

Community Action in Integrated and Market Oriented Feed-Livestock Production in Central and South Asia

Baseline and Impact Assessment Studies at the Rainfed and Irrigated Project Sites in Pakistan

Abid Hussain
Dr. Muhammad Azeem Khan
Hussnain Shah

Wrap Up Meeting, Tashkent
December 10-11, 2009

PARC/NARC, Pakistan



1

Assessment of Interventions at Project sites

Hussnain Shah





Objectives

- ☀ To examine the **compatibility of project interventions** with the farm situations.
- ☀ To understand **farmers' perceptions for the adoption** of project interventions.
- ☀ To provide **feedback** to the concerned scientists and development departments.



Farmers' Perceptions and Assessment of Kharif Fodder Crops at Rainfed Site

Parameters	Sorghum	Pearl Millet	Maize	Guar	Sorghum & Guar Mix	Millet & Guar Mix	Sorghum, Millet & Guar Mix
Farmers' knowledge							
Varietal know how	Poor	Poor	Poor	Poor	Poor	Poor	Poor
Input knowledge	Good	Good	Good	Good	Partial	Partial	Partial
Farmer evaluation in terms of attributes							
Palatability	Better	Better	Better	Same	Best	Best	Best
Green Fodder availability	20-30 days more	15 days more	Same	Same	Same	Same	Same



Parameters	Sorghum	Pearl Millet	Maize	Guar	Sorghum & Guar Mix	Millet & Guar Mix	Sorghum, Millet & Guar Mix
Evaluation in terms of Yield and Adoption							
Green Fodder Yield difference ↑	100-150%	%100-125	50-75%	40-50%	100-125%	00-125%	100-125%
Number of Cuttings	Same	Same	Same	Same	Same	Same	Same
Future intentions	Adopt	Adopt	Adopt	-	Adopt	Adopt	Adopt



Farmers' Perceptions and Assessment of Rabi Fodder Crops at Rainfed Site

Parameters	Oat	Oat & Vetch Mix	Berseem & Oat Mix (Irrigated only)
Farmers' knowledge			
Varietal know how	Partial	Poor	Poor
Input knowledge	Good	Good	Good
Farmer evaluation in terms of attributes			
Palatability	Better	Best	Best
Green Fodder availability	Same	Same	20 days more



Parameters	Oat	Oat & Vetch Mix	Berseem & Oat Mix (Irrigated only)
Evaluation in terms of Yield and Adoption			
Green Fodder Yield difference ↑	50-100%	50-100 %	100-150%
Additional cuttings	1	1	1-2
Future intentions	Adopt	Adopt	Adopt



Farmers' Perceptions and Assessment of Kharif Fodder Crops at Irrigated Site

Parameters	Sorghum	Pearl Millet	Maize	Sorghum, Millet, Cow pea mix
Farmers' knowledge				
Varietal know how	Partial	Poor	Partial	Poor
Input knowledge	Good	Good	Good	Partial
Farmer evaluation in terms of attributes				
Palatability	Better	Better	Better	Best
Green Fodder availability	One month more	15 days more	Same	15-20 Days more



Parameters	Sorghum	Pearl Millet	Maize	Sorghum, millet, Cow pea mix
Evaluation in terms of Yield and Adoption				
Green Fodder Yield difference ↑	50-75%	50-75 %	50%	50-75%
Number of cuttings	Same	Same	Same	Same
Future intentions	Adopt	Adopt	Adopt	Adopt



Farmers' Perceptions and Assessment of Rabi Fodder Crops at Irrigated Site

Parameters	Oat	Berseem and Oat Mix
Farmers' knowledge		
Varietal know how	Partial	Poor
Input knowledge	Good	Good
Farmer evaluation in terms of attributes		
Palatability	Better	Best
Green Fodder availability	Same	15-20 days more

Parameters	Oat	Berseem and Oat Mix
Evaluation in terms of Yield and Adoption		
Green Fodder Yield difference ↑	50-100%	100-150%
Additional cuttings	Same	1
Future intentions	Adopt	Adopt

2

Baseline and Impact Assessment Results of Rainfed Site of Rawalpindi District

Dr. Muhammad Azeem Khan
Abid Hussain



Sites Selection Process at Rainfed & Irrigated Sites

Rainfed Site

- ☀ Lodhay village was selected due to the **enterprising** nature of the community
- ☀ **Nata Mora-8km** village was selected as control village for impact evaluation.

Irrigated Site

- ☀ Two villages Chak No. 74/SB and 105/SB were selected considering **enterprising and market access**
- ☀ Two control (72-SB and 100 SB at Sargodha) villages were selected for Impact Evaluation



Attributes of the Livestock Farmers

Farmer Attributes	Participating	Non-Participating	Control	All	Sig.
Farm Manager Age (yrs.)	36	51	40	42	0.531
Manager Experience (yrs.)	7	17	19	21	0.043
Education (yrs.)	9	7	7	8	0.030
Operational Holding (hac.)	5.01 (4.15)	3.48 (2.28)	1.48 (0.94)	3.58 (3.26)	0.465
Family Size (no.)	7	9	8	7	0.200
Males Working on Farm (no.)	1.7 (1.1)	1.8 (0.5)	1.3 (0.5)	1.6 (0.8)	0.058
Females Working on Farm (no.)	0.8 (1.0)	0.5 (0.7)	0.6 (1.0)	0.6 (0.9)	0.600



Operational Farm Size and Milk Sale

Farm Size Categories	Participating	Non-Participating	Control	All	Sig.
Farm Size	Percentage				
< than 2 ha	17	28	71	36	0.465
2-4 ha	39	39	23	35	
> 4 ha	44	33	06	06	
Selling Agency	Percentage				
No sales	22	44	12	26	0.185
Milkmen	69	45	64	60	
Others (Village Shopkeepers, Consumers, Milkmen & Consumers)	9	11	24	14	



Dairy Animal Ownership

Herd Size	Participating	Non-Participating	Control	All	Sig.
Small (1-2 dairy animals)	30	66	47	46	0.044
Medium (3-4 dairy animals)	30	28	41	33	
Large (5 or more dairy animals)	40	06	12	21	



Breeds of the Dairy Animals

(percent farmers)

Dairy Animals	High Yielding				Average Yielding			
	Participating	Non-Participating	Control	All	Participating	Non-Participating	Control	All
Buffaloe								
Local	46	62	33	47	56	0	25	38
Nili Ravi	31	13	44	30	0	0	50	13
Kundi	15	0	0	7	22	67	25	31
Cross	8	25	22	16	22	33	0	19
Cow								
Cross	20	33	49	34	33	25	0	28
Local	30	0	13	19	11	50	100	29
New Jersey	30	0	13	19	11	0	0	7
Frisian	20	33	0	14	23	25	0	22
Sahiwal	00	33	25	14	22	0	0	14



Dairy Production Problems

Problems	Dairy Farmers (%)
Shortage and High Prices of Feed	29
Lack of Financial Resources	29
Less Productive Breeds	23
Small and Decreasing Farm Size	13



Farmers' Suggestions

Problem	Dairy Farmers (%)
Improved Feed Quality and Low Prices	30
Provide Vet. Services	14
Dug-well Installation	14
Loaning on Easy Terms & Conditions	12
Establishment of Milk Collection Centers	8



Milk Yield of Buffaloes

Survey	Participating	Non-Participating	Control	All
High Yielding Buffaloes				
Baseline (2007)	10.0 (1.2)	9.3 (1.9)	10.6 (2.8)	9.9 (2.0)
Post Project Assessment (2009)	10.7 (3.0)	11.0 (2.2)	11.4 (2.7)	11.0 (2.7)
Change	1.2	-1.8	0.9	0.7
Average Yielding Buffaloes				
Baseline (2007)	6.6 (0.6)	6.5 (1.0)	6.4 (0.6)	6.5 (0.6)
Post Project Assessment (2009)	8.4 (1.3)	5.9 (2.8)	7.1 (0.3)	6.7 (1.9)
Change	1.8	-0.6	0.7	0.2



Milk Yield of Cows

Survey	Participating	Non-Participating	Control	All
High Yielding Cows				
Baseline (2007)	15.0 (7.7)	14.1 (2.4)	17.3 (6.5)	15.0 (6.0)
Post Project Assessment (2009)	19.3 (6.0)	-	17.3 (5.4)	18.9 (5.3)
Change	4.3	-	0	3.9
Average Yielding Cows				
Baseline (2007)	9.3 (2.5)	6.5 (1.9)	4.1 (2.3)	6.9 (3.9)
Post Project Assessment (2009)	7.3 (0.0)	4.7 (0.1)	6.9 (1.2)	6.5 (2.1)
Change	-2.0	-1.8	2.8	-0.4



Gross Income Per Lactation of Buffaloes

Survey	Participating	Non-Participating	Control	All
High Yielding Buffaloes				
Baseline (2007)	81954.5 (27749.2)	77807.7 (28706.8)	91575.8 (43480.0)	83281.7 (32223.8)
Post Project Assessment (2009)	119751.6 (38695.8)	89944.8 (4781.1)	95700.0 (17093.9)	98712.6 (26962.9)
Change	37797.1	12137.1	4124.2	15430.9
Average Yielding Buffaloes				
Baseline (2007)	45433.8 (7950.3)	49610.0 (10846.6)	49852.5 (4809.7)	48436.9 (7028.9)
Post Project Assessment (2009)	84175.0 (7672.1)	61194.4 (34833.00)	71425.0 (5585.5)	69711.39 (23660.7)
Change	38741.2	11584.4	21572.5	21274.49



Gross Income Per Lactation of Cows

Survey	Participating	Non-Participating	Control	All
High Yielding Cows				
Baseline (2007)	125057.5 (67539.8)	132840.0 (41653.7)	119025.0 (48652.3)	126799.5 (54227.9)
Post Project Assessment (2009)	208237.5 (92833.4)	-	140130.0 (65432.4)	194616.0 (85972.4)
Change	83180.0	-	21105.0	67816.5
Average Yielding Cows				
Baseline (2007)	82846.5 (52125.4)	52940.0 (14986.0)	31685.6 (21422.4)	58316.2 (41149.7)
Post Project Assessment (2009)	83302.5 (10150.5)	54000.0 (1018.2)	57017.1 (14663.3)	61247.7 (16116.20)
Change	456.0	1060.0	25331.5	2931.5



Animal Specific Costs of Production

- ✿ Fodder and Forage Feeding Cost
- ✿ Concentrates Feeding Cost
- ✿ Labour Cost
- ✿ Capital Input Cost
- ✿ Insemination/ Health Cost



Total Variable Cost Per Lactation of Buffaloes

Survey	Participating	Non-Participating	Control	All
High Yielding Buffaloes				
Baseline (2007)	40425.5 (10145.8)	43443.5 (15061.2)	45100.5 (10461.6)	42550.6 (11667.7)
Post Project Assessment (2009)	60874.7 (3491.3)	53058.9 (5030.1)	56927.1 (4739.3)	57654.6 (4701.3)
Change	20449.2	9615.4	11826.6	15104.0
Average Yielding Buffaloes				
Baseline (2007)	32936.9 (8778.5)	36178.6 (4000.7)	34424.8 (3868.9)	34221.2 (5531.3)
Post Project Assessment (2009)	37194.4 (6095.0)	34469.9 (5720.5)	40345.2 (13479.5)	37349.4 (6682.9)
Change	4257.5	-1708.7	5920.4	3128.2



Total Variable Cost Per Lactation of Cows

Survey	Participating	Non-Participating	Control	All
High Yielding Cows				
Baseline (2007)	60874.7 (3491.3)	53058.9 (5030.1)	56927.1 (4739.3)	57654.6 (4701.3)
Post Project Assessment (2009)	58867.3 (8148.1)	-	56213.5 (4367.4)	58336.5 (7155.5)
Change	-2007.4	-	-713.6	681.9
Average Yielding Cows				
Baseline (2007)	37194.4 (6095.0)	34469.9 (5720.5)	40345.2 (13479.5)	37349.4 (6682.9)
Post Project Assessment (2009)	38287.5 (5304.7)	33307.1 (1793.5)	39031.3 (8560.0)	37594.0 (6780.8)
Change	1093.1	-1162.8	-1313.9	244.6



Net Income Per Lactation of Buffaloes

Survey	Participating	Non-Participating	Control	All
High Yielding Buffaloes				
Baseline (2007)	41529.0 (29930.3)	34364.2 (29558.3)	46475.4 (45149.1)	40731.0 (33675.9)
Post Project Assessment (2009)	58876.8 (37969.4)	36886.2 (7005.6)	38773.0 (15648.3)	41057.9 (25142.7)
Change	17347.8	2522.0	-7702.4	326.9
Average Yielding Buffaloes				
Baseline (2007)	12496.8 (11149.8)	15724.6 (13057.7)	15427.6 (8197.1)	15594.4 (9467.2)
Post Project Assessment (2009)	44992.3 (25560.1)	26724.2 (30710.6)	32381.5 (13479.5)	32669.6 (21326.2)
Change	32495.5	10999.6	16953.9	17075.2



Net Income Per Lactation of Cows

Survey	Participating	Non-Participating	Control	All
High Yielding Cow				
Baseline (2007)	73257.9 (66049.9)	85497.7 (48216.2)	72273.6 (43416.0)	76831.4 (54554.0)
Post Project Assessment (2009)	149370.2 (91293.4)	-	83916.5 (37480.9)	136279.5 (84307.2)
Change	76112.3	-	11642.9	59448.1
Average Cow				
Baseline (2007)	47874.7 (55524.1)	25852.1 (14426.0)	1597.7 (16261.2)	26943.4 (40793.3)
Post Project Assessment (2009)	45015.0 (23040.7)	20692.9 (12811.8)	10680.7 (9691.7)	20535.5 (16186.0)
Change	-2859.7	-5159.2	9083	-6407.9



Price Per Liter of Milk

Survey	Participating	Non-Participating	Control	All
Buffaloes				
Baseline (2007)	25.2 (1.9)	24.6 (1.5)	24.2 (1.3)	24.8 (1.6)
Post Project Assessment (2009)	35.0 (4.1)	40.0 (3.4)	30.6 (1.7)	32.9 (4.0)
Change	9.8	15.4	6.4	8.1
Cows				
Baseline (2007)	23.1 (2.1)	22.6 (1.3)	23.1 (1.3)	22.9 (1.6)
Post Project Assessment (2009)	33.0 (5.7)	-	30.8 (2.0)	31.8 (4.0)
Change	9.9	-	7.7	8.9



Net Income Per Liter of Buffalo Milk

Survey	Participating	Non-Participating	Control	All
High Yielding Buffaloes				
Baseline (2007)	12.7	10.7	12.2	12.0
Post Project Assessment (2009)	17.3	16.4	12.3	13.8
Change	4.7	5.7	0.2	1.8
Average Yielding Buffaloes				
Baseline (2007)	6.7	7.9	7.8	7.8
Post Project Assessment (2009)	18.4	21.4	12.7	14.9
Change	11.8	13.5	4.9	7.1



Net Income Per Liter of Cow Milk

Survey	Participating	Non-Participating	Control	All
High Yielding Cow				
Baseline (2007)	13.8	-	14.1	14.0
Post Project Assessment (2009)	23.5	-	18.8	21.9
Change	9.7	-	4.7	7.9
Average Yielding Cow				
Baseline (2007)	12.9	7.8	-6.7	8.5
Post Project Assessment (2009)	17.7	12.3	11.5	13.4
Change	4.8	4.4	18.1	4.9

2

Baseline Survey Results at irrigated Sites of Sargodha District





M.Sc. And Ph.D. Research Titles

University of Agriculture, Faisalabad

1. Comparative economics of diff dairy production systems
2. Comparative profitability of surplus vs non-surplus dairy producers
3. Profitability of peri-urban vs rural dairy farmers

Georg-August-Universität Göttingen

Analysis of the Development Options to improve the income Situation of Dairying Households in Punjab



Attributes of the Livestock Farmers

	Participating	Non-participating	Control
Farm Manager Age (years)	55	50	51
Manager Experience (years)	23	21	26
Education (years)	6	5	5
Family Size (no)	9	6	6
Farm Size (ac)	6	5	5
Males Working on Farm (no)	1.70	1.50	1.60
Females Working on Farm (no)	0.65	0.60	0
On Farm Permanent Hired Labor (no)	0.4	0.5	0.3



Animal Specific Milk Productivity

Dairy Animal Type	Participating	Non-participating	Control	All
High Yielding Buffalo	2403	2179	2329	2294
Average Yielding Buffalo	1719	1934	1722	1784
High Yielding Cow	3090	3948	2500	3095
Average Yielding Cow	2829	2108	1752	2251



Gross Income Per Lactation

Dairy Animal Type	Participating	Non-participating	Control	All
High Yielding Buffalo	50508	45773	48916	48179
Average Yielding Buffalo	36099	40618	36168	37467
High Yielding Cow	58710	75018	47505	58806
Average Yielding Cow	53761	40066	33302	42783



Total Variable Cost Per Lactation

Dairy Animal Type	Participating	Non-participating	Control	All
High Yielding Buffalo	26423	27958	28986	27168
Average Yielding Buffalo	23740	24732	22536	23904
High Yielding Cow	30016	33952	20790	27424
Average Yielding Cow	26690	24356	16459	22795



Net Income Per Lactation

Dairy Animal Type	Participating	Non-participating	Control	All
High Yielding Buffalo	24085	17815	19930	21011
Average Yielding Buffalo	12359	15886	13632	13563
High Yielding Cow	28694	41066	26715	32382
Average Yielding Cow	27071	15710	16843	19988



Thank You