Soil management

Faced with insufficient rainfall, frequent droughts, demographic pressure, over-exploitation of land, inappropriate agricultural practices, and inadequate use of fertilisers, African soils are weakened, if not exhausted in some cases. The most notable phenomena contributing to this situation include: erosion, chemical degradation (nutrient loss, salination, acidification, etc.), and physical degradation (soil compaction, silting, etc.). Soil management is, therefore, a major issue, especially that African soils hold a great potential for carbon sequestration. Notably, 65% of the planet's unexploited arable lands are found in Africa. And solutions do exist; they just need to be supported in their development and implementation.

AAA promotes and supports three over-arching solution clusters to enhance soil management:

1. Soil Fertility & Crop Fertilisation

Current State of Affairs

Africa is one of the world's lowest consumers of fertilisers. This is due to the sparse availability of fertilisers, both qualitatively and quantitatively, to insufficient efforts to raise the awareness of farmers about the advantages of fertilisers, and to financial hurdles.
Actions can be taken, however, to develop an integrated system of soil-fertility management based on a larger-scale, and more sensible, use of fertilisers.
This management system will have to account for the complexity of each local context, given the enormous diversity of soils and cropping systems in Africa.

Key Solutions and Recommendations

- Developing soil-fertility information systems: Adopt new technologies for soil mapping and digital compilation; establish soil-fertility and crop-fertilisation observatories;
- Managing systems: Improve the biological fixation of atmospheric nitrogen in order to increase nitrogen availability in soils by adopting rotation systems for food and forage legumes; use fertigation and implement hydroponics; develop organic farming; treat soil acidity by applying phosphate rock; perform rangeland rehabilitation; etc.

In order to see these solutions through, farmers must be assisted:

- Awareness of, and education in, the use of fertilisers: agricultural counsel, advertising, farmer field schools, innovation platforms; etc.
- Financial support: facilitated access to loans, use of smaller packaging requiring a smaller investment, implementation of subsidy-type incentive policies; etc.

2. Arboriculture & Agroforestry

Current State of Affairs

Faced with weather extremes, African farmers develop survival mechanisms, often taking short-term measures that degrade resources and affect productivity and regeneration over time.
In animal husbandry, too, Africa has come to face a momentous challenge. This sector, which contributes over 26% to Africa's agricultural GDP, is marginally productive because it still relies on traditional production systems that are extremely vulnerable to climate changes.
As to agroforestry, which combines crops, trees/shrubs, and livestock farming in a synergetic manner, it offers numerous benefits to farmers and breeders, as well as to the environment.
In Africa today, more than 715 million hectares of deforested and degraded lands are eligible for restoration.

Key Solutions and Recommendations

- Integrated management of agroforestry and arboriculture cropping systems: Improve technical coordination; promote suburban agroforestry; domesticate native species and introduce economic-interest species;

- Integrated management of pastoral systems: Develop rangelands and regulate transhumance flows; secure largely pastoral zones as well as strategic pastoral areas; elaborate/implement rangeland development/rehabilitation protocols; set up/treat water points for livestock watering;
- Integrated management of forest systems: Improve the management of forest landscapes and gain-sharing; introduce large-scale afforestation/reforestation programmes; establish national forest parks for carbon storage and for safeguarding diversity; launch sustainable natural-forest developments and increase reforestation/planting efforts.

Farmers must be sensitised to – as well as assisted and trained in – these practices. All these opportunities can materialise at a large scale by way of implementing assertive national or regional policies, strengthening regulatory and institutional provisions, engaging the private sector, improving the agricultural-investment environment, and building research capacity.

3. Agro-Ecological Innovations & Carbon Sequestration

- Improving nutrient resources: Recover organic waste for agricultural use and manage crop residues; treat and reuse waste water (solid-waste sources), solid waste, and agricultural by-products to produce compost; improve fertiliser procurement and distribution systems; develop blending units for the production of fertilisers suited to local conditions; etc.

Current State of Affairs

African soils, namely unexploited lands, harbour a great potential for carbon storage. Yet, at present, Africa stores only 175 gigatonnes of carbon, out of 1,500 gigatonnes stored globally.
Carbon storage is a solution to global warming (through the mitigation of, or compensation for, GHG emissions), as well as to soil degradation (through water retention, aggregate stability, sodicity mitigation, biological activity, etc.)
As an ecologically sustainable alternative to production-intensive agriculture, agro-ecology allows for an increased storage potential in soils, while limiting their degradation. Its approach has to be modular (adaptable to each zone) and balanced (meant to strike the right balance between a production-oriented agriculture and an agro-ecology that would "produce with less, or zero, inputs").
Agro-ecology must adopt specific practices for each of the three scales (plot, farm, and territory), as well as for the components of agro-ecosystems.

Key Solutions and Recommendations

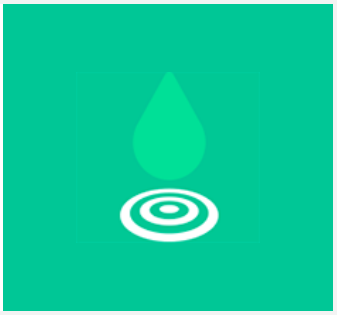
Among the key agro-ecology and carbon-sequestration solutions:

- Implement a conservation-oriented agricultural model based on the minimal use of mechanised tillage (no plowing or direct seeding), the permanent coverage of soil by organic, carbon-rich mulch (straw and/or other crop residues), crop rotations and associations (including nitrogen-fixing legumes);
- Introduce intercropping (between tree rows);
- Develop composting and crop-residue incorporation;
- Develop bio-intensive micro-agriculture;
- Undertake fallowing;
- Develop oases sustainably;
- Develop agro-pastoral zones sustainably.

27%
of the world's
degraded-soil
area is in Africa

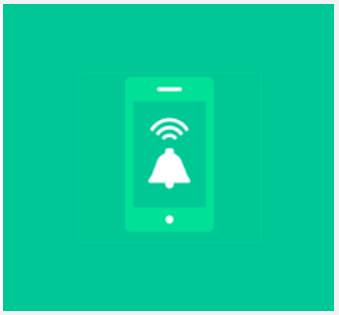
Agricultural-water control

More



Climate-risk management

More



Launched upstream of COP22 organized in Morocco, the initiative for the Adaptation of African Agriculture (AAA) aims to reduce the vulnerability of Africa and its agriculture to climate change.