

Study on the Living of Farmers Involved in ‘Grain for Green’ National Key Forestry Program in Yunnan Province

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Speaker Background

- Linsen Zhao, Chinese Fellow at WFI studying urban forestry for 6 months
- Background in silviculture, started to be involved in urban forestry in the past few years
- Teach Landscape Architecture at Southwest Forestry College, Kunming, Yunnan



6 National Key Forestry Programs in China

- Aiming at restoring the nation's ecosystems and landscape
- Covers 97% of China's counties
- Area of afforestation and reforestation will be 180 million acres
- Biggest reforestation plan in the world



‘Grain for Green’, or ‘The Conversion of Cropland to Forest Program’

- ◆ Paying farmers a stipend to plant Trees, not Crops on sloping land with gradient $>20^\circ$ and desert area
- ◆ Main objective: reduce soil erosion in mainly hilly areas
- ◆ Government designates a list of tree species to plant
- ◆ Covers part of east, most of middle and western regions
- ◆ Target: to convert 36 million acres of cropland with trees between 2001 and 2010
- ◆ Effect: Increase forest coverage by 5%; reduce soil erosion in 214 million acres and desertification in 252 million acres

Walnut (*Juglans regia*) is a favorite pick from the government's tree species list for Yunnan: native species, good market, easy storage, multiple purposes



Pecan (*Carya pecan*), almond (*Prunus communis*), pistachio (*Pistacia vera*)
prosper well

- pecan nuts harvested from experimental plots valued at over US\$ 5/lb



Mulberry (*Morus*
spp.) is another
profitable species



Case study in Yunnan Province

- Background
- Contents, methods and scale
- Result analysis
- Comments & recommendations

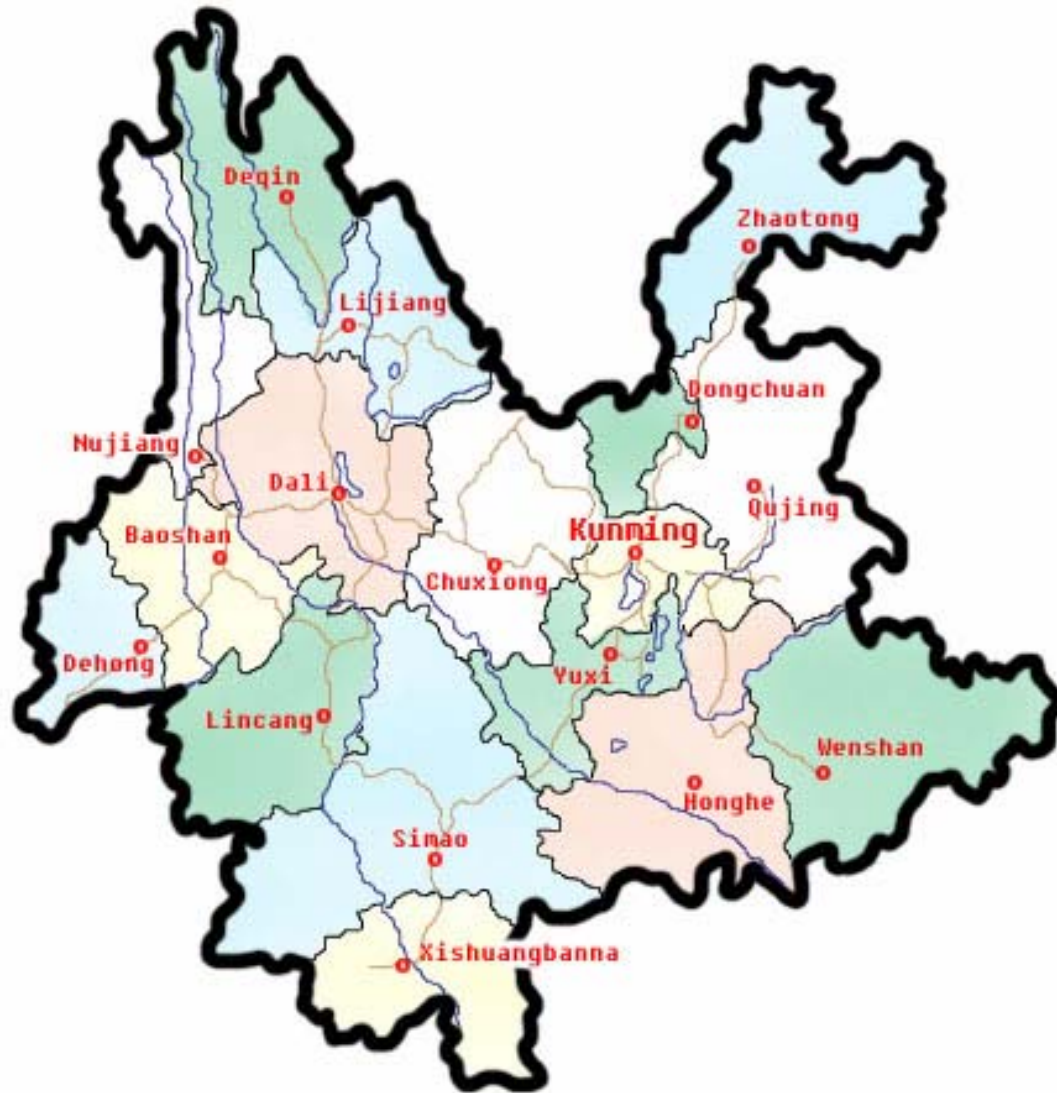


Map of China

Locations of provinces,
autonomous regions
and municipalities.



Map of Yunnan Province (Beautiful Clouds in the South)



Area: 152,084 square miles
4.1% of China

Topography: mountainous
94% (elevation 250-22,112 ft)

Forest cover: 49%

Pop.: 45 million (52 ethnic
minorities 38%, urban 30%)

GDP/cap: US\$ 1149 (2006)

Main industries: non-ferrous
metals, tobacco, tourism, cut
flowers (60% of China)

Natural resources: plants,
wildlife, water resource, solar
energy

Ever heard of Yunnan? Remember history

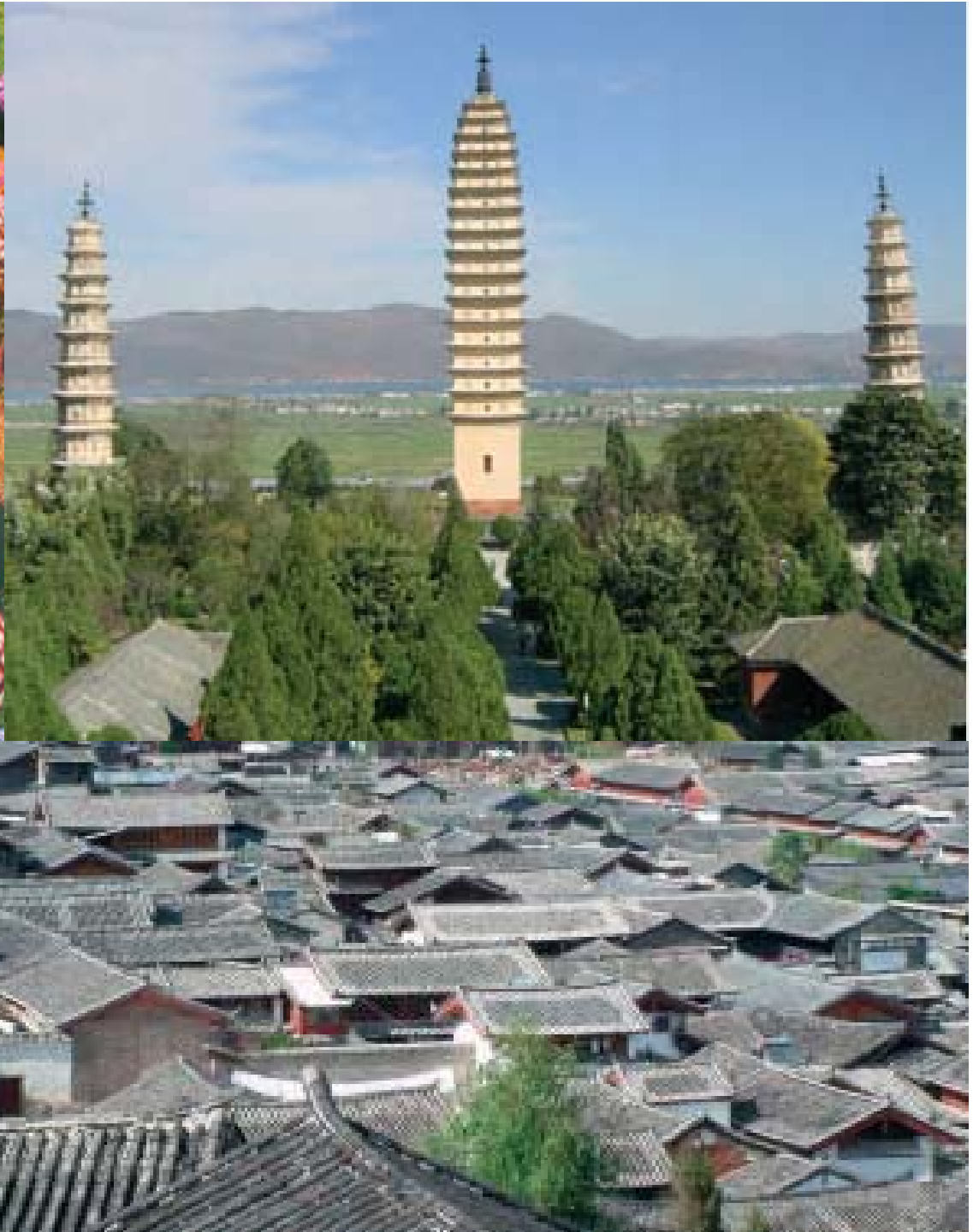


In World War II(1941-1942), Yunnan farmers used heavy stone rollers to build a landing strip for the famed US volunteer “Flying Tiger” air force that flew the “Camel Hump” India-China route.

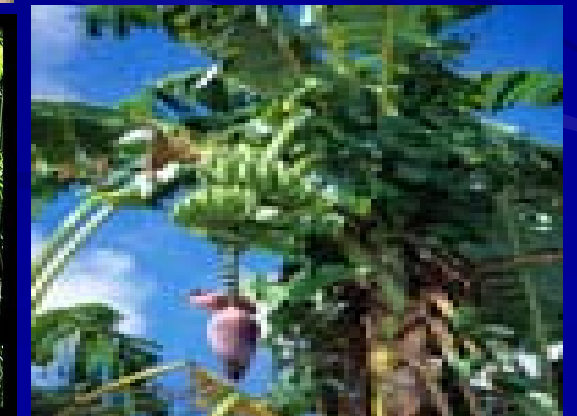








The Kingdom of Plants



The Kingdom of Animals



Gaur



Clouded leopard



Red panda



Golden cat



Asian elephant



Culver



Mandarin duck



Lady Amherst's pheasant



Golden pheasant



There are major 26 different ethnic minorities in Yunnan, accounting for 38 % of the province's population and making it the most culturally diverse province in China.

Grain for Green Program Issues

- Government pays farmers a stipend for each year that the program runs, e.g. 5 years for economic (non-timber products) forests and 8 years for ecological forests
- What will happen to farmers after the stipends end?
 - Can farmers make a living from the trees?
 - Will there be markets to sell the wood or the fruits?
- Need to study the long-term impact of Grain for Green program on farmer's livelihoods

National Program Evaluation

- Central government directed a national survey of each province
- 3 types of surveys were conducted in Yunnan
- (1) Self reporting by prefectures, counties, townships
 - ◆ 16 prefectures/municipalities
 - ◆ 129 counties or districts
 - ◆ 1428 townships
 - ◆ 11273 villages
 - ◆ 1.281 mil farmer families
 - ◆ 5.411 mil population





(2) Sampling

In addition to self-reporting, one county from each prefecture was sampled to cross-check accuracy of the data



(3) Typical sampling of farmers

- 6 counties included: distributed across the province
- 14 townships, 18 villages, 29 residential groups, 92 families, 433 people
- Converted land area: 145 acres
- 1.6 acre per family
- 0.3 acre per person



Study Questions

- ◆ Who has been impacted by the program?
- ◆ Did their incomes improve?
- ◆ Was a lot of food-producing land lost for the conversion?
- ◆ How much land was converted, what tree species were planted, were other crops planted beneath the tree canopy?
- ◆ Were the farmers paid in a timely manner and what were their attitudes towards the program?
- ◆ For energy and heat, how much wood, coal, other sources of fuel were used?
- ◆ Was there conflict between livestock and forestry?
- ◆ What types of business activities developed from these planted trees?

Results analysis

planted scale, tree species, investment, food supply, income



Program scale in Yunnan Province

(by the end of 2005)

- Finished conversion area = 85 million acres

Investment	Spent	Planned
Yunnan	\$633 mil	\$1.44 bil
National	\$20 bil	\$56 bil

Types of plantations by program

Type	ecological	multiple (eco-profit)	economic	grasses
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Area

(mil acres)	55.8	24.9	4.4	0.18
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(%)	65.4	29.1	5.3	0.2
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Main tree species planted (16 counties)

- **Ecological plantation:** *Pinus* spp., (*P. yunnanensis*, *P. armandi*, *P. kesiya* var. *langbianensis*) *Cupressus* spp., *Illicium verum*, *Eucalyptus* spp., bamboo species (*Sinocalamus latiflorus*, *Dendrocalamus* spp., *Phyllostachys sulphurea*), *Cunninghamia lanceolata*, *Cryptomeria fortunei*, *Betula alnoides*, *Alnus* spp., *Picea* spp., (>200 acres of each species)



Multiple plantations:

- *Juglans regia*, *Carya pecan*, *Aleurites fordii*, *Camellia sinensis* (tea), (>200 acres of each species); and *Morus abba*, *Castanea mollissima*, *Zizyphus spp.*, *Zanthoxylum bungeanum*, *Dalbergia szemaoensis*, *Hevea brasiliensis*, *Eucommia ulmoides*



Economic plantations:

- *Pyrus pyrifolia*, *Mangifera indica*, *Prunus pseudocerasus*, *Citrus limen* (>25 acres of each species); and *Citrus spp.* (oranges), *Cinnamomum cassi* (spice), *Eriobotrya japonica*, *Prunus salicina*, *Prunus persica*, *Diospyros kaki*



Farmers' Incomes

- The gross annual income per capita of the farmers involved was 1,850 yuan (US\$237) in 2005
- Sampling survey from 16 counties showed there was an increase (this includes subsidies)

	Average family income (yuan/year)	Average Annual income per capita (yuan/year)
before	12871 (US \$1650)	2848 (US \$365)
after	14179 (US \$1817)	3138 (US \$402)

What will happen to incomes after the subsidies stop? (i.e. 8 years for eco, 5 years for pro.)



Differences between self reporting and sampling—underestimating the problem

	Self reporting (1.28 mil families 5.41 mil people)	Sampling (16 count, 9866 families, 44580 people)
Increasing income	36.6%	31.2%
No change	48.0%	13.5%
Declining income	15.3%	38.4%
Serious income and living difficulties	8.3%	17.0%

Major concerns with program impact

- ◆ Some tree species will have no profits due to poor timber quality and low growth, (e.g. *Cupressus spp.*)
Irrational species selection at the initial stage because of stiff regulations
- ◆ Some species with profitable potential will not be mature and harvested (e.g., *Betula alnoides*, *P. kesiya* var. *langbianensis*)
- ◆ Low growth due to poor site conditions
- ◆ Poor tending, no market for final products
- ◆ Non-competitive products

Impact on food safety by the program

Both types of surveys show 50% decline in food land area, but only small decline in food supply

	Self Reporting		Sampling	
	before	after	before	after
Grain land area (acre/capita)	0.28	0.12	0.31	0.18
Food shortage	NA	8.1%	NA	14.5% (7.81%)

Reasons for food shortage in Yunnan

- There was shortage before the program
- Whole conversion families lost all the food land
- Some food production land was converted
- Infertile soil or in areas with poor site conditions
- Poor cultivation level (slash and burn)

Conclusions for food supply

- There is great difference among the counties
- Overall, 80% of Yunnan farmers in the 'Grain for Green' program were not negatively impacted in terms of food production.
 - ◆ Food producing land area has been basically ensured (land area per capita was in accordance with national regulations)
 - ◆ But some 20% of Yunnan farmers will have problems with food supply—8% of them severely

Problem with program— Focus is on Planting, not on Markets

- Only 132 companies in Yunnan process and market forest raw materials
- Only 15 leading enterprises
- Less value-added processing



- Small in scale, little capital and investment
- Short production chains with little added value
- Monotype products, mainly engaged in planting and timber processing of eucalyptus, bamboo and pine tree species



Utilization of understory resource

- Among 9866 sampled families in 16 counties,
few made use of the resources under the canopy
 - ◆ 503 families, 5% raised livestock
 - ◆ 1227 families, 12% planted other crops
 - ◆ 8118 families, 81% did not do anything

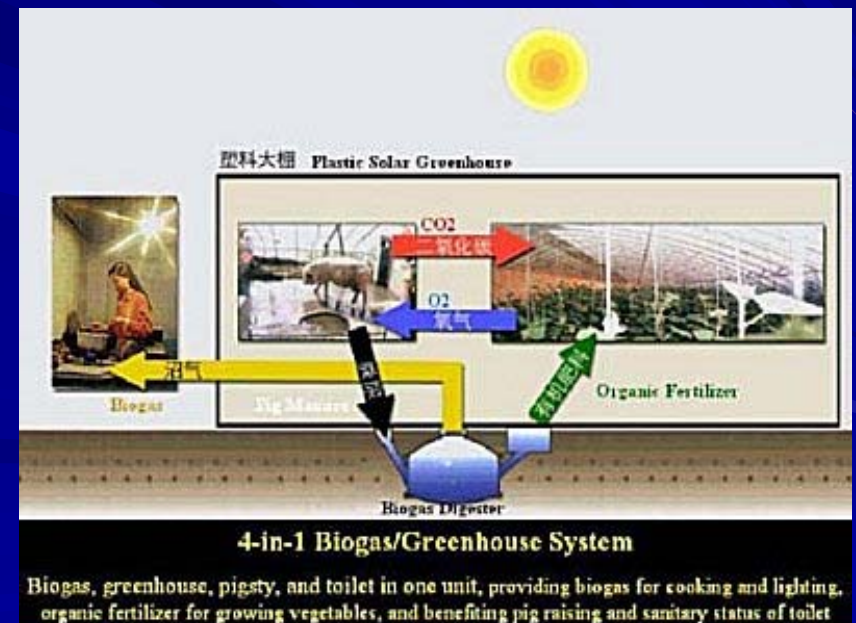


Energy structure change of the farmers

- Firewood was still dominant, though its proportion dropped a little
- Fuel-saving stoves were effective



- Proportions of coal, electricity, solar energy in energy consumption increased a little
- Family methane pool technique and solar water heater have been extended quickly
 - ◆ Methane stoves increased by 11% since the program



Attitude of the farmers involved

- Survey of 9866 families in 16 counties
- Did they like the Grain to Green program?
 - 95.3%, 9402 families 'yes'
 - 2.4%, 239 families 'no'
 - 2.2%, 218 families 'other'
- Majority of the farmers hoped the program would continue, with improvements

Concrete wishes of the farmers

- ◆ Stabilize policies, set forest land tenure for long duration
- ◆ Prolong duration for subsidy, especially for potential tree species
- ◆ Increase subsidy, relieve food shortage
- ◆ Government activities
 - Introduce superior species/varieties/cultivars
 - Expand market, open new canals
 - Build better roads and solve transportation for remote areas



Study Recommendations

- Extend the subsidy duration
- Relax tree species selection
- Allow intercropping at initial stage
- Support related enterprises and marketing
- Permit rational thinning
- Provide varied social services
- Help to set up associations
- Relocate migrants from ecologically sensitive areas
- Train and employ landless farmers
- Legislate to take ecological or carbon taxes

A scenic landscape featuring several tall, jagged rock formations, possibly limestone karsts, rising from a lush green forest. The rocks are dark grey with some yellowish-brown staining. In the foreground, a calm body of water reflects the sky and the surrounding greenery. The sky is blue with scattered white clouds.

Thank you very much!

Any questions?