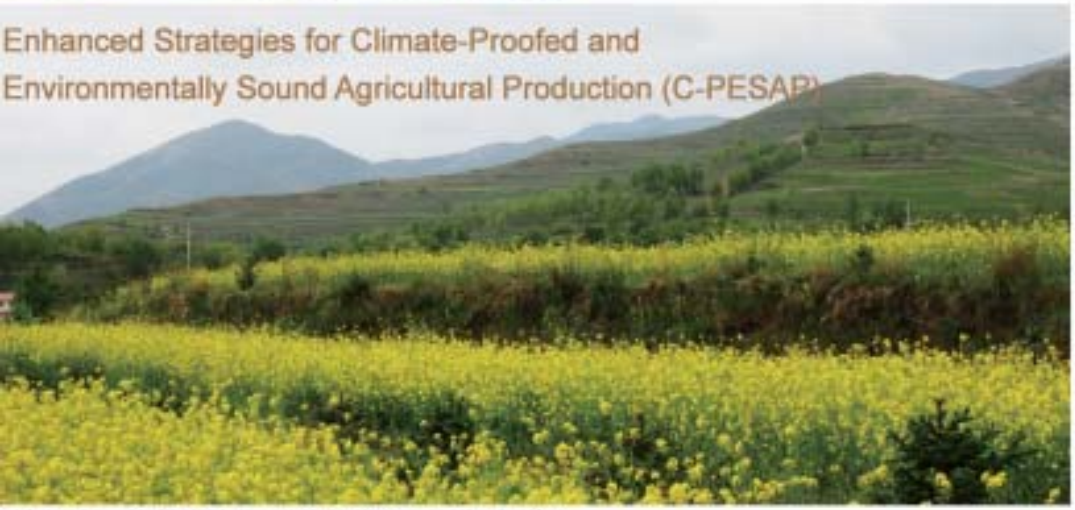
应对气候变化的环境友好型

生态农业技术发展战略

Enhanced Strategies for Climate-Proofed and Environmentally Sound Agricultural Production (C-PESAP)



项目执行期：2008年-2011年　Duration：3 years from 2008-2011

中国——联合国气候变化伙伴框架项目

A Component of the UN-China Climate Change Partnership Framework Programme

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执 行 伙 伴： 中华人民共和国农业部
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宁夏回族自治区发展和改革委员会
西北农林科技大学
河南省洛阳市农业科学研究院
山东省农业科学院

Coordination: Food and Agriculture Organization of United Nations (FAO)
Implementation: Ministry of Agriculture (MOA)
Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (IARRP-CAAS)
Ningxia Development and Reform Commission
Northwest Agriculture and Forestry University
Luoyang Academy of Agricultural Sciences
Shandong Academy of Agricultural Sciences (SAAS)

项目介绍

2007年初，西班牙政府向联合国总部捐资5亿美元建立"西班牙千年发展目标基金"，资助联合国在全球开展"千年发展目标"研究。中国—联合国气候变化伙伴框架项目在此基金资助下，由联合国9家机构和中国11个部委共同在中国开展应对气候变化的相关活动，内容涉及政策、减缓、脆弱性评估及应对气候变化等。其中由联合国粮农组织，中国农业部和中国农业科学院农业资源与农业区划研究所联合执行了"黄河流域应对气候变化的环境友好型生态农业技术发展战略研究"项目。本项目分别选择黄河流域上中下游不同的农业生态类型区，开展多学科、集成化的保护性农业应对技术研究与示范推广活动，以期在不同区域形成可持续的、低污染的农业发展战略及行动方案。

THE PROJECT

The UN-China Climate Change Partnership Framework, a programme funded by the Spanish MDG Achievement Fund, is a partnership between 9 UN organizations and 11 Chinese ministries that addresses different aspects related to climate change: policy, mitigation, vulnerability assessment and adaptation. One of its components, the project Enhanced strategies for environmentally sound agricultural production (C-PESAP): Agricultural development in selected agro-ecosystems of the Yellow River Basin focuses on developing strategies and actions for adapting the agriculture sector to climate change and reducing agricultural pollution.

项目目标

- 评估气候变化对农业生产的影响，研究集成化的保护性农业应对技术
- 推广集成化的农业应对技术，保障区域粮食生产安全
- 加强农业科研院所、农民、地区技术人员及官员在农业技术及信息领域的交流
- 提升农民、地方技术人员及官员应对气候变化的能力
- 提出省级应对气候变化的环境友好型生态农业对策和行动方案

OBJECTIVES

- Raise awareness of impacts of climate change on agriculture and the need for climate resilient and environmentally sound agriculture
- Develop and test technologies for adapting agriculture to climate change while reducing pollution and emissions.
- Disseminate information including examples of adaptation practices.
- Promote technology and knowledge sharing between research institutes, farmers, field technicians and authorities.
- Enhance capacities of communities, field technicians and authorities to deal with climate change.
- Develop participatory provincial action plans to adapt agriculture to climate change and reduce agricultural pollution.

主要成果

- 黄河流域气候变化与农业生产现状分析研究报告
- 适合政府官员、技术人员及农民的各类培训教材
- 应对气候变化的环境友好型农业生产的技术示范与推广
- 基于网络的信息共享平台
- 黄河流域四省农业应对气候变化行动方案

MAJOR OUTPUTS

- Situation analysis on agriculture production and the potential effects of climate change.
- Training materials and sessions for local authorities, technicians and farmers on climate change concepts, adaptation on agriculture and an ecosystem perspective to agricultural production.
- A set of climate-resilient and environmentally sound agricultural production technologies and field demonstration of selected practices.
- A web-based information system.
- Four proposals of provincial action plans.

示范区与示范技术

EXAMPLES OF TECHNOLOGIES AND DEMONSTRATION SITES

本项目根据黄河流域自然资源、生态环境和气候变化的特点，沿黄河上游的宁夏（北部引黄灌区和南部山区）、中游陕西（关中平原区）、中下游河南（豫西黄土丘陵区）和下游山东（华北平原区）4省，设置13个不同农业生态类型重点示范区，分类开展农业应对气候变化技术示范与推广。示范技术通过引进改变播种期，增强水资源利用率，精准施肥，防止水土流失等多种技术加强农业生产系统抵御气候变化的能力；同时，通过减少农业化学物排放和秸秆燃烧、土壤增碳等技术降低农业生产对气候变化的不利影响，以下是部分示范技术的简介：

This project works in 13 pilot sites in Ningxia, Shaanxi, Henan and Shandong. These pilot sites represent different agro-ecosystems across the Yellow River basin. The technologies demonstrated contribute to make systems more resilient to climate change by introducing changes in planting dates; using more resistant varieties; increasing water-use efficiency; using other inputs more efficiently; introducing more diverse systems; and avoiding water or soil losses. These technologies also contribute to reduce the impact of agriculture to the environment and mitigate climate change by reducing emissions from agrochemicals or burning practices and by increasing carbon in soils. Some examples of the technologies include:

(1) **大葱—小麦轮作养分精准管理技术**：该技术通过精确作物不同生长阶段的用氮量，减少化肥用量，同时提高作物的品质和产量，有效降低化肥对环境的污染。

Precise Nutrient Management for a Scallion-Wheat Rotation:Calculates the amount of nitrogen fertilizer to be used at different growth stages, thus reducing the excess of fertilizer and pollution as well as increasing the quality and yield of crops.

(2) **小麦–玉米一体化少免耕技术**：该技术将免耕、秸秆覆盖与还田以及集中施肥有机地结合在一起，能有效降低丘陵旱作区水土流失，提高土壤肥力，提升小麦对水分和肥料的利用率。

Mechanised conservation agriculture for a winter wheat-summer corn rotation: Integrates no-tillage with mulching and plant nutrient management. Enhances the soil capacity to capture and preserve moisture, reduces soil erosion, increases soil fertility and carbon in soils, and reduces environmental pollution caused by straw burning.

(3) **果园生草技术**：指在果园种植对果树生产有益的草，以持续增加土壤肥力，保持水土，保护害虫天敌，减少化肥和农药的施用量，降低污染，提高果品的产量和质量。

Planting white clover in orchards: Increases nitrogen in soils and reduces the use of chemical fertilizers, improves water retention, prevents soil degradation, depresses weed growth, and protects the natural enemies of pests (reducing the incidence of pests and diseases).

(4) **设施蔬菜增碳控氮施肥技术**：该技术是通过施用秸秆堆制的有机肥来增碳，提高氮肥利用率和蔬菜的产量，并改善农产品的品质；同时能增加土壤肥力和抗病性，防治土壤盐渍化。

Protected cultivation of vegetables with integrated nutrient management: Uses organic fertilizer made from heaped stalks to increase carbon in soils and reduce the amount of synthetic nitrogen fertilizers. Improves the quality of vegetables, increases biological activity in the soils which contributes to prevent diseases, and prevents salinization.

能力建设与应对方案

CAPACITY BUILDING AND PLANNING FOR ADAPTATION

应对气候变化的能力建设培训涵盖了地方官员、技术人员及农民三个层次：一是针对三类人群开展以气候变化、减少农业污染、可持续农业生态管理为主题的培训，培训通过将受训者培养为知识传播者的策略来扩大培训效果；二是应对气候变化的环境友好型生态农业技术示范与推广，技术人员与农民通过课堂学习和现场指导，将示范技术应用于生产实践；三是通过组织地方官员、技术人员与农民参与讨论如何应对气候变化，并提出适合当地社会经济发展的农业应对气候变化的行动方案。

The project is carrying out different activities to build the capacity of farmers, field technicians and authorities to adapt agriculture to climate change while reducing its impact on the environment, as follows:

- Training sessions for national and local authorities, field technicians and farmers aimed at enhancing the understanding of different audiences of climate change, agriculture and sound agroecosystem management. This follows a cascade approach, where trainees become trainers for other audiences.
- Demonstration of suitable agricultural practices to address climate-resilient and environmentally sound agricultural production. Farmers and field technicians are invited to the sites to learn how these work and discuss potential adoption in their fields.
- Action planning: The project is testing an approach for involving farmers, field technicians and authorities to jointly find actions to enhance the adaptation of agriculture to climate change. Four action plans will be produced.

项目办与多学科团队专家共同探讨应对气候变化能力建设方案

Multi-Disciplinary team and project management office discussing the capacity building plan

组织不同部门的政府官员交流与研讨农业应对气候变化策略

Capacity building for authorities on climate change

培训技术人员和农民，提升他们对气候变化和减少农业污染，发展可持续农业的认知能力

Training for field technicians and farmers

现场指导技术人员和农民学习与观摩农业示范技术

Technical training and demonstrations

技术人员及社区农民讨论当地农业应对气候变化的行动方案

Local technicians and farmers discussing actions to combat climate change

联系地址：北京市海淀区中关村南大街12号 农业资源与农业区划研究所 100081　　电话：86 10 82109865 (转805)　　电子邮件：qxsap@caas.ac.cn

Contact address:Institute of Agricultural Resource and Regional Planning Chinese Academy of Agricultural Sciences 12 Zhongguancun South Street Haidian District, Beijing P.R.C. 100081　　Tel: 86 10 82109865 (ext 805)　　Email: qxsap@caas.ac.cn