发展菌草 造福人类

Develop Juncao Industry to Benefit All Humankind

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什么是菌草？

What is Juncao？

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真菌、菌菇
mushrooms or fungi

c a o

草本植物
grass or herbaceous plant

菌草：

- “菌”与“草”交叉的、新的研究领域
- 草品种的一个新类别
- 一类新开发利用的农业资源

形成菌草技术体系，拥有**51项**发明专利。

Juncao:

- a new **research field** in the overlapping domain of fungi and herbaceous plant.
- a new **category** of grasses.
- a newly developed agricultural **resource**.

Juncao technology with **51** invention patents.

DIAGRAM OF JUNCAO INDUSTRY

建设了中国**唯一**的国家菌草工程技术研究中心。

The **only** National Engineering Research Center of Juncao Technology in China was established in FAFU.

II

菌草技术的研究与应用

Research and application of Juncao Technology

上世纪80年代，以筛选野生资源丰富的草本植物为主要目标。90年代起，以适宜不同气候条件下可规模栽培的草种为主要目标。

1980s: rich wild grass resources

Since 1990s: Juncao grass species adapted to different climate conditons & planted at large scale

草种选育
Screening and breeding of Juncao grass

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草种选育 Screening and breeding of Juncao grass

例如，人工栽培的巨菌草鲜草产量最高达**853**吨/公顷•年。

Eg. the highest yield of fresh grass reached **853** tons/ha for Jujuncao grass (Giant Juncao grass).

菌业 Mushroom Industry

- 1公顷菌草（鲜草300-500吨），可生产鲜菇120-150吨，不仅产量高，而且质量好，可持续发展。
- 生产方式灵活，即可千家万户小农户参与，也能企业大规模投资生产。
- 菌菇深加工产品如功能性食品、保健品与药品等大大提高附加值。

- **High yield, good quality, and sustainable development.**

  1 ha. land with output of 300-500 tons of fresh grass can produce 120-150 tons of mushrooms.

- **Flexible production methods.**

  For large-scale production and small farmers as well.

- **High Value-added**

  Deep processing mushrooms products as functional foods, health care products and medicines.





饲料 Forage

菌草的粗蛋白含量高，适口性好，可饲喂家禽家畜。斐济Legalega研究站试验结果，生长8个月的巨菌草的粗蛋白含量是**12.74%**，当地的传统牧草臂形草只有5.40%。

High content of crude protein, good for poultry and livestock

Crude protein : **12.74%** of 240-day Giant Juncao grass VS **5.40%** of local Arm Grass

at Fiji Legalega research station





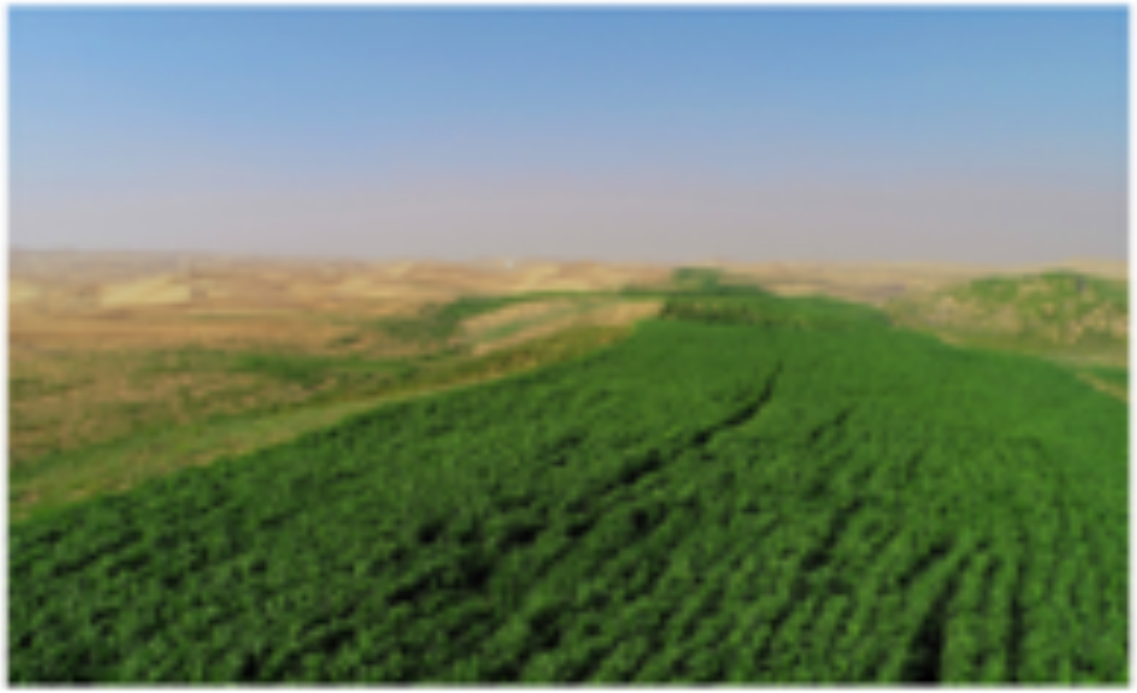
生态治理 Ecological management

菌草作为先锋植物建设菌草生态安全屏障：防风固沙、保持水土：种植菌草**80～100**天能有效防风固沙，在高寒地区，2013年种植的菌草到2019年仍可有效固沙。

Successful demonstration of the **Ecological Safety Juncao Barrier** using Juncao as **pioneer plants**

Wind-preventing and sand-fixing within **80 to 100** days

The Juncao grass planted in **2013** can still effectively fix the sand in 2021 via root system.



120d

Root length 2.12m

Root area 15.2 m^2

改良土壤：种植一年沙地有机质含量增加58.97%，沙地土壤微生物和昆虫种类和数量显著提高，第二年便可种植马铃薯、花生、西瓜等作物。

Soil improvement:

1st year: the organic matter content of sandy land increased by **58.97%** , significantly enriches its soil microbes and insect species;

2nd year: other economic crops such as potato, watermelon, and peanuts could be planted.



III

菌草技术转移，服务可持续发展目标

The transfer of Juncao technology for promoting the sustainable development goals

菌草技术落实13个可持续发展目标

Juncao technology contribute to the implementation of **13** SDGs

技术本土化 Local adaptation of technique

在技术层面把菌草技术本土化、简便化、标准化

让农民“一看就懂”、“一学就会”、“一做就成功”。

Adaptation, Simplification and Standardization of Juncao technology for farmers

Easy to Learn, Easy to Practice, Easy to Gain Successes




推广本土化 Local adaptation for extension

在技术推广模式上

采用建“示范中心+农民协会/合作社+个体农户”的推广模式，让技术进村到户。

Technology Extension Model:

Demonstration Center+ Farmers 'Association/Cooperative + Individual Farmers

make sure it goes into rural area to every farmers in need

Juncao Technology Demonstration Centers/Bases at South Africa, PNG, Fiji, Rwanda,and Lesotho

人才培养本土化 Nurture local talents

在福建农林大学培养菌草专业24名留学生。为数千名发展中国家研究人员和学生免费提供技术支持。

Future technical experts:

- International students trained in FAFU

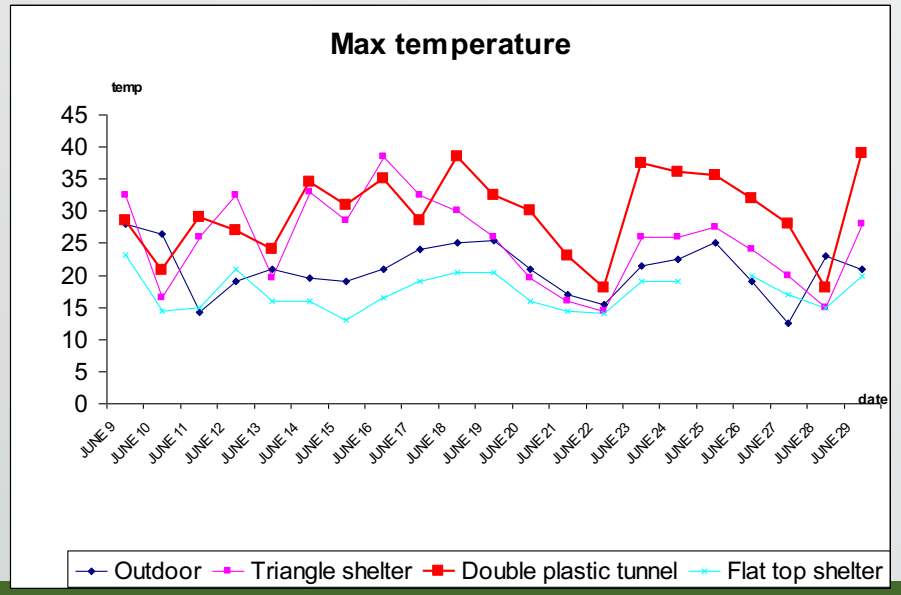
- FAFU provided support to researchers and students of developing countries including mushroom strains, grass seedlings, teaching materials and technical consultance etc.

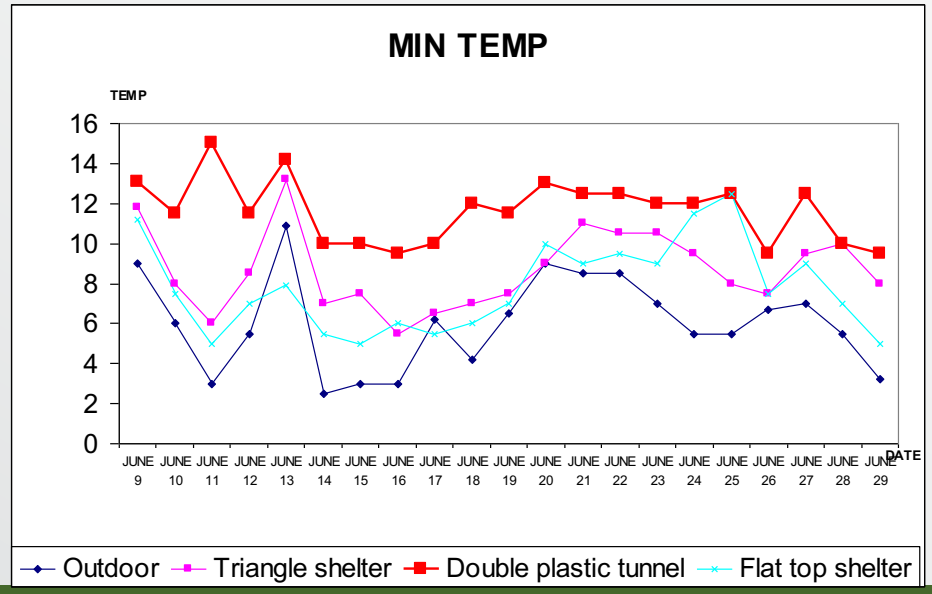
CASE 1: South Africa

Cedara Juncao Technology Training & Demonstration Center

Interaction of shelter design and tunnel covering

	Outdoors	Double plastic tunnel under trees	Triangular shelter single plastic	Flat top shelter single plastic
Min T (ºC)	3	9.5	5.5	5
Max T (ºC)	28	39	38.5	23
Average (ºC)	16.64	20.61	17.07	15.53
Min Humidity (%)	51	75	68	60





CASE 2: Rwanda

China-Rwanda Agricultural Technology Demonstration Center

CRATDC : training, demonstration, & on-site technical assistance, directly supporting 36 cooperatives and 14 Companies

Producing & cultivating mushroom substrate packs(tubes) around 1,100,000 tubes/year =435 tons fresh mushroom (market value 870,000 $)

Create jobs for poor peoples and have trained >20,000 peoples.
> 5,000 households are involved on Juncao mushroom production.

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