

Attachment-3(1)

*Crop Production Records
in Ghana*

Crop Production Records in Ghana (1996)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	50,528	11,770	-	-	58,504	29,117	9,511	38,774	-	-	-
Central	76,198	605	-	-	57,504	15,278	3,550	8,187	-	-	-
Eastern	136,500	9,000	-	-	163,200	70,000	28,000	95,000	-	-	-
Greater Accra	21,751	750	-	-	25,840	-	-	-	-	-	-
Volta	50,900	8,605	-	4,800	56,370	7,690	20,500	4,950	-	-	-
Ashanti	101,098	3,850	-	-	117,462	53,500	16,251	54,700	-	-	-
Brong Ahafo	76,475	5,550	-	-	92,300	38,130	48,085	27,140	-	-	-
Northern	104,500	24,000	64,700	107,000	19,488	-	36,109	-	-	-	-
Upper West	40,500	3,220	65,000	88,000	-	-	16,000	-	-	-	-
Upper Eat	6,500	37,900	59,900	114,500	-	-	-	-	-	-	-
Total	664,950	105,250	189,600	314,300	590,668	213,715	178,006	228,751	-	-	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	69,600	14,990	-	-	540,340	170,713	59,380	279,780	-	-	-
Central	90,900	740	-	-	632,891	75,277	20,419	49,906	-	-	-
Eastern	262,000	14,400	-	-	1,958,400	476,000	520,800	855,000	-	-	-
Greater Accra	28,300	6,520	-	-	206,672	-	-	-	-	-	-
Volta	73,150	34,300	-	4,800	984,700	42,530	246,800	29,800	-	-	-
Ashanti	166,040	5,460	-	-	1,191,481	534,522	194,500	435,021	-	-	-
Brong Ahafo	145,430	4,900	-	-	1,468,465	252,776	671,568	173,888	-	-	-
Northern	123,440	49,380	59,386	114,020	128,233	-	387,284	-	-	-	-
Upper West	42,950	2,830	71,480	110,413	-	-	174,038	-	-	-	-
Upper Eat	5,800	82,200	62,438	124,186	-	-	-	-	-	-	-
Total	1,007,610	215,720	193,304	353,419	7,111,182	1,551,818	2,274,789	1,823,395	-	-	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.38	1.27	-	-	9.24	5.86	6.24	7.22	-	-	-
Central	1.19	1.22	-	-	11.01	4.93	5.75	6.10	-	-	-
Eastern	1.92	1.60	-	-	12.00	6.80	18.60	9.00	-	-	-
Greater Accra	1.30	8.69	-	-	8.00	-	-	-	-	-	-
Volta	1.44	3.99	-	1.00	17.47	5.53	12.04	6.02	-	-	-
Ashanti	1.64	1.42	-	-	10.14	9.99	11.97	7.95	-	-	-
Brong Ahafo	1.90	0.88	-	-	15.91	6.63	13.97	6.41	-	-	-
Northern	1.18	2.06	0.92	1.07	6.58	-	-	-	-	-	-
Upper West	1.06	0.88	1.10	1.25	-	-	-	-	-	-	-
Upper Eat	0.89	2.17	1.04	1.08	-	-	-	-	-	-	-
Total	1.52	2.05	1.02	1.12	12.04	7.26	12.78	7.97	-	-	-

Source: Agriculture Statistics & Census Division (PPMED), Ministry of Food & Agriculture (December 1996)

Crop Production Records in Ghana (1997)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	52,943	12,705	-	-	60,944	10,587	30,890	40,963	-	-	-
Central	78,900	605	-	-	60,093	4,071	15,654	8,500	-	-	-
Eastern	143,000	10,800	-	-	165,000	30,200	65,000	91,000	-	-	-
Greater Accra	10,894	861	-	-	12,092	-	-	-	-	-	-
Volta	42,200	9,621	-	4,900	56,800	21,000	7,800	5,050	-	-	-
Ashanti	101,098	3,850	-	-	117,462	14,645	55,630	54,700	-	-	-
Brong Ahafo	72,300	5,330	-	-	94,390	50,190	31,250	24,560	-	-	-
Northern	109,000	24,000	66,000	109,200	22,500	39,000	0	0	47,000	47,800	-
Upper West	37,500	3,600	60,900	89,200	-	17,750	0	-	36,200	31,100	-
Upper Eat	3,800	46,350	43,100	120,300	-	-	-	-	76,600	-	-
Total	651,635	117,722	170,000	323,600	589,281	187,443	206,224	224,773	159,800	78,900	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	74,502	16,319	-	-	578,059	68,697	185,208	305,700	-	-	-
Central	94,210	740	-	-	661,100	20,757	76,440	41,926	-	-	-
Eastern	249,200	20,600	-	-	1,904,400	549,400	442,000	818,100	-	-	-
Greater Accra	15,251	6,520	-	-	88,372	-	-	-	-	-	-
Volta	83,270	36,724	-	5,880	993,000	270,600	33,840	28,230	-	-	-
Ashanti	166,040	5,460	-	-	1,191,481	194,446	577,810	435,021	-	-	-
Brong Ahafo	159,630	5,270	-	-	1,425,622	728,300	214,500	189,400	-	-	-
Northern	109,000	19,200	46,200	120,120	157,500	401,700	0	0	37,600	43,020	-
Upper West	42,950	2,830	71,480	110,413	-	174,038	0	-	40,800	16,050	-
Upper Eat	1,900	83,400	25,800	96,200	-	-	-	-	61,280	-	-
Total	995,953	197,063	143,480	332,613	6,999,534	2,407,938	1,529,798	1,818,377	139,680	59,070	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.41	1.28	-	-	9.49	6.49	6.00	7.46	-	-	-
Central	1.19	1.22	-	-	11.00	5.10	4.88	4.93	-	-	-
Eastern	1.74	1.91	-	-	11.54	18.19	6.80	8.99	-	-	-
Greater Accra	1.40	7.57	-	-	7.31	-	-	-	-	-	-
Volta	1.97	3.82	-	1.20	17.48	12.89	4.34	5.59	-	-	-
Ashanti	1.64	1.42	-	-	10.14	13.28	10.39	7.95	-	-	-
Brong Ahafo	2.21	0.99	-	-	15.10	14.51	6.86	7.71	-	-	-
Northern	1.00	0.80	0.70	1.10	7.00	-	-	-	0.80	0.90	-
Upper West	1.15	0.79	1.17	1.24	-	-	-	-	1.13	0.52	-
Upper Eat	0.50	1.80	0.60	0.80	-	-	-	-	0.80	-	-
Total	1.53	1.67	0.84	1.03	11.88	12.85	7.42	8.09	0.87	0.75	-

Source: Agriculture Statistics & Census Division (PPMED), Ministry of Food & Agriculture (December 1997)

Crop Production Records in Ghana (1998)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	47,200	14,000	-	-	65,400	11,640	33,100	44,810	-	-	-
Central	81,800	0	-	-	62,700	4,200	16,600	8,700	-	-	-
Eastern	160,000	12,700	-	-	186,000	35,600	65,900	96,800	-	-	-
Greater Accra	7,836	474	-	-	10,883	-	-	-	-	-	-
Volta	42,465	10,035	-	4,470	65,655	21,232	7,750	5,050	-	-	-
Ashanti	109,890	4,201	-	-	116,863	16,101	60,773	57,919	-	-	-
Brong Ahafo	82,154	5,632	-	-	97,532	61,119	33,644	32,638	-	-	-
Northern	122,000	30,000	67,500	114,500	24,650	40,970	0	0	48,000	51,000	-
Upper West	37,578	3,618	59,367	94,410	-	20,053	0	0	41,639	46,916	-
Upper East	5,698	49,733	53,866	118,983	-	-	-	-	87,134	-	-
Total	696,621	130,393	180,733	332,363	629,683	210,915	217,767	245,917	176,773	97,916	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	60,400	16,640	-	-	605,570	74,650	192,720	325,370	-	-	-
Central	86,700	0	-	-	608,200	19,100	70,300	47,700	-	-	-
Eastern	287,000	26,200	-	-	2,236,000	690,000	463,000	817,000	-	-	-
Greater Accra	7,053	2,535	-	-	65,298	-	-	-	-	-	-
Volta	73,167	36,429	-	5,364	1,158,900	232,992	28,650	27,760	-	-	-
Ashanti	183,553	6,729	-	-	1,168,862	201,546	610,731	476,355	-	-	-
Brong Ahafo	143,417	5,746	-	-	1,168,622	904,086	211,286	218,463	-	-	-
Northern	122,000	54,000	51,740	126,550	160,000	409,700	0	0	44,000	46,000	-
Upper West	46,207	3,526	58,644	116,461	-	170,783	0	0	56,580	24,379	-
Upper East	5,532	129,306	51,885	107,044	-	-	-	-	92,591	-	-
Total	1,015,029	281,111	162,269	355,419	7,171,452	2,702,857	1,576,687	1,912,648	193,171	70,379	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.28	1.19	-	-	9.26	6.41	5.82	7.26	-	-	-
Central	1.06	-	-	-	9.70	4.55	4.23	5.48	-	-	-
Eastern	1.79	2.06	-	-	12.02	19.38	7.03	8.44	-	-	-
Greater Accra	0.90	5.35	-	-	6.00	-	-	-	-	-	-
Volta	1.72	3.63	-	1.20	17.65	10.97	3.70	5.50	-	-	-
Ashanti	1.67	1.60	-	-	10.00	12.52	10.05	8.22	-	-	-
Brong Ahafo	1.75	1.02	-	-	11.98	14.79	6.28	6.69	-	-	-
Northern	1.00	1.80	0.77	1.11	6.49	-	-	-	0.92	0.90	-
Upper West	1.23	0.97	0.99	1.23	-	-	-	-	1.36	0.52	-
Upper East	0.97	2.60	0.96	0.90	-	-	-	-	1.06	-	-
Total	1.46	2.16	0.90	1.07	11.39	12.81	7.24	7.78	1.09	0.72	-

Source: Agriculture Statistics & Census Division (PPMED), Ministry of Food & Agriculture (December 1998)

Crop Production Records in Ghana (1999)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	49,556	14,792	-	-	67,328	12,655	36,600	11,854	-	-	-
Central	85,706	0	-	-	65,310	4,329	17,546	8,894	-	-	-
Eastern	151,800	14,000	-	-	167,400	35,000	66,000	76,920	-	-	-
Greater Accra	6,765	1,200	-	-	10,273	-	-	-	-	-	-
Volta	42,950	9,895	-	4,470	65,555	21,200	7,550	5,050	-	-	-
Ashanti	117,649	4,860	-	-	118,934	17,714	63,816	59,540	-	-	-
Brong Ahafo	89,432	4,434	-	-	120,441	90,358	36,241	38,163	-	-	-
Northern	112,020	30,600	67,000	109,900	25,100	41,300	0	0	50,000	55,000	-
Upper West	35,630	3,800	45,650	80,740	-	17,630	34,030	0	34,030	31,530	-
Upper Eat	8,222	23,516	58,615	102,947	-	-	-	-	74,520	-	-
Total	699,730	107,097	171,265	298,057	640,341	240,186	261,783	200,421	158,550	86,530	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	72,167	17,767	-	-	650,103	81,966	214,149	392,870	-	-	-
Central	102,426	0	-	-	848,439	21,048	78,967	52,899	-	-	-
Eastern	254,895	28,862	-	-	2,091,080	668,086	463,880	667,264	-	-	-
Greater Accra	5,914	5,398	-	-	61,327	-	-	-	-	-	-
Volta	8,640	35,920	-	4,470	1,161,520	242,800	28,050	31,450	-	-	-
Ashanti	193,522	10,637	-	-	1,380,713	210,957	686,785	531,293	-	-	-
Brong Ahafo	180,422	2,720	-	-	1,322,037	1,891,296	261,712	278,742	-	-	-
Northern	107,248	58,088	65,490	118,085	170,429	449,303	0	0	42,010	50,847	-
Upper West	42,770	3,420	60,670	109,190	-	236,130	0	0	51,830	23,340	-
Upper Eat	6,216	44,176	38,830	67,470	-	-	-	-	60,150	-	-
Total	974,220	206,988	164,990	299,215	7,685,648	3,801,586	1,733,543	1,954,518	153,990	74,187	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.46	1.20	-	-	9.66	6.48	5.85	33.14	-	-	-
Central	1.20	-	-	-	12.99	4.86	4.50	5.95	-	-	-
Eastern	1.68	2.06	-	-	12.49	19.09	7.03	8.67	-	-	-
Greater Accra	0.87	4.50	-	-	5.97	-	-	-	-	-	-
Volta	0.20	3.63	-	1.00	17.72	11.45	3.72	6.23	-	-	-
Ashanti	1.64	2.19	-	-	11.61	11.91	10.76	8.92	-	-	-
Brong Ahafo	2.02	0.61	-	-	10.98	20.93	7.22	7.30	-	-	-
Northern	0.96	1.90	0.98	1.07	6.79	-	-	-	0.84	0.92	-
Upper West	1.20	0.90	1.33	1.35	-	-	-	-	1.52	0.74	-
Upper Eat	0.76	1.88	0.66	0.66	-	-	-	-	0.81	-	-
Total	1.39	1.93	0.96	1.00	12.00	15.83	6.62	9.75	0.97	0.86	-

Source: Agriculture Statistics & Census Division (PPMED), Ministry of Food & Agriculture (February 2000)

Crop Production Records in Ghana (2000)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	51,876	14,745	-	-	69,834	12,913	37,227	54,048	-	-	-
Central	89,229	0	-	-	78,561	4,481	18,380	10,362	-	-	-
Eastern	148,400	12,300	-	-	150,000	34,100	55,000	70,000	-	-	-
Greater Accra	6,968	1,980	-	-	10,787	-	-	-	-	-	-
Volta	44,640	10,690	-	4,600	67,150	21,600	7,700	5,450	-	-	-
Ashanti	114,879	4,860	-	-	124,795	17,714	90,933	63,710	-	-	-
Brong Ahafo	94,798	4,657	-	-	126,464	95,780	38,222	40,836	-	-	-
Northern	98,500	30,400	62,300	96,000	32,500	51,800	0	0	60,000	50,000	-
Upper West	34,979	4,103	61,478	103,574	-	22,653	0	0	48,434	40,759	-
Upper Eat	10,466	31,421	84,570	84,532	-	-	-	-	109,426	-	-
Total	694,735	115,156	208,348	288,706	660,091	261,041	247,462	244,406	217,860	90,759	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	74,349	18,598	-	-	667,034	83,165	219,163	404,572	-	-	-
Central	117,482	0	-	-	1,380,107	22,291	84,833	58,527	-	-	-
Eastern	241,990	24,600	-	-	1,729,190	582,353	375,370	556,774	-	-	-
Greater Accra	6,207	8,910	-	-	63,643	-	-	-	-	-	-
Volta	62,638	35,070	-	4,600	1,135,050	235,500	33,800	32,710	-	-	-
Ashanti	191,903	11,040	-	-	1,218,001	225,721	637,124	584,423	-	-	-
Brong Ahafo	166,326	2,856	-	-	1,702,483	1,432,463	274,798	295,465	-	-	-
Northern	78,800	72,960	49,840	72,000	211,250	518,000	0	0	40,000	39,500	-
Upper West	56,725	9,281	49,138	105,335	-	263,416	0	0	68,623	23,785	-
Upper Eat	16,280	65,379	70,399	97,849	-	-	-	-	100,015	-	-
Total	1,012,700	248,694	169,377	279,784	8,106,758	3,362,909	1,625,088	1,932,471	208,638	63,285	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.43	1.26	-	-	9.55	6.44	5.89	7.49	-	-	-
Central	1.32	-	-	-	17.57	4.97	4.62	5.65	-	-	-
Eastern	1.63	2.00	-	-	11.53	17.08	6.82	7.95	-	-	-
Greater Accra	0.89	4.50	-	-	5.90	-	-	-	-	-	-
Volta	1.40	3.28	-	1.00	16.90	10.90	4.39	6.00	-	-	-
Ashanti	1.67	2.27	-	-	9.76	12.74	7.01	9.17	-	-	-
Brong Ahafo	1.75	0.61	-	-	13.46	14.96	7.19	7.24	-	-	-
Northern	0.80	2.40	0.80	0.75	6.50	-	-	-	0.67	0.79	-
Upper West	1.62	2.26	0.80	1.02	-	-	-	-	1.42	0.58	-
Upper Eat	1.56	2.08	0.83	1.16	-	-	-	-	0.91	-	-
Total	1.46	2.16	0.81	0.97	12.28	12.88	6.57	7.91	0.96	0.70	-

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (February 2001)

Crop Production Records in Ghana (2001)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	54,099	15,720	-	-	71,929	12,996	37,657	55,778	-	-	-
Central	91,012	0	-	-	80,132	4,526	18,563	10,465	-	-	-
Eastern	147,744	12,670	-	-	180,000	36,700	57,750	84,000	-	-	-
Greater Accra	8,015	2,138	-	-	11,320	-	-	-	-	-	-
Volta	43,350	13,200	-	5,000	69,500	22,400	8,000	5,750	-	-	-
Ashanti	119,473	5,545	-	-	128,539	17,786	101,844	66,257	-	-	-
Brong Ahafo	99,277	4,750	-	-	132,787	98,653	38,604	42,878	-	-	-
Northern	104,088	33,813	64,267	99,052	52,150	70,460	-	-	66,500	48,457	-
Upper West	36,250	4,498	65,356	112,831	-	23,865	-	-	52,287	53,091	-
Upper Eat	9,995	42,987	63,356	112,220	-	-	-	-	135,710	-	-
Total	713,303	135,321	192,979	329,103	726,357	287,386	262,418	265,128	254,497	101,548	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	75,000	20,458	-	-	707,144	84,844	223,445	428,856	-	-	-
Central	118,000	0	-	-	1,463,962	22,855	87,285	60,337	-	-	-
Eastern	201,000	25,339	-	-	2,088,000	608,690	392,700	672,000	-	-	-
Greater Accra	6,517	10,690	-	-	70,000	-	-	-	-	-	-
Volta	63,840	44,900	-	5,000	1,077,600	222,500	35,000	33,785	-	-	-
Ashanti	170,000	11,448	-	-	1,304,480	228,429	671,530	568,668	-	-	-
Brong Ahafo	168,000	2,913	-	-	1,872,731	1,475,436	277,546	310,238	-	-	-
Northern	69,878	63,343	39,774	53,344	381,923	620,701	-	-	72,063	35,929	-
Upper West	50,738	9,532	42,013	92,312	-	283,284	-	-	79,019	26,613	-
Upper Eat	15,000	85,973	52,583	129,056	-	-	-	-	135,710	-	-
Total	937,973	274,596	134,370	279,712	8,965,840	3,546,739	1,687,506	2,073,884	286,792	62,542	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.39	1.30	-	-	9.83	6.53	5.93	7.69	-	-	-
Central	1.30	-	-	-	18.27	5.05	4.70	5.77	-	-	-
Eastern	1.36	2.00	-	-	11.60	16.59	6.80	8.00	-	-	-
Greater Accra	0.81	5.00	-	-	6.18	-	-	-	-	-	-
Volta	1.47	3.40	-	1.00	15.51	9.93	4.38	5.88	-	-	-
Ashanti	1.42	2.06	-	-	10.15	12.84	6.59	8.58	-	-	-
Brong Ahafo	1.69	0.61	-	-	14.10	14.96	7.19	7.24	-	-	-
Northern	0.67	1.87	0.62	0.54	7.32	-	-	-	1.08	0.74	-
Upper West	1.40	2.12	0.64	0.82	-	-	-	-	1.51	0.50	-
Upper Eat	1.50	2.00	0.83	1.15	-	-	-	-	1.00	-	-
Total	1.31	2.03	0.70	0.85	12.34	12.34	6.43	7.82	1.13	0.62	-

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (February 2001)

Crop Production Records in Ghana (2002)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	61,800	16,980	-	-	74,290	10,240	38,210	57,520	-	-	-
Central	94,740	1,730	-	-	110,030	4,810	18,560	12,110	-	-	-
Eastern	199,000	14,500	-	-	182,000	40,500	62,200	84,000	-	-	-
Greater Accra	4,080	2,660	-	-	7,750	-	-	-	-	-	-
Volta	45,500	14,400	-	5,500	72,000	24,100	8,000	8,100	-	-	-
Ashanti	170,000	5,500	-	-	129,000	18,000	108,000	67,000	27,000	-	-
Brong Ahafo	176,800	5,960	-	-	171,020	118,870	50,330	56,710	40,000	-	-
Northern	89,060	47,250	68,250	96,800	66,060	83,050	-	-	218,360	74,500	-
Upper West	37,790	1,700	70,780	123,720	-	26,560	-	-	94,750	61,210	-
Upper Eat	11,920	8,440	67,530	120,000	-	-	-	-	124,600	54,640	-
Total	890,690	119,120	206,560	346,020	812,150	326,130	285,300	285,440	504,710	190,350	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	86,520	22,090	-	-	792,160	93,060	240,740	473,350	-	-	-
Central	247,110	4,430	-	-	1,597,140	24,260	92,900	70,430	-	-	-
Eastern	218,900	27,550	-	-	2,184,000	660,000	404,300	672,000	-	-	-
Greater Accra	2,610	3,390	-	-	51,870	-	-	-	-	-	-
Volta	58,630	46,750	-	6,100	1,235,100	241,000	35,000	44,410	-	-	-
Ashanti	187,000	9,350	-	-	1,354,500	234,000	702,000	636,500	37,800	-	-
Brong Ahafo	295,680	3,530	-	-	2,489,990	1,809,900	351,440	432,320	50,000	-	-
Northern	79,050	93,970	55,830	62,300	551,150	461,170	-	-	133,310	74,260	-
Upper West	60,710	3,770	54,630	127,820	-	309,280	-	-	129,990	46,210	-
Upper Eat	20,370	27,910	65,280	141,450	-	-	-	-	137,930	25,120	-
Total	1,256,580	242,740	175,740	337,670	10,255,910	3,832,670	1,826,380	2,329,010	489,030	145,590	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.40	1.30	-	-	10.66	9.09	6.30	8.23	-	-	-
Central	2.61	2.56	-	-	14.52	5.04	5.01	5.82	-	-	-
Eastern	1.10	1.90	-	-	12.00	16.30	6.50	8.00	-	-	-
Greater Accra	0.64	1.27	-	-	6.69	-	-	-	-	-	-
Volta	1.29	3.25	-	1.11	17.15	10.00	4.38	5.48	-	-	-
Ashanti	1.10	1.70	-	-	10.50	13.00	6.50	9.50	-	-	-
Brong Ahafo	1.67	0.59	-	-	14.56	15.23	6.98	7.62	-	-	-
Northern	0.89	1.99	0.82	0.64	8.34	-	-	-	0.61	1.00	-
Upper West	1.61	2.22	0.77	1.03	-	-	-	-	1.37	0.75	-
Upper Eat	1.71	3.31	0.97	1.18	-	-	-	-	1.11	-	-
Total	1.41	2.04	0.85	0.98	12.63	11.75	6.40	8.16	0.97	0.76	-

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (December 2002, Provisional)

Crop Production Records in Ghana (2003)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	61,800	16,980	-	-	74,290	10,240	38,210	57,520	-	-	-
Central	94,740	1,730	-	-	110,030	4,800	18,560	12,110	-	-	-
Eastern	150,600	13,000	-	-	183,300	36,000	59,700	85,600	-	-	-
Greater Accra	4,080	2,660	-	-	7,750	-	-	-	-	-	-
Volta	45,500	14,400	-	5,500	72,000	24,100	8,000	8,100	-	-	-
Ashanti	119,620	5,600	-	-	122,780	17,790	101,870	66,420	27,000	-	-
Brong Ahafo	176,800	5,960	-	-	171,030	118,870	50,330	56,710	-	-	-
Northern	89,060	47,250	68,250	96,800	66,060	83,050	-	-	218,360	74,500	-
Upper West	37,790	1,700	70,780	123,730	-	26,560	-	-	94,750	61,210	-
Upper Eat	11,920	8,440	67,530	120,000	-	-	-	-	124,600	54,640	-
Total	791,910	117,720	206,560	346,030	807,240	321,410	276,670	286,460	464,710	190,350	-

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	86,520	22,090	-	-	792,160	93,060	240,740	473,350	-	-	-
Central	247,110	4,430	-	-	1,597,140	24,260	92,900	70,430	-	-	-
Eastern	244,000	21,340	-	-	2,199,600	648,320	412,000	700,200	-	-	-
Greater Accra	2,610	3,390	-	-	51,880	-	-	-	-	-	-
Volta	58,630	46,750	-	6,100	1,235,100	241,000	35,000	44,410	-	-	-
Ashanti	193,920	11,630	-	-	1,322,320	225,850	672,570	607,890	37,800	-	-
Brong Ahafo	295,680	3,530	-	-	2,489,990	1,809,900	351,440	432,320	-	-	-
Northern	79,050	93,970	55,830	62,300	551,150	461,170	-	-	133,310	74,260	-
Upper West	60,710	3,770	54,630	127,820	-	309,280	-	-	129,990	46,210	-
Upper Eat	20,370	27,910	65,280	141,450	-	-	-	-	137,930	25,120	-
Total	1,288,600	238,810	175,740	337,670	10,239,340	3,812,840	1,804,650	2,328,600	439,030	145,590	-

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.40	1.30	-	-	10.66	9.09	6.30	8.23	-	-	-
Central	2.61	2.56	-	-	14.52	5.05	5.01	5.82	-	-	-
Eastern	1.62	1.64	-	-	12.00	18.01	6.90	8.18	-	-	-
Greater Accra	0.64	1.27	-	-	6.69	-	-	-	-	-	-
Volta	1.29	3.25	-	1.11	17.15	10.00	4.38	5.48	-	-	-
Ashanti	1.62	2.08	-	-	10.77	12.70	6.60	9.15	-	-	-
Brong Ahafo	1.67	0.59	-	-	14.56	15.23	6.98	7.62	-	-	-
Northern	0.89	1.99	0.82	0.64	8.34	-	-	-	0.61	1.00	-
Upper West	1.61	2.22	0.77	1.03	-	-	-	-	1.37	0.75	-
Upper Eat	1.71	3.31	0.97	1.18	-	-	-	-	1.11	-	-
Total	1.63	2.03	0.85	0.98	12.68	11.86	6.52	8.13	0.94	0.76	-

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (February 2004)

Crop Production Records in Ghana (2004)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	6,200	1,900	-	-	7,184	2,251	6,562	9,466	-	-	-
Central	3,064	56	-	-	2,997	71	1,283	-	-	-	-
Eastern	27,840	-	-	-	9,400	26,200	560	650	-	-	-
Greater Accra	343	2,678	-	-	861	-	-	-	-	-	-
Volta	5,600	1,300	-	1,500	29,000	7,500	600	400	-	-	-
Ashanti	3,933	1,147	-	-	4,998	224	1,682	1,561	-	-	-
Brong Ahafo	7,380	-	-	-	6,500	19,680	3,500	1,350	-	-	-
Northern	900	4,500	3,000	7,000	5,000	2,600	-	-	7,100	3,500	400
Upper West	10,883	480	7,450	8,067	-	6,441	-	-	10,042	5,132	576
Upper Eat	2,900	660	14,500	24,400	-	-	-	-	28,600	13,250	270
Total	69,043	12,721	24,950	40,967	65,940	64,968	14,186	13,427	45,742	21,882	1,246

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	14,022	2,231	-	-	120,250	7,873	44,442	84,776	-	-	-
Central	37,696	-	-	-	355,796	3,376	-	-	-	-	-
Eastern	22,572	-	-	-	204,600	35,150	85,828	115,938	-	-	-
Greater Accra	1,057	-	-	-	20,780	-	-	-	-	-	-
Volta	4,500	5,200	-	-	29,000	12,000	12,500	15,750	-	-	-
Ashanti	6,489	508	-	-	40,366	2,183	31,246	19,592	-	-	-
Brong Ahafo	13,053	226	-	-	309,600	1,381	103,428	146,114	-	-	-
Northern	7,300	-	3,600	9,000	2,180	33,950	-	-	4,080	2,400	3,080
Upper West	1,573	506	4,239	8,749	-	8,776	-	-	6,793	6,797	37
Upper Eat	-	952	5,155	7,739	-	-	-	-	9,870	3,152	-
Total	108,261	9,623	12,994	25,487	1,082,572	104,689	277,444	382,170	20,743	12,349	3,117

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	2.26	1.17	-	-	16.74	3.50	6.77	8.96	-	-	-
Central	12.30	-	-	-	118.71	47.29	-	-	-	-	-
Eastern	0.81	-	-	-	21.77	1.34	153.26	178.37	-	-	-
Greater Accra	3.08	-	-	-	24.14	-	-	-	-	-	-
Volta	0.80	4.00	-	-	1.00	1.60	20.83	39.38	-	-	-
Ashanti	1.65	0.44	-	-	8.08	9.73	18.58	12.55	-	-	-
Brong Ahafo	1.77	-	-	-	47.63	0.07	29.55	108.23	-	-	-
Northern	8.11	-	1.20	1.29	0.44	-	-	-	0.57	0.69	7.70
Upper West	0.14	1.05	0.57	1.08	-	-	-	-	0.68	1.32	0.06
Upper Eat	#VALUE!	1.44	0.36	0.32	-	-	-	-	0.35	-	-
Total	1.57	0.76	0.52	0.62	16.42	1.61	19.56	28.46	0.45	0.56	2.50

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (February 2005)

Crop Production Records in Ghana (2005)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	12,464	4,631	-	-	8,586	3,926	8,553	13,508	-	-	-
Central	4,519	-	-	-	4,540	-	-	3,956	-	-	-
Eastern	13,602	160	-	-	12,520	1,138	534	449	-	-	-
Greater Accra	104	-	-	-	-	-	-	-	-	-	-
Volta	2,200	-	-	-	1,000	100	300	100	-	-	-
Ashanti	3,005	10	-	-	3,829	25	16	942	-	-	-
Brong Ahafo	n/a	n/a	-	-	n/a	n/a	n/a	n/a	-	-	-
Northern	10,500	2,600	3,850	7,100	3,230	10,300	-	-	4,800	350	400
Upper West	8,575	-	8,545	13,267	-	5,777	-	-	18,390	13,187	-
Upper Eat	2,683	5,732	10,322	11,904	-	-	-	-	8,330	10,715	3,058
Total	57,652	13,133	22,717	32,271	33,705	21,266	9,403	18,955	31,520	24,252	3,458

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	14,022	2,231	-	-	120,250	7,873	44,442	84,776	-	-	-
Central	37,696	-	-	-	355,796	3,376	-	-	-	-	-
Eastern	22,572	-	-	-	204,600	35,150	85,828	115,938	-	-	-
Greater Accra	1,057	-	-	-	20,780	-	-	-	-	-	-
Volta	4,500	5,200	-	-	29,000	12,000	12,500	15,750	-	-	-
Ashanti	6,489	508	-	-	40,366	2,183	31,246	19,592	-	-	-
Brong Ahafo	13,053	226	-	-	309,600	1,381	103,428	146,114	-	-	-
Northern	7,300	-	3,600	9,000	2,180	33,950	-	-	4,080	2,400	3,080
Upper West	1,573	506	4,239	8,749	-	8,776	-	-	6,793	6,797	37
Upper Eat	-	952	5,155	7,739	-	-	-	-	9,870	3,152	-
Total	108,261	9,623	12,994	25,487	1,082,572	104,689	277,444	382,170	20,743	12,349	3,117

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.12	0.48	-	-	14.01	2.01	5.20	6.28	-	-	-
Central	8.34	-	-	-	78.37	-	-	-	-	-	-
Eastern	1.66	-	-	-	16.34	30.89	160.73	258.21	-	-	-
Greater Accra	10.16	-	-	-	-	-	-	-	-	-	-
Volta	2.05	-	-	-	29.00	120.00	41.67	157.50	-	-	-
Ashanti	2.16	50.84	-	-	10.54	87.31	1,952.84	20.80	-	-	-
Brong Ahafo	-	-	-	-	-	-	-	-	-	-	-
Northern	0.70	-	0.94	1.27	0.67	3.30	-	-	0.85	6.86	7.70
Upper West	0.18	-	0.50	0.66	-	1.52	-	-	0.37	0.52	-
Upper Eat	-	0.17	0.50	0.65	-	-	-	-	1.18	0.29	-
Total	1.88	0.73	0.57	0.79	32.12	4.92	29.51	20.16	0.66	0.51	0.90

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (April 2006)

Crop Production Records in Ghana (2006)

1. Cropped Area (ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	51,102	15,011	-	-	69,256	11,611	38,750	54,084	-	-	-
Central	102,648	3,886	-	-	108,114	2,411	18,702	12,487	-	-	-
Eastern	133,844	11,012	-	-	180,822	39,312	53,500	78,097	-	-	-
Greater Accra	2,879	2,070	-	-	6,876	-	-	-	-	-	-
Volta	35,330	15,917	-	5,278	85,445	21,762	5,690	6,328	-	-	-
Ashanti	138,793	8,467	-	-	115,937	31,122	88,000	88,060	43,502	-	-
Brong Ahafo	191,691	3,070	-	-	168,172	113,603	55,358	59,944	-	-	-
Northern	85,644	45,823	57,333	93,558	55,380	88,610	-	-	145,895	59,404	37,729
Upper West	36,714	3,679	61,552	98,354	-	20,570	-	-	116,812	54,666	12,860
Upper Eat	14,355	16,396	81,116	122,809	-	-	-	-	173,792	52,930	1,411
Total	793,000	125,331	200,001	319,999	790,001	329,001	260,000	299,000	480,001	167,000	52,000

2. Production (ton)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	73,210	19,150	-	-	670,000	96,727	236,166	530,764	-	-	-
Central	166,847	4,911	-	-	1,302,021	12,611	87,089	78,492	-	-	-
Eastern	209,542	18,843	-	-	2,608,430	622,923	410,105	764,050	-	-	-
Greater Accra	2,134	2,612	-	-	42,770	-	-	-	-	-	-
Volta	48,286	34,499	-	5,772	976,100	248,279	38,815	42,409	-	-	-
Ashanti	164,226	9,600	-	-	1,126,290	364,412	523,070	848,360	61,778	-	-
Brong Ahafo	363,595	4,050	-	-	2,429,908	1,673,696	357,950	635,924	-	-	-
Northern	98,157	98,793	52,134	77,630	482,480	962,286	-	-	130,329	70,640	40,762
Upper West	48,128	5,124	47,602	90,380	-	307,065	-	-	166,540	53,453	12,336
Upper Eat	14,712	52,417	65,264	141,214	-	-	-	-	161,350	42,901	1,230
Total	1,188,836	250,000	165,001	314,997	9,637,998	4,288,000	1,653,195	2,900,000	519,997	166,994	54,328

3. Unit Yield (ton/ha)

Region	Maize	Rice	Millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	G'nuts	Cowpea	Soyabean
Western	1.43	1.28	-	-	9.67	8.33	6.09	9.81	-	-	-
Central	1.63	1.26	-	-	12.04	5.23	4.66	6.29	-	-	-
Eastern	1.57	1.71	-	-	14.43	15.85	7.67	9.78	-	-	-
Greater Accra	0.74	1.26	-	-	6.22	-	-	-	-	-	-
Volta	1.37	2.17	-	1.09	11.42	11.41	6.82	6.70	-	-	-
Ashanti	1.18	1.13	-	-	9.71	11.71	5.94	9.63	1.42	-	-
Brong Ahafo	1.90	1.32	-	-	14.45	14.73	6.47	10.61	-	-	-
Northern	1.15	2.16	0.91	0.83	8.71	10.86	-	-	0.89	1.19	1.08
Upper West	1.31	1.39	0.77	0.92	-	14.93	-	-	1.43	0.98	0.96
Upper Eat	1.02	3.20	0.80	1.15	-	-	-	-	0.93	0.81	0.87
Total	1.50	1.99	0.83	0.98	12.20	13.03	6.36	9.70	1.08	1.00	1.04

Source: Statistics, Research and Inf. Directorate (SRID), Ministry of Food & Agriculture (April 2006)

Attachment-3(2)

*History of NERICA Dissemination
in Ghana*

History of NERICA Dissemination in Ghana

Historical events of the NERICA dissemination in Ghana are illustrated in the figure attached hereto and summarized below.

1. Introduction of NERICA to Ghana

The NERICA varieties developed at WARDA (80 lines) were firstly introduced to Ghana by Senior Researchers of CRI and SARI in 1997 with financial assistance by DFID. They were sown in Hohoe District and Nyampala. During 2000 and 2002, eight (8) varieties selected were sown and tested at three (3) research stations of CRI, SARI and partly University of Ghana Agriculture Research Station, Kade (ARS Kade). These varieties showed higher grain productivity equal to the best local varieties but noticeable NERICA characteristics especially shorter growth period and weed competitiveness.

The introduction of the NERICA varieties was thus embarked on in Ghana. CRI and SARI exerted their dissemination through transfer of appropriate farming techniques with efficient crop management and rice-based cropping systems, i.e. rotation with cowpea, leguminous and cover crops.

One or more NERICA varieties had been released in 10 West African countries by 2003. DFID convinced the financial assistance to the Consultative Group on International Agricultural Research (CGIAR) of Ghana for encouragement of the NERICA dissemination through participatory variety selection and community seed production for which about £20 million per year are allocated.

2. Variety Trials at IDC

In parallel, JICA, FAO and MOFA had jointly carried out some preliminary trials at IDC (SSIAPP) in 2000-2002.

Nine (9) NERICA varieties were introduced to IDC by the JICA Expert in 2000. The trials focused on variety selection under both upland and lowland conditions. Then, MOFA requested IDC to evaluate four (4) varieties out of nine (9) in the experimental plots of the Ashaman irrigation scheme in 2001. In response to the request by MOFA, FAO extended their assistance to the multiplication of foundation seeds. Finally, FAO through MOFA and JICA in collaboration requested SSIAPP to establish the seed multiplication project at IDC. The activities were followed up in 2003 for seed multiplication under the financial assistance from UNDP,

3. Assistance by Gatsby Charitable Foundation of UK

Gatsby supported SARI to conduct the evaluation of NERICA varieties through participatory variety

selection (PVS) approach in Phase I from 2000 to 2002. The research selected NERICA a, 4 and 6. Gatsby extended further assistance to SARI in Phase II of the project that concentrated on improvement of quality, profitability and competitiveness of local rice production with emphasis on varieties selected through PVS in Phase I.

4. Participation in Regional Efforts

In March 2002, Ghana participated in the regional efforts for promotion of food security with rice, namely African Rice Initiative (ARI) as one of seven pilot countries. ARI hosted by WARDA aims to scale up the dissemination of the NERICA throughout sub-Saharan Africa. Seeking to fight poverty through the dissemination of NERICA, the ARI is in line with the New Partnership for Africa's Development (NEPAD) and is an important follow-up to the Tokyo International Conference on African Development (TICAD).

Initially, ARI is focusing on the upland ecology, for which the original NERICAs were bred. It will also promote complementary technologies to improve soil fertility and alleviate other problems associated with rice production. By 2006, the area under NERICA is expected to be over 200,000 ha with a production close to 750,000 ton per year. Nearly US\$90 million worth of rice imports will be saved.

5. Variety Selection by JAICAF

In 2004, Japan and UN decided to extend an assistance through the Trust Fund for Human Security for the program "Dissemination of NERICA and Improved Rice Production Systems to Reduce Food Deficit and Improve Farmers' Income in Ghana" by FAO. This project aimed at assisting poor farmers and their communities in Ghana by increasing food security and income of farmers through the dissemination of NERICA Rice and the provision of improved rice production technologies.

In 2004 to 2006, JAICAF dispatched the Senior Rice Expert to Ghana in order to reinforce the NERICA dissemination activities in Ghana. Seven (7) varieties, namely NERICA 1 - 7, originated from WARDA and Japan were several sites under the control of CRI, SARI and GIDA. Although most of NERICA varieties seemed to be insufficient in the uniformity of characteristics, NERICA 2 and 6 showed higher yield than others.

6. NERICA Rice Dissemination Project

African Development Fund decided to finance NERICA Dissemination Project for the seven (7) countries of West Africa including Ghana under the regional coordination of WARDA in 2003. The main objective of the project is to increase rice production through enhanced access to high yielding upland NERICA rice varieties. The project aims to support the transfer of NERICA technology from

WARDA and strengthen linkages between and among research, extension, farming communities and the private sector.

Under the control of MOFA, the project is being carried out by CRI, SARI and GIDA in Ghana under four (4) project components: a) Technology Transfer; b) Production Support; c) Capacity Building; and d) Project Coordination, of which the first two components are summarized below.

Technology Transfer - The project supports the production of NERICA Basic and Foundation seeds. Farmers are organized in the scheme of Community Based Seed Multiplication System (CBSS) for the production of NERICA certified seed, using the participatory variety selection (PVS) approach. The project also supports an adaptive on-farm research program for: (a) testing and fine tuning NERICA complementary technologies and (b) production of extension materials in local languages. Improved small-scale rice processing equipment (small-scale rice mills, threshers and destoners) are established for demonstration purposes.

Production Support - The project, in close collaboration with Government Extension Services, recruits NGOs, to mobilize the project beneficiaries and undertake PRA for training needs assessment. Extension service is strengthened for effective delivery of technical advice on cultural practices and farming systems. Workshops and study tours are organized to facilitate exchange of knowledge, skills and experiences among stakeholders. Feeder road network, rice-drying floors, stores and marketing sheds are to be constructed on a demand-driven basis.

Within the framework of this project, MOFA implements substantial dissemination of the NERICA varieties in Ghana. In response to the request by MOFA, CRI and SARI have provided intensive assistance in technology transfer, production support, capacity building and project coordination. Under the project, particularly for participatory seed selection and seed multiplication are implemented in three (3) selected districts, namely Ejura-Sekyeredumasi (Kumashi), Tolon-Kumbungu (Northern) and Hohoe (Volta).

GIDA also assisted in production of foundation seed. In the scheme of the NERICA Dissemination Project, deficit in seed requirements for all expanded areas has been filled in by off season production in the irrigated farms of two (2) GIDA schemes, namely Ashaman and Okyereko.

The project is currently promoting two (2) NERICA varieties, i.e. NERICA 1 with its good aroma characteristic and NERICA 2 of high productivity.

EVENTS OF NERICA DISSEMINATION IN GHANA

Epoch and Program	Organizations & Donor	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Introduction of NERICA Varieties to Ghana from WARDA	CRI, SARI, Univ. Ghana (DFUD) SARI (DFUD)	▶ Introduction of NERICA (80 varieties) Variety Trials with 8 lines													
Variety Trials at IDC	GIDA/IDC/SSIAPP (JICA/FAO/MOFA)			 Trials of 4 varieties from WARDA Yield evaluation of 4 lines										
Community Variety Selection at SARI	SARI (Gatsby Foundation)			Phase I for Participatory Variety Selection (NERICA 1, 4 and 6)											
Participation in Regional Activities - African Rice Initiative: ADF / AfDB - Dissemination Project: ADF / AfDB						▶	▶								
Seed Multiplication at GIDA/IDC	UNDP							NERICA seed multiplication under UNDP							
JAICAF's Variety Trials	CRI, SARI, GIDA (JAICAF)								Variety Trials with 7 lines						
NERICA Rice Dissemination Project	MOFA/FAO-SPFS (AfDB)						Farmers Field School Technical and Financial Assistance to Farmers Association		 Certified Seed Production of NERICA 1 and 2					
							Participatory Variety Selection								

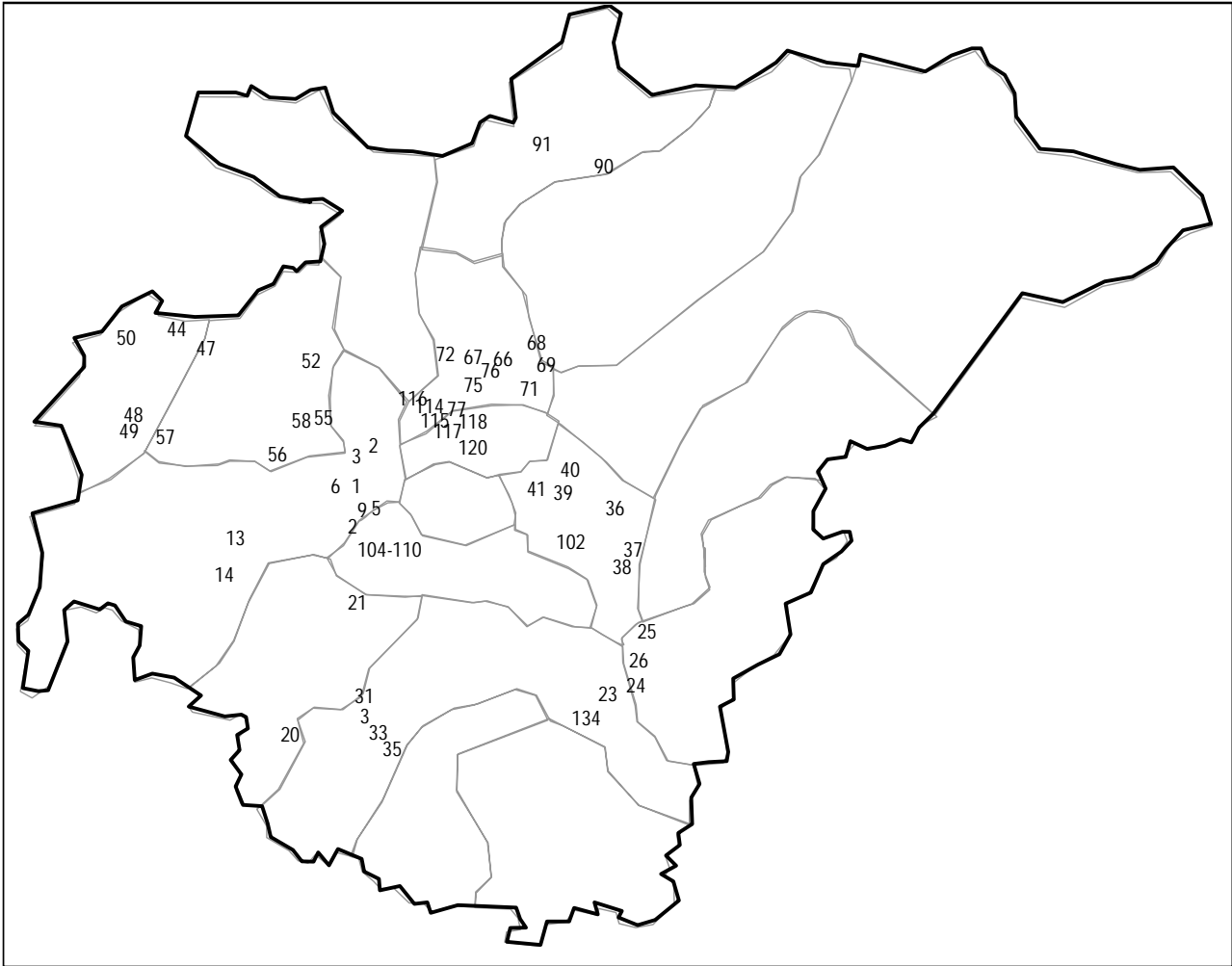
Attachment-9(1)

*List of Potential Area
for Rice Development
in Ashanti Region*

List of Potential Area for Rice Development in Ashanti Region

No.	District	Name of Area	Name of Valley	No.	District	Name of Area	Name of Valley	No.	District	Name of Area	Name of Valley
1	Atwima	Nerebehi	River Ofin	57		Mpsaaso	Mpsaaso	113	Kwabre	Aduman	Owadi
2	Nwabiegya	Mfensi	River Ofin				Nyamebekyere	114		Wawase	Anyinasu and
3		Amadum	River Ofin	58		Kunsu	Kunsu	115			Ayomso
4		Nkawie Panyin	Fankomawe	59	Sekyere	Dome	Atonsu	116		Ankaase	Anyinasu
5		(M) Fankomawe	Fankomawe	60	West	Kyeiase	Kyei	117		Ankaase	Anyinasu
6		Kyereyaase	River Ofin	61		Bonuso	Bonu	118		Kodie	Owabi
7		Gyankobaa	River Ofin	62		Satasa	Sata	119		Maase	Owadi
8		Ntensere	Behie/Ofin	63	Sekere	Nkwankana	Anum	120		Adanwomase	Bomohwe
9		Koforidua	Owabi	64	East	Bomso		121		Ankaase	
10	Atwima	Tanodumase		65		Drobonso	Afram	122	Kumasi	Gyenaase	Wewe
11	Mponua	Abofrem		66	Afigya	Domeabra	Ofin	123	Metropolitan	Gyenaase	Wewe
12		Kansakrom		67	Sekyere	Amoako	Ofin	124		Nhyiaeso	Subin
13		Adiembra		68		Jamasi	Oyon	125		Dechiemso	Subin
14		Ntonbroso	Ofin	69		Agona	Oyon	126		Deduakor	Wewe
15		Donkoto		70		Asaman	Kukua	127		Ayeduae	Wewe
16		Anasu		71		Tanodumasi	Kukuo	128		Apemso	Wewe
17		Kwame Dwumo		72		Boaman	Ofin	129		UST Campus	Wewe
18	Amansie	Dome Bebuabow		73		Tetrem	Abankro	130		Daban New Site	Aboabo
19	West	Atwere Adukonana		74		Tetrem	Nobeso	131		Ahwodwo Daban	Aboabo
20		Watreso		75		Kyeyewere	Ofin	132		Asuoyebo	
21		Keniego		76		Daaponkor	Ofin	133		Nseniye/Kentinkro	
22		Ankan		77		Nkwantakese	Ofin	134		Duase	
23	Amansie	Freso	River Fre/Anyano	78		Kwaman	Ofin	135		Titiiso	Titii
24	East	Tebesi 1& 2	River Tebe / Onyebiase	79	Offinso	Anyinasosu	Anyinaso	136		Titiiso	Nkantebura
25		Anyanso	River Anyaa	80		Odeso/Anyinasos	Odeso	137		Adom Koforidua	Asabi
26		Freboye	River Fre/Anunu	81		Odeso/Bonsua	Odeso	138		Old Adubiase	Bremen
27		Aframoaso	River Afia	82		Kayere	Anankaso	139			Kyeabu
28		Keteke	River Afia	83		Aduana	Anankaso	140	Adansi	Subriso	Subriso
29		Nsese		84		Asikaman	Anakaso	141	South	Akutreso	Akutreso
30	Amansie	Aboagyekrom	Aboagyekrom	85		ADA	Dam	142		New Adubiase	New Adubiase
31	Central	Kente	Kente	86		Akyease	Mensare	143		Atobiase	Atobiase
32		Atia	Atia	87		Awisem	Anankaso	144		Apagya	Apagya
33		Sabe	Sabe	88		Worapong	Odeso	145		Ataase	Ataase
34		Odumto	Odumto	89		Koforidua	Odeso	146		Praso	Prasp
35		Mile 9	Mile 9	90	Ejura /	Aframso	Afram	147		Nkranso	Nkranso
36	Ejisu	Kubease	Hwere	91	Sekyedumasi	Teacherokrom	Chirede	148		Nkwanta	Nkwanta
37	Juabeng	Bomfa	Bankro	92	Ashanti	Akutuae	Enfe	149		Kwawso	Kwawso
38		Adumusa	Anum		Akim North			150		Kojo Mankront	Kojo
39		Domaso	Oda	93	Ashanti	Juaso	Aframso	151		Bepoase	Bepoase
40		Besease	Oda	94	Akim South		Aboabu	152		Nkrankese	Nkrankese
41		Krapa	Oda/Kankan	95		Odubi	Komu	153		Hwediem	Hwediem
42	Ahafo Ano	Adugyama	Katabo	96		Ofoase	Anum	154		Amudurasi	Amudurasi
43	North		Abuuho	97		Nadaeso	Pra	155		Memant	Memant
44			Nsakasu	98		Apragya	Pra	156		Oyant	Oyant
45			Onwe	99		Asankare	Tweadua	157		Krokrom	Krokrom
46			Nkwanta	100		Atwedie	Kanton	158		Subin Camp	Subin Camp
47			Anyinnaso	101	Bosomtwi	Nyameani	Nyameani	159		Asarekrom	Asarekrom
48		Betiako	Kwadwotiako	102	Atwima	Piase	Bankro	160		Ahomahoma	Ahomahoma
49		Abunasuao	Bonsuso	103	Kwawoma	Deduakor	Bankro	161		Aniampam	Aniampam
50		Tepa Marbang	Kwasum	104		Nwineso No.1	Aponaponoso	162		Tweadese	Tweadese
51		Asuahyaye	Dedan/Subri	105			Nwine	163		Kojo Yentumi	Kojo Yentumi
52	Ahafo Ano	Apan	Nsutem	106		Nwineso No.2	Nwine	164		Tonkoase 1	Tonkoase 1
53	South	Abesewa	Abesewa	107			Anansu	165		Tonkoase 2	Tonkoase 2
54		Apotosu	Attakrom	108		Nwineso No.3	Nwine	166		Dwendama	Dwendama
55		Mankranso	Beposo	109			Asikaso	167		Wuruyei	Wuruyei
56		Bonkwaso	Bonkwaso	110			Anansu	168		Atwereboana	Atwereboana
				111		Twedie	Asuabena				
				112		Atwima Hwedien	Oda				

Source : Study team based on the information from Ashanti regional office and each district office



Attachment-9(2)

*List of Potential Area
for Lowland Rice Development
in Northern Region*

List of Potential Area for Lowland Rice Development in Northern Region

No.	District	Name of Area	Name of Valley	No.	District	Name of Area	Name of Valley
1	West Mamprusi	Nasia	Nasia	36	Karaga	Namburugu	Nambu
2		Janga	Janga	37		Gunayilli	Tandon
3		Arigu	Arigu	38		Yemo Karaga	Yemo Karaga
4		Gbinsi	Bumoga/Kusigyin	39		Yidua	Yidua
5		Yagba		40		Nyingate	Nyingate
6		Isiasi(yizesi)	Isiasi	41		Tuliga	Tulinga
7		Tantala		42		Tong	Tong
8		Fio		43		Nyensobga	Nyensobga
9	Tamale	Pacaza	Pagaza	44		Nangunkpang	Nangunkpang
10		Tugu	Tugu	45	East Mamprusi	Duni	Duni
11		Juni	Juni	46		Gbangdaa	Gbangdaa
12	Tolon Kumbungu	Golinga	Totima	47		Nalerigu	Nalerigu
13		Dalon Kuku	Kpukpalripuna	48		Samni	Samni
14		Lingbunga	Tampi	49	Yendi	Zang	Kuntaglani
15		Gizaa Gunda	Gizaa Gunda	50		Dagbanjado	Dagbanjado
16		Tolon Yipelgu	Yellibana	51		Ngolin	Ngolin
17	Kulli		52	Adibo		Nyalinba	
18	Gushiegu	Kpatili	Kpatili	53		Sang	Tublizee
19		Gaa	Gaa	54		Zagbang	Zagbang Bani
20		Sanpibga	Sanpibga	55		Zane	Fobiliya
21		Katani	Katani	56		Gagbini	Panduli
22		Zin indo		57	Puriya	Puriya	
23		Kpatinga	Sampmo/Bugya	58	East Gonja	Katanga	Katanga
24		Nayugu		59		Fuu	Fuu
25		Zori		60		Makango	Makango
26	Samanga		61	Kpabusi		Kpalbusi	
27	Savelugu	Yong	Yong	62		Mahun	Mahun
28		Bungling	Bungling	63		Nanumba North & South	Juo
29		Nabogu	Nabogu	64	Wulensi		Burini
30		Tamaligu	Tamaligu	65	Kambo		Kumbo baa
31		Kukobila	Kukobila	66	Jakpamba		Jakpanba
32		Zoggu	Zoggu	67	Wulensi		Lanpilgu
33		Libga	Libga	68	Wulensi		Gmang-Poglo
34		Kanshegu	Kanshegu	69	Kaleog		Kaleog
35		Kpalung	Kpalung	70	Sabongida		Sabongida
			71	Kpalsogu	Kpalsogu ba		
			72	Zabzugu Tatale	Sabari	Sabari	

Source : Study team based on the information form Northern regional office and each district office



Attachment-10(1)

*Development Components
Newly Added to the Action Plan*

Development Component (1): Extension of Improved Postharvest Processing Technology

Integrated Program	Rain-fed Rice Promotion Program (Semi-Intensive Rain-fed) / Support Program for Poor Rice Farmers (Extensive Rainfed)		Code	PH-1
Implementation Period				
Target Group	Rice Producers Group			
Implementing agency	MOFA (AESD)	Cooperating agencies	DAES	
Background and Objectives: A series of rice processing and handling practices after harvesting carried out by producers is very conventional and rough treatment by hands. Then many impurities such as stones, dust, straws and sand are contaminated and broken rice is generated in various stages of threshing, drying and transportation. Consequently, producers are facing the difficulty of sales and cheaper price on their product that contains many impurities and not meet consumers' preference. The program aims to extend the improved postharvest processing technology to producers in order to avoid impurities contamination and reduce broken rice generation, and meet the consumers' needs.				
Goal: The value of product will be increased by no impurities contamination and less broken rice contents.				
Output: 1) The mindset suited to market oriented activities will be promoted in producers. 2) Bargaining power will be increased. 3) Sales price will be raised.				
Activities: 1. Clarification of constraints a. Study of present postharvest processing practices (incl. simple loss assessment survey). b. Clarification of constraints on each process and stage. 2. Preparation of training manual for improvement of postharvest processing practices. a. Consideration on improvement measures for each constraint. b. Preparation of training manual for improvement of postharvest processing practices. 3. Training a. Training to extension officers. b. Training to producers. 4. Monitoring the implementation by producers (incl. simple loss assessment survey for evaluation).				
Input				
Donor side		Ghana side (responsible agency: AESD)		
1. Provision of expert		1. Counterpart personnel (C/P) (AESD, DAES)		
a. Postharvest processing	12 pm	1-1 Postharvest processing		36 pm
b. Extension	12 pm	1-2 extension		72 pm
2. Training equipment		2. Office facilities		
a. Video equipment	1 set			
b. Projector + screen	2 sets			
c. PC	2 sets			
3. Rice inspection instruments	2 sets			
4. Office equipment	L.S.			
5. Other project costs (fuel, counterpart travel allowance, etc.)	L.S.			

Source: JICA Study Team

Development Component (2): Promotion of Postharvest Processing Equipment Program

Integrated Program	Rain-fed Rice Promotion Program (Semi-Intensive Rain-fed) / Support Program for Poor Rice Farmers (Extensive Rainfed)		Code	PH-2
Implementation Period				
Target Group	Producers' group			
Implementing agency	MOFA (AESD), GIDA(IRC)	Cooperating agencies	DAES	
Background and Objectives: A series of rice processing and handling practices after harvesting carried out by producers is very conventional and rough treatment by hands. Then many impurities such as stones, dust, straws and sand are contaminated and broken rice is generated in various stages of threshing, drying and transportation. Consequently, producers are facing the				

<p>difficulty of sales and the cheaper price on their product that contains many impurities and cannot meet consumers' preference.</p> <p>The program aims to promote the postharvest processing equipment to producers in order to avoid impurities contamination and reduce broken rice generation, together with implementation of the improved technology dissemination program (PH01), and meet the consumers' needs.</p>																																					
<p>Goal: The value of product will be increased by no impurities contamination and less broken rice contents.</p>																																					
<p>Output:</p> <ol style="list-style-type: none"> 1) The mindset suited to market oriented activities will be promoted in producers. 2) Bargaining power will be increased. 3) Sales price will be raised. 																																					
<p>Activities:</p> <ol style="list-style-type: none"> 1. Selection of equipment <ol style="list-style-type: none"> a. Selection of equipment that can be expected contribution based on the result of the study carried out by Program PH-01. 2. Arrangement of procurement condition for farmers' group <ol style="list-style-type: none"> a. Conclusion of equipment supply condition with IRC. b. Arrangement of credit program to farmers' group for equipment procurement. (2KR program and/or the revolving fund of 2KR shall be considered as the resource of the program.) c. Preparation of the equipment procurement manual including a guideline for using credit program. 3. Explanation to farmers' groups <ol style="list-style-type: none"> a. Explanation of the program content and the procedure for equipment procurement to farmers. 4. Training of equipment operation <ol style="list-style-type: none"> a. Preparation of the equipment operation manual. b. Training of extension officers. c. Training for equipment operation to farmers' groups that will procure equipment. 5. Monitoring the operational condition of equipment and credit program. 																																					
<p>Input</p> <table border="1"> <thead> <tr> <th colspan="2">Donor side</th> <th colspan="2">Ghana side (responsible agency: AESD)</th> </tr> </thead> <tbody> <tr> <td>1. Provision of experts</td> <td></td> <td>1. Counterpart personnel (C/P) (AESD / DAES)</td> <td></td> </tr> <tr> <td>1-1 Postharvest technology</td> <td>12 pm</td> <td>1-1 Postharvest technology</td> <td>48 pm</td> </tr> <tr> <td>1-2 Extension</td> <td>12 pm</td> <td>1-2 Extension</td> <td>96 pm</td> </tr> <tr> <td>1-3 Finance</td> <td>12 pm</td> <td>1-3 Accounting</td> <td>12 pm</td> </tr> <tr> <td>2. Office equipment</td> <td></td> <td>2. Office facilities</td> <td></td> </tr> <tr> <td>3-1 Rice grain analysis kits</td> <td>2 sets</td> <td></td> <td></td> </tr> <tr> <td>3-2 PC</td> <td>2 sets</td> <td></td> <td></td> </tr> <tr> <td>3. Other project costs (fuel, counterpart travel allowance, etc.)</td> <td>L.S.</td> <td></td> <td></td> </tr> </tbody> </table>		Donor side		Ghana side (responsible agency: AESD)		1. Provision of experts		1. Counterpart personnel (C/P) (AESD / DAES)		1-1 Postharvest technology	12 pm	1-1 Postharvest technology	48 pm	1-2 Extension	12 pm	1-2 Extension	96 pm	1-3 Finance	12 pm	1-3 Accounting	12 pm	2. Office equipment		2. Office facilities		3-1 Rice grain analysis kits	2 sets			3-2 PC	2 sets			3. Other project costs (fuel, counterpart travel allowance, etc.)	L.S.		
Donor side		Ghana side (responsible agency: AESD)																																			
1. Provision of experts		1. Counterpart personnel (C/P) (AESD / DAES)																																			
1-1 Postharvest technology	12 pm	1-1 Postharvest technology	48 pm																																		
1-2 Extension	12 pm	1-2 Extension	96 pm																																		
1-3 Finance	12 pm	1-3 Accounting	12 pm																																		
2. Office equipment		2. Office facilities																																			
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3-2 PC	2 sets																																				
3. Other project costs (fuel, counterpart travel allowance, etc.)	L.S.																																				

Source: JICA Study Team

Development Component (3): Rice Mill Modernization Program

Integrated Program	Rain-fed Rice Promotion Program (Semi-Intensive Rain-fed) / Support Program for Poor Rice Farmers (Extensive Rainfed)	Code	PH-3
Implementation Period			
Target Group	Rice millers / Rice producers' group		
Implementing agency	MOFA (AESD)	Cooperating agencies	DAES, MOTI
Background and Objectives:			
<p>Urban populations as the majority of rice consumer in Ghana consume mainly imported rice and do not prefer the local rice due to containing many impurities such as stones, sand, dust and straws and broken rice. To produce the qualified rice without impurities it is necessary that the machinery and equipment used in rice mill shall be modernized as well as seed, cultivation method and postharvest practice shall be improved in the production area.</p> <p>For example, the conventional milling machine called Engerberg Type that produce rough and bad looking surface of rice with more broken rice is still popular in North Area of Ghana as the rice surplus production area. If those old type machinery could be replaced to modern one such as One-pass Type with a husker by rubber rolls and pre-cleaner, destoner and length grader could be attached newly, more qualified local rice shall be produced and delivered to market. Therefore, to promote the modernization of rice mill industry the program will provide the credit line by which rice millers</p>			

and rice producers' groups can replace or install modern and effective machinery and equipment for producing qualified products.	
Goal: Qualified local rice in the market will be increased and expand their market share and the motivation of more rice production will generate in producers.	
Output: 1) The management mind based on market needs will be fostered. 2) Consumers of local rice will be increased. 3) Management condition will be improved.	
Activities: 1. Selection of machinery and equipment a. Selection of equipment that can directly contribute to rice quality improvement. b. Rough estimation of cost and contents for machinery and equipment procurement and attachment, and installation work. 2. Arrangement of credit condition for rice millers a. Development and decision of budgetary resources. (2KR program and/or the revolving fund of 2KR shall be considered as the resource of the program.) b. Arrangement of credit condition. 3. Preparation of the guideline of the credit for users. 4. Explanation and advertisement to rice millers and producers' groups. a. Explanation of the program content and the procedure for using credit. b. Consultation to candidates. 4. Monitoring a. Monitoring of management condition of users. b. Monitoring of budgetary control condition in the implementing agency.	
Input	
Donor side	Ghana side (responsible agency: AESD)
1. Provision of experts	1. Counterpart personnel (C/P) (AESD / DAES)
1-1 Postharvest technology 6 pm	1-1 Postharvest technology 16 pm
1-2 Finance 24 pm	1-3 Finance / Accounting 96 pm
2. Office equipment	2. Office facilities
2-1 PC 2 sets	
3. Other project costs L.S. (fuel, counterpart travel allowance, etc.)	

Source: JICA Study Team

Development Component (4): Support for Marketing Activities

Integrated Program	Rain-fed Rice Promotion Program (Semi-Intensive Rain-fed) / Support Program for Poor Rice Farmers (Extensive Rainfed)	Code	M-01
Implementation Period	3 years		
Target Group	Rice Producers Group		
Implementing agency	MOFA (DAES)	Cooperating agencies	SRID
Background and Objectives: Various rice varieties are cultivated in small area by each farmer and the products contain many impurities in other area than the irrigated area. Such condition is not effective for trader's procurement and makes the product into low value of rice in the market due to mixed variety and many impurities contamination. Therefore the price of rice is lowered and it cannot be distributed to big consumption cities. As the uniform qualified rice without impurities can be produced in the Project Area, the program aims to strengthen the bargaining power and gain the higher value in the market, and raise the sales price by the marketing promotion and advertisement in view of the different better quality to other local rice and efficient amount of sales unit gathered by group collection.			
Goal: The uniform qualified rice without impurities that will be gathered to economic amount of sales unit will stimulate many buyers, gain the good position in the market and raise the sales price.			

Output:	
<ol style="list-style-type: none"> 1) The mindset suited to market oriented activities will be promoted in producers. 2) Bargaining power will be increased. 3) Sales price will be raised. 4) Motivation for more production will be strengthened in producers. 	
Activities:	
<ol style="list-style-type: none"> 1) Workshop among the producers for their understanding and consensus of the program's objectives and activities will be held. (especially, about AD strategy focused on the difference to other local rice and importance of enough amount of sales unit gathered by group activity.) 2) "Marketing Activities Group (MAG)" will be organized. 3) Brand name will be titled and used for the advertisement as the symbol of "different" quality of rice. 4) Sales promotion goods will be designed and produced. (flier, poster, flag, T-shirts, etc. / printing on clearly "brand name", "catch copy", "producer's name", "contact to:", etc.) 5) Sales promotion will be carried out using goods to wholesaler, retailers and consumers in near town and city and to middlemen covering far distant markets. 6) Candidate buyers list will be compiled during sales promotion activities. 7) Rice mill of modern facility that can be asked the milling of collected paddy will be looked for and nominated. 8) Collection and sales schedule will be prepared among all members based on harvesting schedule. 9) SRDI will provide rice market price information in major markets weekly. (Procedure and system for it will be discussed and agreed between both sides preliminarily) 10) Buyers will be screened and nominated among the candidate buyers list by negotiation on price and amount, watching market price information. 11) Product will be collected and gathered according to the schedule and sale to buyers on time after milling. ("brand name", "catch copy", "producer's name", "contact to:", etc. will be indicated on / in the each bag.) 12) Sales income will be paid to producers according to each shipping share after reduction of rice mill charge and MAG's commission. (Amount or rate of MAG's commission will be discussed and agreed among group members in advance.) 13) Monitoring will be done on activities and management condition timely. Afterward, activities will be back to 5) and continue. Expected optional activities for further development: <ol style="list-style-type: none"> a) Various size of plastic bags by original design will be used. b) Direct transportation and sales to buyers in far distant city market will be carried out (by the own trucks). c) Own retailing shop will be established in the big cities. d) Joint sales activities with other rice producers' groups will be introduced. e) Own rice mill will be established and start the milling service to producers and other groups. 	
Input	
Donor side <ol style="list-style-type: none"> 1. Provision of experts <ol style="list-style-type: none"> 1-1 Participatory activities expert 12 pm 1-2 Marketing expert 12 pm 2. IT equipment 1set / each group <ol style="list-style-type: none"> PC, telephone and facsimiles 1set / each group 3. Sales promotion goods 1set / each group <ol style="list-style-type: none"> flier, poster, flag, T-shirts, etc. 1set / each group 4. Other project costs L.S. <ol style="list-style-type: none"> (fuel, counterpart travel allowance, etc.) 	Ghana side (responsible agency: DAES) <ol style="list-style-type: none"> 1. Counterpart personnel (C/P) (DAES / SRID) <ol style="list-style-type: none"> 1-1 Extension expert (DAES) 48 pm 1-2 Data processing 12 pm 2. Office facilities

Source: JICA Study Team

Attachment-10(2)

*Rice Farming Type of Each Sample Site
and Development Component*

Ashanti Region Ahafo-Ano South District

(1) Attakrom

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> The improvement of the productivity and the quality is expected by improving the water supply facilities, the field condition, and the cultivation technique, and, in addition, sale system is improved though a current cultivation technique is low. 	<ul style="list-style-type: none"> Type-2 Semi-intensive Rainfed Rice Farming (2) : A water structure, paddy field condition, cultivation technique are elementary, base of future development should be made.
<ul style="list-style-type: none"> Water resources and supplemental irrigation Levee Drainage and existing flood 	<ul style="list-style-type: none"> There is a source of a river, and there aren't water utilization facilities. Levees are not enough and water depth runs short and is instability. Not to be able to confirm it 	<ul style="list-style-type: none"> Field improvement for semi-intensive rain-fed rice farming : Ploughing and till a rice field coming improves a levee and land levelling necessary for the cultivation technique and post harvest at least at the early stage. The maintenance of a simple water utilization facilities of supplementary irrigation and enhancing the field are executed at a stage established of the improved productivity. (The measurement and the design are necessary.)
<ul style="list-style-type: none"> Plowing and land levelling Seeding Planting method Crop management 	<ul style="list-style-type: none"> Human power and a farm tractor Not to be able to confirm it Transplanting Weedy is so much. The fertilizer and agricultural chemicals aren't properly used. A crop management is insufficient. 	<ul style="list-style-type: none"> Improvement of semi-intensive rain-fed rice farming : Productivity is improved by improving a basic cultivation technique.
<ul style="list-style-type: none"> Post harvest 	<ul style="list-style-type: none"> After paddy is dried on the field, it will be milled by the seat and the drum. 	<ul style="list-style-type: none"> Extension of improved post harvest processing technology : It aims at the quality improvement of the paddy, the meter tool (scale) is introduced, and production and the amount of sale system based on the measurement are understood. Promotion of post harvest processing equipment : Seeing and introduce the settlement of post harvest technology pedal thresher and winnower etc. the improvement of a quality measures
<ul style="list-style-type: none"> Extension services 	<ul style="list-style-type: none"> Frequency is low though there is guidance by the spread member in the district office. 	<ul style="list-style-type: none"> Capacity development of extension staffs :

Item	Present Condition	Classification of Rice Farming Type and Development Components
		Basic Levee maintenance, the land levelling, degree improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> Beneficiary and their food pattern 	<ul style="list-style-type: none"> Not to be able to confirm it 	
<ul style="list-style-type: none"> Sale system 	<ul style="list-style-type: none"> Not to be able to confirm it 	<ul style="list-style-type: none"> Support for marketing activity : Because the amount and the quality of the paddy are improved by improving the cultivation technique and post harvest, the improvement of the income is attempted by the sale system promotion. The Kumasi market is put in view, the competition with other domestic production rice is won now sale system ahead, and it aims at circulation outside region.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Impacts on environment could not be observed 	

Ashanti Region Ahafo-Ano South District
(2) Adugyama

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • The improvement of the improved productivity and the quality can be expected of a current field condition and the cultivation technique comparatively excellently by maintaining of the production base and improving the cultivation technique. 	<ul style="list-style-type: none"> • Type-2 Semi-intensive Rainfed Rice Farming (1) : The water carriage structure, paddy place condition, cultivation technique are in the level of some extent by the effort and IVRDP of a farmhouse and diffusion personnel. Adding it to expansion, of the improvement, sale system of production and quality the production of the periphery area by Seeding proliferation is promoted
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There is the source of a river by a small river and the application of a simple irrigation structure • Levee and depth are the tolerances. • Not to be able to confirm it 	<ul style="list-style-type: none"> • Is will be extended from 2008-2009 by IVRDP, (AfDB) • The profit drain facilities and the field are AfDB: Is it 2008 Inland Valley Rice Development Project (IVRDP) It schedules it maintenance in 2009.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Human power and a farm tractor • Not to be able to confirm it • Transplanting • Weeding is executed, and the fertilizer and agricultural chemicals are used, and excellent crop management is performed comparatively. 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : The cultivation technique is generally excellent according to the technical guidance of IVRDP. Land levelling by Leveller is improved, and productivity and the qualities of the introduction of Line Marker for transplanting, weeding by Manual Rotary Paddy weeder, and the mixing prevention etc. of the kind are improved. • Community-based rice seed production and distribution : Seeding is produced by comparatively excellent crop management, and it distributes it to the vicinity farmer sale system.
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • After paddy is dried on the field, it will be milled by the seat and the drum. 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : Pedal Thresher, Winnower, and the seat are introduced, dryness and threshing are improved, and it aims at the quality improvement of the paddy by improving of efficiency and preventing impurities being mixed.

Item	Present Condition	Classification of Rice Farming Type and Development Components
		The measure machine is introduced at the same time and the amount of handling is understood.
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • It is IVRDP and there is guidance by the spread member in the District office. 	<ul style="list-style-type: none"> • Capacity development of extension staffs : Basic Levee maintenance, the land levelling, degree improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi. • The improvement farming technology is exhibited and it proves in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> • Beneficiary and their food pattern 	<ul style="list-style-type: none"> • Farmer's desire is high. 	
<ul style="list-style-type: none"> • Sale system 	<ul style="list-style-type: none"> • Not to be able to confirm it 	<ul style="list-style-type: none"> • Support for marketing activity : Sale system promotion corresponding to a quantitative increase of number of paddies for quality improvement by mixing prevention of stone and different kind and sale system. Sale system tip inserts a Kumasi market to a view and compete for to importation rice and even the distribution to Region outside.
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Impacts on environment could not be observed 	

Ashanti Region

(3) Mankranso (Ahafo-Ano South District) (4) Duampompom (Ejisu-Juaben District)

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • As for the current state, rice farming is not done. • There is introduce a paddy place condition, rice crop cultivation technique the source of a river and by, the upgrading of a water carriage structure and an income is improved by sale system 	<ul style="list-style-type: none"> • Type-2 Semi-intensive Rainfed Rice Farming (3) : To introduce rice farming newly, the water supply facilities.
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There are source of a river of small rivers, and there are not water utilization facilities • There are source of a river of small rivers, and there are not water utilization facilities. • There is no irrigation system. • Nothing 	<ul style="list-style-type: none"> • Field improvement for semi-intensive rain-fed rice farming : Plowing and till a rice field coming improves a levee and land levelling necessary for the cultivation technique and post harvest at least at the early stage. The simple water utilization facilities maintenance and the field enhancing are executed at a stage established of productivity.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Nothing • Nothing • Nothing • Nothing 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : Rice farming is established by the introduction of a basic cultivation technique.
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Nothing 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : A basic technology is introduced about a basic harvest, dryness, threshing, and the selection at the early stage. The progress of production is seen, the improvement strategy of Post harvest is introduced, efficiency is improved, impurities are prevented being mixed, and the paddy quality is improved. The measure machine is introduced at the same time and the amount of handling is understood
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Nothing 	<ul style="list-style-type: none"> • Capacity development of extension staffs : A basic farming technology is exhibited and it proves in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> • Beneficiary and their food pattern 	<ul style="list-style-type: none"> • Not to be able to confirm it 	

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Sale system 	<ul style="list-style-type: none"> • Nothing 	<ul style="list-style-type: none"> • Support for marketing activity : It improves the quality preventing a stone and a different kind being mixed, and it promotes its sale system corresponding to a quantitative increase of the number of paddies for sale system. The Kumasi market is put in view, the competition with other domestic production rice is won now sale system ahead, and it aims at circulation outside region.
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • There is no access to a main road. • Impacts on environment could not be observed 	<ul style="list-style-type: none"> • Improvement of access to rice field : The progress of the rice farming introduction is seen, and the farming route is maintained as an access necessary for carrying of the input and carrying out the paddy.

Ashanti RegionEjisu-Juaben District
(5) Kubease

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • Profit drainage facilities are maintained, and the paddy field condition also often notifies the fixed level of cultivation technique. • The improvement cultivation technology is introduced, it widens sales by increases in production and the quality improvement, and the income is improved. 	<ul style="list-style-type: none"> • Type2 : Semi-intensive Rainfed Rice Farming (1) <p>The rice farming technology is established, and the production increase of the paddy is aimed at including the quality and sale system.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There is a source of a small river, and is supplementary irrigation system by pump • Levee and depth are the tolerances • There is drainage. 	<ul style="list-style-type: none"> • The profit drain facilities and the field are maintained with SPFS of FAO. • Is will be extended from 2008-2009 by IVRDP, (AfDB)
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Human power and a farm tractor • Not to be able to confirm it • Transplanting • Weeding is executed, and the fertilizer and agricultural chemicals are used, and excellent crop management is performed comparatively 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : <p>The productivities of the Land levelling improvement by Leveller, the introduction of Line Marker for transplanting and weeding by Manual Rotary Paddy weeder and the mixing prevention etc. of the kind and the qualities are improved in the action plan.</p> <ul style="list-style-type: none"> • Community-based rice seed production and distribution : <p>Seeding is produced by excellent crop management, and it distributes it to the vicinity farmer sale system.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Not to be able to confirm it 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : <p>The measure machine is introduced at the same time and the amount of handling is understood</p>
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • The crops laboratory of Kumasi is executing Applicable Research of water field rice by the demonstration plot. • It is IVRDP and there is guidance by the spread member in the District office. 	<ul style="list-style-type: none"> • Capacity development of extension staffs : <p>Basic Levee maintenance, the land levelling, degree improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi.</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Beneficiary and their food pattern 	<ul style="list-style-type: none"> Farmer's desire is high 	
<ul style="list-style-type: none"> Sale system 	<ul style="list-style-type: none"> Not to be able to confirm it 	<ul style="list-style-type: none"> Support for marketing activity : Sale system promotion corresponding to a quantitative increase of number of paddies for quality improvement by mixing prevention of stone and different kind and sale system Sale system tip inserts a Kumasi market to a view and compete for to importation rice and even the distribution to Region outside.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> It is facing to a main road and access good Impacts on environment could not be observed 	

Ashanti Region Ejisu-Juaben District
(6) Besease

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • The water utilization facilities are maintained, and the field condition reaches well at a level constant as for the cultivation technique. • The improvement cultivation technology is introduced, it widens sales by increases in production and the quality improvement, and the income is improved. 	<ul style="list-style-type: none"> • Type 2 : Semi-intensive Rainfed Rice Farming (1) <p>The rice farming technology is established, and the production increase of the paddy is aimed at including the quality and sale system</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There is a source of a small river, and is supplementary irrigation system • There is a source of a small river, and is supplementary irrigation system. • Levee and depth are the tolerances • There is drainage. 	<ul style="list-style-type: none"> • The water utilization facilities and the field have been maintained with the farmer by the effort of the crops laboratory. • Is will be extended from 2008-2009 by IVRDP, (AfDB)
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Human power and a farm tractor • Not to be able to confirm it • transplanting • Weeding is executed, and the fertilizer and agricultural chemicals are used, and excellent crop management is performed comparatively 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : <p>Technical assistance is in IVRDP that has introduced the cultivation technique by the crops laboratory with the spread member.</p> <p>The productivities of the Land levelling improvement by Leveller, the introduction of Line Marker for transplanting and weeding by Manual Rotary Paddy Weeder and the mixing prevention etc. of the kind and the qualities are improved in the action plan.</p> <ul style="list-style-type: none"> • Community-based rice seed production and distribution : <p>Seeding is produced by excellent crop management, and it distributes it to the vicinity farmer sale system.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • After paddy is dried on the field, it will be milled by the seat and the drum. 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : <p>The measure machine is introduced at the same time and the amount of handling is</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • It is IVRDP and there is guidance by the spread member in the District office. 	<ul style="list-style-type: none"> • Capacity development of extension staffs : Basic Levee maintenance, the land levelling, degree improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> • Beneficiary and their food pattern 	<ul style="list-style-type: none"> • Farmer's desire is high 	
<ul style="list-style-type: none"> • Sale system 	<ul style="list-style-type: none"> • Not to be able to confirm it 	<ul style="list-style-type: none"> • Support for marketing activity : Sale system promotion corresponding to a quantitative increase of number of paddies for quality improvement by mixing prevention of stone and different kind and sale system The Kumasi market should be sales target. It should win the competition with other country rice and even the distribution to state outside.
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Impacts on environment could not be observed 	

Ashanti Region Ejura – Sekyedumase District
(7) Aframso

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • The profit drain facilities are maintained, and the field condition reaches well at a level constant as for the cultivation technique. • The improvement cultivation technology is introduced, it widens sales by increases in production and the quality improvement, and the income is improved. 	<ul style="list-style-type: none"> • Type 2 : Semi-intensive Rainfed Rice Farming (1) <p>The rice farming technology is established, and the production increase of the paddy is aimed at including the quality and sale system</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There is the source of Afram river and supplemental irrigation system. • Levee and depth are the tolerances • Drain is defective, and it is in the field in the Afram banks of a river at the harvest time after the heavy rain in the rainy season excessive moisture though there is drainage. 	<ul style="list-style-type: none"> • Is will be extended from 2008-2009 by IVRDP, (AfDB) • Subject of the next stage be the operation control of back-up irrigation and paddy field structure
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Human power and a farm tractor • Not to be able to confirm it • transplanting • Weeding is executed, and the fertilizer and agricultural chemicals are used, and excellent crop management is performed comparatively 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : <p>The productivities of the Land levelling improvement by Leveller, the introduction of Line Marker for transplanting and weeding by Manual Rotary Paddy Weeder and the mixing prevention etc. of the kind and the qualities are improved in the action plan.</p> <ul style="list-style-type: none"> • Community-based rice seed production and distribution : <p>Seeding is produced by excellent crop management, and it distributes it to the vicinity farmer sale system.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • After paddy is dried on the field, it will be milled by the seat and the drum. 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : <p>The measure machine is introduced at the same time and the amount of handling is understood</p>
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • It is IVRDP and there is guidance by the spread member in the District office. 	<ul style="list-style-type: none"> • Capacity development of extension staffs : <p>Basic Levee maintenance, the land levelling, degree</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
		improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> Beneficiary and their food pattern 	<ul style="list-style-type: none"> Farmer's desire is high but farmers are graying. 	
<ul style="list-style-type: none"> Sale system 	<ul style="list-style-type: none"> Not to be able to confirm it 	<ul style="list-style-type: none"> Support for marketing activity : Sale system promotion corresponding to a quantitative increase of number of paddies for quality improvement by mixing prevention of stone and different kind and sale system The Techiman-Ejura-Kumasi should be sales target. It should win the competition with other country rice and even the distribution to state outside.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Impacts on environment could not be observed 	<ul style="list-style-type: none"> Improvement of access to rice field : The progress of productivity improvements is seen, and the farming route is maintained as a necessary access for the input carrying and the paddy carrying out.

Ashanti Region, Ejura – Sekyedumase District
(8) Teacherskrome

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • NRDP does logging operation, and Levee and land levelling are maintained by the farmer. • New Rice for Africa is produced by AfDB under the rain water upland rice plant condition. • 	<ul style="list-style-type: none"> • Type3: Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (1) <p>This result improves in the step while executing the participation type kind selection and the community base seed proliferation by NRDP, and it makes it known to the surrounding.(AfDB)</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • There is no water resource and supplemental irrigation system. • Levee is worst level • There is no problem 	<ul style="list-style-type: none"> • Field improvement for extensive rainfed rice faming : <p>If being possible to end of the improvement in p is possible, Levee and Land levelling examine supplementary irrigation by the pump pumping of underground water etc.</p>
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • Human power and a farm tractor • It proliferates in the locale. (The crops laboratory guides it.) • Stripe Seeding by Dibbling • Weeding is executed, and the fertilizer and agricultural chemicals are used, and excellent crop management is performed comparatively 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming : <p>Technical assistance is in IVRDP into which the cultivation technique has been introduced with IFAD.</p> <p>Improved plow and sickle are introduced and the work efficiency improvement and the labor load reduction are aimed at.</p> <p>The productivities of Land levelling improvement by Leveller, a manual machine, manual eradicator, and the prevention of the kind mixing, etc. and the qualities are improved.</p> <ul style="list-style-type: none"> • Support for marketing activities : <p>The Seeding proliferation by present NRDP is expanded, and the distribution sales are done to the vicinity farmer.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • After paddy is dried on the field, it will be milled by the seat and the drum. 	<ul style="list-style-type: none"> • Extension of improved post harvest processing technology and Promotion of post harvest processing equipment : <p>The measure machine is introduced at the same time and the amount of handling is understood</p> <p>Improvement of the storage of the unhusked rice for house consumption and sale system</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Extension services 	<ul style="list-style-type: none"> The spread member in the District office guides it with NRDP by the support of the crops laboratory. 	<ul style="list-style-type: none"> Basic Levee maintenance, the land levelling, degree improvement, and the cultivation technique are exhibited in cooperation with the crops laboratory of Kumasi.
<ul style="list-style-type: none"> Beneficiary and their food pattern 	<ul style="list-style-type: none"> Farmer's desire is high but are graying. 	<ul style="list-style-type: none"> Livelihood improvement : "Improvement kitchen range" is introduced including the method of cooking rice, and shortening the cooking time and the reduction of the labor load of the firewood collection are aimed at.
<ul style="list-style-type: none"> Sale system 	<ul style="list-style-type: none"> Not to be able to confirm it 	<ul style="list-style-type: none"> Support for marketing activities : Sale system promotion corresponding to a quantitative increase of number of paddies for quality improvement by mixing prevention of stone and different kind and sale system The Techiman-Ejura-Kumasi market is put in view, the competition with other domestic production rice is won now sale system ahead, and it aims at circulation outside region.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Impacts on environment could not be observed 	

Ashanti Region, Adansi South District
(9) Subriso, (10) Bepoase, (11) Asarekrom

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Potential area of 1,200 ha in Subriso & Ntontobu Valley is available. • Potential area of 160 ha in 4 valley along to the Pra River in Bepoase is available. • Potential area of 40 ha in Akyekyenso Valley in Asarekrom is available. 	<ul style="list-style-type: none"> • Commenced NERICA production and sale with extension officer and farmers' leader's initiatives • Expansion of paddy land by farmer's own effort 	<ul style="list-style-type: none"> • Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (2) <p>Establishment of basic cultivation system through proper technologies transfer and land improvement by levelling and arrangement of levees.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • Water resource is available. • Poor • No problem 	<ul style="list-style-type: none"> • Field improvement for extensive rainfed rice farming : <p>Land improvement by levelling and arrangement of levees Considering the supplemental irrigation by pumping up the ground water, if possible.</p>
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor or by man power • Multiplied in the village level under the supervision of the crop research centre • By dibbling • Crop is growing nicely with application of chemical and fertilizer and weeding management. 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming : <p>Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle.</p> <p>Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Threshing by oil drum and sheet after drying in the field. • Subriso Rice Growers Association (400 members) has a rice mill provided by MOFA. 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Simple grain storage extension</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p> <p>Improvement of paddy storage for both home consumption and sales.</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Carried out by the extension officer in the District Office 	<ul style="list-style-type: none"> • Verification and field demonstration of improved cultivation technologies with research institute in Kumashi
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Kumashi
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Impacts on environment could not be observed • One hour drive from village to Asarekrom. Access is not easy. 	

Northern Region, Tolon-Kumbungu District
(12) Gbrumani

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • Lowland Valley established by UNDP Land Restoration Project • AfDB: Production of NERICA under rain-fed and upland condition by Nerica Rice Dissemination Project (NRDP) 	<ul style="list-style-type: none"> • Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (1) Community based rice seed production and distribution Aiming at upgrading and dissemination of this activity to surrounding farmers
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • No water resources and supplemental irrigation system • Poor • No problem 	<ul style="list-style-type: none"> • Field improvement for extensive rainfed rice farming : Land improvement by levelling and arrangement of levees. Considering the supplemental irrigation by pumping up the ground water, if possible.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor or by man power • Multiplied in the village level under the supervision of the crop research centre • By dibbling • Crop is growing nicely with application of chemical and fertilizer and weeding management. 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming Farm tools improvement : Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle. Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller. • Production and distribution of quality rice seed : Enhancement of existing multiplying quality seed system and selling them to the surrounding farmer.
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Threshing by oil drum and sheet after drying in the field. 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies Promotion of post-harvest processing equipment Simple grain storage extension Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices. Improvement of paddy storage for

Item	Present Condition	Classification of Rice Farming Type and Development Components
		both home consumption and sales.
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Giving the instruction to the farmer through extension staff in the District office under supervision of Savanna agriculture research institute in NRDP 	<ul style="list-style-type: none"> • Verification and field demonstration of improved cultivation technologies with Savanna agriculture research institute in NRDP
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • Observe high motivation of farmer 	<ul style="list-style-type: none"> • Simple grain storage extension and livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Tamale
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Impacts on environment could not be observed • Twenty minute drive from District office. Access is easy. 	

Northern Region, Tolon-Kumbungu District
(13) Kubline Valley (Gbrumani)

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • There is a potential for development of 200 ha in Lowland valley • Levee is not prepared properly and paddy field is not levelled 	<ul style="list-style-type: none"> • Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (2) <p>Levee preparation and land levelling are necessary to be done by the farmer firstly. The basic knowledge is transferred to the farmer.</p> <p>Enhancement of supplemental irrigation and drainage system can be considered after confirmation of land improvement and progress of technology transfer.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • The Borda River and Small scale reservoir • Manageable • Difficult to drain in rainy season 	<ul style="list-style-type: none"> • Recommend the farmer to prepare the levee and level the land at plowing stage.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor • Not confirmed • Direct sowing • Primitive way and less labor force 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming : <p>Introduction and establishment of improved cultivation system of paddy.</p> <p>Improvement of productivity and quality of paddy by introducing of manual seeder, weeder and line marker for planting and preventing inclusion of other varieties and land improvement by leveller.</p> <ul style="list-style-type: none"> • Production and distribution of quality rice seed : <p>Enhancement of existing multiplying quality seed system and selling them to the surrounding farmer.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Necessary to utilize the sheet for drying or select area for drying where moisture content is low 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
		the handling weight of paddy by introducing the necessary measuring devices.
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Extension staff in the District office gave the instruction to the farmers. 	<ul style="list-style-type: none"> • Verification and field demonstration of improved cultivation technologies
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • 5 surrounding communities are cultivating paddy. • Observe high motivation of farmer 	<ul style="list-style-type: none"> • Simple grain storage extension and livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Tamale
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Impacts on environment could not be observed • More than one hour drive from main road. Access is not easy. 	

Northern Region, Tolon-Kumbungu District
(14 - 1) Dalun (Donjiri)

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • Depending on the rain-fed • Water resource is available. Increase in the income level by introducing the appropriate paddy technologies and irrigation and drainage facilities. • Paddy cultivation is concentrated in the surrounding area. 	<ul style="list-style-type: none"> • Type 2 : Semi-intensive Rainfed Rice Farming (1) <p>Improve productivity and quality of paddy by upgrading the existing basic technologies.</p> <p>Introduce supplemental irrigation system to stabilize the production after increase the technology level of paddy cultivation. Also aiming to expand the paddy cultivation in the surrounding area.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • Small stream is available but no irrigation facility • Available and good condition • Not available 	<ul style="list-style-type: none"> • Field improvement for semi-intensive rain-fed rice farming : <p>Levee preparation and land levelling are necessary to be done by the farmer at first though puddling. The basic knowledge is transferred to the farmer.</p> <p>Construction of simple irrigation facility and enlarge the farm land after increase in paddy production.</p>
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor and field is levelled. • Not confirmed • Transplanting • Crop is growing nicely with application of chemical and fertilizer and weeding management. 	<ul style="list-style-type: none"> • Improvement of semi-intensive rain-fed rice farming : <p>Introduction and establishment of improved cultivation system of paddy.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Basic technologies such as harvest, drying, threshing and selection are introduced.</p> <p>Looking at the progress, post harvest system can be upgraded and improve the quality of paddy preventing inclusion of others</p> <p>Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p>
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Capacity development of extension staff <p>Verification and field</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
		demonstration of improved cultivation technologies.
<ul style="list-style-type: none"> Beneficiary and food pattern 	<ul style="list-style-type: none"> Not confirmed 	<ul style="list-style-type: none"> Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> Sales system 	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Tamale.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> No access to the main road Impacts on environment could not be observed 	<ul style="list-style-type: none"> Improvement of access to the paddy field Construction of necessary farm road to carry in and out of the farm input and output after confirmation of the progress of technology transfer of paddy cultivation.

Northern Region, Tolon-Kumbungu District
(14 - 2) Dalun (Kukuo)

Item	Present Condition	Classification of Rice Farming Type and Development Components
	<ul style="list-style-type: none"> • Production of NERICA under Nerica Rice Dissemination Project (NRDP) 	<ul style="list-style-type: none"> • Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (1) <p>Paddy technology has been established and aiming to increase in the paddy production and sale.</p> <p>Aiming to expand the paddy cultivation in the surrounding area by multiplying seed paddy.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • Not available • Poor • Drainage system is available 	<ul style="list-style-type: none"> • Preparation of levee and levelling through plowing. Process land reclamation for rain-fed paddy and upland after improvement of paddy cultivation.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor. Need improvement of levelling. • Disseminating the technologies through community based rice seed production and distribution • By dibbling • Crop is growing nicely with application of chemical and fertilizer and weeding management. 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming : <p>Improvement of productivity and quality of paddy by preventing the inclusion of other variety.</p> <ul style="list-style-type: none"> • Production and distribution of quality seed : <p>Produce the quality seed paddy with proper management and selling them to the surrounding farmer.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Extension of small scale grain storage</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p> <p>Introduce small scale storage facilities to the farmers' group to reduce the loss in the storing and transportation. Aiming at group shipping.</p>
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Giving the instruction to the 	<ul style="list-style-type: none"> • Verification and field

Item	Present Condition	Classification of Rice Farming Type and Development Components
	farmer with support of Savanna agriculture research institute in NRDP	demonstration of improved cultivation technologies with Savanna agriculture research institute in NRDP
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • Observe high motivation of farmer 	<ul style="list-style-type: none"> • Livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Kumasi to beat the imported rice
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Adjacent to main road and access is good • Impacts on environment could not be observed 	

Northern Region, Sevelugu-Nanton District
(15) Dipale, (16) Nabogu

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Irrigation facilities are under construction at Dipale with Arab fund. There are both small scale farming and large scale farming at Nabogu. 	<ul style="list-style-type: none"> It is expected to cultivate paddy in rainy season and maize and vegetable in dry season with supplemental irrigation system at Dipale. Continue paddy cultivation since 1970s at Nabogu. 	<ul style="list-style-type: none"> Type 2 : Semi-intensive Rainfed Rice Farming (2) <p>Paddy technology has been established and aiming to increase in the paddy production and sale.</p>
<ul style="list-style-type: none"> Water resources and supplemental irrigation Levee Drainage and existing flood 	<ul style="list-style-type: none"> Not available Manageable Drainage canal is available 	<ul style="list-style-type: none"> Preparation of levee and levelling through plowing. Encourage land reclamation for rain-fed paddy and upland after improvement of paddy cultivation.
<ul style="list-style-type: none"> Plowing and land levelling Seeding Planting method Crop management 	<ul style="list-style-type: none"> By tractor Not confirmed By Dibbling and direct sowing Not confirmed at Dipale Basic cultivation technologies are established at Nabogu 	<ul style="list-style-type: none"> Improvement of semi-intensive rain-fed rice farming : <p>Improvement of planting method from direct sowing to row seeding, row seeding to transplanting</p> <p>Improvement of productivity and quality of paddy by introducing of manual rotary, paddy weeder and line marker for planting and preventing inclusion of other varieties and land improvement by leveller.</p> <ul style="list-style-type: none"> community based rice seed production and distribution : <p>Produce the quality seed paddy with proper management and selling them to the surrounding farmer.</p>
<ul style="list-style-type: none"> Post harvest 	<ul style="list-style-type: none"> Piling harvested paddy on the ground. Threshing by stick on the sheet after drying. Shedding and inclusion of other material are observed. 	<ul style="list-style-type: none"> Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p>
<ul style="list-style-type: none"> Extension services 	<ul style="list-style-type: none"> Giving the instruction to farmer through extension staff 	<ul style="list-style-type: none"> Capacity development of extension staff <p>Verification and field demonstration of improved</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
		cultivation technologies.
<ul style="list-style-type: none"> Beneficiary and food pattern 	<ul style="list-style-type: none"> Observed high motivation of farmer. 	<p>Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.</p>
<ul style="list-style-type: none"> Sales system 	<ul style="list-style-type: none"> Not confirmed 	<ul style="list-style-type: none"> Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in the other region including Kumasi to increase sales share.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Adjacent to main road from Tamale to Upper East and access is good Impacts on environment could not be observed 	

Northern Region, Sevelugu-Nanton District
(17) Maligunyili, (18) Nakpankzo, (19) Zoggu

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Development potential lowland area of some hundred ha in Maligunayil, 350 ha in Nakpankzo, 40 ha in Zoggu • No cultivation in some area in Maligunayili due to the shortage of the fund. The fund has been spent for compensation for the drought damage in 2005. 	<ul style="list-style-type: none"> • Since the area is the lowland in the wide gentle slope area, the moisture contents of the soil is high until dry season due to the collected drainage water. • Cultivating the paddy during the end of rainy season and beginning of dry season with direct sowing way. • Extensive paddy cultivation depending on the large scale combine harvester was practiced in 1980 to 1990s in Maligunayili. 	<ul style="list-style-type: none"> • Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (2) Aiming to shift to the intensive farming from extensive one depending on the large scale farm machinery. Establish basic cultivation and post harvest technology and encourage the paddy production
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • No water resources and no irrigation facilities • Poor • Drainage problem in rainy season 	<ul style="list-style-type: none"> • Field improvement for extensive rainfed rice farming : Preparation of levee in plowing the land Effective utilization of water resources Improvement of drainage system to stabilize the production after establishment of farming technologies.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor • Multiplied in the village level • By Dibbling or direct sowing • Extensive way 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming Farm tools improvement : Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle. Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller.
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Threshing by oil drum and sheet after drying in the field. 	<ul style="list-style-type: none"> • Extension of improved post-harvest processing technologies Promotion of post-harvest processing equipment Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by

Item	Present Condition	Classification of Rice Farming Type and Development Components
		introducing the necessary measuring devices.
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Giving the instruction to farmer through extension staff in the District 	<ul style="list-style-type: none"> • Verification and field demonstration of appropriate technologies
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • Observed high motivation of farmer. 	<ul style="list-style-type: none"> • Livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in surrounding area and town
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Maligunayil is located along the Karaga-Sevelugu road • Nakpankzo is along the branch road and Zoggu is located on Sevelugu-Karaga road. • Impacts on environment could not be observed 	

Northern Region, Karaga District

(20) Gunayili Valley, (21) Jamaga-Tindong, (22) Napoligu-Diburo Valleys, (23) Gaa Valley

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Introduced extensive large scale mechanized farming using combine harvester and tractor in 1970s Remaining part of extensive mechanized farming at present and small scale farming is also there 	<ul style="list-style-type: none"> Since the area is the lowland in the wide gentle slope area (some hundred ha), the area become marsh in the rainy season and cultivating paddy with this water. Extensive paddy cultivation depending on the large scale combine harvester in Gunayili Valley and Gaa Valley Some part of land is suitable for upland paddy cultivation. 	<ul style="list-style-type: none"> Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (2) <p>Aiming to shift to the intensive farming from extensive one depending on the large scale farm machinery.</p> <p>Establish basic cultivation and post harvest technology and encourage the paddy production</p>
<ul style="list-style-type: none"> Water resources and supplemental irrigation Levee Drainage and existing flood 	<ul style="list-style-type: none"> Not available Poor Not confirmed 	<ul style="list-style-type: none"> Field improvement for extensive rainfed rice farming : <p>Preparation of levee in plowing the land</p> <p>Effective utilization of water resources</p> <p>Improvement of drainage system to stabilize the production after establishment of farming technologies.</p>
<ul style="list-style-type: none"> Plowing and land levelling Seeding Planting method Crop management 	<ul style="list-style-type: none"> By tractor Self seed production in some farmer Direct sowing Extensive way without fertilizer or minimum usage of them 	<ul style="list-style-type: none"> Improvement of extensive rain-fed rice farming <p>Farm tools improvement :</p> <p>Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle.</p> <p>Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller.</p>
<ul style="list-style-type: none"> Post harvest 	<ul style="list-style-type: none"> Farmer using large scale machinery : Harvest, threshing and packing by combine harvester after drying paddy in the field. Soil, stone and straw are mixed. Par-boil method is common to prevent the fragmentation Small scale farmer : Pilling harvested paddy on the ground and threshing by tractor after optimization of moisture contents 	<p>Extension of improved post-harvest processing technologies</p> <p>Promotion of post-harvest processing equipment</p> <p>Extension of small scale grain storage</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Extension services 	<ul style="list-style-type: none"> Giving the instruction to some farmers through extension staff in the District 	<ul style="list-style-type: none"> Verification and field demonstration of appropriate technologies
<ul style="list-style-type: none"> Beneficiary and food pattern 	<ul style="list-style-type: none"> Observed high motivation of farmer. 	<ul style="list-style-type: none"> Livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> Sales system 	<ul style="list-style-type: none"> Not confirmed 	<ul style="list-style-type: none"> Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to the markets in surrounding area and town
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Each site is located 30 min to one hour drive from Karaga Impacts on environment could not be observed 	

Northern Region, East Gonja District
(25) Katanga Valleys

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> Introduced extensive large scale mechanized farming through paddy public cooperation in 1970s. Area of Katanga Valley development is said 12,000 ha 	<ul style="list-style-type: none"> Since the area is the lowland in the wide gentle slope area, the area become marsh in the rainy season and cultivating paddy with this water. No cultivation in Katanga Valley 	<ul style="list-style-type: none"> Type 3 : Extensive Rain-fed Rice farming System in Rain-fed Lowland and Upland (2) <p>Aiming to shift to the intensive farming from extensive one depending on the large scale farm machinery.</p> <p>Establish basic cultivation and post harvest technology and encourage the paddy production</p>
<ul style="list-style-type: none"> Water resources and supplemental irrigation Levee Drainage and existing flood 	<ul style="list-style-type: none"> Not available Poor Not confirmed 	<ul style="list-style-type: none"> Field improvement for extensive rainfed rice farming : <p>Preparation of levee in plowing the land</p> <p>Effective utilization of water resources</p> <p>Improvement of drainage system to stabilize the production after establishment of farming technologies.</p>
<ul style="list-style-type: none"> Plowing and land levelling Seeding Planting method Crop management 	<ul style="list-style-type: none"> By tractor but poor levelling Not confirmed Transplanting or by dibbling Extensive way and no fertilizer or minimum 	<ul style="list-style-type: none"> Improvement of extensive rain-fed rice farming <p>Farm tools improvement :</p> <p>Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle.</p> <p>Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller.</p>
<ul style="list-style-type: none"> Post harvest 	<ul style="list-style-type: none"> Piling harvested paddy on the ground. Threshing by stick on the sheet after drying. Shedding and inclusion of other material are observed. 	<ul style="list-style-type: none"> Extension of improved post-harvest processing technologies <p>Promotion of post-harvest processing equipment</p> <p>Simple grain storage extension</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by introducing the necessary measuring devices.</p>
<ul style="list-style-type: none"> Extension services 	<ul style="list-style-type: none"> Giving the instruction to farmer through extension staff in the 	<ul style="list-style-type: none"> Verification and field demonstration of appropriate

Item	Present Condition	Classification of Rice Farming Type and Development Components
	District	technologies
<ul style="list-style-type: none"> Beneficiary and food pattern 	<ul style="list-style-type: none"> Cultivating paddy in 150 ha with 120 families in 6 communities in Mankongo Valley 	<ul style="list-style-type: none"> Livelihood improvement : Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> Sales system 	<ul style="list-style-type: none"> Selling to Kumasi market through Ejura in Ashanti region carrying by ferry from Yeji. 	<ul style="list-style-type: none"> Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to Kumashi carrying by ferry from Ejula. Try to keep the good quality as a imported rice.
<ul style="list-style-type: none"> Others 	<ul style="list-style-type: none"> Katanga Valley : Located 15 km East from Salaga Impacts on environment could not be observed 	

Northern Region, East Gonja District
(24) Mankongo Valleys, (26) Fuu Valleys

Item	Present Condition	Classification of Rice Farming Type and Development Components
<ul style="list-style-type: none"> • Development potential of 200 ha in lowland is available. FAO: 30 ha with 54 families are cultivated under SPFS (0.55 ha / family) • 150 ha is under cultivation with 120 families in Mankongo Valley 	<ul style="list-style-type: none"> • Technologies transfer of paddy cultivation, land reclamation and construction of flood dyke is going on in Fuu Valleys under SPFS • No cultivation after drought in 2005 due to the shortage of the fund. 	<ul style="list-style-type: none"> • Type 2 : Semi-intensive Rainfed Rice Farming (2) : <p>Improvement of planting method from direct sowing to row seeding, row seeding to transplanting</p> <p>Improvement of productivity and quality of paddy by introducing of appropriate cultivation and post harvest technologies after establishment of basic knowledge of cultivation</p> <p>Expand the cultivation area for paddy after stabilization of the sale. Also aiming to expand the paddy cultivation in the surrounding area.</p>
<ul style="list-style-type: none"> • Water resources and supplemental irrigation • Levee • Drainage and existing flood 	<ul style="list-style-type: none"> • Depending on rain-fed • Poor • There is a flood in Fuu Valleys 	<ul style="list-style-type: none"> • Preparation of levee and levelling through plowing. Encourage land reclamation for rain-fed paddy and upland after improvement of paddy cultivation. • Giving necessary arrangement to prevent flood damage such as construction of flood dyke, encourage the paddy cultivation.
<ul style="list-style-type: none"> • Plowing and land levelling • Seeding • Planting method • Crop management 	<ul style="list-style-type: none"> • By tractor • Producing self seed (TOX variety) and using • Transplanting or by dibbling • Fuu Valley : Minimum management. Applying chemical fertilizer in the past but not now. • Mankongo Valleys : manual weeding with fertilizer 	<ul style="list-style-type: none"> • Improvement of extensive rain-fed rice farming <p>Farm tools improvement :</p> <p>Improvement of work efficiency and reduction in work load by introducing the improved spade and/or sickle.</p> <p>Improvement of productivity and quality of paddy by introducing of manual seeder and weeder and preventing inclusion of other varieties and land improvement by leveller.</p>
<ul style="list-style-type: none"> • Post harvest 	<ul style="list-style-type: none"> • Piling harvested paddy on the ground. Threshing by stick on the sheet after drying. Shedding and inclusion of other material are observed. • Mankongo Valley: One rice mill is available in Yeji 	<p>Extension of improved post-harvest processing technologies</p> <p>Promotion of post-harvest processing equipment</p> <p>Aiming at improvement of paddy processing by upgrading the drying and threshing way such as introducing Pedal, Thresher, Winnower and sheet and preventing inclusion of others in the paddy. Also aiming to record the handling weight of paddy by</p>

Item	Present Condition	Classification of Rice Farming Type and Development Components
		introducing the necessary measuring devices.
<ul style="list-style-type: none"> • Extension services 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Capacity development of extension staff : Verification and field demonstration of appropriate technologies
<ul style="list-style-type: none"> • Beneficiary and food pattern 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Aiming at shortening the cooking time and reduction in work load for cooking by introducing the improved cooking stove and recipe.
<ul style="list-style-type: none"> • Sales system 	<ul style="list-style-type: none"> • Not confirmed 	<ul style="list-style-type: none"> • Support for marketing activities : Improvement of quality of rice by preventing of inclusion of others such as stone from the paddy and sales system development after increase in paddy production. Aiming to sale the product to Tamale and other regions.
<ul style="list-style-type: none"> • Others 	<ul style="list-style-type: none"> • Mankongo Valley : located near Salaga (District capital) • Fuu Valleys : One hour drive from Salaga to Tamale • Impacts on environment could not be observed 	

Attachment-10(3)

Rice Farming Tools and Machinery

Rice Farming Tools and Machinery
Fabrication Centre, GIDA Irrigation Development Center
Ashiaman, Greater Accra Region
(1/2)

	
<p>Fabrication Centre Workshop,</p>	<p>Fabrication Centre Workshop</p>
	
<p>Leveller for Land Preparation</p>	<p>Line Marker for Transplanting (30 cm x 30 cm)</p>
	
<p>Manual Rotary Weeder (single type)</p>	<p>Manual Rotary Weeder (single type)</p>

Rice Farming Tools and Machinery
Fabrication Centre, GIDA Irrigation Development Center
Ashiaman, Greater Accra Region
(2/2)

	
Pedal Thresher	Pedal Thresher
	
Manual Winnower	Manual Winnower
	
Winnower under Fabrication	De-stoner under Fabrication

List of Tools and Agricultural Machinery (Fabrication Center: GIDA Irrigation Development Center)

(as of September 2007)

	Price (GHC)	Machinery Life	Depreciation	Operation Efficiency and Capacity
1. Leveller	¢400,000	36 months 3 years (sharing by farmers)	¢133,000 per annum	0.50 hr/ac by power tiller with 2 operators 2.00 ha/day by manual operation
2. Line Marker	¢300,000	36 months 3 years (sharing by farmers)	¢100,000 per annum	30 cm interval, 8 lines
3. Manual Rotary Paddy Weeder (single type)	¢240,000	36 months 3 years	¢80,000 per annum	0.08 ha/day - 2 hrs. operation in morning - 2 hrs. operation in evening - 4 hrs. operation per day in total - 1 ac: 5 days = 20 hours
4. Manual Rotary Paddy Weeder (double type)	¢500,000	36 months 3 years	¢167,000 per annum	0.12 ha/day - Same operation hrs. as the single type - 150% working efficiency of the above - 0.08 ha/day x 150% = 0.12 ha/day
5. Thresher (power driven)	¢4,000,000	60 months 5 years	¢800,000 per annum	0.24 ton/hr. - 150% of Pedal Thresher - 160 kg per hour (below) x 150%
6. Thresher (foot pedal)	¢3,500,000	60 months 5 years	¢700,000 per annum	0.16 ton/hr. - 4 person per thresher - 11 net working hrs. for 1 ac - 21 bags from 1 ac - 1,760 kg per ac: 21 bags x 84 kg - 160 kg per hour : 1,760 kg in 11 hrs.
7. Winuower	¢4,000,000 to ¢5,000,000	120 months 10 years	¢400,000 per annum ¢500,000 per annum	0.50 ton/hr. - 21 bags of grain per ac - about 3 hrs. of threshing for 1 ac - 1,760 kg for about 3 hrs. - 500 kg per hr.
8. De-stoner	-	-	-	Under trial fabrication

Source: GIDA Irrigation Development Center, and interview from the Extension Worker in the GIDA Scheme.

Mr. Simon APIO (Agricultural Engineer), Officer-in-Charge, IDC, Ashiaman (Tel: 0277-400-606)

Attachment-12

*Ranking by Environmental Impact Assessment
of the Study
(Rank · Reason · Countermeasure)*

The Study on
The Promotion of Domestic Rice in the Republic of Ghana M/P
Ranking by Environmental Impact Assessment of the Study (Rank • Reason • Countermeasure)

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Social environment			
Resident move and the circumferrence resident's influences on life (Reason) (Countermeasure)	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • A scale differs by a scheme and even the big institution of a scale conceivable comparatively. • The case when it has an influence on resident move and a life of the surrounding resident at water intake facilities and a channel is assumed by the scale. • The influence to the life of the presence and periphery resident of the resident move are confirmed with the stage of individual plan preparation. In the case that there are the move and influence, the regular procedure that conformed to a law system will be stepped on. 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • Although water harvesting and slight land levelling follow, neither such large-scale development of farmland nor institution maintenance is performed that it is fundamentally accompanied by resident move or has influence to a life of residents. • (Especially nothing) 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • (Especially nothing)
Land use (Reason) (Countermeasure)	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • The work of the main institution by the construction merchant is hypothesized in the big irrigation scheme of a scale. • The land development of paddy fields and upland places as the small-scale structure will be done by farmers and resident and the introduction such as a large public works machine will be avoided. • The influence will be confirmed with the stage of individual plan preparation. 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • To promote the ownership, small-scale construction of the participation type mainly composed of the farmer and the resident was assumed though a slight rice field maintenance or field development (for upland rice plant) was accompanied. • Large-scale farmland maintenance is avoided, and use of natural resources such as land that continues and is reasonable is kept in mind. • (Especially nothing) 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • (Especially nothing)

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Influence to a social custom (Reason) (Countermeasure)	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • The case of the repair, especially the problem is not thought. • In the case of expansion, schedules with farming custom and product change may be necessary. • In the case that an influence is predicted with the stage of individual plan preparation the plan that intends the understanding of the resident with explanation meeting etc. and become a gradual change is taken. 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • It is the direction where hypothesize cantering around the improvement of agriculture work on the basis of the agricultural production activity on the basis of the community and don't change a traditional social custom sharply. • (Especially nothing) 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • (Especially nothing)
Influence on social infrastructure (Reason) (Countermeasure)	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • In the case of a small-scale scheme, a problem in particular cannot be considered. • There are influence possibilities in the road and the river, etc. in a large-scale scheme. • An influence is confirmed with the stage that makes an individual plan. In the case that an influence is predicted, corresponding with the work method and design will be done and the understanding of the resident will be reached with an explanation meeting. 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • There is not the large-scale base upgrading that destroys the social infrastructure of established. • It doesn't limit to the beneficiary and it aims the improvement of a dull social infrastructure that involves the community by using the social infrastructure such as existing markets in the farm village road. • (Especially nothing) 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • (Especially nothing)

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
<p>Influence on poorest segment of the population, socially vulnerable, and minority (Reason)</p> <p>(Countermeasure)</p>	<p>C</p> <ul style="list-style-type: none"> The poverty layer is the center of a beneficiary in the project. Woman and child, besides the moving in person (the cultivation right) from the area is the weak position. Advancing the agreement of a community in a base the woman etc. the socially vulnerable can participate with, and it arranges the condition that does not become a too hard labour. Mutual agreement is formed and the strategy put into writing is taken among a land owner and administrative parties concerned so that those who import it should not become disadvantageous. 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left
<p>Unequal distribution of profit (Reason)</p> <p>(Countermeasure)</p>	<p>C</p> <ul style="list-style-type: none"> There are the persons who can receive benefit directly and cannot do that, because it treats with the farm village community as a unit. Forming the agreement of a community from the first development stage, and understanding is taken in a community with each stage of development. It should be paid an attention that a more unfair impression does not happen to a part of resident in such stepping. 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Cultural ruins (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> Land in cultural ruins etc. that is excluded. (Especially nothing) 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left
Confrontation with peripheral people (Reason) (Countermeasure)	<p>B</p> <ul style="list-style-type: none"> There is an example of which friction went out by land problems between communities in the past. It is necessary to select the site carefully in the vicinity of the community boundary. 	<p>B</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>B</p> <ul style="list-style-type: none"> The same as left The same as left
Water supply and water rights (Reason) (Countermeasure)	<p>B</p> <ul style="list-style-type: none"> There is the possibility that the river and reservoir etc. become the irrigation source. It depends on an irrigation scheme. On making an individual plan adjustment of the water rights will be necessary. 	<p>D</p> <ul style="list-style-type: none"> It is assumption in a small-scale site as for rice farming with rain water. Supplementary irrigation, the water harvest, and the drain improvement of the rainy season with a little water supply in the region and influence on water rights are assumed. It is very low though the influence is not necessarily any at all even in case of being. The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left
Hygiene (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> The factor that deteriorates especially is not found compared with the current state. Possibility that life improves in accordance with an income improvement and the sanitary conditions will be improved is high. (Especially nothing) 	<p>D</p> <ul style="list-style-type: none"> The same as left (Especially nothing) 	<p>D</p> <ul style="list-style-type: none"> The same as left (Especially nothing)

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Risk of epidemic (Reason) (Countermeasure)	B <ul style="list-style-type: none"> In general, when the rice field is assumed, an increase etc. of the mosquito and the horse fly that mediates the sickness even if it is small-scale are thought. Spread of basic health hygiene knowledge, extermination of the mosquito and the horse fly, establishing such as a clean supply equipment of the drinking water and drainage as an annex will be considered. 	B <ul style="list-style-type: none"> The same as left The same as left 	B <ul style="list-style-type: none"> The same as left The same as left
Natural environment			
Influence to the nature of soil, the lay of land (Reason) (Countermeasure)	C <ul style="list-style-type: none"> Scale of expansion the influence is expected in a big scheme When an individual plan is made, influence will be confirmed and when an influence is expected correspondence will be confirmed. 	D <ul style="list-style-type: none"> There is no influence because either project is also small-scale. (Especially nothing) 	D <ul style="list-style-type: none"> The same as left The same as left
Soil erosion (Reason) (Countermeasure)	B+ <ul style="list-style-type: none"> Because it is the paddy field where makes a levee it acts on the direction where soil erosion is prevented (Especially nothing) 	B+ <ul style="list-style-type: none"> By introducing a levee in the rain-fed paddy field in a small-scale site effect that reduces soil erosion is expected The same as left 	B+ <ul style="list-style-type: none"> The same as left The same as left
Underground water (Reason) (Countermeasure)	D <ul style="list-style-type: none"> The use of large-scale underground water is not assumed. Moreover, the influence on the groundwater cultivation is expected the minimum because ground water will be used as supplementary water resource to the rice field mainly the rainy season. (Especially nothing) 	D <ul style="list-style-type: none"> The effect of promoting to underground water is thought by suppressing the surface runoff by introducing of the levee etc into the rain-fed paddy field. (Especially nothing) 	D <ul style="list-style-type: none"> Big influence on underground water is not expected because the field rice farming is taken mainly and rain water condition is not so small in addition the water harvest is also taken. (Especially nothing)

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Influence and water pollution to the surrounding waters (Reason) (Countermeasure)	<p>B</p> <ul style="list-style-type: none"> In the case that the agriculture by irrigation cultivation is not carried out appropriately water pollution by the inappropriate use of a chemical manure, agricultural chemicals is conceivable When an individual plan is made grasping the situation of a swamp and the estimation and monitoring of an influence should be done. 	<p>B</p> <ul style="list-style-type: none"> Although the destruction of large-scale water-resource development and the edge of the water are absent case. But because the small-scale target site is located in valley and low position the land target will attach the existing swamp. Water pollution by the inappropriate use of chemical manure and agricultural chemicals are possible in respect of agriculture. Life level of an object community improves and deterioration etc., indirect water pollution of village drainage conceivable. From the face of agriculture technology cultivation method in consideration of the decrease agricultural chemicals and chemical manures will be spread. Enlightenment concerning the water quality is aimed at the farmer and the community resident. 	<p>D</p> <ul style="list-style-type: none"> A basic concept is rice farming cultivation by the low input and the low output, and the chemical fertilizer and agricultural chemicals with a high cost are assumed a minimum turning on. (Especially nothing)
Influence on coast part (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> Development that faces the coast is not thought. When it faces the river and lakes and marshes in large-scale construction and the production facilities, the system can be disarranged. 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
<p>Influence on marsh (Reason)</p> <p>(Countermeasure)</p>	<p>C</p> <ul style="list-style-type: none"> The valley ground rice paddy and low ground where are hypothesizing to an object the case that most are a seasonal swamp and the good place of the access is used with some movement cultivation etc. forms in the dry season is almost. The access is very difficult in the current state in an unused marsh, and it is not suitable target of this project. <ul style="list-style-type: none"> The influence is taken by phased maintenance and the stopped strategy is taken at least. For instance, the levee and land levelling of the field will be developed gradually before transplanting, maintain, and introduce maintenance that the earthwork is accompanied will be done if necessary in the place where it reached some maintenance level. A proper using and the use of the organic fertilizer are encouraged from respect of the cost about the input such as the fertilizers and agricultural chemicals. 	<p>C</p> <ul style="list-style-type: none"> The same as left <ul style="list-style-type: none"> The same as left 	<p>D</p> <ul style="list-style-type: none"> Basically this project can not accompanied basic infrastructure construction, fundamentally the input such as the fertilizer agricultural chemicals is limited and cultivation on the field condition or swamp periphery is hypothesized. Planting will be started when water pulls around the marsh after the rainy season. It follows, and it doesn't influence Water Body etc. directly. Already the movement cultivation of the established be being carried out in the fine place of the moisture condition such as swamp periphery and some hands are entrance by the resident of periphery. When planting is made regular around the marsh, in order to make influence of the marsh on the ecosystem minimize, it should be considered that not to heavy-use the input considering the cost and to expand the area gradually.

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Animals and plants and also diversity (Reason) (Countermeasure)	C <ul style="list-style-type: none">When institution maintenance and development of farmland follow, a possibility of affecting animals and plants depending on a scale cannot be denied.The influence on the ecosystem is examined at the stage of the individual plan making, and the construction of an artificial thing is stopped to the minimum.	C <ul style="list-style-type: none">There can be a case to touch the marsh where the small-scale site located and the low order part in geographical features is an object where the ecosystem is various.The same as left	C <ul style="list-style-type: none">The same as leftThe same as left
Atmospheric phenomena (Reason) (Countermeasure)	D <ul style="list-style-type: none">The development of the scale that exerts a big influence on the weather is not thought.(Especially nothing)	D <ul style="list-style-type: none">The same as leftThe same as left	D <ul style="list-style-type: none">The same as leftThe same as left
Landscape (Reason) (Countermeasure)	C <ul style="list-style-type: none">It is hard to think about the serious influence, but influence on scene is possible by water intake institutions scale of the structure.Measures such as avoiding the exposure on the construction side are taken.	D <ul style="list-style-type: none">The maintenance of the production base is small-scale and the influence is a little.(Especially nothing)	D <ul style="list-style-type: none">The same as leftThe same as left
Global warming (Reason) (Countermeasure)	D <ul style="list-style-type: none">CO2 is taken to a plant body by the production of rice, although burn the straw after a harvest in a paddy place and CO2 is discharged. Because this become repeatedly there is little substantial increase.Especially nothing	D <ul style="list-style-type: none">The same as left	D <ul style="list-style-type: none">The same as leftThe same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Air pollution (Reason) (Countermeasure)	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • If the processing agricultural products facilities such as the rice mills are proposed, the exhaust of dust is thought from the motor and the machine in the circumference. • The rice mill machine is properly driven, and it lectures on measures of dustproof and the collection if necessary. 	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • The same as left • The same as left 	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • The same as left • The same as left
Soil pollution (Reason) (Countermeasure)	<p style="text-align: center;">B</p> <ul style="list-style-type: none"> • The ground pollution by improper use of the chemical fertilizer and agricultural chemicals is thought. • The use of a poisonous chemical and the heavy metal is not extremely thought. The use of a poisonous chemical and the heavy metal is not extremely thought. • Use of appropriate fertilizer and agricultural chemicals, it spreads. 	<p style="text-align: center;">C</p> <ul style="list-style-type: none"> • The same as left • The same as left 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The basis concept is the rice crop cultivation by low input low output and the high chemical manure agricultural chemicals of the cost make with the input of a minimum. • The same as left
Waste (Reason) (Countermeasure)	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • Waste is not exhausted in a usual agricultural production activity though an increase of garbage for the construction period is thought. • The amount of the exhaust of Chaff and bran increases from the rice mill. • The waste exhausted by construction is made a minimum and the waste management plan is introduced. • Effective use for Chaff and bran is aimed at. 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • The same as left 	<p style="text-align: center;">D</p> <ul style="list-style-type: none"> • The same as left • The same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Noise and vibration (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> If the processing agricultural products facilities such as the rice mills are proposed, the noise and the vibration of the motor and the machine are thought in the circumference. The traffic such as tracks increases by going out carrying with the rice mill and the warehouse. The rice mill machine is properly driven, and it lectures on measures of the noise and the vibration if necessary. Attention is roused to driving the track. 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left
Subsidence (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> Because the large-scale subterranean water application and large-scale water use are not hypothesized there are few influence (Especially nothing) 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left
Stench (Reason) (Countermeasure)	<p>C</p> <ul style="list-style-type: none"> It is conceivable to the sanitary conditions deteriorate and put out a stench, in the case that the operation control of a market is not done properly. Proper management of the market is promoted. 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.

Item	Marketing Driven Rice Enhancement Program (intensive irrigated rice cultivation)	Rain-fed Rice Promotion Program (semi-intensive rainfed rice farming)	Support Program for Poor Rice Farmers (extensive rice farming)
Bottom material (Reason) (Countermeasure)	<p>D</p> <ul style="list-style-type: none"> Neither the river nor lakes and marshes are influenced to a low quality by the rice cultivation. It is possible that community resident's income level goes up, the exhaust of the life sewage increases, and a low quality deteriorates indirectly. The water quality improvement plan of drain like waste water treatment etc. is adopted. 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>D</p> <ul style="list-style-type: none"> The same as left The same as left
Accident (Reason) (Countermeasure)	<p>C</p> <ul style="list-style-type: none"> The occurrence of the accident is incontrovertible because of the handling of the medicines such as processing agricultural products and agricultural chemicals such as the agricultural implement and machineries and the rice mills such as tractors and coppers. A proper, safe driving is promoted, and it spreads of avoiding driving dangerous and using. 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left 	<p>C</p> <ul style="list-style-type: none"> The same as left The same as left

Evaluation Ranking : 「A」 A serious environmental impact is expected, 「B」 Some environmental impacts are expected, 「C」 The environmental impact is not clear, 「D」 The environmental impact is not expected.