Agroforestry in the Semi-arid Sahel of Africa
How trees help farmers improve their livelihoods

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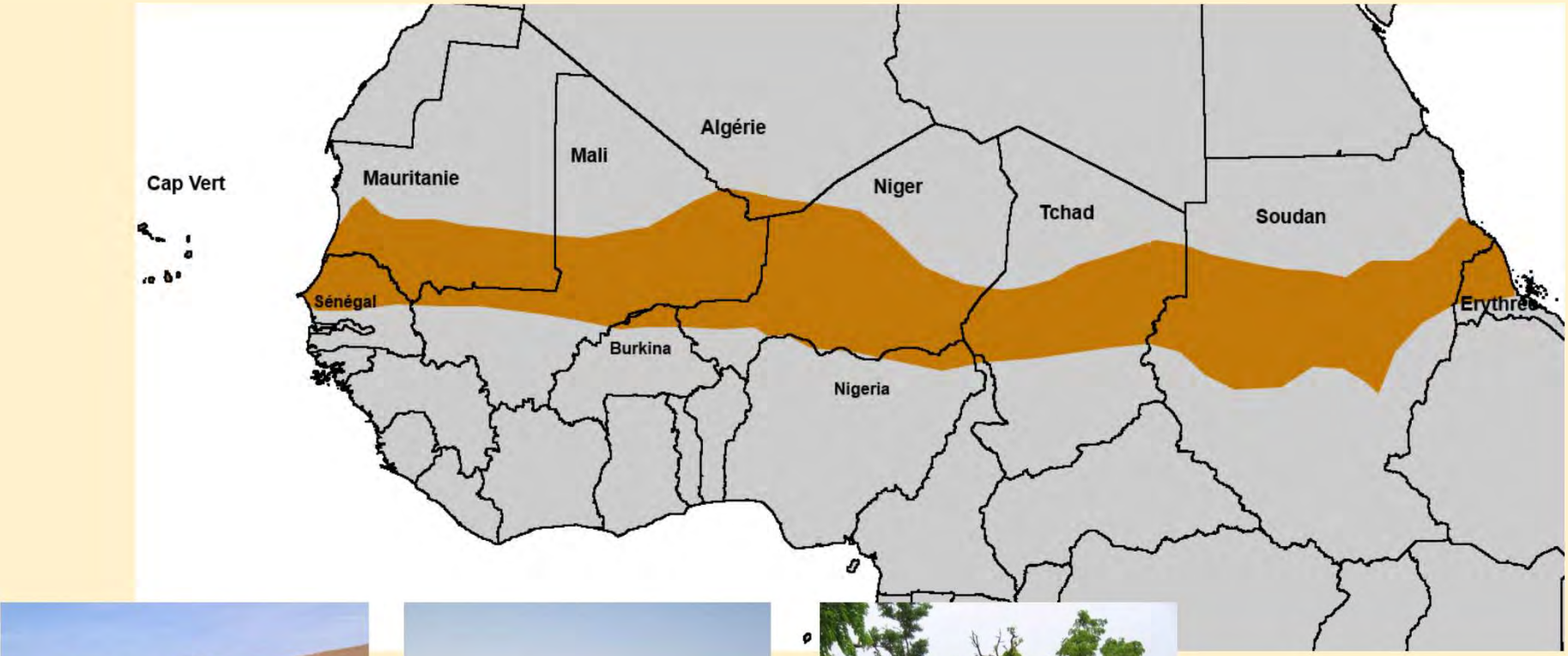
Outline

- A few words about World Agroforestry
- Introduction to the Sahel
- The farm households and their livelihood strategies
- Their challenges
- Agroforestry practices
- The way forward

World Agroforestry

- World Agroforestry (ICRAF) is a non-profit center of science and development excellence that harnesses the benefits of trees for people and the environment.
- With HQ in Nairobi, Kenya, we have staff in 30 countries across the tropics

The Sahel


Cap Vert
Mauritanie
Mali
Algérie
Niger
Tchad
Soudan
Sénégal
Burkina
Nigeria
Erythrée

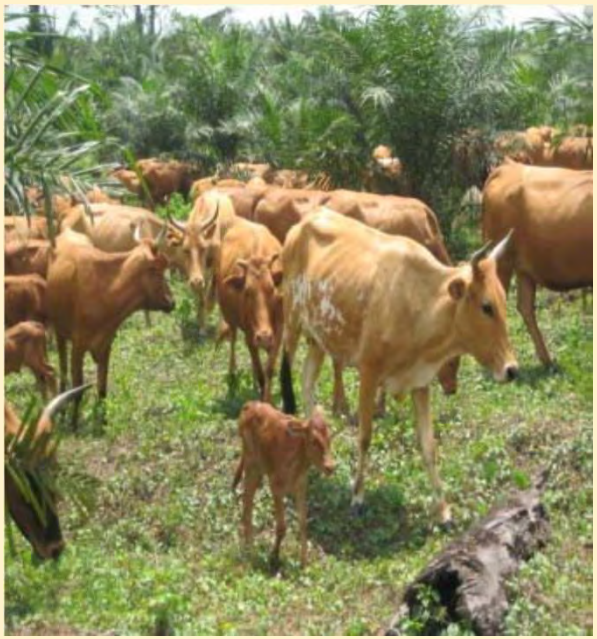
The land in the Sahel

- Flat to slightly sloping terrain, 100 to 1000 ft altitude
- 94% of cultivated land is rainfed; Rainfall 8-24 inches/yr
- One rainy season/yr, 2-3 months long
- Poor soils, low in C,N,P, susceptible to erosion
- Climate change is reducing temperatures and rainfall

The people

- 60-70% rely on farming
- Literacy rates around 40%
- 50-70% earning less than $2/day (below int'l poverty line)
- 60-80% of adults have cell phones

Livelihood strategies: Crops + livestock + trees



Providing food for the household is the main priority in this risky environment

Why do farmers practice agroforestry?

Trees contribute 23% to 72% of farmers' incomes:

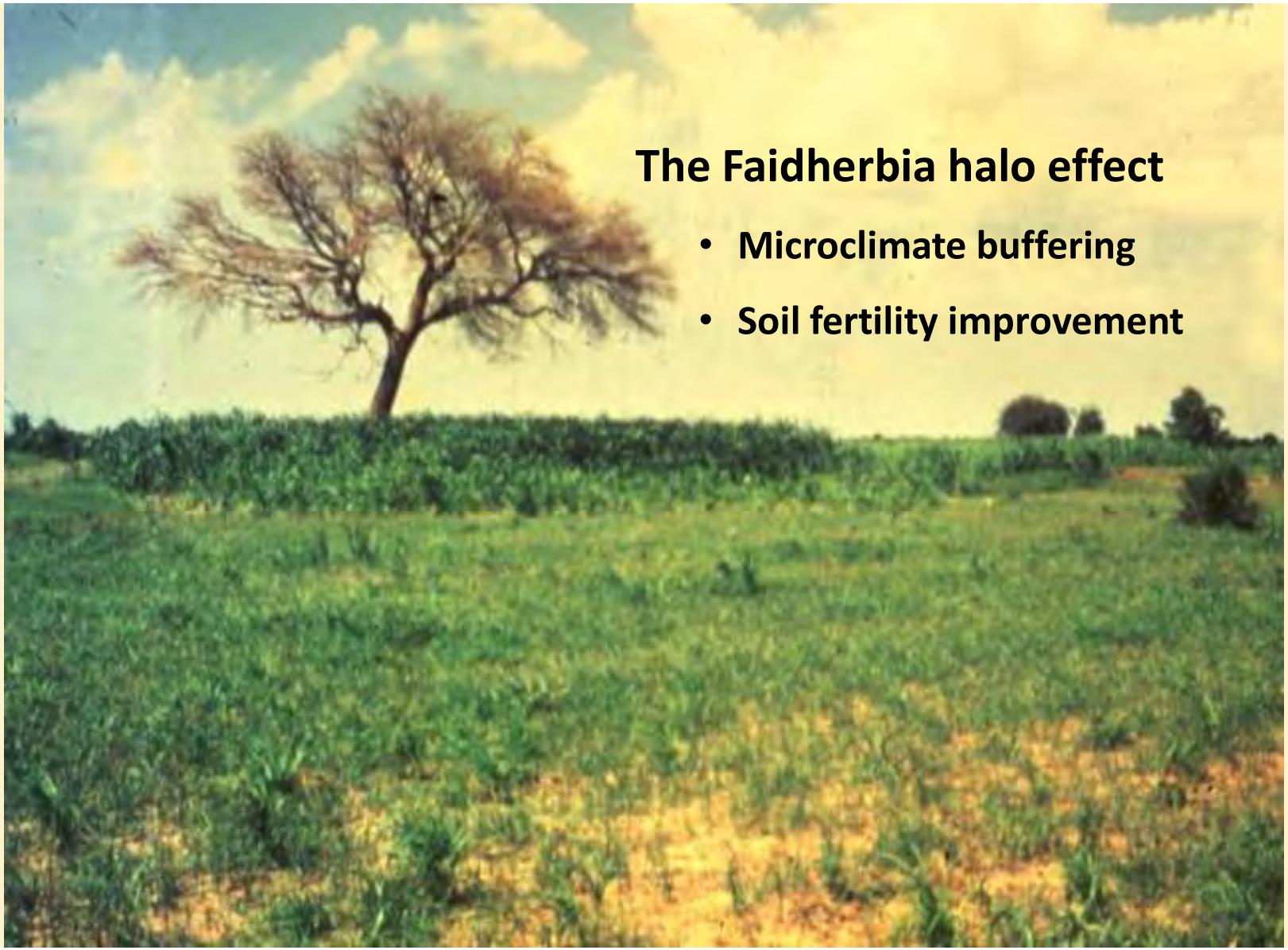
- Products for home consumption: fuelwood, poles, timber; fruits, leaves and other food products; medicines
- Products for sale: all of the above plus gums, resins, nuts
- Products for livestock: pods, leaves, leafy branches for feeding which in turn increase milk and manure production
- Services to crops: water and soil conservation, soil nutrient additions, shade, windbreaks, fences
- Others: boundary demarcation, aesthetics

Integrate traditional knowledge with science: 2 examples

- Improving indigenous fruit trees, such as *Ziziphus mauritiana*.

Farmer Managed Natural Regeneration (FMNR)

- Definition: allowing useful trees to grow and managing them to meet needs
- Example of *Faidherbia albida*


The Faidherbia halo effect
• Microclimate buffering
• Soil fertility improvement

The Important Shea Tree (*Vittelaria paradoxa*)

Transforming Shea nuts to make beauty soap and creams:

A $60 million dollar per year industry

Gum Arabic, collected from *Senegalia senegal* trees, is widely used in industry, valued at 60 million dollars.

Solidified sap

More than just a nice postcard, Baobab (Adansonia digitate) provides:

- nutrient rich leaves and fruit
- nutrient rich leaf litter

Managing *Jatropha curcas*, the seed of which is sold on contract to private companies for biofuel production

Fodder shrubs for increased milk production: *Gliricidia sepium*, *Pterocarpus erinaceus* and *P. lucens.*

Live fences replacing dead fences: *Euphorbia* Spp., *Ziziphus mauritiana*

Sustainable water management

- Contours and cut- off ditches, half-moon shaped earthen bunds, reinforced with stones serve as micro-catchments basins to reduce water runoff and erosion.

- Associating trees with these structures increases water retention and harvesting of scarce rainfall by channelling run-off into the basins around the trees.

Concluding statements

- But it is not just about technologies. Improving policies and institutional arrangements are also critical, e.g.
- Strengthening national research and extension
- Land tenure policy
- Improving access to business services such as credit, insurance and climate information
- Organizing producer organizations for collective marketing

The way forward

Implementation approaches needed that:

- Are bottom-up, demand-driven
- Are market-oriented
- Strengthen local institutions, e.g. producer organizations, research and extension
- Are climate smart, helping farmers adapt to climate change
- Use Public-Private-Partnerships for high priority tree products
- Leverage cell phones as
  - a business tool for farmers
  - a means of acquiring information