

Agrosilvopastoral management of Sahelian lands

Role of animal production in agroforest and natural forest management

In the past, the natural vegetation of Sahelian landscapes comprised wooded grasslands on the slopes and various types of forest in the valleys. Nowadays, in every inhabited zone, most of the deep soils have been cleared and are now cultivated. Cohabitation between crop farmers and other users of these areas (particularly stock farmers), who often have conflicting interests, is sometimes fraught. However, through various projects, CIRAD researchers have shown that these groups can organize themselves and come up with land management solutions that optimize any possible synergies.



Fula shepherd children at the foot of a shea tree. © R. Peltier/CIRAD



Young shepherd leading his herd through a forest area used for fuelwood production, in Niger. © R. Peltier/CIRAD

Dunes, hills and dry plateaus, which are often stony and difficult to cultivate, serve as collective areas for grazing, hunting and gathering, particularly of wood. Copses and small areas of bottomland forest have in some cases been preserved around ponds and on riverbanks. The farmers, for their part, have almost all kept in their fields a few trees they see as useful and not too much of a problem for their crops.

Livestock is led into uncultivated areas during the rainy season, and as harvesting progresses, into fields to eat straw and other crop residues. Throughout the year, the animals thus eat

both herbaceous plants and “aerial fodder” on trees (leaves, bark and young shoots, flowers and fruit). The latter is particularly important towards the end of the dry season, once all the herbaceous biomass has dried: the animals need the nitrogen in the aerial fodder to digest straw.

However, free livestock movements within these landscapes are increasingly hindered, if not prevented, by the densification of crops and animals and the specialization and privatization of various areas. This has adverse effects on the functioning of the various agrosilvopastoral systems, and can cause very serious socioeconomic problems.

Contact

Régis Peltier

CIRAD, UPR BSEF
Tropical Forest Goods
and Ecosystem Services
Campus international de
Baillarguet
34398 Montpellier Cedex 5
France

regis.peltier@cirad.fr

Integrating animal production into harvested forests

Certain areas are steadily being appropriated by woodcutters' organizations. This is the case in Niger and Mali, where CIRAD has supported the introduction of a local natural resource management policy and the creation of woodcutters' associations and rural fuelwood markets. Unfortunately, those groups sometimes have a tendency to exclude stock farmers, claiming that their animals damage trees, particularly stump sprouts. However, scientists have shown that livestock in fact has a very limited impact on tree survival and growth in the Sahel. On the contrary, grazing during the rainy season primarily concerns the herbaceous layer and in fact reduces dry season fire damage to trees. Lastly, stock farmers are objective allies of forest users in the fight against excessive clearing.



Faidherbia albida parks are a perfect example of a positive combination of animal and crop farming and wood production. © R. Peltier/CIRAD

Could access to fodder be traded for fertilizing fields?

Some stock farmers have settled partially and are practising agriculture. At the same time, crop farmers have acquired animals and are increasingly claiming exclusive ownership of their plots and keeping straw and tree products solely for their own animals, particularly in densely populated areas. However, there are still regions in which farmers have very few animals, and any agrosilvopastoral areas are still under-used for animal production. In such areas, untrimmed trees may become a hindrance to crops and be logged. It is thus crucial to recommend introducing as widely as possible management methods that

encompass the many uses of areas and of their resources, based on traditional service and product exchange practices (fodder for manure, also cereals for milk, etc).

Preserving stock farmers' access to springs and bottomland water points

Riverside and bottomland forests are often cleared to plant market garden or flood-recession crops, orchards or timber trees, which deprives animals of access to water points in the thick of the dry season, or causes the water points to dry out. This intensification of fertile and irrigable zones may be legitimate as far as the crop farmers are concerned, but the traditional, administrative and political authorities also need to take account of the irreplaceable value of these unique landscapes and their key role for wildlife and livestock.

Setting up negotiating platforms for multi-use land management

Cohabitation between the different users of a given area, who often have conflicting short-term interests and customs, is not easily managed. Through various projects, researchers from CIRAD have shown that these groups can organize themselves, begin talks, come up with scenarios and find land management solutions that optimize any possible synergies. This involves creating and supervising negotiating platforms and conducting multi-stakeholder modelling. Generally speaking, taking account of the pastoral value of trees helps to ensure management methods that preserve biodiversity, and indeed biomass carbon stocks, more effectively, while providing local people with more diversified sources of income and helping to keep the peace between the different human groups concerned.



Discussion between stock and crop farmers concerning joint land management in a village in northern Cameroon. © R. Peltier/ CIRAD



Bottomland *Acacia nilotica* forest, which is key to the animal production system practised in a valley in Niger. The system is under threat from uncontrolled clearance for farming. © R. Peltier/ CIRAD

Partners

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