

Stakeholder Consultation on Farming Systems for Nutrition

Interventions in Koraput, Odisha

23.12.2013 , Bhubaneswar



Location of FSN intervention villages in Koraput



Village details

Block	Panchayat	Villages	No. of HHs
Boipariguda	Chandrapada	Banuaguda	137
		Bhejaguda	91
		Atalguda	80
	Bodaput	Rauliguda	28
		Chikima	64
		Kurukuti	186
		K.Maliguda	90
	Total		



Population

Village	Total Population				
	Male	%	Female	%	Total
Banuaguda	254	48.94	265	51.06	519
Bhejaguda	199	47.27	222	52.73	421
Atalguda	172	47.25	192	52.75	364
Rauliguda	54	46.96	61	53.04	115
Chikima	133	49.44	136	50.56	269
Kurkuti	367	45.82	434	54.18	801
Maliguda	189	47.25	211	52.75	400
Total	1368	47.35	1521	52.65	2889

Caste	%
SC	11.09
ST	44.23
OBC	40.09
Others	4.59

Land classification

Area (acres)	No. of HHs	%
0	223	32.99
<2	270	39.94
2-10	178	26.33
>10	5	0.74

Land, Livestock and Homestead Land Matrix

Koraput	Land Classification	No Homestead Land	Homestead Land
Livestock	0	25	68
	<2	41	148
	2-10	13	121
	>10	0	5
No Livestock	0	82	48
	<2	23	58
	2-10	7	37
	>10	0	0

Major Crops Grown in Study Villages



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Koraput		
Major Crops	Net Sown Area (Acre)	Share (%)
Kharif season		
Rice	779.75	72.48
Finger Millet	88.70	8.25
Vegetables	85.12	7.91
Maize	63.30	5.88
Black gram	35.16	3.27
Little millet	8.56	0.80
Others	15.26	1.42
Rabi Season		
Green Gram	107.89	10.03
Groundnut	113.34	10.54
Vegetables	194.37	18.07

Consumption Pattern

Items consumed	Koraput			
	Avg Qty Consumed per HH*	Sources (%)		
		Home grown	Market	PDS
Rice	13.40	31.52	34.94	33.54
Wheat	0.01	0	100.00	0
Sugar	0.45	0	96.00	4.00
Salt	0.37	0	97.40	2.59
Coarse Cereals	2.40	10.33	89.67	
Pulses	0.91	2.78	97.22	
Green Leafy Veg	0.78	12.48	87.52	
Roots & Tubers	3.99	6.17	93.83	
Other Veg	2.87	8.53	91.47	
Milk & Milk products	0.13	15.09	84.91	
Animal products	2.88	0.84	99.16	

* Based on weekly recall in Kg & Liter as applicable

Activities undertaken:



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- Selection of Intervention villages
- Selection of control villages
- Village baseline survey
- Household baseline survey
- Formation of VDC
- Identification of farmers for the following demonstrations
 - ❖ Fertilizer Deep Placement (FDP) in rice
 - ❖ Mix cropping
 - ❖ Sweet potato
 - ❖ Nutrition garden
 - ❖ Fodder crop
 - ❖ Fish farming
 - ❖ Backyard Poultry

UREA DEEP PLACEMENT(UDP)TECHNOLOGY







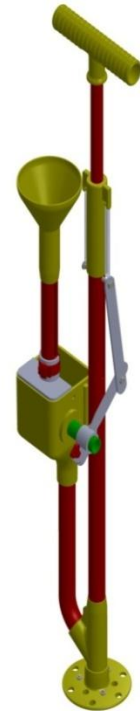
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UDP is a sustainable technology to increase crop yield

The placement is facilitated by a super granule called Urea Super Granule (USG)

UDP requires less urea

<p>Prilled urea- Efficiency is less than 30%, N loss due to volatilization, leaching & run off</p>	<p>USG(0.9gram)-winter paddy three and summer paddy two granules in each placement point of four hills</p>
	
<p>One USG(1.8gram) in each placement point of four hills of summer paddy</p>	<p>One USG (2.7grams) in each placement point of four hills of winter paddy</p>
	
<p>IFDC-An International Center for Soil Fertility and Agricultural Development</p>	
<p>IFDC - CATALIST Project, East & Southern Africa Division (ESAFD)</p>	



On Farm Demonstration: Fertilizer Deep Placement in Rice

Sl. No.	Land Category	Variety	Methods	Area (acre)
1	Upland	<i>Jyotirmayee</i> (90-100 days)	Modified method (Direct sowing through two row seeder)	0.5
2			Modified method with application of Urea Super Granules (USG) (Direct sowing through two row seeder)	0.5
3	Medium Land	<i>Hiranmayee</i> (120-130 days)	Modified method (Direct sowing through drum seeder)	0.5
4			Modified method with application of Urea Super Granules (USG) (Direct sowing through two row seeder)	0.5
5	Low Land	<i>Hiranmayee</i> (120-130 days)	Modified method (Line transplanting)	0.5
6			Modified method with application of Urea Super Granules (USG) (Line transplanting)	0.5

Fertilizer Application Stages

Sl. No.	Land type	<i>Basal</i>			<i>Tillering</i>	<i>Panicle initiation</i>	
		<i>N (Kg)</i>	<i>P (Kg)</i>	<i>K (Kg)</i>	<i>N (Kg)</i>	<i>N (Kg)</i>	<i>K (Kg)</i>
1	Upland	6	6	3	3	3	3
2		6	6	3	6 Kg USG after 20 days of sowing (2.75 Kg N)		3
3	Medium Land	8	8	4	4	4	4
4		8	8	4	8 Kg USG after 25 days of sowing (3.7 Kg N)		4
5	Low Land	8	8	4	4	4	4
6		8	8	4	8 Kg USG , 7 days after transplanting (3.7 Kg N)		4

The Results

Duration	Variety	Method	Avg. Plant height (cm)	No. of tillers /plants	No. of panicles/ plants	Avg. grain yield /ha (qtl)	Avg. straw yield/ha (qtl)
Short Duration (90-100 days)	<i>Jyotirmayee</i>	Experimental (DSR)	99.4	20	18	52	58
	<i>Jyotirmayee</i>	Control (DSR)	91.3	14	13	41	45
	<i>Khandagiri</i>	Farmers' field (DSR)	84	5	4	28	45
Medium duration (120-135 days)	<i>Hiranmayee</i>	Experimental (DSR)	131	13	12	57	82
	<i>Hiranmayee</i>	Control (DSR)	118	8	7	50	54
	<i>Lalat</i>	Farmers' field (DSR)	89	5	4	28	49
	<i>Hiranmayee</i>	Experimental (TSR)	132	10	9	58	84
	<i>Hiranmayee</i>	Control (TSR)	107	7	6	50	65
	<i>Hiranmayee</i>	Farmers' field (TSR)	99	5	4	30	36

Cost-Benefit Analysis: On Farm Demonstration Paddy

Sl. No.	Variety	Method of cultivation	Expenditure (Rs./ha)	Income (Rs./ha)	Net profit (Rs./ha)
1	<i>Jyotirmayee</i>	Modified (DSR) with USG	34580	71020	36440
2	<i>Jyotirmayee</i>	Modified (DSR) without USG	35590	55960	20370
3	<i>Khandagiri</i>	Farmers method (DSR)	22050	38930	16880
4	<i>Hiranmayee</i>	Modified (DSR) with USG	41802	78777	36975
5	<i>Hiranmayee</i>	Modified (DSR) without USG	43344	68200	24856
6	<i>Lalat</i>	Farmers method (DSR)	25272	39130	13858
7	<i>Hiranmayee</i>	Modified (TSR) with USG	40174	80180	40006
8	<i>Hiranmayee</i>	Modified (TSR) without USG	42680	68750	26070
9	<i>Hiranmayee</i>	Farmers method (TSR)	20280	40100	19820

The lease of land cost per hectore Rs 10000/- is not included

Some photographs of UDP trial



Some photographs of rice demonstration





Sowing upland rice by two row seeder



Sowing medium land rice by drum seeder

Technology interventions



Use of USG applicator



Weeding of mix cropping plot by hand weeder

Mixed Cropping

Sl. No.	Crop	Variety	Spacing	Area
Trial 1. FM+BG+PS (60:25:15), Trial 2. FM+BG+PS (60:25:15)				1 acre
1	Finger Millet	<i>GPU-67</i>	20cm X 10cm	0.3 acre
	Finger Millet	<i>GPU-45</i>		0.3 acre
2	Black gram	<i>Nirmal No.7</i>	30cm X 15cm	0.25 acre
3	Pop Sorghum	<i>Traditional</i>	50cm X 20cm	0.15 acre
Trial 3. Rice+Maize+PP (40:40:20)				0.35 acre
4	Rice	<i>Jyotirmayee</i>	15cm X 10cm	0.14 acre
5	Maize	<i>HQPM-1</i>	60cm X 25cm	0.14 acre
6	Pigeon pea	<i>Durga 30</i>	45cm X 20cm	0.07acre
Trial 4. Rice + Maize + BG (40:40:20)				0.35 acre
7	Rice	<i>Jyotirmayee</i>	15cm X 10cm	0.14 acre
8	Maize	<i>Pusa Composite-4</i>	60cm X 25cm	0.14 acre
9	Black gram	<i>Nirmal No.7</i>	30cm X 15cm	0.07acre



Trial on Sweet Potato

Sl.No.	Variety	Type	Methods	Area	Spacing
1	ST-14	(Orange flesh)	Modified method with line transplanting	10 cent	60 cm X 20 cm
2	Kamala Sundari	(Orange flesh)			
3	CIP-440127	(Orange flesh)			
4	Kishan	Normal			

Demonstration on this has been laid out on 0.1acre of farmers' field as well on MSSRF Campus. Research protocol has been prepared and inter cultural operation undertaken as per the research protocol. Harvesting is going on.



Nutrition garden demonstration

- Two community nutrition garden demonstration in two villages - managed by the community.
- One in MSSRF campus.
- Fruit bearing plants like - papaya, banana, guava, lemon, custard apple, pomegranate, and other tree species like: drumstick, curry leaf and *Bauhinia purpurea* planted in the fence as per the space availability.



Seasonal vegetable crop calendar

Type of vegetables	Name of the vegetable	Rainy season	Winter season	Summer season
GLV	Amaranth	√	√	√
	Spinach	√	√	√
	Coriander leaves	√	√	√
	Drumstick leaves	√	√	√
	Cabbage	√	√	
Root & tuber	Yam (Dioscorea)	√		
	Elephant foot yam	√		
	Colocasia	√		√
	Carrot		√	
	Onion	√	√	
	Sweet potato	√		
	Radish	√	√	√
	Tapioca	√		√

Seasonal vegetable crop calendar



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Type of vegetables	Name of the vegetable	Rainy season	Winter season	Summer season
Other vegetables	Beans	√	√	
	Brinjal	√	√	√
	Bitter gourd	√	√	√
	Bottle gourd	√		√
	Chilli	√	√	√
	Cauliflower	√	√	
	Cluster bean	√	√	√
	Cucumber	√		√
	<i>Lobia</i>	√		√
	Ridge gourd	√		√
	Pumpkin	√		√
	Lady' finger	√		√
	Knol khol		√	
	Tomato	√	√	√

Fish farming

- 3 Ponds in three villages were treated with lime and raw cow dung.
- Finger lings totaling 6000 in number of *catla*, *rohu* and *grass carp* were released in these ponds
- Locally suited recommended practices were employed

Backyard poultry

- 15 households in 7 villages were identified by the respective village committee to take up the activity.
- Discussion with the Superintendent of Special Poultry Breeding Farm, Semilguda to provides the chicks.
- Each households has been provided with 10 no. of poultry chicks in the month of November.
- Locally suited recommended practices were employed

Details of *Rabi* (2013-14) trials:

Sl. No.	Activity	Variety & Trial	
1	Rice trial	Khandagiri	Modified practice with line transplanting
			Modified practice with line transplanting and application of Urea Super Granules (USG)
2	Mix cropping	Trial 1	Finger millet (<i>GPU-45</i>)+ Black gram (<i>NUL-7</i>)
		Trial 2	Finger millet (<i>GPU-67</i>)+ Green gram (<i>NVL-1</i>)
3	Pulses trial	Trial 1	Black gram (<i>NUL-7</i>)
		Trial 2	Green gram (<i>NVL-1</i>)
		Trial 3	Horse gram (<i>Local</i>)
		Trial 4	Pea
4	Pulses	Over lapping	Horse gram (<i>Local</i>)
			Pea
5	Sweet potato	4 varieties	Line transplanting
6	Potato		

Forthcoming Surveys

- Household survey to collect information on water access, sanitation, socio-eco aspects
- Baseline survey on household consumption pattern (every quarter to understand seasonal variation)
- Baseline survey on employment status and migration
- Baseline survey on Agriculture, Animal Husbandry and Home garden details
- Baseline input, cost and income survey
- Baseline survey on Health & Nutrition assessment (24 hour recall-Diet survey, anthropometric, bio-chemic, morbidity)
- Gender roles – time use, access to resources, decision making
- Midterm survey to evaluate progress
- Endline surveys to assess impact of the project



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Thank
you