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Local knowledge and perception of biological soil crusts by land users in the Sahel (Niger)

K. J-M Ambouta (1,2), B. Hassan Souley (1), O. Malam Issa (3,4), J. L. Rajot (5), and A Mohamadou (6)

(1) Université Abdou Moumouni, Département des Sciences de la Terre, Niamey, Niger, (2) Université de Tahoua BP 255 Tahoua-NIGER, (3) IRD-BIOEMCO UMR211- BP 11416, Niamey, NIGER, (4) Université de Reims Champagne Ardenne, GEGENAA EA 3795 , (5) IRD, UMR 211 BIOEMCO, Université Paris Est Créteil, UMR 7583 CNRS, LISA, Créteil, France, (6) LASDEL BP 12901, Niamey, Niger

Local knowledge, i.e. knowledge based on accumulation of observations is of great interest for many scientific fields as it can help for identification, evaluation and selection of relevant indicators and furthermore for progress through conservation goals. This study aimed at gathering and understanding the local knowledge and perception of biological soil crusts (BSC) by users of land, pastoralists that cross the Sahel and sedentary farmers.
The methodological approach is based on a semi-direct surveys conducted on a north-south rainfall gradient (350 to 650 mm/year) including agricultural- and pastoral-dominated areas in western Niger. Denomination, formation processes, occurrence, distribution and role of biological soil crusts are among the major issues of the inquiry.
The results of the surveys showed that BSC are mainly identified by the names of “Bankwado” and “Korobanda”, respectively in hausa and zarma langages, what means "toad back". Other denominations varying according to region, ethnic groups and users are used. They are all related to the aspects, colors and behaviour of BSC with regard wetting and drying cycle. From the point of view of users depressed areas and land lied fallow are favourable places for the occurrence of BSC, while cultivation and observed changes in rainfall regimes represent negative factors. The formation processes of BSC are mainly related to the occurrence and the impact of rain and wind on soil surface. Their roles in protecting soil against degradation or as an indicator of soil fertility were recognised by at least 83% of farmers and breeders. This study reveals significant aspects of BSC already validated by scientific knowledge. Integrating the two forms of knowledge will help to define relevant indicators of soil surface dynamics and to perform practices to minimize farming and grazing impacts on BSCs.