

Fish Production Systems in Nepal

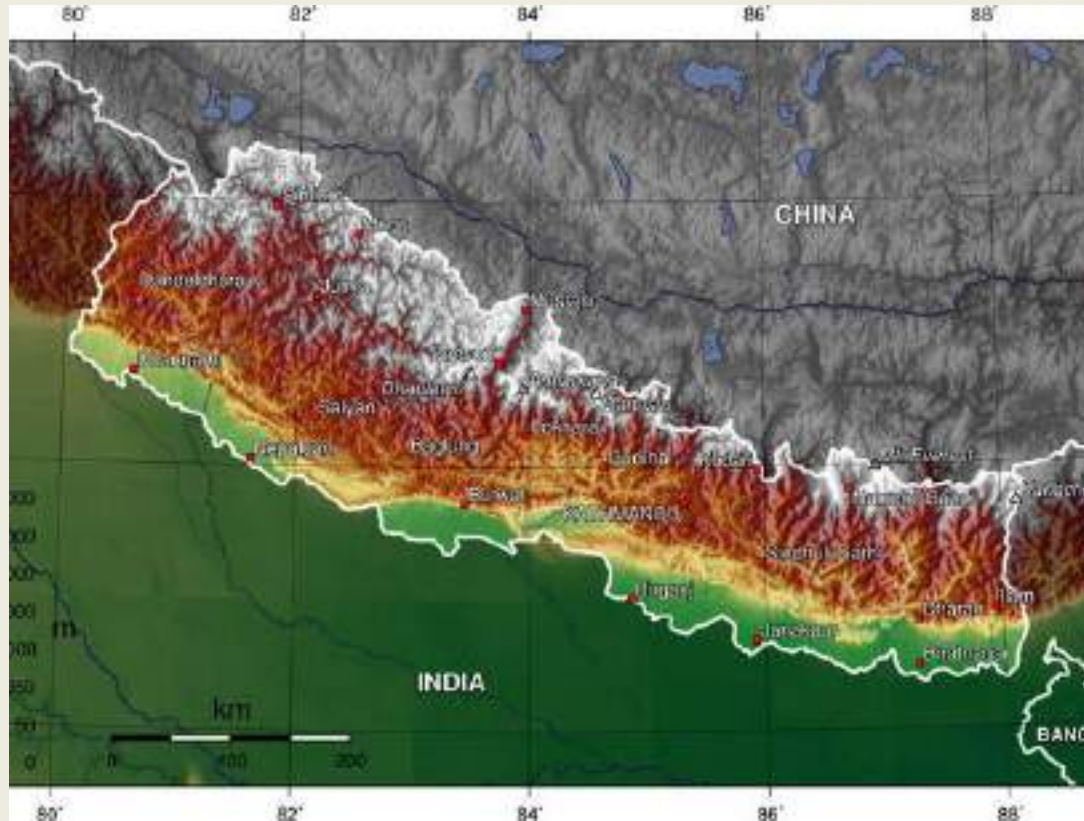
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Physiographic Region



Southern Plain and Valleys	25%
Mid hills and mountains	68%
High Mountains	15%

National Fish Production Status

- Total Fish production = 56,000 mt
 - Aquaculture = 36,500 mt
 - Fisheries (Capture) = 21,500 mt

- Per caput fish production = 2.0 kg/yr

Categorization of Aquaculture Production (2012/13)

Culture Systems	Production (mt)	Percentage
Pond Culture	31240	86.73
Swamp	4050	11.26
Cage	360	1.00
Enclosure (Pen)	140	0.39
Paddy-fish	45	0.13
Race-way	180	0.50
Aquaculture Total	36015	100.00



Production distribution by geographic region

- Eastern region = 35%
- Central region = 40%
- Western region = 15%
- Mid-western = 7.5%
- Far-western region = 2.5%

Fish seed

- Seed availability
 - Private hatchery = 81%
 - Government hatchery = 19%

Fish Production Systems

- Small-scale household aquaculture
 - Family/Household pond (< 200 m²)
 - A subsystem of household farming
 - 60-70% fish produced goes for family consumption
 - 30-40% for sale and supplemental income

Production systems (Cont'd)

- Semi-commercial aquaculture
 - Relatively large pond/s (1- 4 in nos.)
 - Cage aquaculture (1- few in nos.)
- Commercial aquaculture
 - Registered as commercial farm
 - Pond aquaculture
 - Cage aquaculture
 - Raceway aquaculture

Examples of small-scale household pond

Integration with vegetables

- Pond for fish
- Dike for vegetables
- Green water to irrigate vegetable in dike
- Waste of vegetables as input for pond



Integration with Livestock

- Manure to pond
- Urine to pond
- Waste feed as input for pond



Mid-hill aquaculture

- Transportation of fry/ fingerling
- Culture in earthen ponds
- Harvest of fish
- Productivity = 2- 3 tons/ha/yr



Small-scale aquaculture

- Integrated farming
- Livelihood based
- Family nutrition
- Surplus sale
- Productivity 3 -5 ton/ha/yr



Aquaculture for livelihood and nutrition



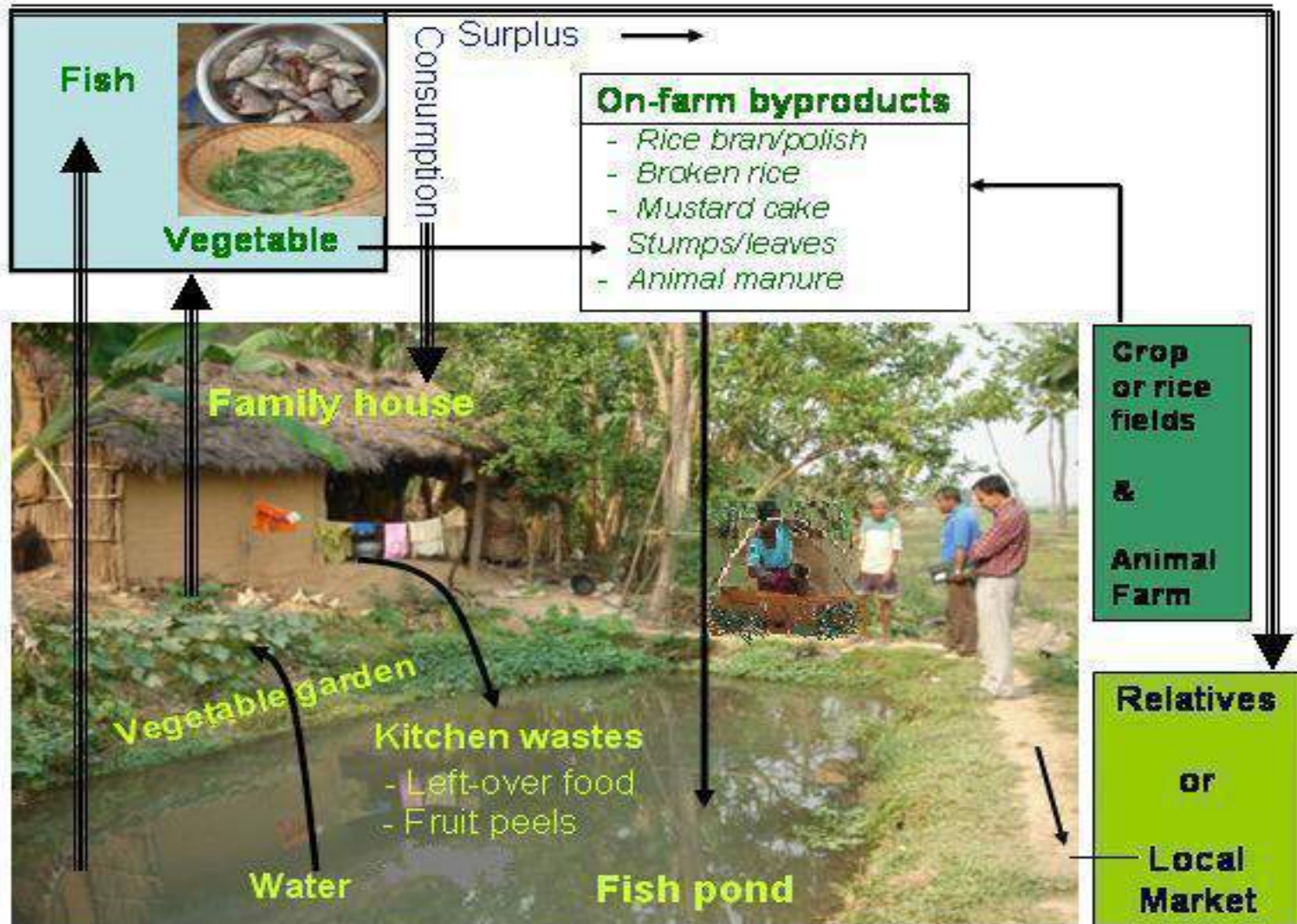
Small indigenous
fish species (SIS)



Carps



Small-scale aquaculture



Semi-commercial Systems

- Polyculture of Carps
 - Generally 3 – 7 species
- Semi-intensive culture system
 - Pond fertilization with inorganic and organic fertilizer
 - Supplemental feed
- Majority of production is for sale



Market of carps



Sahar-Tilapia

- Sahar growth and production
- Tilapia growth



Cage culture in Lake and Reservoir

- Extensive cage culture in Lakes and Reservoir
 - Silver and Bighead carps feeding in planktons
- Newly practiced Semi-intensive cage culture:
 - Grass carp feeding on aquatic grass





Phewa lake Pokhara



Kulekhani reservoir

Fish from cage culture



Productivity of planktivorous fish = $1.5 - 3 \text{ kg/m}^3$

Productivity of grass carp = $3-6 \text{ kg/m}^3$

Commercial Catfish culture (African catfish)

Pond size (m ²)	9 – 427
Mean growth (g/d)	2 - 6
Mean Yield (kg/m ² /yr)	9 – 16
Poultry waste	
Extrapolated yield (ton/ha)	90 - 160



Commercial catfish culture

Pangas catfish farming

- Stocking: 10-25 fish/m²
- Pellet feed
- Production : 30-40 ton/ha/yr



P. hypophthalmus



Commercial Trout Farming

- Cold, flowing and clean water farming
- Race-ways culture in concrete tanks
- High quality pellet feed
- Productivity = 10-15 kg/ m³
- For Luxury market



AquaFish Innovation Lab

Nepal Project

Objectives

Overall objectives

Develop environmentally sustainable and efficient systems

Enhance household consumption of fish

List of Research projects

- 1. Reproduction and seed production of sahar (*Tor putitora*) in Chitwan Nepal**
- 2. Production of periphyton to enhance yield in polyculture ponds with carps and small indigenous**
- 3. Household fish ponds in Nepal: their impact on fish consumption and health of women and children; and their constraints determined by value chain analysis**

Nepal Project Cont'd

- 4. Introduction of two small indigenous species to improve sustainability in typical polyculture systems in Nepal (Climate change adaptation: Indigenous species/experiment)**
- 5. Demonstrating the value of tilapia and sahar production in polyculture ponds using government farm and on-farm trials**
- 6. Establishing school ponds for fish farming and education to improve health and nutrition of women and children in rural Nepal (Human nutrition and human health impacts of aquaculture/activity)**

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