



Managing Africa's Soils No. 18

Stakeholder perceptions of agricultural policies in Kenya

H.C.K. Kinyanjui, S.N. Obanyi,
D.D. Onduru, L.N. Gachimbi, S.M. Nandwa

July 2000



1 Introduction

As the negative soil nutrient balances found in a number of farming systems are starting to affect agricultural productivity, farmers and policy makers in Kenya are becoming increasingly concerned about declining soil fertility (Smaling et al., 1997; Onduru et al., 1998). Although a very large amount of money has been poured into research on soil and water management over the last fifty years, soil degradation is becoming a pressing problem (CABI, 1994; Smaling and Braun, 1996; Muchena and Kiome, 1995). The limited use of agricultural research findings is partly due to extension budgets being too small to secure enough staff for an effective programme. Moreover, farmers are disregarding some improved technologies.

While farmers are acutely aware of the problem, the low levels of income on most farms often means that they cannot obtain sufficient mineral fertilisers or animal manure to compensate for the outflow of nutrients from their soils (Jager et al., 1999). The profitability of farming is further undermined by inadequate rural infrastructure and transport systems. Smallholder farmers are also faced with the inability to get access to credit, which is particularly acute for women, despite the fact that they are usually the farm manager.

Policymakers seem to ignore some results of research, which raises a number of questions about the way in which policies are formulated, implemented, monitored and evaluated. Kenya has no comprehensive land use and environmental policy to combat soil degradation. The current 'system' consists of a large number of ad hoc pieces of legislation relating to the environment and land use, which are formulated and administered by different government ministries, parastatals and non-governmental organisations (Richardson, 1996). There is inadequate co-ordination between the major actors in the agricultural sector (e.g. infrastructure development, water, land settlements), and of activities within the Ministry of Agriculture and Rural Development. This situation does not help to address the numerous constraints to effective soil fertility management, and agricultural production in general.

Government policies have considerable impact on the practices employed by farmers, either encouraging or hindering investment in sound soil fertility management strategies. We need a better understanding of the tools and processes involved in

formulating and implementing policies¹. We hope to achieve this by analysing the way in which certain national policies affecting soil fertility management have evolved, and how they are perceived by stakeholders. The focus of this paper is on Soil and Water Conservation (SWC) policies and mineral fertiliser supply policies. In order to understand their nature and impact, we briefly trace the history of these policies before going on to analyse their effect on soil conservation and fertility as perceived by key stakeholders. The study closes by identifying a number of key points for improving policy processes.

Methodology

The research team identified local and national stakeholders involved with soil fertility management or the agricultural sector in general, and then invited representatives from agricultural extension agencies, NGOs and research institutes to a workshop. After developing a working definition of what a policy is, and identifying which ones influence soil fertility management, participants selected two policies for further study: land use policy, with a focus on soil and water conservation, and the policy on mineral fertilisers.

Researchers reviewed the ways in which policies on land use and agricultural inputs had been formulated and implemented in the past, and held semi-structured interviews with farmers, extension staff, stockists and researchers, as well as other key resource people involved in formulating and implementing the two policies. After the data collected during the study had been analysed, stakeholders were invited to a feedback workshop to discuss the findings.

Study areas

The study was conducted in two contrasting agro-ecological zones, which had already been the subject of research on soil fertility management practices: Manyatta Division in Embu District, and Kalama Division in Machakos District (Nandwa et al., 2000).

Background to Manyatta Division-Embu

Manyatta Division, in Embu District, is situated in the Eastern Province of Kenya. The district rises from 760 metres above sea level (masl) to over 4,570 masl on the slopes of Mount Kenya. Rainfall is bimodal and varies between 700 to 2,000 mm per year, depending on location and altitude. The soils are mostly nitisols and andosols, which are inherently fertile, well drained and deep. Population density is high, averaging 132 persons/km² (CBS, 1993), which has resulted in land fragmentation. The average farm size is only 1.0 hectare per family and farming on valley bottoms has intensified.

¹ In this study, a policy has been defined as a plan of action or a statement of ideas that enables ministries to direct government interventions on specific issues, such as natural resource management (Mutiso, 1997).

Agricultural enterprises are fairly diverse. Tea, coffee and macadamia are grown as cash crops, while maize, beans, Irish potatoes, bananas and vegetables are produced for food. Napier grass is grown for fodder, and is also used to stabilise terrace embankments. Livestock such as dairy cows, sheep and poultry provide income, food and manure.

Box 1 gives farmers' perspective of the major events affecting agriculture and soil fertility management in Manyatta division since the 1930s. The introduction of new technologies and crops, access to mineral fertilisers, the demarcation of land and construction of infrastructure are all the results of various policies. Extension activities seem to have focused on soil and water conservation, the introduction of coffee and improved varieties of maize.

Farmers view the decline of soil fertility as the main constraint to farming, but also listed several other impediments, such as the decreasing size of land holdings, lack of adequate technical information as well as the high cost, lack of timely availability and inappropriate packaging of mineral fertilisers.

An increasing number of soil and water management techniques are being used in Embu District. Because of the labour constraints involved in digging the *fanya juu* terraces, many farmers are turning to agro-forestry techniques to conserve soil, laying

Box 1. Key events related to soil fertility in Manyatta

1932	Introduction of <i>fanya chini</i> terraces ² ;
1941	Cassava famine (<i>ng'aragu ya mianga</i>);
1946-47	Introduction of <i>fanya juu</i> terraces ² ;
1948-49	Invasion of armyworms;
1951	Famine;
1952	Coffee introduced into the area;
1958-59	Demarcation of coffee land boundaries; Embu-Runyenjes and Nembule-Rukina roads constructed;
1960	Start of land demarcation;
1961	Heavy rains cause floods;
1969	Embu-Runyenjes road was tarmacked;
1971	Great famine (<i>yura ya kilo</i>); Maize hybrid 613 introduced; Unit of measure changed from pounds to kilos;
1982	Extension promotes <i>fanya juu</i> terraces;
1984	Yellow maize famine (<i>yura ya gathirikari</i>);
1991	Kale and rice famines (<i>yura ya sukuma na muchele</i>);
1992	Smaller, affordable packages of fertilisers available on the market as a result of the liberalisation of the fertiliser sector;
1994	Free fertiliser given as part of food-for-work package on SWC measures

² *Fanya chini* are terraces with the excavated soil placed on the lower side, while for *Fanya juu* terraces the soil is placed on the upper side.

trash and stone lines to prevent runoff, and planting trees on steep slopes to help combat erosion. Other SWC measures practised in Embu district include bench terraces, grass strips, hedges, retention ditches, mulching and the protection of riverbanks. However, the extent to which these measures are implemented largely depends on levels of awareness of the need to combat erosion, which seem to be highest among the younger generation.

Farmers also have to respond to constraints, such as lack of land, which may force them to abandon traditional methods of regenerating exhausted soils. For example, mounting population pressure has caused many farmers to start planting Napier grass and fodder trees on the lower slopes instead of leaving them fallow. The introduction of tea and coffee into areas that are naturally susceptible to erosion has helped to conserve soil. However, deforestation has increased soil erosion in other areas, and farmers are now being encouraged to establish woodlots, especially on sloping areas.

In addition to SWC practices, farmers use a variety of inputs to improve production. Mineral fertilisers are available on credit from coffee and tea factories, and are mainly used on these cash crops and, to a lesser extent, on napier grass. Tea farmers sometimes sell small amounts of mineral fertilisers to other farmers, who apply them to their food crops. Most food crops are fertilised with manure and compost, although farmers find it almost impossible to produce enough organic fertilisers to meet their needs.

Background to Kalama Division, Machakos

Kalama Division is located in Machakos District, in the Eastern Province of Kenya. In the centre of the District, hills of up to 1800-2100 masl are surrounded by an extensive plateau sloping from 1700 to 700 metres. The rainfall pattern is bimodal, averaging between 500-1500 mm per annum, depending on location and altitude (Kassam et al., 1991). The soils are mainly acrisols, luvisols and ferralsols, with loamy sand to sandy loam topsoil. They range from shallow to deep, and are well drained, but fertility is declining, and they are deficient in nitrogen, phosphorus and organic matter (Jaetzold and Schmidt, 1982; Jager et al., 1999; Onduru et al., 1998). The low and unpredictable rainfall in most parts of the district makes use of mineral fertilisers less suitable, as they are likely to damage crops in dry years. Population density is over 100 persons/km², and farming in the study site is mostly subsistence oriented.

Farming systems have changed considerably over the last twenty years, from extensive, livestock oriented to intensive, crop oriented systems, although farmers still keep a range of cattle breeds. Traditional food crops, such as millet and sorghum, have been replaced with maize and pulses. Soil conservation and water harvesting techniques are extensively practised to conserve the fragile soils and limited soil moisture, mainly by using cut-off drains, stone and trash lines, farmyard manure, mulching with crop residues and cover crops (Tiffen et al., 1994).

Box 2 below presents farmers' view of developments in land use over most of the last century. During the colonial era they were forced to install a number of compulsory soil conservation measures and to reduce numbers of livestock, practices which were largely abandoned after Independence, but SWC was revived again in the 1970s. Other developments include the introduction of various new technologies for soil conservation, the production of manure and compost, and soil preparation. More recently, the liberalisation of the economy has increased the price of mineral fertilisers, putting them beyond the means of most farmers. Like Embu, the district has suffered many famines.

Farmers in Machakos believe that soil fertility is declining, as yields are falling, despite the use of some fertiliser. *"I have noticed that I get less maize from the same piece of land than I did 10 years ago"*, one farmer said. *"I use manure every year, but not enough because we do not have as many livestock as we did a long time ago"*.

Box 2. Key events related to soil fertility in Kalama Division

1913	Drought causes crop failure and famine;
1928	Famine caused by drought, locusts and <i>Quelea</i> birds (<i>"Looking everywhere to find food"</i>);
1930s	Compulsory de-stocking and contour terracing; Promotion of manure and compost, mixed cropping and narrow terraces. Grazing lands rehabilitated by planting resistant forage plants;
1933	Famine, many cattle die; Promotion of ox plough for tillage;
1937	Introduction of cut-off drains and <i>fanya juu</i> terraces using ox-graders;
1938	Compulsory de-stocking;
1939	Famine attributed to effect of Somali-Italian war. Crop exports are banned;
1940	Compulsory terracing under supervision of chiefs; Introduction of bench terracing;
1950	Famine caused by drought;
1953	SWC activities start to be rejected, struggle for independence;
1960	Drought and famine;
1961	Compulsory implementation of soil water conservation measures starts to ease up;
1965	Food and fodder shortages;
1970s	SWC heavily promoted;
1980	Famine; NGOs introduce food-for-work programmes for S&W conservation activities and drought recovery programmes;
1983/84	Drought and famine (<i>"I'm dying with cash in my hands"</i>);
1984 to date	SWC activities intensify;
1987 to date	NGOs start promoting composting and use of manure;
1991 to date	Liberalisation and devaluation; price increase of mineral fertilisers; Decline in food production, except during the el Niño rains of 1995.

Although the increased use of inputs may seem an obvious solution to declining soil fertility, farmers identified a number of problems with both mineral and organic fertilisers. They believe that mineral fertilisers are “ *very expensive, we cannot afford [them] and if rain is not enough, the maize dries up faster where fertiliser is applied than where manure only was used* “. Because the number of livestock has fallen, farmers are unable to produce enough manure for their needs, and they also seem unsure about how to handle and store it properly. Some crop residues are incorporated into the soil, but in fairly limited quantities, as stover is used to feed livestock in the dry seasons.

Lack of purchasing power and limited access to credit prevent many smallholder farmers from buying mineral fertilisers. They could benefit greatly from better marketing arrangements and rural infrastructure, higher prices for farm produce and reduced taxes. Given that mineral fertilisers alone are not the most appropriate form of fertility input in this semi-arid environment, they also need to develop soil fertility strategies tailored to their local conditions. This would require a more active extension service and better communication between research and extension, as well as more secure land tenure arrangements.

2 Policies on land use

Colonial policy to land

Kenya was made a British protectorate in 1895, and from 1904 onwards 'white settlers' starting arriving, attracted by the prospect of farming in this fertile country. In 1915, the colonial authorities acceded to the incomers' demands for secure land tenure and issued leases lasting from 99 to 999 years. However, as white settlers appropriated more and more land, they provoked an increasing number of conflicts with local populations. In April 1932, the Secretary of State for the colonies appointed a commission to investigate land use problems in Kenya. Its remit was to:

- Consider the needs of the native population with respect to land use and tenure, and assess whether they should be granted communal or individual tenure;
- Define the area within which persons of European descent were to be granted privileged position.

In 1939, the 'White Highlands' were gazetted, effectively depriving local people of some 16,700 square miles of good quality land. A dual policy was advocated to promote both African and non-African agricultural production, but in reality, only non-African farmers received support. The Dual Policy stated that, in order to develop the African areas, all able-bodied men must strive to produce a marketable surplus from their holdings. Those who could not produce such a surplus had to offer their services either to European farms or to the infrastructure construction sector or migrate to the urban centres (Mbithi and Barnes, 1975). Prospective white farmers were offered training opportunities, low interest loans and direct grants to purchase farming equipment, and could also benefit from government sponsored agricultural research, maize and wheat subsidies, sponsored marketing schemes and transport facilities. Little was done to support African agriculture, apart from enforcing measures to combat soil erosion and compulsory de-stocking.

By the early 1950s it was generally accepted that the policy of dual development had failed, and a ten-year plan was formulated to encourage the development of African held land, livestock and water resources as well as farmer organisation. The plan was also intended to reduce population pressure by encouraging Africans to settle in unoccupied or little used land. Conserving soils and preventing degradation were some of the objectives of colonial policies. Farmers were discouraged from ploughing on

steep land or cultivating water courses, and obliged to install terracing, plant trees, reclaim pastures and take measures to prevent the formation of gullies. These measures were implemented by coercion under pressure of local chiefs, headmen and government technicians. Farmers were reluctant to maintain the structures, and as a consequence the policy failed in the longer term (see Box 3). The struggle for freedom started in earnest in the late 1950s, leading to Independence in 1963.

Box 3. Perceptions of colonial SWC policies in Machakos

- Policies were formulated without taking account of the views of African farmers;
- Africans believed the colonial government promoted SWC measures as a means of appropriating their land;
- Many farmers believed that erosion was caused by the creation of native reserves, which prevented them from moving to new sites;
- Insecurity of land tenure made farmers reluctant to construct terraces;
- Narrow bench terraces were perceived as a nuisance to farming.

SWC policies after independence

Having associated SWC measures with colonialism, farmers either cut down their conservation activities or abandoned them altogether. Soil erosion consequently increased, causing such concern that a land use commission was created in 1970 to address the increasing degradation of natural resources, but it made slow progress.

A similar, but more successful initiative was the National Soil Conservation Programme, which was launched in the 1970s with support from the Swedish International Development Agency (SIDA). Its objective was to increase and sustain agricultural production, by introducing simple, cheap and effective conservation measures that could be carried out by the farmers themselves. The focus was on individual farms. Volunteer farmers were given extension advice and expected to adopt whichever SWC measures they felt appropriate. However, this approach was perceived as slow and ineffective, and there was little consultation with farmers beyond the initial extension phase.

In the 1980s, the Ministry of Agriculture, Livestock Development and Marketing adopted the Training and Visit (T&V) system to promote SWC techniques. However, extension agents were so overloaded that they could not give adequate conservation advice to farmers, let alone any support with planning, surveying farms and installing conservation measures. Nonetheless, this approach did have a more positive impact than the former individual farm approach.

T&V was replaced by the catchment approach, which entails groups of farmers suggesting how SWC policies could be implemented. With this approach, farmers in

selected farming units or clusters ('catchments') are involved in diagnosing local problems, planning how to resolve them, and implementing and assessing the impact of SWC work. Participatory rural appraisals (PRA) are carried out with the help of divisional planning teams, so that farmers can give their views on the constraints to farming and possible solutions in their area. Their input is then incorporated into the plans for future activities, which are implemented by catchment committees. These committees work in close collaboration with the Divisional Soil Conservation Officer, who is responsible for co-ordinating the implementation of SWC activities.

Overall, there has been a long-term political commitment to SWC in Kenya, which has taken a variety of forms, and extension approaches have changed considerably over the last few decades. The colonial authorities were the first to commit themselves to a comprehensive but coercive programme of SWC activities, in their quest to maintain agricultural productivity. Subsequent governments have established various departments and commissions dedicated to SWC. The present government has also joined farmers, donor agencies and NGOs in a nationwide campaign to restore and conserve soils.

Impact of SWC policies

Farmers and extension workers in Machakos believe that interventions by donors and NGOs since the 1970s have played an important role in furthering local SWC activities, although opinions differ as to their long term effect. A number of schemes were introduced to facilitate terracing and other conservation work in this district, such as cash payments, food for work and tools for work. In the short term, it was noted that the food and tools for work schemes were effective insofar as the group work enabled poor farmers to construct terraces. However, once the incentives were removed, work slowed down considerably and morale dropped (Kariuki et al., 1994), although farmers also blamed this on the fact that they were getting fewer visits and less advice from extension agents. This was probably caused by budgetary constraints in the extension service, which has become even more severe since the World Bank support programme was phased out in the late 1990s.

Farmers in both study sites blamed the limited long-term impact of many soil conservation programmes and policies on the following factors:

- A blanket approach to new technologies that failed to take account of local needs and circumstances;
- Governments have taken a top-down approach, implementing policies through coercion rather than voluntary participation;
- Failure to involve local farmers and village organisations, or to consider their practices and priorities in the design and execution of programmes;
- Failure to consider conservation activities as part of normal farming practices;
- Emphasising the construction of conservation measures and not following it up with support for maintenance;

- Tendency to push programmes through as fast as possible, without considering the option of gradual implementation of measures or building up terraces progressively;
- Some measures have been very expensive to construct because of the inappropriate use of mechanisation and imported inputs.

While recognising their value in reducing losses of topsoil, farmers reported that one of the main constraints to SWC practices was the labour required for constructing and maintaining terraces. They also said that the pressure caused by the growing population means that it is not always possible to follow the recommendations, as more farmers now cultivate steep slopes in an attempt to meet their needs. Some have started modifying terraces to form micro-catchments for bananas. Farmers suggested that as many soil conservation methods (especially *fanya juu* terraces) are very expensive and require a lot of team work, other strategies for reducing erosion should be encouraged, such as trash lines and hedgerows.

The Kenya Soil Conservation Programme with the support of the Swedish International Development Authority (SIDA) has undertaken one of the more successful soil conservation projects. Their positive results have been partly due to the long term commitment of the Swedish agency, training of the extension service, and the promotion of relatively simple techniques based on local practices, developed at a pace that takes account of local labour constraints. However, evaluations revealed that SWC measures alone cannot improve soil fertility and soil nutrient balances remain negative.

During interviews with members of various ministries, a number of suggestions were made as to how soil conservation activities could be increased:

- Taking a community approach to planning, co-ordinating and supervising the construction and maintenance of conservation measures;
- Ensuring community participation in all stages of planning, design, implementation and monitoring of conservation activities;
- Ensuring that soil conservation activities in cultivated areas can be integrated into normal land husbandry practices;
- Conservation activities on public land should be the responsibility of the community.

With the introduction of the catchment approach, there is a general feeling that SWC measures are being planned and implemented in a more participatory manner, although some farmers maintain that conservation schemes still fail to take account of their priorities and knowledge, even when they had been clearly stated during the diagnostic phase of the programme. For example, little has been done about land registration, despite its importance for settling disputes over land and therefore encouraging farmers to implement long-lasting SWC measures such as terracing. Indigenous technical knowledge continues to be largely ignored when new technologies are introduced.

Protecting fragile areas

Introduced in 1965, the Agricultural Land Act was intended to reduce erosion on slopes and along watercourses by banning farming on slopes of over 35%, quarrying of sand from riverbeds, and the cultivation along rivers. However, the act is criticised for making no distinction between areas close to watercourses that can be cultivated safely, and those where cultivation should be restricted.

The Act could not be properly implemented without supportive legislation, and has also set up extension agents, who had to police the Act, in opposition to the farmers they were supposed to be advising. Given the increasing pressure on land, extension agents now believe that they should be helping farmers whose land includes steep slopes to manage their holdings effectively, instead of deterring them from cultivating these areas.

Work is currently under way to harmonise policies related to land use and amendments to the Agricultural Act have also been formulated (Thomas et al., 1997). The principle is now that farmers should be educated and encouraged to follow policies, rather than forcing implementation through compulsory measures alone.

3 Mineral fertiliser policy

The central objective of government policy on mineral fertilisers is to ensure that they are available at the right time, in sufficient quantities and at the lowest possible farm-gate price (Government of Kenya, 1993). A fierce debate has been raging over the use of mineral fertilisers for some time, pitting environmentalists against those who take a more commercial view of farming. Over the years, each group has put forward a number of very divergent and sometimes extreme opinions and strategies.

Promotion of mineral fertilisers

In the past, soil science research in East Africa tended to be strongly biased towards soil fertility and plant nutrition (Muchena and Kiome, 1995). Trials were conducted on the use of fertilisers, the levels and availability of nutrients in soils, crop responses to different fertilisers, and the use of organic manure. Fertiliser trials started in 1925, providing the basis for recommendations on the use of soil amendments on crops. In 1961 they were compiled into a bulletin entitled "A guide to fertiliser use in Kenya", which later became the keystone of government policy on fertilisers, while the results of the experiments on which the guide is based were used to project Kenya's fertiliser needs.

In 1985, a Fertiliser Use Recommendation Project (FURP) was set up to carry out trials to develop zone and crop specific fertiliser recommendations, to replace the blanket recommendations made in 1961 (KARI, 1992). Considerable amounts of data on soils, climatic conditions and fertiliser responses have been gathered over the last fifteen years, and less simplistic recommendations have been developed and compiled (FURP, 1994). Before liberalisation started in 1991, the main fertiliser importers were the National Cereals and Produce Board (NCPB) and the Kenya Grain Growers Co-operative Union (KGGCU), now known as the Kenya Farmers Association (KFA). The KGGCU had a monopoly on the distribution of fertiliser aid supplied by donors, while the government controlled and subsidised prices. Importers had to leap over a number of bureaucratic hurdles, the first of which was applying for an import quota. The amount of fertiliser that the private sector was allowed to import depended on how much came into the country that year as aid. After receiving the letters of allocation needed to secure import and foreign exchange licences, successful applicants had to obtain a letter of credit. Not surprisingly, many found this system to be cumbersome, time consuming and inefficient.

Despite the fact that fertilisers were relatively cheap, they were not widely used, as government intervention in the sector delayed imports, resulting in a very inefficient domestic distribution service. In addition to not always being available at the right time, fertilisers were also often sold in quantities that far exceeded the needs and finances of many smallholders. Another constraint was the rent seeking activities by some Government officials (Argwings-Kodhek, 1996). The sixth government development plan (1989-1993) proposed the following steps to encourage the use of mineral fertilisers in order to increase agricultural production:

- Revision of the import allocation system, so that fertilisers are categorised under schedule 1 of the customs tariff schedule, which grants automatic import licences;
- Making the marketing system more competitive and increase the margins for retail distributors, which would improve the distribution network;
- Channelling fertiliser aid acquired by the Ministry of Agriculture through co-operatives and private entrepreneurs;
- Making fertilisers available in smaller quantities, which would make them available to farmers who cannot afford to buy in bulk;
- Strengthening the extension system so that it can disseminate information on the right types and quantities of fertiliser, and when to apply it.

Economic liberalisation

The implementation of the sixth development plan received much impetus from the economic liberalisation which started in 1991. The following measures directly affecting fertilisers came into force:

- Liberalisation of fertiliser prices and distribution;
- Lifting of import quotas and licences;
- Lifting of government control over interest rates;
- Liberalisation of trade within the cereal sector;
- Liberalisation of foreign exchange rate.

Subsidies on mineral fertilisers were abolished and other government interventions that distorted market prices removed.

A number of tax reforms were also passed and resulted in an upgrading of mineral fertilisers to a more favourable import tariff schedules, while some fertilisers were exempted from import duty. However, farm gate prices rose after VAT was introduced in 1993, which was not levied directly on fertiliser, but did increase the cost of transportation. VAT was initially set at 18%, although it later dropped to 15%.

Distribution costs vary considerably between different modes of transport, road conditions and the distances involved, and seem to increase most sharply between the distributor and the farmer. They started to rise after markets were liberalised in 1991, but fell in 1993 when the National Cereals and Produce Board was liberalised, making the transport business very competitive. However, transport costs have been going up since then in response to mounting international fuel prices, devaluation and domestic inflation.

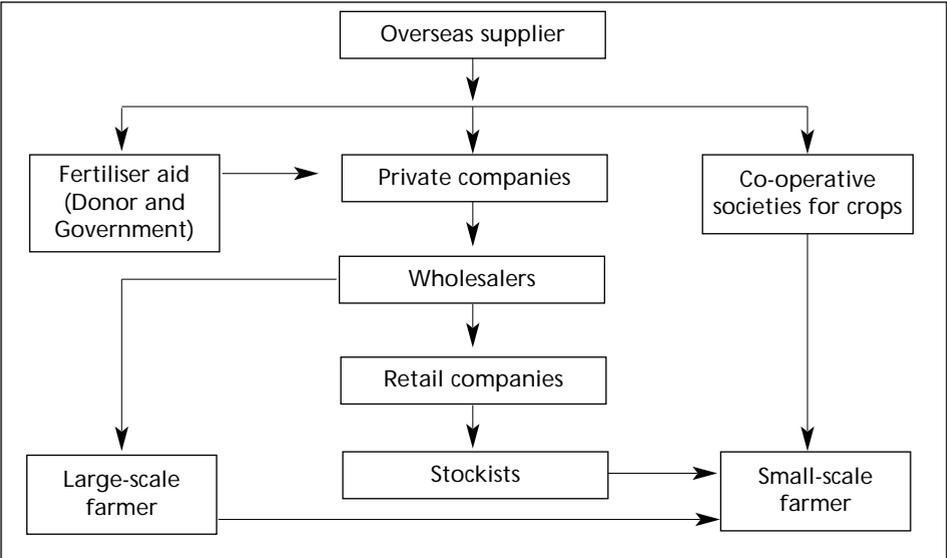
Fertiliser prices have gone up after the local currency was devalued, although the world market price actually remained quite stable. Imports of fertilisers fell sharply in 1995/1996 following the rapid devaluation of the Kenyan shilling. Domestic fertiliser prices fluctuated with changing foreign exchange rates, forcing many new importers to pull out of the market. The price of imported inputs is also affected by the availability of foreign exchange and capital.

A price increase for mineral fertilisers of 40% in just one year was reported in 1999 (Daily Nation, 1999a). Farmers now use less mineral fertiliser than they used to, and some have gone back to using organic fertilisers alone. The government needs to consider its pricing policy on mineral fertilisers very carefully, as it directly influences not only the interests of farmers, but also the entire nation, through its impact on food production.

Development of the fertiliser distribution network

As eight of the ten principal fertiliser importers are now private companies, imports by the private sector have increased considerably since the industry was liberalised. However, it is not enough simply to get the fertiliser into the country, as farmers can only use fertilisers effectively if efficient marketing and distribution arrangements ensure that inputs reach them at the right time, in the right quantity and quality, and at the right price. Figure 1 below illustrates the current marketing system.

Figure 1. Fertiliser marketing channels in Kenya



Importation by the co-operative sector

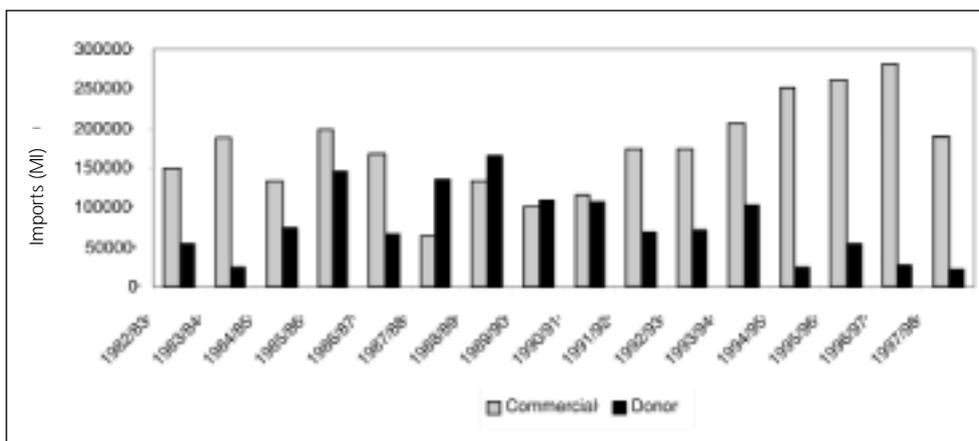
In 1992 the Kenya National Farmers Association (KNFA) initiated a strategy of joint importation, setting up a number of dealerships with distributors, stockists and retailers in an attempt to improve the supply of competitively priced inputs to farmers. Despite a certain degree of success, the level of importation by the co-operative sector has declined over the years, largely because internal financial management problems have forced major players like the Kenya Grain Growers Co-operative Union out of the picture. Some co-operative societies who had ventured into the import business lost large sums of money after the financial sector was liberalised, and withdrew from importation, subsequently confining themselves to distribution.

Previous efforts by the government to invest in a fertiliser manufacturing plant were not a success, but in accordance with current policy of liberalisation, the private sector has now been given the necessary incentives and support to play an active role in the development of the fertiliser industry. Bio-fertilisers and biological nitrogen fixing agents are also being promoted as alternatives to mineral fertilisers.

Fertiliser aid

The share of fertilisers supplied by donor has declined since the liberalisation of the sector. Figure 2 shows that donor imports rose steadily to 68% in 1987/1988, then dropping to 10% in 1997/1998. Japan is now the most consistent donor, supplying fertiliser and agro-chemical commodity aid under KR2, in order to promote national food self-sufficiency. Fertiliser aid levels increased sharply following the droughts of 1993, when the World Bank and European Union sent in emergency supplies for use in the worst affected areas. The Italian government contributed fertiliser aid in 1996.

Figure 2. Donor versus commercial fertiliser imports (1982 – 1998)



Perceptions of the impact of liberalisation policies

Traders

Sources in Embu reported that the effects of liberalisation on fertiliser supply had been less positive than expected. Two stockists said that in early 1993, more fertiliser did become available from importers and wholesalers, but this did not last for long. These stockists complain of delays in obtaining the documents necessary for importation and claim that overall nothing much has changed within the fertiliser sector, as prices are still high and demand has been dropping. They attributed this to lack of purchasing power, which has been aggravated by recent droughts, as farmers have no money to buy inputs after poor harvests. They think that demand was also adversely affected by the distribution of free fertilisers for famine relief.

Retailers are starting to sell in smaller, more affordable quantities, hoping that this will enable more individuals to buy, and are also encouraging farmers to bulk-buy in groups and then divide the bags amongst themselves. DAP has consistently remained the most popular fertiliser, but demand is declining even for this input. Horticultural farmers, one of the few sectors where demand has increased, mainly use other types of fertiliser.

The traders we spoke to made a number of suggestions as to how the government could improve the situation:

- Encouraging investment by providing incentives through investment credit and tax rebates, and strengthening of institutions, such as the Kenyan Fertiliser Association;
- Establishing safety nets to prevent the collapse of the fertiliser market;
- Re-introducing subsidies to reduce the price of fertilisers. This would make them affordable for smallholders, and subsidies could then be lifted as the market grows;
- Subsidising the cost of transporting inputs to stockists to reduce the farm gate costs of fertilisers.

Extension workers

Extension workers in Machakos believe that the policy on fertilisers has made them more accessible to farmers, as there are now distribution points in even the most remote parts of the District. However, they think that cartels have kept prices high, despite the fact that the many individual players in the private sector price their goods competitively and sell them in smaller, more affordable units. Levels of use in the lowland areas of Machakos are consequently well below the recommended rates, with only about 38% of farmers using mineral fertilisers, and applying less than 20kg/ha (Thomas et al., 1997; Freeman and Kaguongo, 1998). Studies carried out by Omiti (1999) show that there is a positive correlation between households using fertilisers and levels of off-farm income and education.

Farmers

Farmers claim that it has been easier to get hold of fertilisers since the introduction of market reforms, but that they are still hampered by a lack of technical information about how and when to use them. Extension staff responded to this by saying that the technical information is available, and that the disappointing results are due a decline in the quality of fertilisers since liberalisation, as policies designed to maintain standards have not been fully implemented. Other constraints to the use of fertiliser included rising costs, inability to get credit, transport costs and unpredictable rainfall. However, farmers seem to regard any farm inputs requiring a cash outlay as costly, even if the technology is profitable. It is possible that this attitude is the result of having been given free inputs by famine relief programmes.

Options for new policies suggested by farmers are:

- Price subsidy for mineral fertilisers so that more farmers could afford fertilisers;
- Support to marketing of agricultural produce after a good harvest. Farmers could then earn more money to buy fertilisers;
- Investment in irrigation in order to reduce the risks associated with using mineral fertilisers in dry areas;
- Improved access to credit such as through co-operatives similar to those active in the coffee and tea industries, which help farmers to buy fertilisers on credit and repay their costs over a relatively long period;
- Improvements to infrastructure, which would reduce the cost of transporting fertilisers and enable farmers to sell their produce more easily;
- Improved livestock marketing: Farmers are highly dependent on the income earned from animals.

Many farmers recognise that they can improve their soils by using manure and compost, and that increasing the organic matter content is a cheap way of increasing soil fertility and water retention. They would therefore like to see the development of a policy on organic farming and to be taught how to make better use of manure.

4 Improving the process of policy formulation

The procedure for developing government policy

Officially, policy formulation within government starts when the chief economist advises the Permanent Secretary (PS) that a policy needs to be reviewed. Technical staff are informed of the issues at stake and requested to submit reports to the planning department. The Kenya Institute of Policy Research and Analysis (KIPRA), the Institute of Policy Analysis Research (IPAR) and the Policy Analysis Matrix (PAM) are asked to provide technical information on policy issues to the MoA. As MoA staff is rarely invited to collaborate in the development of recommendations, they are often very unreceptive to the policy proposals produced by these institutions. Some see these institutions as narrow-minded and uncommunicative, accusing them of hiding behind a barrier of highly technical language. It is clearly important to involve members of the various ministries in the formulation process, in order to raise awareness of policy issues and promote a sense of common purpose between the relevant agencies, and to ensure that policies are drafted in a form that is accessible and understandable to all concerned.

Next, District Agricultural Officers (DAO) and interested NGOs are invited to workshops to discuss the proposals. Having been informed of the outcome of these workshops, the PS then presents the proposals to the ministerial policy committee, which is made up of departmental heads from the MoA. Once the committee has authorised the PS to continue with the proposal, he can invite comments from counterparts in other ministries related to agriculture, before presenting it to a policy steering committee. If they are in agreement, the proposition is taken to ministerial level, and a cabinet memorandum is drafted, directing the MoA to develop a plan to implement the proposed policy in consultation with the chief economist and the MoA planning section. When the proposition is debated by the cabinet and approved as a draft sessional paper, it is published by the Attorney General and sent to parliament to be tabled as a bill, and finally passed as an act of parliament. Members of parliament comment on sessional papers, but they often receive no detailed information and will generally not consult their constituents about forthcoming bills.

The programme of privatisation effectively changed the role of the government, and opened the way for groups and individuals outside government structures to initiate

and implement policies. For example, extension agents from the MoA work with a number of NGOs in the implementation of development programmes. However, much still needs to be done to ensure that policies are both formulated and implemented in a participatory manner. Many stakeholders still believe that the whole process is conducted in a top-down manner, while policy papers are little more than a 'shopping list' used to raise money from donors.

Role of research

Although researchers have traditionally taken a top-down approach, they are now exploring issues from a broader perspective, using participatory rural appraisal and other consultative methods to determine the interests of farmers, find out what works best for them and what needs to be improved. At local level, regional research centres disseminate information about soil fertility in annual reports, seminars and field days, aiming to reach individuals and organisations in the area. While the District Agricultural Officer is aware of these activities, he has no formal links with researchers. By liaising with the District Agriculture Livestock and Extension Officer (DALEO) and the Research and Extension Liaison Officer (RELO), KARI-Embu now collaborates with extension staff from the MoA, who regularly attend local workshops, and has developed several joint programmes to enhance the links between research and extension. It has been suggested that the District Development Committees (DDC) could play a key role in raising issues and enhance collaboration with research centres.

Research officers in KARI are technically well-placed to present and discuss policy issues, but they feel that no proper forum exists to raise policy issues at national level. There is certainly need for a national body to co-ordinate policy analysis and impact assessment of new policies. KARI and the MoA also need to collaborate more at national level to ensure that policies reflect the genuine concerns of farmers. Representatives from KARI have also joined a number of new networks that meet with key people in relevant ministries. This kind of dialogue is certainly a positive development, as it informs policy makers about issues at grass roots level, and is far more effective than presenting papers at large meetings, seminars and conferences.

Conclusions

This study has shown that national policies directly affect farmers' decision-making, and may either encourage or deter them from investing in sound soil fertility management strategies. If policies are to have a positive impact on the ground, key stakeholders, such as farmers, extension workers, researchers and the private sector must be allowed to play an active role in their formulation. The success or failure of a policy is ultimately determined by the manner in which it is formulated and implemented, and it will only be fully supported if stakeholders consider it to be legitimate and relevant to their needs. Policy processes should therefore extend beyond the scope of central government and include local government, civil society organisations and community groups.

References

- Argwings-Kodhek, O.**, 1996. The evolution of fertilizer marketing in Kenya: Paper presented at the conference on fine-tuning market reforms for improved agricultural performance policy analysis project, Egerton University, Kenya.
- CBS (Central Bureau for Statistics)**, 1993. Kenya population estimates. Ministry of Planning and National Development, Government of Kenya. Nairobi.
- CABI (Commonwealth Agricultural Bureau)**, 1994. Soil fertility research in East Africa. An annotated bibliography.
- Daily Nation**, 1999a. Poor farming blamed on ignorance. 9-4-1999, page 27.
- Freeman, H.A. and Kaguongo, W.**, 1998. Fertilizer market reforms and farmers changing fertility management strategies: Evidence from Semi-Arid Kenya. Paper presented at the 15th International Symposium of Association for Farming Systems Research-Extension, Pretoria, South Africa.
- FURP**, 1994. Fertiliser use recommendations, vol. 1-23. KARI, FURP, Nairobi.
- Government of Kenya, 1993. Development Plan 1994-1996 Government Printer, Nairobi.
- Jaetzold, R. and Schmidt, H.**, 1982. Farm management handbook of Kenya vol. II/c. Natural conditions and farm management information, East Kenya, Ministry of Agriculture, Kenya.
- Jager, A. de, Onduru, D., Wijk, M.S. van, Vlaming, J. and Gachini, G.N.**, 1999. Assessing sustainability of low-external input farm management systems with the nutrient monitoring approach: a case study in Kenya. *Agriculture Systems* (In press).
- KARI**, 1992. Annual report. Kari, Nairobi.
- Kariuki, J, Onduru, D.D. and Muchoki, M.**, 1994. Organic farming adoption survey. KIOF, Nairobi.
- Kassam, A.H., Velthuisen, H.T., Fisher, G.W. and Shah, M.M.**, 1991. Agro-ecological land resource assessment for agricultural development planning: a case study of Kenya - resources data and land productivity. In: FAO, Land Resources: Technical Annex 1. Land and Water Development Division, FAO and IIASA, Rome, pp. 9-31.
- Mbithi, P.M. and Barnes, C.**, 1975. The spontaneous settlement in Kenya, East Africa.
- Muchena, F.N. and Kiome, R.M.**, 1995. The role of soil science in agricultural development in East Africa: In *Geoderma* 67 (1995) 141-157. KARI-NARL, Nairobi.
- Mutiso, S.K.**, 1997. Adaptive strategies of the poor in arid and semi-arid lands of the Sub-Sahara Africa: Policy Paper. University of Nairobi, Kenya.
- Nandwa, S.M. Onduru, D.D. and Gachimbi, L.N.** (2000). Soil fertility generation in Kenya. In: Hilhorst, T. and Muchena, F.M. (Eds.) 2000. Nutrients on the move -Soil fertility dynamics in African farming systems. International Institute for Environment and Development, London.
- Omiti, J.**, 1998. Macro-level strategies to improve soil fertility in semi-arid agriculture. Poster presented at 15th International Symposium of Association for Farming Systems Research-Extension, Pretoria, South Africa.

- Onduru, D.D., Nandwa, S. and Gachimbi, LN.,** 1998. Experience in participatory diagnosis of soil nutrient management in Kenya. *Managing Africa's Soils* No. 3, IIED, London.
- Richardson, J.A.,** 1996. Structural adjustment and environmental linkages: a case study of Kenya. Overseas Development Institute, London.
- Smaling, E.M.A. and Braun, A.R.,** 1996. Soil fertility research in sub-Saharan Africa: new dimensions, new challenges. *Communications in Soil Science and Plant Analysis* 27:365-386.
- Smaling, E.M.A., Nandwa, S.M. and Janssen, B.H.,** 1997. Soil fertility is at stake. In: *Replenishing Soil fertility in Africa*, Special publication No. 51, American society of Agronomy and Soil Science, Madison.
- Thomas D.B., Eriksson, A., Grunder, M. and Mburu, J.K., (Eds.),** 1997. Soil and Water Conservation for Kenya. Soil and Water Conservation Branch, Ministry of Agriculture, Livestock Development and Marketing, Republic of Kenya. Nairobi
- Tiffen M., M. Mortimore and F. Gichuki,** 1994. More people less erosion. Environmental recovery in Kenya, ACTS, Nairobi, Kenya and ODI, London.

Working papers published in the series **Managing Africa's Soils:**

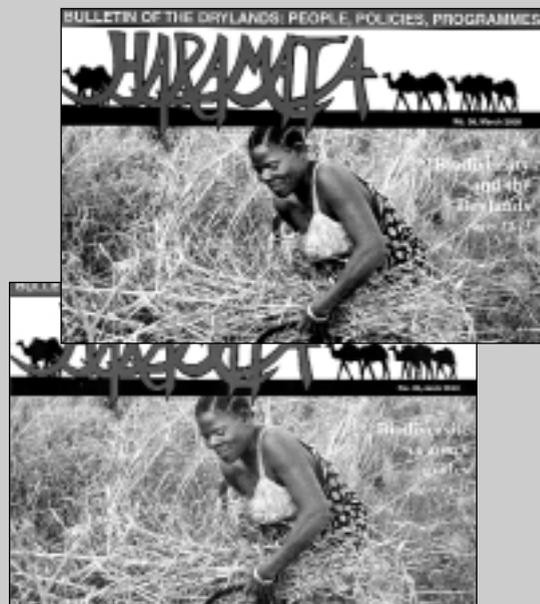
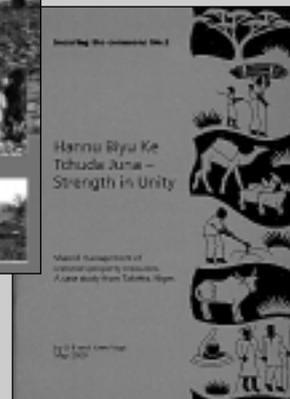
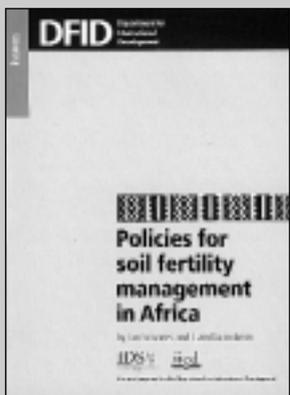
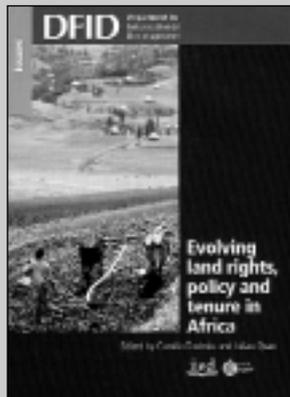
- 1 *Soil fertility management in its social context: a study of local perceptions and practices in Wolaita, Southern Ethiopia.* DATA Dea. September 1998
- 2 *Is soil fertility declining? Perspectives on environmental change in southern Ethiopia.* EYASU Elias September 1998
- 3 *Experiences in participatory diagnosis of soil nutrient management in Kenya.* D. Onduru, G.N. Gachini and S.M. Nandwa. September 1998
- 4 *Farmer responses to soil fertility decline in banana-based cropping systems of Uganda.* Mateete Bekunda. February 1999
- 5 *Experiences of farmer participation in soil fertility research in southern Zimbabwe.* Blasio Z. Mavedzenge, Felix Murimbarimba and Claxon Mudzivo. February 1999
- 6 *Soil nutrient balances: what use for policy?* Ian Scoones and Camilla Toulmin. February 1999
- 7 *Integrated soil fertility management in Siaya district, Kenya* by Nelson A.R. Mango. August 1999
- 8 *Participatory research of compost and liquid manure in Kenya* by D.D. Onduru, G.N. Gachini, A. de Jager and J-M Diop. August 1999
- 9 *In the balance? Evaluating soil nutrient budgets for an agro-pastoral village of Southern Mali* by Joshua J. Ramisch. August 1999
- 10 *Farmers' knowledge of soil fertility and local management strategies in Tigray, Ethiopia* by Marc Corbeels, Abebe Shiferaw and Mitiku Haile. February 2000.
- 11 *Towards integrated soil fertility management in Malawi: incorporating participatory approaches in agricultural research* by G. Kanyama-Phiri, S. Snapp, B. Kamanga and K. Wellard. February 2000
- 12 *Dynamics of irrigated rice farming in Mali* by Loes Kater, Ibrahim Dembélé, and Idrissa Dicko. February 2000
- 13 *Managing fragile soils: a case study from North Wollo, Ethiopia* by Eyasu Elias and Daniel Fantaye. April 2000
- 14 *Policies on the cultivation of vleis in Zimbabwe and local resistance to their enforcement: a case study of Mutoko and Chivi districts* by Billy B. Mukamuri and Terence Mavedzenge. April 2000
- 15 *Improving the management of manure in Zimbabwe* by Jean K. Nzuma and Herbert K. Murwira. April 2000
- 16 *Policy processes in Uganda and their impact on soil fertility* by Beatrice Egulu and Peter Ebanyat. July 2000.
- 17 *Stakeholder participation in policy processes in Ethiopia* by Worku Tessema. July 2000.
- 18 *Stakeholder perceptions of agricultural policies in Kenya* by Harry C.K. Kinyanjui, Stella N. Obanyi, Davies D. Onduru, Louis N. Gachimbi and Stephen M. Nandwa. July 2000

Managing Africa's Soils papers can be obtained from:

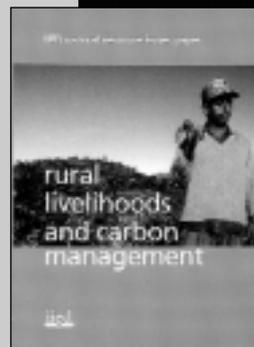
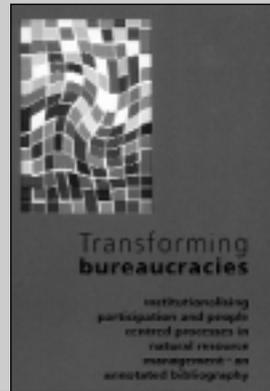
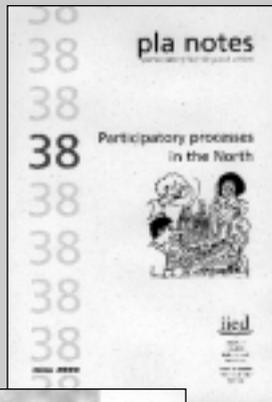
IIED-Drylands programme, 3 Endsleigh Street
London WC1H 0DD; United Kingdom
Tel: +44 171 388 2117; Fax: +44 171 388 2826
E-mail: drylands@iied.org

These working papers can also be downloaded from internet: www.iied.org/drylands

Publications from the Drylands Programme



IIED publications



To order copies of these publications please contact
IIED Bookshop, 3 Endsleigh Street, London WC1H 0DD, UK
Tel: (+44 20) 7388 2117; Fax (+44 20) 7388 2826;
email: bookshop@iied.org; website: www.iied.org



This discussion paper series has been launched as part of the NUTNET project. NUTNET stands for *Networking on soil fertility management: improving soil fertility in Africa-Nutrient networks & stakeholder perceptions*. It brings together several research programmes working on soil fertility management in sub-Saharan Africa. Activities include research on farmer management of soil fertility and understanding of the perceptions of different stakeholders towards how best to improve soils management. This series will be continued under the INCO-concerted action programme *Enhancing soil fertility in Africa: from field to policy-maker* which builds on the work done by NUTNET and receives funding from the European Union.

This discussion paper series offers an opportunity to publish findings from research on soil fertility management in Sub Saharan Africa. Themes include:

- Farmers' knowledge of soils and soil fertility management
- Socio-economic context of environmental change, including histories of soil management
- Nutrient budget analysis at farm and field level
- Examination of the policy context within which soil fertility is managed
- Discussion of methodological aspects and dilemmas when analysing soil fertility management at farm level
- Approaches towards on-farm trials and technology development with farmers.

The series encourages publication of recent research results in a discussion paper form. Emphasis will be on interdisciplinary research results which highlight a particular theme of wider relevance to development policy and practice.

For more information and submission of manuscripts please contact:

Thea Hilhorst
IIED-Drylands Programme
4 Hanover Street
EH2 2EN Edinburgh
United Kingdom
Tel: +44 131 624 7042
Fax: +44 131 624 7050
E-mail: thea.hilhorst@iied.org