Rubber cultivation for enhancing the environmental and social resilience to climate change in drier climates of Sri Lanka

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Workshop on Climate Change and Natural Rubber Systems

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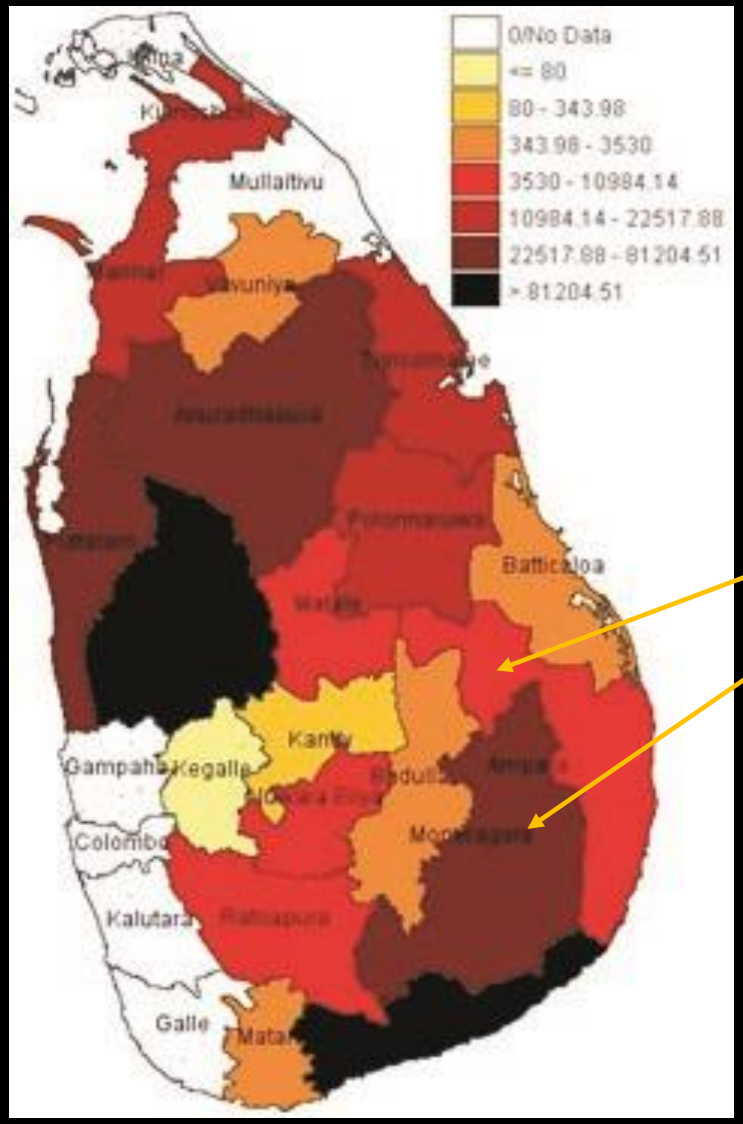
Agricultural loss due to droughts in SL



Eastern & Uva provinces are highly vulnerable to climate change !

Crop loss due to drought (ha) 1974-2008; mostly affected in 1987, 2001 & 2004

Effects of extreme weather events; another drought in 2009

- Only the rubber planted in 2008 affected

Hardly any ground water

Temperature 38^0C
RH 25%

Traditional *vs* Nontraditional areas

	Traditional	**Nontraditional**
Environmental factors	High rainfall (>2500 mm/yr)	Low rainfall (1250-2500 mm/yr)
	High humidity (ca.80%)	Low humidity (ca.65%)
	Moderate temperature (30^0C)	High temperature (34^0C)
	Mainly dry spells (<0.3mm for 7 days)	Prolonged drought period (5-7 months)
Social factors	Low land per capita	High land per capita
	High land value; use more for industrial & settlements	Low land value; use more on agriculture
	People depend more, - on off-farm activities	 - on on-farm activities
	Labour scares	Labour available

Feasibility – SWOT analysis in 2005

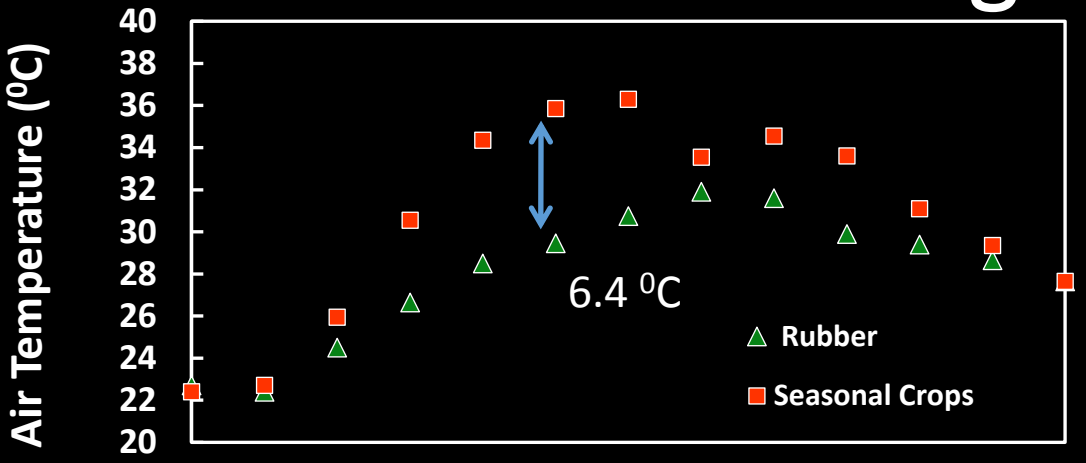
Strengths	Weaknesses
1. Land availability (70% of the farmers high land category) 2. Farmers' interest (all are highly interested) 3. Soil fertility 4. Experience in farming (All have farming experience) 5. Labour availability (80% farmers have no labour issues)	1. Lack of knowledge on rubber 2. Problem on land ownership 3. Lack of financial assets 4. Distinct dry period 5. Seasonal demand for labour
Opportunities	**Threats**
1. Extension service 2. Rubber subsidy scheme 3. Ability to confirm the land ownership 4. Opening to new income generating activities	1. Droughts 2. Pest & Diseases 3. Cyclones 4. Low price 5. Wild animals

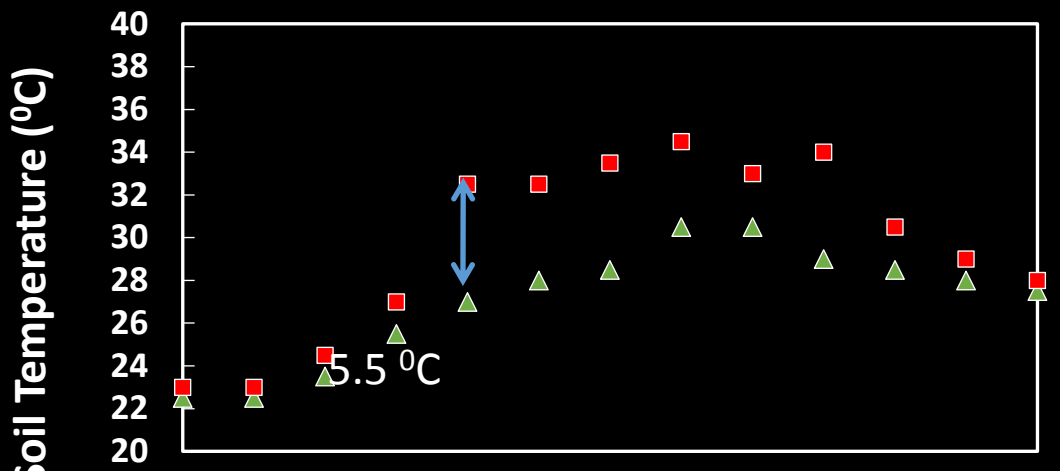
Rodrigo, V.H.L., Iqbal, S.M.M. and Dharmakeerthi, R.S. (2011). Potential for rubber (Hevea brasiliensis Muell. Arg.) cultivation in the Eastern province of Sri Lanka. J.Natn.Sci.Foundation Sri Lanka, 39(4), 403-411

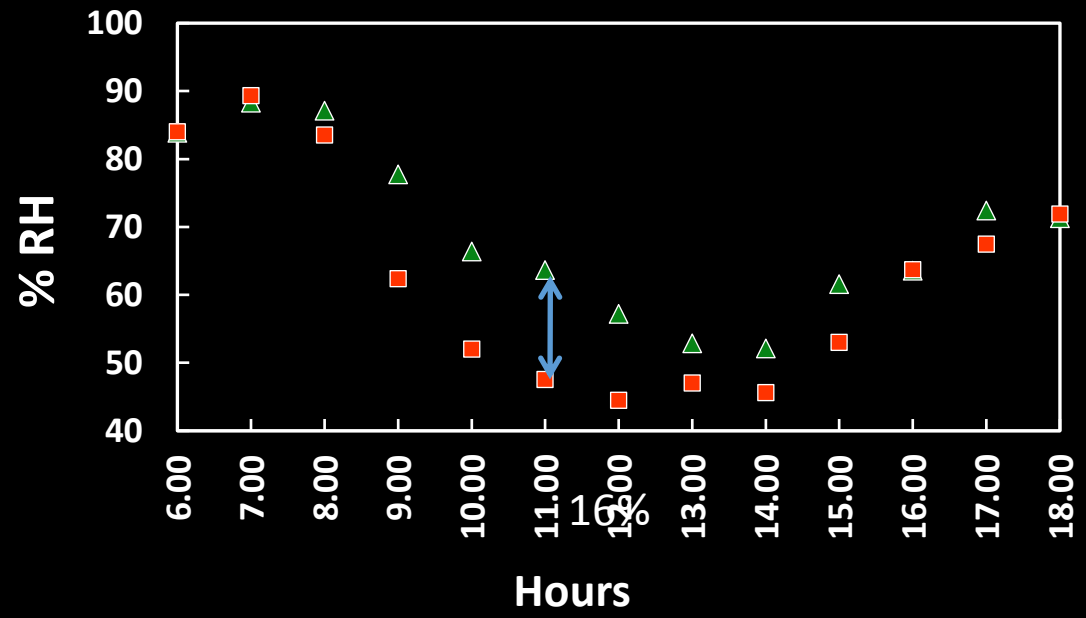
Agronomic feasibility

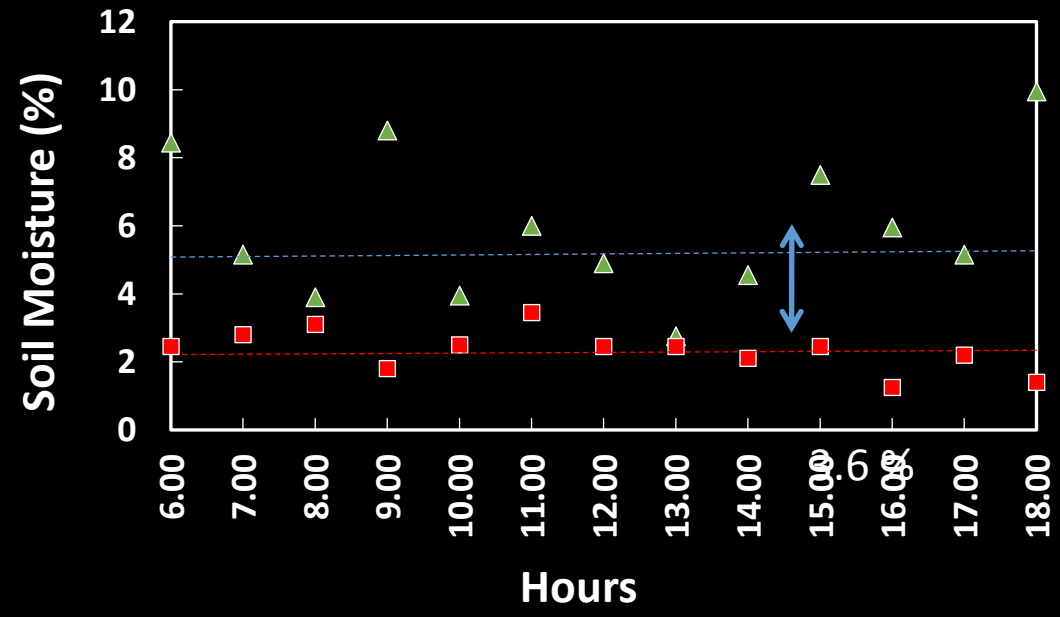
Girth increment rate **(Average for 14 sites)**	**7.4 cm/year**
Establishment to date **(% sites successful)**	**About 400 ha** **(75%)**
Yield	**>1,200 kg/ha/year**

Environmental advantages







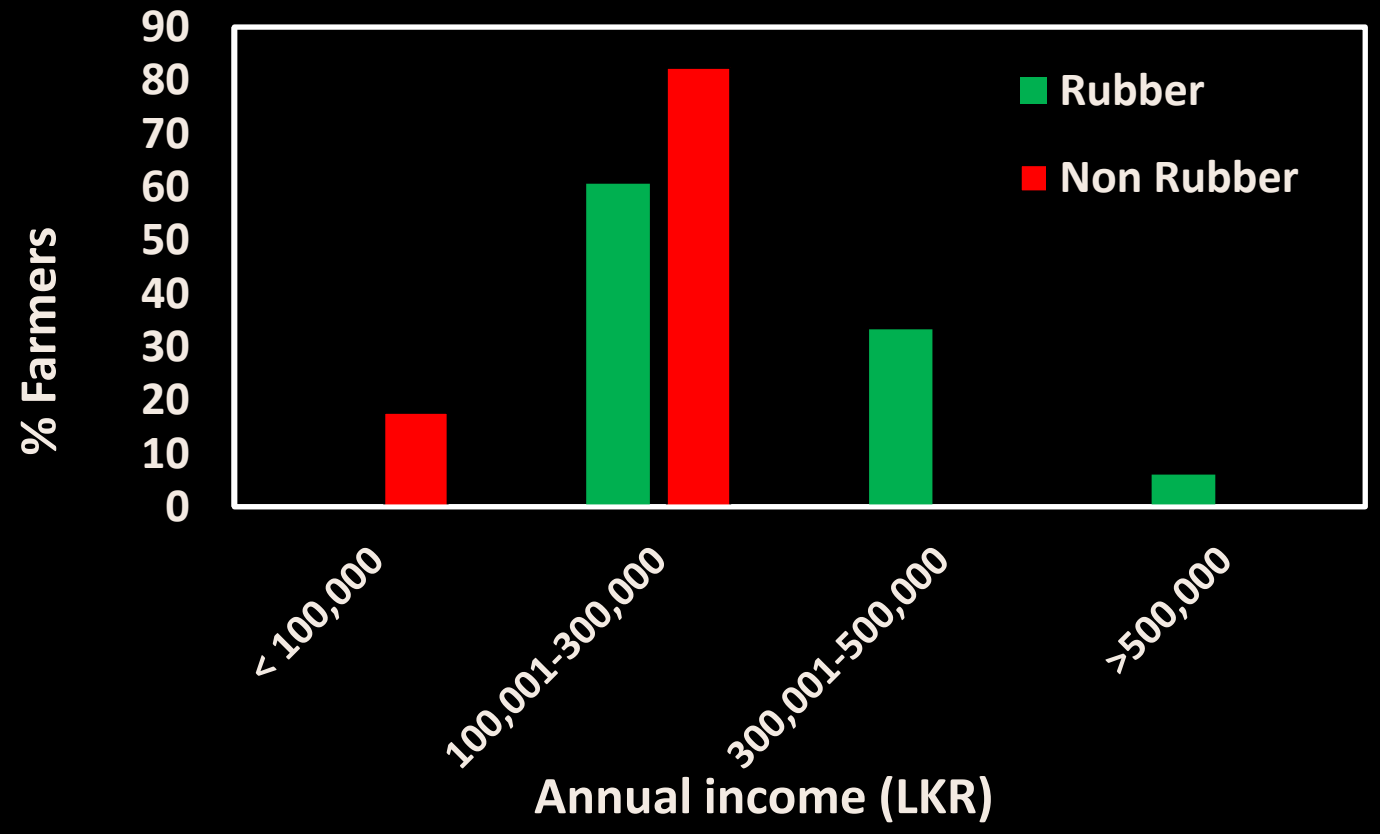


Rodrigo, V. H. L., Iqbal, S.M.M., Munasinghe, E. S. and Balasooriya, B. M. D. C. (2014). Rubber in East assures the perceived benefits; increased rubber production, amelioration of the climate and improved the rural livelihood. Journal of the Rubber Research Institute of Sri Lanka. 94, 33-42.

Socioeconomic advantages

(A study in 2017 with 34 farmers from each category)

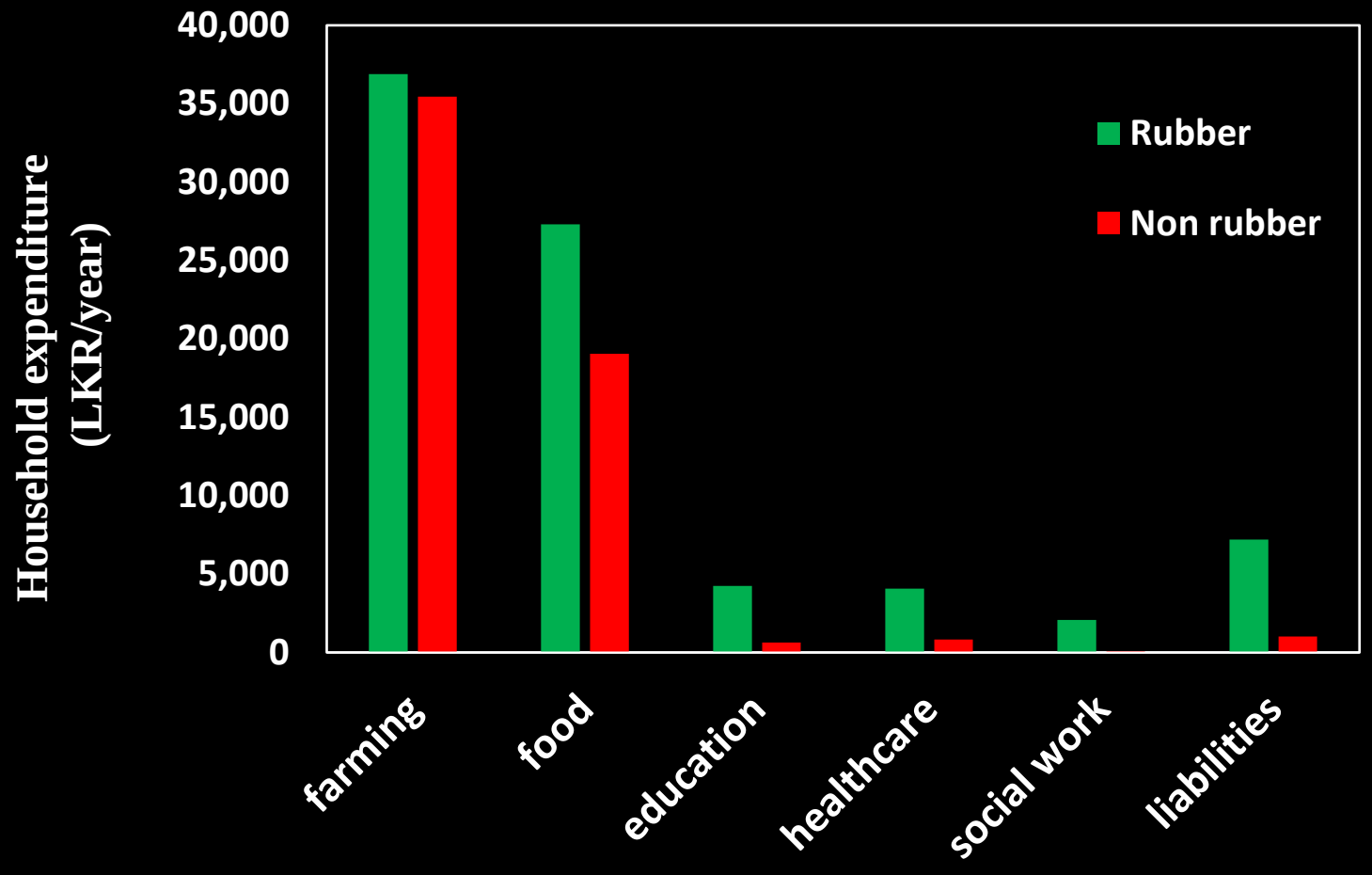
Financial capital



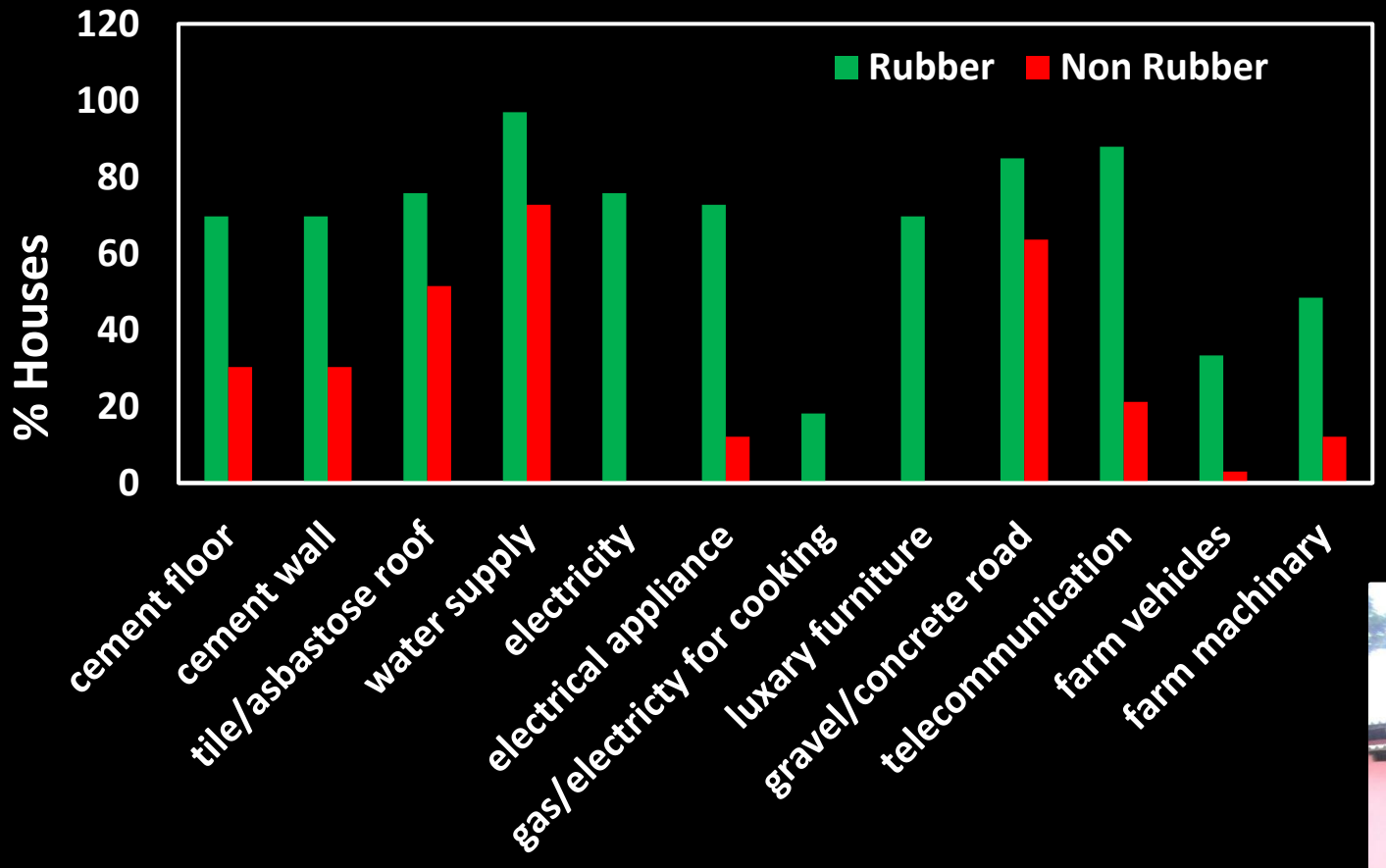
About 100 kg per month

Munasinghe, E. S., Rodrigo, V. H. L., Jayathilake, P. M. M., Piyasena N. M. and Iqbal, S. M. M. (2019). Livelihood capital improvements in the rubber growing community of the Eastern Province of Sri Lanka. Proceedings of the Seventh Symposium on Plantation Crop Research, Marino Beach Hotel, Colombo, Sri Lanka. 04–06 November 2019. Vol. 2. 123-134.

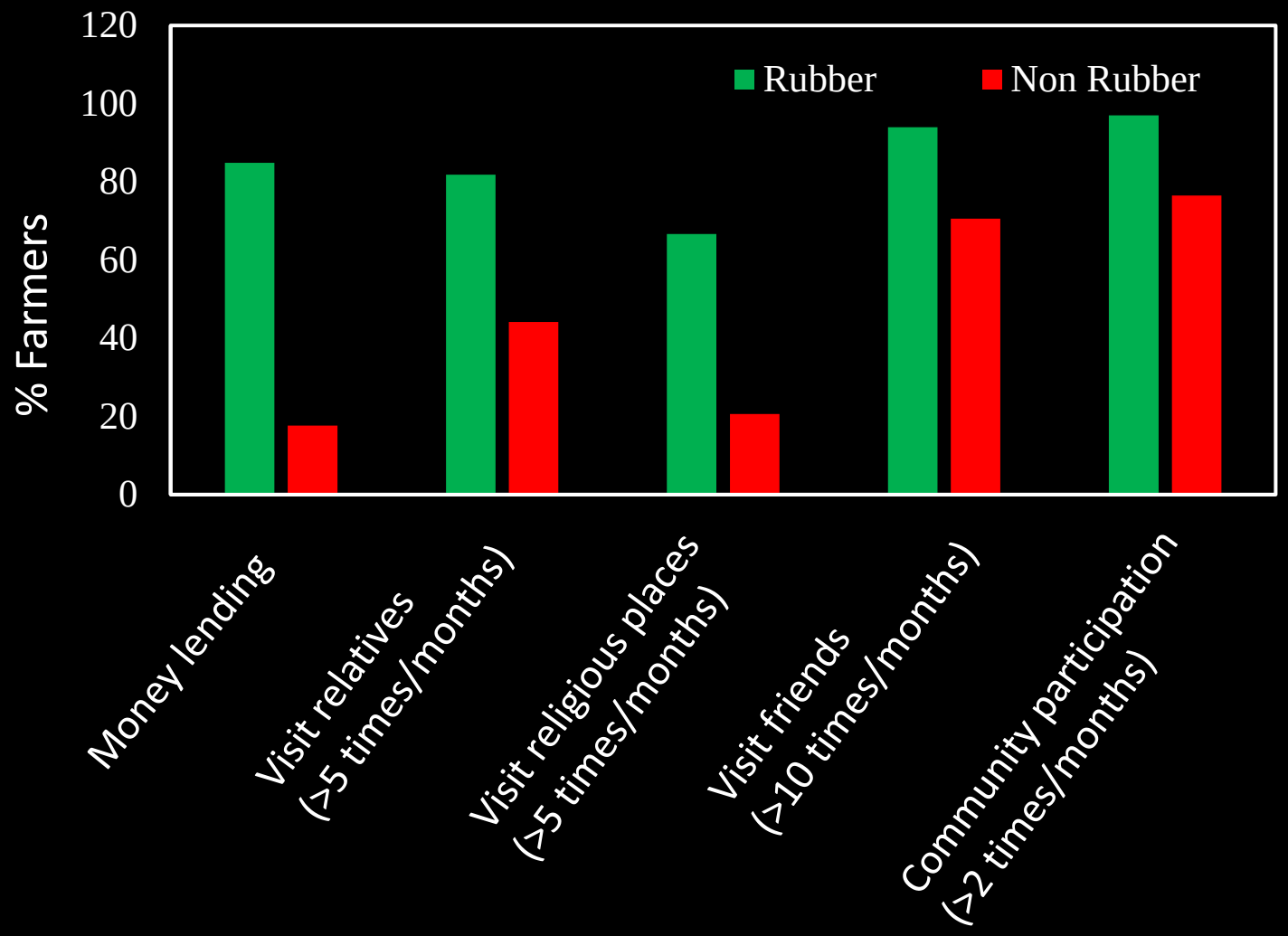
Human capital



Physical capital



Social capital



Evidence for easing hardships of the resource poor; a case study

- Sole bread winner became handicapped with an accident
- But, wife started tapping in their neglected rubber land (ca. 250 trees in 2 acres) bringing about LKR 20,000 per month with ca. 60 kg of rubber (over 80% of household income)

Above: Rubber trees being tapped by Mr. Dharmadasa's wife

Below: Family at home

Reported in Sunday Times (Sri Lanka) on 30th April 2017 – "Rubber a fortune in time of misfortune: Eastern cultivator"

Carbon market

- Carbon offset development project for voluntary market is on the way covering 2,500 ha of rubber in Ampara and Monaragala districts of the Eastern Province.
- Carbon credits (450,000) will be available to interested parties under voluntary market with the value of US$ 2.25 Mn.
- Funds generated by selling the carbon credits will be utilized for the livelihood development of rubber smallholders and for further expansion of rubber cultivation in nontraditional areas


Thank
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