

# Climate-smart intensification of West-Africa's cocoa systems

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## Can supply keep up with demand?

Global demand for cocoa is increasing by 2-3% annually, particularly due to growth in Asia. About 70% of global supply originates from West-Africa, where cocoa is produced by smallholder farmers (<5ha). Their yields are low (10-30% of potential) and highly variable with limited use of external nutrient inputs. Over the past decades, cocoa supply relied largely on the expansion of the crop into 'fresh' forest. Consequently, cocoa has been a key driver of deforestation. With less than 15% of the original cover in West Africa remaining, the cocoa industry is increasingly concerned about its future supply, particularly now that recent studies revealed that climate change further threatens the current production zones (Fig 1). Climate-smart intensification is required to ensure both smallholder livelihoods and the industry's need.

Suitability Change for Cocoa Growing Regions by 2050

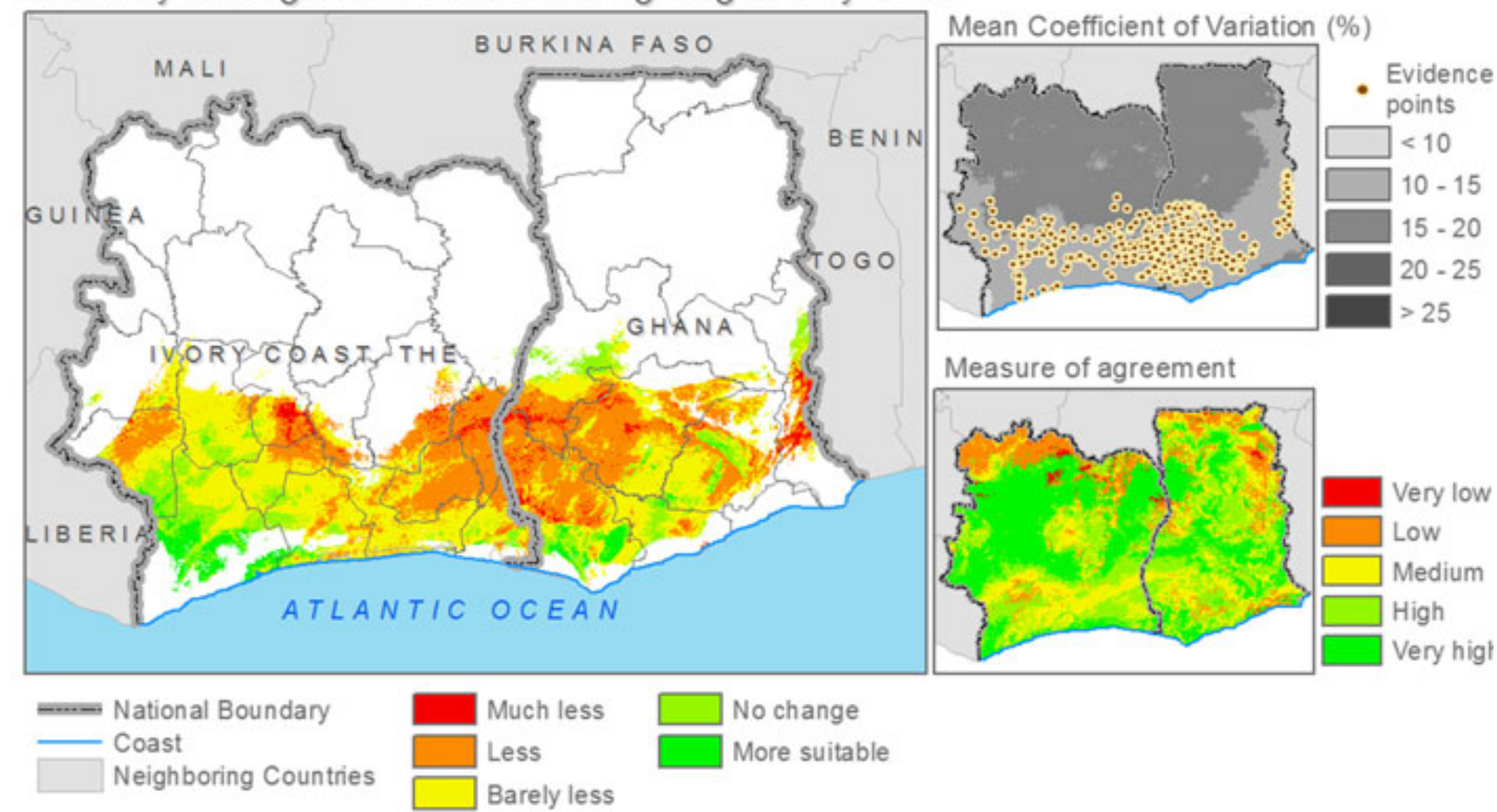


Fig 1: Suitability change for cocoa (Laderach et al., 2013)

## Intensification and fertilizer use

Over the past decades, many of the cocoa actors have promoted full-sun intensified systems. Whereas these systems may seem to have the highest production potential, they do expose farmers to risks of climate variability and reduced sustainability. Fertilizer use is currently limited to areas where fallow land is no longer available (See Fig 2 – example Mounjo, Cameroon) and/or where government programs (read subsidies) enhance access to external nutrient inputs -> fertilizers to protect forests.

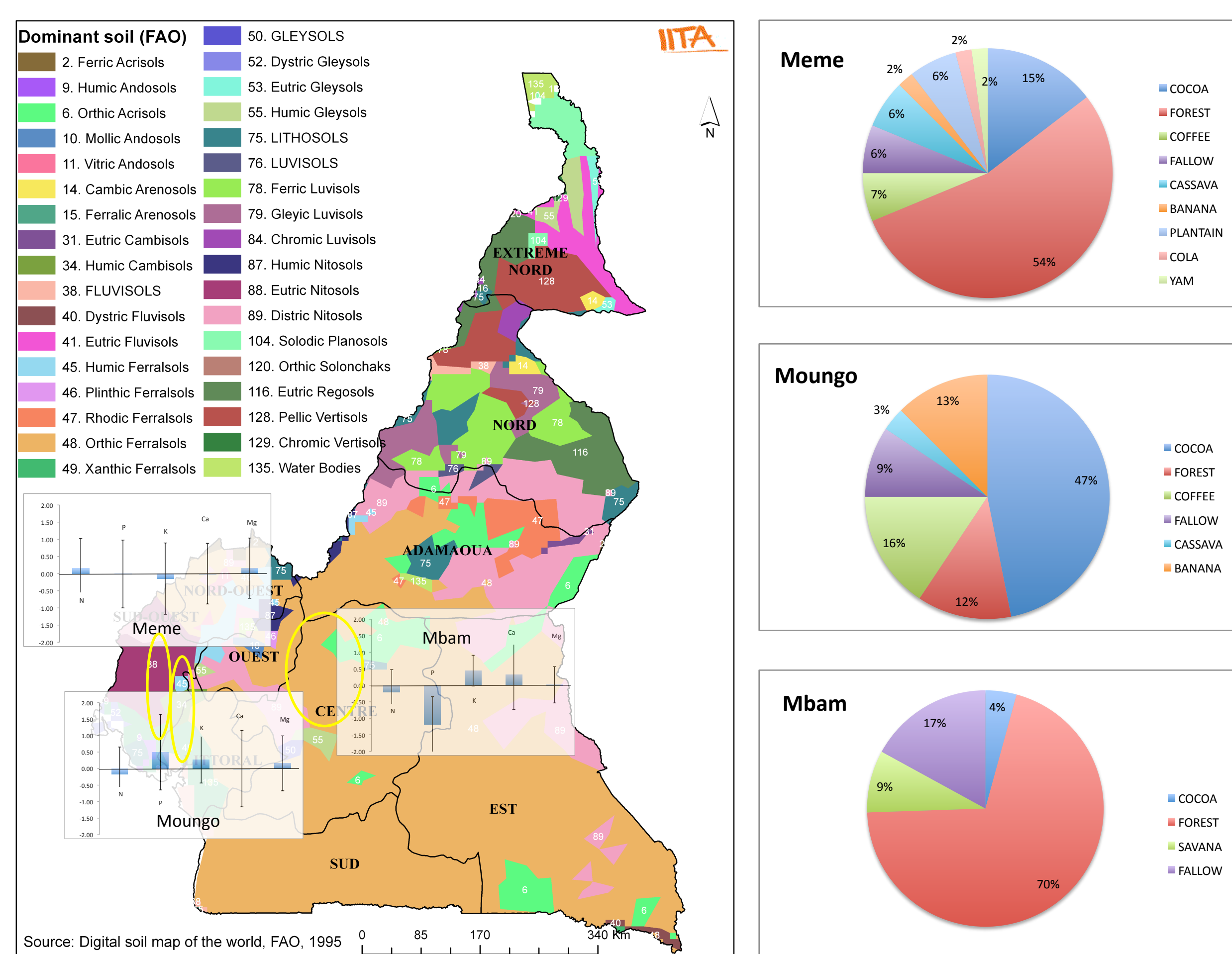


Fig 2: In Cameroon, fertilizer is only used (52%) on cocoa in Mounjo where land pressure is high and 'spare' forest is no longer available – bar graphs depict nutrient imbalances (CND) - pie charts depict land use prior to planting cocoa



Fig 3: Farm Field Schools for participatory knowledge development and sharing – S. Muilerman

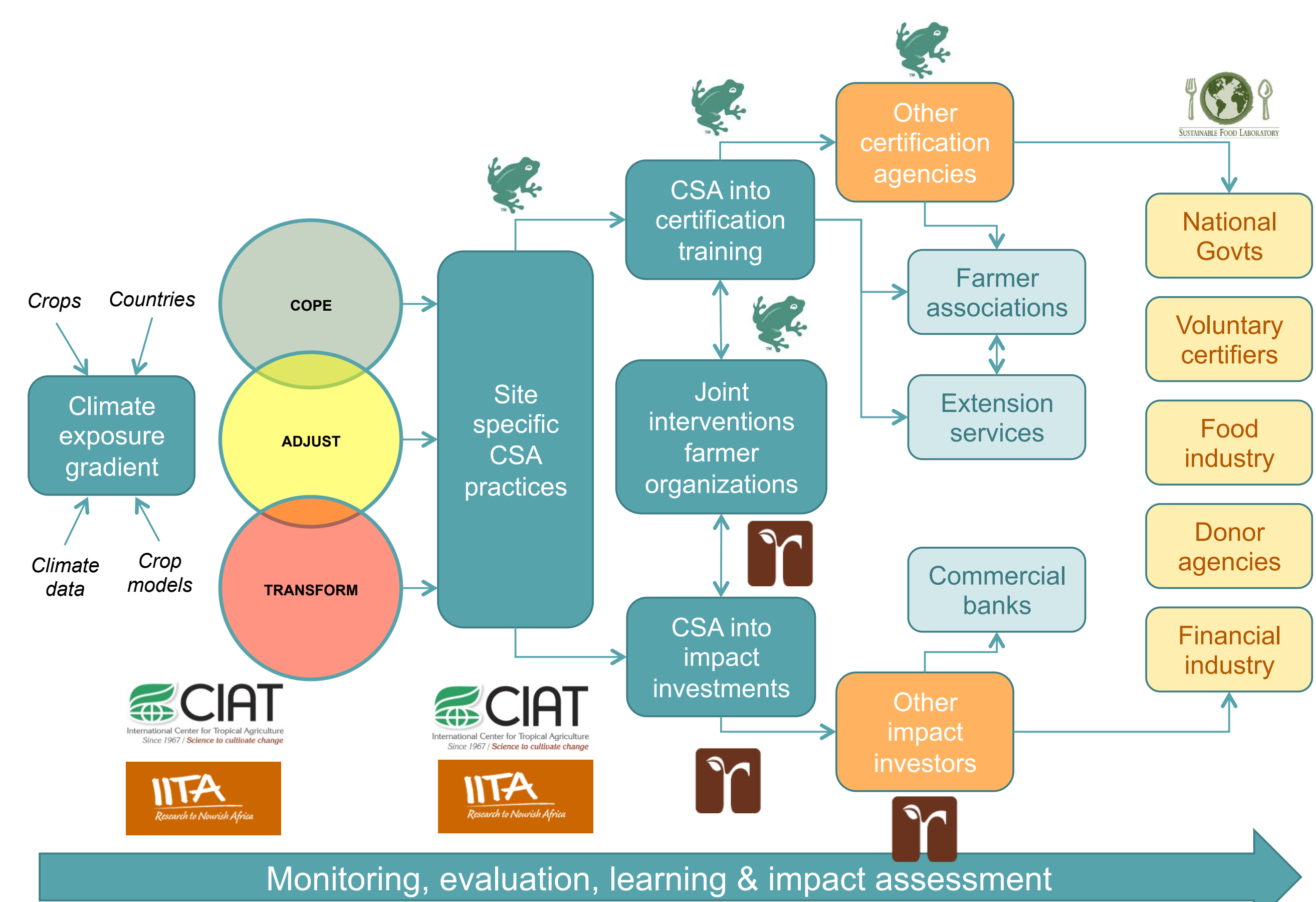


Fig 4: CSA innovation in R4D feeds into innovative approach for private-public scaling (Lundy et al., unpublished)

## Scaling approach

There is an urgent need for (i) technical recommendations on how to achieve intensified climate-smart cocoa systems and (ii) improved channels of communicating this knowledge to the smallholders. This challenge may require enhanced networks and novel platforms in a sector that is traditionally characterized by a high degree of fragmentation.

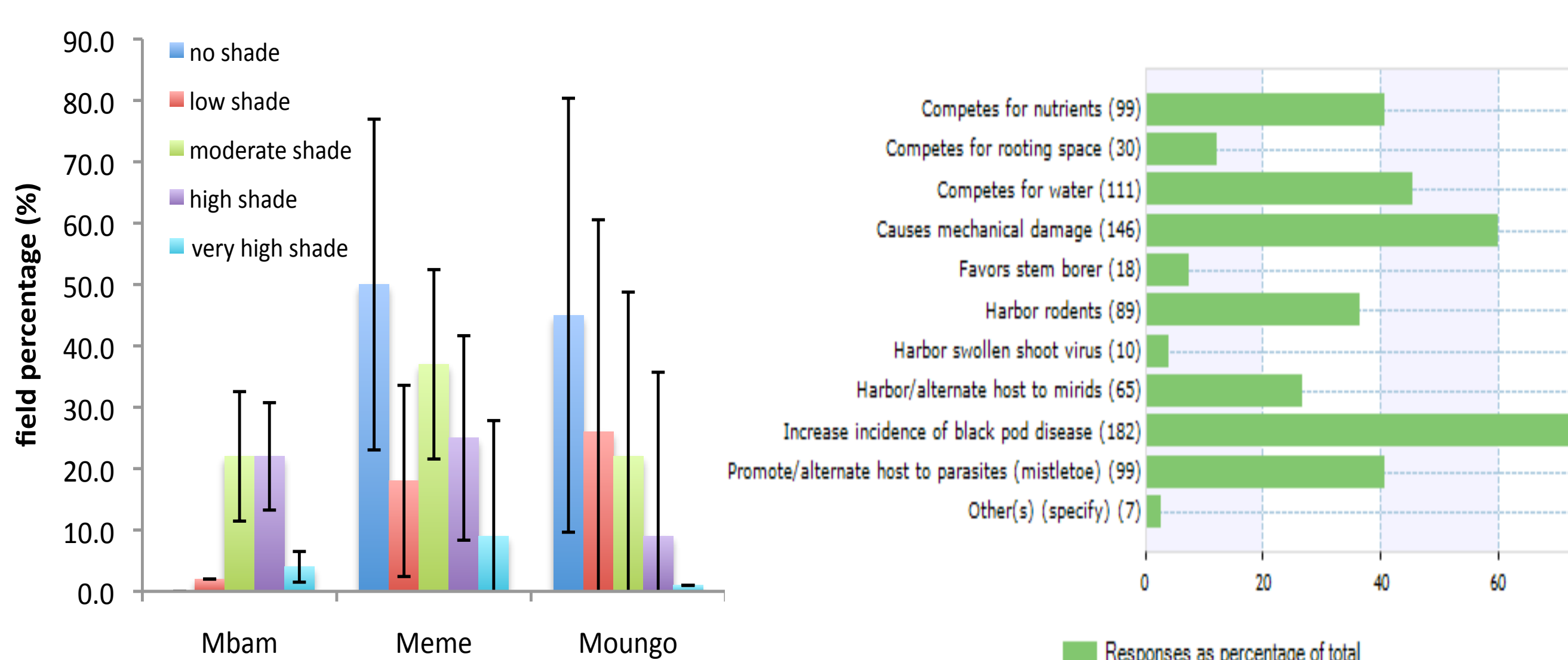
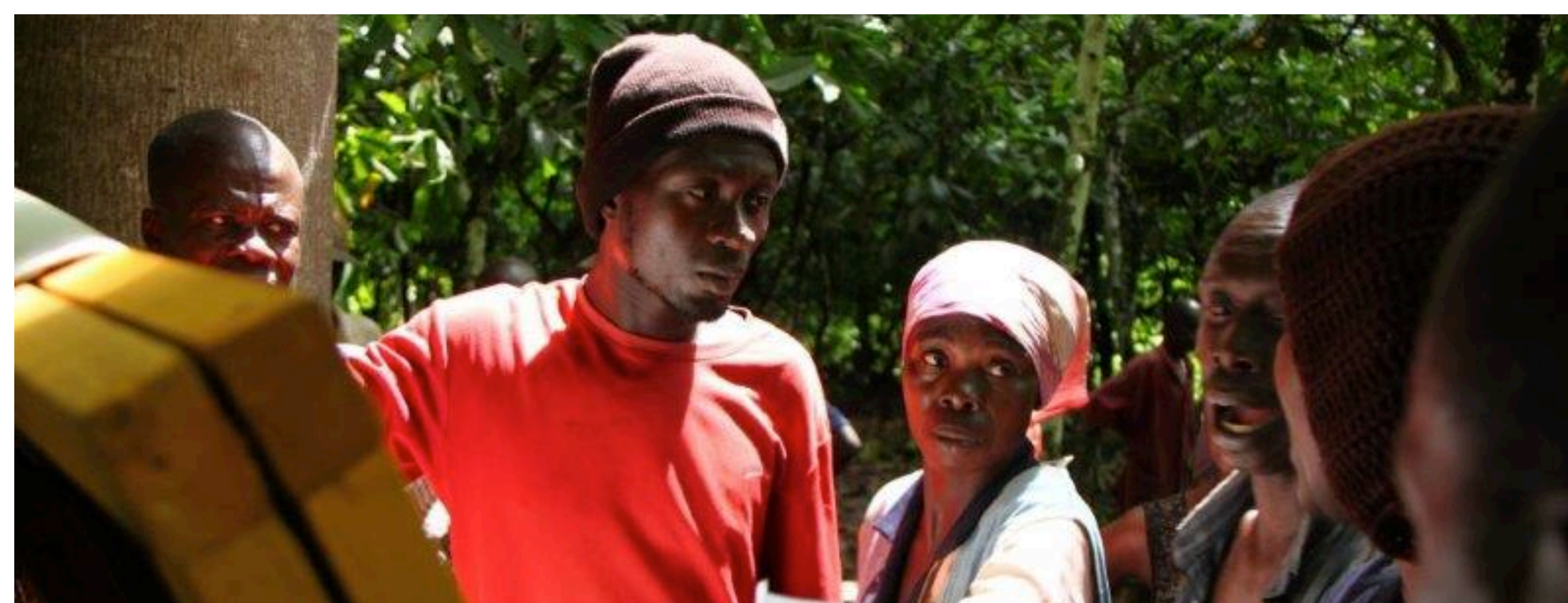


Fig 5 (left): No / low shade systems dominate in intensified smallholder cocoa systems (right): Farmer-perceived constraints to shade as CSA technology Source Fig 2 and Fig 5-left: Jassogne et al., unpublished. Source Fig 5-right: Manu et al., unpublished



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