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Editors:

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Cattle Impact on Secondary Vegetation Proposed as Component for Smallholder Pastures in the Eastern Amazon, Brazil — Vegetation Development and Composition after 42 Months of Grazing

STEFAN HOHNWALD¹, BARBARA RISCHKOWSKY¹, JOSÉ ADÉRITO RODRIGUES FILHO², ARI PINHEIRO CAMARÃO², RAINER SCHULTZE-KRAFT³, JOHN M. KING¹

¹*Georg-August-Universität Göttingen, Institute of Animal Breeding and Husbandry in the Tropics and Subtropics, Germany*

²*Brazilian Agricultural Research Corporation (EMBRAPA), Brazil*

³*University of Hohenheim, Institute of Plant Production and Agroecology in the Tropics and Subtropics, Department of Biodiversity and Land Rehabilitation, Germany*

In the Eastern Amazon cattle pastures tend to ecologically degrade 7–10 years after establishment. Therefore, there is a need to develop sustainable cattle production systems. An innovative model for smallholdings was proposed integrating pastures as an intermediate stage between the crop and fallow phase in the slash-and-burn cultivation, which is still commonly practised in northeastern Pará. Preliminary results from a researcher-managed on-farm experiment showed that the partly tolerated secondary vegetation (capoeira) develops with only minor disturbances in the beginning of the pasture phase. Therefore, it was hypothesised that cattle will also not endanger further vegetation development. The vegetation of a grass-capoeira pasture (GCP) was compared against two controls in the form of a conventional grass (*Brachiaria humidicola*) pasture (GP) and an undisturbed re-growth of capoeira (UC). The pastures had been grazed in a rotational system at 1.49 and 1.23 LU ha⁻¹ in the first two phases and 0.91 LU ha⁻¹ in the third phase. Vegetation sampling was carried out in 10 m² subplots (n=30) 42 months after start of the first grazing phase (March 2000). In contrast to sampling after 16 months GCP had the highest phytodiversity although it decreased from 67 to 64 species. But UC showed a drastic decline from 72 to species 59 and thus was not different from GP ($p < 0.05$), which remained at 57. The total soil cover, excluding the forage grass, declined on UC from 585 to 410 %, on GCP from 278 to 231 %, and stayed nearly constant on GP from 141 compared to 133 %. The strong decline in species number on UC was due to fewer herbs and grasses as the woody capoeira species had already started to shade them out. Concluding the cattle impact on a GCP remains uncritical for the restoration function in the fallow phase even after more than three years of grazing. The animal effect did not alter the capoeira. The biomass accumulation of the subsequent fallow will just be slightly retarded. The results confirm that GCP might be an interesting alternative to avoid ecological pasture degradation. However, further testing has to demonstrate the socio-economic feasibility of this type of pasture.

Contact Address: Stefan Hohnwald, Georg-August-Universität Göttingen, Institute of Animal Breeding and Husbandry in the Tropics and Subtropics, Kellnerweg 6, 37077 Göttingen, Germany, e-mail: shohnwa@gwdg.de