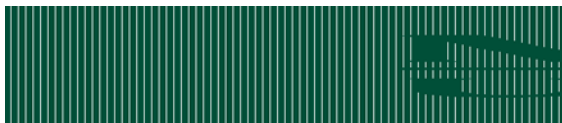


# The Role of Rice in Changing Food Consumption Patterns in West Africa

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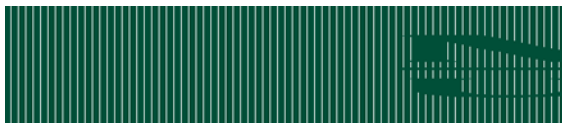


**syngenta** foundation  
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**3<sup>rd</sup> Africa Rice Congress**   
21-24 October 2013, Yaoundé, Cameroon

# Background/Context

- West Africa : Changes - social and economic environment in the last 25 years
- Structural changes: Urbanization, population, growth in per capita incomes
- Changes in relative prices – SAP; 1994 FCFA devaluation\*; 2007-2008 global food crisis
- Time-poor urban consumers.
- Changes in the mix of starchy staples, even in rural areas.
- Regional average rice production < 65% in domestic rice supply (exceptions: Mali and Nigeria)
- Regional rice import dependence rate= decreased but still > 75% for some (Senegal)



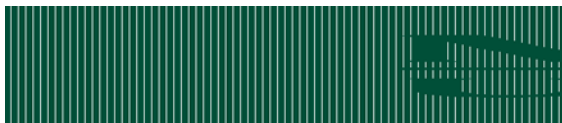
# Research Relevance and Contribution

## Relevance

- I. Implications for food security (availability)
- II. Implications for developing successful production & marketing strategies for rice & other starchy staples in WA

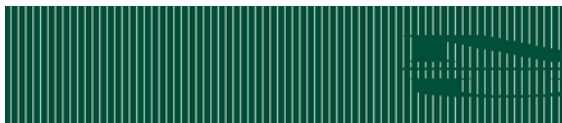
## Contribution

- ▶ Empirical Aggregate-Level Food Demand studies
  - Relative prices versus structural factors
    - Pre-devaluation—is the high rice consumption due to lower relative price of rice/wheat?
      - E.g. Delgado (1989); Delgado and Reardon (1992)— structural factors
    - Post 1994 CFAF devaluation—Have rice prices increased enough to shift consumption away from rice?
      - E.g. Diangana et al. (1999)—urban WA—Expected shift didn't occur.



# Research Objectives, Methods & Data

1. To examine changing patterns of rice consumption in the context of broader consumption shifts in all starchy staples (cereals plus roots & tubers) in ECOWAS in 1980-2009.
  - *Descriptive analysis –FAOSTAT Food Balance Sheet 1980-2009*
    - Trend in the level of food availability;
    - Trend in rice share in starchy staples calories;
    - Trend in the composition of food availability by major starchy staple type.
2. Econometric analysis of the determinants of rice share in starchy staple calories.
  - More data: Urban population shares and GDP per capita (World Bank).

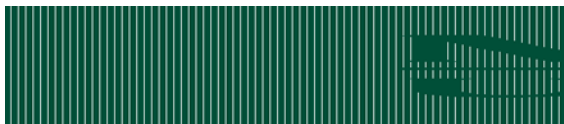
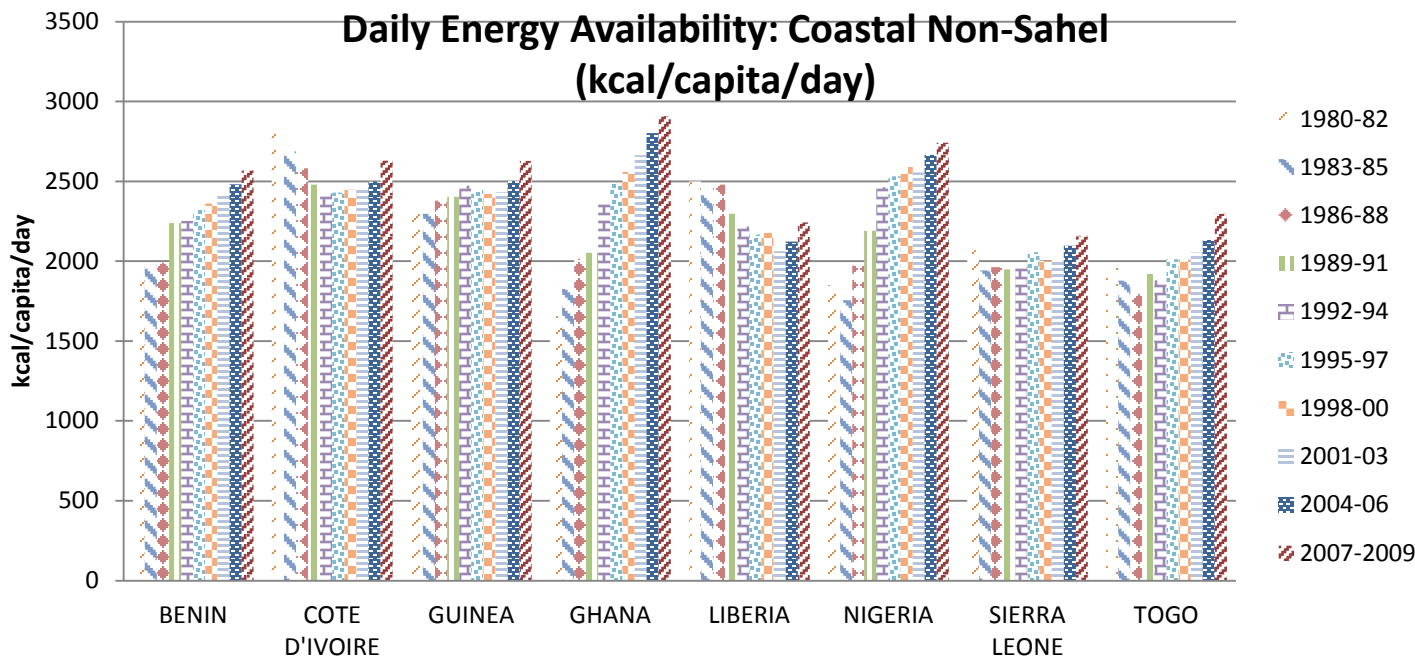


# Findings

## A. Descriptive Analysis

### 1. Trends in the level of food availability

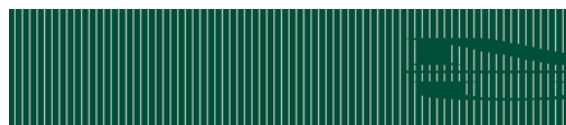
- Overall- shift towards greater daily energy availability (DEA);  
Driven mainly by starchy staples (SS) calorie availability. SS share in per capita DEA > 50% for most.



# Findings Cont.

## II . Trend in rice share (%) in starchy staples calories

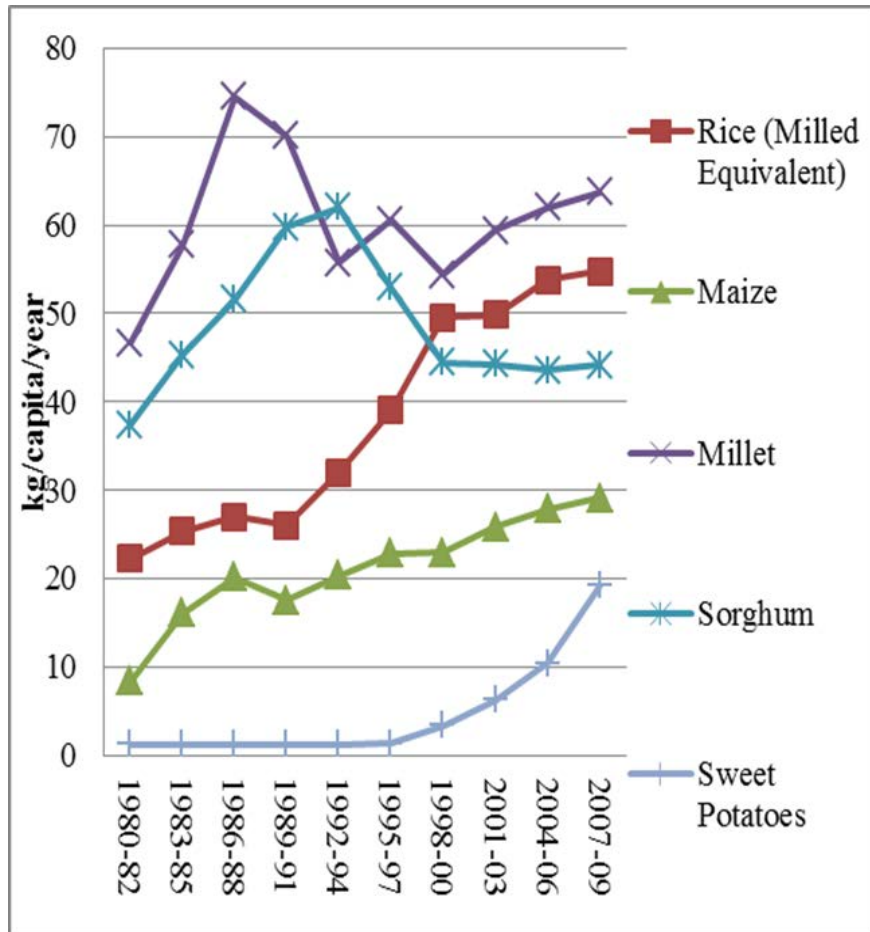
	1980-82	1989-91	2001-03	2007-09	% change 1980-85 to 2004-09
<b>Non-coastal Sahel</b>					
Mali	21	17	29	29	49
Niger	5	6	12	7	62
Burkina Faso	6	6	10	9	18
<b>Coastal Sahel</b>					
Cape Verde	12	18	34	40	195
Gambia	58	57	32	38	-41
Guinea Bissau	53	67	61	58	-3
Senegal	45	42	51	48	8
<b>Coastal non-Sahelian</b>					
Benin	5	10	10	18	171
Cote d'Ivoire	29	30	28	33	6
Guinea	49	59	60	61	23
Ghana	5	8	11	14	151
Liberia	69	65	43	56	-28
Nigeria	16	15	14	12	-14
Sierra Leone	79	79	67	68	-14
Togo	6	7	11	12	119



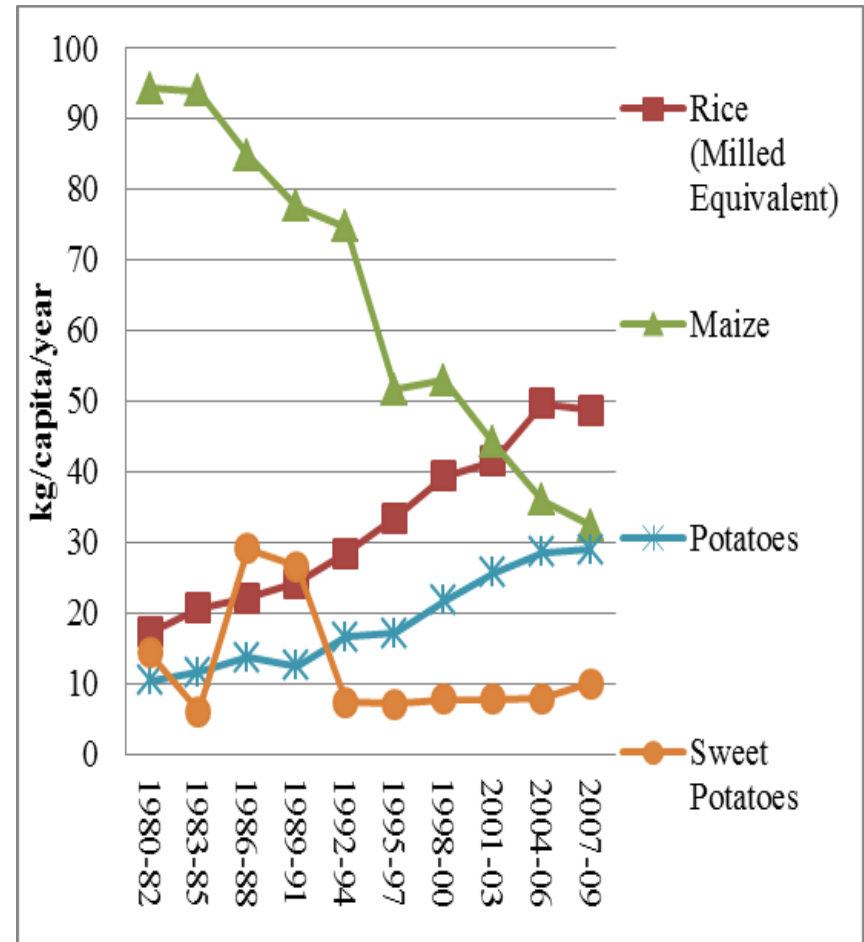
# Findings Cont.

## III. Trends in Supply by Major Starchy Staple Type(kg/capita)

### Mali



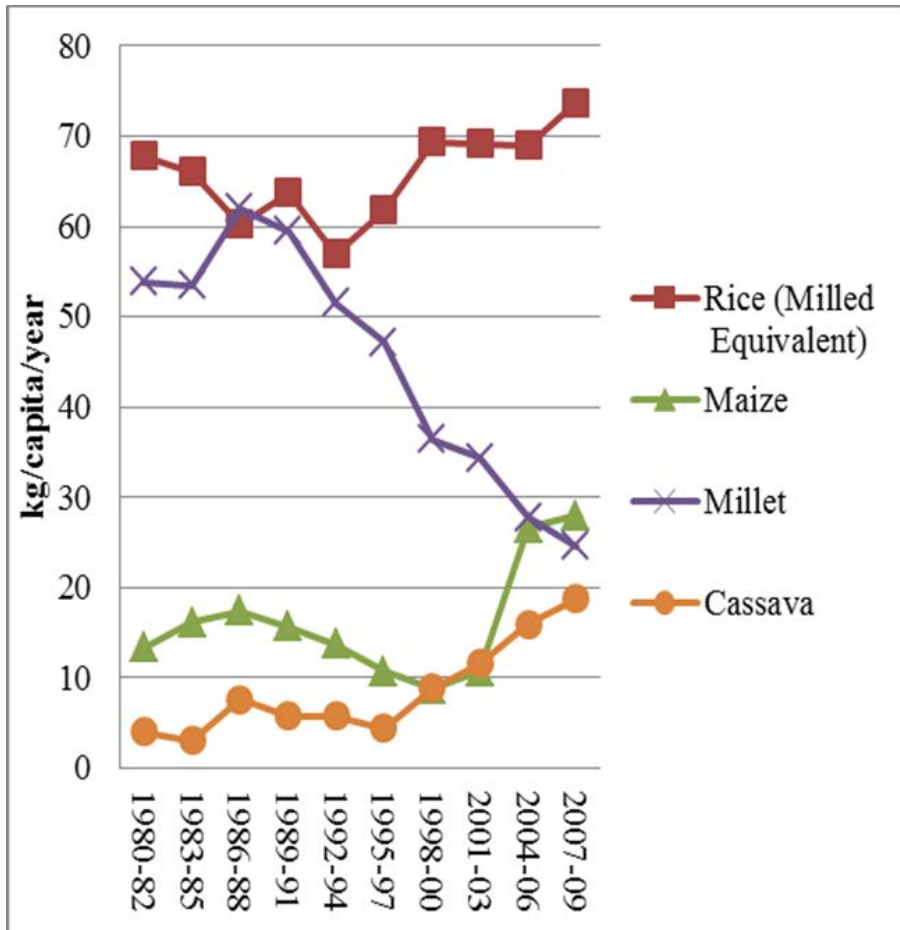
### Cape Verde



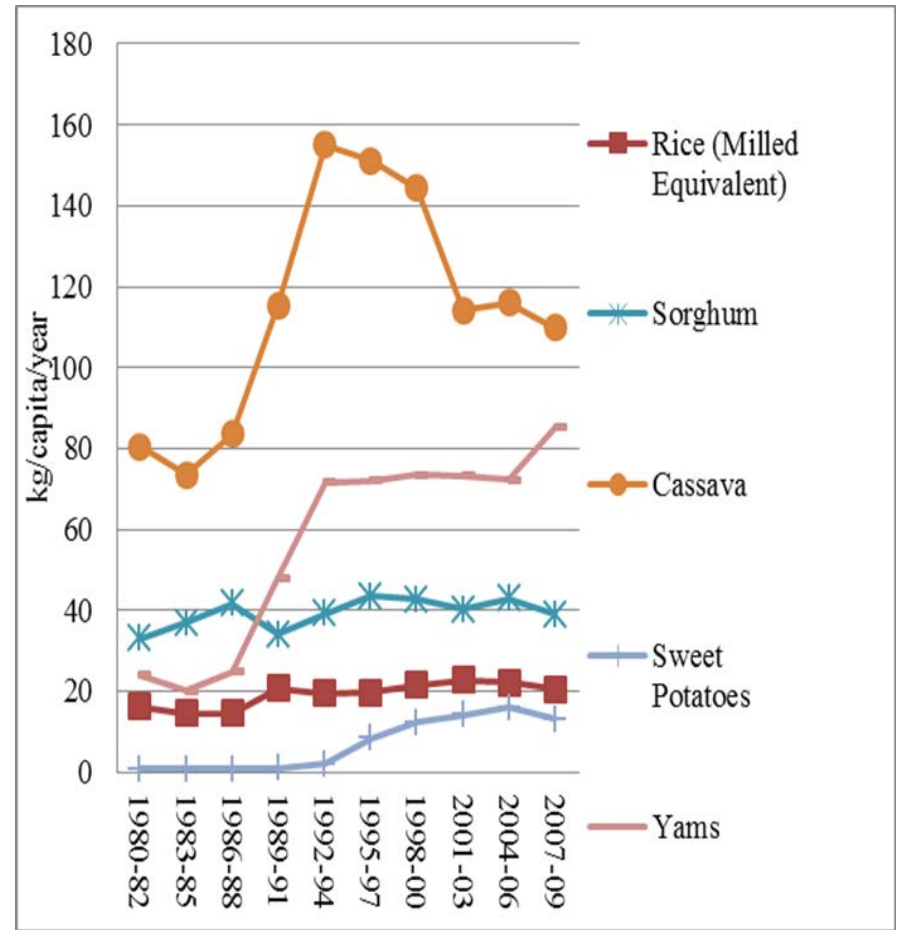
# Findings, Cont.

## III. Trends in Supply by Major Starchy Staple Type(kg/capita)

### Senegal



### Nigeria





# Findings Cont.

## B. Econometric Analysis

*Model:*

$$S_t = \alpha_t + \sum_{i=1}^{14} \beta_i d_i + \gamma V + \sigma X_t + \delta U_t + \varphi U_t * X_t + \sum_{i=1}^{14} \phi_i d_i U_t + \varepsilon_t$$

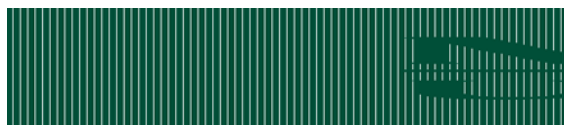
Where:

$S_{it}$  = rice share (%) in SS calories in country  $i$  at time  $t$ ;

$X_t$  = per capita GDP (constant \$ US) ;

$d_i$  = country dummies; and  $U_t$  = urban population share

*Estimation Method:* Ordinary Least Squares.



# Findings Cont.

## Estimated Effect of Urbanization on Rice Share(%) in Starchy Staples Calories.

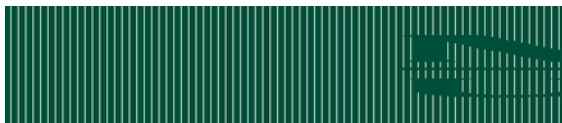
### Estimation Results

- Sample size=450;  $R^2= 0.97$ ;  
(Prob>F = 0.0000).
- 10/15 country dummies-  
statistically significant.
- A 100US\$ rise in GDP/capita  
→ 2 % increase in rice calorie  
share.
- Mixed evidence of  
relationship between  
urbanization and rice share in  
SS calories

Country	Effect (%) of a 1% change in Urban population Share
Benin	0.67*
Burkina Faso	0.17
Cape Verde	0.30**
Cote d'Ivoire	0.48*
Gambia	-1.04*
Ghana	0.29*
Guinea	1.11*
Guinea Bissau	0.52*
Liberia	-0.86*
Mali	0.96*
Niger	1.91*
Nigeria	-0.22*
Senegal	1.06*
Sierra-Leone	-1.71*
Togo	0.55*
Statistically significant at 5% (*) ; 10% (**)	

# Conclusions and Policy Implications(PI)

1. Evidence of a diversification in the composition of SS supply and some substitution amongst major SS types (more than rice/wheat VS. traditional SS). It involves other SS (cassava, yams, sweet potatoes, Irish potatoes and maize).
  - PI-1: Scope to encourage ongoing diversification & substitution in consumption
2. Positive relationship between rice calorie share and GDP/capita → growth in rice demand as people get richer.
  - PI-2: Efforts geared towards expanding rice production and reducing the unit cost of production are necessary to capture this growing effective demand.
- Effect of urbanization-conventional wisdom holds in 11/15.
  - Special cases:
    - The Gambia and Nigeria- Data problems
    - Sierra Leone and Liberia-Civil disruption



THANK YOU !!!

MERCI !!!

