



EVALUATION OF AGROECOLOGY IN THE VILLAGES OF GUIÈ AND DOURÉ (CENTRAL PLATEAU REGION, BURKINA FASO)

The economic and social effects of agroecological systems and practices inside and outside Sahelian bocage landscapes, and preconditions for their development

This note presents a summary of the study conducted between 2020 and 2022 in the villages of Guiè (in the commune of Dapélogo) and Douré (in the commune of Toeghin) (Central Plateau region of Burkina Faso), as part of the project entitled Sharing the Sahelian Bocage (Bocage sahélien en partage, BSP). The BSP project was conducted by TERRE VERTE and its partners (Zoramb Naagtaaba Association – AZN, La Trame association, French National Research Institute for Sustainable Development – IRD, and GRET) as part of the ECOWAS Agroecology Programme (EAP), with financial support from Agence française de développement (AFD).¹

The objective of the study was to assess the socio-economic effects of agroecological systems and practices inside and outside three bocage schemes, or hedgerow landscape schemes, set up by TERRE VERTE and AZN, and to evaluate the preconditions for developing the implementation of these systems and practices. The study was conducted as part of the agroecology evaluation activities conducted by the Group for Agroecological Transitions (GTAE) and its scientific partners (Agroparistech, Cirad, IRD and Institut Agro Montpellier).

THE MAIN RESULTS RELATING TO THE EFFECTS OF AND PRECONDITIONS FOR DEVELOPMENT OF AGROECOLOGY

THE ECONOMIC, SOCIAL AND ECOLOGICAL CONTEXT, AND CHARACTERISATION OF FARMS

The zone covered by the study is marked by low, irregular rainfall, severe land degradation, and decline of shrub and tree vegetation and fallow land. In this context, agricultural yields have decreased significantly over the last sixty or so years, and livestock numbers have also dropped.

1. <https://gret.org/publication/evaluation-de-lagroecologie-dans-les-villages-de-guie-et-doure-region-du-plateau-central-burkina-faso> (in French only).

Agriculture is characterised by the predominance of small farms (0.5 to 4 ha/family agricultural labour unit) mainly concentrating on cereal production (sorghum and millet) and cowpea, and on breeding small ruminants and poultry. Food security is a primary objective for all of these farms. The study identified different types of farms: large farms with more or less livestock breeding; small farms with predominant livestock breeding; small, averagely intensive farms; farms with scarce resources; and intermediary farms.

A large number of farms, particularly those with scarce resources, generate income levels that place them beneath the poverty line. This income is insufficient to enable a dynamic for the development of agriculture and restoration of the cultivated ecosystem. Only larger farms and small farms with predominant livestock breeding seem able to engage in a process of development. Low income also leads to food insecurity during hunger gap periods and bad years.

THE PRESENCE OF AGROECOLOGY

In the context of crisis in cultivated ecosystems, green revolution solutions seem inappropriate and have, in fact, limited presence. Farmers do however put practices in place that are more or less agroecological, particularly in terms of integration between agriculture and livestock breeding (valorisation of straw, haulms and organic manure, animal traction). However, agriculture and livestock breeding integration remains limited due to small herd sizes and therefore low levels of manure, incomplete valorisation of the latter, and the fact that many farmers have no means of traction.

For twenty years now, the practice of *zaï* has been developing, concentrating application of organic manure around plants cultivated and thereby obtaining better yields. Various other agroecological practices have developed, such as stone bunds and assisted natural regeneration (ANR). Since 1989, TERRE VERTE and AZN have been promoting agroecological transition as part

of bocage schemes, with the objective of restoring and protecting soil, better valorising the water resource, protecting crops from destruction related to common grazing, and creating a framework to provide technical support to farmers.

Overall, based on a grid for characterisation of the degree of agro-ecologisation of farms, adapted to the territory, it can be considered that farms are averagely to highly agroecological. The most agroecological are those with a high level of agriculture-livestock breeding integration, or with a plot in a bocage scheme.

THE POSITIVE EFFECTS OF AGROECOLOGY

In the context of the zone, a significant, sustainable increase in food production and added value levels per usable farm area is a central issue. To achieve this, the implementation of agroecological practices is a crucial precondition. Hence, all of the farms that obtain relatively high added value levels – 200 to 500,000 FCFA/ha (all the farms in set C in the diagram below), compared to 50 to 200,000 FCFA/ha for the other farms (sets A and B) – are among the most agroecological. However, numerous farms (set B), although more agroecological than the others (set A), do not succeed in generating a better level of added value per usable farm area. The importance of livestock breeding and strong agriculture-livestock integration are key factors for increasing added value. The bocage area has less effect, but the situation is variable according to schemes considered. When surplus yields in the schemes are moderate (+20 to +30%), this gain is compensated in small farms by the fact that a part of their cultivated area remains fallow and is therefore not directly productive, except thanks to grazing. However, when surplus yields are higher (up to +70% in one of the schemes), the increase in added value is substantial.

The economic effects of the schemes depend on the physical substrate (less effect when land was initially very degraded), on the social conditions of their appropriation by farmers (under-use of one of the schemes), and on the type of farm (small farms are penalised for leaving a large part of their land in the area fallow, which is considered by farmers as a rule that must be respected).

More generally, the bocage schemes enable better protection and increased health of soil, as demonstrated by the evaluation conducted by IRD in parallel to the study carried out by GRET, and better valorisation of available water, which explains the better yields.

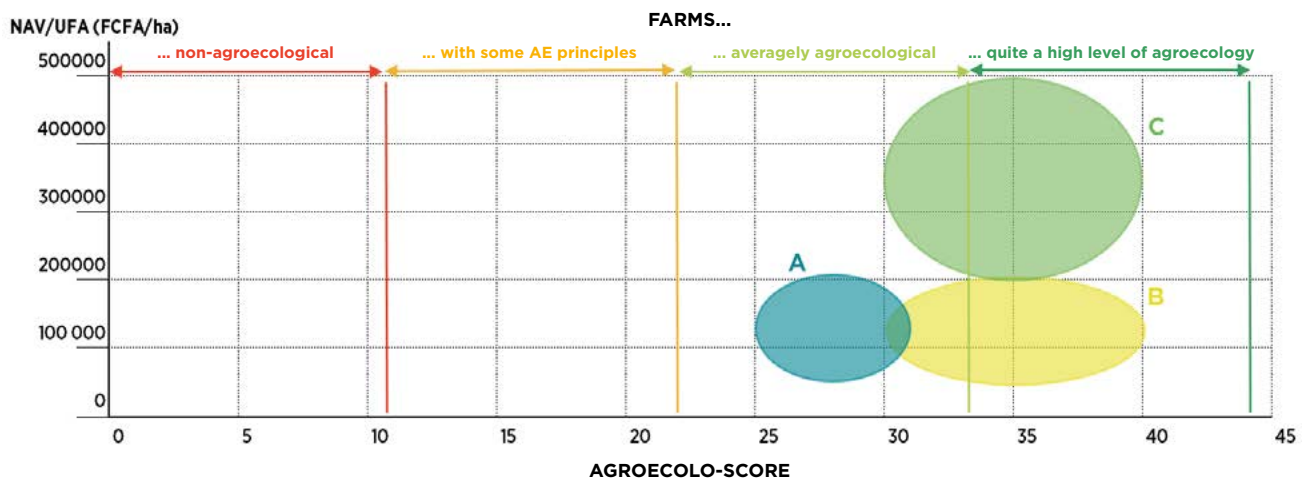
The bocage schemes also enable protection from common grazing: farmers can sow earlier and harvest later, without risking crop destruction and without having to plan for guarding their crops. Straw can be kept in the ground after the harvest and collected several days later. Lastly, it becomes possible, early in the season, to sow short-cycle species on a smaller scale and thereby obtain food during the hunger gap.

In general, compared to other farms, the most agroecological farms' food security is much better during the hunger gap and bad years. This can be explained on the one hand by the positive role of livestock farming and its integration with agricultural activities (additional income, organic manure), and on

THE TANKOURI BOCAGE SCHEME © Ciné Yam



IDENTIFICATION OF THREE SETS OF FARMS BASED ON LEVELS OF AGRO-ECOLOGISATION (AGROECOLO-SCORE) AND ADDED VALUE PER USABLE FARM AREA (NAV/UFA)



the other hand by the positive effect of the bocage schemes when they enable a substantial increase in cereal yields and the cultivation of short-cycle species early in the season.

The schemes also provide an overall framework for experimentation, discussions among farmers and technical support.

However, the schemes do not often enable a real surge in productivity, as the increase in yields is partially compensated by the presence of fallow land that is not directly productive.

PRECONDITIONS FOR THE DEVELOPMENT OF AGROECOLOGY

The main factors limiting agroecological transition are low availability of organic matter, the quantity and arduousness of work required for certain practices, low levels of capital available, and farming families' income and poverty levels, which prevent them from investing. Common grazing rights are a further limitation, which the bocage schemes make it possible to eliminate.

The development of agroecological systems and practices is driven by severe degradation of the ecosystem. It is largely favoured by external interventions, and financial, organisational and technical support, in particular in the case of bocage schemes. However, this support does not resolve constraints related to under-capitalisation in terms of livestock.

In addition, a feeling of insecurity regarding sustainable possession of the schemes is sometimes a constraint for greater involvement of farmers. Constraints that are specific to the use of one of the schemes studied were also identified: severe initial degradation of land, opposition from an influential figure, abandonment of the majority of plots, concentration of damage by birds in the plots cultivated, and destruction of fences to allow animals to enter.

RECOMMENDATIONS: HIGHLIGHTING THE ADVANTAGES OF BOCAGE SCHEMES

Bocage schemes are a precious asset for agroecological transition and for farming families' economic and social development.

THE CHALLENGE OF DEVELOPING LIVESTOCK FARMING AND FODDER PRODUCTION

Further agroecological intensification would require higher capacity to produce and valorise organic manure, and therefore increasing herds, which would also make it possible to increase monetary income from livestock farming.

An increase in herds raises the issue of an increase in farms' fodder production. The bocage scheme can contribute to increasing production of fodder from trees, according to the choice of species. An increase of fodder production in areas of fallow land is a central issue. Sowing legume seeds and valorisation of fodder produced through rotational grazing can contribute to this. Replacing fallow land with temporary prairies included in the rotation can be facilitated by the very existence of the scheme. The latter can ensure protection of crops from wandering animals and facilitate rotational grazing.

However, the farmers are not used to growing fodder and, given the food insecurity context in the zone, they perceive growing fodder rather than food products as being difficult. This is why part of the fallow land could be replaced by legume crops with a dual purpose, in particular cowpea, which would lead to an intensification of crop rotations. This replacement could be partial, at least initially, in order to maintain part of the surface area for grazing.

The bocage schemes could also provide an opportunity to test the development of milk production. Even

though consumption of milk is not widespread in the zone, it is likely to improve families' nutritional intake. The proximity to the capital also provides potential market outlets.

Support for the development of livestock farming and its integration in agricultural activities would require extending the scope of AZN's technical support.

AGRICULTURAL DIVERSIFICATION

When it seems feasible, the development of irrigation in the schemes would enable complementary crops to be grown on a small scale, in particular vegetable crops in the off-season. This would contribute to improving families' monetary income and nutritional intake.

Another avenue to explore is the valorisation of hedgerows inside the schemes, for example with species producing medicinal plants or fruit trees.

VALORISATION OF THE SCHEMES' PRODUCTION

Some production could be marketed and valorised by a mark of recognition, based on an existing agroecological label or a "Sahelian bocage" label. The schemes could provide an opportunity to test a collective organisation for the marketing and distribution of agricultural products.

POSSIBLE EVOLUTIONS IN TERMS OF SUPPORT SYSTEMS

The current mode of agricultural advice is quite classical (prior identification of practices, development and validation by the experimental farm, subsequent dissemination in farming circles, weak role of farmer experimentation, lack of research steered by farmers). Evolution towards participative research-development by farmers (farmer trials, discussions, research steered by farmers) can be envisaged. New communication technologies also provide new possibilities of exchange with and between farmers.

For this, the AZN association's experience is a precious lever. It would be possible to draw inspiration from numerous experiences. Visits to experiences in the West-African region could inform reflections on both agricultural techniques and research-development systems. This would also require professional and positional evolutions on the part of agricultural technicians (role of facilitation and support for farmer research-development dynamics) and therefore specific support.

In parallel, it would be necessary to question the possible perverse effects of the grants system, although grants are partly necessary. This system can in fact create structural dependency among farmers, generate bias in technical and economic choices, weaken appropriation of the schemes, and threaten their viability over the long term. It would be worth pursuing global discussion of these issues with farmers.

ENSURING THE EXISTENCE OF PRECONDITIONS FOR SOCIAL APPROPRIATION OF THE SCHEMES

The development of agroecology in the schemes requires full appropriation by farmers, which requires that they have control over decisions on operating rules. Land tenure groups set up by the farmers now define the

operating rules for the schemes. However, the support and grants provided by the experimental farm depend partly on compliance with a certain number of rules. This can influence collective and individual decisions by farmers, which does not facilitate total appropriation of the schemes or the practices promoted.

Full appropriation also requires the existence of a feeling of security regarding the ownership of land. Therefore, it would be necessary to clarify some misunderstandings around risks of land-grabbing in the schemes. Work would also need to be carried out to eliminate constraints blocking valorisation of land in one of the schemes, through a process of consultation between the various stakeholders.

On the scale of the entire territory, integration of the subject of livestock farming in relation to the bocage schemes raises the question of involving livestock farmers. It is important that the schemes do not aggravate tensions that may exist between livestock farmers and crop farmers, and on the contrary, that they contribute to creating greater cohesion by including livestock farmers in the dynamic. ■



This briefing note was written by

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Photo page 1: Farmers using the zai technique © GRET
Translation: Jenny Gilbert