Dedication

Late Prof. Dr. M. C. Nandeesha
CARP-SIS POLYCulture: A NEW INTERVENTION TO IMPROVE WOMEN’S LIVELIHOODS, INCOME AND NUTRITION IN TERAI, NEPAL


Agriculture and Forestry University
Chitwan, Nepal
Outline

• Carp-SIS-Prawn polyculture
• Carp-SIS polyculture
• Project activities
• Project output
• Project outcome
• Conclusion
Carp-SIS-Prawn polyculture (2008-2010)
Project site

Kailali

Chitwan
Target group

- Total no. of beneficiaries – 136
- 95% Tharu women – ethnic group
- Main age group- 20-39 yr.
Objectives

a. to improve the nutrition of women and children through increased intake of nutrient rich SIS

b. to increase household income

c. to empower women
### Micro-nutrients in fish (Roos et. al., 2006)

<table>
<thead>
<tr>
<th>Fish</th>
<th>Vit. A (RAE/100g raw clean fish)</th>
<th>Ca (g/100 g raw clean fish)</th>
<th>Fe (mg/100 g raw clean fish)</th>
<th>Zn (mg/100g raw clean fish)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Esomus danricus</em> (SIS)</td>
<td>890</td>
<td>0.9</td>
<td>12.0</td>
<td>4.0</td>
</tr>
<tr>
<td><em>Amblyparyngodon mola</em> (SIS)</td>
<td>2,680</td>
<td>0.9</td>
<td>5.7</td>
<td>3.2</td>
</tr>
<tr>
<td><em>Puntius sophore</em> (SIS)</td>
<td>60</td>
<td>1.2</td>
<td>3.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Silver carp</td>
<td>&lt;30</td>
<td>0.9</td>
<td>4.4</td>
<td>-</td>
</tr>
<tr>
<td>Mrigal</td>
<td>&lt;30</td>
<td>1.0</td>
<td>2.5</td>
<td>-</td>
</tr>
</tbody>
</table>

RAE=Retinol Activity Equivalent
Household Income

Household consumption to improve nutrition
Drawbacks

• Prawn seed: Brought from Bangladesh
  - Expensive
  - High mortality
  - Not sustainable

• Though Prawn has high demand among farmers.

• Mara (*Amblypharyngodon mola*)
  - Unavailable in the project site - Chitwan

• Niche utilization
  - 4 carp species might not utilized all niches

Sustainability ?????????
<table>
<thead>
<tr>
<th>Species</th>
<th>No./ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rohu</td>
<td>2,000</td>
</tr>
<tr>
<td>Mrigal</td>
<td>500</td>
</tr>
<tr>
<td>Silver carp</td>
<td>3,000</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>1,000</td>
</tr>
<tr>
<td>Common carp</td>
<td>2,000</td>
</tr>
<tr>
<td>Grass carp</td>
<td>1,500</td>
</tr>
<tr>
<td>SIS (Dedhuwa/Pothi)</td>
<td>30,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40,000</strong></td>
</tr>
</tbody>
</table>
Activities

• Stocking of Carp and SIS fingerlings

• Fertilization: Urea and DAP @ 470 g/100 m² and 350 g/100 m²

• Feeding: daily, dough of rice bran and mustard oil cake
• Partial harvesting of SIS for household consumption

• Final harvesting
Production

- Average total fish production was 4.4 t/ha/y, higher than national average.

- Carp and SIS contributed 86% and 14% to the total production, respectively.
Extra production
Consumption

- Consumed 48.7% of the total production on average
- Fish consumption rate was 3.7 kg/caput/y
- Fish consumption rate - double of national average
• Farmers sold surplus carp i.e., 51.3% of the total production.
• Income - NPR. 3,025 per household in 270 days.
• Income spent on household expenditures, children school fee etc.
Marketing

• Marketing: not a problem because small production.
• Farmers sold carp in neighbourhood.
• Customers come to farmers’ house to buy fish.
• Large quantity was sold during final harvesting.
Capacity building

Farmers’ training

Eighteen farmers served as trainers in Finnish project

Field trip
Capacity building..........................

• Six women fish farmers’ groups and one cooperative is formed.
• Member’s no: 17-26 member/group
• Collects NPR 10-25/month/member which they utilize in repairing of pump set, disbursing loan to needy member at low interest i.e., 1%/month.
• Highest loan disbursed was NPR. 5,000.
Outcome

Self-confidence improved

Farmer

New Cooperative President
Outcome

Got opportunity

Farmer

Field Supervisor
Outcome

Improved participation
Conclusion

• Was able to
  – increase the food, income and nutritional standards of women and their children in a marginalized Tharu community.
  – to empower women through income generation, pond ownership and capacity building.
  – established SIS as a high nutrient value fish.
Ways forward......

- Up scaling of the approach to new areas
- The approach is being replicated in four districts by IAAS, AFU and NGOs.

1. Twinning support for development of women fish farmers’ organizations in Nepal (2012-2013) – Government of Finland
2. Carp-SIS polyculture in enhanced system (2013-2015) – Aquafish CRSP
Thank you
Embassy of Denmark to Nepal
GAF4, Aquafish CRSP