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The U.S. Government's Global Hunger & Food Security Initiative

Pilot testing of agricultural technologies: uptake and impacts on diet diversity in Bangladesh

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INTRODUCTION

- The potential of agriculture innovations to improve consumption and nutrition by increasing year-round availability of aquaculture and horticulture products needs to be explored

- There is need for innovative technologies : shelf life, food safety, access to good quality.

- The Nutrition Innovation Lab/Tufts in collaboration with the Horticulture Innovation Lab/ UC Davis implemented a test of technologies (Barisal & Dhaka).

  Cool rooms/ CoolBot: 36 HHs

  Solar dryers : 36 HHs

  Floating gardens: 36 HHs

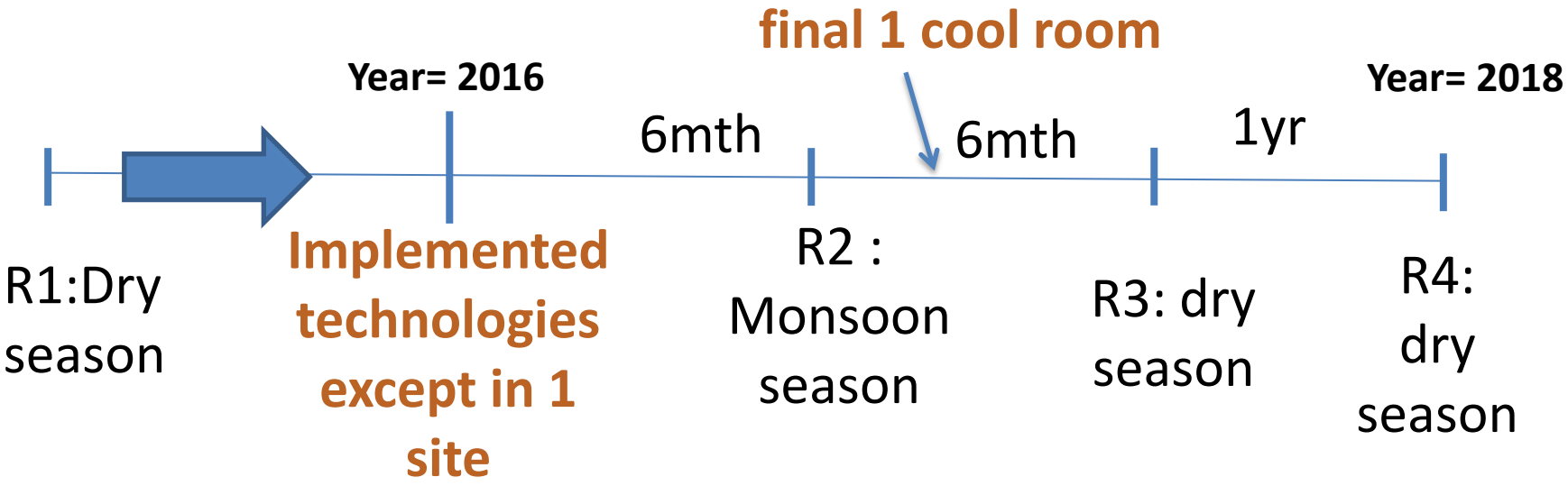
Research question

- What is the effect of implementing **new technologies** (cool rooms, solar dryers, floating gardens) on the income, consumption, nutrition and health of households?

Research design: Mixed methods

- Quantitative survey: enrolled all 108 beneficiaries of 3 technologies
- Qualitative survey: Nine Focus Group Discussion (FGDs) and nine Key Informant Interview (KII)

Program and research implementation



TECHNOLOGY 1: SOLAR CHIMNEY DRYER

- Community owned.
- One community: rice, bitter gourd, cabbage, tomatoes, olive, pulse, mango etc.
- Second community: Fish drying
- Low-cost, can be made from local materials.
- Plastic cover protects the food products from dust, rain, and insects.
- Construction cost : $120

TECHNOLOGY 2: FLOATING GARDENS

- Floating garden made up of low cost environmentally friendly materials.
- Allows farmers to grow vegetables on their ponds.
- Contains soil-less medium to allow plant production without impacting fish.
- Water hyacinth negatively impact fish in small ponds.
- Construction cost: $110

Technology 3: Cool room

- Cool room with household AC and room temperature sensor (Cool bot device.
- Reduces water loss and deterioration, growth of fungi and bacteria.
- Allows farmers to consolidate product and get profit from changes in market price.
- Duration of storage: 15-30 days.
- Construction cost: $12,808

RESULTS: CHIMNEY DRYER

	Vegetable quantity		Vegetable quality	
	Post implementation		Post implementation	
	R2: Monsoon	R3: Dry season	R2: Monsoon	R3: Dry season
Increased	43% →	96%	50% →	82.9%
Not affected	0	3.1%	3.3% →	17.9%
Decreased	0	0	3.3%	0

Impact of Chimney Dryer on vegetable quantity and quality

RESULTS: FLOATING GARDEN

- No effect on fish in the pond or water quality.

Types of products grown	R2: Monsoon	R3: Dry season	R4: Dry season
Vegetables (turnips, carrots, spinach, onion, gourd, cauliflower	100%	94%	100%
Spices (chili, mint, cilantro, turmeric)	0%	100%	56%
Fruit (strawberry)	100%	0%	0%

Impact of Floating Garden on vegetable quantity and quality

	Vegetable quantity		Vegetable quality	
	Monsoon season	Dry season	Monsoon season	Dry season
Increased	90.0% →	50.7%	30.8% →	63.8%
Not affected	6.7%	0.9%	1.9%	2.7%
Decreased	3.3%	15.4%	0.9%	0.5%

RESULTS: COOL ROOM

Products stored in cool room	R2: Monsoon season	R3: Dry season	R4: Dry season
Vegetables (cucumber, tomato, gourd, bean, chili)	50%	74%	37%
Fruit (mango, pomelo, green banana)	26%	39%	17%
Fish	0%	0%	3%
Flowers	0%	0%	3%

Summary of FGD and KII findings

1. Chimney dryer

- Saves time: compared to drying in the traditional drying method.
- Suitable for personal use due to its size.

2. Floating garden

- Ideal for growing saplings.
- Measures to deal with pest and animal attack.

3. Cool room

- Interested in storing more diverse variety of food items that have demand in markets such as fish, shrimp, onion and potatoes.

CONCLUSION

1. All three technologies have a potential for success

- Vegetable quality and quantity.
- Household diet diversity : increased over time, slight decrease of HDDS in monsoon season in chimney dryer and floating garden HHs but not in cool room HHs.
- Minimum dietary diversity for women and index child's diet diversity: increased over time. Season had no impact.

2. Assessment of cost effectiveness is the next step.

3. Critical issues : Lack of electricity and bureaucracy involved in obtaining one. Issues with accessing market prices.

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