

Cost and Return Economic Analysis for Eleven Crops on the Dyke of Shrimp Enclosure

Harun-Ar-Rashid
Executive Director, AAS



Prepared by:

Agricultural Advisory Society (AAS)

House # 1/6, Block-G, Lalmatia, Dhaka-1207

Phone: 880-2-58152151

Email: harunaas@gmail.com

Web: <http://www.aas-bd.org>

31 July 2016

Contents

Subject	Page No.
Front page -----	1
Contents -----	2
Executive Summary -----	4
Background -----	7
Purpose -----	7
Study area -----	7
Data Collection, analysis and report preparation -----	7
Findings -----	9
I. Land use status of shrimp enclosure -----	9
II. Cost and return of vegetable crops -----	11
1. Early winter tomato -----	11
2. Cucumber -----	12
3. Bitter gourd -----	13
4. Bottle gourd -----	13
5. Ash gourd -----	14
6. Snake gourd -----	15
7. Sweet gourd -----	16
8. Country Bean -----	17
9. Cauliflower -----	18
10. String Bean -----	19
11. Ridge gourd -----	20
III. Crop Ranking -----	21
List of Table	
Table.1: Number of respondents for eleven dyke crops in Gopalganj, Bagehat and Khulna districts during 2015 summer and 2015-16 winter seasons -----	9
Table.2: Pond area, water body, dyke area and cultivable dyke area of shrimp enclosures in Gopalganj, Bagerhat and Khulna districts -----	10
Table.3: Summary cost and return analysis of early winter tomato (F ₁) production during 2015-16 winter season in Khulna, Bagerhat and Gopalganj districts -----	11
Table.4: Summary cost and return analysis of hybrid Cucumber production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	12
Table.5: Summary cost and return analysis of hybrid Bitter gourd production during 2015 summer season in Khulna and Bagerhat districts -----	13
Table.6: Summary cost and return analysis of hybrid Bottle gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	14

Table.7: Summary cost and return analysis of hybrid Ash gourd production during 2015 summer season in Khulna and Bagerhat districts -----	15
Table.8: Summary cost and return analysis of hybrid Snake gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	16
Table.9: Summary cost and return analysis of hybrid Sweet gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	17
Table.10: Summary cost and return analysis of Country Bean production during 2015-16 winter season in Khulna district -----	18
Table.11: Summary cost and return analysis of hybrid Cauliflower production during 2015-16 winter season in Bagerhat district -----	19
Table.12: Summary cost and return analysis of String Bean production during 2015 summer season in Bagerhat district -----	20
Table.13: Summary cost and return analysis of Ridge gourd production during 2015 summer season in Bagerhat district -----	21
Table.14: Comparative ranking of 11 dyke crops based on net-return, under full cost and cash cost basis and gross-return during 2015 summer and 2015-16 winter seasons -----	22

List of Figure

Figure.1 Location map of Gopalganj, Bagerhat and Khulna districts -----	23
---	----

List of Annex

Annex.1: Pond area, water body area, dyke area and cultivable dyke area of shrimp enclosures of nine fish farmers in Gopalganj, Bagerhat and Khulna districts ----	24
Annex.2: Summary cost and return analysis of early winter Tomato (F ₁) during 2015-16 winter season in Khulna, Bagerhat and Gopalganj districts -----	25
Annex.3: Summary cost and return analysis of hybrid Cucumber during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	26
Annex.4: Summary cost and return analysis of hybrid Bitter gourd during 2015 summer season in Khulna and Bagerhat districts -----	27
Annex.5: Summary cost and return analysis of hybrid Bottle gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	28
Annex.6: Summary cost and return analysis of hybrid Ash gourd during 2015 summer season in Khulna and Bagerhat districts -----	29
Annex.7: Summary cost and return analysis of hybrid Snake gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	30
Annex.8: Summary cost and return analysis of hybrid Sweet gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts -----	31
Annex.9: Summary cost and return analysis of Country Bean during 2015-16 winter season in Khulna district -----	32
Annex.10: Summary cost and return analysis of hybrid Cauliflower during 2015-16 winter season in Bagerhat district -----	33
Annex.11: Summary cost and return analysis of String Bean during 2015 summer season in Bagerhat district -----	34
Annex.12: Summary cost and return analysis of hybrid Ridge gourd during 2015 summer season in Bagerhat district -----	35
Annex.13: Sowing duration, harvesting duration, cropping season and scientific name of the eleven crops during 2015 summer and 2015-16 winter seasons -----	36

Executive Summary

Out of a total of 275,274 ha shrimp enclosure (Gher or Pond), of which about 36,000 ha dyke area (more than 80,000 ha for creeping crops) is available for cultivation of large number of suitable high value short duration crops throughout the year in southern regions of Bangladesh. To gather information from farmers on yield, cost and return, and price, of those targeted crops during summer and winter seasons, AAS collected the relevant primary data from 137 shrimp farm owners for cost and return analysis for the 11 existing dyke crops in 5 upazilas of Gopalganj district (Sadar and Tungipara upazilas), Bagerhat district (Chitolmari upazila) and Khulna district (Rupsha and Dumuria upazilas) in the southern regions of the country during 1 February-31 March 2016.

Average about 73.24%, 26.75% and 12.78% of the total pond area was observed under total water body area, total dyke area and total cultivable dyke area of the shrimp enclosure, respectively in Gopalganj, Bagerhat and Khulna districts.

Average about 38.05 t/ha of fresh tomatoes yield was observed for hybrid early winter tomatoes production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid early winter tomato was calculated Tk.654,660/ha (ranked as 1) counter to the average total cost of Tk.333,949/ha and Tk 190,168/ha on full cost basis and cash cost basis, respectively, for early winter tomatoes production. The average net-return was calculated Tk.320,711/ha (ranked as 1) on full cost basis and Tk.464,492/ha (ranked as 1) on cash cost basis for early winter tomatoes production. Average about Tk.17.29/kg sale price of tomatoes was observed at farm house for 2015-16 early winter tomatoes.

Average about 26.64 t/ha of cucumber yield was observed for hybrid Cucumber production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Cucumber was calculated Tk.413,937/ha (ranked as 3) in contrast to average total cost of Tk.261,042/ha and Tk.158,059/ha on full cost basis and cash cost basis, respectively, for Cucumber production. The average net-return was calculated Tk.152,895/ha (ranked as 2) on full cost basis and Tk.255,878 /ha (ranked as 3) on cash cost basis for Cucumber production. Average about Tk.15.64/kg sale price of Cucumber was observed at farm house for 2015 summer cucumber.

Average about 15.33 t/ha of Bitter gourd yield was observed for hybrid Bitter gourd production on the dyke of Shrimp enclosure in two districts. Among the 11 involved crops, average gross-return of hybrid Bitter gourd was calculated Tk.351,418/ha (ranked as 6) against to the average total cost of Tk.255,738/ha and Tk.155,754/ha on full cost basis and cash cost basis, respectively, for hybrid Bitter gourd production. The average net-return was calculated Tk.95,680/ha (ranked as 6) on full cost basis and Tk. 195,664/ha (ranked as 5) on cash cost basis for Bitter gourd production. Average about Tk.23.17/kg sale price of Bitter gourd was observed at farm house for 2015 summer Bitter gourd.

Average about 14,092 fruits/ha of Bottle gourd yield was observed for hybrid Bottle gourd production on the dyke of Shrimp enclosure in two districts. Among the 11 involved crops, average gross-return of hybrid Bottle gourd was calculated Tk.340,754/ha (ranked as 7) in contrast to the average total cost of Tk.253,150/ha and Tk.164,261/ha on full cost basis and cash cost basis, respectively, for hybrid Bottle gourd production. The average net-return was calculated Tk.87,605/ha (ranked as 7) on full cost basis and Tk.176,493/ha (ranked as 6) on

cash cost basis for Bottle gourd production. Average about Tk.24.35/Bottle gourd was observed at farm house for 2015 summer Bottle gourd.

Average about 15,344 fruits/ha of Ash gourd yield was observed for hybrid Ash gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Ash gourd was calculated Tk.306,255/ha (ranked as 9) counter to the average total cost of Tk.238,308/ha and Tk.154,725/ha on full cost basis and cash cost basis, respectively, for hybrid Ash gourd production. The average net-return was calculated Tk.67,947/ha (ranked as 9) on full cost basis and Tk.151,530/ha (ranked as 10) on cash cost basis for Ash gourd production. Average about Tk.20.00/Ash gourd was observed at farm house for 2015 summer Ash gourd.

Average about 26.44 t/ha of Snake gourd yield was observed for hybrid Snake gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Snake gourd was calculated Tk.356,616/ha (ranked as 4) counter to the average total cost of Tk.249,887/ha and Tk.157,579/ha on full cost basis and cash cost basis, respectively, for hybrid Snake gourd production. The average net-return was calculated Tk. 106,728/ha (ranked as 4) on full cost basis and Tk.199,037/ha (ranked as 4) on cash cost basis for Snake gourd production. Average about Tk.13.89/Kg sale price of Snake gourd was observed at farm house for 2015 summer Snake gourd.

Average about 15.06 t/ha of Sweet gourd yield was observed for hybrid Sweet gourd production on the dyke of Shrimp enclosure in three districts. Among the 11 involved crops, average gross-return of hybrid Sweet gourd was calculated Tk.247,971 (ranked as 11) counter to the average total cost of Tk.182,518/ha and Tk.126,633/ha on full cost basis and cash cost basis, respective, for hybrid Sweet gourd production. The average net-return was calculated Tk.65,453/ha (ranked as 10) on full cost basis and Tk. 121,338/ha (ranked as 11) on cash cost basis for Sweet gourd production. Average about Tk.16.75/kg sale price of Sweet gourd was observed at farm house for 2015 summer Sweet gourd.

Average about 24.64 t/ha of Country bean yield was observed for Country bean production on the dyke of Shrimp enclosure in Khulna district. Among the 11 involved crops, average gross-return of Country bean was calculated Tk.576,271/ha (ranked as 2) in contrast to the average total cost of Tk.434,975/ha and Tk.309,519/ha on full cost basis and cash cost basis, respectively, for Country bean production. The average net-return was calculated Tk.141,296/ha (ranked as 3) on full cost basis and Tk.266,752/ha (ranked as 2) on cash cost basis for Country Bean production. Average about Tk.23.56/kg sale price of Country bean was observed at farm house for 2015-16 winter Country bean.

Average about 39.6 t/ha of Cauliflower yield was observed for hybrid cauliflower production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of hybrid cauliflower was calculated Tk.355,680/ha (ranked as 5) in contrast to the average total cost of Tk.297,825/ha and Tk.202,468/ha on full cost basis and cash cost basis, respectively, for Cauliflower production. The average net-return was calculated Tk.57,855/ha (ranked as 11) on full cost basis and Tk. 153,212/ha (ranked as 8) on cash cost basis for cauliflower production. Average about Tk.9.00/kg sale price of Cauliflower was observed at farm house for 2015-16 winter Cauliflower.

Average about 14.29 t/ha of String bean yield was observed for String bean production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of String bean was calculated Tk.324,824/ha (ranked as 8) in counter to the average total

cost of Tk.225,149/ha and Tk.148,767/ha on full cost basis and cash cost basis, respectively, for String bean production. The average net-return was calculated Tk.99,674/ha (ranked as 5) on full cost basis Tk.176,057/ha (ranked as 7) on cash cost basis for String Bean production. Average about Tk.22.88/kg sale price of String bean was observed at farm house for 2015 summer String bean.

Average about 16.50 t/ha of Ridge gourd yield was observed for hybrid Ridge gourd production on the dyke of Shrimp enclosure in Bagerhat district. Among the 11 involved crops, average gross-return of hybrid Ridge gourd was calculated Tk.292,508/ha (ranked as 10) in counter to the average total cost of Tk.208,579/ha and Tk.139,494/ha on full cost basis and cash cost basis, respectively, for hybrid Ridge gourd production. The average net-return was calculated Tk.83,929/ha (ranked as 8) on full cost basis and Tk.153,014/ha (ranked as 9) on cash cost basis for Ridge gourd production. Average about Tk.17.75/kg sale price of Ridge gourd was observed at farm house for 2015 summer Ridge gourd.

Through administered the ranking on the involved 11 crops, top four crops were determined as very high value cash crops and they are Tomato, Cucumber, Country Bean and Snake gourd based on net-return under full cost and cash cost basis and gross-return in Gopalganj, Bagerhat and Khulna districts during 2015 summer and 2015-16 winter seasons.

Background

Currently, total of 275,274 ha shrimp farming is reported for golda (*macrobrachium rosenbergii*) and Bagda (*Peneous monodon*) culture in southern regions of the country. Out of a total of 275,274 ha shrimp enclosure (Pond or Gher), of which about 44,000 ha dyke area (16% of the total pond area) could be available for cultivation of suitable high value short duration crops (most of them are vegetables) throughout the year. Shrimp farmers in southern regions have been cultivating such high value crops on the dyke of shrimp farms (enclosure/pond/gher) from the later part of nineties (1997-1999) as short duration and profitable crops with high market demand. Of the total about 44,000 ha available dyke area is suitable for non-creeping crops (Tomato, Cauliflower, Cabbage, Knol-Khol, Radish, Spinach, Chilli, India spinach etc.) and creeping (vine) crops (Cucumber, Bitter gourd, Bottle gourd, Country bean, Sweet gourd, Snake gourd, String bean, Ridge gourd etc.). Such available dyke area would be more than double for creeping (vine) crops cultivation on the bamboo made platform throughout the year. Less fertilizer needs to apply on the fertile soil for suitable crops cultivation on the dyke of shrimp enclosure. Less pest attack and disease infection are reported for dyke cropping in southern regions. Most of the involved dyke crop varieties are hybrids. However, dyke cropping with high value hybrid crop varieties is found as enormous prospective with high productivity and profitability in the southern regions of the country.

Purpose

Large number of high value crops are grown on the dyke of shrimp enclosure in the southern regions of Bangladesh, the latest information from farmers on yield, cost and return, and price of those targeted crops during winter and summer seasons should be available for the benefit of extensionists, fish farmers, project staff, traders, policymakers, exporters and relevant other users. Accordingly, AAS was undertaken initiative to collect the relevant primary data for cost and return analysis of those targeted crops in five upazilas of the three districts in southern regions during 1 February-31 March 2016.

Study area

Total of three districts (Gopalganj, Bagerhat and Khulna districts) were selected by the study team for conducting the study on cost and return analysis for dyke crops of shrimp enclosure in the southwest region. Field data was collected from the selected shrimp farmers in five upazilas of Gopalganj district (Sadar and Tungipara upazilas), Bagerhat district (Chitolmari upazila) and Khulna district (Rupsha and Dumuria upazilas) during 1 February - 31 March 2016. These three districts are among USAID's Feed the Future (FTF) 20 working districts in southern regions of Bangladesh. The study area is illustrated in Figure 1.

Data Collection, analysis and report preparation

AAS's trained staff collected primary data for cost and returns of the selected eleven crops from 137 successful farmers using one page structured questionnaire developed by AAS. Thus, data were collected from the 137 successful farmers at the selected communities in five upazilas of Gopalganj, Bagerhat and Khulna districts. Total of 137 successful farmers were interviewed in three districts, of which 58 farmers were interviewed for eight crops in Khulna districts, 50

farmers were interviewed for ten crops in Bagerhat district and 29 farmers were interviewed for five crops in Gopalganj district (Table 1). Out of a total of 137 respondent farmers, of which the highest number of farmers were interviewed for 2015-16 early winter Tomato (39 respondents) followed by 2015 summer Cucumber (30 respondents), 2015 summer Bottle gourd (18 respondents), 2015 summer Bitter gourd (13 respondents), 2015-16 winter Country bean (9 respondents), 2015 summer Snake gourd/Sweet gourd (8 respondents), 2015 summer Ash gourd (5 respondents), 2015 summer String bean (4 respondents), 2015 summer Ridge gourd (2 respondents) and 2015-16 winter Cauliflower (1 respondent). Thus, cost and return analysis was conducted for the selected eleven dyke vegetable crops (Tomato, Cucumber, Bottle gourd, Bitter gourd, Country bean, Ash gourd, Snake gourd, String bean, Ridge gourd, Cauliflower and Sweet gourd) for the final report preparation. Collected data were clean for analysis and entered in MS Excel spread sheet and analysis was done using MS Excel and SPSS.

Report summarizing costs and returns analysis for the eleven vegetable crops from 137 interviewed farmers through using the following data categories and definitions:

- (a) Cost of production (Tk./ha) for eleven crops include costs for land preparation, labor, seed, fertilizer, crop protection, irrigation, land rent, transportation, bamboo made platform (creeping crops), bamboo stick, rope, wire and interest on working capital. The total cost is calculated on full cost basis (FCB) and cash cost basis (CCB) in taka per hectare.
 - (i) **Full cost includes:** (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo Stick, (10) Bamboo made platform (Macha), (11) Rope, (12) Wire and (13) Interest on working capital
 - (ii) **Cash cost includes:** (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo Stick, (9) Bamboo made platform (Macha), (10) Rope, (11) Wire and (12) Interest on working capital
- (b) Gross return (Tk./ha) is calculated by valuing harvested 11 crops at the local market sale price.
- (c) Net-return (Tk./ha) are calculated on full cost and cash cost basis.
- (d) Cost-benefit ratios are estimated on full cost and cash cost basis.
- (e) Yields (t/ha) are calculated from the respondent farmers and averaged for 11 involved crops.
- (f) Crop produces cost (Tk./unit) is calculated from respondent farmers for each crops.
- (g) Crop produces sale price (Tk./unit) is calculated from respondent farmers for each crops.

Table.1: Number of respondents for eleven dyke crops in Gopalganj, Bagehat and Khulna districts during 2015 summer and 2015-16 winter seasons

SL #	Crop Name	Scientific Name	Cropping Season	Farmers (No.)			
				Khulna	Bagerhat	Gopalganj	Total
1	Tomato	<i>Lycopersicum esculentum</i>	2015-16 Early Winter	17	10	12	39
2	Cucumber	<i>Cucumis sativus</i>	2015 Summer	16	9	5	30
3	Bitter gourd	<i>Momordica charantia</i>	2015 Summer	4	9	0	13
4	Bottle gourd	<i>Lagenaria siceraria</i>	2015 Summer	7	4	7	18
5	Ash gourd	<i>Benincasa hispida</i>	2015 Summer	2	3	0	5
6	Snake gourd	<i>Trichosanthes anguina</i>	2015 Summer	1	4	3	8
7	Sweet gourd	<i>Cucurbita moschata</i>	2015 Summer	2	4	2	8
8	Country Bean	<i>Dolichos Lablab</i>	2015-16 Winter	9	0	0	9
9	Cauliflower	<i>Brassica oleracea</i>	2015-16 Winter	0	1	0	1
10	String Bean	<i>Vigna sesquipedalis</i>	2015 Summer	0	4	0	4
11	Ridge gourd	<i>Luffa acutangula</i>	2015 Summer	0	2	0	2
Total				58	50	29	137

Findings

Cost and return analysis for eleven dyke crops with 137 fish farmers and land use status calculation from nine fish farmers of shrimp enclosures were administered and the findings are presented in Annexes 1-13.

Summary on cost and return analysis on eleven crops and land use status of shrimp enclosures are presented in Tables 2-14 and brief findings are described below:

I. Land use status of shrimp enclosure

Table 2 presents the pond area, water body, dyke area and cultivable dyke area of shrimp enclosures from nine fish farmers in Gopalganj, Bagerhat and Khulna districts. About 73.24% of the average total pond area was observed under the water body area of shrimp enclosure (pond) for shrimp culture in Gopalganj, Bagehat and Khulna districts. Among the three study districts, the highest proportion of the average total pond area occupies under the water body

area of the shrimp enclosure was observed in Gopalganj district (74.59%) followed by Bagerhat district (72.73%) and Khulna district (72.40%).

About 26.75% of the total pond area was observed under the total dyke (embankment) area of shrimp enclosure in Gopalganj, Bagerhat and Khulna districts. Among the three involved districts, the highest proportion of the total pond area occupies under the total dyke area of the shrimp enclosure was observed in Khulna district (27.59%) followed by Bagerhat district (27.26%) and Gopalganj district (25.40%).

About 12.78% of the total pond area was observed under the total cultivable dyke area for the suitable crops cultivation throughout the year of the shrimp enclosure in Gopalganj, Bagerhat and Khulna districts. Among three study districts, the highest proportion of the total pond area occupies under the total cultivable dyke area for the suitable crops cultivation was observed in Bagerhat district (14.73%) followed by Khulna district (12.80%) and Gopalganj district (11.80%).

Total dyke area was calculated about 36.55% of the total water body of shrimp enclosure in Gopalganj, Bagerhat and Khulna districts. Among the three study districts, the highest proportion of dyke area of the total water body was calculated for Khulna district (38.11%) followed by Bagerhat district (37.48%) and Gopalganj district (34.05%).

Total cultivable dyke area was calculated about 47.75% of the total dyke area of shrimp enclosure in Gopalganj, Bagerhat and Khulna districts. Among the three study districts, the highest proportion of cultivable dyke area of the total dyke area was calculated for Bagerhat district (50.39%) followed by Gopalganj district (46.47%) and Khulna district (46.38%).

Table.2: Pond area, water body, dyke area and cultivable dyke area of shrimp enclosures in Gopalganj, Bagerhat and Khulna districts

Item	District			Average
	Gopalganj	Bagerhat	Khulna	
1. Total pond area (Decimals)	100.23	90.73	87.67	92.88
2. Water body				
(a) Total area (Decimals)	74.76	65.99	63.47	68.07
(b) % of total pond area (Decimals)	74.59	72.73	72.40	73.24
3. Dyke area				
(a) Total dyke area (Decimals)	25.46	24.73	24.19	24.79
(b) % of total pond area	25.40	27.26	27.59	26.75
(c) % of total water body area	34.05	37.48	38.11	36.55
4. Cultivable dyke area				
(a) Total cultivable dyke area (Decimals)	11.83	12.46	11.22	11.84
(b) % of total pond area	11.80	13.73	12.80	12.78
(c) % of total dyke area	46.47	50.39	46.38	47.75

II. Cost and return of vegetable crops

Summary on cost and return analysis on eleven vegetable crops are presented in Tables.3-13 and brief findings are provided below:

1. Early winter tomato

Table 3 presents the summary cost and return of early winter tomato (F_1) production during 2015-16, winter season in Khulna, Bagerhat and Gopalganj districts. Average about 38.05 t/ha fresh tomatoes yield was observed for early winter tomato production in three districts, of which the highest yield was observed in Gopalganj district (41.46 t/ha) followed by Bagerhat district (36.97 t/ha) and Khulna district (35.72 t/ha). The average gross-return was calculated Tk. 654,660/ha counter to the average total cost of Tk. 333,949/ha and Tk.190,168/ha on full cost basis and cash cost basis, respectively, for early winter tomatoes production in southern region of the country. The average net-return was calculated Tk. 320,711/ha and Tk.464,492/ha on full cost basis and cash cost basis, respectively, for early winter tomatoes production. Thus, about 45% higher net-return was calculated for cash cost basis (Tk.464,492/ha) than full cost basis (Tk.370,711/ha), for early winter tomatoes production. The higher cost-benefit ratio was calculated on cash cost basis (1:3.46) than full cost basis (1:1.97). The average per kg production cost of fresh tomatoes was found higher for full cost basis (Tk.8.79/kg) than cash cost basis (Tk.5.00/kg). Average about Tk.17.29/kg sale price was observed for early winter tomatoes in three districts, of which the highest sale price was determined in Bagerhat district (Tk.18.00/kg) followed by Khulna district (Tk.17.29/kg) and Gopalganj district (Tk.16.58/kg).

Table.3: Summary cost and return analysis of early winter tomato (F_1) production during 2015-16 winter season in Khulna, Bagerhat and Gopalganj districts

Item	Cost-return (Tk./ha)			Average
	Khulna	Bagerhat	Gopalganj	
A. Total cost				
(a) Full cost basis	330,526	312,366	358,954	333,949
(b) Cash cost basis	184,892	179,489	206,123	190,168
B. Gross and Net Return				
Gross return (Tk./ha)	616,584	660,979	686,417	654,660
Net-return (Tk./ha)				
(a) Full cost basis	286,058	348,613	327,463	320,711
(b) Cash cost basis	431,692	481,490	480,293	464,492
C. Cost Benefit Ratio				
(a) Full cost basis	1.86	2.13	1.92	1.97
(b) Cash cost basis	3.34	3.69	3.34	3.46
D. Yield, cost & sale price				
(a) Yield (Kg/ha)	35,722	36,968	41,463	38,051
(b) Production Cost (Tk./kg)				
(i) Full cost basis	9.25	8.45	8.66	8.79
(ii) Cash cost basis	5.18	4.86	4.97	5.00
(c) Tomato sale price (Tk./kg)	17.29	18.00	16.58	17.29

2. Cucumber

Table 4 provides the summary cost and return of hybrid cucumber production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts. Average about 26.64 t/ha cucumber yield was observed for cucumber production in three districts, of which the highest cucumber yield was observed in Khulna district (35.65 t/ha) followed by Bagerhat district (22.33 t/ha) and Gopalganj district (21.93 t/ha). The average gross-return was calculated Tk. 413,937/ha in contrast to the average total cost of Tk.261,042/ha and Tk.158,059/ha on full cost basis and cash cost basis, respectively, for cucumber production. The average net-return was calculated Tk. 152,895/ha and Tk.255,878/ha on full cost and cash cost basis, respectively, for cucumber production. Thus, about 67% higher net-return was calculated for cash cost basis (Tk.255,878/ha) than full cost basis (Tk.152,898/ha) for cucumber production. The highest cost-benefit ratio was calculated on cash cost basis (1:2.89) than full cost basis (1:1.78). The average per kg cucumber production cost was found higher for full cost basis (Tk.10.19/kg) than cash cost basis (Tk.6.14/kg). Average about Tk.15.64/kg sale price was observed for cucumber in three districts, of which the highest sale price was observed in Khulna district (Tk.16.06/kg) followed by Bagerhat district (Tk15.67/kg) and Gopalganj district (Tk.15.20/kg).

Table.4: Summary cost and return analysis of hybrid Cucumber production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

Item	Cost-return (Tk./ha)			Average
	Khulna	Bagerhat	Gopalganj	
A. Total cost				
(a) Full cost basis	281,094	264,604	237,427	261,042
(b) Cash cost basis	174,450	156,100	143,627	158,059
B. Gross and Net Return				
Gross return (Tk./ha)	560,526	348,328	332,956	413,937
Net-return (Tk./ha)				
(a) Full cost basis	279,432	83,725	95,529	152,895
(b) Cash cost basis	386,077	192,228	189,329	255,878
C. Cost Benefit Ratio				
(a) Full cost basis	2.02	1.32	2.02	1.78
(b) Cash cost basis	3.23	2.23	3.23	2.89
D. Yield, cost & sale price				
(a) Yield (Kg/ha)	35,653	22,333	21,930	26,639
(b) Production Cost (Tk./kg)				
(i) Full cost basis	7.88	11.85	10.83	10.19
(ii) Cash cost basis	4.89	6.99	6.55	6.14
(c) Cucumber sale price (Tk./kg)	16.06	15.67	15.20	15.64

3. Bitter gourd

Table 5 presents the summary cost and return of hybrid Bitter gourd production during 2015 summer season in Khulna and Bagerhat districts. Average about 15.33 t/ha Bitter gourd yield was observed for Bitter gourd production in two districts, of which the higher Bitter gourd yield was observed in Begerhat district (15.83 t/ha) than Khulna district (14.84 t/ha). The average gross-return was calculated Tk. 351,415/ha against to average total cost of Tk.255,738/ha and Tk.155,754/ha on full cost and cash cost basis, respectively, for Bitter gourd production. The average net-return was calculated Tk.95,680/ha and Tk.195,664/ha on full cost and cash cost basis, respectively, for Bitter gourd production. Thus, about 105% higher net-return was calculated for cash cost basis (Tk.195,664/ha) than full cost basis (Tk.95,680/ha), for Bitter gourd production. The highest cost-benefit ratio was calculated on cash cost basis (1:2.24) than full cost basis (1:1.36). The average per kg Bitter gourd production cost was found higher for full cost basis (Tk.16.72/kg) than cash cost basis (Tk.10.18/kg). Average about Tk.23.17/kg sale price was observed for Bitter gourd in two districts, of which the higher sale price was observed in Khulna district (Tk.25.00/kg) than Bagerhat district (Tk.21.33/kg).

Table.5: Summary cost and return analysis of hybrid Bitter gourd production during 2015 summer season in Khulna and Bagerhat districts

Item	Cost-return (Tk./ha)		Average
	Khulna	Bagerhat	
A. Total cost			
(a) Full cost basis	267,432	244,045	255,738
(b) Cash cost basis	158,452	153,056	155,754
B. Gross and Net Return			
Gross return (Tk./ha)	370,126	332,710	351,418
Net-return (Tk./ha)			
(a) Full cost basis	102,694	88,665	95,680
(b) Cash cost basis	211,674	179,654	195,664
C. Cost Benefit Ratio			
(a) Full cost basis	1.37	1.35	1.36
(b) Cash cost basis	2.31	2.16	2.24
D. Yield, cost & sale price			
(a) Yield (kg/ha)	14,835	15,825	15,330
(b) Cost (Tk./kg)			
(i) Full cost basis	18.03	15.42	16.72
(ii) Cash cost basis	10.68	9.67	10.18
(c) Bitter gourd sale price (Tk./kg)	25.00	21.33	23.17

4. Bottle gourd

Table 6 provides the summary cost and return of hybrid Bottle gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts. Average about 14,092 Bottle gourd fruits per hectare was produced in three districts, of which the highest number of fruits per

hectare was produced in Khulna district (16,589 fruits/ha) followed by Gopalganj district (13,896 fruits/ha) and Bagerhat district (11,792 fruits/ha). The average gross-return was calculated Tk.340,754/ha in contrast to average total cost of Tk.253,150/ha and Tk.164,261/ha on full cost and cash cost basis, respectively for Bottle gourd production. The average net-return was calculated Tk.87,605/ha and Tk.176,493/ha on full cost and cash cost basis, respectively, for Bottle gourd production. Thus, about 102% higher net-return was calculated for cash cost basis (Tk.176,493/ha) than full cost basis (Tk.87,605/ha), for Bottle gourd production. The highest cost-benefit ratio was calculated on cash cost basis (1:2.08) than full cost basis (1:1.35). The average per fruit Bottle gourd production cost was found higher for full cost basis (Tk.18.10/fruit) than cash cost basis (Tk.11.76/fruit). Average about Tk.24.23/fruit sale price was observed for Bottle gourd production in three districts, of which the highest sale price of Bottle gourd was observed in Gopalganj district (Tk.28.57/fruit) followed by Bagerhat district (Tk.22.75/fruit) and Khulna district (Tk.21.71/fruit).

Table.6: Summary cost and return analysis of hybrid Bottle gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

Item	Cost-return (Tk./ha)			Average
	Khulna	Bagerhat	Gopalganj	
A. Total cost				
(a) Full cost basis	261,539	210,554	287,355	253,150
(b) Cash cost basis	167,739	138,161	186,883	164,261
B. Gross and Net Return				
Gross return (Tk./ha)	359,310	268,715	394,238	340,754
Net-return (Tk./ha)				
(a) Full cost basis	97,771	58,161	106,882	87,605
(b) Cash cost basis	191,571	130,555	207,355	176,493
C. Cost Benefit Ratio				
(a) Full cost basis	1.38	1.28	1.38	1.35
(b) Cash cost basis	2.16	1.95	2.12	2.08
D. Yield, cost & sale price				
(a) Yield (Fruit/ha)	16,589	11,792	13,896	14,092
(b) Production cost (Tk./fruit)				
(i) Full cost basis	15.77	17.86	20.68	18.10
(ii) Cash cost basis	10.11	11.72	13.45	11.76
(c) Bottle gourd sale price (Tk./fruit)	21.71	22.75	28.57	24.35

5. Ash gourd

Table 7 provides the summary cost and return of hybrid Ash gourd production during 2015 summer season in Khulna and Bagerhat districts. Average about 15,344 Ash gourd fruits per hectare was produced in two districts, of which the higher number of fruits per hectare was produced in Khulna district (16,388 fruits/ha) than Bagerhat district (14,300 fruits/ha). The

average gross-return was calculated Tk.306,255/ha counter to the average total cost of Tk.238,308/ha and Tk. 154,725/ha on full cost and cash cost basis, respectively, for Ash gourd production. The average net-return was calculated Tk.67,947/ha and Tk.151,530/ha on full cost and cash cost basis, respectively, for Ash gourd production. Thus, about 123% higher net-return was calculated for cash cost basis (Tk.151,530/ha) than full cost basis (Tk.67,947/ha), for Ash gourd production. The higher cost-benefit ratio was calculated on cash cost basis (1:1.98) than full cost basis (1:1.29). The average per fruit Ash gourd production cost was found higher for full cost basis (Tk.15.52/fruit) than cash cost basis (Tk.10.09/fruit). Average about Tk.20.00/fruit sale price was observed for Ash gourd in Khulna and Bagerhat districts.

Table.7: Summary cost and return analysis of hybrid Ash gourd production during 2015 summer season in Khulna and Bagerhat districts

Item	Cost-return (Tk./ha)		Average
	Khulna	Bagerhat	
A. Total cost			
(a) Full cost basis	257,503	219,113	238,308
(b) Cash cost basis	163,119	146,331	154,725
B. Gross and Net Return			
Gross return (Tk./ha)	327,088	285,422	306,255
Net-return (Tk./ha)			
(a) Full cost basis	69,585	66,309	67,947
(b) Cash cost basis	163,969	139,091	151,530
C. Cost Benefit Ratio			
(a) Full cost basis	1.27	1.30	1.29
(b) Cash cost basis	2.01	1.95	1.98
D. Yield, cost & sale price			
(a) Yield (Fruits/ha)	16,388	14,300	15,344
(b) Production Cost (Tk./fruit)			
(i) Full cost basis	15.71	15.32	15.52
(ii) Cash cost basis	9.95	10.23	10.09
(c) Ash gourd sale price (Tk./fruit)	20.00	20.00	20.00

6. Snake gourd

Table 8 presents the summary cost and return of hybrid Snake gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts. Average about 26.44 t/ha Snake gourd yield was observed for snake gourd production in three districts, of which the highest Snake gourd yield was observed in Khulna district (32.70 t/ha) followed by Bagerhat district (28.13 t/ha) and Gopalganj district (18.50 t/ha). The average gross-return was calculated Tk.356,616/ha counter to the average total cost of Tk.249,887/ha and Tk.157,579/ha on full cost and cash cost basis, respectively, for Snake gourd production. The average net-return was calculated Tk.106,728/ha and Tk.199,037/ha on full cost and cash cost basis, respectively, for Snake gourd production. Thus, about 87% higher net-return was calculated for cash cost basis (Tk.199,037/ha) than full cost basis (Tk.106,728/ha), for Snake gourd production. The higher

cost-benefit ratio was calculated on cash cost basis (1:2.24) than full cost basis (1:1.42). The average per kg Snake gourd production cost was found higher for full cost basis (Tk.9.75/kg) than cash cost basis (Tk.6.19/kg). Average about Tk.13.89/kg sale price was observed for Snake gourd in three districts, of which the highest sale price was observed in Gopalganj district (Tk.15.67/kg) followed by Khulna district (Tk.13.50/kg) and Bagerhat district (Tk.12.50/kg).

Table.8: Summary cost and return analysis of hybrid Snake gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

Item	Cost-return (Tk./ha)			Average
	Khulna	Bagerhat	Gopalganj	
A. Total cost				
(a) Full cost basis	284,008	249,757	215,896	249,887
(b) Cash cost basis	171,915	158,876	141,946	157,579
B. Gross and Net Return				
Gross return (Tk./ha)	440,558	350,852	278,436	356,616
Net-return (Tk./ha)				
(a) Full cost basis	156,550	101,095	62,540	106,728
(b) Cash cost basis	268,643	191,976	136,491	199,037
C. Cost Benefit Ratio				
(a) Full cost basis	1.55	1.40	1.29	1.42
(b) Cash cost basis	2.56	2.21	1.96	2.24
D. Yield, cost & sale price				
(a) Yield (Kg/ha)	32,700	28,125	18,500	26,442
(b) Cost (Tk./kg)				
(i) Full cost basis	8.69	8.88	11.67	9.75
(ii) Cash cost basis	5.26	5.65	7.67	6.19
(c) Snake gourd sale price (Tk./kg)	13.50	12.50	15.67	13.89

7. Sweet gourd

Table 9 presents the summary cost and return of hybrid Sweet gourd production during 2015 summer season in Khulna, Begerhat and Gopalganj districts. Average about 15.06 t/ha Sweet gourd yield was observed for Sweet gourd production in three districts, of which the highest Sweet gourd yield was observed in Khulna district (17.25 t/ha) followed by Gopalganj district (15.23 t/ha) and Begerhat district (12.70 t/ha). The average gross return was calculated Tk.247,971/ha counter to the average total cost of Tk. 182,518/ha and Tk.126,633/ha on full cost and cash cost basis, respectively, for Sweet gourd production. The average net-return was calculated Tk.65,453/ha and Tk. 121,338/ha on full cost and cash cost basis, respectively, for Sweet gourd production. Thus, about 85% higher net-return was calculated for cash cost basis (Tk.121,338/ha) than full cost basis (Tk.65,453/ha) for Sweet gourd production. The higher cost-benefit ratio was calculated on cash cost basis (1:1.97) than full cost basis (1:1.36). The average per kg Sweet gourd production cost was found higher for full cost basis (Tk.12.23/kg)

than cash cost basis (Tk.8.47/kg). Average about Tk.16.75/kg sale price was observed for Sweet gourd in three districts, of which the highest sale price was observed in Bagerhat district (Tk.19.50/kg) followed by Gopalganj district (Tk.15.75/kg) and Khulna district (Tk.15.00/kg).

Table.9: Summary cost and return analysis of hybrid Sweet gourd production during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

Item	Cost-return (Tk./ha)			Average
	Khulna	Bagerhat	Gopalganj	
A. Total cost				
(a) Full cost basis	200,911	174,124	172,518	182,518
(b) Cash cost basis	141,751	119,148	119,002	126,633
B. Gross and Net Return				
Gross return (Tk./ha)	258,227	246,364	239,322	247,971
Net-return (Tk./ha)				
(a) Full cost basis	57,316	72,240	66,804	65,453
(b) Cash cost basis	116,476	127,216	120,321	121,338
C. Cost- Benefit Ratio				
(a) Full cost basis	1.29	1.42	1.39	1.36
(b) Cash cost basis	1.82	2.07	2.01	1.97
D. Yield, cost & sale price				
(a) Yield (Kg/ha)	17,250	12,703	15,233	15,062
(b) Cost (Tk./kg)				
(i) Full cost basis	11.65	13.71	11.33	12.23
(ii) Cash cost basis	8.22	9.38	7.81	8.47
(c) Sweet gourd sale price (Tk./kg)	15.00	19.50	15.75	16.75

8. Country Bean

Table 10 provides the summary cost and return of Country Bean production during 2015-16 winter season in Khulna district. Average about 24.64 t/ha Country Bean yield was observed in Khulna district. The average gross return was calculated Tk.576,271/ha in contrast to the average total cost of Tk.434,975/ha and Tk.309,519/ha on full cost and cash cost basis, respectively, for Country Bean production. The average net-return was calculated Tk.141,296/ha and Tk.266,752/ha on full cost and cash cost basis, respectively, for Country Bean production. Thus, about 89% higher net-return was calculated for cash cost basis (Tk.2,66,752/ha) than full cost basis (Tk.141,296/ha) for Country Bean production. The higher cost benefit ratio was calculated on cash cost basis (1:1.87) than full cost basis (1:1.32). The average per kg Country Bean production cost was found higher for full cost basis (Tk.17.65/kg) than cash cost basis (Tk.12.56/kg). Average about Tk.23.56/kg sale price of Country Bean was observed in Khulna district.

Table.10: Summary cost and return analysis of Country Bean production during 2015-16 winter season in Khulna district

Item	Cost-return (Tk./ha)
A. Total cost	
(a) Full cost basis	434,975
(b) Cash cost basis	309,519
B. Gross and Net Return	
Gross return (Tk./ha)	576,271
Net-return (Tk./ha)	
(a) Full cost basis	141,296
(b) Cash cost basis	266,752
C. Cost Benefit Ratio	
(a) Full cost basis	1.32
(b) Cash cost basis	1.87
D. Yield, cost & sale price	
(a) Yield (Kg/ha)	24,642
(b) Cost (Tk./kg)	
(i) Full cost basis	17.65
(ii) Cash cost basis	12.56
(c) Country Bean sale price (Tk./kg)	23.56

9. Cauliflower

Table 11 presents the summary cost and return analysis of hybrid Cauliflower production during 2015-16 winter season in Bagerhat district. Average about 39.60 t/ha Cauliflower yield was observed in Bagerhat district. The average gross-return was calculated Tk.355,680/ha in contrast to average total cost of Tk.297,825/ha and Tk.202,468/ha on full cost and cash cost basis, respectively, for Cauliflower production. The average net-return was calculated Tk.57,855/ha and Tk.153,212/ha on full cost and cash cost basis, respectively, for Cauliflower production. Thus, about 165% higher net-return was calculated for cash cost basis (Tk.153,212/ha) than full cost basis (Tk.57,855/ha) for Cauliflower production. The higher cost-benefit ratio was calculated on cash cost basis (1:1.76) than full cost basis (1:1.19). The average per kg Cauliflower production cost was found higher for full cost basis (Tk.7.52/ha) than cash cost basis (Tk.5.11/kg). Average about Tk.9.00/kg sale price of Cauliflower was observed in Bagerhat district.

Table.11: Summary cost and return analysis of hybrid Cauliflower production during 2015-16 winter season in Bagerhat district

Item	Cost-return (Tk./ha)
A. Total cost	
(a) Full cost basis	297,825
(b) Cash cost basis	202,468
B. Gross and Net Return	
Gross return (Tk./ha)	355,680
Net-return (Tk./ha)	
(a) Full cost basis	57,855
(b) Cash cost basis	153,212
C. Cost-Benefit Ratio	
(a) Full cost basis	1.19
(b) Cash cost basis	1.76
D. Yield, cost & sale price	
(a) Yield (Kg/ha)	39,600
(b) Cost (Tk./kg)	
(i) Full cost basis	7.52
(ii) Cash cost basis	5.11
(c) Cauliflower sale price (Tk./kg)	9.00

10. String Bean

Table 12 provides the summary cost and return analysis of String Bean production during 2015 summer season in Bagerhat district. Average about 14.29 t/ha String Bean yield was observed in Bagerhat district. The average gross-return was calculated Tk.324,824/ha in counter to the average total cost of Tk.225,149/ha and Tk.148,767/ha on full cost and cash cost basis, respectively, for String Bean production. The average net-return was calculated Tk.99,674/ha and Tk.176,057/ha on full cost and cash cost basis, respectively, for String Bean production. Thus, about 77% higher net-return was calculated for cash cost basis (Tk.176,057/ha) than full cost basis (Tk.99,674/ha) for String Bean production. The higher cost-benefit ratio was calculated on cash cost basis (1:2.18) than full cost basis (1:1.44). The average per kg String Bean production cost was found higher for full cost basis (Tk.15.76/kg) than cash cost basis (Tk.10.41/kg). Average about Tk.22.88/kg sale price of String Bean was found in Bagerhat district.

Table.12: Summary cost and return analysis of String Bean production during 2015 summer season in Bagerhat district

Item	Cost-return (Tk./ha)
A. Total cost	
(a) Full cost basis	225,149
(b) Cash cost basis	148,767
B. Gross and Net Return	
Gross return (Tk./ha)	324,824
Net-return (Tk./ha)	
(a) Full cost basis	99,674
(b) Cash cost basis	176,057
C. Cost Benefit Ratio	
(a) Full cost basis	1.44
(b) Cash cost basis	2.18
D. Yield, cost & sale price	
(a) Yield (Kg/ha)	14,288
(b) Cost (Tk./kg)	
(i) Full cost basis	15.76
(ii) Cash cost basis	10.41
(c) String Bean sale price (Tk./kg)	22.88

11. Ridge gourd

Table 13 presents the summary cost and return analysis of Ridge gourd production during 2015 summer season in Bagerhat district. Average about 16.50 t/ha Ridge gourd yield was observed in Bagerhat district. The average gross-return was calculated Tk.292,508/ha in counter to the average total cost of Tk.208,579/ha and Tk.139,494/ha on full cost and cash cost basis, respectively, for Ridge gourd production. The average net-return was calculated Tk.83,929/ha and Tk.153,014/ha on full cost and cash cost basis, respectively, for Ridge gourd production. Thus, about 82% higher net-return was calculated for cash cost basis (Tk.153,014/ha) than full cost basis (Tk.83,929/ha) for Ridge gourd production. The higher cost-benefit ratio was calculated on cash cost basis (1:2.09) than full cost basis (1:1.40). The average per kg Ridge gourd production cost was found higher for full cost basis (Tk.12.64/kg) than cash cost basis (Tk.8.45/kg). Average about Tk.17.75/kg sale price of Ridge gourd was found in Bagerhat district

Table.13: Summary cost and return analysis of Ridge gourd production during 2015 summer season in Bagerhat district

Item	Cost-return (Tk./ha)
A. Total cost	
(a) Full cost basis	208,579
(b) Cash cost basis	139,494
B. Gross and Net Return	
Gross return (Tk./ha)	292,508
Net-return (Tk./ha)	
(a) Full cost basis	83,929
(b) Cash cost basis	153,014
C. Cost Benefit Ratio	
(a) Full cost basis	1.40
(b) Cash cost basis	2.09
D. Yield, cost & sale price	
(a) Yield (Kg/ha)	16,500
(b) Cost (Tk./kg)	
(i) Full cost basis	12.64
(ii) Cash cost basis	8.45
(c) Ridged gourd sale price (Tk./kg)	17.75

III. Crop Ranking

Crop ranking was accomplished based on the net-returns (full cost and cash cost basis) and gross-return for the involved eleven dyke crops for 2015 summer and 2015-16 winter seasons (Table.14). In case of full cost basis of the net-return for the eleven crops, the highest net-return was observed for early winter tomato (Tk.320,711/ha) as rank 1 followed by Cucumber (Tk.152,895/ha) as rank 2, Country Bean (Tk.141,296/ha) as rank 3, Snake gourd (Tk.106,728/ha) as rank 4, String bean (Tk.99,674/ha) as rank 5, Bitter gourd (Tk.95,680/ha) as ranked 6, Bottle gourd (Tk.87,605/ha) as rank 7, Ridge gourd (Tk.83,929/ha) as rank 8, Ash gourd (Tk.67,947/ha) as rank 9, Sweet gourd (Tk.65,453/ha) as rank 10 and Cauliflower (Tk.57,855/ha) as rank 11. In case of cash cost basis of the net-return for the eleven crops, the highest net-return was observed for early winter tomato (Tk.464,492/ha) as rank 1, followed by Country bean (Tk.266,752/ha) as rank 2 Cucumber (Tk.255,878/ha) as rank 3, Snake gourd (Tk.1,99,037/ha) as rank 4, Bitter gourd (Tk.195,664/ha) as rank 5, Bottle gourd (Tk.176,493/ha) as rank 6, String bean (Tk.176,057/ha) as rank 7, Cauliflower (Tk.153,212/ha)

as rank 8, Ridge gourd (Tk.153,014/ha) as rank 9, Ash gourd (Tk.151,530/ha) as rank 10 and Sweet gourd (Tk.121,338/ha) as rank 11.

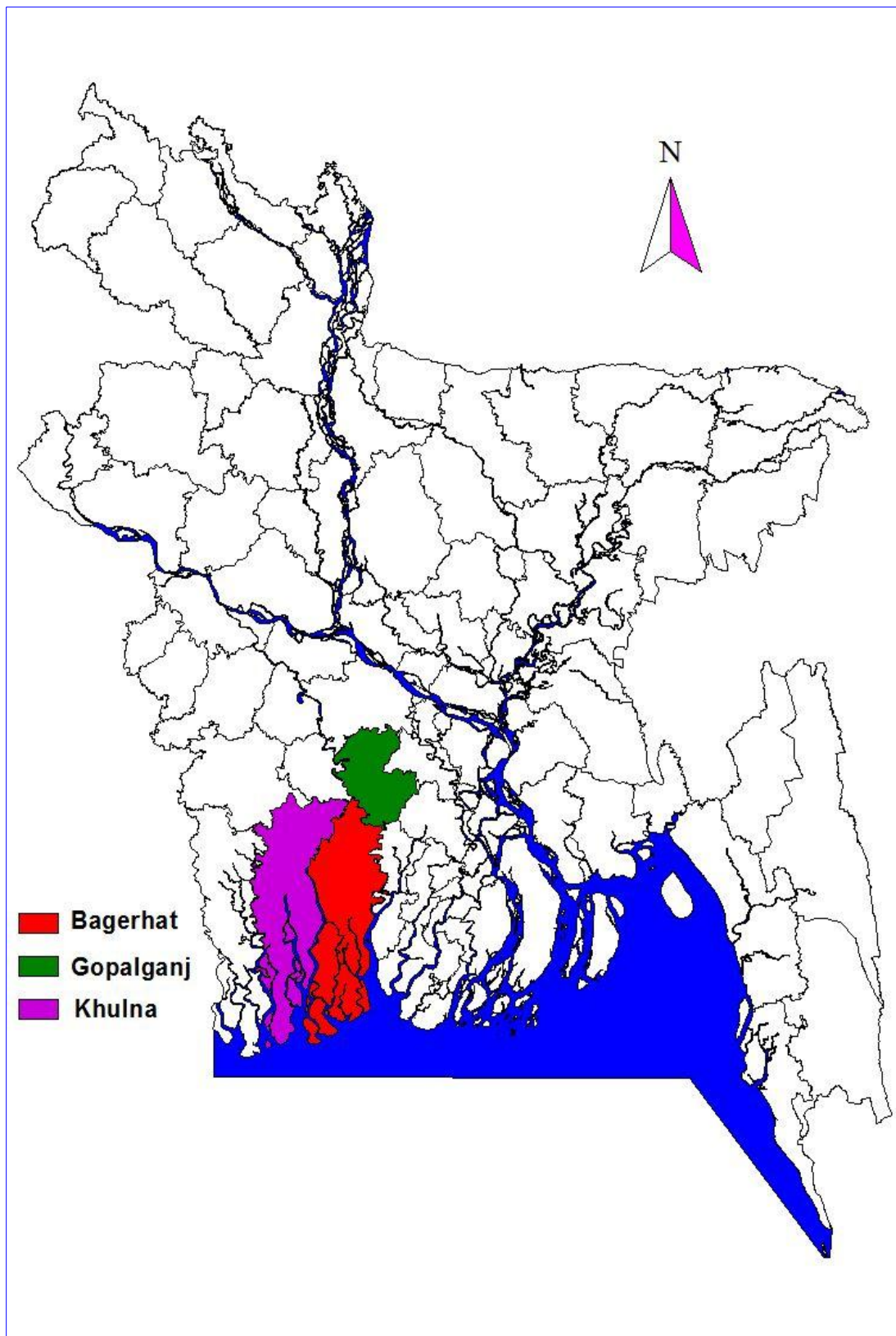
Among the involved eleven crops, the highest gross-return was observed for early winter tomato (Tk.654,660/ha) as rank 1 followed by Country Bean (Tk.576,271/ha) as rank 2, Cucumber (Tk.413,937/ha) as rank 3, Snake gourd (Tk.356,616/ha) as rank 4, Cauliflower (Tk.355,680/ha) as rank 5, Bitter gourd (Tk.351,418/ha) as rank 6, Bottle gourd (Tk.340,754) as rank 7, String Bean (Tk.324,824/ha) as rank 8, Ash gourd (Tk.306,255/ha) as rank 9, Ridge gourd (Tk.292,508/ha) as rank 10 and Sweet gourd (Tk.247,971/ha) as rank 11.

In this ranking, top four crops were determined as very high value cash crops and they are Tomato, Cucumber, Country Bean and Snake gourd on the ground of net-return under full cost and cash cost basis and gross-return in Gopalganj, Bagerhat and Khulna districts during 2015 summer season and 2015-16 winter season.

Table.14: Comparative ranking of 11 dyke crops based on net-return, under full cost and cash cost basis and gross-return during 2015 summer and 2015-16 winter seasons

Crop	Net-return on full cost basis (Tk./ha)	Rank	Net-return on cash cost basis (Tk./ha)	Rank	Gross return (Tk./ha)	Rank
Tomato	320,711	1	464,492	1	654,660	1
Cucumber	152,895	2	255,878	3	413,937	3
Bitter gourd	95,680	6	195,664	5	351,418	6
Bottle gourd	87,605	7	176,493	6	340,754	7
Ash gourd	67,947	9	151,530	10	306,255	9
Snake gourd	106,728	4	199,037	4	356,616	4
Sweet gourd	65,453	10	121,338	11	247,971	11
Country Bean	141,296	3	266,752	2	576,271	2
Cauliflower	57,855	11	153,212	8	355,680	5
String Bean	99,674	5	176,057	7	324,824	8
Ridge gourd	83,929	8	153,014	9	292,508	10

Figure.1 Location map of Gopalganj, Bagerhat and Khulna districts



Annex.1: Pond area, water body area, dyke area and cultivable dyke area of shrimp enclosures of nine fish farmers in Gopalganj, Bagerhat and Khulna districts

Farmer	Total pond area (Decimals)	Water body area		Dyke area			Cultivable dyke area		
		Total area (Decimals)	% of total pond area	Total area (Decimals)	% of total pond area	% of total water body area	Total area (Decimals)	% of total pond area	% of total dyke area
Bhoboti Banik (Gopalganj)	100.21	74.97	74.81	25.24	25.19	33.67	11.33	11.31	44.89
Soresh Mondal (Gopalganj)	162.22	124.44	76.71	33.77	20.82	27.14	17.38	10.71	51.47
Suresh Mondal (Gopalganj)	38.27	24.88	65.01	13.38	34.96	53.78	6.79	17.74	50.75
Gopalganj	100.23	74.76	72.18	24.13	26.99	38.20	11.83	13.25	49.04
Mizanur Rahman (Khulna)	61.23	43.95	71.78	17.28	28.22	39.32	7.73	12.63	44.73
Sheikh Altaf Hossain (Khulna)	51.85	33.08	63.8	18.76	36.18	56.71	9.85	19	52.51
Hasan Sheikh (Khulna)	149.92	113.38	75.63	36.54	24.37	32.23	16.08	10.73	44.01
Khulna	87.67	63.47	70.40	24.19	29.59	42.75	11.22	14.12	47.08
Mongshopoti (Bagerhat)	44.53	29.25	65.69	15.27	34.29	52.21	8.03	18.03	52.59
Subodh Biswas (Bagerhat)	98.03	71.55	72.99	26.48	27.01	37.01	14.94	15.24	56.42
Ranjan Kumar Hira (Bagerhat)	129.62	97.18	74.97	32.44	25.03	33.38	14.42	11.13	44.45
Bagerhat	90.73	65.99	71.22	24.73	28.78	40.87	12.46	14.80	51.15
Average	92.88	68.08	71.27	24.35	28.45	40.61	11.84	14.06	49.09
Range	38.27- 162.22	24.88- 124.44	63.80- 76.71	13.38- 36.54	20.82- 36.18	27.14- 56.71	6.79- 17.38	10.71- 19.00	44.01- 56.42

Annex.2: Summary cost and return analysis of early winter Tomato (F₁) during 2015-16 winter season in Khulna, Bagerhat and Gopalganj districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	16,257.29
2	Labor	121,993.25
3	Seed	11,460.26
4	Fertilizer	38,159.63
5	Crop Protection	20,934.58
6	Irrigation	17,994.46
7	Land rent	30,947.16
8	Transportation	21,714.23
9	Bamboo Stick	41,643.64
10	Rope	9,645.18
11	Wire	9,552.23
12	Interest on working capital	
	a) Full cost basis	12,844.18
	b) Cash cost basis	7,314.16
	Total Cost (A)	
	a) Full cost basis	333,948.67
	b) Cash cost basis	190,168.11
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	654,660.14
	b) By-product	
	Total Gross return (Tk./ha)	654,660.14
	Net return (Tk./ha)	
	a) Full cost basis	320,711.48
	b) Cash cost basis	464,492.03
C. Cost Benefit Ratio		
	a) Full cost basis	1.97
	b) Cash cost basis	3.46
D. Yield, cost & price		
	(a) Yield (Kg/ha)	38,050.69
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	8.79
	(ii) Cash cost basis	5.00
	(c) Tomato Sale Price (Tk/kg)	17.29

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo Stick, (10) Rope, (11) Wire and (12) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo Stick, (9) Rope, (10) Wire and (11) Interest on working capital

Annex.3: Summary cost and return analysis of hybrid Cucumber during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	13,380.03
2	Labor	85,641.74
3	Seed	15,528.98
4	Fertilizer	26,871.47
5	Crop Protection	12,094.09
6	Irrigation	7,096.40
7	Land rent	28,440.69
8	Transportation	14,180.22
9	Platform (Macha)	47,767.89
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	10,040.06
	b) Cash cost basis	6,079.19
	Total Cost (A)	
	a) Full cost basis	261,041.58
	b) Cash cost basis	158,058.93
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	413,936.83
	b) By-product	0.00
	Total Gross return (Tk./ha)	413,936.83
	Net return (Tk./ha)	
	a) Full cost basis	152,895.25
	b) Cash cost basis	255,877.89
C. Cost Benefit Ratio		
	a) Full cost basis	1.58
	b) Cash cost basis	2.59
D. Yield, cost & price		
	(a) Yield (Kg/ha)	26,638.82
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	10.19
	(ii) Cash cost basis	6.14
	(c) Cucumber Sale Price (Tk/kg)	15.64

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.4: Summary cost and return analysis of hybrid Bitter gourd during 2015 summer season in Khulna and Bagerhat districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	14,969.70
2	Labor	81,169.02
3	Seed	12,928.00
4	Fertilizer	24,784.20
5	Crop Protection	14,574.66
6	Irrigation	6,416.18
7	Land rent	30,875.00
8	Transportation	10,548.23
9	Platform (Macha)	49,637.02
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	9,836.08
	b) Cash cost basis	5,990.53
Total Cost (A)		
	a) Full cost basis	255,738.09
	b) Cash cost basis	155,753.83
B. Gross and Net return:		
Gross return (Tk./ha)		
	a) Main product (Kg)	351,417.79
	b) By-product	0.00
Total Gross return (Tk./ha)		
		351,417.79
Net return (Tk./ha)		
	a) Full cost basis	95,679.70
	b) Cash cost basis	195,663.97
C. Cost Benefit Ratio		
	a) Full cost basis	1.36
	b) Cash cost basis	2.24
D. Yield, cost & price		
	(a) Yield (Kg/ha)	15,330.00
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	16.72
	(ii) Cash cost basis	10.18
	(c) Bitter gourd Sale Price (Tk/kg)	23.17

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.5: Summary cost and return analysis of hybrid Bottle gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	9,997.62
2	Labor	75,472.22
3	Seed	10,690.86
4	Fertilizer	23,178.53
5	Crop Protection	5,640.37
6	Irrigation	7,671.97
7	Land rent	29,182.00
8	Transportation	14,916.23
9	Platform (Macha)	66,663.27
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	9,736.52
	b) Cash cost basis	6,317.73
	Total Cost (A)	0.00
	a) Full cost basis	253,149.59
	b) Cash cost basis	164,260.95
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (No.)	340,754.41
	b) By-product	0.00
	Total Gross return (Tk./ha)	340,754.41
	Net return (Tk./ha)	
	a) Full cost basis	87,604.82
	b) Cash cost basis	176,493.46
C. Cost Benefit Ratio		
	a) Full cost basis	1.35
	b) Cash cost basis	2.08
D. Yield, cost & price		
	(a) Yield (Fruits/ha)	14,092.41
	(b) Production cost (Tk./Fruit)	
	(i) Full cost basis	18.10
	(ii) Cash cost basis	11.76
	(c) Bottle gourd Sale Price (Tk/fruit)	24.35

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.6: Summary cost and return analysis of hybrid Ash gourd during 2015 summer season in Khulna and Bagerhat districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	12,537.12
2	Labor	67,831.44
3	Seed	9,168.94
4	Fertilizer	24,743.66
5	Crop Protection	7,360.10
6	Irrigation	4,366.16
7	Land rent	29,939.39
8	Transportation	14,876.14
9	Platform (Macha)	58,319.44
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	9,165.70
	b) Cash cost basis	5,950.95
Total Cost (A)		
	a) Full cost basis	238,308.09
	b) Cash cost basis	154,724.79
B. Gross and Net return:		
Gross return (Tk./ha)		
	a) Main product (No)	306,255.05
	b) By-product	0.00
Total Gross return (Tk./ha)		
		306,255.05
Net return (Tk./ha)		
	a) Full cost basis	67,946.96
	b) Cash cost basis	151,530.26
C. Cost Benefit Ratio		
	a) Full cost basis	1.29
	b) Cash cost basis	1.98
D. Yield, cost & price		
	(a) Yield (Fruits/ha)	15,343.75
	(b) Production cost (Tk./Fruit)	
	(i) Full cost basis	15.52
	(ii) Cash cost basis	10.09
	(c) Ash gourd Sale Price (Tk/Fruit.)	20.00

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.7: Summary cost and return analysis of hybrid Snake gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	13,181.65
2	Labor	75,576.18
3	Seed	13,090.17
4	Fertilizer	26,261.42
5	Crop Protection	9,699.12
6	Irrigation	7,651.18
7	Land rent	28,691.92
8	Transportation	13,688.96
9	Platform (Macha)	52,435.52
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	9,611.04
	b) Cash cost basis	6,060.73
Total Cost (A)		
	a) Full cost basis	249,887.16
	b) Cash cost basis	157,579.01
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	356,615.61
	b) By-product	0.00
	Total Gross return (Tk./ha)	356,615.61
	Net return (Tk./ha)	
	a) Full cost basis	106,728.45
	b) Cash cost basis	199,036.59
C. Cost Benefit Ratio		
	a) Full cost basis	1.42
	b) Cash cost basis	2.24
D. Yield, cost & price		
	(a) Yield (Kg/ha)	26,441.67
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	9.75
	(ii) Cash cost basis	6.19
	(c) Snake gourd Sale Price (Tk/Kg)	13.89

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.8: Summary cost and return analysis of hybrid Sweet gourd during 2015 summer season in Khulna, Bagerhat and Gopalganj districts

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	8,233.33
2	Labor	45,501.64
3	Seed	7,516.04
4	Fertilizer	17,885.67
5	Crop Protection	2,625.93
6	Irrigation	3,617.68
7	Land rent	28,380.05
8	Transportation	7,659.49
9	Platform (Macha)	54,078.03
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	7,019.91
	b) Cash cost basis	4,870.52
	Total Cost (A)	
	a) Full cost basis	182,517.78
	b) Cash cost basis	126,633.41
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	247,971.16
	b) By-product	0.00
	Total Gross return (Tk./ha)	247,971.16
	Net return (Tk./ha)	
	a) Full cost basis	65,453.38
	b) Cash cost basis	121,337.75
C. Cost Benefit Ratio		
	a) Full cost basis	1.36
	b) Cash cost basis	1.97
D. Yield, cost & price		
	(a) Yield (Kg/ha)	15,061.88
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	12.23
	(ii) Cash cost basis	8.47
	(c) Sweet gourd Sale Price (Tk/kg.)	16.75

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.9: Summary cost and return analysis of Country Bean during 2015-16 winter season in Khulna district

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	10,437.21
2	Labor	110,193.60
3	Seed	3,534.51
4	Fertilizer	27,993.33
5	Crop Protection	104,372.05
6	Irrigation	18,712.12
7	Land rent	36,176.77
8	Transportation	30,313.64
9	Platform (Macha)	76,511.78
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	16,729.80
	b) Cash cost basis	11,904.57
	Total Cost (A)	
	a) Full cost basis	434,974.82
	b) Cash cost basis	309,518.78
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	576,270.96
	b) By-product	0.00
	Total Gross return (Tk./ha)	576,270.96
	Net return (Tk./ha)	
	a) Full cost basis	141,296.14
	b) Cash cost basis	266,752.18
C. Cost Benefit Ratio		
	a) Full cost basis	1.32
	b) Cash cost basis	1.87
D. Yield, cost & price		
	(a) Yield (Kg/ha)	24,641.67
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	17.65
	(ii) Cash cost basis	12.56
	(c) Country Bean Sale Price (Tk/kg)	23.56

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.10: Summary cost and return analysis of hybrid Cauliflower during 2015-16 winter season in Bagerhat district

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	18,712.12
2	Labor	72,977.27
3	Seed	41,166.67
4	Fertilizer	57,558.48
5	Crop Protection	22,454.55
6	Irrigation	37,424.24
7	Land rent	26,196.97
8	Transportation	9,880.00
9	Platform (Macha)	0.00
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	11,454.81
	b) Cash cost basis	7,787.24
	Total Cost (A)	
	a) Full cost basis	297,825.12
	b) Cash cost basis	202,468.15
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	355,680.00
	b) By-product	0.00
	Total Gross return (Tk./ha)	355,680.00
	Net return (Tk./ha)	
	a) Full cost basis	57,854.88
	b) Cash cost basis	153,211.85
C. Cost Benefit Ratio		
	a) Full cost basis	1.19
	b) Cash cost basis	1.76
D. Yield, cost & price		
	(a) Yield (Kg/ha)	39,600.00
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	7.52
	(ii) Cash cost basis	5.11
	(c) Cauliflower Sale Price (Tk/kg.)	9.00

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation and (9) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation and (8) Interest on working capital

Annex.11: Summary cost and return analysis of String Bean during 2015 summer season in Bagerhat district

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	15,905.30
2	Labor	57,539.77
3	Seed	11,414.39
4	Fertilizer	20,368.14
5	Crop Protection	29,565.15
6	Irrigation	6,362.12
7	Land rent	26,196.97
8	Transportation	9,842.58
9	Bamboo stick	28,295.45
10	Rope	5000.00
11	Wire	6000.00
12	Interest on working capital	
	a) Full cost basis	8,659.60
	b) Cash cost basis	5,721.79
	Total Cost (A)	
	a) Full cost basis	225,149.48
	b) Cash cost basis	148,766.60
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	324,823.71
	b) By-product	0.00
	Total Gross return (Tk./ha)	324,823.71
	Net return (Tk./ha)	
	a) Full cost basis	99,674.23
	b) Cash cost basis	176,057.11
C. Cost Benefit Ratio		
	a) Full cost basis	1.44
	b) Cash cost basis	2.18
D. Yield, cost & price		
	(a) Yield (Kg/ha)	14,287.50
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	15.76
	(ii) Cash cost basis	10.41
	(c) String Bean Sale Price (Tk/Kg)	22.88

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo Stick, (10) Rope, (11) Wire and (12) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo Stick, (9) Rope, (10) Wire and (11) Interest on working capital

Annex.12: Summary cost and return analysis of hybrid Ridge gourd during 2015 summer season in Bagerhat district

SL#	Item	Average Cost-return (Tk/ha)
A. Cost		
1	Land Preparation	13,098.48
2	Labor	53,329.55
3	Seed	9,356.06
4	Fertilizer	16,279.55
5	Crop Protection	11,227.27
6	Irrigation	5,613.64
7	Land rent	28,068.18
8	Transportation	9,318.64
9	Platform (Macha)	54,265.15
10	Rope	0.00
11	Wire	0.00
12	Interest on working capital	
	a) Full cost basis	8,022.26
	b) Cash cost basis	5,365.14
	Total Cost (A)	
	a) Full cost basis	208,578.78
	b) Cash cost basis	139,493.62
B. Gross and Net return:		
	Gross return (Tk./ha)	
	a) Main product (Kg)	292,507.88
	b) By-product	0.00
	Total Gross return (Tk./ha)	292,507.88
	Net return (Tk./ha)	
	a) Full cost basis	83,929.10
	b) Cash cost basis	153,014.25
C. Cost Benefit Ratio		
	a) Full cost basis	1.40
	b) Cash cost basis	2.09
D. Yield, cost & price		
	(a) Yield (Kg/ha)	16,500.00
	(b) Production cost (Tk./kg)	
	(i) Full cost basis	12.64
	(ii) Cash cost basis	8.45
	(c) Ridge gourd Sale Price (Tk/Kg)	17.75

Full cost includes: (1) Land preparation, (2) Labor (total labor valued at 100% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Land rent, (8) Transportation, (9) Bamboo made platform (Macha) and (10) Interest on working capital

Cash cost includes: (1) Land preparation, (2) Labor (total labor valued at 50% of the market wage rate), (3) Seed, (4) Fertilizer, (5) Pesticide, (6) Irrigation, (7) Transportation, (8) Bamboo made platform (Macha) and (9) Interest on working capital

Annex.13: Sowing duration, harvesting duration, cropping season and scientific name of the eleven crops during 2015 summer and 2015-16 winter seasons

SL #	Crop Name	Scientific Name	Sowing Duration	Harvesting Duration		Cropping Season
				Start	End	
1	Tomato	<i>Lycopersicum esculentum</i>	17/07/2015-20/08/2015	15/09/2015-15/11/2015	11/02/2016-10/03/2016	2015-16 Early Winter
2	Cucumber	<i>Cucumis sativus</i>	03/05/2015-31/05/2015-	30/07/2015-21/08/2015	25/09/2015-14/10/2015	2015 Summer
3	Bitter gourd	<i>Momordica charantia</i>	28/04/2015-20/05/2015	14/07/2015-10/08/2015	05/10/2015-25/10/2015	2015 Summer
4	Bottle gourd	<i>Lagenaria siceraria</i>	10/05/2015-16/08/2015-	15/07/2015-15/10/2015	20/09/2015-15/12/2015	2015 Summer
5	Ash gourd	<i>Benincasa hispida</i>	15/05/2015-24/06/2015	09/08/2015-28/08/2015	05/10/2015-30/10/2015	2015 Summer
6	Snake gourd	<i>Trichosanthes anguina</i>	15/04/2015-15/06/2015	20/06/2015-04/08/2015	22/08/2015-02/10/2015	2015 Summer
7	Sweet gourd	<i>Cucurbita moschata</i>	18/06/2015-13/08/2015	20/09/2015-01/11/2015	25/11/2015-10/01/2016	2015 Summer
8	Country Bean	<i>Dolichos Lablab</i>	08/07/2015-30/07/2015	20/10/2015-10/11/2015	30/02/2016-10/03/2016	2015-16 Winter
9	Cauliflower	<i>Brassica oleracea</i>	16/10/2015	29/12/2015	20/01/2016	2015-16 Winter
10	String Bean	<i>Vigna sesquipedalis</i>	10/06/2015-16/06/2015	25/07/2015-30/07/2015	05/09/2015-12/09/2015	2015 Summer
11	Ridge gourd	<i>Luffa acutangula</i>	01/07/2015-15/07/2015	20/08/2015-25/08/2015	25/10/2015-30/10/2015	2015 Summer