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农业生物多样性及其保护与管理

AGRO-BIODIVERSITY AND ITS CONSERVATION AND MANAGEMENT

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生命是神奇的,它诞生于亘古,演化于历史长河。自然选择和适应进化的力量将生命节律的印记深深镌刻在每一项生命的成分中。

生命是丰富的,它既有五彩缤纷、错落有致的空间景观,又有春风桃李、秋雨梧桐的时间节律;既有日月相约的花钟,如期而至的蝴蝶,又有秋徙春归的候鸟、春华秋实的收获。

然而,生命也是脆弱的,环境的任何变化都干预或扰动着生命,时间见证着沧桑变革,生息灭化。

地球上的生命体难以计数,为了种群得以生存繁衍,它们努力适应陌生的环境,不断改造自身保留优良的基因。亿万年间,宇宙巨变、沧海桑田,世界经历了毁灭和复苏,"生命"却始终生生不息,依然是地球的主宰。世界之精彩,就在于有丰富的生命形式存在,描绘和演绎着繁衍进化的故事。在人类诞生之前的 30 多亿年就有生物存在,这个缤纷的多样性世界为我们提供了生存发展的基础。随着科学的进步,人类不断关注如何更好地保护和利用生物资源,以求达到持续的和谐。

事实上,以经营生物为主要对象的农业已经成为国民经济的基础。尽管现代化、大规模、集约式农业生产在保障粮食数量安全方面作出了巨大贡献,但以高消耗、单物种、集约化为特征的现代农业也带来了一系列严重的生态环境问题;特别是土地退化、环境污染、生物多样性丧失、食品安全等,已经引起了国际社会的广泛关注。其中,种质资源对于现代农业发展具有重要的意义。按照《生物多样性公约》(1992)的规定,所谓"遗传资源"是指具有现实或潜在价值的遗传材料,包括植物、动物、微生物或其他来源的任何含有遗传功能单位的材料。中国是地球上8个作物起源中心之一,世界上栽培植物(不包括花卉)有1200多种,其中约有200种起源于中国,占全世界的1/6。如此丰富的遗传资源,在培育新的抗病品种、为人类提供食物和食品源、为医疗卫生保健提供药用生物及生物生存环境资源、为工业提供原料等方面有着不可估量的作用。被誉为"杂交水稻之父"的袁隆平院士利用野生稻的雄性不育株,形成三系配套而育出籼型杂交稻,大面积地提高了水稻产量,为解决中国13亿人口的吃饭问题和世界粮食安全问题作出了卓越的贡献。

正是基于对农业生物多样的广泛共识和普遍重视,联合国粮食及农业组织等国际机构发起了"全球重要农业文化遗产动态保护与适应性管理"项目,旨在建立全球重要农业文化遗产及 其有关的景观、生物多样性、知识和文化保护体系,使之成为可持续发展的基础。

2006 年,中国国家环境保护总局、中国商务部、欧盟和联合国开发计划署共同启动了中国—欧盟生物多样性项目。其中"农业生物多样性创新和系统管理的模型开发和能力建设"子项目于 2008 年在四川、云南、新疆 3 个省区的 6 个县分别实施。该项目自启动以来,在农业部国际合作司和联合国粮农组织驻华代表处项目领导的高度重视和悉心指导下,在四川、云南、新疆农业厅及各厅国际合作处的领导和支持下,经各项目点农业局、农业技术推广站各位领导和同仁的共同努力,农业生物多样性系统管理项目已在各项目层面全面展开,并取得了阶段成果。在国家、省级到市县级搭建了相对完整的农业生物多样性管理的组织机构并开始良好运行;通过参与式培训学习方法的科学运用,项目培训了 25 名国家级核心辅导员、180 名社区辅导员,对 180 个社区农民小组开办了田间学校。在调查社区农业生物多样性框架基础上制订保护和管理的行动计划 500 份,近 1.2 万名农民在田间学习了农业生物多样性知识,增强了生物多样性保护和管理意识;通过培训和交流,近 500 名各级政府工作人员提高了农业生物多样性意识,增强了实施项目的信心和决心。同时,项目吸引了近 40 名专家参与项目的相关活动。此外,项目与德国技术合作公司(GTZ)、保护国际(CI)、世界自然基金会(WWF)等非政府组织建立了初步的协调与合作机制。

盘点项目过程的点点滴滴,我们更加期待!随着项目的不断推进和深入,我们将完成更多更加艰巨的任务。按照项目协议文件的计划,2009 年是实现项目各项产出指标的关键时期,超过 500 份社区行动计划、60 个示范社区需要在社区层面实施与效益监测,需要成立 6 个县级农业生物多样性协会,需要完成 3 个省农业生物多样性保护和管理的行动计划;同时,需要继续培训政府和机构服务人员、进行更加广泛的项目交流,并不断完善和深化与其他非政府组织的合作。

为此,项目将推进更加紧密的合作,团结一致,创新性地开展工作,充分利用好各方面资源,又好又快地达到项目目标,将农业生物多样性系统管理新模式不断辐射推广应用,以实现更大的项目效益,从而为保护和利用农业生物多样性、实现全球惠益作出新的贡献!

FAO-MOA 农业生物多样性管理项目 国家项目管理办公室主任

羽包林

2009年8月于成都

Preface

Various forms of life make this blue planet with the solemn beauty of herbs, flowers, birds, and animals.

Life is magical. It was born in time immemorial with endless evolution.

Life is rich. It decorates the vivid world.

However, life is fragile. Any changes in the environment can disturb or even destroy it. Only time witnessed the vicissitudes of life.

There are uncountable forms of life on the earth. The colorful diversity of life has provided humans with the basis of the survival and development. With scientific progressing, human beings continue to be concerned about how to conserve and make better use of biological resources.

Agriculture is the foundation of the national economy. Modernization, intensification and largescaling agricultural practices have greatly contributed a lot to food security. Despite that, modern agriculture of high-consumption, monophyletic species has led to a series of ecological and environmental problems, such as land deterioration, environmental pollution, loss of biodiversity and food safety issues. This critical condition captures the attention of the world. In accordance with the definition of the Convention on Biodiversity Diversity, "Genetic resources" means genetic material of actual or potential value, including any material of plant, animal, microbial or other origin containing functional units of heredity. China is one of the richest countries in agro-biodiversity in the world. Of the 27,000 species of higher plants, about 7,000 are used in agriculture. Of the 1,200 varieties of cultivated plants (except flower species) in the world, about 200 originated from China, which accounts for one sixth of the global genetic resources. The tremendous diversity of plants plays an important role in bearing new species, providing human with food and food resources, ensuring human health and curing illnesses with traditional medicinal plants and providing industries with raw materials. Mr. Yuan Longping, Father of Hybrid Rice, cultivated a type of hybrid rice species, which plays a remarkable role in increasing China's grain production. The achievements greatly contribute to solving the problem of feeding 1.3 billion populations of China and to world-wide food security.

Based on a common recognition, FAO initiated an international partnership initiative

"Conservation and Adaptive Management of Globally Important Agricultural Heritage Systems (GIAHS)". The global GIAHS initiative aims to establish the basis for the international recognition, dynamic conservation and sustainable management of such systems, agricultural biodiversity and their associated biodiversity, knowledge systems, food security and livelihood improvement, landscapes and cultures.

In 2006, Ministry of Environmental Protection of the People's Republic of China, Ministry of Commerce of the People's Republic of China, European Union and United Nations Development Programme jointly launched the EU-China Bio-diversity Programme. In 2008, a field project "Model Development and Capacity Building for Agro-Biodiversity Innovation and System Management" under EU-China Biodiversity Programme was started up in two counties of Sichuan, Yunnan and Xinjiang provinces respectively. Over the past year, with the great efforts of stakeholders at national, provincial and county levels, the field project has obtained stage achievements. The Agro-biodiversity management organization has been established and implemented successfully. 25 core facilitators and 180 community facilitators have been trained through the scientific utilization of participatory training methodology, field farmer schools have been set up for 500 community farmer groups and 500 community action plans have been created on the basis of analysis of community agro-biodiversity profiles analysis, around 12,000 farmers learned about agro-biodiversity and raised awareness of agro-biodiversity management and conservation. Nearly 500 government official and 40 specialists have been involved in relevant project activities. Additionally, preliminary coordination and cooperation systems have been built up with some NGOs such as GTZ, CI and WWF.

Now we are looking forward to fulfilling more challenging missions with the progress of the project. According to the work plan, 2009 is a key year to achieve outcomes of the project. 500 action plans and 60 model communities need to be implemented and monitored, 6 county-level agrobiodiversity associations should be established and 3 province-level action plans on agro-biodiversity management and protection should be completed. At the same time, trainings shall be continued for government officials and service staff, and more cooperation on project with other NGOs should be advocated. Therefore, we will closely cooperate and implement the project creatively and make full use of resources to achieve the goal of the project so as to conserve and sustainably use the agrobiodiversity and to contribute for global benefits.

Deng Yulin
August 2009 in Chengdu

前言

从历史的和现实的视角审视,人类文明的每一段进步都与自然生态环境的变化紧密相连。曾经,人类的发展都不同程度地以损伤或破坏生态环境为代价。当人们共同面临人口急剧增长、资源日益匮乏、生态功能退化、生态环境恶化、生物多样性减少等全球性问题的愈加严重,且必须共同作出抉择时,如何维持生物多样性、保护自然生态环境、协调人与自然的关系、促进可持续发展,便成为时代最为鲜明和炙热的主题。

生物多样性是人类社会赖以生存和发展的基础,它不仅提供了人类生存不可缺少的食物来源,也构成了人类生存与发展的生物圈环境。农业作为直接为人类提供食物的基础性产业,其生物多样性状况在较大程度上影响着农业的生产力、农产品的质量及人类的食物安全,也影响着人类社会的稳定与可持续发展。自 20 世纪中后期以来,最主要的农作物大约有 75%的遗传多样性已经消失。因此,大大增加了农业发展的脆弱性,减少了农业食物的多样化。为此,对栽培地区的传统农业耕作制度的保持和发展,以及达到保护作物和畜禽等遗传多样性及其野生亲缘种类的目的,对农业的可持续发展尤为重要。

中国是世界上生物多样性最为丰富的国家之一。它拥有极为多样的生态系统,但可能最有价值的是占国土面积 15%的耕地,具有丰富的生物多样性,包括基因、作物、牲畜、物种和景观等,维持着 13 亿中国人口的生计。中国仅用世界 7%的耕地养活了世界大约 20%的人口。几百年来,生物多样性资源由成百上千万的农牧民成功地管理着。但是不断加速的人口增长与技术、环境、社会和经济变革降低了人均资源可用量,导致了生物多样性资源的快速流失。扭转这一下降趋势,应对粮食安全、气候变化以及中国人民未来生活福祉等方面的问题,至关重要。意识到生物多样性保护的重要性,中国是最早批准在 1992 年地球首脑会议上通过的《生物多样性公约》的国家之一。该公约的三大主要目标为:保护生物多样性、可持续地利用生物多样性组成部分、公正公平地分享利用遗传资源所产生的好处。其中,可持续地利用生物多样性组成部分、公正公平地分享利用遗传资源所产生的好处。其中,可持续地利用生物多样性和于实现更广意义上的可持续发展目标是至关重要的,它是一个涉及面很广的问题,和所有生物和自然资源都息息相关,特别是和农业有密切联系。可持续利用需要引进和采用生物多样性利用的方法和步骤,防止生物多样性的长期减少,从而保持其潜在的能力,满足目前及今后的人类需求及期望。根据《生物多样性公约》中规定的义务,中国已经制订了《生物多样性战略和行动计划》,列出了优先领域和行动方案。在农业领域,"计划"提出了一些措施,对作物、牧草、蔬菜和家畜遗传资源进行移地保护,并鼓励采用生态农作方法在自然保护区以外进行就地

保护。农业部在贯彻《生物多样性公约》方面主要侧重于制定农业生物多样性保护政策,发展生态农业和保护农村能源资源。它已制定并开始执行《新植物品种保护条例》、《种子管理条例农作物种子执行规定》和《野生水生动物保护条例》,并正在执行《野生植物保护条例》。农业部还制定了《农业部门环境保护九五计划及 2010 年规划》及《农业生物多样性保护行动计划》。《中国农业 21 世纪议程》在保护农作地区的遗传资源和保护区的基础上,特别支持农业资源的综合性管理以及农业生态环境的管理及监测。中国的"十一五计划"(2006—2010 年)号召建设"社会主义新农村",并着力于通过农业生产现代化、持续提高农民收入、加强农村公共服务、基层民主和村民自治等手段来解决"三农"问题。特别提出要推动环保型生产,杜绝农药的过度使用,创造洁净美观的农村。在农业部的支持和努力下,遗传资源的保护、生态农作方法开发、野生水生动物保护和农业环境监测方面都已取得实质性进展。然而,将生物多样性管理纳入村一级的生产过程和农业支持服务中去的工作仍处于初级阶段。

联合国粮食及农业组织与中国农业部从各自的使命和经验出发,已建立起互补的战略伙伴关系,致力于推动农业生物多样性管理的实质性长期变革。这种伙伴关系的基础是近 20 年来双方在开发并实行农民田间学校的做法,并将它作为一项管理工具来培训农民进行农业生态系统分析。粮农组织和农业部之间的这种持续的伙伴关系将有利于建设一个更加健康的环境,提高政府和私有部门服务的有效性和质量,提高生产系统的经济效益和可持续性,为消费者提供更好的产品。本项目将特别致力于推动免费的生态生物多样性服务来提高农民收入,具体做法包括害虫天然防治、养分循环和授粉技术,并减少有害农药的使用。2006 年,中国国家环境保护总局、中国商务部、欧盟和联合国开发计划署共同启动了中国一欧盟生物多样性项目,其中"农业生物多样性创新和系统管理的模型开发和能力建设"子项目于 2008 年在四川、云南、新疆3个省(区)的6个县相继实施,并取得显著成果。

本书是在总结开发"农业生物多样性创新和系统管理的模型开发与能力建设"项目在实施阶段的成果基础上,分别汇集来自四川、云南、新疆项目点及有关咨询院校与研究所专家、非政府组织专家的理论与实践成果编纂而成的。全书共分四篇,第一篇为"农业环境与农业生物多样性资源",第二篇为"农业生物多样性理论与管理技术",第三篇为"农业生物多样性传统知识与典型经验",第四篇为"农业生物多样性政策法规与能力建设"。邓玉林完成全书的立意、序、前言、篇内署名文章、附录及编校工作,武海燕协助完成对本书的编校并联系出版事宜,宋薇平协助联系出版并撰写篇内文章,生物多样性专家石建斌博士完成本书统稿和编校工作。总之,本书是集体智慧的结晶。此智慧既来自项目点及社会各界有关专家和人士的大力支持;此智慧也从各媒介(网络)、文献汲取了丰富的营养。希望本书能够得到更为广泛的关注和重视,从而引导开启中国乃至全球农业生物多样性创新研究、持续利用、科学管理的全新里程。

农业生物多样性,关乎生计,关系未来!

Introduction

From the perspective of history and reality, every step forward in human civilization is linked with changes in natural environment. In the past, human development is achieved at the cost of devastation of the ecological environment in various to some extent. When global problems such as population inflation, insufficient resource, degradation of ecological function, deterioration of ecological environment and biodiversity reduction are becoming worse day by day, which require all of us to face these problems together? It is the hottest topic of the era to maintain bio-diversity, protect ecological environment, keep the balance between human being and nature, and promote sustainable development.

Biodiversity is the basic requirement for human being to survive and develop. It not only provides food, but also forms the biological environment for the survival and development of human beings. The biodiversity status of agriculture determines productivity, the quality of agriculture products and food safety for human being and it influences the stability and sustainability of human society as well. From the mid and latter half of last century, around 75 percent of gene diversity of main crops has disappeared, which increases the fragility of agricultural development and reduces the diversity of agricultural plants. Therefore, in order to achieve sustainable agriculture development by protecting the gene diversity of crops and breeds, it is especially important to preserve and maintain traditional agriculture cropping system in the cultivar area.

China is one of the richest countries of the world with biodiversities. It contains a broad range of diverse ecosystems, but probably the most valued one is the 15% arable land with its rich biological diversity of genes, crops, livestock, associated species and landscapes which supports the livelihoods for 1.3 billion Chinese. Thus, China supports about 20% of the world's human population on only 7% of the world's arable land. Over centuries, the biodiversity resources have been successfully managed by millions of farmers and pastoralists. However, recent population increases and technical, environmental, social and economic changes have decreased the available resources per capita and have resulted in a rapid loss of biodiversity, creating hardships that are particularly felt by the rural poor. Reversing this declining trend is important for food security, climate change and the future well-being of the Chinese population. Recognizing the importance of biodiversity conservation, China is one of the first countries to ratify the Convention on Biological Diversity (CBD) which was adopted at the 1992 Earth Summit on Sustainable Development. The three main objectives of the Convention

are: conservation of biological diversity; sustainable use of the components of biological diversity; and fair and equitable sharing of the benefits arising from the utilization of genetic resources. The goal of sustainable use of biological diversity is essential to achieving the broader goal of sustainable development and is a cross-cutting issue relevant to the management of all biological and natural resources, particularly in agriculture. Sustainable use entails the introduction and application of methods and processes for the utilization of biodiversity to prevent its long-term decline, thereby maintaining its potential to meet current and future human needs and aspirations. Under its obligations to CBD, China has developed a "Biodiversity Conservation Action Plan" which lists priority areas and action options. For the agricultural sector, it includes measures to protect ex-situ the genetic resources of crops, grass for grazing, vegetables and domesticated animals and it encourages eco-farming measures as a means for in-situ conservation outside nature reserves.

Efforts from the Ministry of Agriculture for implementing the CBD have focused on formulating policies for the preservation of agricultural biodiversity; development of ecological farming; and conservation of energy resources in rural areas. It formulated and launched "Regulation Concerning Protection of New Plant Varieties", "Implementing Rules for Agricultural Crop Seed for Regulation Concerning Seed Management"and "Regulation Concerning Protection of Wild Aquatic Animals". It is enforcing the"Regulation Concerning Protection of Wild Plants". MOA has also formulated an "Action Plan for Conservation of Agricultural Biodiversity" and the "Ninth Five-year Plan and 2010 Planning for Environmental Protection in Agricultural Sector". The "China Agricultural Agenda 21" specifically supports the integrated management of agricultural resources and the management and monitoring of the agro-ecological environment, in addition to the conservation of genetic resources and protected zones in farming areas. The Nation's Eleventh Five-Year Plan (2006-2010) calls for a "New Socialist Countryside" and aims to strengthen agricultural, farmers and countryside development through a modernization of agricultural production, sustained increase of farmer's income, improved public services in rural areas, and grass-root democracy and the self-ruling of villagers. It specifically promotes environment-friendly production through eliminating the overuse of agricultural chemicals, and creating clean and beautiful rural areas. With MOA support and efforts, much practical progress has been achieved in protecting genetic resources, developing eco-farming methods, protecting wild aquatic animals and monitoring the agricultural environment. However, the mainstreaming of biodiversity management into the production processes at village level and into agricultural support services is still in its infancy.

Based on their mandates and experience, FAO and Chinese Ministry of Agriculture have joined in a complementary strategic partnership to effect substantial and long-lasting changes in agro-biodiversity management It has built on almost 20 years of successful cooperation in the development and implementation of the farmer field schools methodology and training farmers in agro-ecosystem analysis as a management tool. Benefits from this continued FAO-MOA partnership are expected to

result in a healthier environment, an increased effectiveness and quality of government and private services, more profitable and sustainable production systems, and better products for consumers. Specifically, the project is expected to increase farmers' income through the promotion of free ecological biodiversity services such natural pest suppression, nutrient recycling and pollination, and a decreased use of hazardous agrochemicals. In 2006, Ministry of Environmental Protection of the People's Republic of China, Ministry of Commerce of the People's Republic of China, European Union and United Nations Development Programme jointly launched the EU-China Bio-diversity Programme. In 2008, a field project "MOA-FAO Model Development and Capacity Building for Agro-Biodiversity Innovation and System Management" under EU-China Biodiversity Programme was started up in two counties of Sichuan, Yunnan and Xinjiang provinces respectively. Till now, great progress has been made on this project.

On the basis of summarizing the stage achievements from the project of "Model Development and Capacity Building for Agro-Biodiversity Innovation and System Management", this book collects and compiles theories and practical achievements gathered from project sites and from the specialists in institutions, universities and NGOs. This book is divided into four chapters. The first one is Agricultural environment and Agro-biodiversity resources, the second is Agro-biodiversity theory and Practices, the third is Indigenous knowledge and Local experiences on Agro-biodiversity, and the fourth is Policies, regulations and Capacity building on Agro-biodiversity. This compilation of this book is a brainchild of Mr. Deng Yulin. He is the author of the preface, introduction, and several papers in the book, appendices, editor and proof-reader for the whole book. This compilation of book is a brainchild of Mr. Deng Yulin. He is the author of the preface, introduction, and several papers in the book, appendices, editor and proof-reader for the whole book. Ms. Wu Haiyan assists to compile this book and contacts the publishing companies, and Ms. Song Weiping assists to write papers and contact publishers. Dr. Shi Jianbin, a biodiversity expert, has accomplished gathering and editing the papers for the whole book. In all, this book is an achievement of collective efforts. Contributions come from a wide array of intellectuals and personnel, from information gleaned from mass media, internet, journals and books. The publication of this book can, hopefully, draw increasing attention and contribute to endeavors on agro biodiversity conservation, sustainable use and rational management both in China and in the world.

Agro-biodiversity matters not only our livelihood, but also our future.

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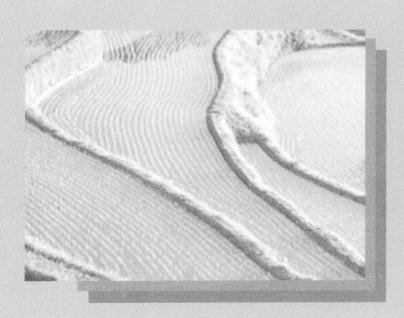
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第一篇

农业环境与农业生物多样性资源

gricultural Environment and Agro-biodiversity Resources



我国农业生物多样性资源及其管理

Agro-biodiversity Resources and Its Management

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 - 摘 要 本文结合前人的研究成果及公开报道,综述了我国农业生物多样性的概念、范畴、服务,并综合分 析了解我国农业生物多样性资源禀赋,提出了解决我国农业生物多样性保护和管理的对策。

关键词 农业生物多样性,资源,保护,经营

Abstract This paper reviewed the concept and status of agro-biodiversity resources in China. Based on analysis, suggestions were proposed on how to improve, conserve and manage agro-biodiversity for sustainability.

Key Words Agro-biodiversity, Resources, Conservation, Management

前言 1

多样化的生物资源是地球生命的基础^①。生物资源对人类具有社会、伦理、文化和经济等重要 价值。据估计, 地球上的物种 500 万~5 000 万种, 至今被人类认识的仅有 140 万种。在已知的物 种中,尤以农业经营和利用的物种显得意义重要。农业生物多样性的意义在于它是种质资源库和国 家生物安全的重要组成部分,这些都与人类未来产业发展和资源开发具有直接的战略关系,对人类 的历史发展进程起到了重要的保障作用,并将对人类未来的生存与可持续发展以及各种土地资源管 理类型的合理、高效和可持续利用,生态环境的有效保护具有重要贡献。正是由于人类利用自然生 物多样性而形成的农业生物多样性,从而丰富了生物多样性的内涵和价值。

中国是世界上生物多样性,特别是农业生物多样性最为丰富的国家之一,超过7000年的农业 开垦史促进农民开发利用并培育了大量植物和家养动物物种。中国也是最早加入《国际生物多样性 公约》的国家之一。中国政府高度重视生物多样性保护工作,制定并实施了一系列与生物多样性保 护有关的法律法规,基本形成了保护生物多样性的法律体系;建立完善了《生物多样性公约》履约 协调机制和生物物种资源保护部际联席会议制度;制定发布了《中国生物多样性保护行动计划》和 各种与生物多样性保护有关的规划,各有关部门还以此为依据,制定和实施了各相关领域的专项保

① Pearce D & Moran D. Economic Value of Biodiversity[M]. London: Earthscan Publishing Ltd., 1994.

护计划,如在农业方面开展了农业动植物保护、农业资源与生态保护等七大体系建设,在林业方面 实施了天然林保护、退耕还林等六大工程,特别需要指出的是,中国目前在相关规划和政策中已开 始考虑气候变化和生物多样性的因素,防止由于资源和土地过度利用对气候变化及生物多样性造成 的影响。总之,通过制定法律、法规和规划,实施就地和迁地保护,开展科学研究和宣传教育等措 施,中国的生物多样性得到了有效保护、生态环境恶化的趋势有所缓解。仅仅通过自然保护区网络 的建立,便促使中国 75%的陆地生态系统、88%的野生动物、65%的高等植物和绝大多数的珍稀濒 危野生动植物得到了有效保护。

然而,值得注意的是,尽管我国在生物多样性保护领域做出了显著成就,但国际《生物多样性公约》中第二主题涉及的"生物多样性的可持续利用"领域,人们所做的工作还远远不够,特别是农业生物多样的社区经营与可持续利用,仍亟待加强。人口增长和经济快速发展正日益为农业生物多样性带来更大的压力和威胁,这不仅关系到当今的粮食安全,也关系到广泛的民生与未来。为此,需要着力从中央到地方、从部门到基层推动农业生物多样性保护与管理工程,促进社区、机构及政府建立可持续的、完备的能力体系;同时,从政策、法规与制度建设上予以充分保障,以达到农业生物多样性可持续利用目标。

2 相关术语及农业生物多样性范畴

2.1 相关术语

生物多样性(Biodiversity)是指一定范围内多种多样活的有机体(动物、植物、微生物)有规律地结合所构成稳定的生态综合体。这种多样性包括动物、植物、微生物的物种多样性,物种的遗传与变异的多样性及生态系统的多样性。其中,物种的多样性是生物多样性的关键,它既体现了生物之间及环境之间的复杂关系,又体现了生物资源的丰富性^①。

农业生物多样性(Agro-biodiversity)是指与食物及农业生产相关的所有生物多样性的总称。它包括遗传多样性(或基因多样性),物种多样性及生态系统多样性,其组成包括:①高等植物:农作物、作为食物而管理的野生植物(经济野生植物)、庭院树木、草场或牧场物种;②高等动物:家禽家畜、作为食物而狩猎的野生动物(经济野生动物)、野生及养殖鱼类;③节肢动物:大多数昆虫包括自养生物(如蜜蜂、蝴蝶)、异养生物(如黄蜂、甲虫)、害虫(如蚱蜢、蚜虫),以及土壤中生活的昆虫(如白蚁);④其他土壤生物,如蚯蚓;⑤微生物,如根瘤菌、真菌、病毒等②。

生物多样性资源(Agro-biodiversity Resources)是指一定地区内拥有与生物有关的自然和社会层面各种物质要素的总称。其中,自然层面包括基因、物种、生态系统及景观层次的物质要素,社会层面包括人力资源、知识信息资源以及经过劳动创造的各种物质和精神财富。

① Tacconi L. Biodiversity and Ecological Economics-Participation, Values and Resource Management[M]. London: Earthscan Publishing Ltd., 2000; Thies E. Incentive Measures Appropriate to Enhance the Conservation and Sustainable Use of Ago-biodiversity GTZ, Eschborn.Germany, 2000.

② FAO. The Global Strategy for the Management of Farm Animal Genetic Resources Executive Brief FAO Rome. 1999.