



Cost of production and cost benefit analysis of different rice in Sirajganj district

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ABSTRACT

Appropriate agricultural practices have positive and sustainable impacts on rural farmers' livelihood possessions and strategies to overcome the climate vulnerabilities. The benefit cost ratio (BCR) is a relative measure which is used to determine benefit per unit cost and helps farmers in decision making activities. A study was carried out in the Sirajganj district during 2017, to compare the cost and revenue of Aus, Aman and Boro rice, using benefit cost ratio technique. The Sirajganj district consists of nine upzilas. Ten farmers of each upzila were randomly selected and primary data were personally collected from the respondents through structural questionnaire. The data about Aus, Aman and Boro rice and their cost as well as returns were collected in farmers' field. The collected data were then sorted, scrutinized and analyzed to achieve the goal set for the study. Results revealed that the total cost of production in Aus rice varied 40856-71353 Tk./ha, gross returns 90651-123889 Tk./ha, cost of per kilogram rice production was 9.87 – 15.45 Tk./kg and BCR 1.61-2.22. The total cost of Aman (Local) rice varied 43031-69067 Tk./ha, gross returns 57651-86889 Tk./ha, cost of per kilogram rice production was 14.98 - 21.40 Tk./kg and BCR 1.25-1.65. The total cost of Aman (HYV) rice varied 66111-78724 Tk./ha, gross returns 123321-164439 Tk./ha, cost of per kilogram rice production was 9.87-14.45 Tk./kg and BCR 1.70-2.22. The total cost of Boro (HYV) rice varied 89129-96886 Tk./ha, gross returns 164439-208956 Tk./ha, cost of per kilogram rice production was 9.31-13.84 Tk./kg and BCR 1.90-2.31. The total cost of Boro (Hybrid) rice varied 92868-99684 Tk./ha, gross returns 205524-226083 Tk./ha, cost of per kilogram rice production 8.99-10.74 Tk./kg and BCR 2.10-2.36. Aus/Aman rice cultivation is eco-friendly i.e., needs less ground water, lower risk of early floods and hailstorms, etc.

Key Words: Aus, Aman, Boro rice, Cost, Return and BCR.

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I. Introduction

Rice is an important cereal crop in Bangladesh and one third food requirement of the world population (Ahmed et al., 2015). Total production and consumption of world rice, the 90% are in Asia (Said et al., 2000). Bangladesh is an agricultural country sacred with a climate favorable for rice cultivation i.e. Aus, Aman, and Boro- three rice crops cultivation is possible in same land in a year. Soils are fertile, the rain fed or irrigated flood plan land, fertilizer and others input is available. Our agriculture compensates a lion share of national income, employment in the rural area, foreign exchange earnings, food supply and industrial raw materials as well. Agriculture is the main stay of the local community of Sirajganj district and a vast land are char area inside of the river of Jamuna. The river gift, siltation and early flood are problem in Sirajganj district. However, the char land is the promising for agricultural crop production and people of char land directly or indirectly involve in agriculture, livestock or fisheries. The economy of the district is predominantly agriculture-based. Vast crop diversity observed in Sirajganj district. Different rice varieties are cultivated in different cropping season. Among them Aus rice-BR 26 is the popular variety of Sirajganj district. However, other Aus rice viz. BRRI dhan 48, IR 76, Kalomanik, Shaita, Hasikalmi etc. were found in Kharif-1 season. Different types of high yielding variety (HYV) of Aman rice are cultivated in Karif-2 season, like BR 11, BRRI dhan 32, 33, 34, (aromatic), 39, 41, 49, 51, 52, 56, 62, 72, BINA 7, 11, Pajam, Ranjit, Swarna and local rice Naijershail, Gainja, Patjag, Shailya, Khatobadha, Sapaher, Latishail, Bashiraj. In some areas, Boro variety BRRI dhan 28, 29 and a few hybrid rice are also cultivated in Kharif-2 season. Boro is main rice crop in this area. Hybrid Boro namely Hira 2, 4, Jagoron, Tej gold, SL 8H, ACI hybrid, Krishibid hybrid, Shathi, Shakti, Aloron, Syngenta etc. are cultivated in Sirajganj district. And HYV Boro rice- BRRI dhan 28, 29, 36, 46, 50 (Basmati aromatic), 58, 64, 67, 74 and Minicate are also cultivated in Rabi season. Local Boro-Kaliboro, Dhali Boro, Kajal lata, Tepi Boro etc. cultivated earlier in Boro season, especially river side in Jamuna.

Boro rice occupied 66%, Aman rice 31% and Aus rice 3% of total rice cultivable area of Sirajganj. Nevertheless, production of rice covered by Boro 74%, Aman 24% and Aus 2%. The area, production and yield of rice for last five years are shown in Table 01. Cost of production varied in Aus, Aman and Boro rice even in the variety to variety of rice crop. Rice cost of production is profitable in terms of cost, revenues and net production (Santha, 1993). However, rice based cropping patterns of 10 different district was obtained the maximum net return/ha in rice-rice crop based cropping patterns (Gangwar and Dubey, 1996). The net return is higher in irrigated rice ecosystem compare to rain fed rice ecosystem (Upendra, 1999). The relationship of price and input use and it influence on crop production, gross and net income of rice crop, labor, seed, fertilizer and irrigation were the factor significantly contributed towards output (Hussain et al., 2008). However, the present study has been undertaken to compare the cost and revenue of different rice (Aus, Aman and Boro) crops, using benefit cost ratio technique.

II. Materials and Methods

The study was carried out in the Sirajganj district during 2017. The Sirajganj district consists of nine upzilas. Ten farmers of each upzilas were randomly selected and primary data was personally collected from the respondents through structural questionnaire. The data about different rice (Aus, Aman and Boro) crops and their cost and returns were collected in farmers' field or home. The collected data were then sorted, scrutinized and analyzed to achieve the goal set for the study. The average percentage, total cost, total return etc. were statistically measured to determine the economic performance of rice (Aus, Aman and Boro) production. Farmer perches their inputs from the local market - the price of rice seed @ 25 Tk./kg, Urea fertilizer @ 16 Tk/kg, TSP @ 22 Tk/kg, MoP @ 15 Tk/kg and paddy sale @ 28 Tk/kg, straw @ 5 Tk/kg in local market. Cobb-Douglas production function model was followed to determine the estimate the contribution of factors to rice cultivation. All analyses data were presented in tabular form. The benefit cost ratio (BCR) is a relative measure which is used to determine benefit per unit cost. Benefit cost ratio is the proportion of net return (benefit) and total cost of production (Dillon and Hardaker, 1993).

Production Cost = (Total Cost of cultivation– Price of by product)/Total Paddy Production (Tk./kg)

Benefit cost ratio = Net return (benefit)/Total cost

III. Results and Discussion

Aus rice (HYV and Local): The highest cost of input was observed in Raiganj (19342 Tk./ha) for rice harvesting operation (Table 02). Another major cost of item was land charge, plowing, transplanting, fertilizer application, irrigation and weeding. The total cost of Aus rice production was observed in Kazipur (71353 Tk./ha) followed by Belkuchi (68440 Tk./ha), Ullapara (67918 Tk./ha), Kamarkhanda (67497 Tk./ha), Sirajganj Sadar (66890 Tk./ha), Tarash (66474 Tk./ha for Local), Raiganj (60214 Tk./ha for HYV and 59125Tk./ha for Local) and Chouhali (40856 Tk./ha, Local). The highest cost of production occurred due to crop harvesting, plowing, transplanting, weeding and irrigation. These cost indicated that labor price was high during crop operational periods. The highest gross returns was found in Belkuchi (123889 Tk./ha) followed by Ullapara (123882 Tk./ha), Kazipur (123552 Tk./ha), Sadar (123321 Tk./ha), Tarash (121803 Tk./ha), Raiganj (115203 Tk./ha), Kamarkhanda (108933 Tk./ha) and Chouhali (90651 Tk./ha). On the other hand, the highest net returns was found in Sirajganj Sadar (56431Tk./ha) and lowest in Raiganj (41030 Tk./ha) (Table 02). The highest per kg rice cost of production was found in Kamarkhanda (15.45 Tk./kg) followed by Raiganj (14.63 Tk./kg for HYV), Kazipur (14.06 Tk./kg), Belkuchi (13.42 Tk./kg), Ullapara (13.09 Tk./kg), Tarash (13.01 Tk./kg), Sirajganj Sadar (12.90 Tk./kg) Raiganj (11.94 Tk./kg for Local) and Chouhali (9.87 Tk./kg) (Table 02). Cost of rice production may be varied due to low input price that area. The benefit cost ratio (BCR) was highest in Chouhali (2.22), followed by Raiganj (1.95 for Local), Sadar (1.84), Tarash (1.83), Ullapara (1.82), Belkuchi (1.81), Kazipur (1.73), Raiganj (1.68 for HYV) and Kamarkhanda (1.61) (Table 02). High BCR may be occurred due low cost of production and high management practices leads to high crop production. Family labor involvement should be reduced cost of production.

Table 01. Occupied area and yield of Aus, Aman and Boro rice of Sirajganj district

Upazila	Aus				Aman				Boro					
	Local		HYV		Local		HYV		Local		HYV		Hybreed	
	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)	Area (ha)	Paddy Prodn. (t)
Sadar	0	0	485	1171	1258	1937	8799	27709	350	645	12855	3764	780	54033
Kazipur	105	157	205	515	2850	5130	7248	22199	400	738	12400	2943	620	50633
Raiganj	0	0	955	2339	75	120	19275	59673	5	9	17360	15991	3310	68631
Tarash	0	0	3050	6402	98	171	13022	37880	0	0	21770	2583	550	84032
Ullapara	0	0	580	1469	1500	2550	5530	15611	70	113	27480	9503	2000	118118
Shahjadpur	0	0	60	150	5	8	50	134	360	663	21160	6396	1280	90044
Belkuchi	0	0	60	154	250	455	600	1888	35	47	7360	3585	755	31093
Kamarkhanda	0	0	35	97	506	855	3882	11116	0	645	6310	3678	760	54033
Chouhali	450	629	0	0	0	0	4	11.75	1050	738	1785	24.4	5	50633
Total	5985 ha (3%)		13081 t (2 %)		64952 ha (31%)		579117 t (24 %)		140810 ha (66 %)		583217 t (74 %)			

Aman rice (Local): The highest cost of input was observed both in Ullapara (19550 Tk./ha) for rice harvesting operation (Table 03). The next major cost of item was land charge, plowing, transplanting, weeding fertilizer management system. The total cost of Aman rice production was observed in Ullapara (69067 Tk./ha) followed by Tarash (66849 Tk./ha), Kamarkhanda (64100 Tk./ha), Belkuchi (62769 Tk./ha), Shahjadpur (62596 Tk./ha), Sirajganj Sadar (54832 Tk./ha), Raiganj (52018 Tk./ha) and Chouhali (43031 Tk./ha) (Table 03). The highest cost of production occurred due to crop harvesting, plowing, transplanting. These cost indicated that labor price was high during crop operational periods. The highest gross returns was found in Tarash (86889 Tk./ha) and lowest in Chouhali (57651 Tk./ha). On the contrary, The highest net returns was obtained in Raiganj (33881 Tk./ha) and lowest in also Chouhali (14620 Tk./ha) (Table 03). The highest per kg rice cost of production was found in Ullapara (21.40 Tk./kg) followed by Kamarkhanda (20.73 Tk./kg), Tarash (20.39 Tk./kg), Belkuchi (20.20 Tk./kg), Shahjadpur (20.09 Tk./kg) Chouhali (19.63 Tk./kg), Sadar (16.25 Tk./kg) and Raiganj (14.98 Tk./kg). The cost of rice production varied due to high production and price of straw in that area. The benefit cost ratio (BCR) was highest in Raiganj (1.65) followed by Sadar (1.55), Chouhali (1.34), Shahjadpur (1.32), Belkuchi (1.31), Tarash (1.30), Kamarkhanda (1.28) and Ullapara (1.25) (Table 03). High BCR may be occurred due high production and high price of local rice straw in that area.

Table 02. Cost of production of Aus (Local and HYV) rice of Sirajganj district

Item (Tk./ha)	Sadar (HYV)	Kazipur (HYV)	Raiganj		Tarash (Local)	Ullapara (HYV)	Belkuchi (HYV)	Kamarkhanda (HYV)	Chouhali (Local)
			Local	HYV					
Fertilizer	7038	7803	2215	7631	6913	7163	7481	7839	2934
Seedling	1375	1375	1375	1375	1375	1375	1375	1375	1375
Plowing	8097	8138	8983	8983	8114	8190	8035	8515	0
Transplanting	7671	7474	6304	7304	6737	7436	6737	6138	0
Irrigation	6228	7055	0	0	6114	6225	6228	6540	0
Weeding	6211	7474	0	0	6228	6332	6457	5983	6228
Pesticide	1540	1671	19342	1972	2018	2053	2691	2080	2091
Harvesting	16079	17474	1557	19342	16228	16228	16457	16228	16228
Processing	1360	1468	9342	1453	1468	1595	1643	1491	1468
Land charge	9342	9342	9342	9342	9342	9342	9342	9342	9342
Sub-Total	64941	69274	58460	57402	64537	65939	66446	65531	39666
Bank interest (@9%, 4 mons.)	1949	2079	1754	1723	1937	1979	1994	1966	1190
Total cost (Tk./ha)	66890	71353	60214	59125	66474	67918	68440	67497	40856
Rice Production (kg/ha)	3737	3744	3068	3491	3691	3754	3803	3301	2747
Price of Rice (TK./ha)	104636	104832	85904	97748	103348	105112	106484	92428	76916
Straw Production (kg/ha)	3737	3744	3068	3491	3691	3754	3481	3301	2747
Price of Straw (Tk./ha)	18685	18720	15340	17455	18455	18770	17405	16505	13735
Gross Returns (Tk./ha)	123321	123552	101244	115203	121803	123882	123889	108933	90651
Net Returns (Tk./ha)	56431	52199	41030	56078	55329	55964	55449	41436	49795
Production Cost (Tk./kg Rice)	12.90	14.06	14.63	11.94	13.01	13.09	13.42	15.45	9.87
BCR	1.84	1.73	1.68	1.95	1.83	1.82	1.81	1.61	2.22

Table 03. Cost of production of Aman (Local) rice of Sirajganj district

Item (Tk./ha)	Sadar	Kazipur	Raiganj	Tarash	Ullapara	Shahjadpur	Belkuchi	Kamarkhanda	Chouhali
Seedling	1375	-	1375	1375	1375	1375	1375	1375	1246
Plowing	8097	-	8983	8529	8879	8426	8060	8111	0
Transplanting	7605	-	7758	7671	7163	7737	7737	7083	0
Irrigation	0	-	0	4360	5294	0	6228	6540	0
Weeding	0	-	6868	6228	7664	6557	6457	6737	6228
Pesticide	0	-	1747	1945	1263	1336	1491	1557	1868
Harvesting	19342	-	12457	17474	19550	19342	12457	14048	16228
Processing	1480	-	1972	1491	1414	1228	1851	1868	1868
Land charge	9342	-	9342	9342	9342	9342	9342	9342	9342
Sub-Total	53234	-	50502	64901	67055	60772	60940	62233	41777
Bank interest (@9%, 4 mons.)	1598	-	1516	1948	2012	1824	1829	1867	1254
Total cost (Tk./ha)	54832	-	52018	66849	69067	62596	62769	64100	43031
Rice Production (kg/ha)	2580	-	2603	2633	2616	2495	2491	2491	1747
Price of Rice (TK./ha)	72240	-	72884	73724	73248	69860	69748	69748	48916
Straw Production (kg/ha)	2580	-	2603	2633	2616	2495	2491	2491	1747
Price of Straw (Tk./ha)	12900	-	13015	13165	13080	12475	12455	12455	8735
Gross Returns (Tk./ha)	85140	-	85899	86889	86328	82335	82203	82203	57651
Net Returns (Tk./ha)	30308	-	33881	20040	17261	19739	19434	18103	14620
Production Cost (Tk./kg Rice)	16.25	-	14.98	20.39	21.40	20.09	20.20	20.73	19.63
BCR	1.55	-	1.65	1.30	1.25	1.32	1.31	1.28	1.34

Aman rice (HYV): The highest cost of input was observed in Sadar (16948 Tk./ha) for rice harvesting operation (Table 04). Then the major cost of item was land charge, irrigation, plowing, transplanting, weeding and fertilizer management system. The total cost of Aman high yielding variety ((HYV) rice

production was observed in Kazipur (78724 Tk./ha) followed by Shahjadpur (74085 Tk./ha), Ullapara (73463 Tk./ha), Sadar (73212 Tk./ha), Kamarkhanda (71272 Tk./ha), Belkuchi (70823 Tk./ha), Chouhali (69552 Tk./ha) and Raiganj (66111 Tk./ha) (Table 04). The highest cost of production occurred due to land preparation, weeding, transplanting and harvesting system. The highest gross returns was obtained in Shahjadpur (164439 Tk./ha) and lowest in both Raiganj and Belkuchi (123321 Tk./ha). The highest net returns was obtained from Shahjadpur (90354 Tk./ha) followed by Sadar (74760 Tk./ha), Chouhali (74328 Tk./ha), Kamarkhanda (62312 Tk./ha), Ullapara (57382 Tk./ha), Raiganj (57210 Tk./ha), Kazipur (54860 Tk./ha) and Belkuchi (52498 Tk./ha) (Table 04). The highest per kg rice cost of production was found in Kazipur (14.45 Tk./kg) followed by Belkuchi (13.95 Tk./kg), Ullapara (13.53 Tk./ha), Raiganj (12.69 Tk./kg), Kamarkhanda (12.61 Tk./kg), Sadar (11.33 Tk./kg), Chouhali (10.95 Tk./kg) and Shahjadpur (9.87 Tk./kg). The cost of rice production varied due to high price of straw in that area. The benefit cost ratio (BCR) was highest in Shahjadpur (2.22), followed by Chouhali (2.07), Sadar (2.02), Raiganj (1.87), Kamarkhanda (1.87), Ullapara (1.78), Belkuchi (1.74) and Kazipur (1.70) (Table 04). Chanda et al. (2018) obtained similar result in Sirajganj district on Aman rice. High BCR may be occurred due high production and high price of local rice straw in that area.

Table 04. Cost of production of Aman (HYV) rice of Sirajganj district

Item (Tk./ha)	Sadar	Kazipur	Raiganj	Tarash	Ullapara	Shahjadpur	Belkuchi	Kamarkhanda	Chouhali
Fertilizer	7619	7605	7630	-	7873	7540	7851	7983	8088
Seedling	1375	1375	1375	-	1375	1375	1375	1375	1375
Plowing	8097	8138	8983	-	8879	8671	8827	8138	8294
Transplanting	7605	7474	8588	-	7163	7737	3737	7138	6228
Irrigation	9342	16055	0	-	8294	8457	9342	7540	8803
Weeding	7474	7474	7765	-	8664	9342	8457	7605	7457
Pesticide	1917	1983	2073	-	2304	1893	1691	1865	1614
Harvesting	16948	15571	16457	-	16211	16342	16495	16342	14457
Processing	1360	1414	1972	-	1218	1228	1643	1868	1868
Land charge	9342	9342	9342	-	9342	9342	9342	9342	9342
Sub-Total	71079	76431	64185	-	71323	71927	68760	69196	67526
Bank interest (@9%, 4 mons.)	2133	2293	1926	-	2140	2158	2063	2076	2026
Total cost (Tk./ha)	73212	78724	66111	-	73463	74085	70823	71272	69552
Rice Production (kg/ha)	4484	4048	3737	-	3965	4983	3737	4048	4360
Price of Rice (TK./ha)	125552	113344	104636	-	111020	139524	104636	113344	122080
Straw Production (kg/ha)	4484	4048	3737	-	3965	4983	3737	4048	4360
Price of Straw (Tk./ha)	22420	20240	18685	-	19825	24915	18685	20240	21800
Gross Returns (Tk./ha)	147972	133584	123321	-	130845	164439	123321	133584	143880
Net Returns (Tk./ha)	74760	54860	57210	-	57382	90354	52498	62312	74328
Production Cost (Tk./kg Rice)	11.33	14.45	12.69	-	13.53	9.87	13.95	12.61	10.95
BCR	2.02	1.70	1.87	-	1.78	2.22	1.74	1.87	2.07

Boro (HYV): The highest cost of input was observed in Sadar (19930 Tk./ha) for rice harvesting purpose (Table 05). Another major cost of item was irrigation, fertilizer management, land charge, weeding, plowing and transplanting operation system. The total cost of Boro high yielding variety (HYV) rice production was observed in Raiganj (96886 Tk./ha) followed by Tarash (96469 Tk./ha), Sadar (95036 Tk./ha), Shahjadpur (94323 Tk./ha), Belkuchi (93999 Tk./ha), Kamarkhanda (93863 Tk./ha), Ullapar (93280 Tk./ha), Kazipur (93102 Tk./ha) and Chouhali (89129 Tk./ha) (Table 05). The highest cost of production occurred due to land preparation, fertilizer application, irrigation, weeding, transplanting and harvesting system. A comparative analysis was done by Dash et al. (1995) in summer rice crop and they show the average cost of production was 17113 Rs/ha, average yield 56 q/ha, average gross returns 18923 Rs/ha and net returns 1920 Rs/ha. The gross and net returns was highest in Ullapara (208956 Tk./ha and 115676 Tk./ha, respectively) and lowest in Kamarkhanda (164439 Tk./ha and 70576 Tk./ha). (Table 05). The highest per kg rice cost of production was found in

Kamarkhanda (13.84 Tk./kg), followed by Belkuchi (12.35 Tk./kg), Sadar (10.88 Tk./kg), Kazipur (10.57 Tk./ha), Raiganj (10.56 Tk./kg), Tarash (10.49 Tk./kg), Shahjadpur (10.14 Tk./kg), Ullapara (9.73 Tk./kg) and Chouhali (9.31 Tk./kg). The cost of rice production varied due to high yield of rice in that area. The benefit cost ratio (BCR) was highest in Chouhali (2.31) followed by Ullapara (2.24), Shahjadpur (2.18), Tarash (2.13) Kazipur (2.12), Raiganj (2.12), Sadar (2.08), Belkuchi (1.90) and Kamarkhanda (1.75) (Table 05). These results matched with the results of Chanda et al. (2018). They carried out a study in Sirajganj district on Boro rice cultivation. High BCR may be occurred due high production of HYV rice yield in that area.

Table 05. Cost of production of Boro (HYV) rice of Sirajganj district

Item (Tk./ha)	Sadar	Kazipur	Raiganj	Tarash	Ullapara	Shahjadpur	Belkuchi	Kamarkhanda	Chouhali
Fertilizer	10744	10906	12310	12133	12453	11117	10688	10931	9467
Seedling	1375	1375	1375	1375	1375	1375	1375	1375	1375
Plowing	8097	8138	8983	8671	8190	8228	8086	8138	7228
Transplanting	7540	7474	8041	8474	7682	7360	7737	7138	7474
Irrigation	17457	17277	17474	17474	17342	17113	17948	17373	17277
Weeding	8457	8474	8512	8457	8768	8685	8418	8474	8457
Pesticide	5917	5605	5813	5671	5612	5671	5491	5148	5114
Harvesting	19930	18685	18685	18948	16363	19342	18872	19342	17571
Processing	3408	3114	3529	3114	3436	3342	3304	3868	3228
Land charge	9342	9342	9342	9342	9342	9342	9342	9342	9342
Sub-Total	92267	90390	94064	93659	90563	91575	91261	91129	86533
Bank interest (@9%, 4 mons.)	2769	2712	2822	2810	2717	2748	2738	2734	2596
Total cost (Tk./ha)	95036	93102	96886	96469	93280	94323	93999	93863	89129
Rice Production (kg/ha)	5983	5979	6228	6228	6332	6228	5419	4983	6228
Price of Rice (TK./ha)	167524	167412	174384	174384	177296	174384	151732	139524	174384
Straw Production (kg/ha)	5983	5979	6228	6228	6332	6228	5419	4983	6228
Price of Straw (Tk./ha)	29915	29895	31140	31140	31660	31140	27095	24915	31140
Gross Returns (Tk./ha)	197439	197307	205524	205524	208956	205524	178827	164439	205524
Net Returns (Tk./ha)	102403	104205	108638	109055	115676	111201	84828	70576	116395
Production Cost (Tk./kg Rice)	10.88	10.57	10.56	10.49	9.73	10.14	12.35	13.84	9.31
BCR	2.08	2.12	2.12	2.13	2.24	2.18	1.90	1.75	2.31

Boro (Hybrid): The highest cost of input was observed in Kazipur (19571 Tk./ha) for rice harvesting purpose (Table 06). After then the major cost of item was irrigation, fertilizer application, land charge, weeding and transplanting system. The total cost of Boro (Hybrid) rice production was observed in Tarash (99684 Tk./ha) followed by Shahjadpur (98404 Tk./ha), Ullapara (98059 Tk./ha), Kazipur (96895 Tk./ha), Belkuchi (96613 Tk./ha), Raiganj (95822 Tk./ha), Sadar (95385 Tk./ha) and Kamarkhanda (92868 Tk./ha) (Table 06). The highest cost of production occurred due to crop operation of land preparation, fertilizer application, irrigation, weeding, transplanting and harvesting system. The highest gross returns was found both in Raiganj (226083 Tk./ha) and Shahjadpur (226083 Tk./ha) followed by Ullapara (216381 Tk./ha), Tarash (208956 Tk./ha) and similar result showed in Sadar (205524 Tk./ha), Kazipur (205524 Tk./ha), Belkuchi (205524 Tk./ha) and Kamarkhanda (205524 Tk./ha). The highest net returns was obtained from Raiganj (130261 Tk./ha) followed by Shahjadpur (127679 Tk./ha), Ullapara (118322 Tk./ha), Kamarkhanda (112656 Tk./ha), Sadar (110139 Tk./ha), Tarash (109272 Tk./ha), Belkuchi (108911 Tk./ha) and Kazipur (108629 Tk./ha) (Table 06). The highest per kg rice cost of production was found in Tarash (10.74 Tk./kg) followed by Kazipur (10.56 Tk./ha), Belkuchi (10.51 Tk./kg), Sadar (10.32 Tk./kg) Kamarkhanda (9.91

Tk./kg), Ullapara (9.95 Tk./kg), Shahjadpur (9.36 Tk./kg) and Raiganj (8.99 Tk./kg). The cost of rice production varied due to high yield of rice in that area. The benefit cost ratio (BCR) was highest in Raiganj (2.36) followed by Shahjadpur (2.30) Ullapara (2.21) Kamarkhanda (2.21), Sadar (2.15), Belkuchi (2.13), Kazipur (2.12) and Tarash (2.10) (Table 06). High BCR may be occurred due high production of hybrid rice yield in that area.

Table 06. Cost of production of Boro (Hybrid) rice of Sirajganj district

Item (Tk./ha)	Sadar	Kazipur	Raiganj	Tarash	Ullapara	Shahjadpur	Belkuchi	Kamarkhanda	Chouhali
Fertilizer	10744	11834	10277	12631	12621	12079	10187	9965	-
Seedling	1375	1375	1375	1375	1375	1375	1375	1375	-
Plowing	8097	8138	8983	8671	8190	8228	8086	8138	-
Transplanting	7540	7474	8041	8474	7682	7360	7737	7138	-
Irrigation	17457	17277	17474	17474	17342	17113	17948	17373	-
Weeding	8304	9342	8512	10457	10768	10685	10457	8474	-
Pesticide	5917	5605	5813	5983	5405	5671	5491	5148	-
Harvesting	19422	19571	18685	18259	18363	19342	18872	18342	-
Processing	4408	4114	4529	4114	4114	4342	4304	4868	-
Land charge	9342	9342	9342	9342	9342	9342	9342	9342	-
Sub-Total	92606	94072	93031	96780	95202	95537	93799	90163	-
Bank interest (@9%, 4 mons.)	2779	2823	2791	2904	2857	2867	2814	2705	-
Total cost (Tk./ha)	95385	96895	95822	99684	98059	98404	96613	92868	-
Rice Production (kg/ha)	6228	6228	6851	6332	6557	6851	6228	6228	-
Price of Rice (TK./ha)	174384	174384	191828	177296	183596	191828	174384	174384	-
Straw Production (kg/ha)	6228	6228	6851	6332	6557	6851	6228	6228	-
Price of Straw (Tk./ha)	31140	31140	34255	31660	32785	34255	31140	31140	-
Gross Returns (Tk./ha)	205524	205524	226083	208956	216381	226083	205524	205524	-
Net Returns (Tk./ha)	110139	108629	130261	109272	118322	127679	108911	112656	-
Production Cost (Tk./kg Rice)	10.32	10.56	8.99	10.74	9.95	9.36	10.51	9.91	-
BCR	2.15	2.12	2.36	2.10	2.21	2.30	2.13	2.21	-

IV. Conclusion

Above results and discussion it may be concluded that per kg rice production cost was high in Aman (Local) rice production and followed by Aus (HYV and Local), Aman (HYV), Boro (HYV) and Boro (Hybrid). However, Boro (Hybrid) rice gave high benefit cost ratio (BCR) followed by Aman (HYV), Aus (Local), Boro (HYV), Aus (HYV) and Aman (Local) rice.

References

- [1]. Ahmed, N., Ahmad, Z., Junaid, M. and Ali, A. (2015). Economic analysis based on benefit cost ratio approach for rice varieties of Malakand division. *Journal of Economic and Sustainable Development*, 6, 39-44.
- [2]. Chanda, S. C., Arshed, M. A. and Sarwar, A. K. M. G. (2018). Cost benefit analysis of Aman and Boro rice in Sirajganj district. *International Conference on Research and Extension for Sustainable Rural Development*. Held on 15-16 February, 2018, Rural Development Academy, Bogra, Bangladesh, pp: 110-111.
- [3]. Dash, J. K., Singh, R. P. and Pandey, R.K. (1995). Economic analysis of summer rice production in Baharagora block of Singhbhum district, Bihar- A case study. *Journal of Research*, Birsa Agricultural University, 7, 131-135.
- [4]. Dillon, J. L. and Hardaker, J. B. (1993). *Farm management research for small farm development*. Food and Agriculture Organization of United Nations, Rome, Italy.

- [5]. Gangwar, B. and Dubey, R. P. (1996). Production potential and economic of rice based cropping sequences in Andaman Islands. *Bhartiya Krishi Anusandhan Patrika*, 11, 85-90.
- [6]. Hussain, A., Khattak, N. U. R. and Khan, A. Q. (2008). Cost benefit analysis of different rice varieties in district Swat. *Sarhad Journal of Agriculture*, 24, 745-748.
- [7]. Said, A., Zada, A. and Tahir, M. (2000). Improved cultural practices for profitable rice production in North West Frontier Province. Pakistan: TASRAN Computer Associate, Mingora, Swat.
- [8]. Santha, A. M. (1993). A comparative analysis of cost and returns of Paddy cultivation for different seasons in Trichur, Kerala. *Madras Agricultural Journal*, 80, 41-44.
- [9]. Upendra, K. (1999). Economics of rice cultivation under different Eco-system- A case study of Pusa block of North Bihar. *Annals of Applied Biology*, 9, 97-99.

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