

Northern Ghana Programme

The original aim of the research collaboration initiated by ILEIA was to validate LEISA as a viable option for agriculture. The dry land savanna site selected for this research was northern Ghana. A network of NGOs known as the Association of Church Development Projects (ACDEP), based in Tamale, the

Sandema and Garu, where animal traction is becoming widespread for tillage; and Tamale, a site with a high degree of urbanisation (Atengdem & Dery p 38).

Stakeholder concerted action

Collaboration began when ILEIA and ACDEP invited various organisations concerned with agricultural research and development in northern Ghana to a preparatory workshop in June 1995.

ILEIA had a mandate to work with local institutions in validating LEISA in scientific terms. This was an interest shared by scientists and academics from SARI, ARI and UDS, who saw the research project as an opportunity for field research and publication. In addition, the UDS staff saw it as an opportunity to strengthen links with NGOs in order to fulfil the mandate of pursuing a grassroots problem-solving approach to development. The MOFA staff were motivated primarily by the possibility of reaching more farmers with the additional resources that the project would provide. The church-based organisations within ACDEP were mainly interested in helping farmers solve their practical problems. The formation of the NGLWG, the long process of reaching an agreement about the purposes and mechanisms of collaboration with ILEIA, and the dynamics of the SCA are described in more detail in the article by Alebikiya (p 40)

The exposure of staff at UDS to the experience of supporting farmers' experimentation with LEISA techniques helped to break down barriers in communication between academics, extension agents and farmers. As Dittoh and Alebikiya (p 52) describe, this

led to efforts within the university to incorporate PTD and LEISA into the curriculum in both lectures and practical training.

Participatory Technology Development

The approach chosen to assist farmers to move toward LEISA was PTD. The church-based agricultural stations within ACDEP already had some experience with this approach. Because the other members of the NGLWG were not so familiar with PTD, a series of workshops for information sharing and training was organised by the NGLWG. In northern Ghana, the six phases of PTD were as follows:

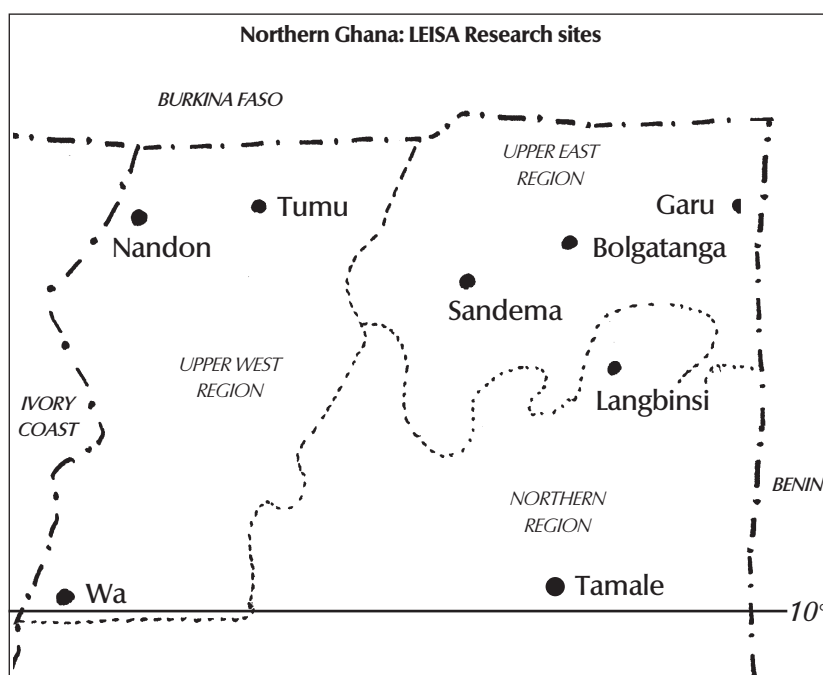
- 1 **Getting started:** PTD courses for NGLWG members, and the first workshops with farmers to agree on collaboration;
- 2 **Looking for things to try:** Second set of farmers' workshops, during which the farmers prioritised their problems, agreed to focus on soil fertility improvement, and decided who in the communities should carry out experiments on their behalf;
- 3 **Designing the experiment:** A series of meetings and discussions between NGLWG members and farmers, during which the path of farmers' informal experimentation was traced and agreement was reached on designs for collaborative experiments: these involved comparing the effect of farmyard manure and household refuse, with and without the addition of phosphorus, on soil fertility.
- 4 **Trying out:** Laying out the experimental plots for soil-fertility management trials in the fields of 52 men and women farmers, implementation of the trials by the farmers, and joint data collection by farmers and NGLWG members.

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main city in northern Ghana, joined forces with individuals from research, extension and teaching organisations to form the Northern Ghana LEISA Working Group (NGLWG). This was the organisational structure for the Stakeholder Concerted Action (SCA) in LEISA research.

The research sites

Two pilot sites for the research were selected: Sandema in the Upper East Region and Langbensi in the Northern Region. Debates within the group and between the group and ILEIA about how far these sites represented the dry land savanna of northern Ghana led to the identification of four "syndicate sites": Garu, the driest and most densely populated site, where livestock play a significant role in agriculture and soil fertility management and dry-season cultivation of onions under irrigation is becoming a major activity; Tumu, with rich and deep loamy soils, low population density, a farming system based on yam and sorghum, and shifting cultivation to maintain soil fertility; Nandom, a transition area between



Northern Ghana lies between 8°N and 11°N latitude at an altitude of 200-300m. Mean annual temperatures are 25-30°C and rainfall is highly variable (800-1300mm/year) with a wet season from May to September. The Sadama research site has coarse sandy loam, moderately acidic soils with low organic matter content. Available N is 10-30 kg/ha and P less than 10 kg/ha. There is considerable sheet erosion. Soils at the Langbensi site are strongly acidic and more suitable for cultivation. Organic matter content, N and P are higher here than in Sadama. Woodland savanna characterises much of Northern Ghana. The administrative regions of Upper East, Upper West and Northern Region account for 41% of the nation's territory and 20% of its population. Population densities vary from 125 persons/km² (Upper East Region) to 25 persons/km² (Northern Region). There is 3% population growth despite the continual out-migration of landless, unemployed youth. More than 90% of the population are farmers. Shifting cultivation dominates the less populated areas (5ha/household) and permanent agriculture the more densely populated regions (0.8ha/household). Millet (food) and groundnuts (cash) are the major crops in Sadama. In Langbensi, maize (food) and cotton and cowpeas (cash) are the most important.

⑤ **Sharing the results:** Farmer assessment workshops after the end of the cropping season, when farmers and NGLWG members jointly analysed the results of the experiments and made them known to colleague farmers and scientists.

⑥ **Sustaining the process:** Built into all above phases, in the form of workshops in which farmers were key resource persons and farmer exchange visits (for example, to Burkina Faso) to gain ideas which could be used in further experimentation and to influence policy

Also within the PTD process, a group of 15 women experimented with different ways of storing cowpea (see p 44) and men and women farmers in Garu, one of the syndicate sites, explored ways to eradicate the parasitic weed striga. Similar PTD experiments, mainly on techniques of soil fertility management, but with varying degrees of formal structure, were carried out at the other syndicate sites.

A more detailed description of the PTD process and the major results is given in the article by Millar (p 43). The intensive interaction of NGLWG members in the concrete activities of planning, implementing, monitoring, evaluating and documenting the PTD process made a great contribution to strengthening relations within this platform for concerted action in Northern Ghana. The PTD activities and results provided examples and information that could be used to convince policy makers about the effectiveness of bringing local and scientific knowledge together to improve smallholder farming.

Scientific studies

Various studies, initially commissioned by ILEIA, were undertaken to gain a better understanding of the physical and socio-economic environment. Most of the early studies were done by experts outside of the NGLWG. Later, the NGLWG took over the responsibility of commissioning studies to support the process of farmer-led research.

An exploratory study provided insights into the historical changes in agricultural practices and policies in northern Ghana; principal findings are summarised in the

article by Atengdem and Dery (p 38). Agroecological resource mapping (AERM) provided information about the available resources and their interrelationships. A soil classification study (Kauffman p 9) and context studies were made of land forms in the pilot sites. Technical studies provided information on the soils in the pilot areas and on the role of livestock in improving soil fertility. This latter study identified options to explore in farmers' experimentation (Karbo et al. p 49). Case studies were made of ecological farming and non-burning practices (Aalangdong et al. p 47).

In order to carry out a more quantitative assessment of sustainability, data were continuously collected of all inputs into and all outputs out of the various plots of selected farmers by using the FARMS-software (ILEIA Newsletter 13.3). This was then used to determine nutrient and financial balances for the plots and for the farm as a whole. Unfortunately, because the computer software for FARMS could not be made operational during the project period, analyses are not yet available. However, the participating farmers found it enlightening to become more conscious of the inputs and outputs in their farm system.

The following articles describe the agroecological conditions in Northern Ghana and the history of agricultural research and development (Atengdem & Dery p 38); a consideration of the threats to sustainability in the dry land savanna that stakeholders are trying to address through their concerted action in collaborative research and policy influencing (Saa Dittoh p 51) and finally the major lessons learnt over the past four years and the prospects for continuing joint action for sustainable agriculture (Alebikeya & Waters-Bayer p 54).

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The **References** of the articles are not included, they can be requested from ILEIA.

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Northern Ghana partners in collaborative research

- Association of Church Development Projects (ACDEP): Network established in 1977 by 20 church sponsored agricultural stations in northern Ghana, with office in Tamale
- Farmers at pilot sites near ACDEP stations in Sandema (Upper East Region) and Lengbensi (Northern Region).
- Ministry of Food and Agriculture (MOFA): Specially the extension division responsible for promoting agricultural development in Northern Ghana, with office in Tamale
- Savanna Agricultural Research Station (SARD): Originally a German sponsored project started in 1974, now a government institute with a mandate for research for agricultural development in dry land areas, located in Nyankpala near Tamale
- Animal Research Institute (ARI): National institute with headquarters in Accra, which established a centre in Tamale for northern Ghana.
- University for Development Studies (UDS) University established in Tamale to teach students community-orientated approaches to development in northern Ghana.