



Brussels Rural Development Briefings
A series of meetings on ACP-EU development issues

Briefing session n° 17
Biodiversity and Rural Development in ACP countries
Wednesday 10 March 2010

Biodiverse agriculture for a changing climate
Dr Jonathan Ensor - Practical Action
Executive Summary

The model of production practiced by globalised, industrial agriculture relies heavily on fossil fuel inputs. By contrast, at least 1.4 billion traditional farmers, pastoralists and artisanal fishers, and many more gardeners and organic farmers, have thrived by developing biodiverse production systems that draw on and replenish natural resources. Biodiverse agriculture encompasses production systems that foster biodiversity and are themselves biodiverse. These systems depend on and sustain agricultural biodiversity, comprising seeds, livestock breeds and aquatic organisms, as well as predators, pollinators and soil micro-organisms which together improve productivity. Community practices and research from field-scale trials and laboratory studies confirms how biodiverse agriculture conserves the environment and delivers high and dependable yields in an increasingly uncertain world.

Mitigating climate change

Agriculture accounts for around 30% of all greenhouse gas emissions from human activity. Land use change, driven by industrial production methods, accounts for more than half of agricultural emissions. Intensive livestock rearing and fertilizer use dominate the remainder, making agriculture responsible for around half of all methane and 60% of all nitrous oxide emissions, both of which have far greater global warming impact than carbon dioxide. Enhancing agricultural biodiversity has significant potential reduce greenhouse gas emissions. Reflecting on nearly three decades of research, a recent report from the US Rodale Institute concluded that implementing 'established, scientifically researched and proven' biodiversity based farming would change agriculture from a global warming contributor to an inhibitor.

Strengthening resilience

Resilience refers to the capacity to absorb or cope with the shocks and stresses of climate change. It reflects the need to sustain yields from land and sea in the face of weather-related events and gradual temperature variations. For example, healthy biodiverse soils are resilient, retaining moisture in a drying climate; diverse ecosystems can adapt to new pests or increased pest numbers; and livelihoods can be insulated through less dependence on external inputs. Key practices for resilience include:

- selecting and breeding locally-adapted crop varieties, animal breeds and fish species for resistance to disease or pests, and planting a range of varieties to insure against different weather conditions
- using biodiverse agriculture to build soil organic matter through crop rotation, composting, green manures and cover crops, which enriches the soil for better yields, drought-resistance, and absorption of excess rainfall.

Building adaptive capacity

Adaptive capacity is the ability of individuals or communities to modify and transform practices in response to climate change. Critical elements include:

- agricultural biodiversity as an asset that enables adaptation of food species to a changing environment
- self-reliance and local knowledge, with opportunities to learn, innovate and make decisions in response to climate change information.

The real challenge: politics and power

The drive for profits by agribusiness, food and commodity corporations dominates agricultural research and development, investment and trade policies and so inhibits the growth of more equitable and diverse food systems. International treaties on intellectual property rights (IPRs) protect corporate interests over seeds, breeds and biological processes, while national legislation rarely protects farmers' rights over locally-developed plant varieties, undermining the seed-saving and exchange necessary to increase agricultural biodiversity.

Adaptive and resilient biodiverse agriculture requires policies and funds for innovation in knowledge-intensive rather than external input-intensive systems. In contrast, current policy and research focus is on industrial agriculture, extinguishing local knowledge and driving out diversity through the narrow selection of crops, breeds and aquatic species for short-term efficiency and profit.