Strategic Cost Management for Profitability of Tea Plantations

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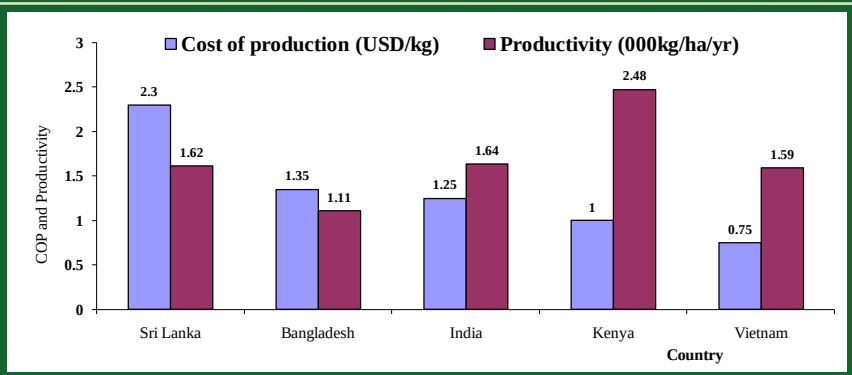
Introduction

- Tea occupies 5% of cultivated land area, absorbs 13 % of labour force & accounts for over 2.1% of GDP
- Tea industry remains a vital contributor to country's exports (16%) earnings of USD 1.3 billion.
- Success of an industry producing an internationally traded commodity lies in its competitiveness in terms of quality and cost.
- Average productivity & COP are the main determinants of competitiveness of a tea producing country compared to another.

Cost of Production & Productivity in Major Tea Producing Countries



Productivity in Sri Lanka is less than many other tea growing countries.

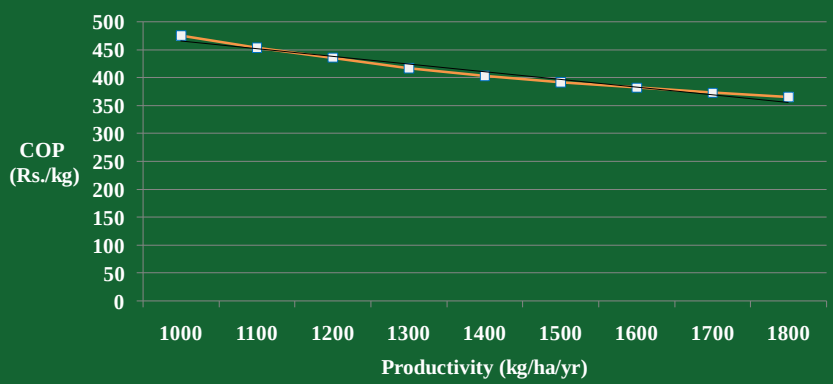
Highest COP in Sri Lanka compared other competitors.

Objectives

- To review past performance of tea estates
- To identify strategies required for improving profitability of tea estates

Past Performance of Tea Estates

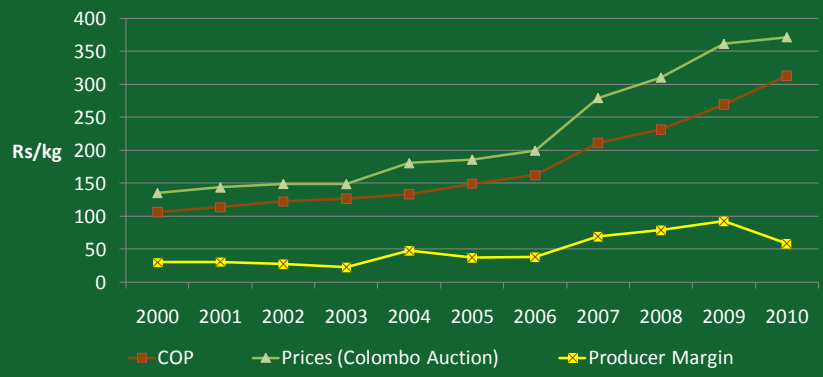
COP vs Average Productivity



There is a strong negative correlation between productivity and cost of production in tea sector.

Source: Plantation sector statistical pocket book, MPI

COP, Prices & Producer Margin



COP in Sri Lanka tea sector has increased dramatically over its competitors, making tea industry less profitable.

Producer margins will continue to shrink due to escalating costs.

Source: Plantation sector statistical pocket book, MPI

Efficiency Measures

1.Physical Efficiency Measures

a. Land Labour Ratio & Productivity

Year	Well Performed Estate				Poor Performed Estate			
	Productivity (kg/ha/yr)	Extent (ha)	Labour force	Land Labour Ratio	Productivity (kg/ha/yr)	Extent (ha)	Labour force	Land Labour Ratio
2000	2254	230.75	685	2.97	1269	244.88	785	3.21
2001	2261	234.00	664	2.84	1255	245.17	757	3.09
2002	2010	242.25	607	2.51	1288	228.17	730	3.20
2003	2145	248.50	549	2.21	1181	227.33	763	3.36
2004	1581	248.50	530	2.13	1242	226.83	727	3.21
2005	1868	229.00	522	2.28	1351	225.83	742	3.29
2006	2036	229.00	567	2.48	998	230.36	714	3.10
2007	2117	229.00	560	2.45	1151	235.16	729	3.10
2008	2228	229.00	546	2.38	1107	226.74	659	2.91
2009	2287	229.00	521	2.28	1189	227.33	645	2.84
2010	2386	228.00	516	2.26	1264	227.58	615	2.70
2011	2281	228.00	489	2.14	1311	227.58	615	2.70

Estates are facing a threat of the fast declining labour force & stagnate or declining productivity.

Land labour ratio has decreased mainly due to labour force declined.

b. Revenue Labour Output (RLO) & Total Productivity Index (TPI)

Revenue Labor Output (RLO)

$$\text{Revenue Labour Output (RLO)} = \frac{\text{Estate production}}{\text{Total Man days}}$$

Total Productivity Index (TPI)

$$\text{Equivalent labour units} = \frac{\text{Estate revenue expenditure}}{\text{Daily wage}}$$

$$\text{Total Revenue Output} = \frac{\text{Estate production}}{\text{Equivalent labour units}}$$

Total Productivity Index (TPI) = Total Revenue Output*NSA

TPI should exceed the wage cost for the unit to break even.

Revenue Labor Output (RLO) & Total Productivity Index (TPI)

Year	Wage rate (Rs./day)	Well Performed Estate		Poor Performed Estate	
		RLO	TPI	RLO	TPI
2000	136.00	3.41	175.95	2.24	159.91
2001	165.15	3.58	186.90	2.26	180.75
2002	165.15	3.98	201.34	2.23	170.93
2003	200.25	3.41	207.75	2.39	194.64
2004	200.25	2.94	205.82	2.16	215.01
2005	285.50	2.92	295.96	2.13	290.66
2006	285.50	4.03	323.59	2.19	296.46
2007	320.00	3.32	428.60	2.36	338.40
2008	320.00	3.44	504.43	2.14	387.64
2009	447.75	3.49	654.06	2.42	416.38
2010	447.75	3.46	713.68	2.32	571.19
2011	572.00	3.21	622.21	2.41	400.40

Revenue Labour Output (RLO) & Total Productivity Index (TPI) are relatively high in well performed estates.

2.Financial Efficiency Measures

Year	Well Performed Estate		Poor Performed Estate	
	B/C Ratio	Profit Margin (Rs./kg)	B/C Ratio	Profit Margin (Rs./kg)
2000	1.28	24.65	1.17	20.09
2001	1.29	28.71	1.09	10.50
2002	1.13	15.04	1.04	4.23
2003	1.00	0.20	0.97	-4.25
2004	1.00	0.16	1.07	12.53
2005	1.03	4.44	1.02	2.99
2006	1.04	5.97	0.93	-16.60
2007	1.01	2.07	1.06	14.55
2008	1.34	67.98	0.87	-39.88
2009	1.13	27.61	0.93	-26.37
2010	1.46	107.65	1.00	0.49
2011	1.38	91.39	0.70	-136.12

Financial efficiency measures are positive in well performed estates.

Strategic Cost Management

Cost of Harvesting Depends on

Productivity

- Type of tea- VP/Seedling tea
- Age of tea
- Weather pattern
- Field conditions (Soil)
- Management practices

Management Interventions

- Length of the plucking round
- Plucking norm – number of pluckers per unit land area/round
- Plucker intake
- Method of harvesting – manual/mechanical

Strategic Cost Management

- Monitoring and supervision (Plucker intake, output/worker etc)
- Contract work - plucking
- Block plucking
- Shear harvesting
- Reduce below norm pluckers
- Adopting good agricultural practices
  - Shorter plucking rounds
  - Correct length of pruning cycle
- Improve marginal tea lands
- Diversify unsuitable fields
- Proper way of labor deployment
- Replanting & Infilling

Contract Work

Plucking

Crop (G.I/ha/yr)	10872
Intake (kg/worker day)	27.82
Average norm (kg/day)	18
Over kilos %	9.82
Plucking cost (Rs./ha)	288,777
Plucking cost with 10% cash plucking (Rs./ha)	283,152
Saving per ha (Rs.)	5,624
Saving per Rs./kg	2.41

Productivity -2338 kg/ha/yr

Source: Estate records

Block Plucking

	Normal (2011)	Block plucking (2012)
Made Tea (kg)	12231	11565
No. of pluckers	2615	2123
Plucking cost (Rs.)	1,751,211	1,451,249
Plucking cost (Rs./Kg)	143.18	125.49
Average plucker intake (kg/day)	18.99	19.79
Below norm plucker %	15.41	9.68

Source: Agricultural Economics Division, Estate records

Shear Harvesting & Below Norm Pluckers %

Plucking with TRI Selective Tea Harvester

Intake (kg/day)	Saving (Rs./kg)
19	1.77
20	8.77

Reduce Below Norm Plucker %

% reduction	Saving (Rs./kg)
10 %	1.72
20%	3.15

*Manual Intake -18 kg/day
Plucking cost –Rs.153.38 /kg

Source: Agricultural Economics Division, Estate records

Shorter Plucking Rounds

	5 day interval	10 day interval	Difference
Productivity (kg/ha/yr)	3235	2393	842
Tea Price (Rs./kg)	360.51	360.51	
Revenue (Rs.)	1,166,250	862,700	303,549
Plucker requirement (man days)	758	561	197
Plucker requirement/round	8	16	-8
Cost of plucking (Rs.)	480,146	361,105	119,041
Other cost (Rs.)	520,835	454,670	66,165
Additional benefits (Rs.) – Intake 20 kg/day	165,269	46,926	118,343
Intake 17 kg/day	111,070	46,926	64,144
Intake 15 kg/day	78,550	46,926	31,624

Source: Agronomy Division

Correct Length of Pruning Cycle (Up country)

	Four year pruning cycle	Five year pruning cycle
Crop loss –kg (recovery period -3 months)	2500	2000
Labour requirement (Man days)	250	200
Additional Income (Rs./ha)		
Low crop loss		1,80,255
Saving labour cost		28,600
Total		2,08,855
Annual income saving (Rs./ha/yr)		10,443
Saving Rs./kg of made tea		5.22

Average productivity in up country-2000 kg /ha/yr
LPH for pruning -50
NSA - Rs.360.51/kg
Duration -20 years

Source: Agricultural Economics Division

Improve Marginal Tea Fields

Categories of fields	Extent (ha)	Fields with below BEP		After improving below BEP fields	
		Average yield (kg/ha/yr)	COP (Estimated) Rs./kg	Average yield (kg/ha/yr)	COP (Estimated) Rs./kg
A	50	3320	310.11	3320	310.11
B	50	2228	359.48	2330	354.71
C	10	1600	402.47	1550	405.07
	10	1500	407.68		
	10	1100	462.55		
	20	900	526.35		
Average		2249	351.63	2556	339.47

Cost reduction – Rs. 12.17/kg of made tea

Break Even Productivity (BEP) – 1300kg/ha /yr Source: Agricultural Economics Division

Break Even Productivity (BEP)

Elevation	General Charges (Rs./ha)	Variable cost (VC) –Rs./kg	NSA (Rs./kg)	BEP (kg/ha/yr)				
				At current NSA & COP	At +10% NSA	At +20% NSA	At -5% COP	At +5% NSA & -5% COP
Up	130,088	284.23	360.00	1717	1164	880	1373	1145
Mid	120,633	303.03	342.00	3096	1649	1124	2118	1609
Uva	129,416	297.01	333.00	3595	1868	1261	2418	1822
Low	130,987	316.18	412.00	1367	956	735	1115	941

Source: Agricultural Economics Division, estate records

Diversify Unsuitable Lands

Planting Gliricidia in unsuitable lands

Criteria	Fuel wood value	Value of fuel wood + Leaves
Gross margin at maturity (after 4yrs) -Rs/ha/yr	61,777	82, 646
Net Present Value at 20%-(Rs.)	56,623	114,288
IRR	27%	34%
Payback Period (yrs)	6	5

Firewood Yield (50,000kg/ha) 10kg/plant (wet basis)
Green leaf = 25,000kg/ha (5kg/plant)
Urea equivalent of leaves = Rs.0.83/kg of green leaf

Source: Agronomy Division

Diversify Unsuitable Lands

Planting Eucalyptus in unsuitable lands

Criteria	Value of fuel wood + Timber
Net Present Value at 20% -(Rs.)	814, 148
IRR	38%
Payback Period –(yrs)	7

Fuel wood yield (at thinning) - 0.1-0.2m3/tree
Average value of a tree at 20th year – Rs. 18,000

Source: Agricultural Economics Division , Estate records

Summary

- There is a high negative correlation between the average productivity & COP .
- Low average productivity and resulting high COP is the major threat faced by tea sector in Sri Lanka.
- Estates should manage COP for viability/profitability.
- Some effective strategies to reduce COP & increase profitability are
  - contract work,
  - block plucking,
  - mechanization,
  - shorter plucking rounds,
  - correct length of pruning cycle,
  - improve marginal tea lands &
  - diversify unsuitable tea lands.

Thank you for your attention