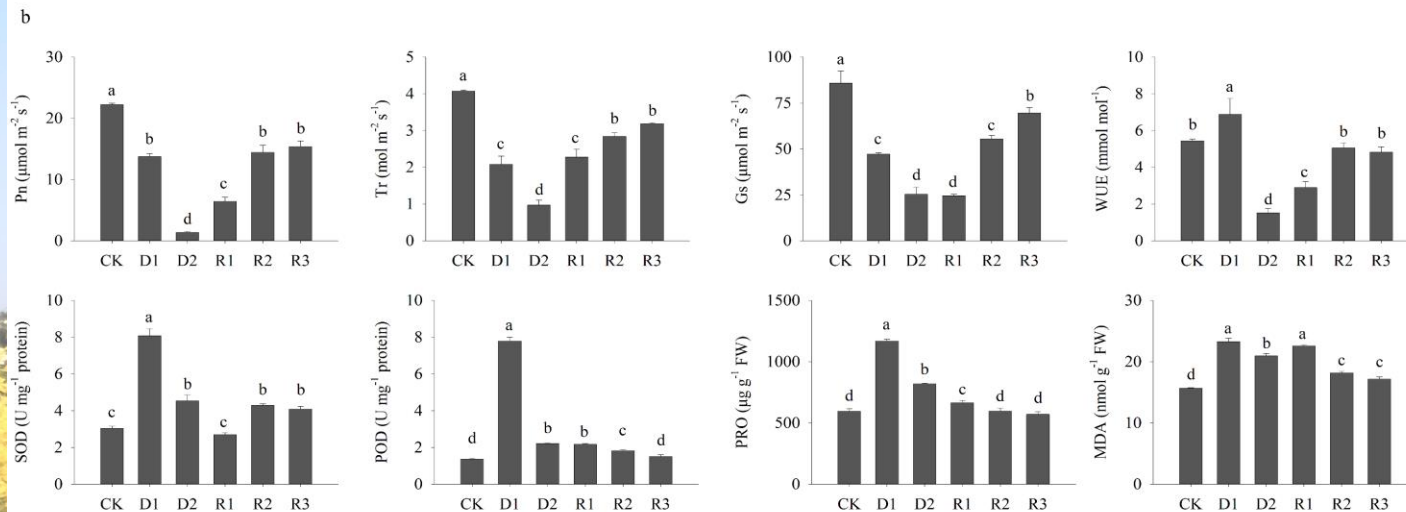
Strong resistance

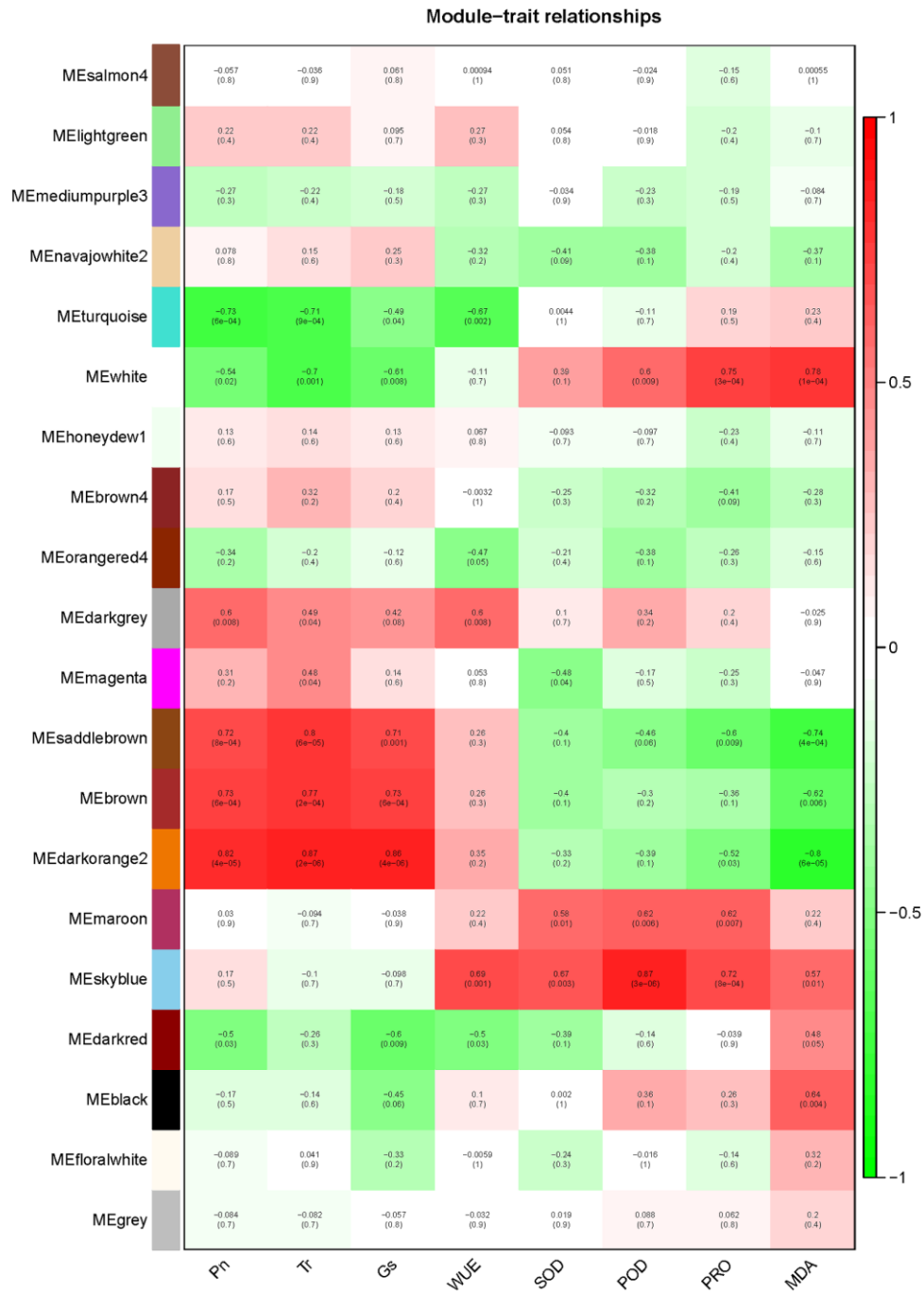
Drought, watering, storm, saline-alkali resistance





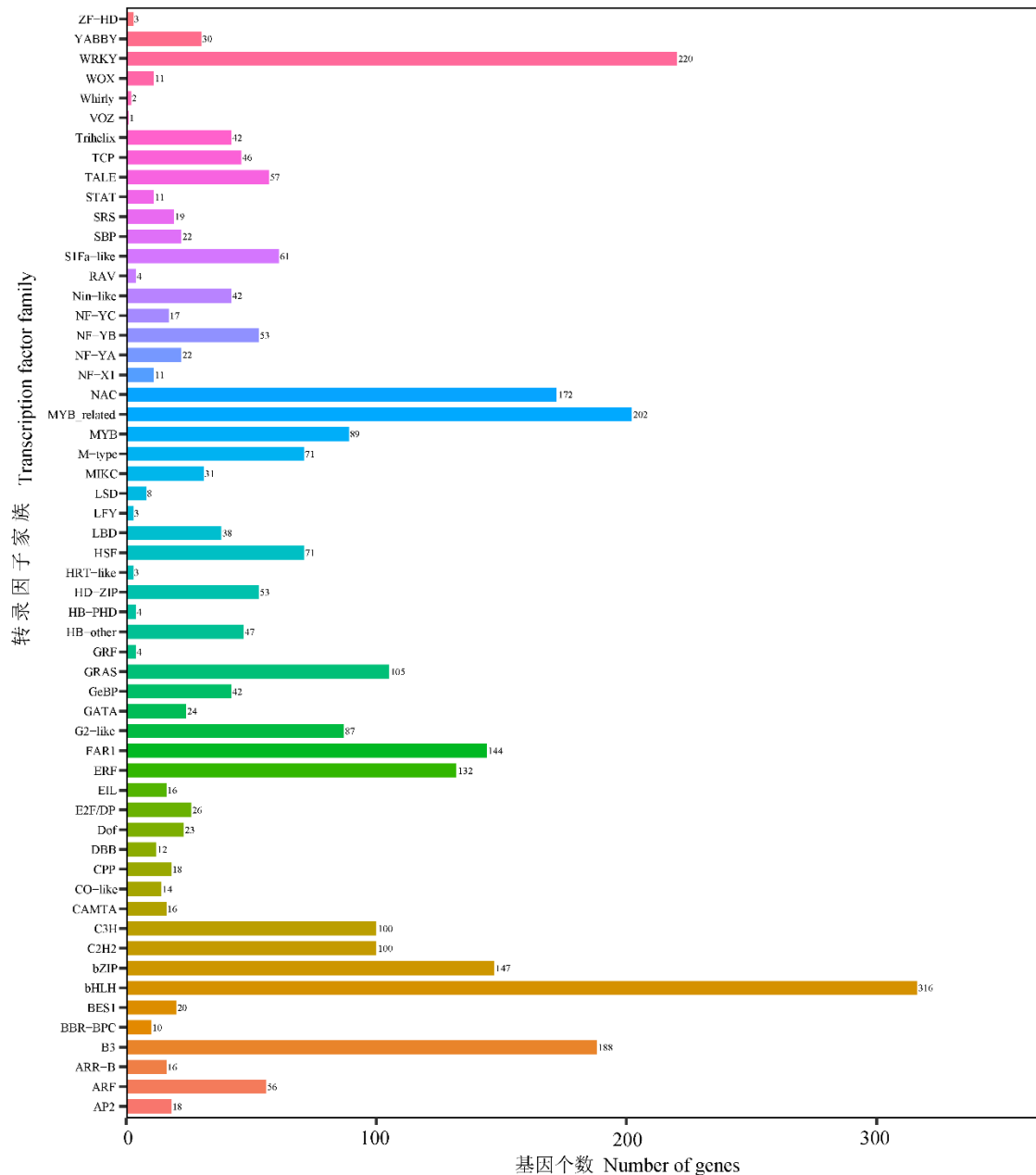
Effect of drought stress and rehydration condition on the growth of Giant Juncao. A picture of Giant Juncao under different treatments condition.





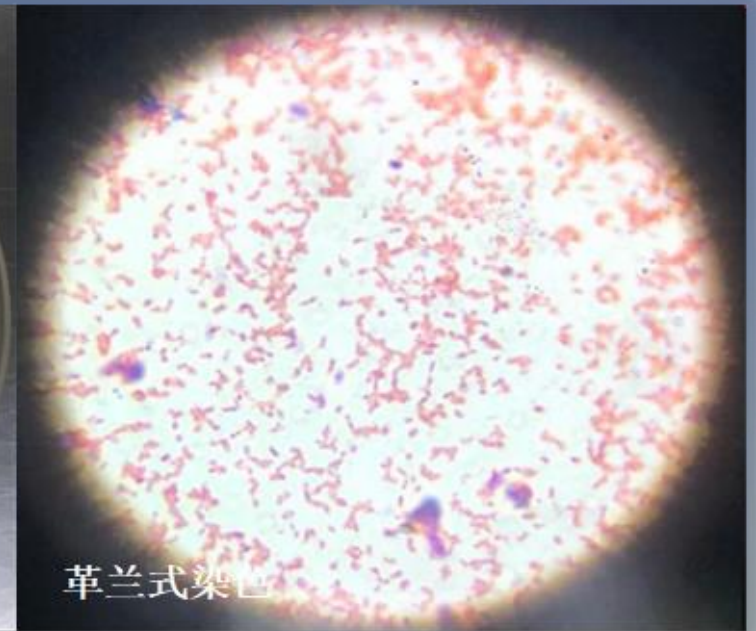
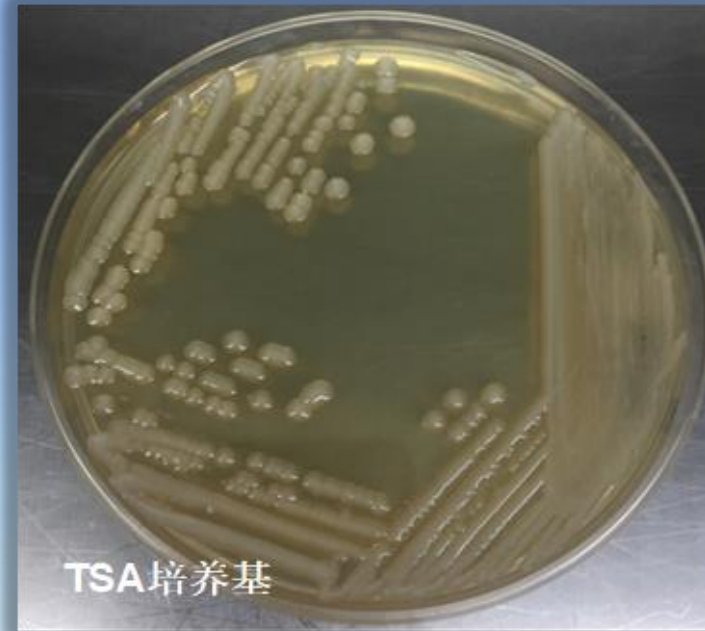
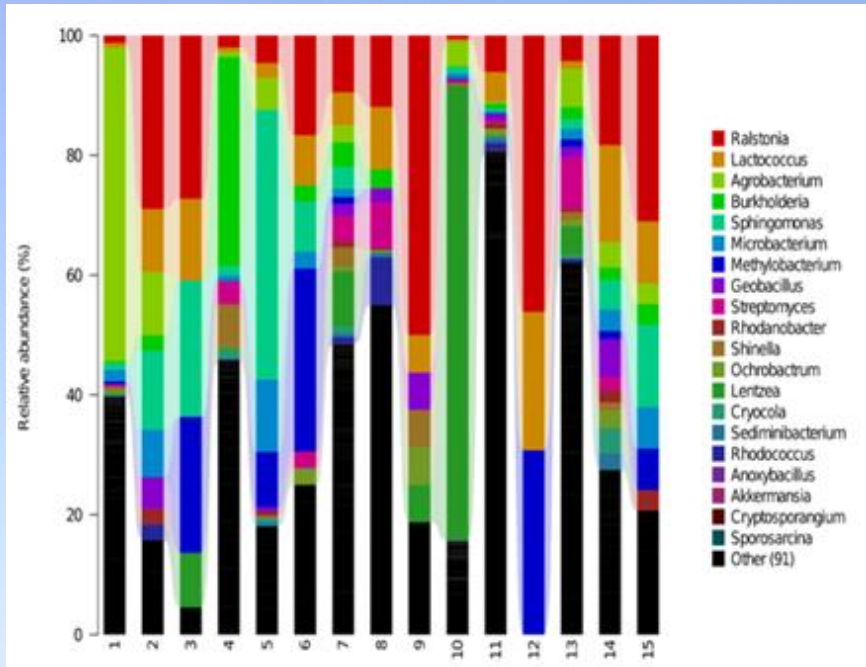
Using WGCNA to detect the relationship between genes and physiological indexes, as well as inter- or intramodular genes. (Zhou *et al.*, *BMC Plant Biology*, 2021)





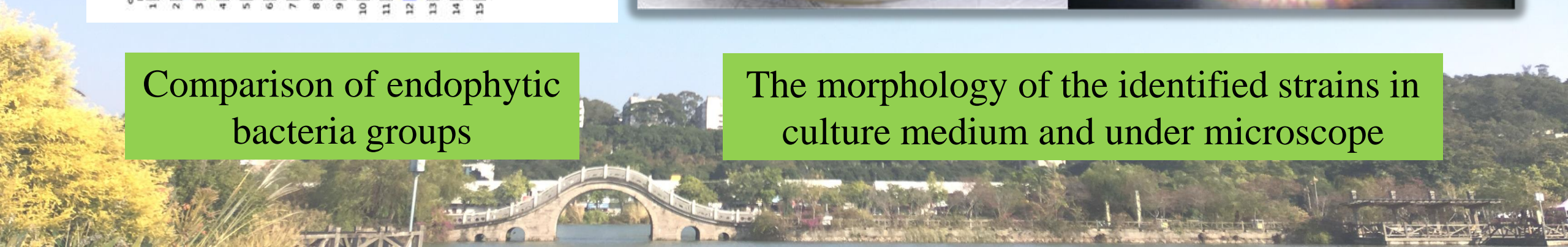
Transcription factor family of root and leaf differential expression genes in Giant Juncao. (Zhou *et al.*, *Acta Prataculturae Sinica*, 2021)

Rich in endophytic nitrogen-fixing bacteria



Comparison of endophytic bacteria groups

The morphology of the identified strains in culture medium and under microscope





Biosafety Assessment of Introduced Giant Juncao

Criteria for Risk Grading of Giant Juncao

Risk Grade	Risk Level	Comprehensive Assessment Value	Significance of Invasion Biology	Management Strategy
I	Severe	2.50-3.00	The risk of invasion is severe, and the hazard are first-class pests or malignant weeds	Introduction prohibited
II	High	2.00-2.50	The risk of invasion is high, and the hazard are second-class pests or regional malignant weeds	Introduction prohibited
III	Moderate	1.50-2.00	The risk of invasion is moderate, and the hazard are third-class pests or common weeds	Introduction prohibited
IV	Low	1.00-1.50	The risk of invasion is low	Introduction allowed, but with control measures
V	Negligible	0.00-1.00	The risk of invasion is negligible	Introduction allowed with no need of any measures



- The productive mode is mainly asexual reproduction.
- Usually no seeds are produced, but when seeds are produced, they are mostly abortive.





Thank you

