Forests Sustaining Agriculture

Side Event:
Contribution of Forests, Trees and Agroforestry to sustainable Food Security and Nutrition in a time of crisis

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Introduction

• Ecosystem services (ES) are regarded as the structure and functions of ecosystems that result in both goods and services being produced that contribute to support human wellbeing.

• The last three decades has seen an exponential rise in ecosystem service related publications.

• However, the contribution of trees to adjacent or embedded food systems remains poorly understood.

• Assessment of the literature base for both the positive (ES) and negative (EDS) functions of forests, trees and agroforestry in relation to food production (Reed et al. 2017).
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Foli et al. 2014; Reed et al. 2017

How does landscape configuration maximise the provision of these goods and services for both sustainable forestry and food production?
“When incorporating forests and trees within an appropriate and contextualized natural resource management strategy, there is potential to maintain, and in some cases, enhance agricultural yields comparable to solely monoculture systems”. Reed et al. 2017
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**Nutrient Cycling:**
Studies conducted in agroforestry systems (AFS): 79% showed a positive effect of tree presence

**Pollination:**
87% of studies showed a positive effect of nearby (0.3 – 1.6km) forest/forest fragment. Pollination and nutrition linkages

**Climate regulation:**
Yields of some crops diminish, further from forests

Forests, trees = resilience

(Foli et al. 2014 Env. Evidence; Ellis et al 2015, Plos One)
Trees in wheat fields increase nitrogen availability in soil, water use efficiency, reduces heat stress and increases yield....

Nutritional value of crops increases with proximity to forest through improved soil organic matter in wheat fields in Ethiopia. Agriculture, Ecosystems and Environment. 266:100-108.
In southwestern Ethiopia, wheat grown on farms near the forest have more proteins, greater nutrient content, and higher yields than wheat grown on farms away from the forest.

The secret is in the soil.
Livestock productivity and nutrient balances improve with increasing proximity to forest....

WHY DO FARMS NEAR THE FOREST HAVE BETTER SOILS?

Putting farm resources to their proper use

- Plentiful firewood means burning less dung

- Farmers keep more livestock due to access to forest for grazing; more animals produce additional manure

- When more manure is applied to the soil, it makes more nutrients available for crops
Shade trees decrease the abundance of pests....

Shade tree diversity enhances coffee production and crop quality in agroforestry systems....

Evergreen Agriculture

Key messages

• Diverse forest and tree-based production systems offer advantages over monocropping systems because of their adaptability and resilience.

• There are a multitude of ecosystem services provided by forests and trees that simultaneously support food production, nutrition, sustainability and environmental and human health.

• Managing landscapes on a multi-functional basis that combine food production, biodiversity conservation and the maintenance of ecosystem services can contribute to food and nutritional security.

• Forests and trees alone will not achieve global food security, but can play a major role: discourse has started to change.
Thank you!

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