Testing Strategies for Riparian Restoration in Oil Palm Plantations

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ABSTRACT

Riparian buffer strips (also known as riparian reserves or margins) are areas of non-cultivated habitat beside waterways within agricultural areas. They can provide multiple benefits including reduction of bank erosion and soil loss, maintenance of water quality and natural hydrology, carbon storage, and also provision of habitat for a wide range of biodiversity. Given their numerous benefits, multiple certification criteria, as well as government regulations, require that riparian buffers should be preserved in oil palm plantations. Although natural forest buffers have been retained in some plantations, they vary in terms of habitat quality, and are completely absent in some plantations. There is therefore a widespread need for restoration of riparian buffers. However, methods for how best to do this in oil palm plantations are poorly developed.

The Biodiversity and Ecosystem Function in Tropical Agriculture (BEFTA) Programme is a research collaboration between Sinar Mas Agro Resources and Technology Research Institute (SMARTRI) and the University of Cambridge, UK, which is testing strategies for habitat management in oil palm. As part of this, they have recently established a large scale, long term experimental project to test different strategies for riparian restoration in oil palm plantations: the Riparian Ecosystem Restoration in Tropical Agriculture (RERTA) Project.

The RERTA Project is establishing replicated riparian restoration treatments across oil palm plantations in Riau Province, Sumatra, Indonesia. Experimental restoration treatments include assessments of the effects of: leaving no riparian buffer; leaving a mature oil palm buffer; removing mature oil palm and planting native tree seedlings; and leaving mature oil palm as well as planting native tree seedlings. We are taking samples at different distances from the river, as well as within the river. We are assessing the effects of different riparian restoration treatments on a wide range of environmental variables, biodiversity of key taxa, ecosystem processes, and economic factors relating to each restoration strategy. Measurements are being taken before and after establishment of riparian experimental treatments using a before-after-control-impact (BACI) design.

We will present details of the design of this project and early results. We invite discussion about our work, as well as possibilities for collaboration.