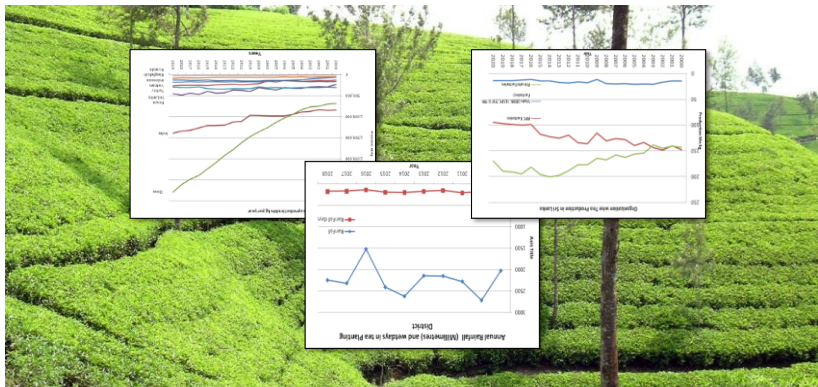


NATIONAL TEA PRODUCTION DECLINE SINCE 2013: EVIDENCE BASED ANALYSIS

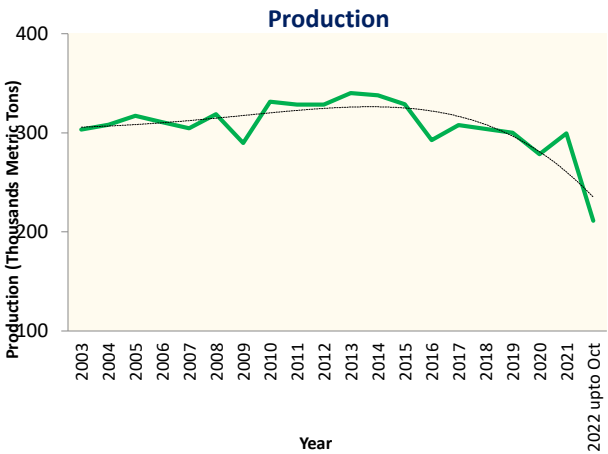


Advisory and Extension Division, Agronomy Division and
Agricultural Economics Division

(V S Sidhakaran, M.A. Wijeratne, H W Shyamalie,
G S Pradeep, K G Lakmali, R Muralithasan)

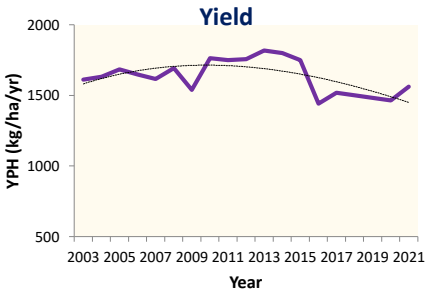
1

Tea Production, Yield & Extent in Sri Lanka

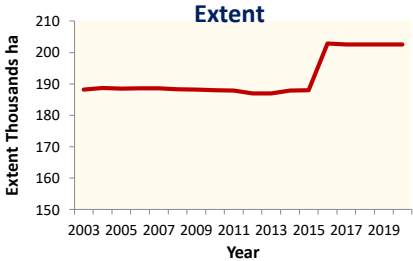


Source: ITC Bulletin of Statistics 2019, 2020, 2021 and Tea Board Monthly Statistical Summary January 2022- October 2022

National tea production to be increased from the present level of 299 Mn kg (2021) to 360 Mn kg in 2025 (61 Mn kg in the next five years)



Source: ITC Annual Bulletin of Statistics 2019, 2020, 2021



Source: ITC Annual Bulletin of Statistics 2019, 2020, 2021

2

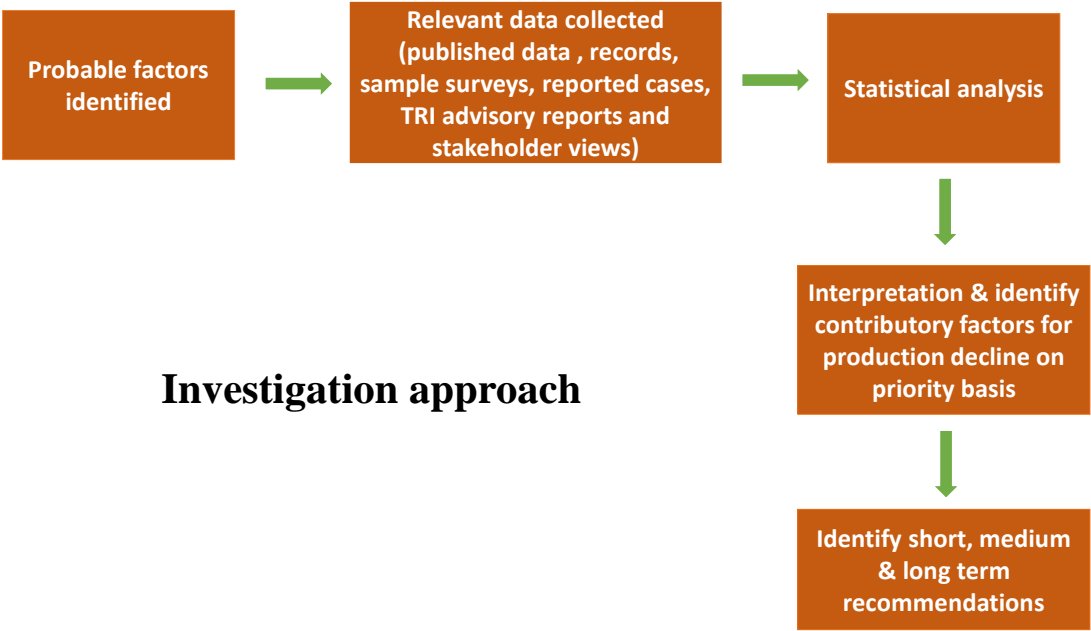
Objectives of the Investigation

Tea Production Decline since 2013

- 1. To find out evidences for tea national tea production decline since 2013
- 2. To identify possible reasons for the national tea production decline
- 3. To recommend appropriate interventions/strategies to arrest the situation

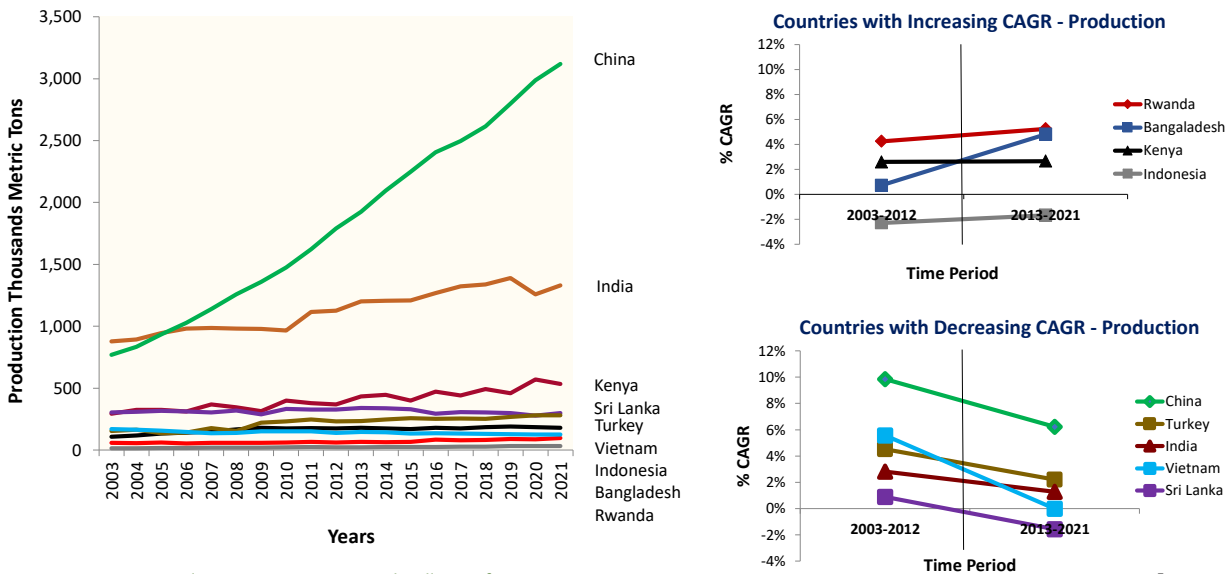
3

Investigation approach



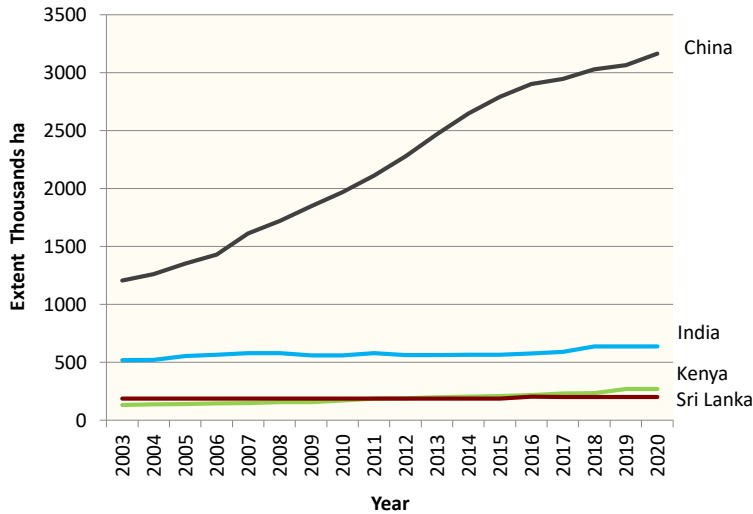
4

Tea Production and Growth Rates (CAGR) in Major Producing Countries



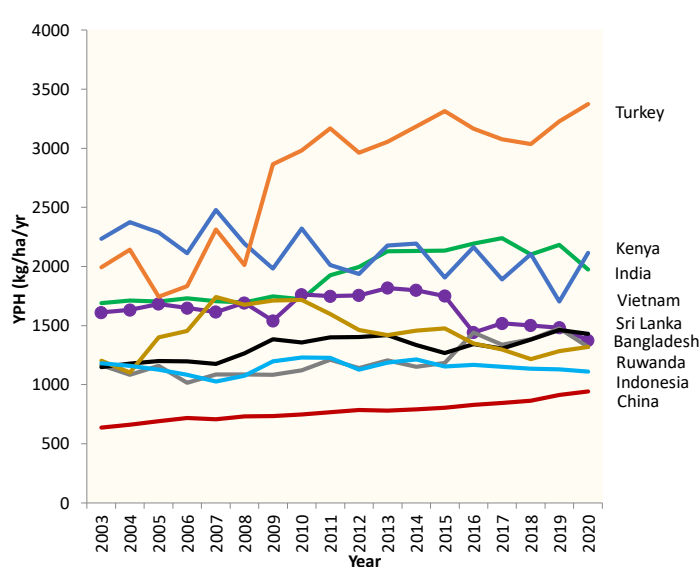
5

Tea Extents in Major Producing Countries

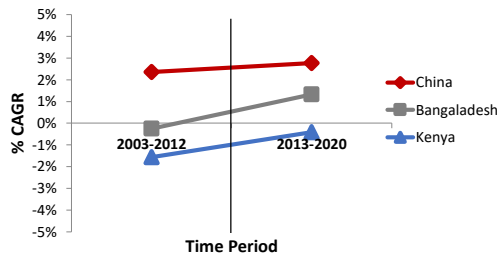


6

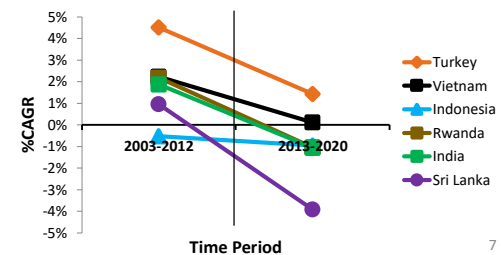
Tea Yield and Growth Rate in Major Producing Countries



Countries with Increasing CAGR - Yield



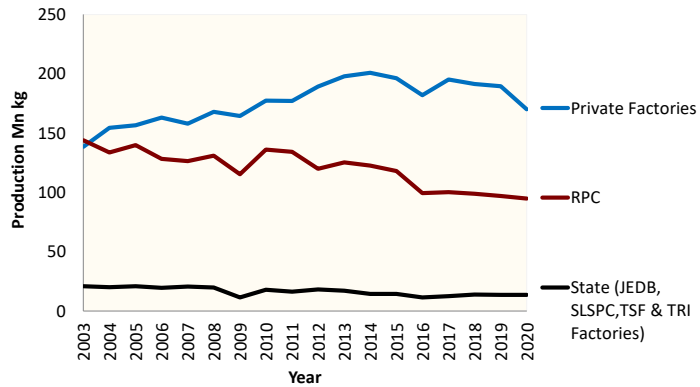
Countries with Decreasing CAGR - Yield



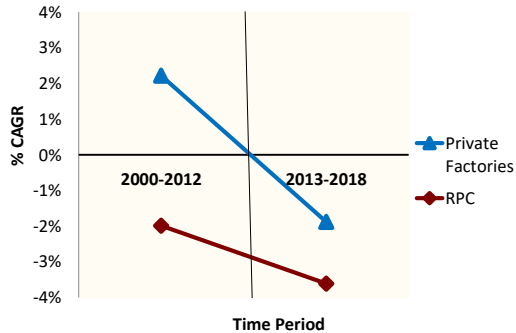
Source: International Tea Committee Annual Bulletin of Statistics 2019, 2020,2021

Sector wise Tea Production

Sector wise Tea Production in Sri Lanka

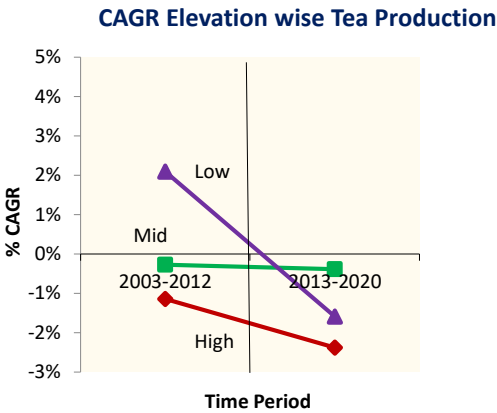
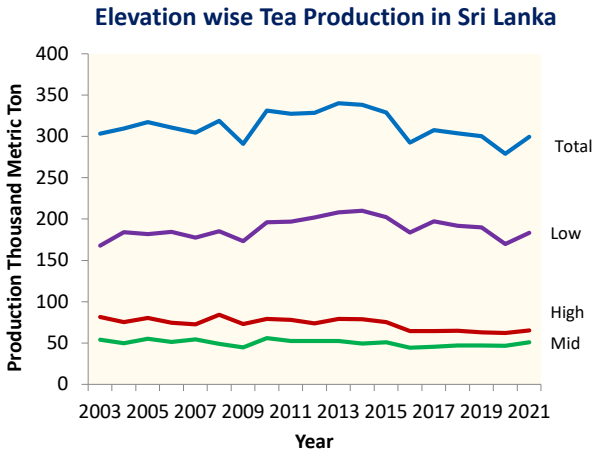


CAGR Sector wise Tea Production



Source: MPI Statistical information on plantation crops 2012, 2018 , Sri Lanka Tea Board Monthly Statistical Summary 2010 January – 2020 December

Elevation-wise Tea Production

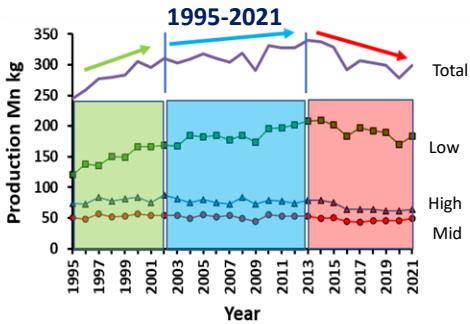


Source: MPI Statistical information on plantation crops 2012, 2018 , Sri Lanka Tea Board Monthly Statistical Summary 2010 January – 2021 December

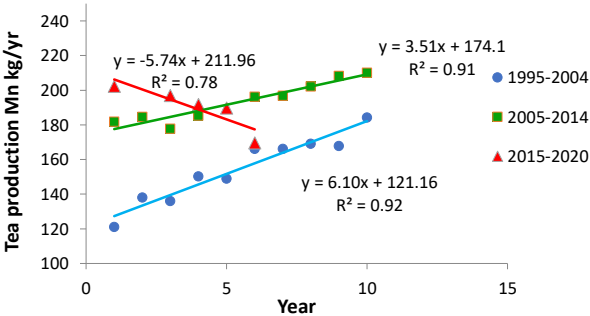
9

Tea Production Scenario - Low Country

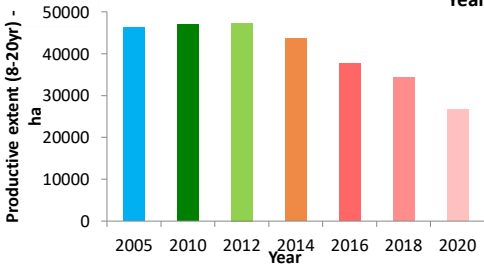
Changes of tea production in Sri Lanka



**Variation of low country tea production
In different time periods**

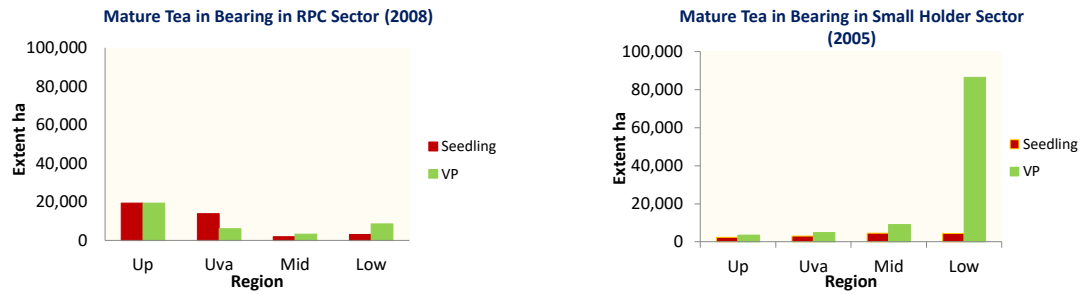


**Variation of most productive tea
extent in low country with time**

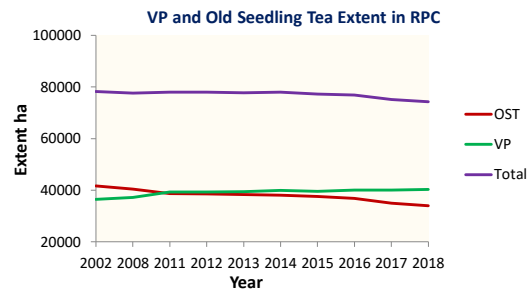


10

VP & OST Extent - RPC & Small Holding Sectors



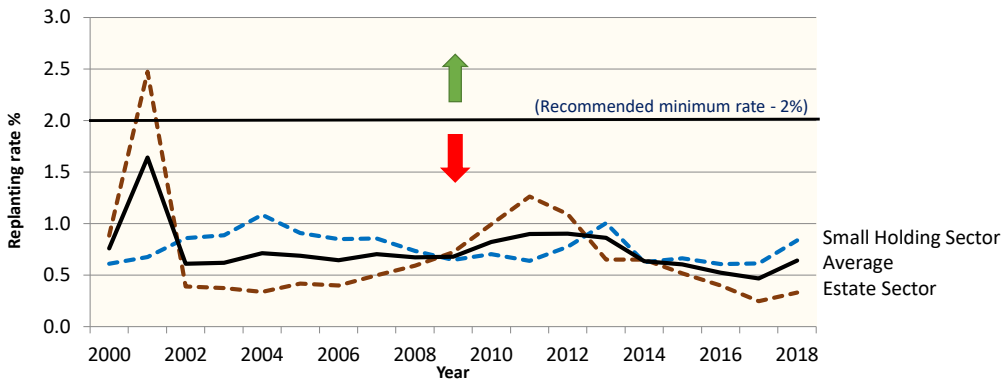
Source: Agronomic profile of corporate sector tea plantations in Sri Lanka, TRI (2011) Source: Tea Small Holding Development Authority, Census of Sri Lanka (2005).



Source: MPI Statistical information on plantation crops 2012, 2018, Agronomic profile of corporate sector tea plantations in Sri Lanka, 2008 TRI

Major Factors Related to Tea Production Decline

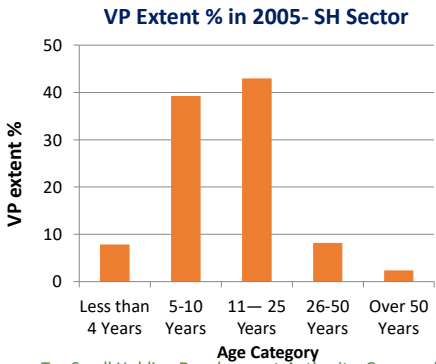
Replanting Rate – Estate & Small Holding Sectors



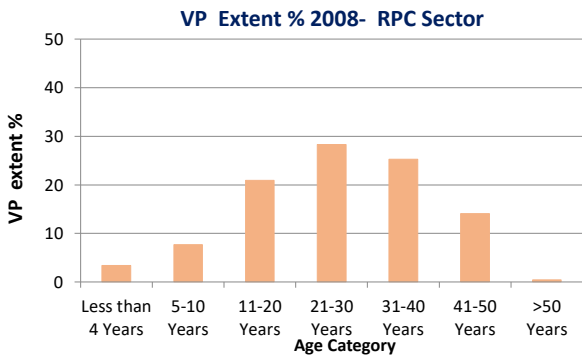
Period	2003-2012	2013-2018
Estate Sector	0.67 %	0.47 %
Small Holding	0.81 %	0.73 %
Total	0.73 %	0.62 %

Source: MPI Statistical information on plantation crops 2012, 2018 13

Age Profile of VP Tea- SH and RPC Sectors

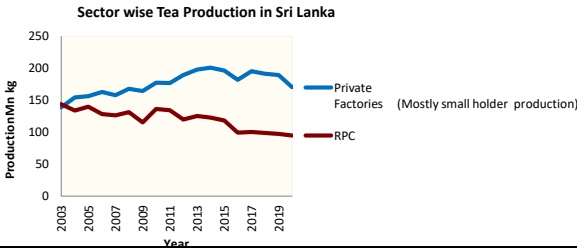


Source: Tea Small Holding Development Authority, Census of Sri Lanka, 2005.



Source: Agronomic profile of corporate sector tea plantations in Sri Lanka, 2008

In general yield decline starts from
20 years in low country
40 years in mid country and Uva
30 years in up country

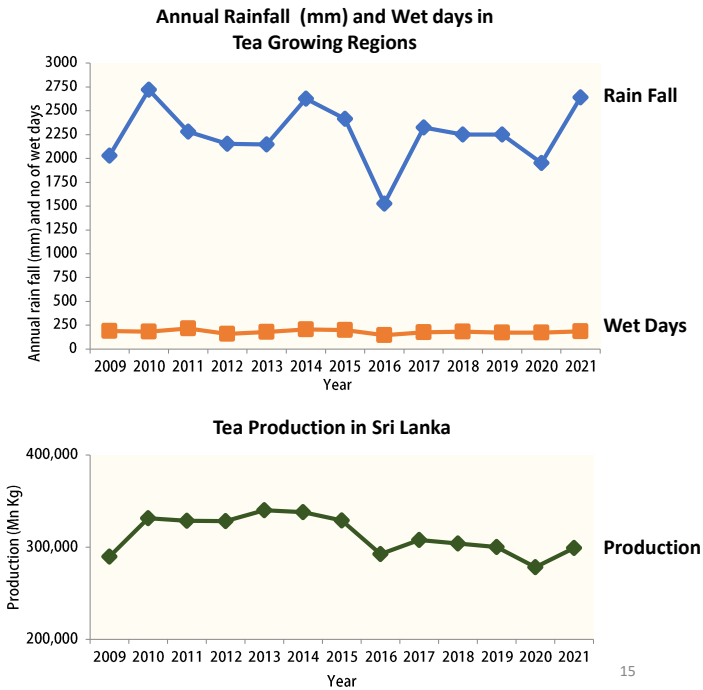


14

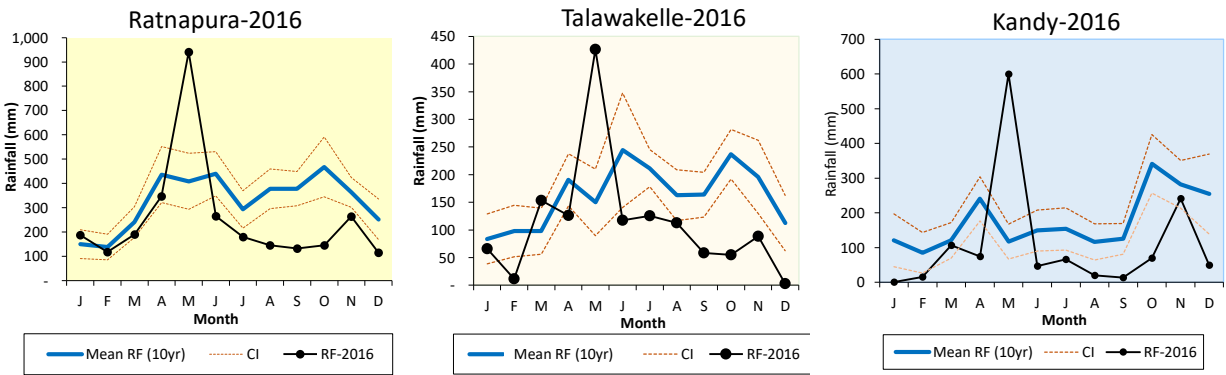
Climate Change – Rainfall and Tea Production

There is a positive correlation between rainfall and tea production ($r = 0.66$, p values 0.03)

Source: Department of Census Statistical abstract 2019, Annual and monthly rainfall at observation stations, 2013-2018, International Tea Committee Annual Bulletin of Statistics 2019, 2020



Climate Change - Deviation in Rainfall Pattern (from Decennial Average)



Climate Change - Annual Mean Temperature Variation since 1960

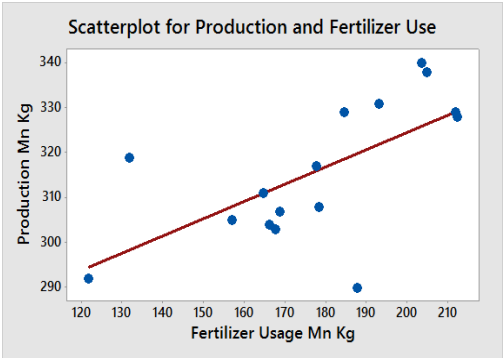
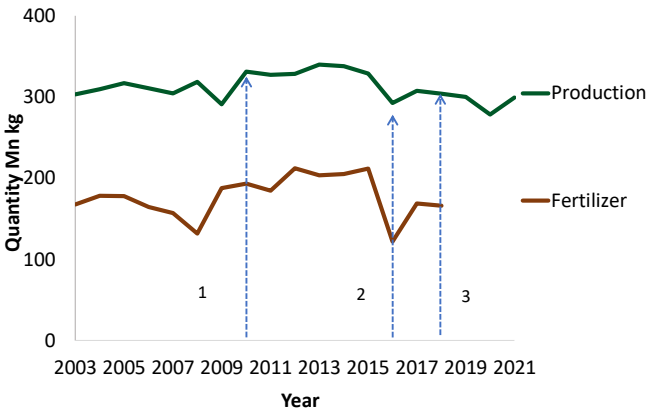
Location	Annual (°C / yr)	
	Max	Min
Badulla	0.028*	0.010*
Bandarawela	0.020*	0.026*
Galle	0.024*	0.020*
Katugastota	0.015*	0.013*
Nuwara Eliya	-0.001	0.023*

Mean temperature increased by 0.5-1.4°C /50 yr

Source: Wijeratne & Lalith Chandrapala, 2013

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Tea Production and Fertilizer Use



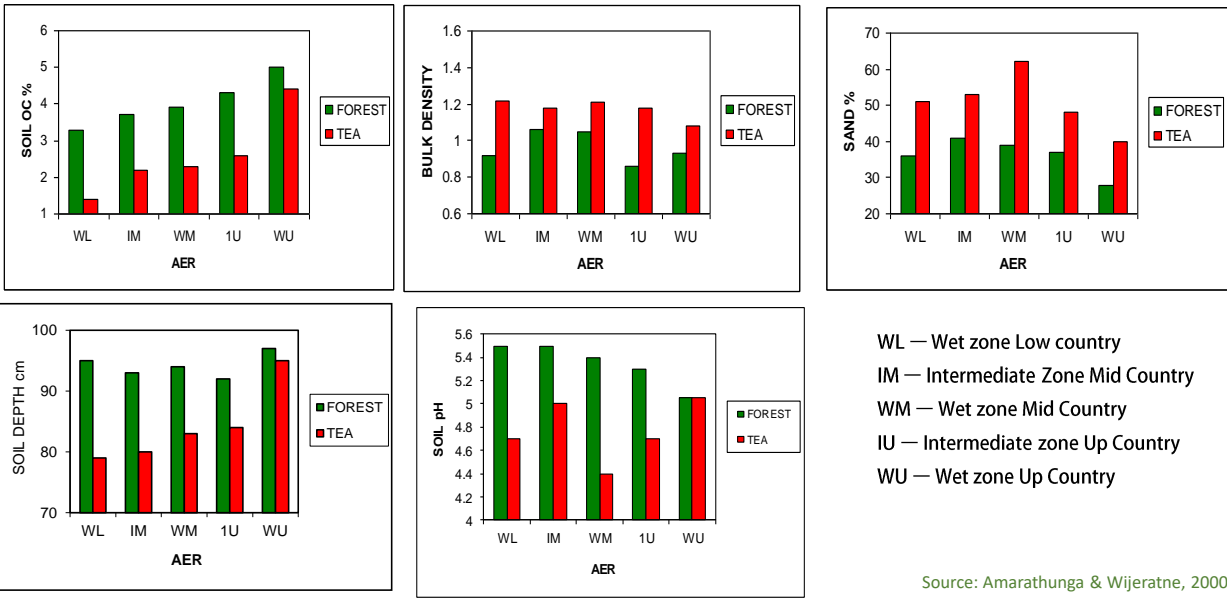
Pearson correlation : r = 0.662

- Fertilizer policy changes
- 1. 2010- Fertilizer support program for small holders
 - 2. 2016- Fertilizer subsidy removal
 - 3. 2018 November - Reintroduction fertilizer subsidy program

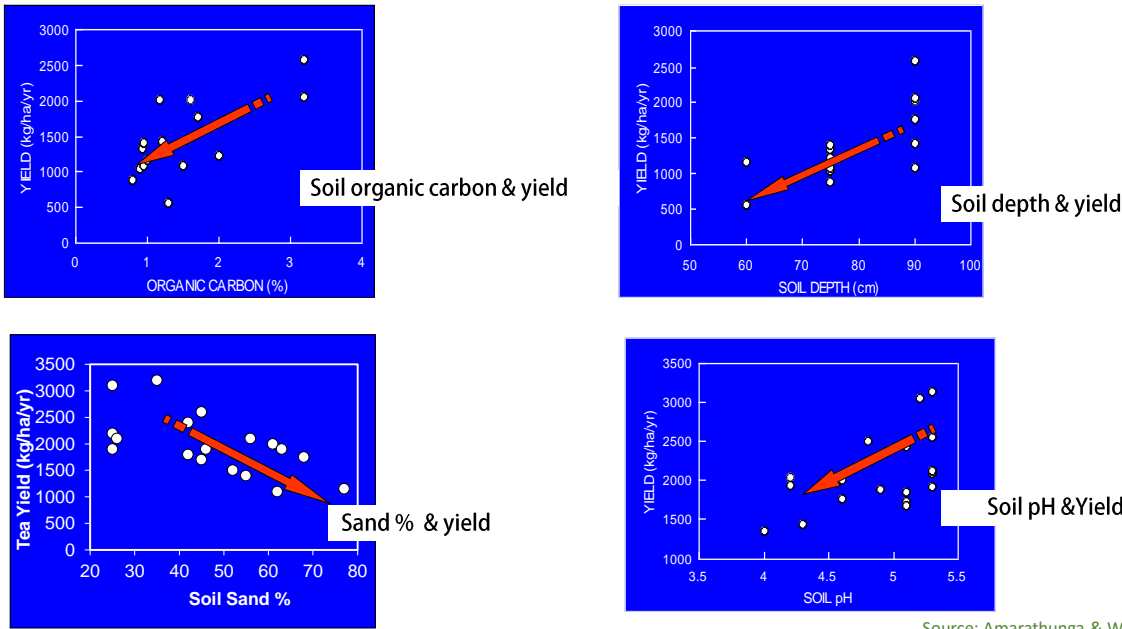
Source: MPI Statistical information on plantation crops 2012, 2018,
Central bank of Sri Lanka Annual reports, 2000 – 2020

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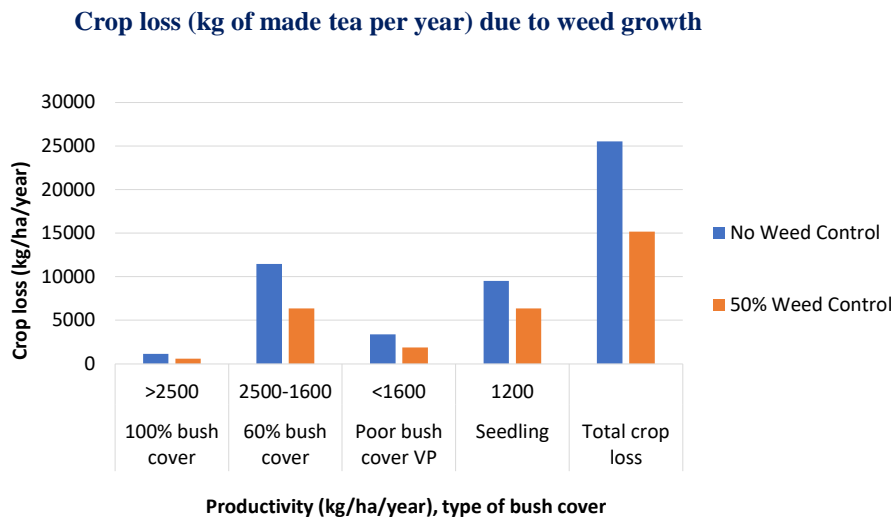
Soil Fertility Decline (Organic Carbon, Bulk Density, Sand %, Soil Depth and pH)



Soil Degradation & Tea Yield

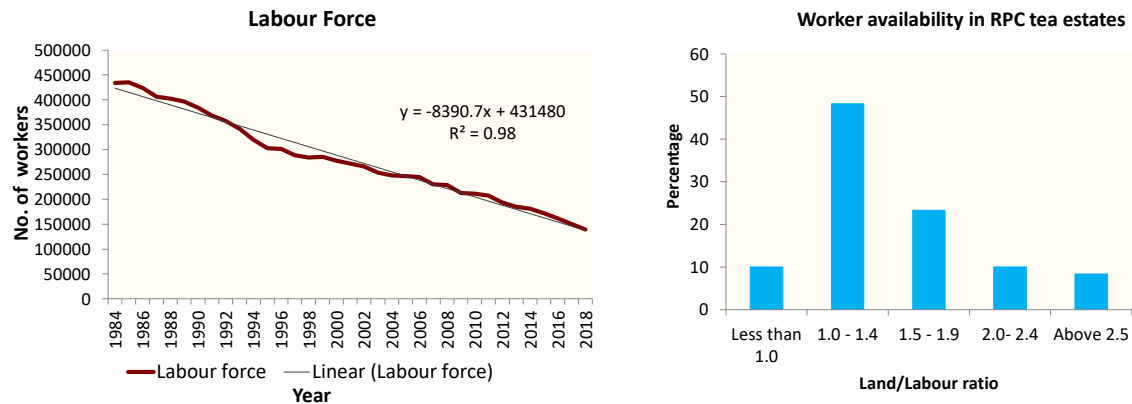


Effect of Recent Policy Changes (Banning of Herbicides in 2016)



Source: 232nd Experiments and Extension Forum Proceedings

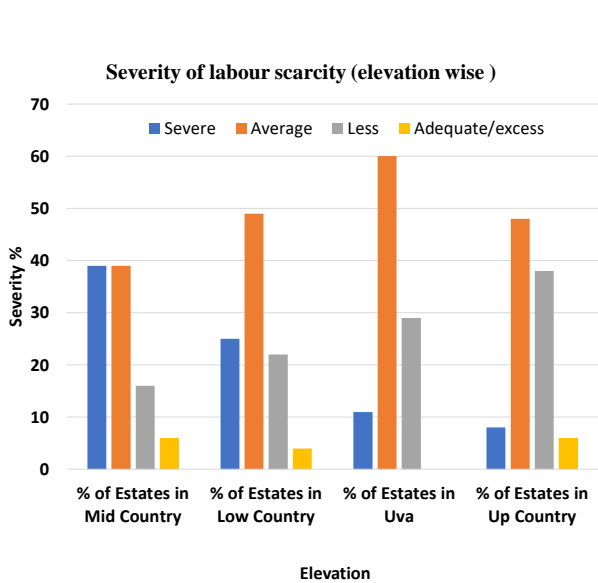
Worker Scarcity



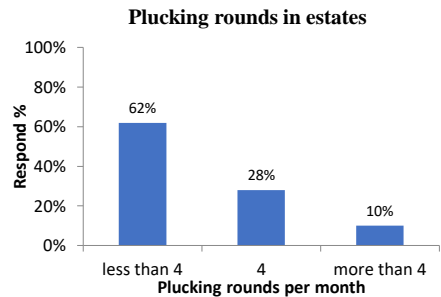
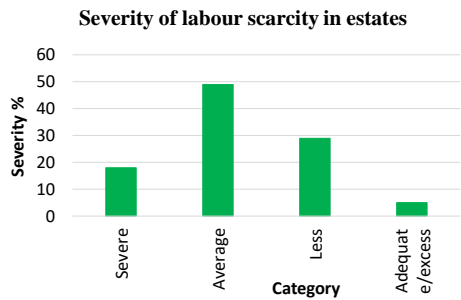
- Impacts
- Reduction of plucking rounds
 - Reduction in plucking extent(during cropping season)
 - Reduction revenue extent
 - Poor adaption of GAP's

Source: MPI Statistical information on plantation crops 2012,2018, Advisory report on yield decline 2014-2020

Severity of Labour Scarcity in Tea Plantations (2016)



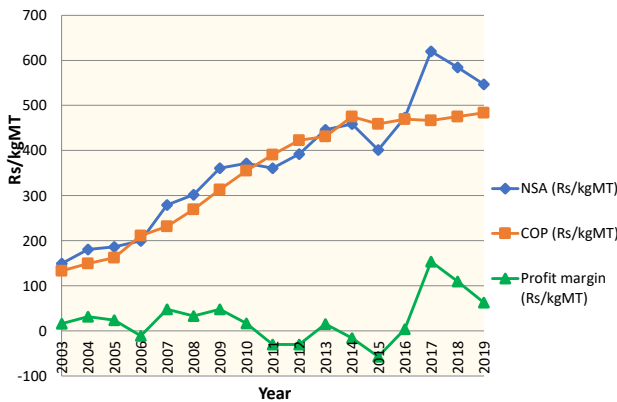
Source: 232nd Experiments and Extension Forum Proceedings



Source: Random sample collected from 50 RPC estates

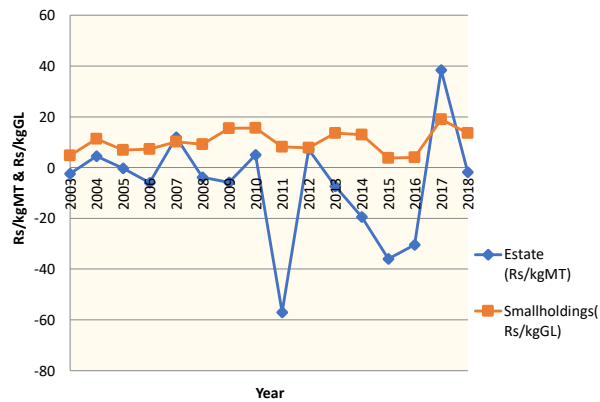
Low Investment on GAPs

Variation of profit margins in tea sector in Sri Lanka



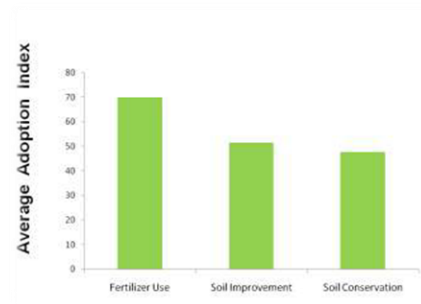
Source: Central Bank of Sri Lanka (2003-2019)

Profit margins of estate and smallholdings sector

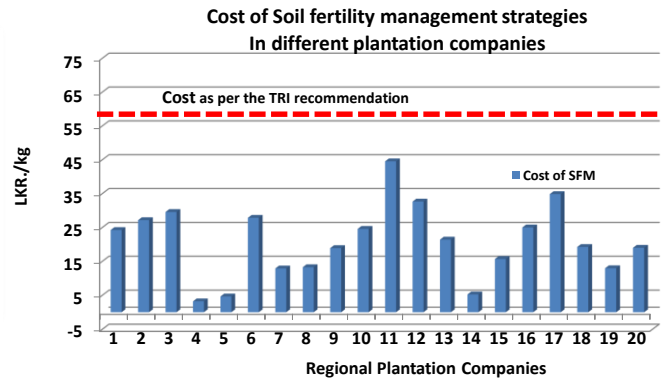


Source: Ministry of Plantation Industries (2003-2018)
Tea Smallholdings Development Authority (2003-2018)

Adoption of Good Agricultural Practices (GAP) & Investment



Source: Agronomic profile of corporate sector tea plantations in Sri Lanka, TRI (2011).

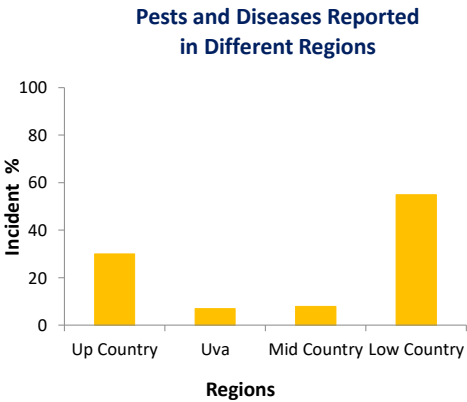


Source: Agricultural Economics Division, TRI (2016)

Average cost of Soil Fertility Management in RPCs : Rs 21.00 / kg (2016)

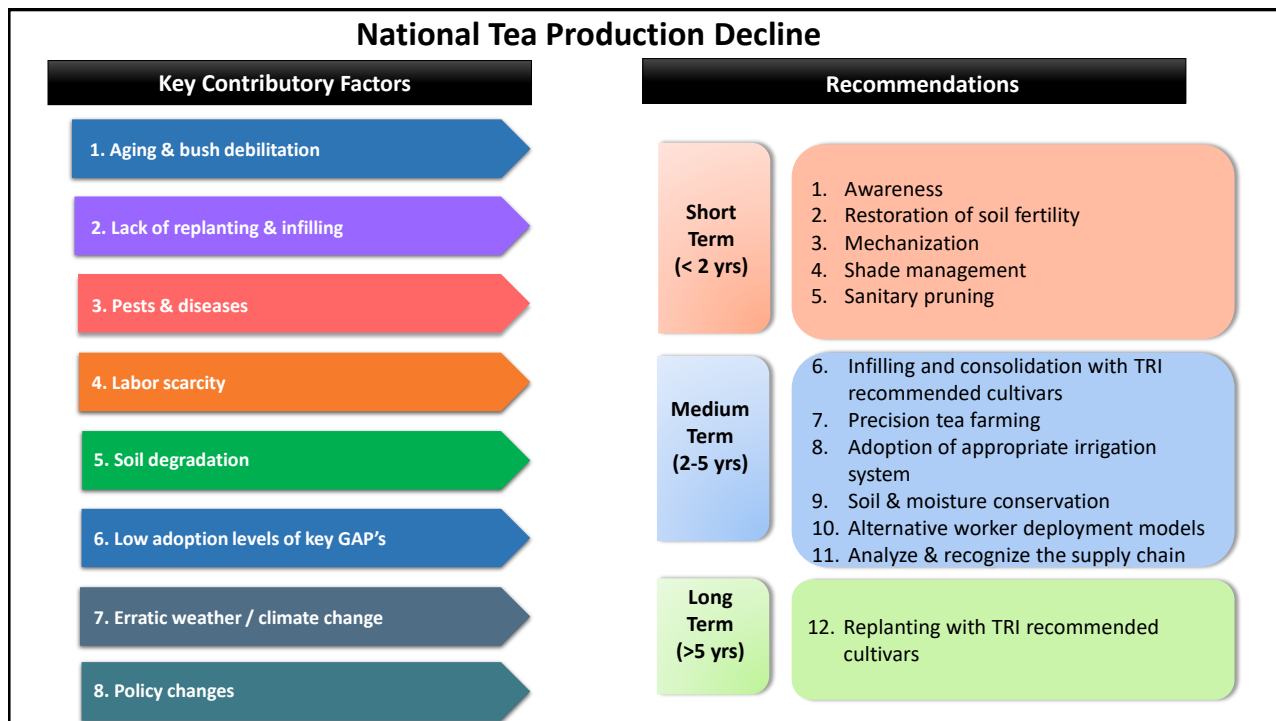
Bush Debilitation- Major Causes

Major contributory factors	Up Country	Uva	Mid Country	Low Country
Shot hole borer	*	*	*	*
Low country live wood termite				*
Up country live wood termite	*			
Scavenging termites	*		*	*
Sun scorch	*	*	*	*
Canker diseases	*	*	*	*
Wood rots	*	*	*	*
Blister blight	*	*	*	*
Aging of tea bushes	*	*	*	*



Source: Advisory report on yield decline 2014-2020

National Tea Production Decline



Recommendations to Arrest National Tea Production Decline

Contributory Factors	Short Term (<2 yrs)	Medium Term (2-5 yrs)	Long Term (>5 yrs)
1. Aging & bush debilitation	Restoration of soil fertility Sanitary pruning Shade management Adoption of GAPs	Infilling & consolidation with recommended cultivars	Replanting with recommended cultivars
2. Lack of replanting & infilling		Infilling & consolidation with recommended cultivars	Replanting with recommended cultivars
3. Pests & diseases	Awareness Adoption of GAPs Shade management	Sanitary pruning Culling and infilling Precision tea farming	Replanting with recommended cultivars
4. Labor scarcity	Awareness Mechanization	Alternative worker deployment models Precision tea farming Analyze & recognize the supply chain	
5. Soil degradation	Restoration of soil fertility Adoption of GAPs	Soil & moisture conservation Precision tea farming	
6. Low adoption of key GAP's	Awareness	Investment on GAPs	
7. Erratic weather / climate change	Restoration of soil fertility Shade management	Adoption of appropriate irrigation system	Replanting with recommended cultivars Improved seedlings
8. Policy changes	Restoration of soil fertility	Adoption of GAPs	

