LANSA
Leveraging Agriculture for Nutrition in South Asia

Promoting nutrition-sensitive agriculture incorporating Neglected & Underutilised Crops

Lessons from LANSA Research

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3 December 2016

Evidence, challenges and opportunities

The evidence linking agriculture and food systems that
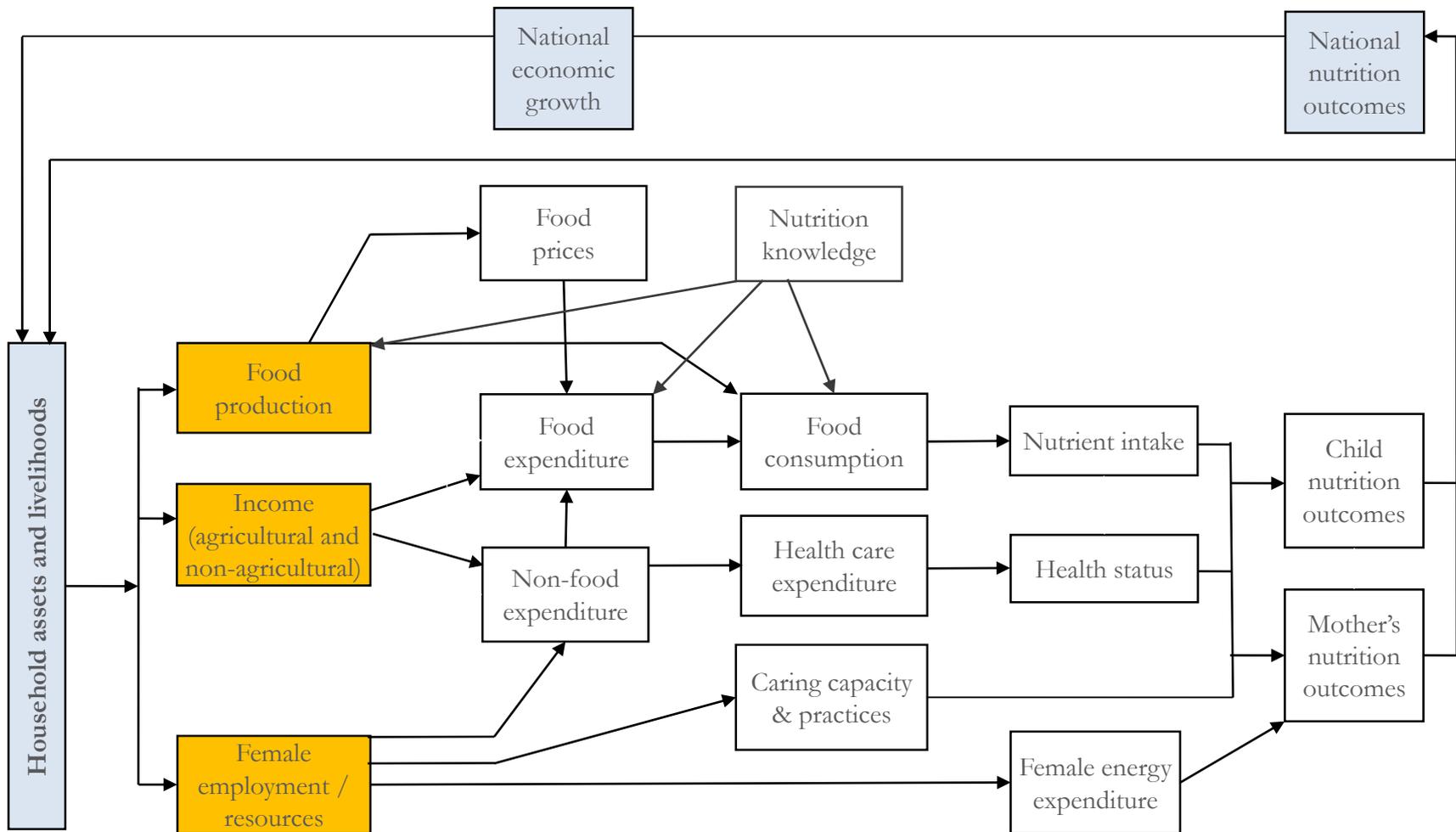link agriculture to nutrition

Challenges:

- massive problem of under-nutrition in the South Asian region

- disconnects between agriculture and nutrition

Opportunities:

- Farming engages over 50% workforce and generates over 50% rural income

- Agriculture is fundamental to a more inclusive and sustainable structural transformation

- The potential for agriculture to influence nutrition outcomes *at scale* is large.

Pathways from agriculture to nutrition

Adapted from Gillespie et al. 2012 and Headey et al 2012

Conceptualizing the pathways between agriculture and nutrition

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Agriculture is a key driver of poverty reduction

but...

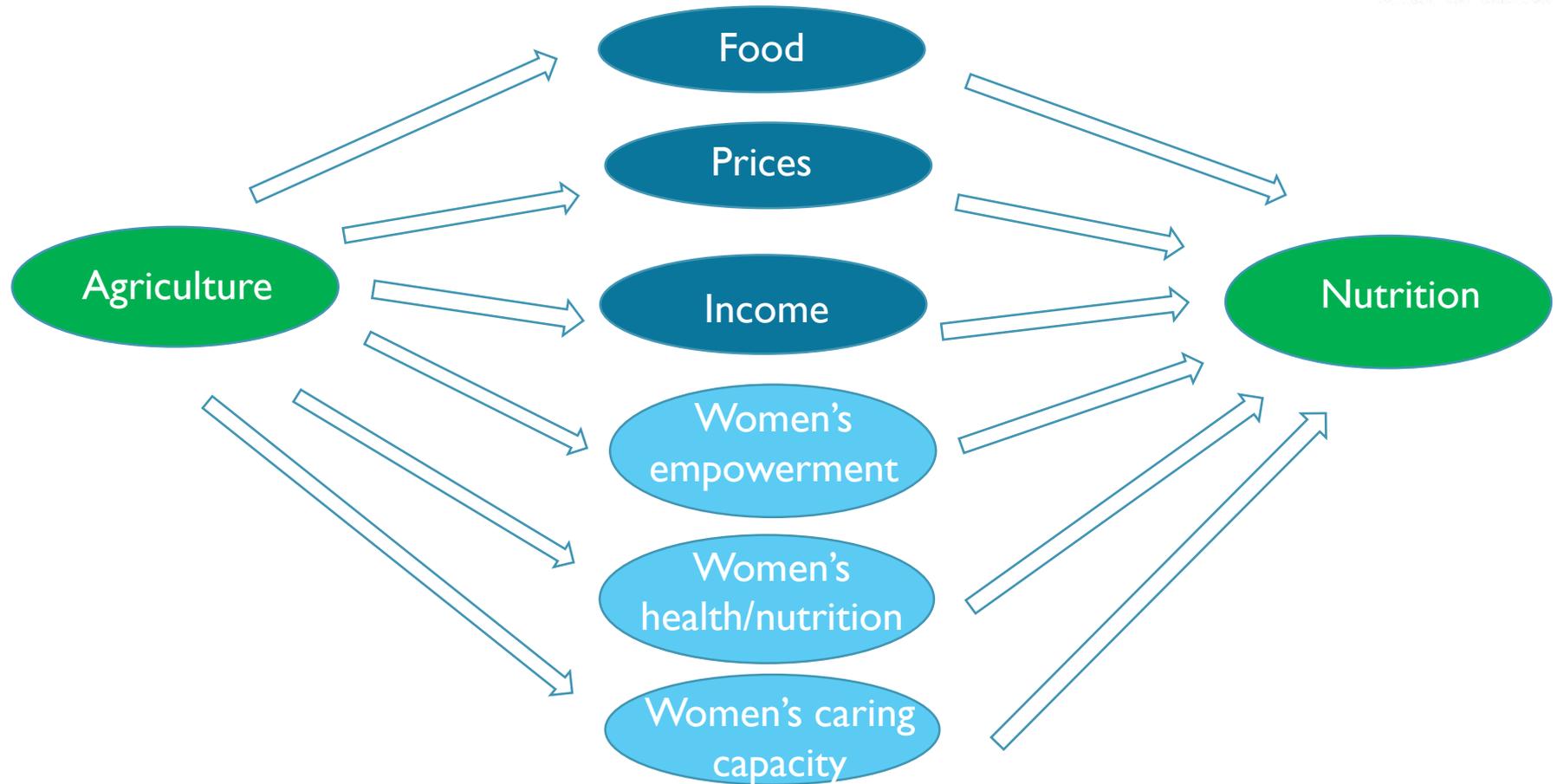**Pathways to nutrition are diverse and interconnected**

1. Agriculture as a source of food

2. Agriculture as a source of income:
   – how income from agriculture/non agriculture is spent on food and non food (other basic needs)

3. Agricultural policies and food prices

Gender dimensions

4. Women's employment, time and ability to manage young child care

5. Women's status, decision making power and control over resource allocation

6. Women's own health and nutritional status

Gillespie et al 2012

What are the direct linkages between agriculture and nutrition?

Agriculture → Food, Prices, Income, Women's empowerment, Women's health/nutrition, Women's caring capacity → Nutrition

➢ **WASH** mentioned across all countries as an important nutrition-sensitive intervention to enhance agriculture's impact on nutrition

LANSA's Research Pillars

Pillar 1:
Enabling environment

What are barriers/ facilitators to nutrition-sensitive agricultural development?

How enabling is the wider context in linking agriculture and food systems to other determinants of nutrition status?

Pillar II:
Agri-food policy/value chains

How can the nutrition impacts of agriculture and agri-food value chains be enhanced through appropriate strategies and policies?

Pillar III:
Nutrition-sensitive agriculture interventions
How strong is the evidence that agricultural interventions can be pro-nutrition?

Gender
Fragility
Innovation systems

Pillar I: Enabling environment for nutrition

- *What are barriers/facilitators to nutrition-sensitive agricultural development in the region?*

- *How do policymakers perceive nutrition?*

- *What are (dis)incentives for decisions/actions to become more 'pro-nutrition'?*

Objectives:

1. Capture stakeholder knowledge/perceptions about the political economy of agriculture and nutrition in their respective countries

2. Identify information sources and when and how evidence is used

3. Identify capacity needs

Countries: India, Bangladesh, Pakistan, Afghanistan

Knowledge & Evidence

Is there sufficient data/evidence of 'what works' related to agriculture's impact on nutrition outcomes?

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- Research focus on staples, not micronutrien[...]
- Inconsistent collection of nutrition data[...] integrated data systems (I, P)
- Not enough known about program im[...] impacts in different contexts (I); or 'wha[...]
- Need for data on nutrition-sensitivity
- Lack of information about cost-effecti[...]

- Data exists but not used/analysed effectively(P)
- Data is mainly from agricultural interventions that had no specific nutrition objectives (P)
- No accountability: policymakers not incentivized to use data (P, B)

Politics & Governance
Is improved nutrition a consideration in agriculture and agri-food sector?

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India
YES
- Nutrition gaining attention as malnutrition continues despite economic growth
- Production/quantity has improved so more room for discussion on quality

NO
- Continued production focus (rice, wheat); lack of focus on pulses, veg, fruit, MN (policy/programming)

Bangladesh
YES
- Discussion on production widening to dietary diversity; nutrition considered important for preventing disease/ achieving dev't outcomes; availability; food safety

NO
- Staple crops continue to dominate discourse; nutrition slowly gaining ground

Pakistan
YES
- Nutrition increasingly emphasized – intersectoral mechanisms promising

NO
- Production is a priority-- assumed that sufficient quantity will result in adequate nutrition

LANSA studies under Research Pillar I showed:

- Agricultural land productivity has a significant positive association with child nutrition.

- Women's education, women's health in terms of not being anaemic promotes child nutrition.

- Sanitation, full vaccination and use of oral rehydration when there was incidence of diarrhoea had significant positive association with better child underweight rates.

- Crop diversity per se is not of much use to reduce child undernutrition and that in dry land and rain-fed agriculture, despite high crop diversity, undernutrition levels are high.

- Child underweight appears to be related significantly to food grain abundance in the districts and the states.

Role of women in improving child nutrition

- Women's education above secondary level always has a positive influence on child underweight and reducing anaemia in children

- Women's own health and not being anaemic has a positive association with healthier children

- Women's work participation even in rural areas has links to better child nutrition.

- Better nutritional outcomes are always associated with full vaccination for children and use of oral rehydration salts during diarrhoeal episodes.

What explains the observed heterogeneity in nutrition outcomes across states in India?

STATES	Stunted (%)	Underweight (%)
Bihar	56	56
Gujarat	52	45
MP	50	60
Odisha	45	41
Tamil Nadu	31	30

Data from NFHS -3 2005

LCIRAH study: Cavatorta et al *World Development*, 76:216-237, 2015

Economic progress including agricultural growth (and grain production growth) is strongly correlated with better nutritional outcomes in some states but very weakly in others

AGRICULTURAL PERFORMANCE	IMPROVEMENTS IN NUTRITION	STATES
Modest/Strong agricultural growth	Significant improvement in nutrition indicators	Goa, Kerala, Maharashtra, TN
Modest/Strong agricultural growth	Little or no improvement in nutrition indicators	MP, Gujarat, Meghalaya,
Poor agriculture performance	Strong improvements in nutrition indicators	UP, Karnataka, Punjab, Odisha, WB
Weak agricultural performance	Mixed improvements in nutrition indicators	Rajasthan, Haryana

Heady, Chiu and Kadiyala, 2011

Based on Percentage changes from 1992 - 2005

Research Pillar II

What public and private actions are needed to strengthen the impacts of agri-food value chains on nutrition (post farm-gate)?

- Country review of pro-nutrition value chain interventions under the categories:
    - (1) Naturally nutrient-dense foods,
    - (2) Fortified foods, and
    - (3) Food distribution systems.

- Case Study of the three initiatives :

    In each of the three countries: Bangladesh, India & Pakistan

Study Location of FSN villages

Seven villages in Koraput district of Odisha State

i.e. 658 households

Five villages in Wardha district of Maharastra State

i.e. 556 households

FSN interventions in 2015-16

Participatory design of FSN interventions with NUS and biofortified crops

Koraput

Season	Crops	Area (ac)
Kharif	Finger millet	11
	Maize + Pigeon pea	11
	Orange flesh sweet potato	1.1
Rabi	Green gram	
	Black gram	
	Fish farming	31 ponds

Wardha

Season	Crops	Area (ac)
Kharif	Sorghum	70
	Red gram	38
	Cotton	30
Rabi	Wheat	40
	Bengal gram	20
	Poultry	25 HHs

Both nutritional and economic advantages demonstrated

Protein (g)	Minerals (g)	Crude fibre (g)	Energy (Kcal)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Niacin (mg)
7.3	2.7	3.6	328	344	283	3.9	1.1

NuNutritive value of finger millet (per 100g of edible portion)

	GPU67 + improved practices (T1)	Farmers varieties/ practices (T2)
Protein (kg)	150.91	115.25
Minerals (kg)	55.81	42.63
Crude fiber (kg)	74.42	56.84
Energy (Kcal)	678074	517846
Calcium (kg)	7.11	5.43
Phosphorus (kg)	5.85	4.47
Iron (kg)	0.081	0.061
Niacin (kg)	0.023	0.017

Nutrition equivalence of finger millets

	T1	T2
Expenses (Rs/ha)	20, 800	17, 850
Production (kg /ha)	2067.3	1578.8
MSP (Rs)/kg	16.50	16.50
Net profit (Rs/ha)	13,310	8,200

Economic advantage

FSN interventions (Koraput)

- Increase in area and participating farmers (*kharif*)

Legend: ■ 2015-16 No. of farmers ■ 2016-17 No. of farmers

Categories (top to bottom): Finger millet, Maize + Pigeon pea, Orange flesh sweet potato, Fish farming. X-axis: 0, 50, 100, 150, 200, 250, 300
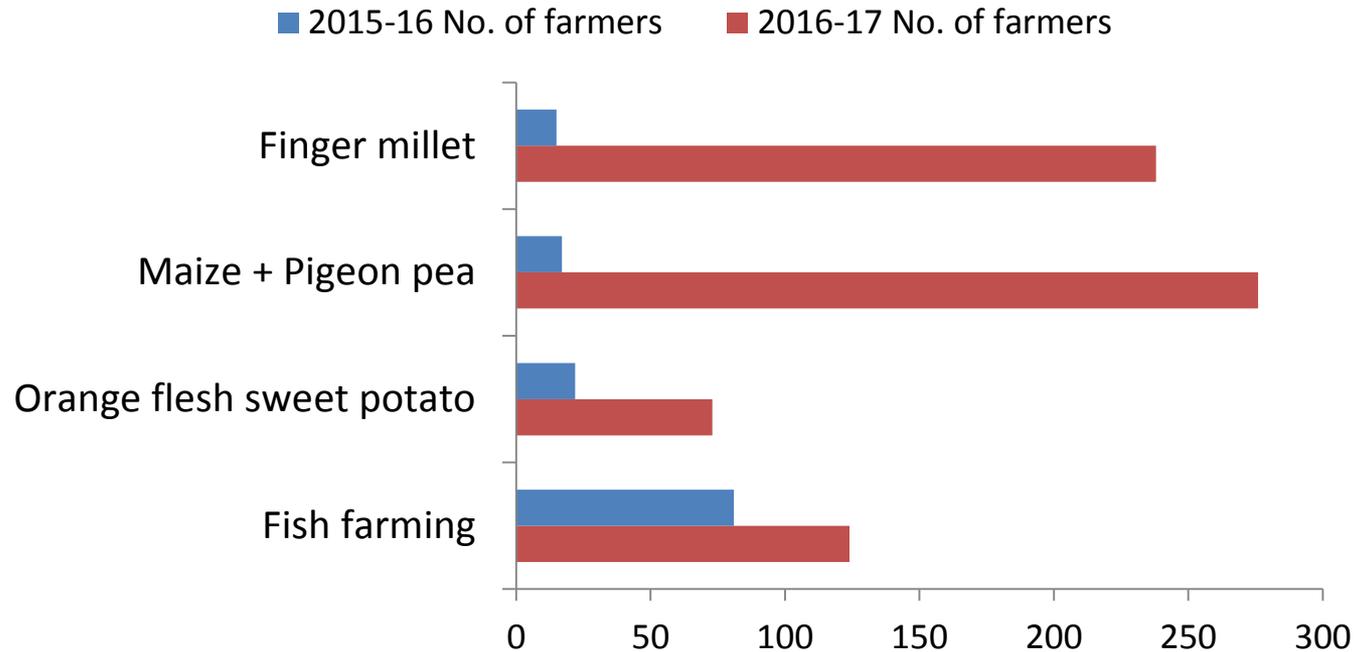
Year	Area under different crops (ac)			
	Finger millet	Maize + Pigeon pea	Orange flesh sweet potato	Fish farming
2015-16	11	11	1.1	31 ponds
2016-17	67	35	5	64 ponds

FSN interventions (2016)

Finger millet

Maize + Pigeon pea

Orange flesh sweetpotato

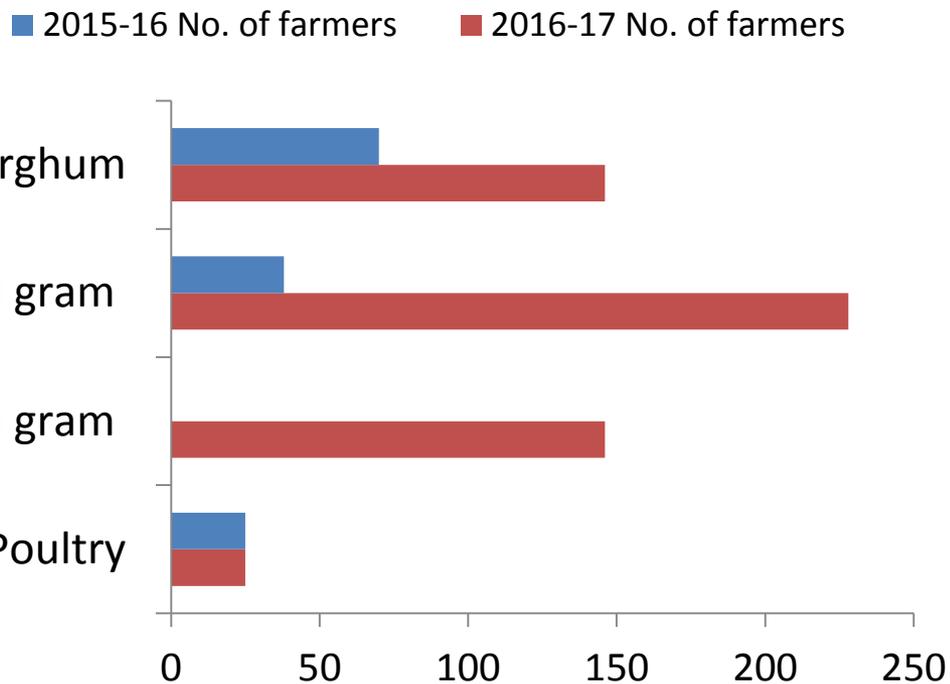

Fish farming

Nutrition garden (Koraput)

Crop calendar

Household nutrition garden (215)

School nutrition garden (4) & AWC (2)

FSN interventions (Wardha)

■ 2015-16 No. of farmers   ■ 2016-17 No. of farmers

[Bar chart showing: Sorghum, Red gram, Green gram, Poultry with values on axis 0, 50, 100, 150, 200, 250]

Poultry production January-August 2016			
Total Poultry consumption (Kg)	Total Sold in quantity	Total eggs production (Nos)	Net profit (Rs)
296	125	405	28,050

Year	Area under different crops (ac)			
	Sorghum	Red gram	Green gram	Poultry
2015-16	70	38	10	25 HH
2016-17	200	200	65	25 HH

Nutrition garden (Wardha)

- 363 HH nutrition gardens

- 3 Community nutrition gardens

- 5 school nutrition gardens

Household level

Community level

Institutional level

Nutrition awareness activities

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Making Research Stick!
Influencing policy and practice

Gender
Fragility
Innovation systems