



COP17 Side Event
Durban, 1 December 2011

Making climate-smart agriculture work for the poor

Henry Neufeldt
World Agroforestry Centre (ICRAF)

The need to transform agriculture

- Increased production, either through extensification or intensification has caused significant negative effects on the environment
- Agriculture is leading to conversion of land and placing greater pressure on biodiversity and natural resource functions than ever before
- By 2050 approximately 70% more food will have to be produced to feed the global population
- Under business-as-usual climate change will reduce global food production

The need to reduce the environmental impacts while increasing production requires a significant change in the way agriculture currently operates

Beddington et al. (2011) Achieving Food Security in the Face of Climate Change. SPM. Commission on Sustainable Agriculture and Climate Change. CCAFS, Copenhagen



What is climate-smart agriculture ?

Agriculture that **sustainably** increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances achievement of national food security and development goals (FAO, 2010).

FAO Climate Smart Website WWW.FAO.ORG/CLIMATECHANGE/CLIMATESMART/EN

It's all about scale

- Climate-smart agriculture can have different meanings depending upon the scale at which it is being applied
- At local scale: opportunities for higher production, e.g. through improved management
- At national scale: e.g. providing frameworks that incentivize sustainable management practices
- At global scale: e.g. setting rules for global trade
- For smallholders: greater food security and resilience against shocks
- For intensive agriculture: opportunities to reduce emissions

It will be important to ensure that the different temporal and spatial scales work together properly



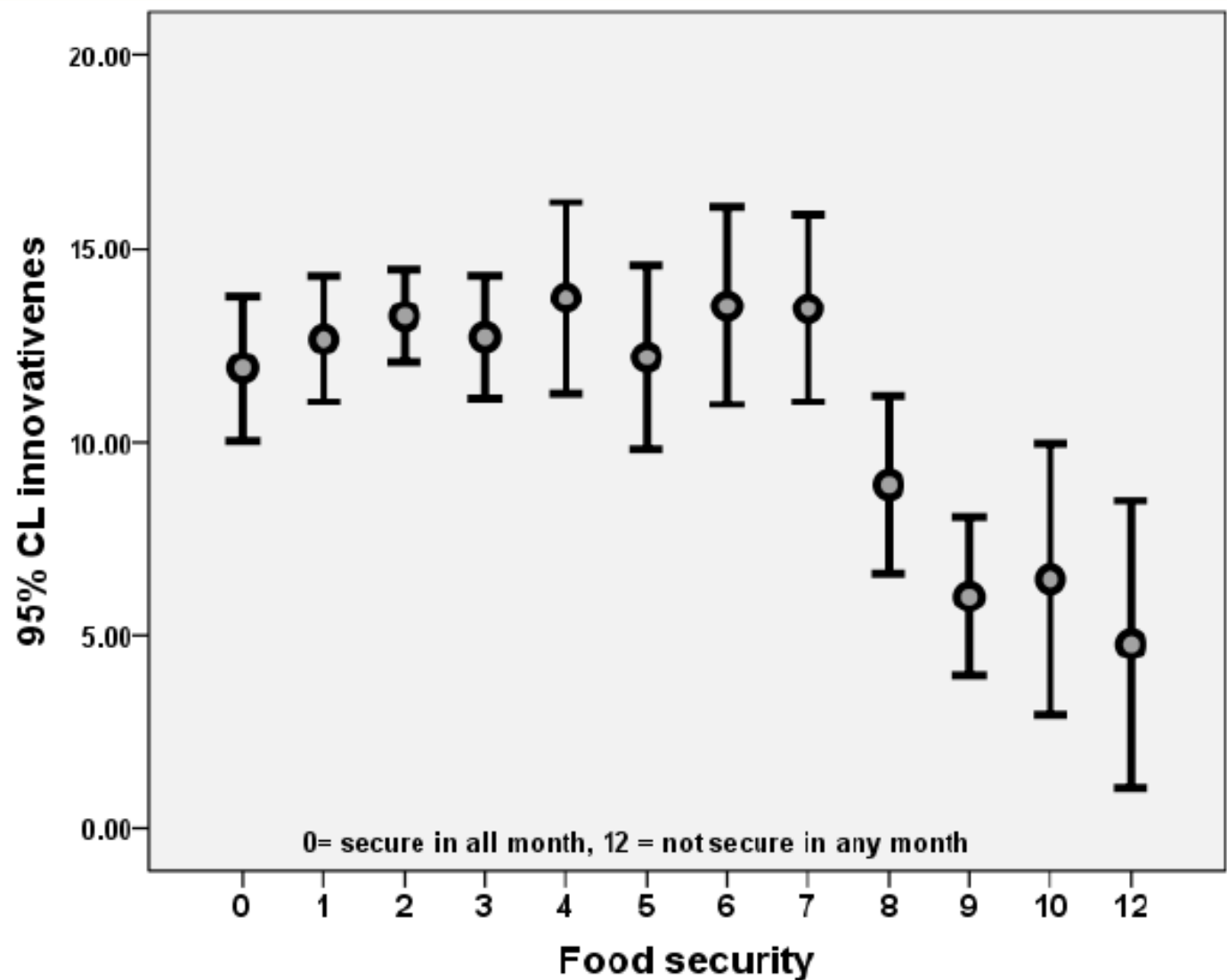
Some climate-smart agricultural practices

Crop management	Livestock management	Soil and water management	Agroforestry	Integrated food energy systems
<ul style="list-style-type: none"> • Intercropping with legumes • Crop rotations • New crop varieties • Improved storage and processing techniques • Greater crop diversity 	<ul style="list-style-type: none"> • Improved feeding strategies • Rotational grazing • Fodder crops • Grassland restoration and conservation • Manure treatment • Improved livestock health • Animal husbandry improvements 	<ul style="list-style-type: none"> • Conservation agriculture • Contour planting • Terraces and bunds • Planting pits • Water storage • Alternate wetting and drying (rice) • Dams, pits, ridges • Improved irrigation (drip) 	<ul style="list-style-type: none"> • Boundary trees and hedgerows • Nitrogen-fixing trees on farms • Multipurpose trees • Improved fallow with fertilizer shrubs • Woodlots • Fruit orchards 	<ul style="list-style-type: none"> • Biogas • Production of energy plants • Improved stoves

All practices presented here improve food security and lead to higher productivity, but their ability to address adaptation and mitigation varies

Constraints: innovation and food security

Relationship between innovativeness (number of farming system changes) and household food security (number of food deficit months). Error bars indicate the 95% confidence interval of the mean

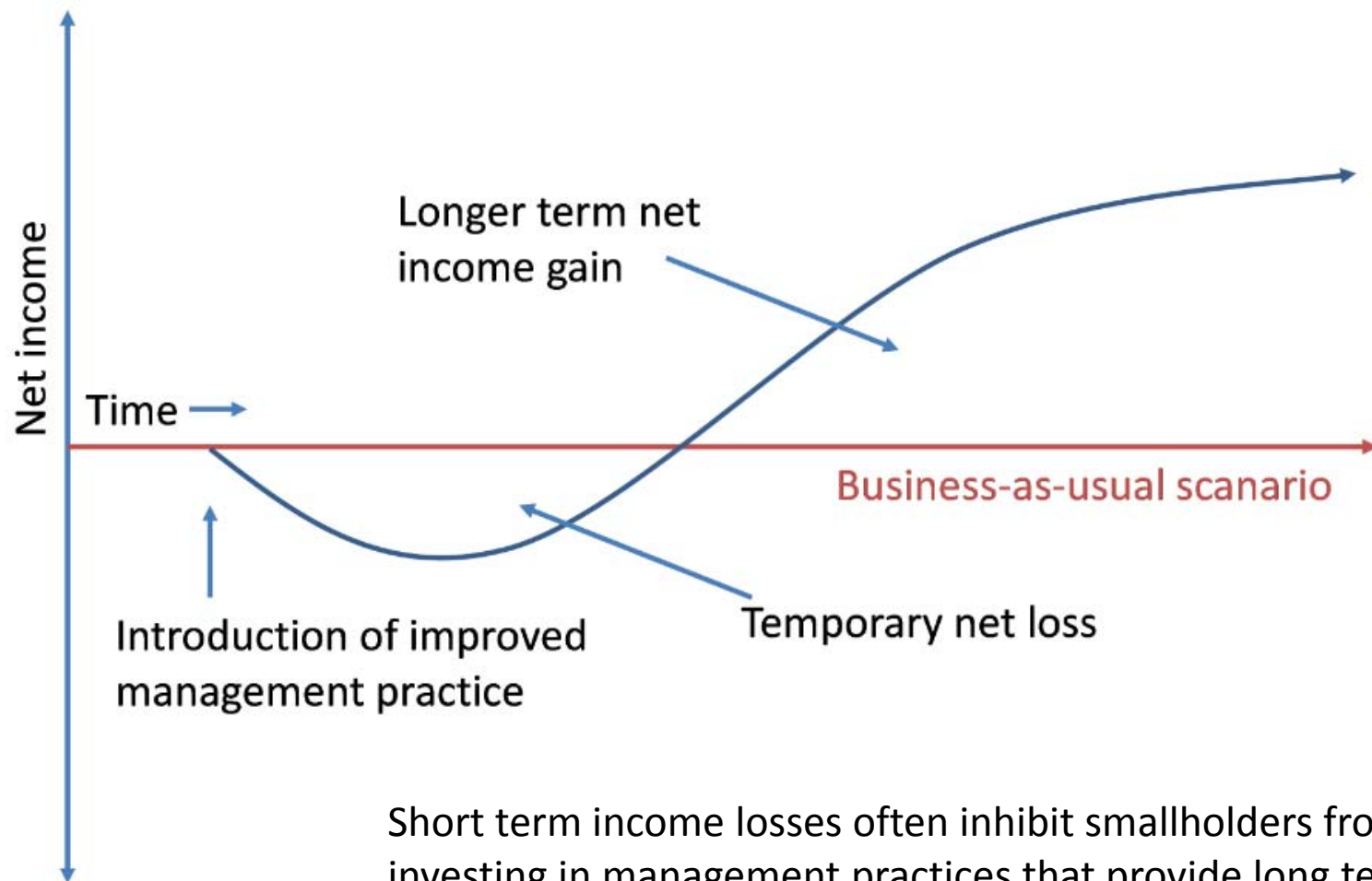


Case study: farmer climate coping strategies

- Farmers most interested in reducing food insecurity
- No long- or medium-term planning possible under food insecure situation
- Tree planting (and other investments in livelihood improvements) only after basic food security is guaranteed
- Food insecurity rose by at least one month (above on average 3 months) during recent drought and floods
- Coping strategies lead into 'poverty trap'

	Reduce Quantity, Quality or # of meals	Comm-unity or family support	Help from Gov, NGO, Church	Borrow money	Casual Labor	Sell possessions or livestock	Consume Seeds	Children attend school less
<i>All #s in %</i>								
Lower Nyando	85	30	42	32	28	72	72	38
Middle Nyando	38	23	18	37.5	25	40	61	12.5

Constraints: short term losses vs. long term benefits



Short term income losses often inhibit smallholders from investing in management practices that provide long term benefits (schematic not drawn to scale).

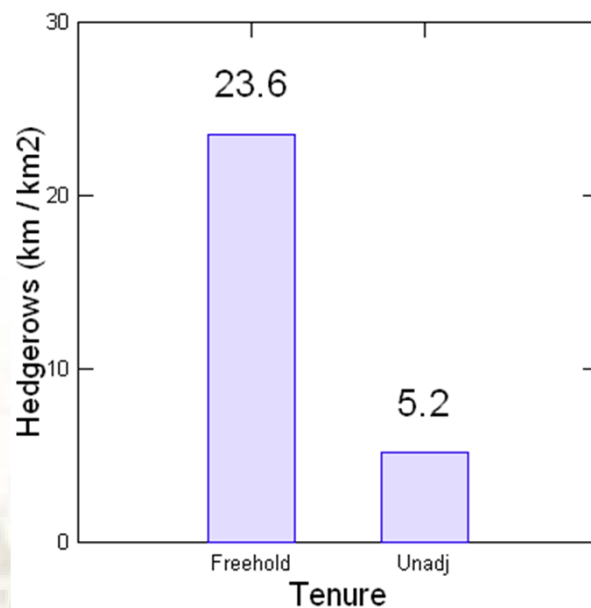
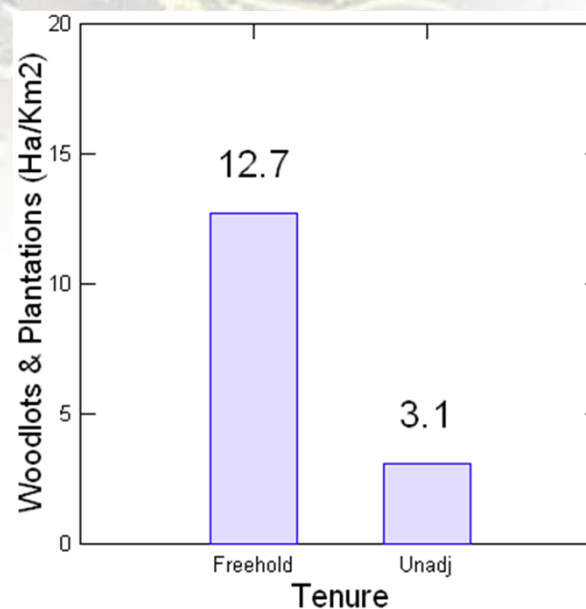
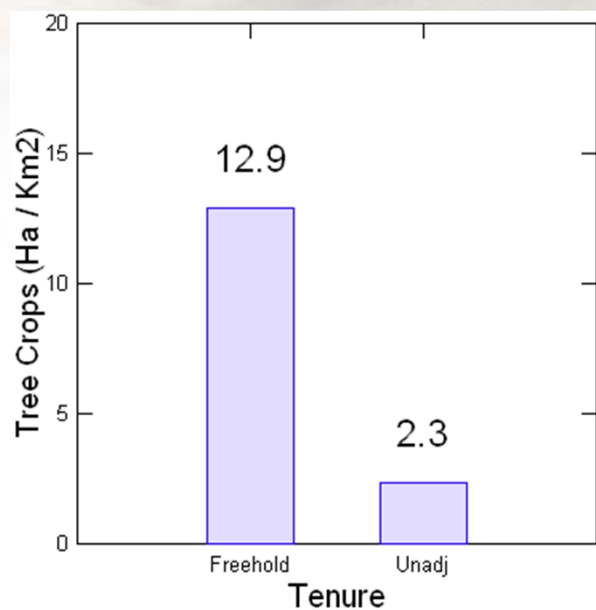


Constraints: lack of knowledge and training

	WKIEMP Group Households	Informal WKIEMP Households	Control Households
Timber -- % hhs planting	92	87	79
Timber – median number planted	56	24	22
Fruit - % hhs planting	77	71	72
Fruit – median number planted	7	5	4
Fodder - % hhs planting	93	88	33
Fodder – median number planted	22	6	0
Soil fertility - % hhs planting	54	30	27
Soil fertility – median number planted	3	0	0
Medicinal -- % hhs planting	43	39	23
Medicinal – median number planted	0	0	0



Constraints: insecure tenure



Net return on land

Freehold: \$347/ha

Unadjudicated: \$110/ha

Net tenure effect: 3.1



Recommendations

- Provide an enabling legal and political environment
- Improve market accessibility
- Involve farmers in the project-planning process
- Improve access to knowledge and training
- Introduce more secure tenure
- Overcome the barriers of high opportunity costs to land
- Improve access to farm implements and capital





Thanks for your attention



World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES