

Sustainable cocoa production in Côte d'Ivoire and Ghana - The role of certification schemes and farmer cooperatives

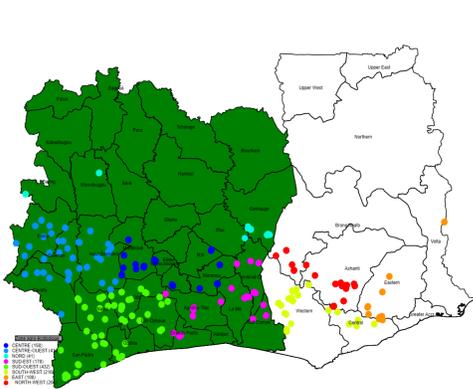
1- The Questions

How sustainable is cocoa production in Côte d'Ivoire and Ghana?

- Many small-scale farmers opt for unshaded or low-shaded cocoa, and often convert primary forest to full sun plantations¹
- Full-sun plantations depend on costly input use and a hybrid tree stock which requires replanting after 15-20 years²
- Unshaded production systems have significantly lower species richness³

What are the effects of effect of participation in sustainability certification schemes and membership in farmer cooperatives?

- Studies focus on impacts on improving cocoa farmers' and workers' wages, yields, incomes, food security and household living standards – **not sustainability**
- In coffee fields, positive impacts of certification in Costa Rica (lower chemical input⁴), in Colombia (better environmental management⁵) and in Uganda (higher biodiversity and carbon storage⁶) **but** not clear effects found in Rwanda⁷ or elsewhere⁸
- No evidence of the effect of cooperative membership on sustainability



	Côte d'Ivoire				Ghana			
	Only certified	Only member in farmer cooperative	Both, certified and member in a farmer cooperative	Neither certified nor member of a cooperative	Only certified	Only member in farmer cooperative	Both, certified and member in a farmer cooperative	Neither certified nor member of a cooperative
Female HH Head	0.03	0.05	0.02*	0.07	0.13***	0.13***	0.24	0.34
Age HH Head	49.30*	45.91	49.59*	46.94	54.01	49.29	53.32	51.91
Migrant	-0.48	0.49	0.53	0.50	-0.28**	0.39***	0.32**	0.17
Education	-3.08	4.94***	4.50***	3.33	-7.78	7.03	7.66	7.25
Dependency ratio	0.94	0.71**	0.88	1.06	0.82	0.92	1.07*	0.82
Mobile	0.86	0.95**	0.84	0.86	0.86*	0.84	0.98***	0.77
Accessible by vehicle	0.94**	0.92*	0.90	0.84	0.90	0.65***	0.88	0.87
Electricity	-0.60**	0.49	0.67***	0.49	-0.85	0.77	0.95*	0.85
Cocoa farm size	3.92	-4.34*	4.47***	3.62	-4.35***	4.18**	3.98	3.28
Age of cocoa trees	15.52*	14.20	14.96	13.92	14.35	15.16	17.97***	14.03
Distance to plot	3.88	3.78	5.15**	4.24	3.27	2.56	2.55	3.12
Suitable terrain	0.71	0.57**	0.78*	0.70	0.61	0.68	0.73	0.66
Rich soil	0.72	0.80	0.88***	0.73	0.81	0.90***	0.95***	0.73
Distance to certified buyer	24.09***	25.69***	15.00***	38.41	16.23***	22.33	21.34	30.62
Distance to cooperative	14.74***	7.61***	8.06***	24.38	23.34	3.14***	2.60	18.87
N	97	65	96	961	93	62	42	331

* (p < 0.1), ** (p < 0.05) and *** (p < 0.01) for ttest of continuous variables and chi2 test for categorical variables. Standard deviations in parenthesis.

3- Measuring sustainability of practices in cocoa production

- A sustainability scale that takes into account multiple dimensions of farm level sustainability was constructed
- Sustainable practices that both maintain biodiversity and optimize yield
- 10 selected individual indicators, grouped by 4 dimensions with equal weight: agroforestry, soil conservation, pest & disease management and cocoa tree sanitation

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Agroforestry								
Shade tree density	0.01	0.02	0.01	0.03	0.14	0.16*	0.34***	0.09
Tree diversity	0.59***	0.38	0.69***	0.42	0.65***	0.47*	0.51**	0.34
Soil conservation								
Organic fertilizer use	0.05	0.07**	0.06*	0.03	0.05	0.02	0.02	0.03
Manual weeding	0.81***	0.77**	0.80***	0.65	0.77	0.79	0.78	0.84
Intercropping	0.46*	0.40***	0.49	0.57	0.66	0.58	0.66	0.57
Pest and disease management								
Pruning	0.88	0.68***	0.93***	0.82	0.91**	0.87	0.98***	0.80
Insect population count	0.11	0.14	0.21	0.16	0.05	0**	0.05	0.06
Observation of insects before treatment	0.80***	0.57	0.83***	0.55	0.46***	0.52*	0.76	0.64
Cocoa tree and farm sanitation								
Sanitary harvest	0.70	0.58*	0.79**	0.68	0.74	0.82	0.90**	0.75
Progressive replantation of cocoa farm	0.53**	0.46	0.56***	0.39	0.43	0.48	0.76***	0.50
Weighted SAP scale (re-scaled 0-1)	0.62***	0.51	0.67***	0.54	0.61	0.59	0.72***	0.58
N	97	65	96	961	93	62	42	331

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2- Survey and data

- Representative cocoa survey implemented in 2019/ 2020 in Côte d'Ivoire and Ghana: 1219 households with 7452 individuals in Côte d'Ivoire and 527 households with 2709 individuals in Ghana
- Farmers classified in 4 groups: participation in a certification scheme (1), a farmer cooperative (2), both (3) or no participation at all (4)
- Significant difference between cocoa farmers in Côte d'Ivoire and Ghana as regards to education, migration and access to electricity
- Average cocoa yield 414 kg/ha in Côte d'Ivoire vs. 493 kg/ha in Ghana

Measurement	Measurement
Agroforestry	
Shade trees	Whether the household grows at least 15 shade tree per hectare (e.g. Terminalia sp., Milicia xcelis, Khaya ivorensis, Terminalia ivorensis, etc.)
Tree diversity	Whether the household grows at least two different varieties of trees on their cocoa farm to establish good shade levels for all stages of cocoa
Soil conservation	
Organic fertilizer use	Whether or not HH or farmer applies organic fertilizer to cocoa
Manual weeding	Whether or not HH or farmer manually weeds the cocoa plot(s)
Intercropping	Whether or not HH or farmer produces more than 1 food or cash crop on at least 1 of their plot(s)
Pest and disease management	
Pruning	Whether or not HH or farmer prunes his/ her cocoa trees
Insect population count	Whether or not HH or farmer has implemented an insect population count in last 12 months
Observation of insects before treatment	Whether or not HH or farmer has established the presence of insects (through observation) before performing a treatment
Cocoa tree and farm sanitation	
Sanitary harvest	Whether or not HH or farmers performs sanitary harvesting
Progressive replantation of cocoa farm	Whether or not HH or farmers replant young cocoa trees under old trees or next to old or dead trees

4- Results

- Shade trees are more common in Ghana
- Majority of certified farmers in both countries report more than 2 tree species (in addition to cocoa) on their plots
- Manual weeding, sanitary harvest and pruning are widespread and common for all groups of cocoa farmers
- Organic fertilizers rarely used – but positive correlation with certification in Côte d'Ivoire
- IPM not very common but certified farmers in CIV adopt more often
- Farmers both certified and members of cooperatives adopt more often the progressive replantation of trees
- Overall, certified farmers in Côte d'Ivoire and those belonging to both groups in Côte d'Ivoire and Ghana have higher sustainability score

5- References

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