

Improvement of women's livelihoods, income and nutrition through carp-SIS-prawn polyculture in Terai, Nepal

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Partner Institutions

1. Institute of Agriculture and Animal Science
2. Rural Integrated Development Society
3. Fisheries Development Centre
4. Resource Empowerment Society

Supporting Technical Partner Institutions

1. Bangladesh Agricultural University, Bangladesh
2. University of Copenhagen, Denmark

Introduction

- Malnutrition caused by vitamin and mineral deficiencies among poor women and children is a serious health problem in Nepal (MOHP, 2006).
- Nearly, 48% of children under five years age are anemic and 49% are stunted (MOHP, 2006). Similarly, 36% of women age 15-49 are anemic (MOHP, 2006).
- There is a need to increase animal food sources particularly Small indigenous fish species (SIS) in their diet to supply essential nutrients such as vitamins, minerals and animal protein.

Vitamin A content in fish species

Fish Species	Vitamin A Mean (RAE/100g/raw, edible parts)
<i>Amblypharyngodon mola</i>	2,680
<i>Rasbora tornieri</i>	1,477
<i>Clupeoides borneensis</i>	250
<i>Channa punctatus</i>	140
<i>Corica soborna</i>	90
<i>Hypophthalmichthys molitrix</i>	30

(Thilsted, 2009)

- Semi-intensive carp polyculture is the major aquaculture system of Nepal. However, it does not promote household fish consumption.
- Needs to develop a sustainable fish culture technology that increases the household consumption as well as the income.
- Carp-SIS-Prawn polyculture, a better approach because
 - a) Improves family nutritional status by frequent consumption of SIS.
 - b) Increases household income by sale of high – priced carps and prawn.

Objectives

- a. to improve the health and nutrition of women and children through increased intake of nutrient-dense SIS
- b. to increase household income
- c. to improve livelihoods of women

Project site



Target group

Tharu Community



Activities

Site selection



women farmers'
selection



Pond construction

Approximately
100 m² pond



Training

■ Trainers' training



■ Farmers' training



Stocking

Carp

1. Rohu (*Labeo rohita*)
2. Mrigal (*Cirrhinus mrigala*)
3. Catla (*Catla catla*)
4. Silver carp (*Hypophthalmichthys molitrix*)

SIS

1. Mara (*Amblypharyngodon mola*)
2. Dedhwa (*Esomus danricus*)
3. Pothi (*Puntius sophore*)

Prawn

1. Giant freshwater prawn (*Macrobrachium rosenbergii*)



Stocking combinations

Table 1. Stocking density (number per hectare) of carps, SIS and prawn

Species	Carps	Carps- prawn	Carps- mara- prawn	Carps- dedhwa- prawn	Carps- pothi- prawn
Rohu	3,000	3,000	3,000	3,000	3,000
Mrigal	1,000	1,000	1,000	1,000	1,000
Catla	1,000	1,000	1,000	1,000	1,000
Silver	2,500	2,500	2,500	2,500	2,500
Mara	-	-	25,000	-	-
Dedhwa	-	-	-	25,000	-
Pothi	-	-	-	-	25,000
Prawn	-	3,750	3,750	3,750	3,750

- Partial harvesting of SIS for household consumption



- Partial harvesting increased household consumption



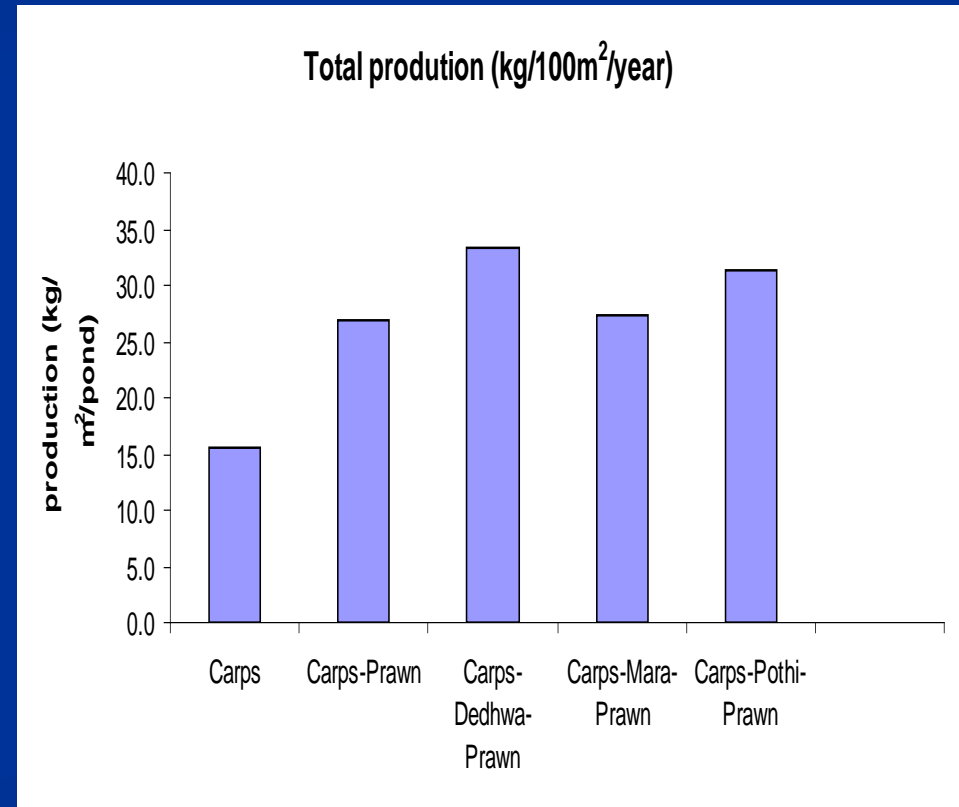
Final harvesting



Outcomes

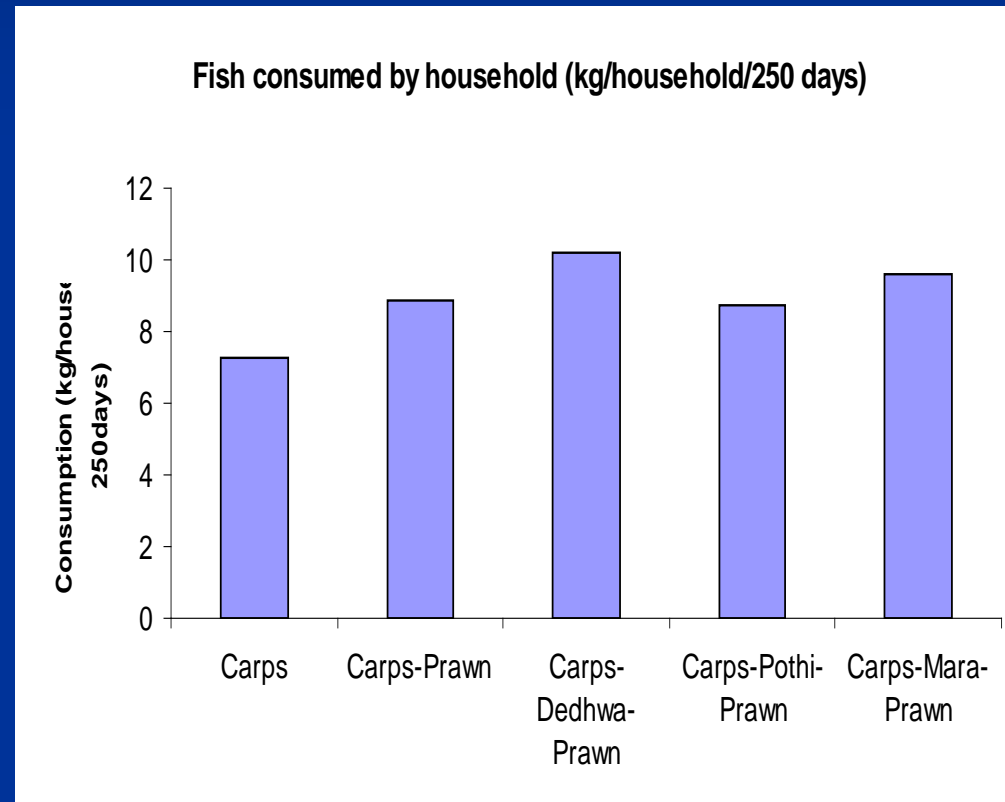
Production

- Average fish production - 2.6 t/ha/y
- Relatively low production due to use of poisoned canal water to the ponds
- Production is almost double in SIS added ponds



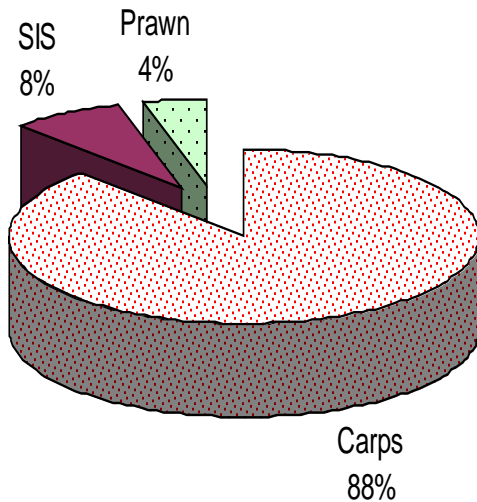
Consumption

- All household consumed fish
- Average fish consumption rate was 9 kg/household in 250 days
- Farmer consumed 54.4% of the total production in average
- Consumption increased by 20-40 % in SIS growing farmers than non-SIS growing farmers

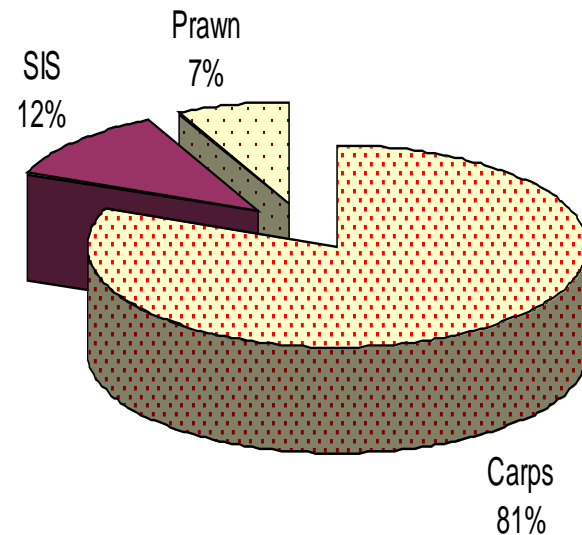


Contribution of Carps, SIS and Prawn on production and consumption

Contribution of Carps, SIS and Prawn on pondwise total Production

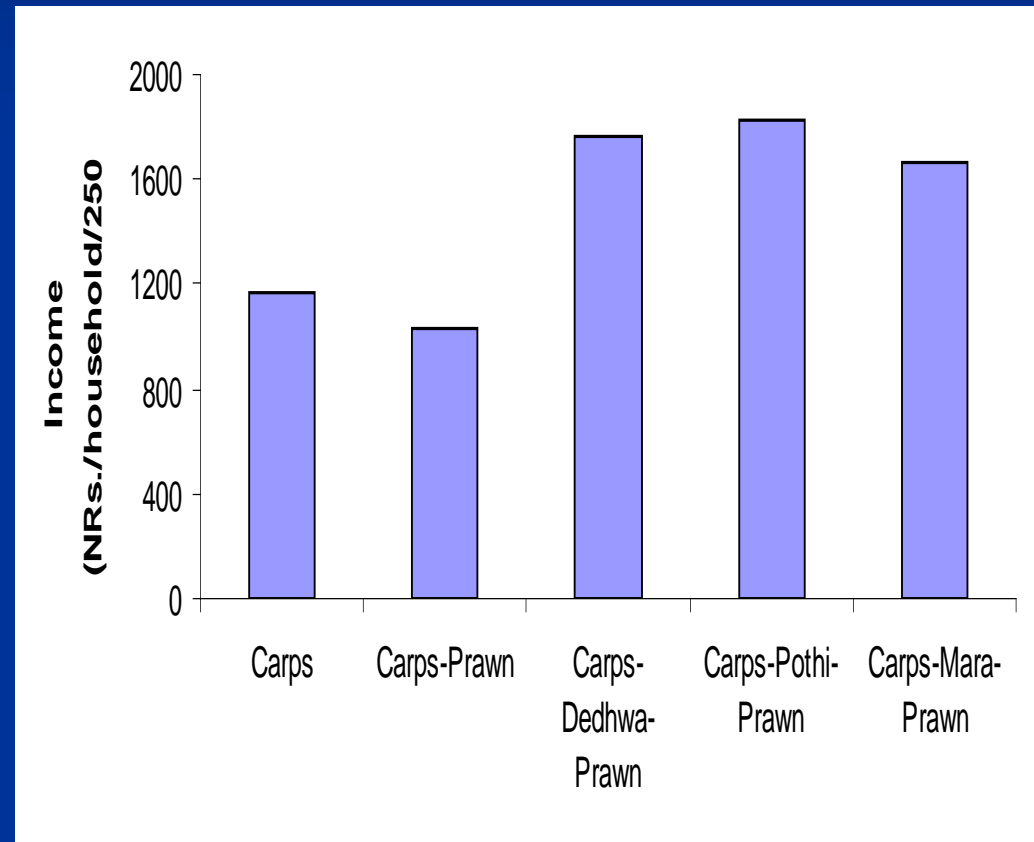


Contribution of Carps, SIS and Prawn in household consumption



Income earned by farmers

- Farmers sold surplus carp and prawn.
- Farmers earned NRs. 135 to 4,846 in 250 days which they utilized to cover household expenses.
- SIS ponds gave approximately 50% higher income than non-SIS ponds



Formation of women farmer groups

- Namuna Bikash Mahila Machapalan Krishak Samuha – Fulloria
- Janmukhi Mahila Machapalan Krishak Samuha – Mudovar
- Rai Mahila Machapalan Krishak Samuha - Jeetpur and Simara



Conclusion

- Production was affected by using poisoned source water.
- Adding SIS and prawn to carp ponds increased production, consumption and income among farmers.
- Needs replication of the approach in other areas to benefit poor.

A photograph of a woman sitting in a pond, surrounded by lush greenery. The woman is wearing an orange top and shorts, and is smiling. The water is calm, reflecting the surrounding foliage. The text 'Thank you' is overlaid in large yellow letters at the top, and 'Embassy of Denmark to Nepal' is overlaid in smaller yellow letters below it. A timestamp '1/12/2009 11:07am' is visible in the bottom right corner.

Thank you

Embassy of Denmark to Nepal

1/12/2009 11:07am