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## Cameroon’s Cocoa Farmers Intensify and Expand Production Yet Retain Shade Trees: Evidence from two Decades

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### Abstract

More than 80 % of the world’s cocoa is grown in West Africa, traditionally under thinned forest where timber, fruit, or nut trees were retained. Nowadays, farmers, particularly in Côte d’Ivoire, are reportedly shifting to full-sun cocoa. Cameroon is the world’s 5<sup>th</sup> largest cocoa producer, where it is grown by 70 % of farmers in the humid south, yet yields are low and constrained by blackpod disease (*Phytophthora megakarya*). Our objective was to assess how management changes have impacted yields between 2001 and 2018. We hypothesised that shade trees had been removed and intensification has occurred fueled by increased inputs. In 2001, we conducted surveys in seven villages with 210 farmers, then again in 2018 with 126 farmers. In 2018, 69 % of farmers had extended their cocoa fields, compared with 28 % in 2001. 54 % of farmers had a nursery compared with 25 % in 2001. In 2018, 61 % of the farmers said that cocoa sales were their largest revenue sources, compared with 40 % in 2001. In 2001, no farmer used herbicide or fertiliser whereas by 2018 this had increased to 9 % for both products. Numbers of farmers using insecticides quadrupled from 18 % in 2001 to 69 % in 2018. Fungicides remained the most used pesticide with 65 % of farmers using them in 2001 compared with 86 % in 2018. Walking time to the field more than doubled and more farms had been established after partial clearance of secondary forest than after short fallow. The global trend towards full-sun systems was not observed as there were less farmers in 2018 indicating they used full-sun systems and more reported using higher shade levels. Average reported yields were higher in 2018 (176 kg ha<sup>-1</sup>) than in 2001 (115 kg ha<sup>-1</sup>). Yield was positively and significantly correlated with total costs and labour invested, yet negatively correlated with total area of cocoa holding. Bucking the regional trend, Cameroon’s cocoa farmers have simultaneously pursued expansion into secondary forest and intensification by increasing chemical inputs and labour investment, and yields have increased by 50 %. Full-sun systems are rare; farmers still cultivate traditional, carbon-rich agroforestry systems albeit with more inputs.

**Keywords:** Agroforestry, blackpod, cocoa, intensification, West Africa

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