

**The 8th East Asia Research Association for Agricultural Heritage
Systems (ERAHS), Aug. 7-10, Gifu, Japan**

Agrobiodiversity Conservation of China's GIAHS

张卫建 Weijian ZHANG

Chief Scientist of Agro-ecology & Farming System

Institute of Crop Sciences, Chinese Academy of Agricultural Sciences

E-mail: zhangweijian@caas.cn Tel: 15810789930, 010-62156856

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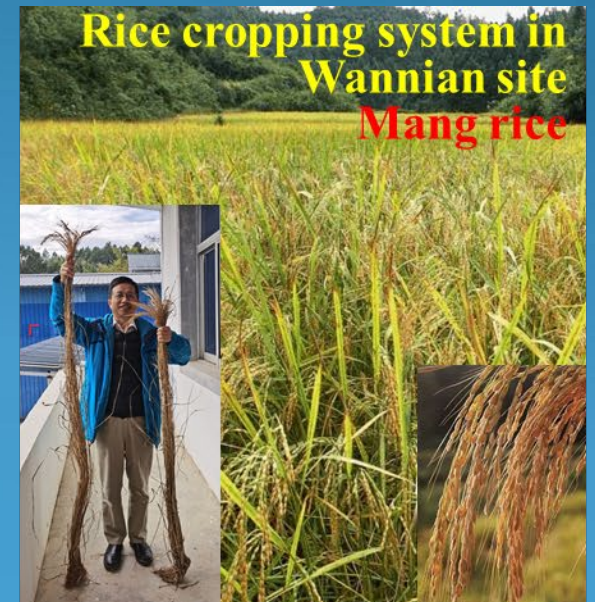
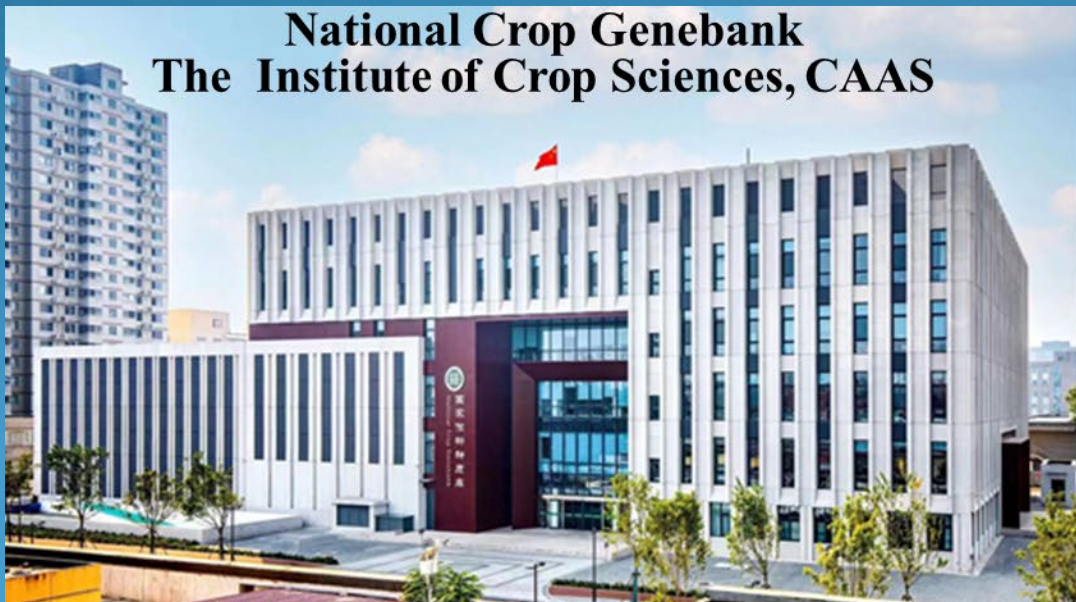
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1.1 GIAHS与种质资源多样性 China's GIAHS & agro-germplasm diversity

GIAHS is the living bank of agro-germplasm/gene. For example, more than 60% crop germplasm in the National Gene-bank of China are collected from the traditional farming sites, most of which are GIAHS sites (there are a lot of landraces of crop and animal). So far, China has identified 188 NIAHS since 2012, all of which are priority areas for biodiversity conservation.



1.2 GIAHS和农业物种多样性 China's GIAHS and agro-species diversity

GIAHS is an important habitat and migration corridor for wildlife. For example, traditional paddy field has high species-diversity (fish, frogs, insects, etc.); in GIAHS sites, wild animals such as migratory birds are frequent visitors. Traditional farming system has high diversity in crop variety and animal species (diversified systems).



1.3 GIAHS和生态系统多样性 China's GIAHS and ecosystem diversity

GIAHS is an important component of agro-ecosystem/landscape diversity, with diversified land use types. For example, paddy terrace system includes landscapes such as forests, villages, rice paddies and valleys, with streams serving as links; Nomadism system on the grassland includes landscapes such as mountains, water, grass, and grazing, with animal serving as a link; GIAHS is an integrated system of human-nature coexisting.



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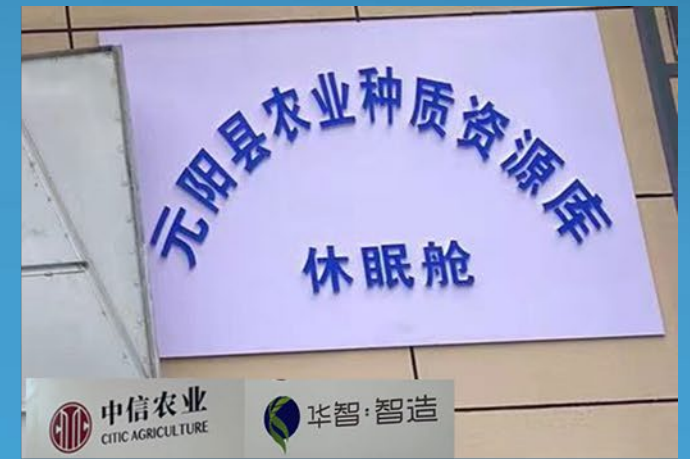
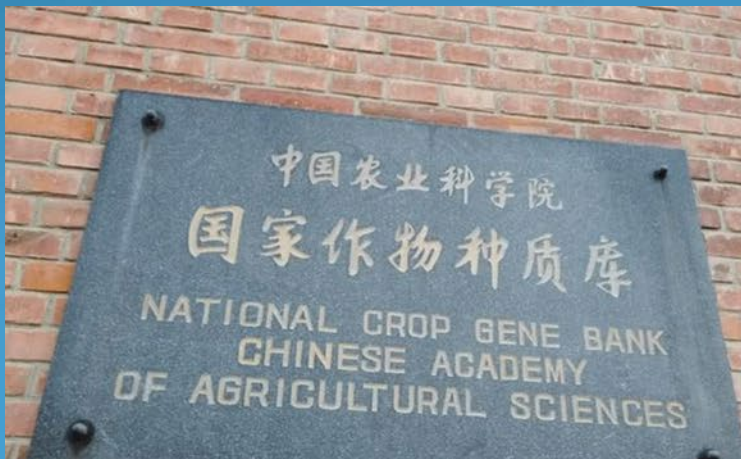
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2.1 种质/基因多样性保护实践 Conservation of crop germplasm/genetic diversity

(1) Off-farm/ex-situ conservation: The government & enterprises have made great efforts to collect landraces in GIAHS sites, establish genebanks.

- **National:** Central government establish medium-long-term preservation banks at national level, including National Crop Genebank, National Agro-microbial Genebank, and National Livestock & Poultry genebank
- **Regional/provincial:** Provincial government establish medium-term preservation banks to collect and protect regional landraces
- **County/enterprise:** County government & enterprises establish short-term preservation genebanks to collect and protect local variety



(2) Industry development model, on-farm/in-situ: “Government + enterprise + Cooperative + farmers” take action to protect landraces through industrialized utilization of local germplasm for germplasm conservation.

- **Government:** Establishing geo-indication & regional public brands based on GIAHS sites; Developing authorization standards, quality traceability & regulatory systems/mechanisms for the regional public brands
- **Enterprise:** Based GIAHS brands, developing products and establishing enterprise brand; Developing authorization standards; Signing contract with the third party or farmers; Storing-processing-selling
- **Third-party:** Designing production and tech-implementation plan and guideline; Signing product contract with cooperative/farmers
- **Cooperative/Farmers:** Implementing protection & utilization activities of landraces on GIAHS sites (Purification, Revitalization, and Preservation)

Case: 万年贡米 (Wannian Rice, Rice cropping system in Wannian site)

Wannian county government establishing a brand of “Wannian Rice” (National Geo-indicator brand); Developing product & brand standards; The enterprise/cooperative/farmers using the brand; Selling by three times price.



(3) Grassroots volunteer, on-farm/in-situ: In 2015, the center government launched the 3rd National Survey & Collection of Agricultural Germplasm Resources to carry out landraces collection & protection, and encourage the public/society-organizations/farmers to take conservation action.

- **Nongovernmental organization, NGO:** Under government guiding, NGO volunteer to collect, exchange, utilize, and preserve local varieties. They simultaneously conduct tech-training & sci-popularization to promote the protection of agricultural germplasm/genetic diversity
- **Farmer/cooperative:** Signing agreement with NGO to conduct landraces utilization/cropping, purification, revitalization and preservation
- **Local community:** Under NGO organizing, community learn landraces conservation knowledge, understand the significance of agro-biodiversity conservation, and actively participate agri-biodiversity conservation

Case: 合作社模式 (Cooperative model, Rice cropping system in Wannian site)

Wannian GIAHS, a cooperative contracted for over 100 mu of rice fields to cultivate a local variety (Manggu, 芒谷). Government/enterprise purchased Manggu at a price of 3 times of conventional variety. The cooperative improved rice variety based on Manggu, processed & sold rice by himself.



2.2 农业物种多样性保护实践 Conservation of agro-species diversity

Species diversity conservation by traditional farming: Traditional farming knowledge and techniques are the major characteristics of GIAHS, such as integrated crop planting & animal feeding, diversified cropping, etc.

- **Diversified cropping:** Multi-cropping, inter-cropping, and crop rotation
- **Integrated eco-crop-animal farming:** Integrated rice-fish, rice-duck
- **Agroforestry farming:** Integrated tea-cover crop, fruit-vegetable, fruit-animal feeding, mushroom-forestry, tea-forestry



2.3 生态系统/景观多样性保护实践 Conservation of agro-ecosystem/landscape diversity

Agro-ecosystem conservation by Agricultural/rural tourism: GIAHS has great ecosystem/landscape diversity & rich natural and cultural scenery.

- **Government:** Leading & organizing festivals; Importing tourism capital
- **Enterprise:** Establishing professional tourism institutions, and investing in infrastructure and enterprise operations; Making high profit
- **Local farmer:** Both of actors & producers; Making more income



2.4 农业生物多样性保护经验 Experiences of ABD conservation of GIAHS

Eco-value realization is the key to sustainable ABD conservation of GIAHS.

Rural youth's recognition and inheritance of traditional agriculture & local culture are the cornerstone, and capital is the guarantee:

- **Joint action of stakeholders:** Government leading with joint efforts of enterprises, cooperatives/farmers & the public/community; Mechanism of sharing responsibility/obligations and benefits
- **Comprehensive exploration of multi-functionality:** Exploring ABD multi-function (Brand effect, training & learning, production experience, leisure & wellness, sightseeing & tourism); Eco-value of traditional farming
- **Integrated development of multi-indus-chains:** Prioritizing conservation; Integration of traditional food processing, agri-culture & tourism, health & wellness indus-chains; Regional & community shared product brands

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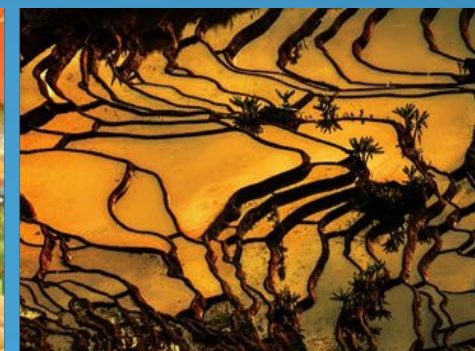
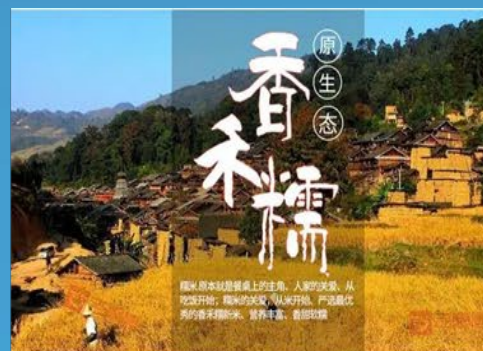
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3.1 GIAHS生物多样性保护的影响因素 Key factors of ABD conservation

Agrobiodiversity includes three levels: Germplasm/Gene, Species, and Agroecosystem. GIAHSs are mostly located in underdeveloped & inconvenient transportation areas. Thus, agrobiodiversity conservation is affected by multiple factors:

- **Approaches & potential of industrial utilization of local germplasm**
- **Efficiency and benefits of traditional farming techniques & models**
- **Development level of agricultural, cultural & tourism in GIAHS sites**
- **Knowledge, awareness, and capacity for biodiversity conservation**



3.2 农业生物多样性保护难题 Difficulties in ABD conservation of GIAHS

Due to the comprehensive impacts of high income expectations, industrial development & urban lifestyle, and off-farm working of rural young labor, ABD conservation of GIAHS facing some new challenges:

- **Difficulty in balancing conservation & utilization:** Slow effectiveness of conservation; Imperceptible harm of development and utilization in short-time; Not reflected ecological value; Lack of enthusiasm & responsibility
- **Difficulty in coordinating tradition & modern:** Conflicts between Agro-civilization & Industrial-civilization, and production, livelihood & ecology
- **Difficulty in monitoring & evaluation:** Unclear ABD background, and key ABD indicator (Essential Biodiversity Variables, EBVs); Lack of method of quantitative monitoring & evaluation

3.3 农业生物多样性保护建议 Suggestions to ABD conservation of GIAHS

GIAHS is a living preservation bank for landraces, and its traditional farming knowledge & techniques are nature-based solutions. It is a nature-positive Agrifood System, benefitting ABD conservation:

- **Policy innovation & improvement:** Building institutional system of ABD conservation; Conducting integrated landscape planning; Designing new mechanisms for sustainable utilization and sharing of agri-biodiversity
- **Building sound monitoring & evaluation system:** Defining protected and development areas; Survey of ABD EBVs & baseline; Building information platform and systems of ABD conservation, monitoring & evaluation
- **Strengthening capacity building:** Stakeholder training & sci-popularization; International program cooperation & integration; Building partnerships for diversified conservation; Building incentive mechanism of community support GIAHS; Government-led financing & sci-tech innovation



Thanks for Your Attention!

