

# **The Agro-Ecological Village Development Model**

*Experiences in China*

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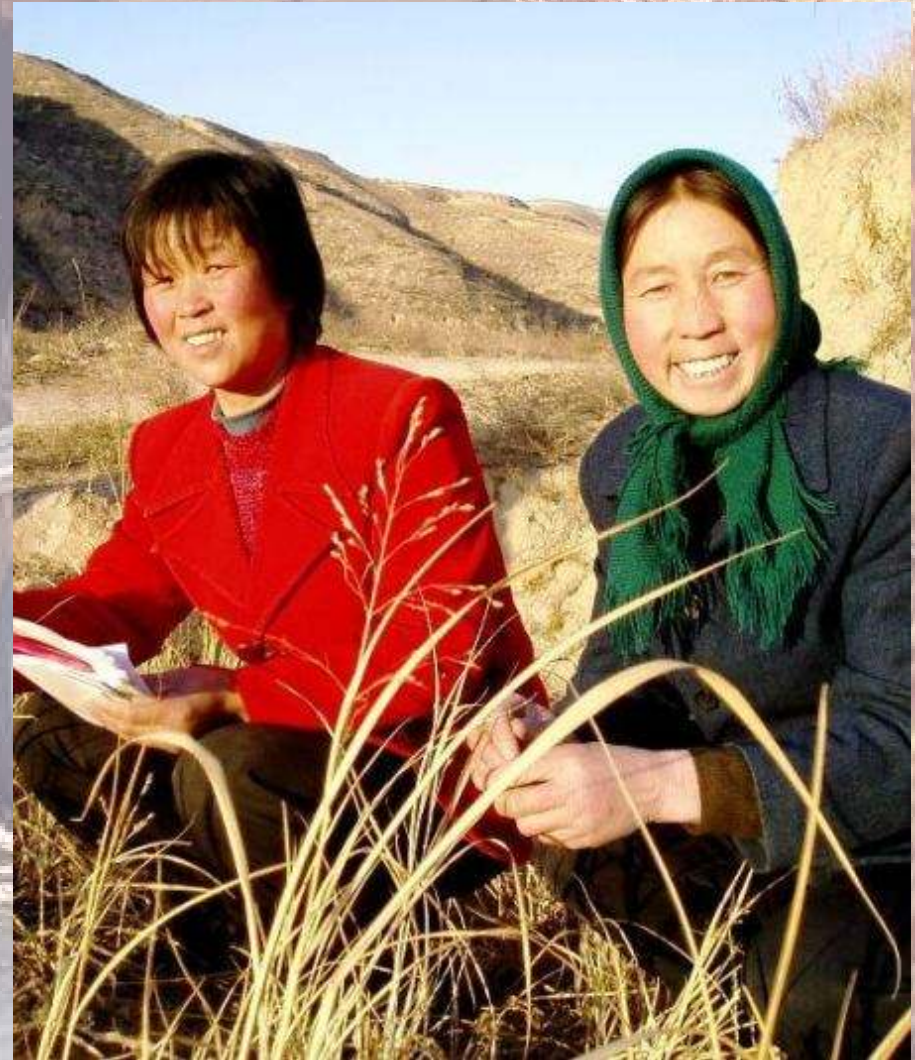
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# REAP-Canada

Helping rural communities in Canada and developing countries meet the challenges of ecologically sound production of food, fibre and fuel since 1986



# Western China Agro-Ecological Village (WCAEV) Development Project

## Project Partner

- Chinese Administrative Center for Seabuckthorn Development (CACSD) Ministry of Water Resources, China
- Initiated in July of 2002 and completed in 2005
- Village Sites were located within watersheds with severe erosion
- Supported by Shell Foundation sustainable communities program

*Project Purpose: To improve the economic and social well being of marginalized farming communities with a focus on women, while at the same time protecting and enhancing the natural resource base through the use of participatory development and ecological farming*

# WCAEV Project Sites



- **Dingxi County, Gansu Province** – 325 households (1470 people) in 4 villages (Zhangjiachuan, Fengjiacha, Chankou, and Beichuan) in the Fuxing watershed
- **Zhunger County, Inner Mongolia Autonomous Region** – 230 households (830) from 4 villages (Sujiata, Nalingo, Bainilaing and Oboyen) in Deshengxi watershed on the Erdos plateau (beside Gobi desert)



# Profile of WCAEV Communities

	Dingxi county	Zhunger County
# of households	325	230
# of people	1470	830
Annual Precipitation	352 mm	350 mm
Annual Farm Income	\$ 254/person	\$ 194/person
Basic land problems	<ol style="list-style-type: none"> <li>1. Annual soil erosion rate at 54 tonnes/ha from wind / water;</li> <li>2. 54% of the area has slope &gt; 25°;</li> <li>3. 40% of this region severely eroded.</li> <li>4. New restrictions on grazing</li> <li>5. Lack of water</li> </ol>	<ol style="list-style-type: none"> <li>1. Loss of vegetation cover from over-grazing</li> <li>2. Severe wind / water erosion</li> <li>3. Water shortages</li> <li>4. New restrictions on animal grazing</li> <li>5. Limited water,</li> <li>6. Inferior soil quality</li> </ol>

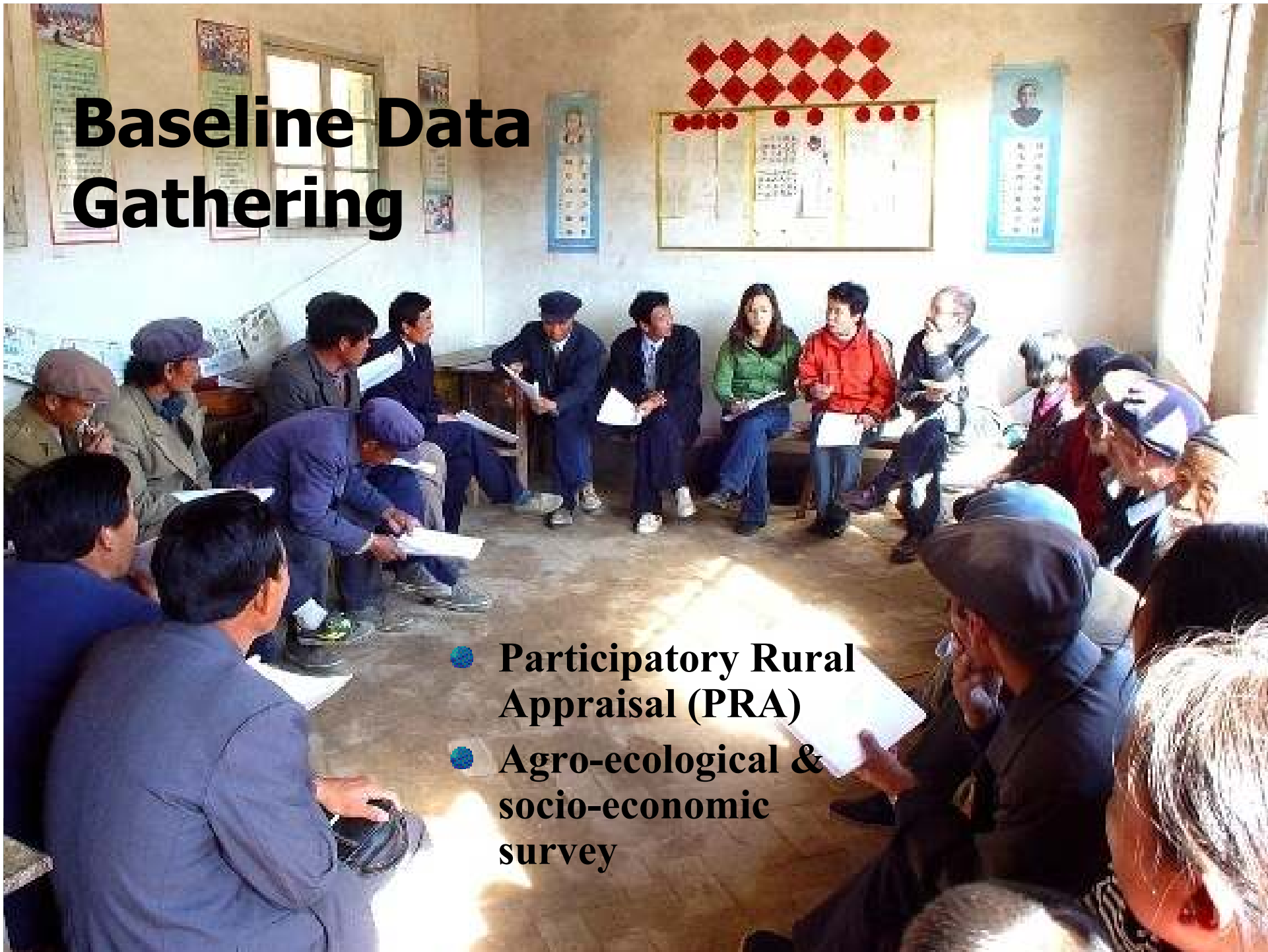
# The Agro-Ecological Village



1. Baseline data collection
2. Institutional building
3. Capacity building and training
4. Field level implementation
5. Public engagement

# Baseline Data Gathering

- Participatory Rural Appraisal (PRA)
- Agro-ecological & socio-economic survey



# PRA

The farmers identified the following areas of interest for the project

## On-farm research:

- Sustainable animal management
- Reduce women's burden in farming
- Reduce salinization

## Training:

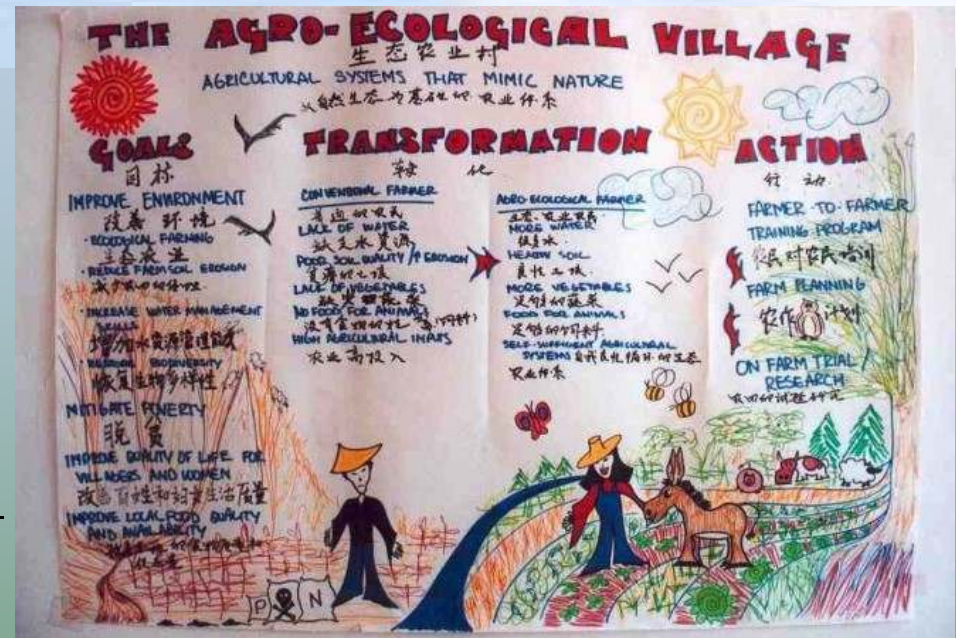
- Basic knowledge about ecological systems
- Increasing soil organic matter
- Reducing chemical fertilizers

## Field trials and new agricultural practices:

- Composting
- Drought-resistant vegetables and grasses
- Planting trees and shrubs
- Increasing bio-diversity

## Institutional capacity building:

- Establish linkages to markets
- Organize farmers in the exchange of information and technology





# Institutional Building Strengthening

1. Community Organizers:
2. Farmers Associations: Developed a constitution, board membership guidelines for activities during the project
  - Dingxi Agricultural Technical Association
  - Zhunger Growers Association

*Essential all project activities are well grounded*

- I** ● *Testing, extension and management of crop, vegetable and fodder varieties, trainings, livestock breeding*

*Technical specialists generally lack necessary organization and social skills!*



# Capacity Building

- PM&E
- Gender development
- Farmer-to-farmer training network and Ecological Training Course

# ***Farmer-to-farmer training Program***

The ecological farming modules included the following topics:

- Introduction to ecological farming
- Soil Fertility Management
- Cropping Systems
- Composting
- Horticulture

- Fruit production
- Pest & disease management
- Livestock Management
- Farm Planning
- Soil & water conservation



# ***Farmer-to-farmer training Summary***

	<b>Dingxi County</b>	<b>Zhunger County</b>
Number of trainers in each community	8	11
Number of training days conducted in each community	3386	1200
Percentage of women participants	50%	25%
Percentage of village population attending trainings	97%	68%



# ***Gender Development***

Both genders were involved in project activities:

- 44% of training participants were women
- 26% of farmer trainers were women
- Average income increased for women (Dingxi: 46%; Zhunger 24%)
- Female farmer (Gao Cunying) invited to speak in Beijing at high level Round Table meeting on Sustainable Soil Conservation

*(jointly organized by the Global Water partnership, World Association for Soil and Water Conservation and Chinese Society for Soil and Water Conservation in Jiangxi)*



# PM&E Program

Allows farmers to monitor their own progress



# Farm Planning & Field Implementation

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- “Learning Farms”
  - Ecological livestock & cropping transition
  - Comprehensive soil & water conservation
  - Appropriate technology (biogas & solar cookers)

# ***Learning Farms***

- **Ecological On-farm Demonstrations**
- **Adaptability Trials**
- **Ecological Farm Plan Rotations**

## **Productivity Drivers!!!**

<b>Good farm management</b>	<b>Good soil fertility</b>
<b>Good seeds &amp; animals</b>	<b>Good weather</b>



# ***Ecological On-Farm Demonstrations***

***Ecological farming enhanced comprehensive soil and  
water development program:***

- **More perennial forages and less water consuming crops**
- **Conserving crop residues on field to retain moisture and soil**
- **Reduced tillage**
- **Eliminating livestock grazing through in-stock feeding**
- **Improved quantity and quality of compost**
- **Reduced use of chemical fertilizers and pesticides**

# ***Adaptability Trials***

Varieties of crops, forages and vegetables distributed:

⇒ 103 in Dingxi, 56 in Zhunger



- **Alfalfa**
- **Corn**
- **Flax**
- **Grasses**
- **Lentils**
- **Millet**
- **Peas**
- **Potatoes**
- **Wheat**



# ***Crop Improvement***

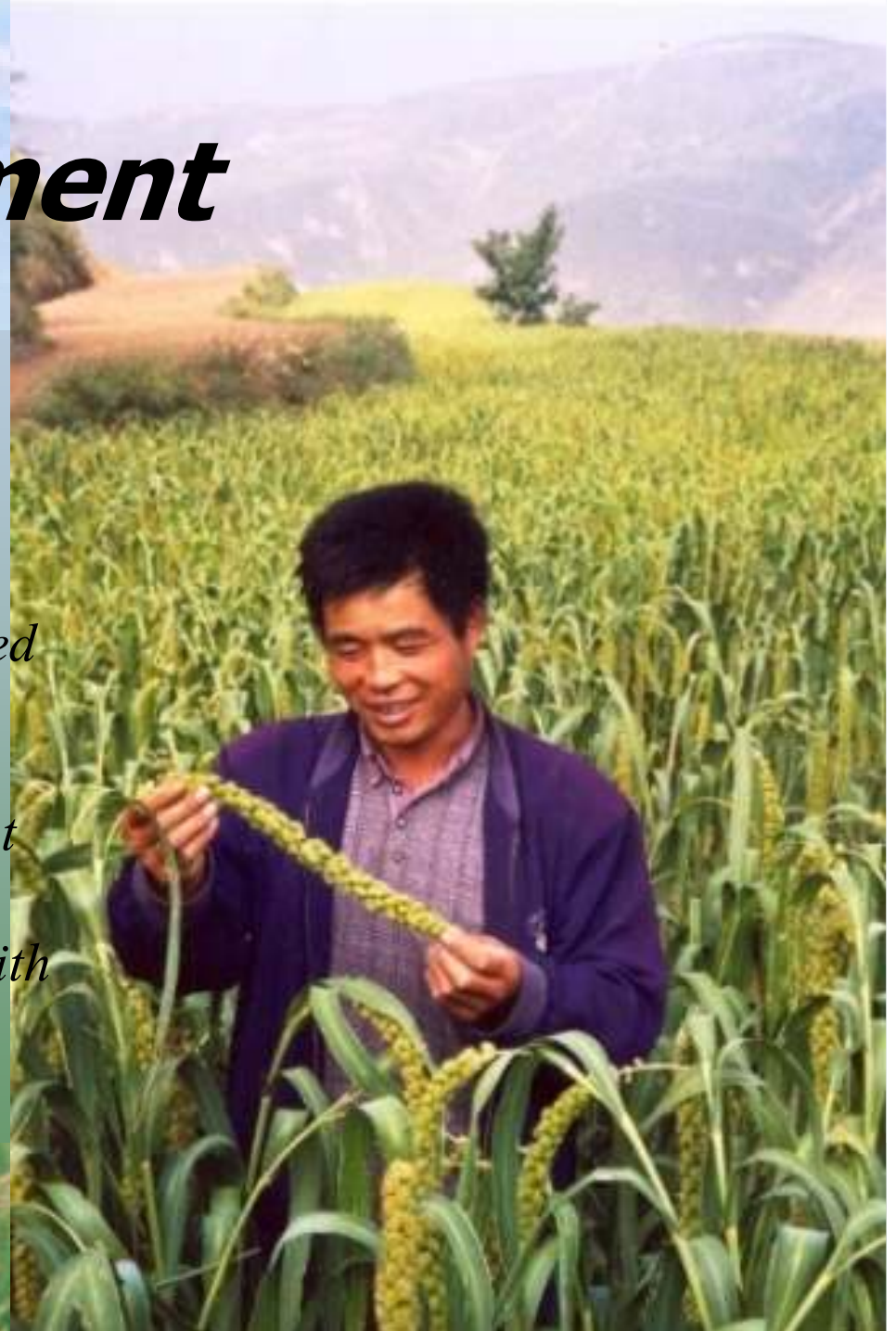
Farmers prioritized their seed needs,

Dingxi: 1<sup>st</sup>. potatoes, peas

2<sup>nd</sup> lentils, wheat, flax, millet, alfalfa,

Zhunger: alfalfa, corn, potatoes

- *successful varieties were tested, scaled up and distributed throughout the community*
- *commonly 20-30% yield improvement with adapted improved cultivars*
- *100% increase in yield in Zhunger with alfalfa and potatoes*



# ***Farm Planning***

## Dingxi:

- 211 Farm Plans drafted

## Zhunger:

- 116 Farm Plans drafted
- Rotations developed to optimize soil fertility and efficient water use



A large group of white cashmere goats with long, thick woolly coats are gathered in a dark, enclosed space, likely a pen or barn. The goats are looking in various directions, some towards the camera. The lighting is somewhat dim, highlighting the texture of their wool.

# Livestock Transition

Zhunger : 5 Improved cashmere male goats for cross breeding

Dingxi: Improved sheep for in-stock feeding

- Zhunger: 400 improved goats/yr doubled hair income/animal
- Major increases to revenues and equity
- More manure and less labour for herding

# Comprehensive Soil and Water Conservation

- Permanent cover of seabuckthorn and other shrubs for erosion control
- Planting alfalfa and Grasses
- Check dams to trap sediment
- Contours and Contour farming
- Water harvesting techniques



# Soil and Water Conservation Summary

<b>Results:</b>	<b>Dingxi County</b>	<b>Zhunger County</b>
Revegetation with sea buckthorn (ha)	588	705
Revegetation with grass (ha)	-	317
Check-dams installed	169	2 (v. large)
Water cellars installed	352	2
Area of terraces constructed (ha)	101	-

# Agro-Ecological & Socio-Economic Survey Results

*Both communities experienced significant income and food security benefits during project implementation (2002 and 2005):*

- 44% increase in mean household income in Dingxi and 60% in Zhunger
- Total revenue from farm-based sources (crops, livestock and forestry) increased by 64% in Dingxi and 68% in Zhunger
- Quality of life in Zhunger has been most dramatic, poorer households ate only ate mainly millet at project inception and now can eat healthy diverse diet



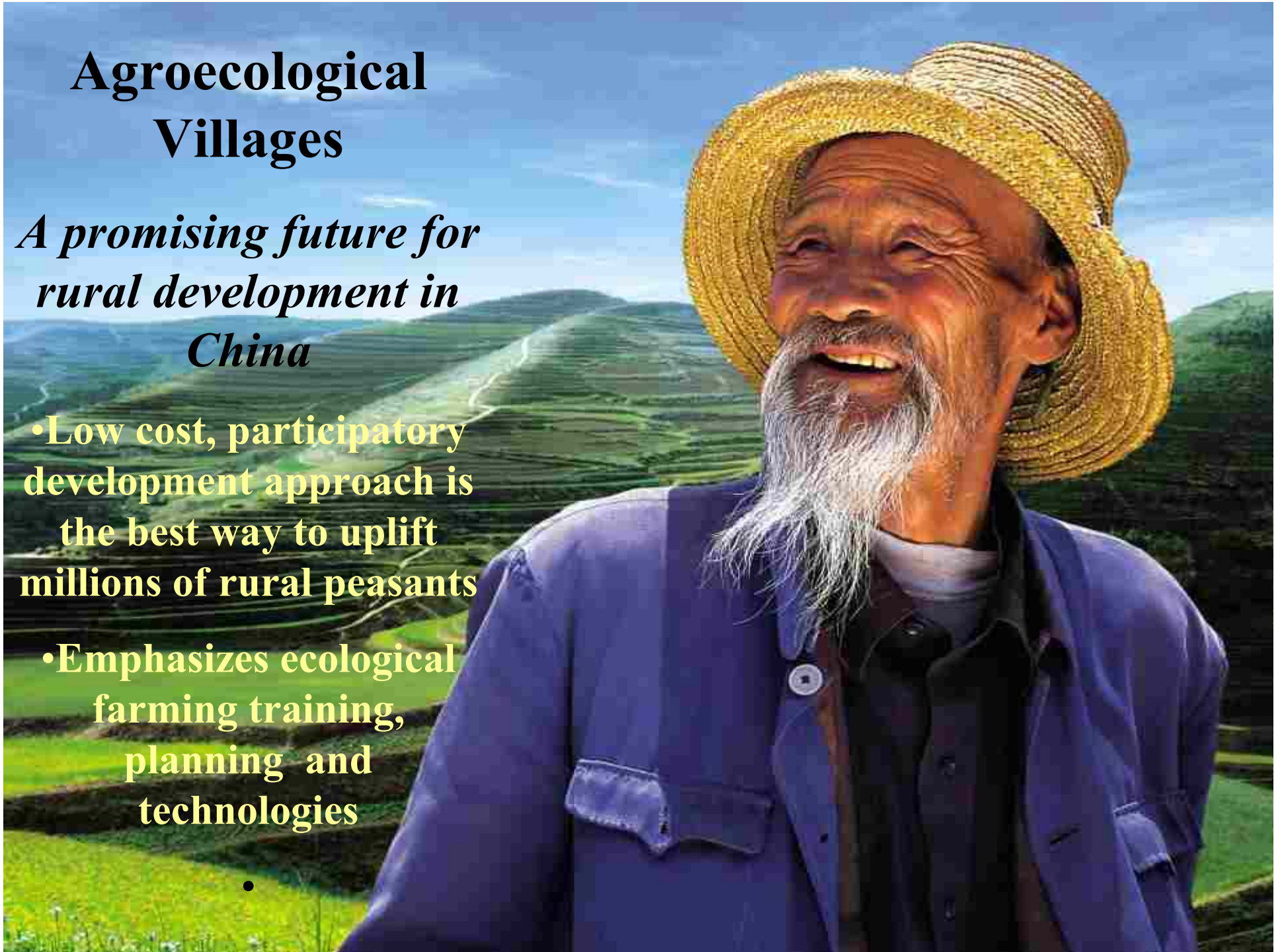


# Agroecological Villages

*A promising future for rural development in China*

- Low cost, participatory development approach is the best way to uplift millions of rural peasants
- Emphasizes ecological farming training, planning and technologies

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**Thank you!**

