Surface crusts of the tiger bush

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Banded vegetation patterning occurs in many arid and semi-arid regions of the world. Although its driving force may be the wind action in some areas, most authors hypothesized the role of the bare interbands as a source of runon for the downslope vegetated bands. Such assumption is supported by the concentric distribution of arcs to the contour on the plateaux. Banded vegetation patterns occur on a very large variety of soils which have in common to develop impervious crusts when left exposed to direct impact of raindrops. Even though the role of these crusts has often been mentioned, no detailed study has been conducted on this issue. The objectives of this paper were to present: (i) the different types of crusts in this typical environment, (ii) their spatial distribution, (iii) some consequences its dynamic.

The study area is located in the Niamey region in Niger on lateritic plateaux. The methods of characterization included detailed field surveys at various scales. Samples of the soil surface were collected for mechanical analysis, thin section preparation, optic and SEM observations.

A wide variety of crusts were characterized. In the bare ground interbands, they included structural sieving, runoff, erosion, gravel and sedimentation crusts. In the vegetated band, only a limited area was protected by a permanent litter cover and was therefore kept immune to surface crusting. In upslope and downslope edges of the vegetated band, structural and sedimentation crusts were common. A particular emphasis has been given to cryptogams which colonize surface crusts, more peculiarly erosion and sedimentation crusts, in the bare ground interband as well as under vegetation. Again a wide variety of

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cryptogams were identified.Due to a longer evolution, the crusts in the tiger bush environment were more complex than in cultivated land where they are rejuvenated by tillage practices. However, they involved a very clear succession along the transect of slaking, sorting, erosion, sedimentation and bioturbation stages. This spatial distribution suggests a temporal succession and therefore an upslope migration of the system.