Reducing GHG emissions with respect to agricultural water

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Food and Agriculture Organization of the United Nations

LAND&WATER

Irrigation

- Surface water pumping
- Ground water pumping
- Water conveyance
- Production and construction of irrigation facilities

Soil health

- Soil hosts the largest terrestrial carbon pool

- Increasing soil organic matter = increasing soil water availability for agriculture

Land management

- Land use has a direct impact on soil organic matter
- Sustainable land use practices impact soil water availability

Crops

- Mutation Breeding to develop sustainable, high yielding and drought resistant crops

Figure 1. Drought effect on cowpea filed in northern Namibia, 2016 (left), farmer Tate Joseph is showing mutant cowpea's performance without supplementary irrigation in his field (right) in 2016.

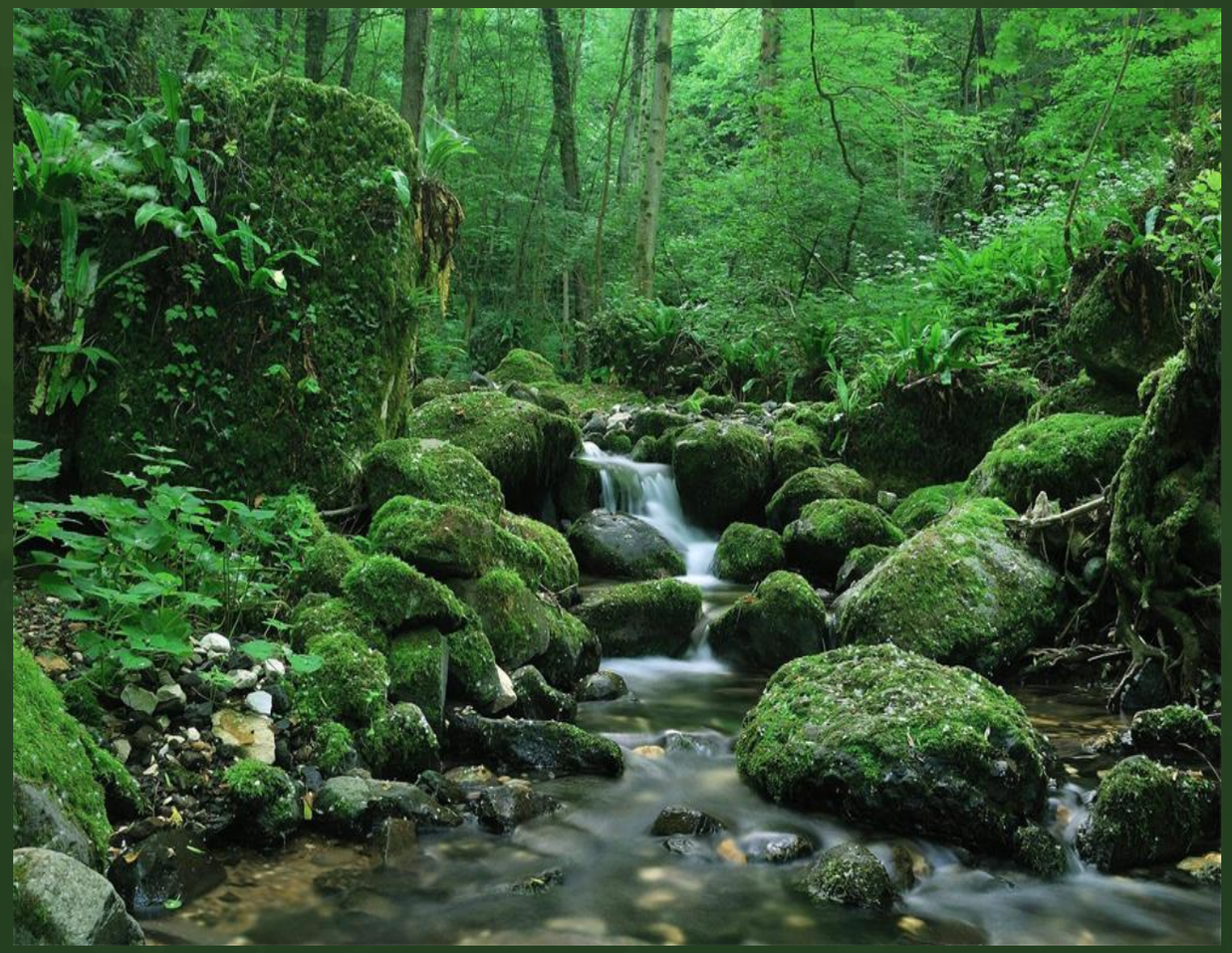
Livestock and water management

- Livestock can affect the water cycle

- Livestock can impact on water quality and quality

Forests

- They can absorb about one-tenth of global carbon emissions into their biomass, soils and products



- They can improve water infiltrations and groundwater recharge

CCAPS-FAO-USAID Study (2016)

Irrigated rice-alternate wetting & drying

Water-efficient practice of periodic drying and re-flooding irrigated rice fields

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Decreases anaerobic decomposition of organic matter, reducing methane production

Irrigated rice-urea deep placement

A nutrient efficiency practice that decreases the amount of fertilizer needed

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Reduces emissions from fertilizer production and on-farm nitrous oxide emissions

Perennial and agroforestry expansion

Conversion of annual croplands and degraded land to perennial or agroforestry systems

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Increases terrestrial carbon by removing it from the atmosphere and storing it in plant biomass

Livestock-herd size management

Increased animal productivity enables fewer, more productive animals

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Fewer, more productive animals produce fewer emissions than many less productive animals

Livestock-grassland improvements

Nutrient and water inputs and rotational grazing increase productivity of grasslands

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Improved pasture growth and composition increase carbon storage in biomass and soils