2. Building on Past Experience – TerrAfrica's Knowledge Base

45. In response to the need to increase goods and services and to address some of the root causes of land degradation, governments and donor agencies started to invest in land degradation control, developed many new approaches and tools and obtained a number of successes, as well as failures and lessons learnt, that could be summarized as follows:

2.1 Key Baseline Experiences and Successes

46. Within SSA, a significant body of experience was gained with the development and adoption of different SLM technologies, practices and approaches. Successful results are found in programmes that have promoted one or more of the following:

Crop Production and Management

47. Soil Fertility Improvement Through Better Land Husbandry – was advocated by many of the national strategies and action plans of the Soil Fertility Initiative for SSA[1]. Better land husbandry is a broader concept than soil and water conservation as it addresses the totality of the farm household livelihood system with the aim of improving both the productivity and sustainability of its natural resource based land use activities. At its heart is the belief that farmers have the ability to better manage and improve (husband) their land resources, thereby enabling their use for productive purposes on a sustainable basis.

48. Conservation Agriculture (CA) – aims to restore, sustain and enhance agricultural production through the integrated management of locally available soil, water, and biological resources, combined as required with cost-effective use of external inputs. It is a holistic approach to agricultural production based on enhancing natural soil biological regeneration processes involving: (i) improved soil organic matter management for the efficient use of rainfall, soil moisture and plant nutrients; and (ii) the maintenance of soil physical properties through keeping mechanical tillage to the absolute minimum required for direct planting/seeding. The following interrelated criteria distinguish CA from conventional agricultural systems: (i) reduced or zero tillage; (ii) permanent soil cover (plant residues and/or cover crops); (iii) crop rotation; and (iv) minimal in-field traffic. CA has been widely adopted by small to large scale farmers in Latin America, North America, Australasia and central Asia. Although not yet widely adopted within SSA the area under CA is expanding into 14 countries in Africa. In Zambia alone, there are between 70,000 and 100,000 smallholder farmers practicing (RELMA).

49. Integrated Plant and Pest Management (IPPM) – has evolved from a single-crop-pest focus to more comprehensive efforts that combine investigations into various production related problems and includes a variety of focus areas ranging from integrated pest management (IPM) to integrated plant nutrient management (IPNM). The emphasis is on providing farmers with the skills required to grow healthy crops. Recently programmes have expanded the range of crops covered to include staple food crops such as bananas and cassava and to consider wider social and cultural factors (nutrition, HIV/AIDS, labour, business skills and marketing). The FFS approach is the principle vehicle for farmer learning and adaptive IPPM management. 12 SSA countries: Benin, Burkina Faso, Burundi, Ethiopia, Kenya, Mali, Niger, Senegal, Tanzania, Togo, Zambia and Zimbabwe have developed country specific recommended plant nutrient practices using guidelines from the FAO IPNM Information System.

Pastoral and Livestock Management

[1] This is *treated in greater detail in section 3 of this paper.*

50. Integrated Crop-Livestock Farming Systems – have been promoted in the Sahel region using community-based approaches and have led to improved cycling of nutrients between rangelands and crop land, and between ruminant livestock and the soils.

51. Opportunistic management strategies by pastoral communities[2] – in response to uncertainties over rainfall and feed availability in arid and semi-arid environments. During drought periods this may involve: (i) long distance transport of animals to feed-surplus areas (trekking, truck transport etc); (ii) feed supplementation (lopping, hay-making, concentrate purchases etc); (iii) cereal stores to prevent needless distress livestock sales; (iv) good animal health care as livestock die more of disease than starvation during drought; (v) diversification or changes in the species composition of the family herd; and (vi) supplementing or diversifying income from non animal based livelihoods. After drought may include: (i) investment/re-investment of surpluses from other activities in livestock (especially small stock with high reproductive rates); and (ii) transfers of animals within social networks (whether kinship based or with stock associates) on which individuals have legitimate claims. Further, grazing strategies that improve range productivity and quality that can enhance drought tolerance are being practiced in east and southern Africa (Savory, 1999).

Agroforestry and Forestry

52. Agroforestry and Soil Fertility Improvement – involving the growing of woody perennials (trees, shrubs, palms, bamboos etc) on the same plot of land used for agricultural crops and/or livestock in ways that permit significant economic and ecological interactions between the woody and non-woody components. Within SSA the World Agroforestry Centre[3] has been instrumental in documenting and promoting both indigenous and derived (i.e. research station) agroforestry systems for soil fertility improvement.

53. Forestry – afforestation and re-afforestation involves planting trees for shelterbelts, windbreaks, and woodlots to increase fuel wood, timber and fodder[4]. Tree planting has been recognized for its capacity sequester carbon while conserving soil and water quality and quantity. The Green Belt Movement in Kenya, well known for tree planting, includes indigenous trees in forest catchment areas and riparian reserves to preserve local biological diversity. Programmes such as Farm Africa in Tanzania and Ethiopia promote local community base forest management for conserving and enhancing forest resources while reducing forest losses and illegal logging[5].

Freshwater Fisheries

54. Freshwater fisheries – include fish production in rivers, lakes and reservoirs which require participatory and co-management arrangements related to land and water for reducing over fishing and environmental degradation (e.g. sedimentation, contamination due to agricultural run-off) and ensure sustainable fish supplies. In Malawi, small scale fish ponds have been shown to enhance local livelihoods and farming systems without adding undue inputs of labour. These aquaculture systems are suited to households affected by HIV/AIDS. The Worldfish Centre[6] is undertaking efforts to enhance livelihoods through small scale fisheries.

Water and Irrigation Management

[2] For a detailed review of new directions in pastoral development in Africa see Scoones 1995.
[3] For a detailed review of new directions in pastoral development in Africa see Scoones 1995.
[4] Afforestation Project in Kano and Jigawa States, Nigeria, UNEP Success Story, http://www.unep.org/desertification/successstories/8.htm
[5] Farm Africa http://www.farmafrica.org.uk/ and Green Belt Movement, Kenya http://www.greenbeltmovement.org/
[6] www.worldfishcenter.org

55. Small-scale Irrigation and Water Harvesting – involves the combination of new and indigenous technologies for small-scale irrigation (e.g. buried porous ceramic pots, pipe drip irrigation) as well as mechanisms to enhance rainfall capture (e.g. v-shaped micro-catchments). These technologies are increasingly being promoted within SSA by a number of national and regional programmes as reliance on irregular and unreliable rainfall for agricultural production is seen as a major constraint on crop productivity, and many high-yielding crop varieties are unable to achieve their full production potential under rainfed conditions. Part of the CAADP vision for the future of agriculture in SSA is increased investment in on-farm and small-scale irrigation development, including small scale informal irrigation (private, peri-urban, horticulture etc.), and in low lying valley floor wetlands (fadamas, "bas-fonds", dambos, vleis, marais, etc.). When water harvesting is combined with integrated nutrient management, as for example in Burkina Faso, yields have been shown to increase by 1.5-2 time over either one alone (Rockstrom, J., J. et al 2003).

56. While incorporation of technical efforts such as some of those noted above, participatory innovations in community based planning and decision making and learner centred capacity building have proven successful in building and sustaining progress, for example.

Community Based Natural Resource Management

57. Community-based land or watershed planning and management – a number of different projects and programmes in east, west and southern SSA have successfully used participatory approaches to identify local priorities and develop community level action plans for tackling land degradation and low agricultural productivity, through improved ecosystem resource management (soils, water, vegetation, forestry, wildlife etc) within locally recognized landscape or watershed units. (collective action needs to be at landscape level requiring cooperation among farmers and entire communities (note 82 reference p. 196 (WDR).

Farmer Learning Networks

Farmer Field School Approach (FFS) For Integrated Soil Management - is based on the concepts and principles of people centred learning, and was developed as an alternative to the conventional top-down test and verification (T&V) extension approach. It uses innovative and participatory methods to create a learning environment, including learning networks, in which the land users have the opportunity to learn for themselves about particular crop production problems, and ways to address them, through their own observation, discussion and participation in practical learning-by-doing field exercises. The approach is now being used to enable farmers to investigate, and overcome, a wider range of SLM problems, including soil productivity improvement, conservation agriculture, control of surface runoff, water harvesting and improved irrigation.