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Expanding Agriculture Productivity in the Emerging Markets:
SOUTHEAST ASIA & SUB-SAHARAN AFRICA

Steve Elmore, Agricultural Division Chief Economist
DowDuPont

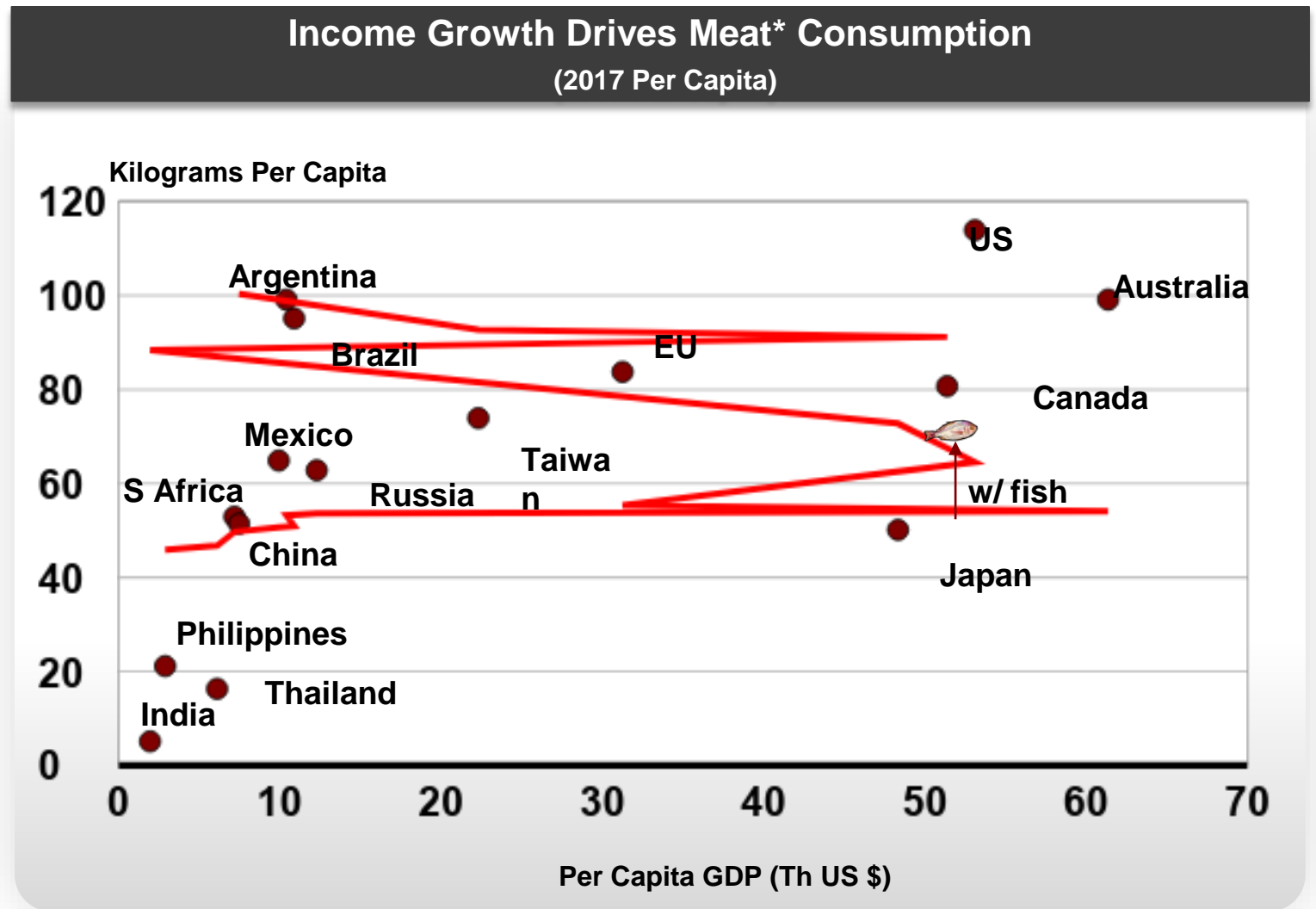
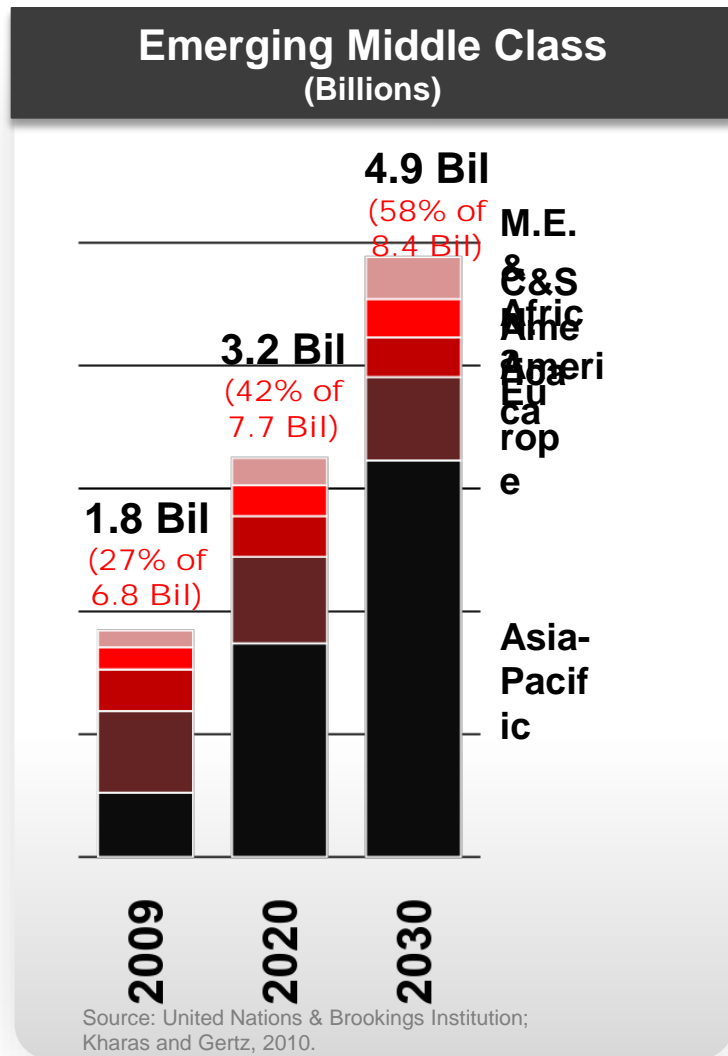
February 2018

This presentation contains forward-looking statements based on expectations, estimates and projections that are not guarantees of future performance and involve a number of uncertainties and assumptions.

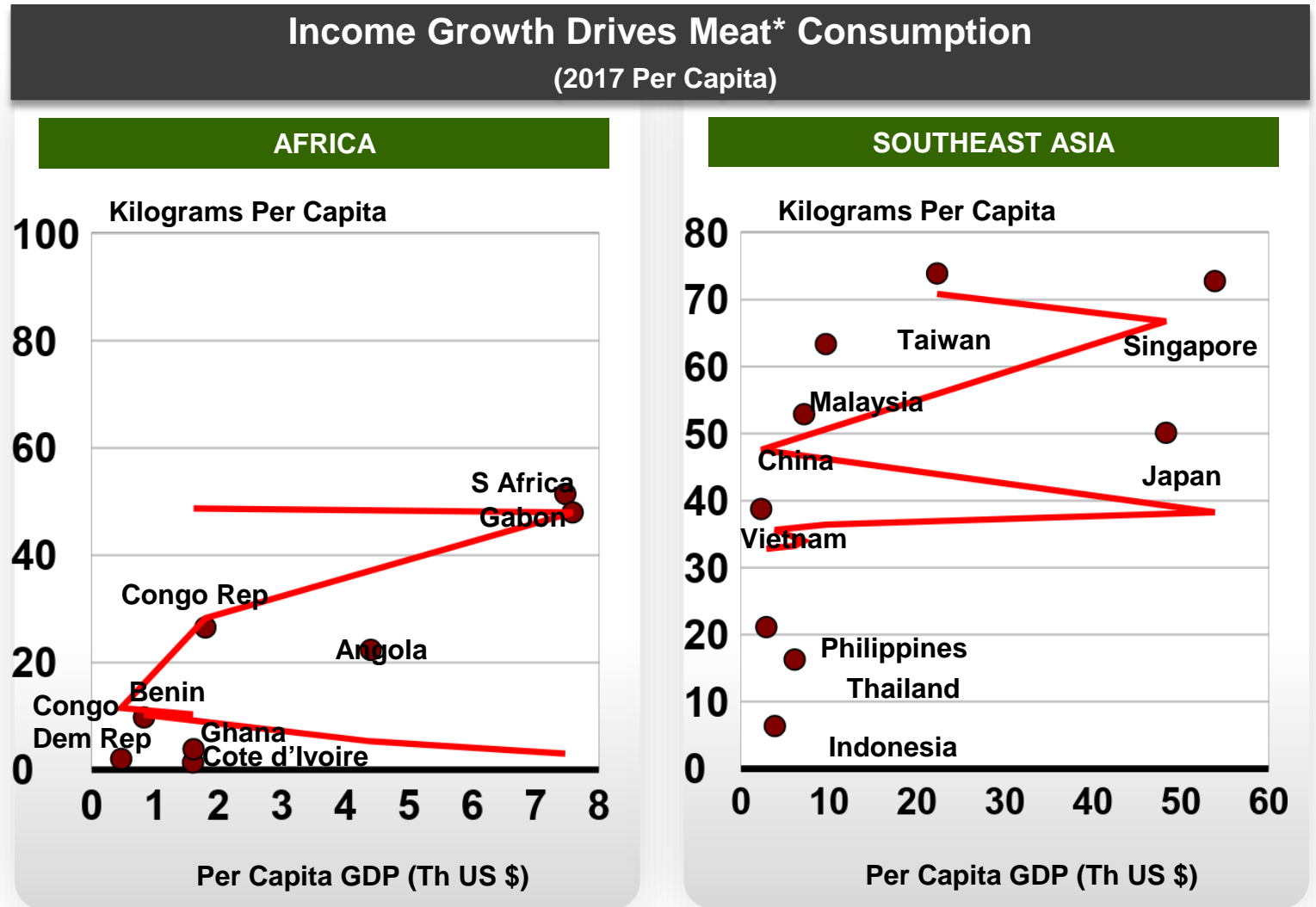
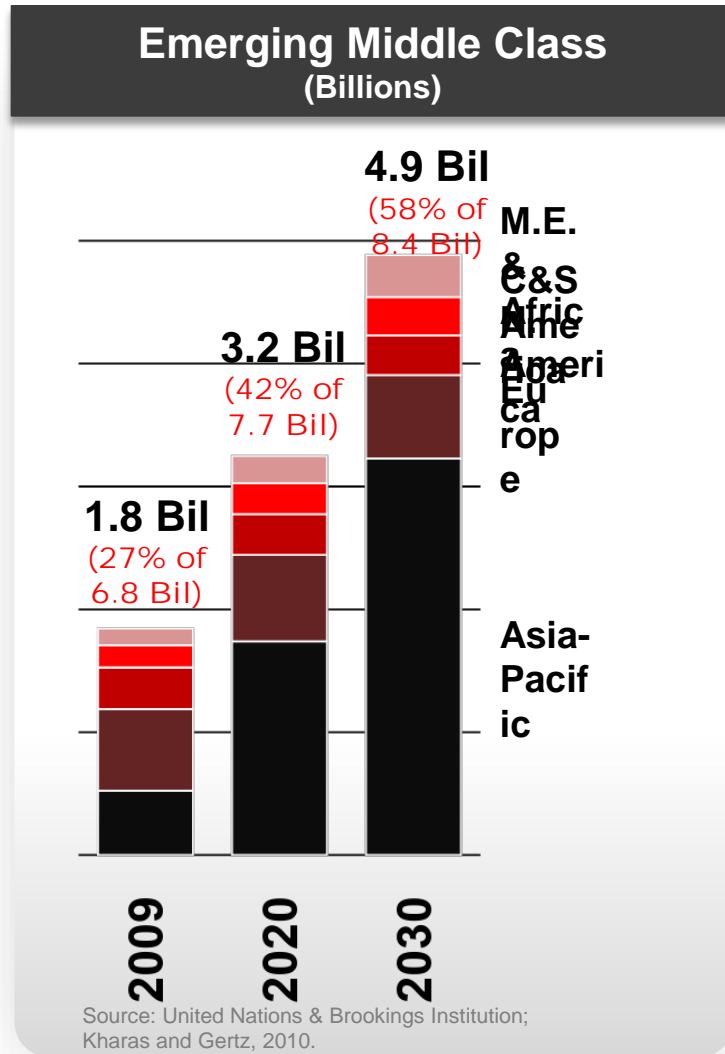
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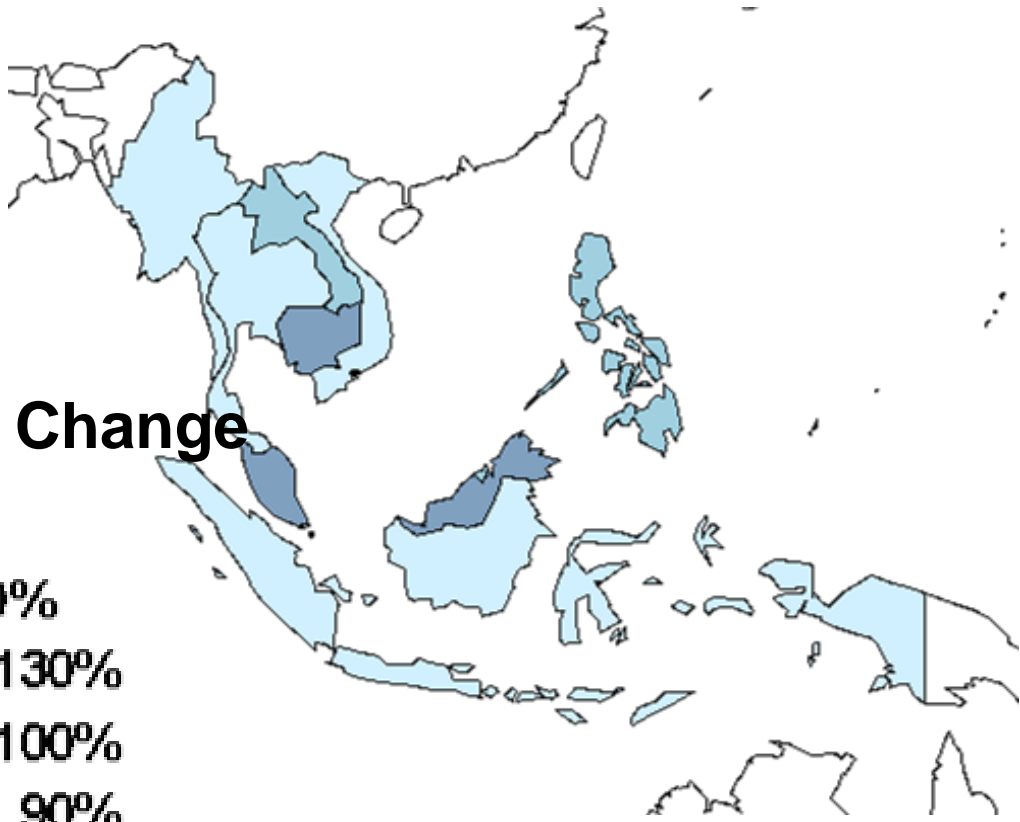
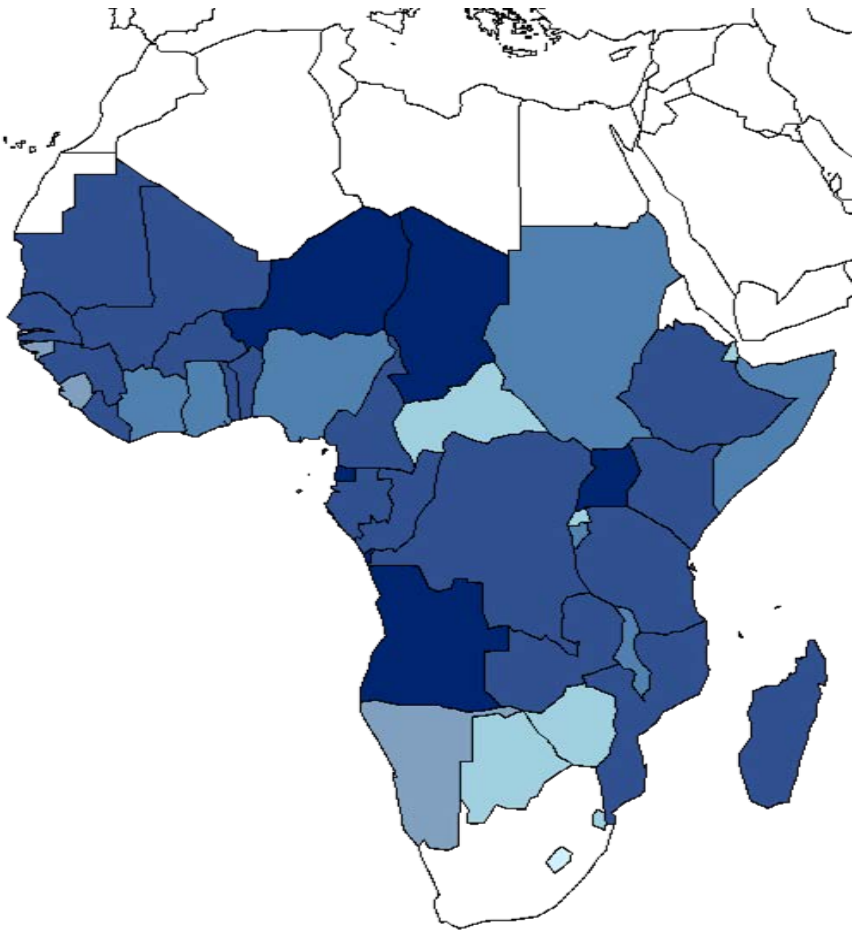
Population & Income Drive Growing Middle Class Diet Changes



Population & Income Drive Growing Middle Class Diet Changes



Sub-Sahara Africa & Southeast Asia: Change in Population 1990 to 2016



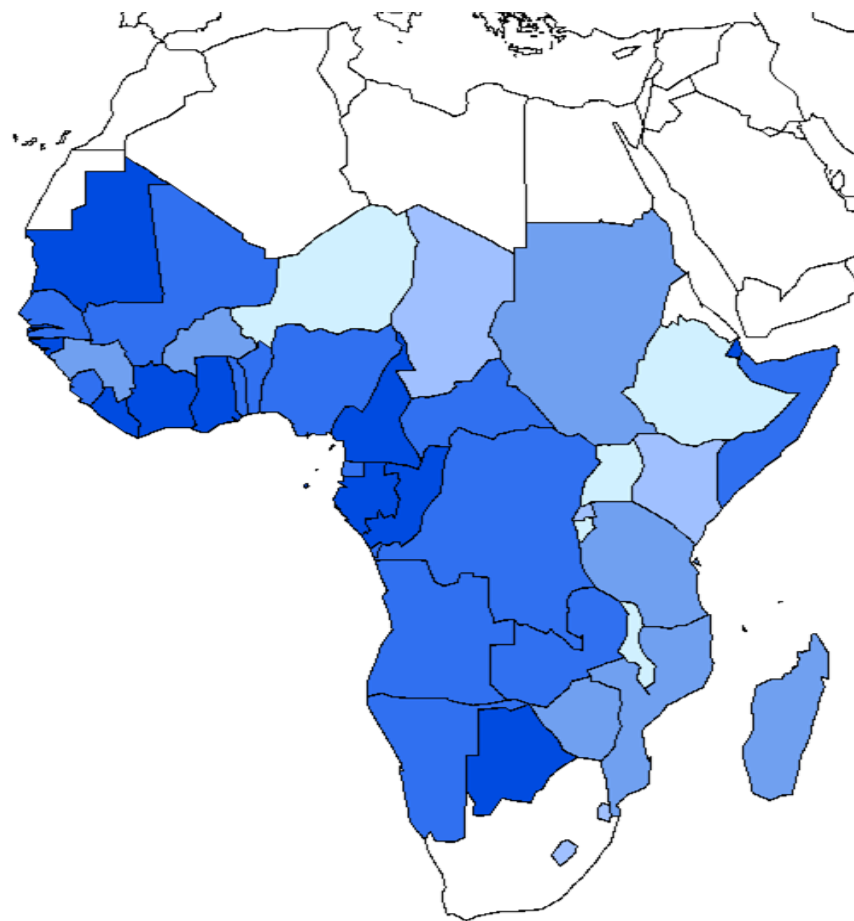
Population Change 1990-2016

- Over 130%
- 100% to 130%
- 90% to 100%
- 70% to 90%
- 50% to 70%
- 10% to 50%

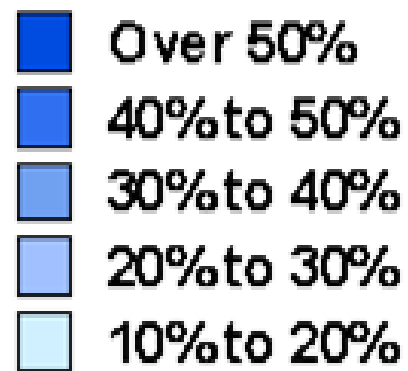
U.S.: +29%
Global: +41%

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Percent Urban Population 2016



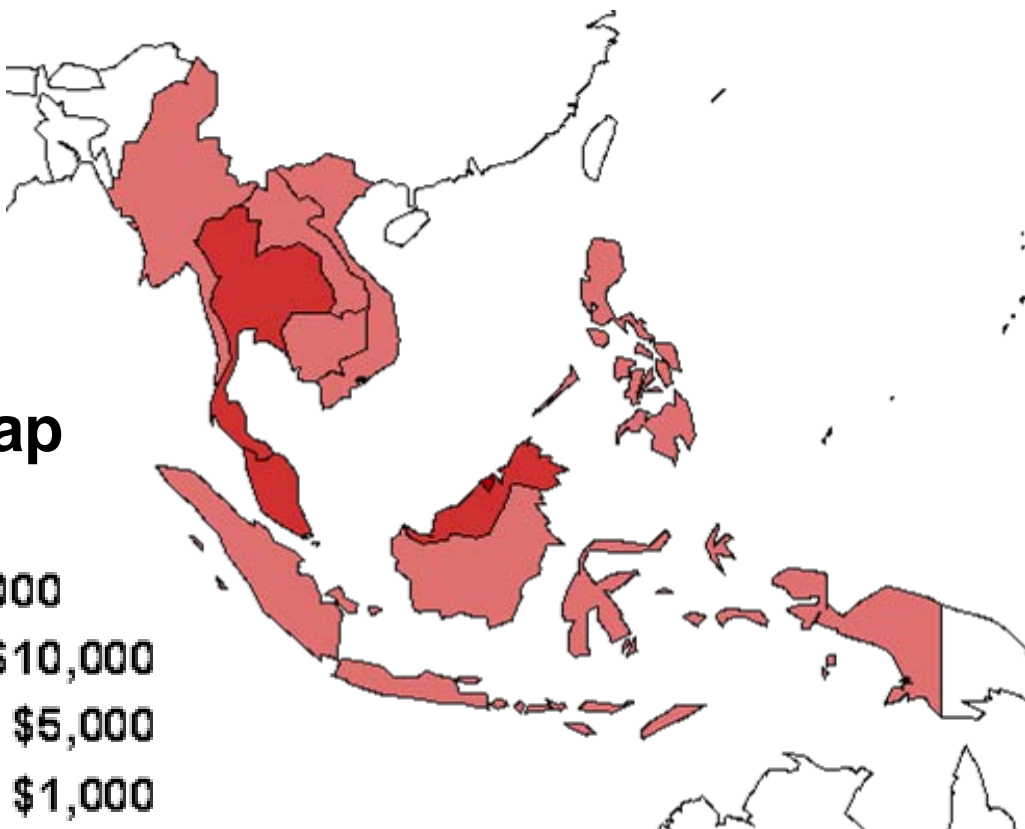
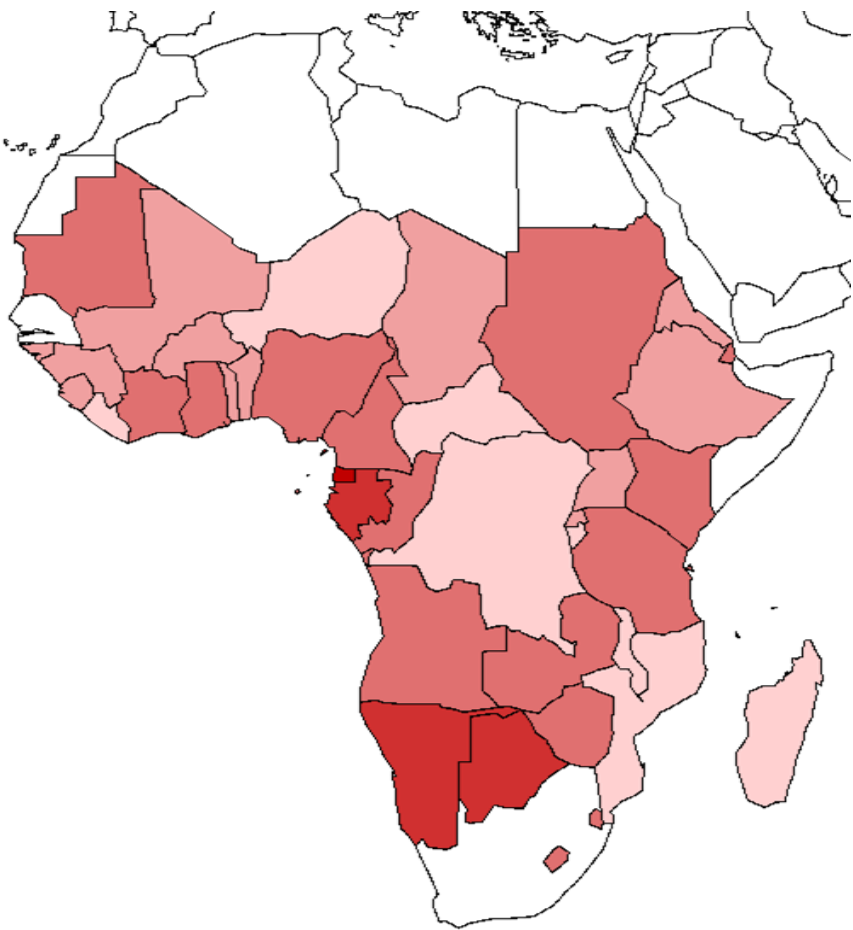
Percent Urban Population



U.S.: +82%
Global: +54%

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: GDP Per Capita 2017



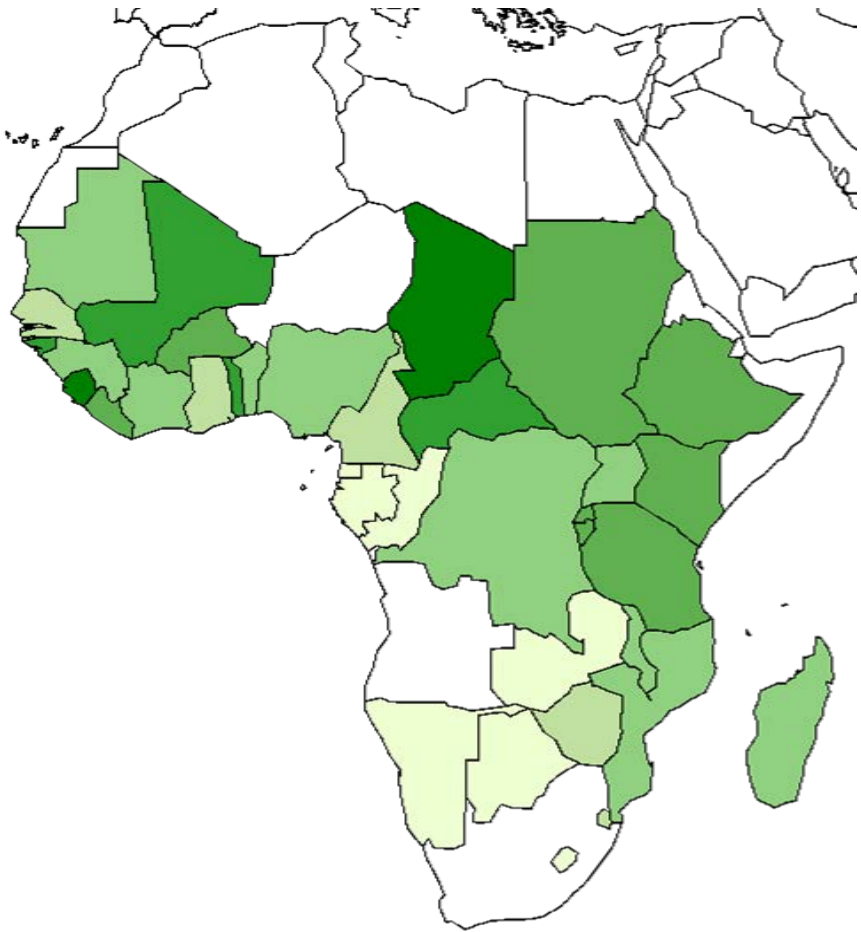
GDP Per Cap US\$

- Over \$10,000
- \$5,000 to \$10,000
- \$1,000 to \$5,000
- \$500 to \$1,000
- 0 to \$500

U.S.: \$59,500

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Agriculture Value as Percent of GDP 2016



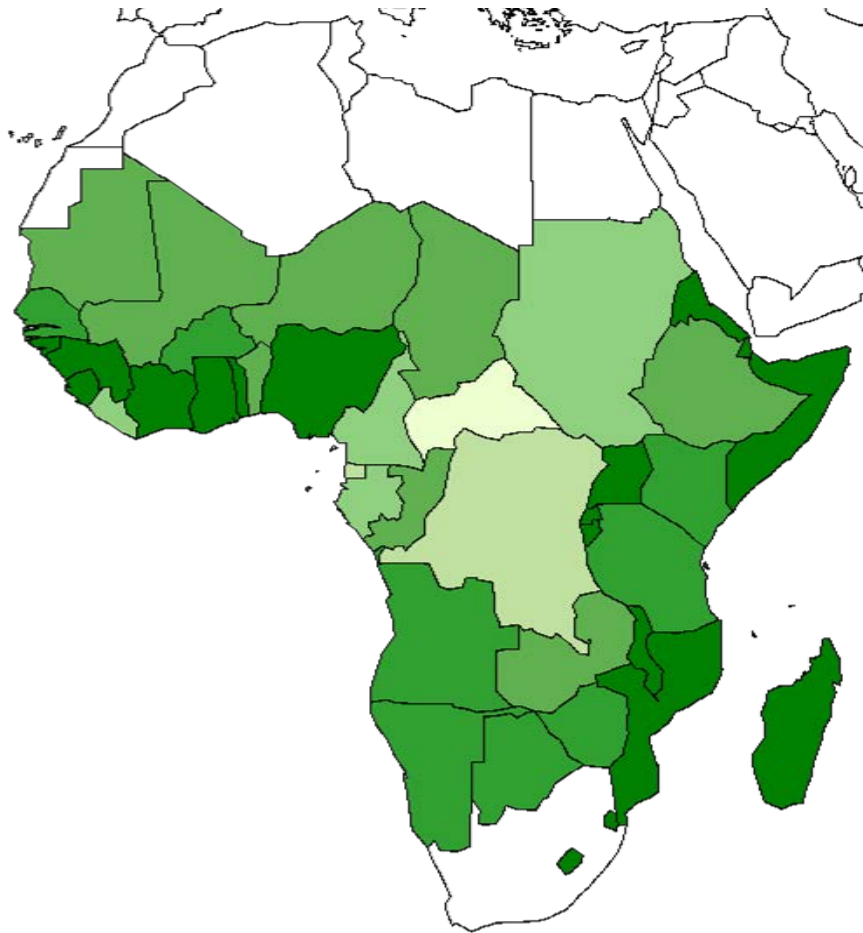
Agriculture Value % of GDP

- Over 50%
- 40% to 50%
- 30% to 40%
- 20% to 30%
- 10% to 20%
- 0 to 10%

U.S.: 1.05%
Global: 3.79%

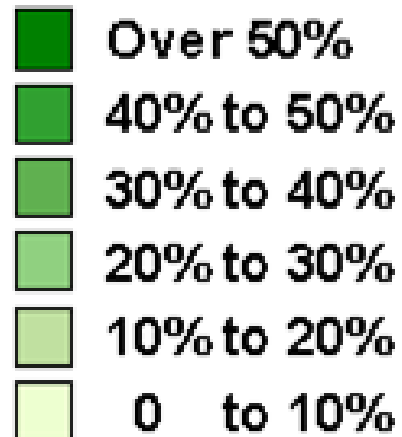
Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Agricultural Land Percent of Land Area 2015



Data Source: World Bank

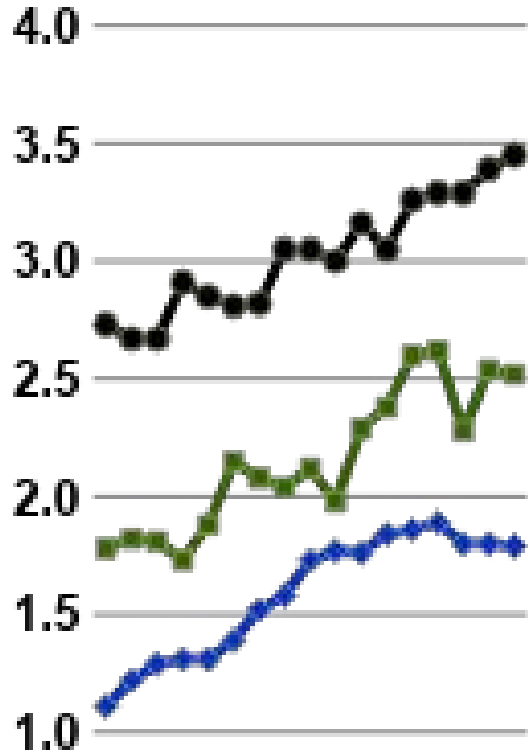
Percent of Land Used for Ag



U.S.: 44%
Global: 37%

Wheat

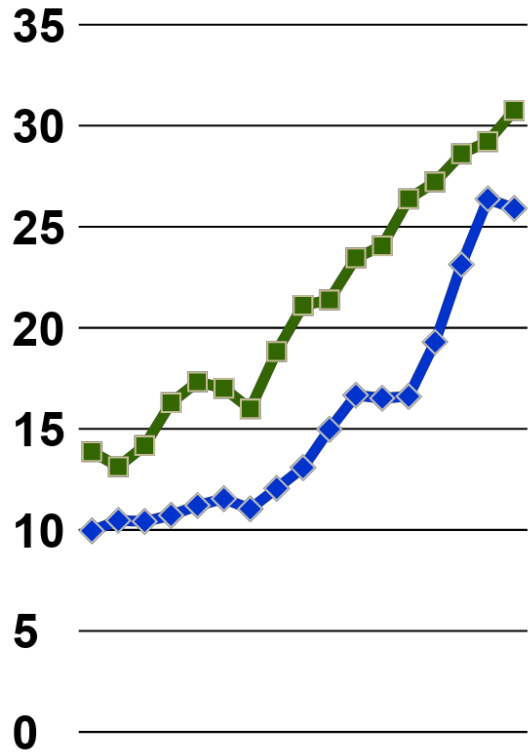
**YIELD
(MT/HA)**



U.S.=3.11 (2017/18)

Data Source: USDA

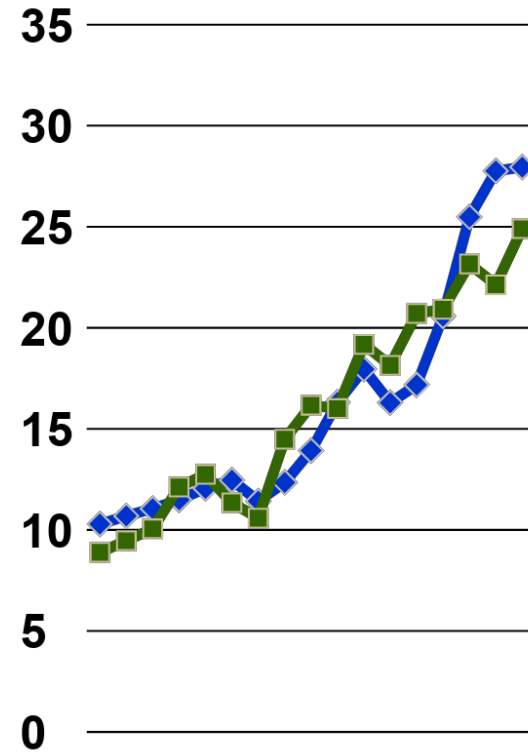
**DOMESTIC
CONSUMPTION (Mil MT)**



World=743; U.S.=30.4

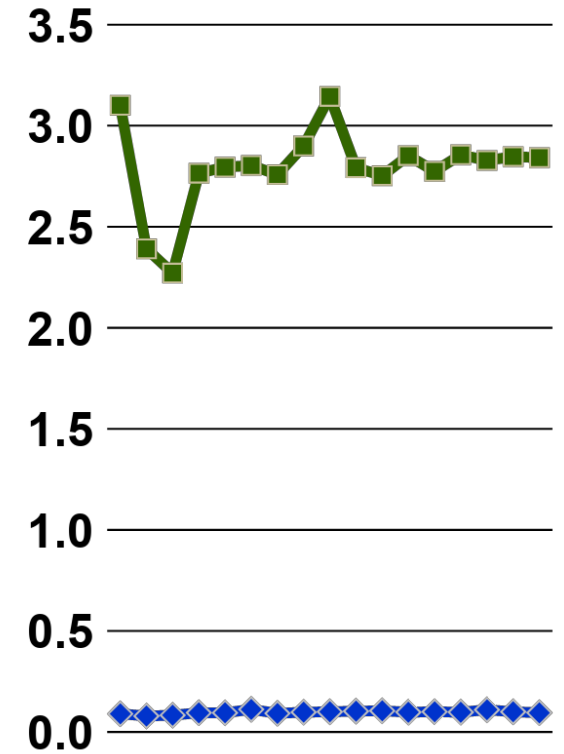
■ Southeast Asia ■ Sub-Saharan Africa ● World

**IMPORTS
(Mil MT)**



World=180 (2017/18)

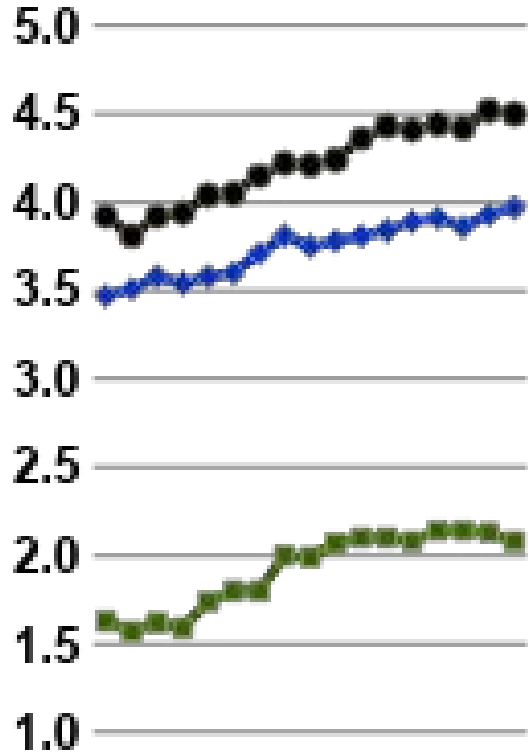
**HARVESTED AREA
(Mil HA)**



World=219; U.S.=15

Rice

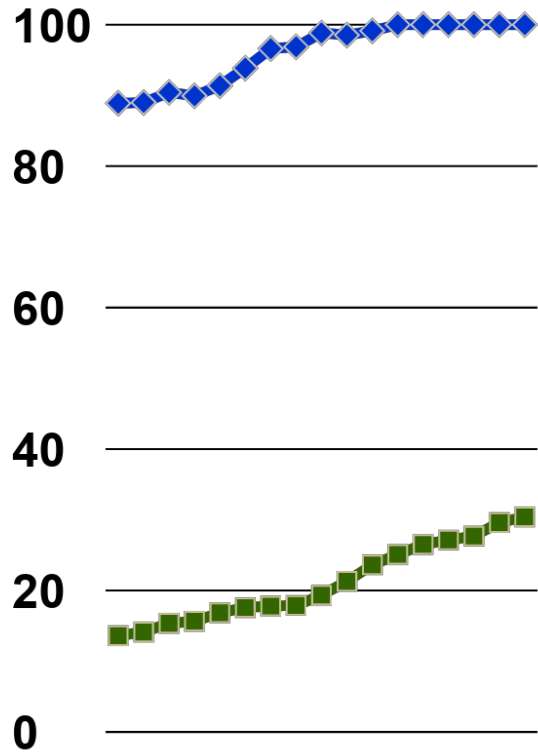
YIELD (MT/HA)



U.S.=8.41 (2017/18)

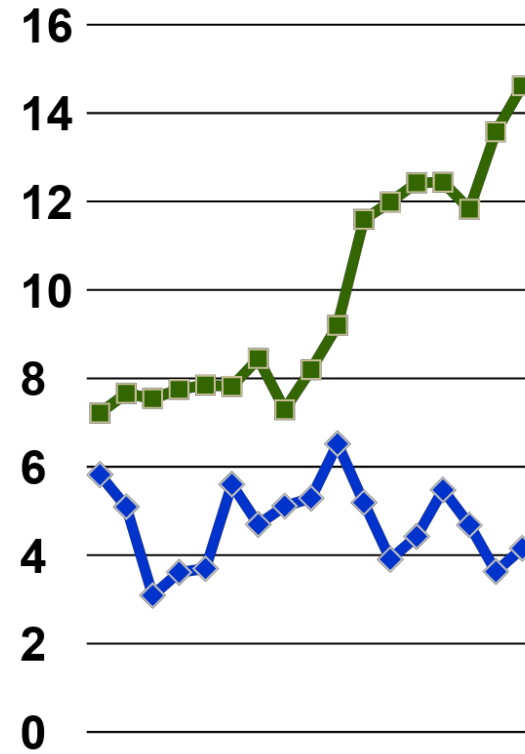
Data Source: USDA

DOMESTIC CONSUMPTION (Mil MT)



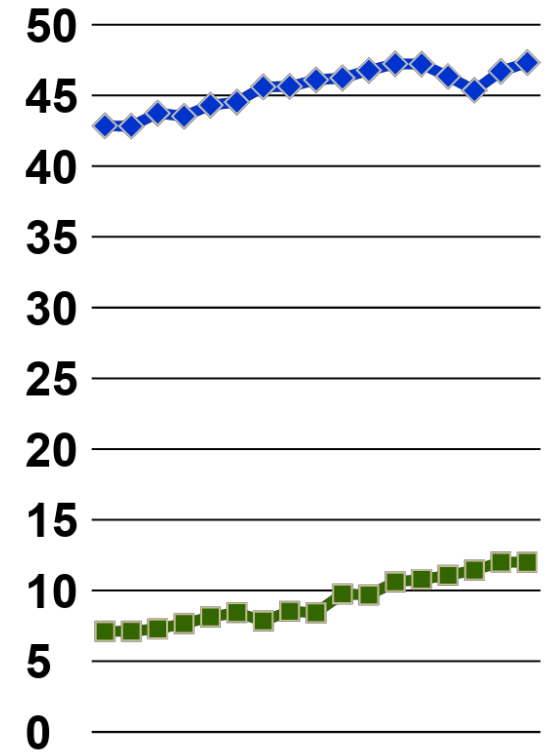
World=480; U.S.=3.8

IMPORTS (Mil MT)



World=46 (2017/18)

HARVESTED AREA (Mil HA)

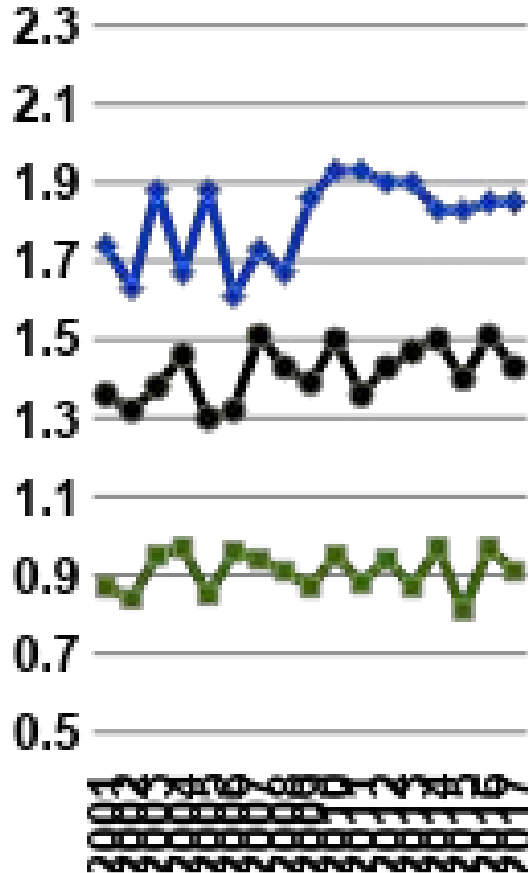


World=160; U.S.=0.96

■ Southeast Asia ■ Sub-Saharan Africa ● World

Sorghum

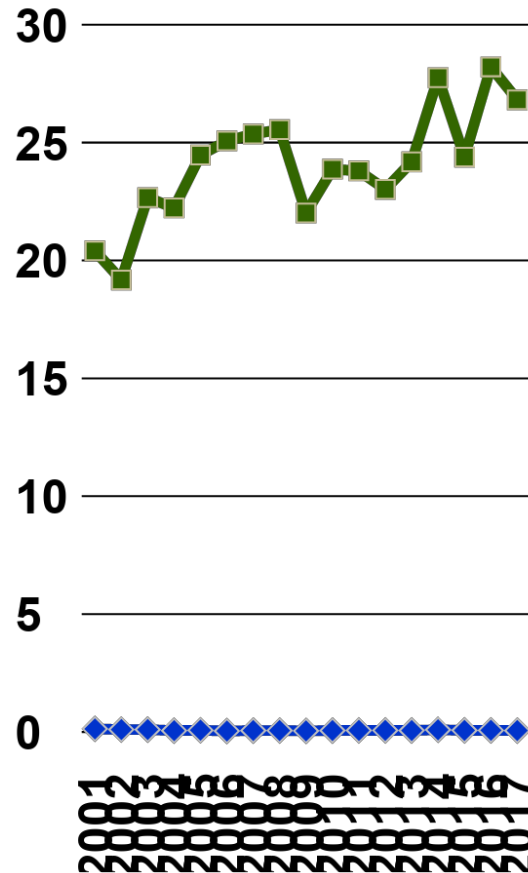
**YIELD
(MT/HA)**



U.S.=4.5 (2017/18)

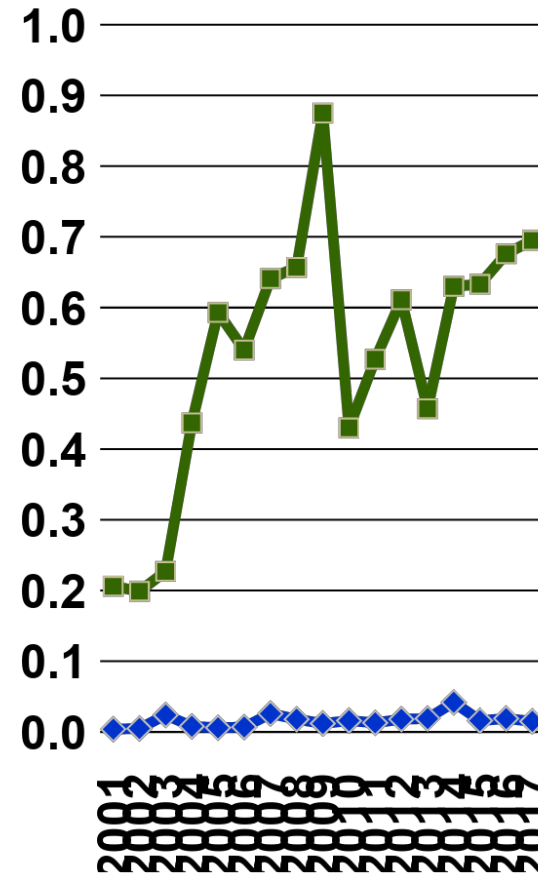
Data Source: USDA

**DOMESTIC
CONSUMPTION (Mil MT)**



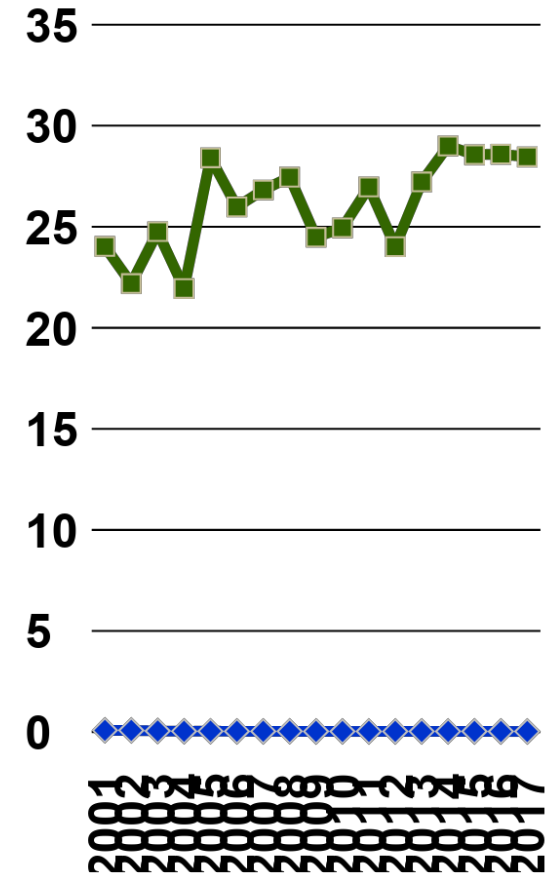
World=60; U.S.=2.9

**IMPORTS
(Mil MT)**



World=8.3 (2017/18)

**HARVESTED AREA
(Mil HA)**

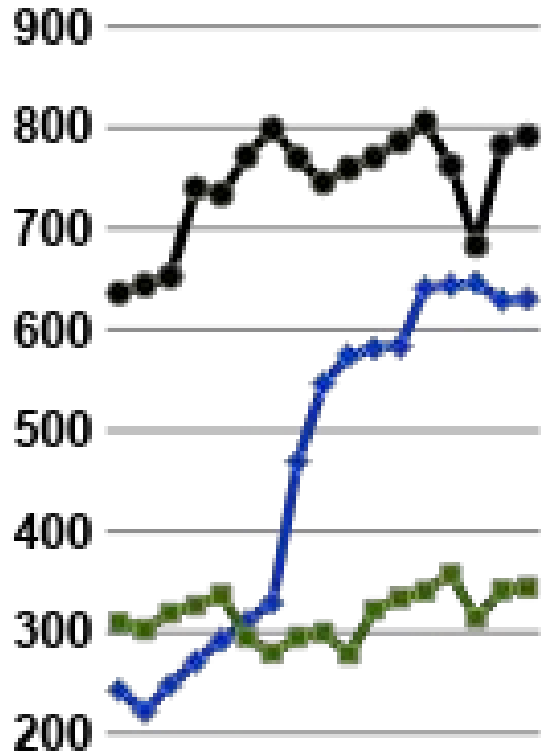


World=42; U.S.=2

◆ Southeast Asia ■ Sub-Saharan Africa ● World

Cotton

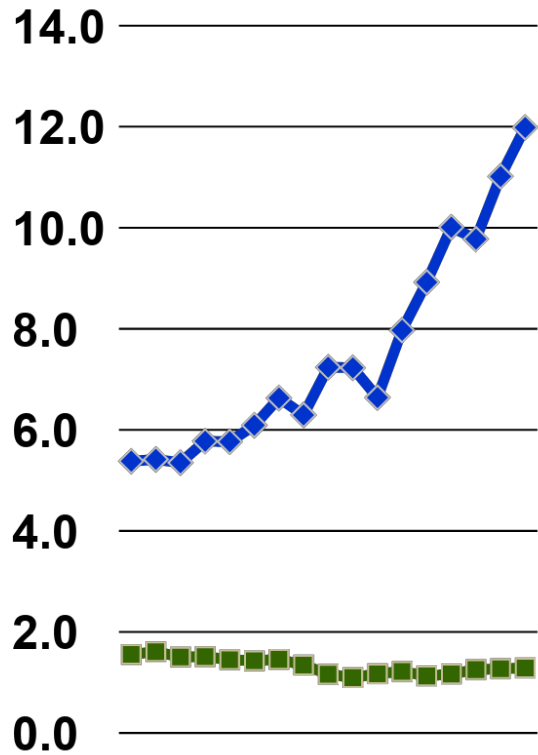
**YIELD
(KG/HA)**



U.S.=1,008 (2017/18)

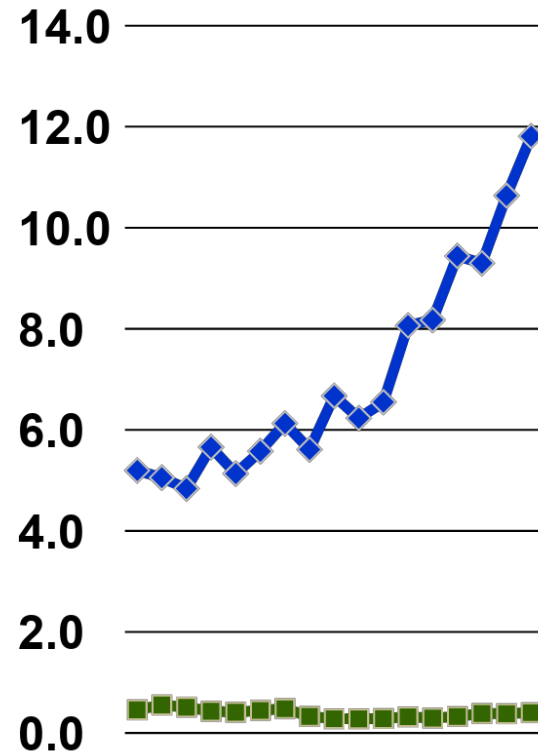
Data Source: USDA

**DOMESTIC CONSUMPTION
(Mil 480# Bales)**



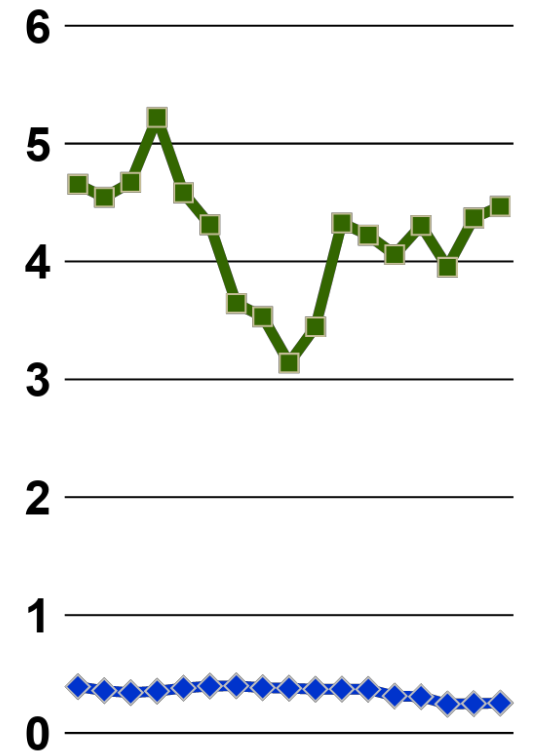
World=120; U.S.=3.5

**IMPORTS
(Mil 480# Bales)**



World=38.2 (2017/18)

**HARVESTED AREA
(Mil HA)**

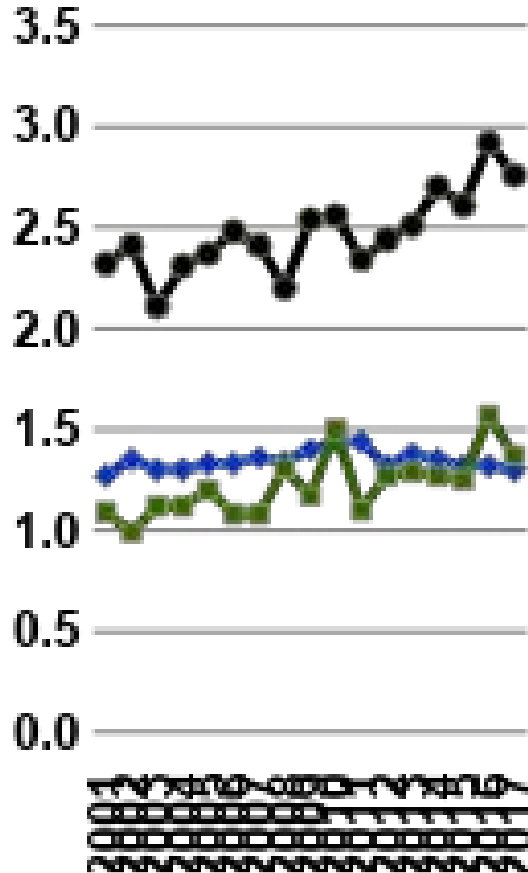


World=33; U.S.=4.6

■ Southeast Asia ■ Sub-Saharan Africa ● World

Soybeans

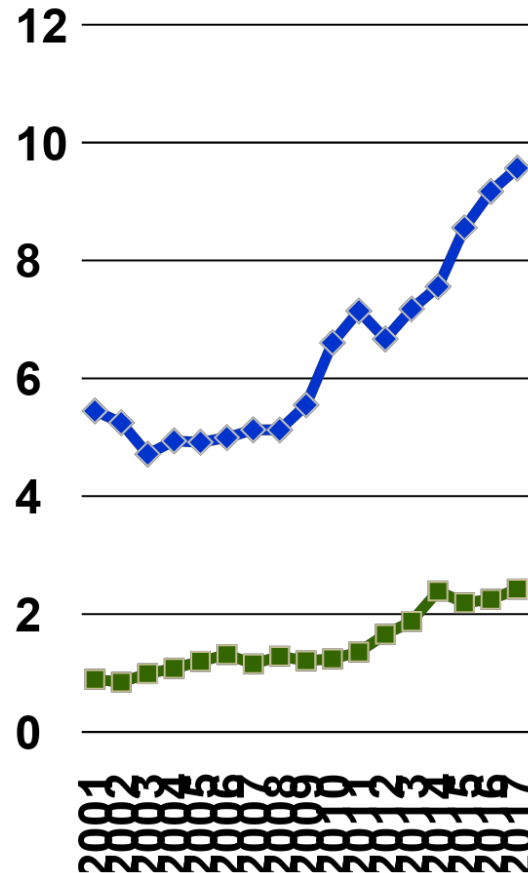
**YIELD
(MT/HA)**



U.S.=3.3 (2017/18)

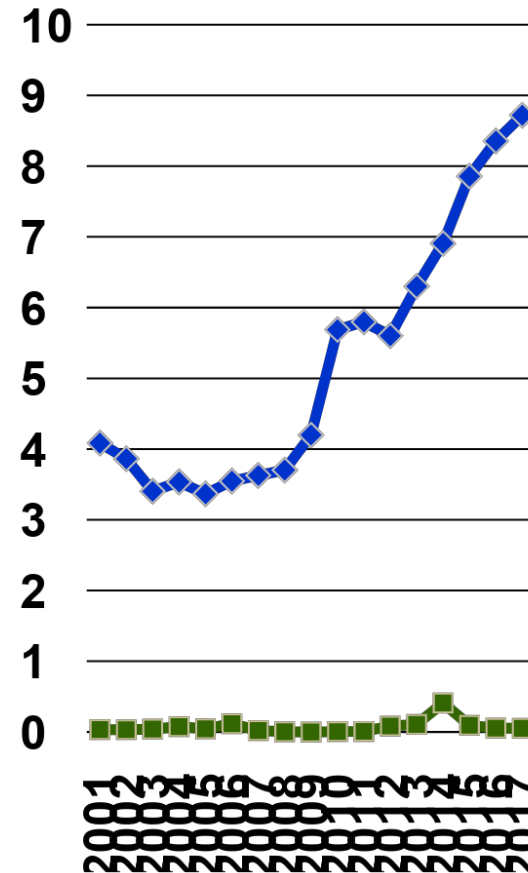
Data Source: USDA

**DOMESTIC
CONSUMPTION (Mil MT)**



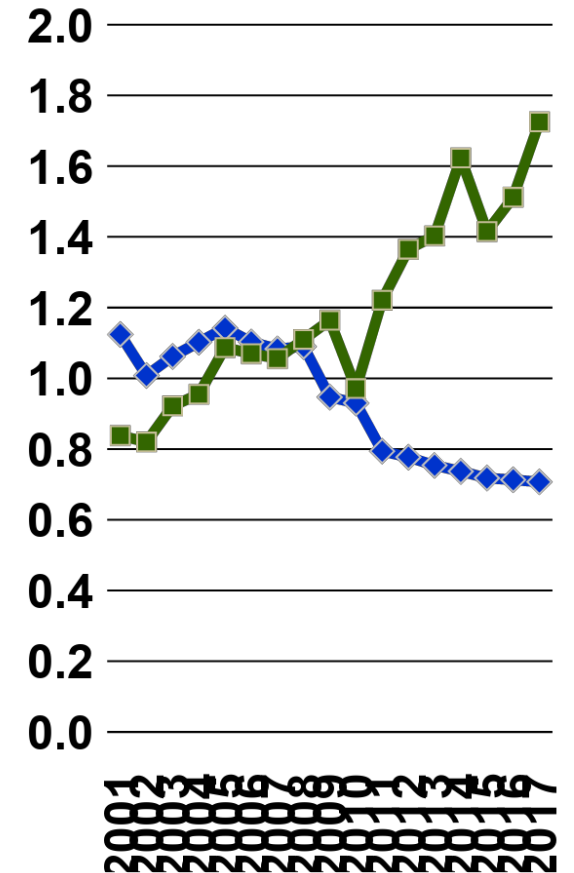
World=343; U.S.=57

**IMPORTS
(Mil MT)**



World=150 (2017/18)

**HARVESTED AREA
(Mil HA)**

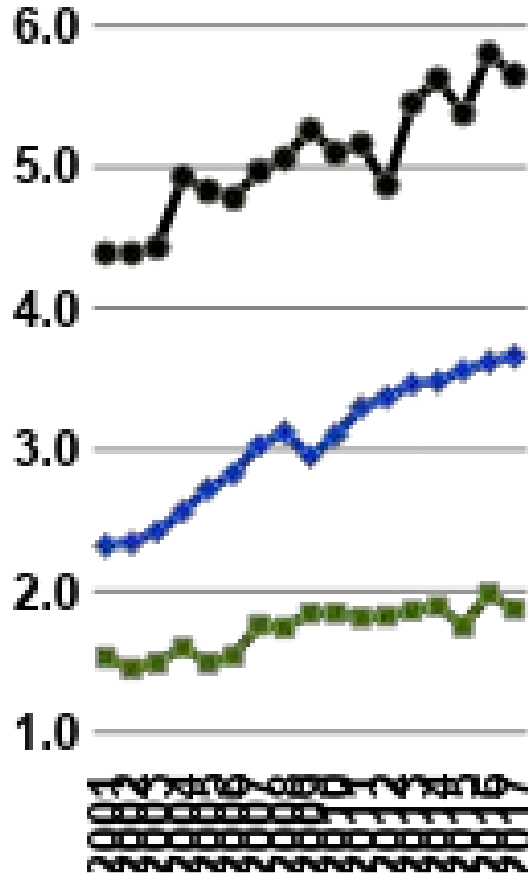


World=126; U.S.=36

■ Southeast Asia ■ Sub-Saharan Africa ● World

Corn

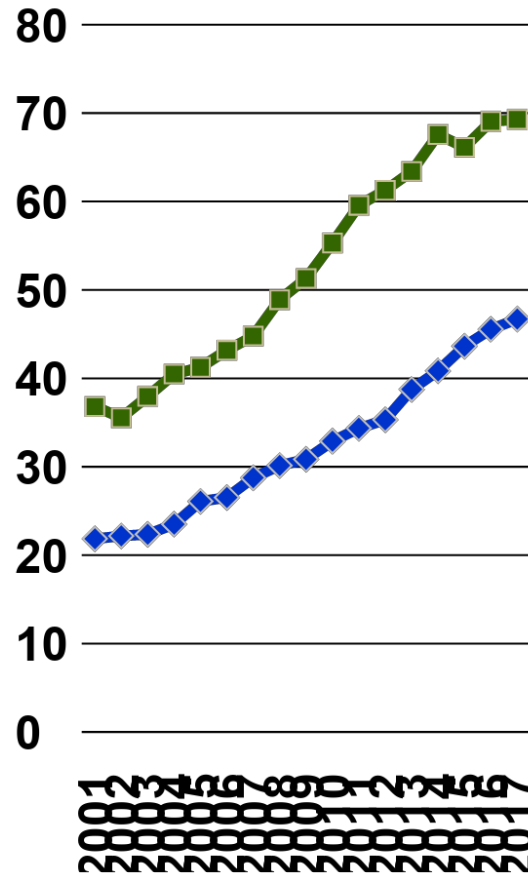
**YIELD
(MT/HA)**



U.S.=11.08 (2017/18)

Data Source: USDA

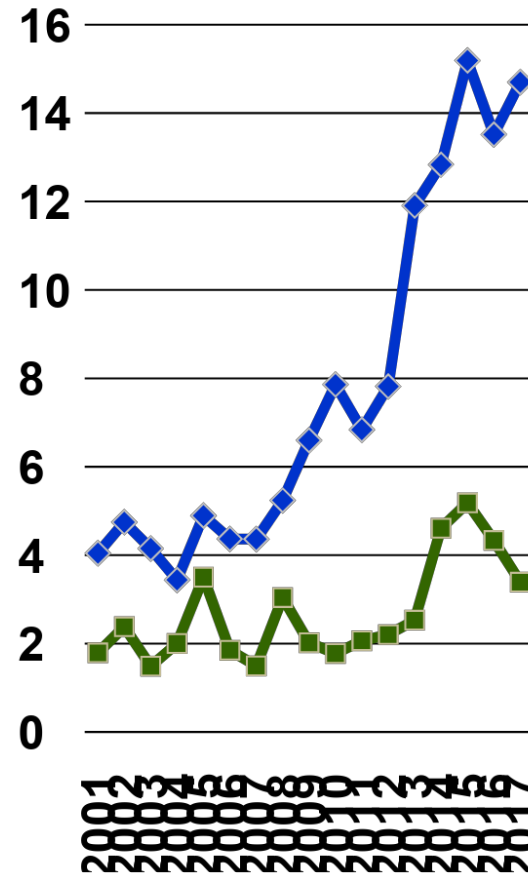
**DOMESTIC
CONSUMPTION (Mil MT)**



World=1,061; U.S.=319

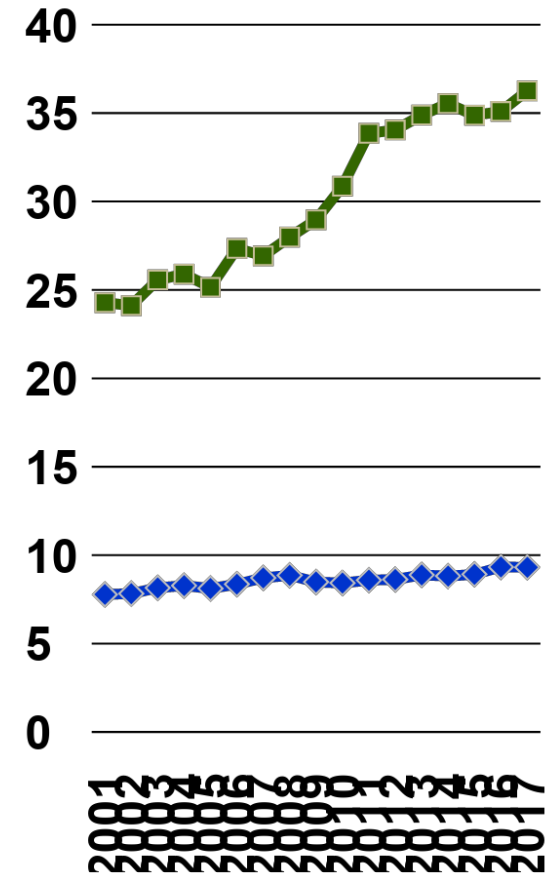
■ Southeast Asia ■ Sub-Saharan Africa ● World

**IMPORTS
(Mil MT)**



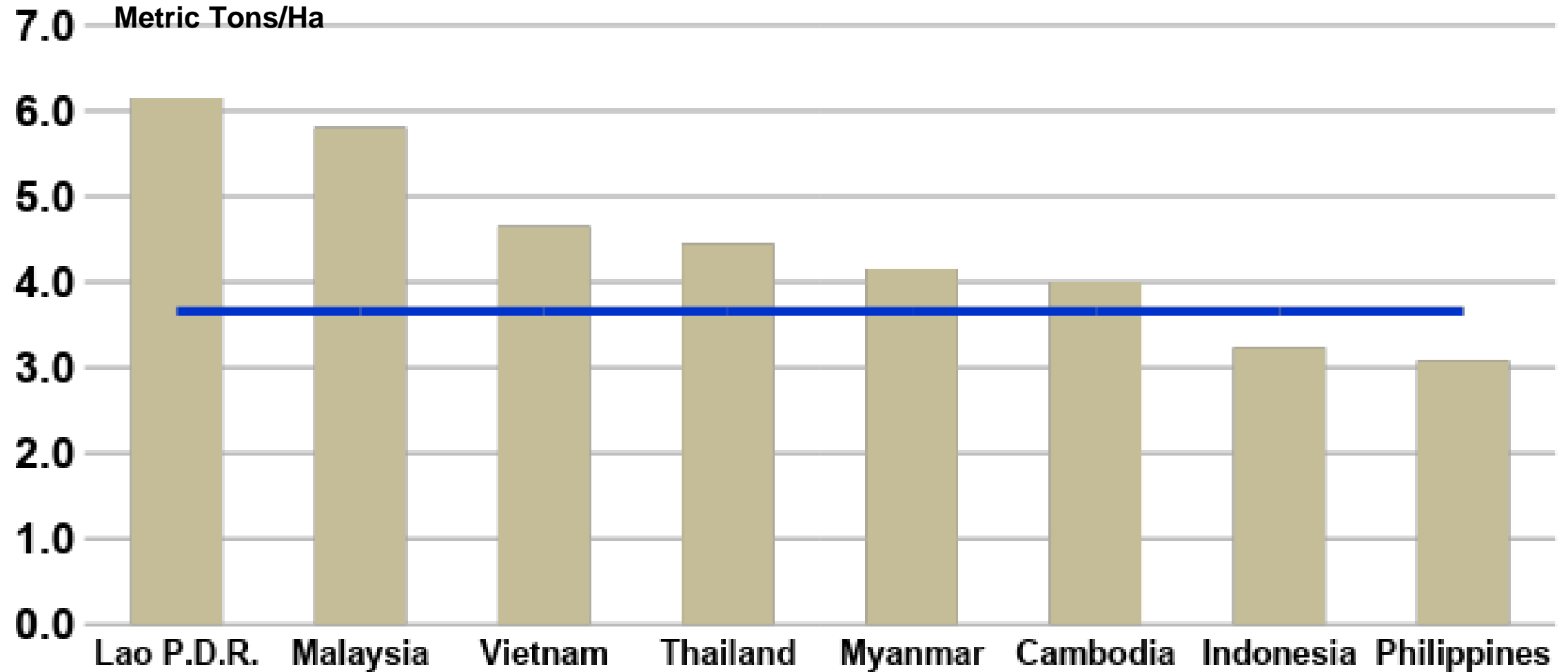
World=146.8 (2017/18)

**HARVESTED AREA
(Mil HA)**



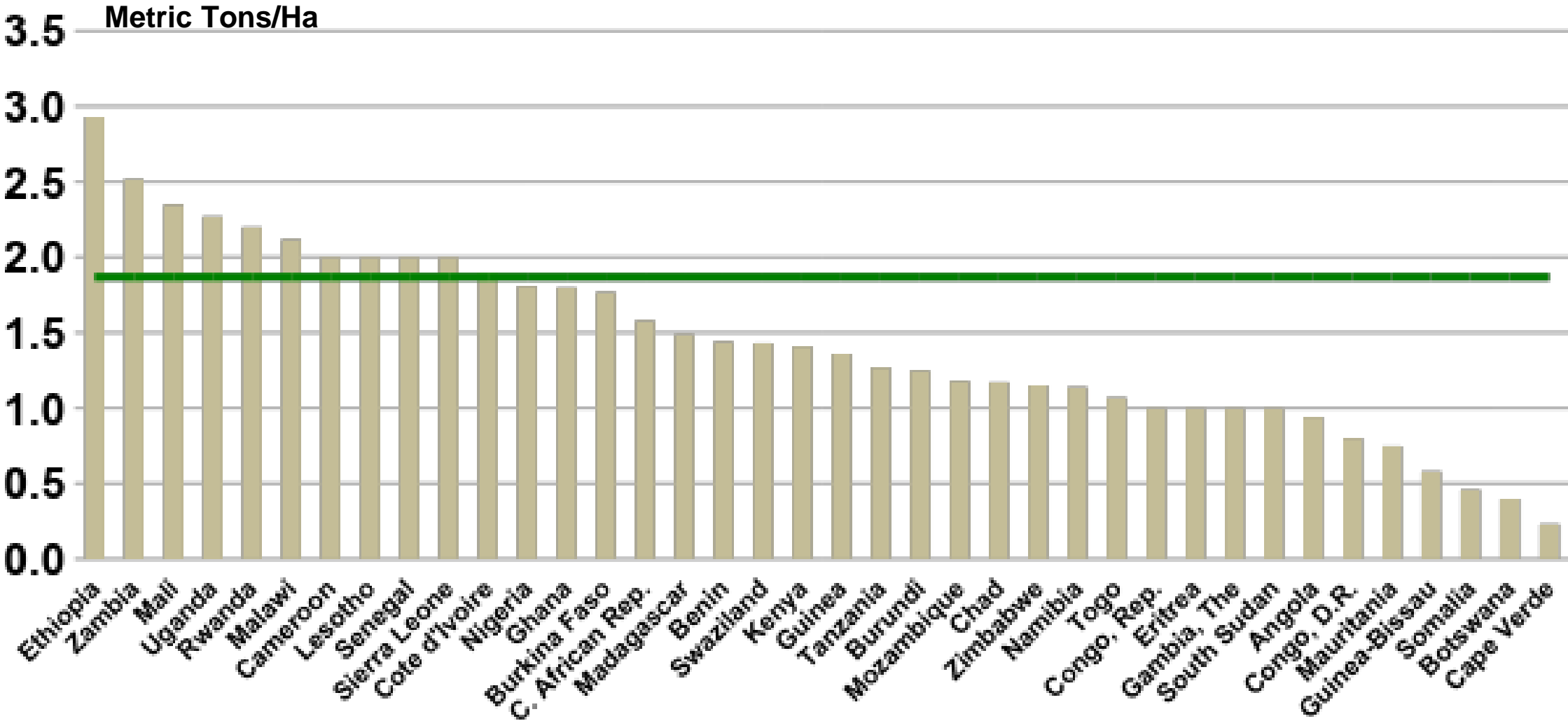
U.S.=33.5 (2017/18)

Southeast Asia: Corn Yield 2017



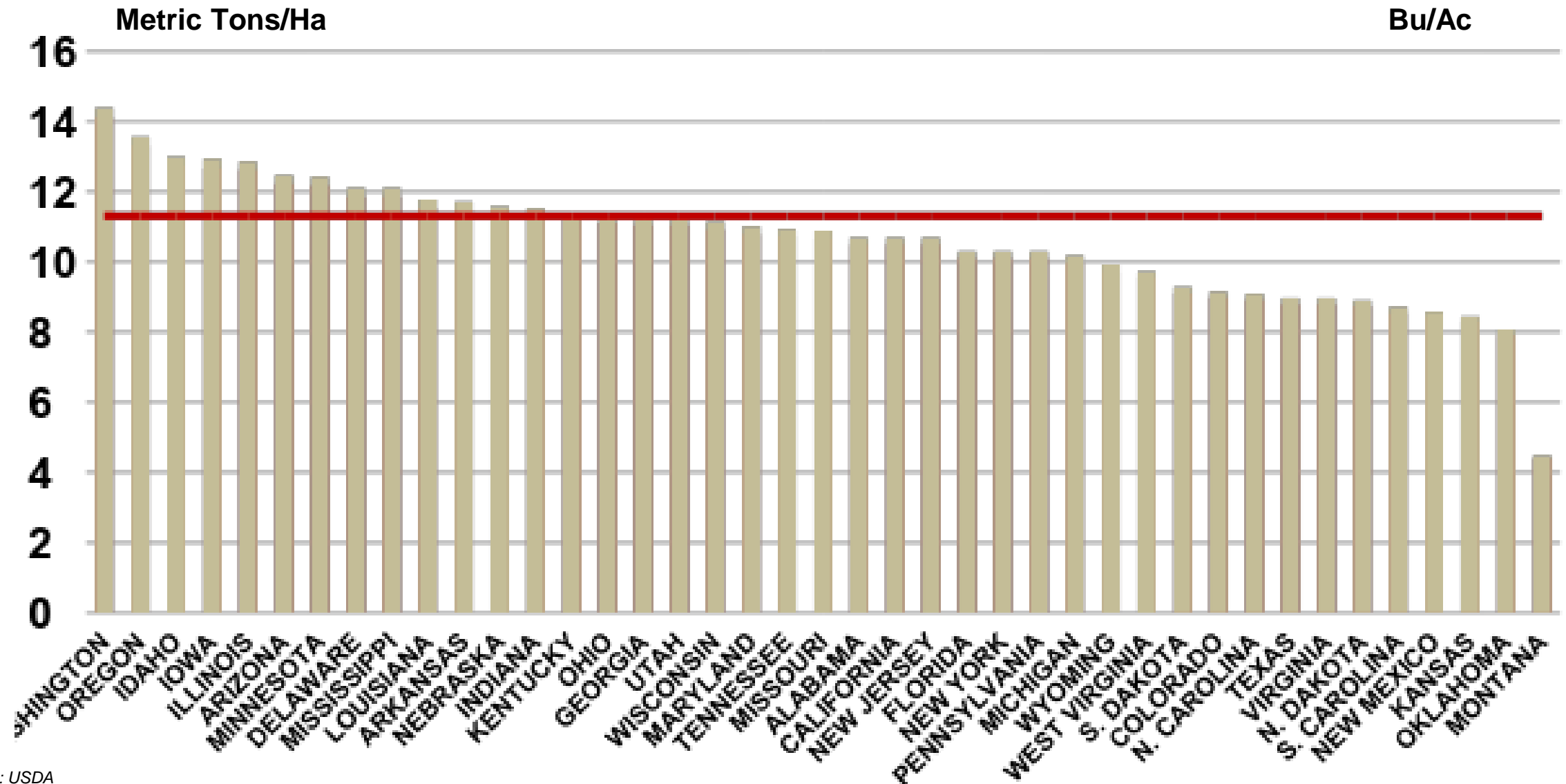
Data Source: USDA

Sub-Sahara Africa: Corn Yield 2017



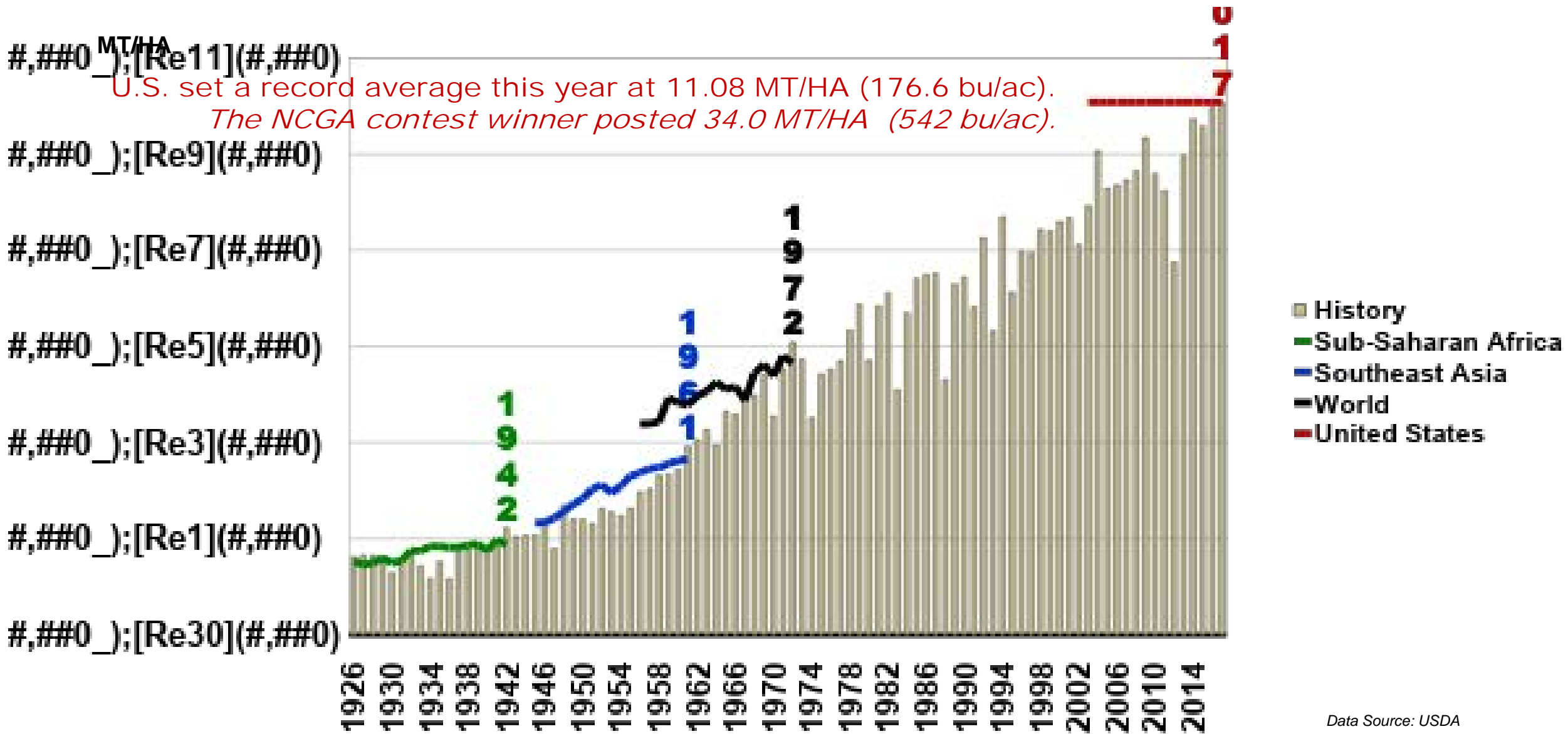
Data Source: USDA

United States: Corn Yield 2017



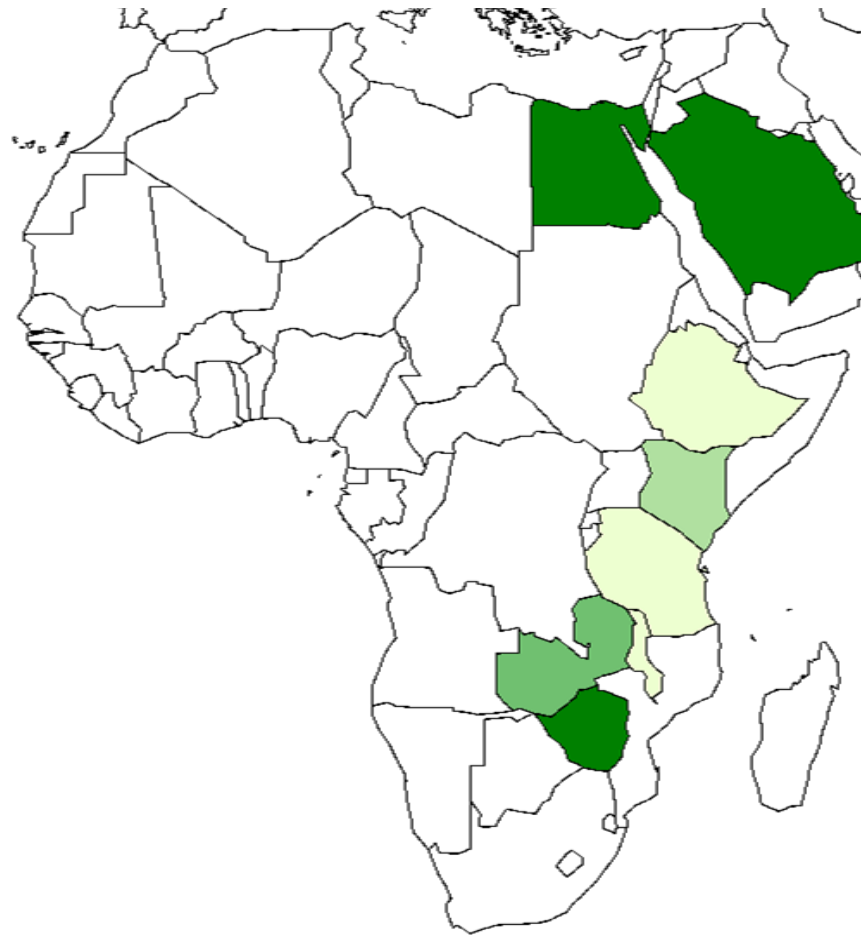
Data Source: USDA

Perspective for Corn Yield in the United States Timeline

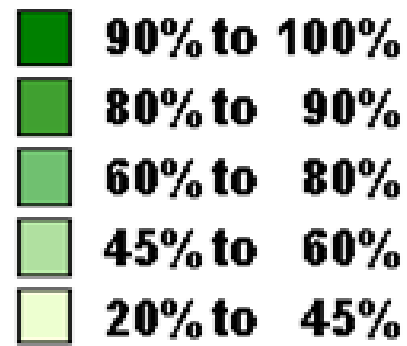


Data Source: USDA

Sub-Sahara Africa & Southeast Asia: Corn Percent Hybrid 2015



Hybrid Percent Of Corn

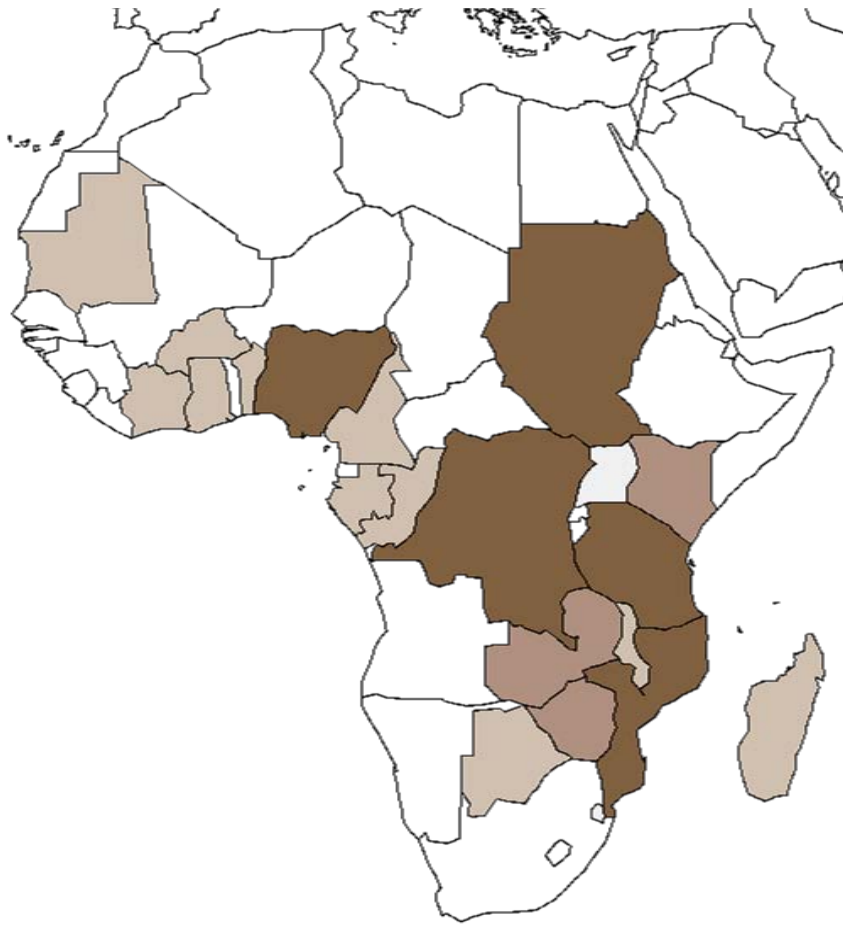


U.S.: 100%



Data Source: Internal Estimates

Sub-Sahara Africa & Southeast Asia: Rail Lines – Total Kilometers 2014



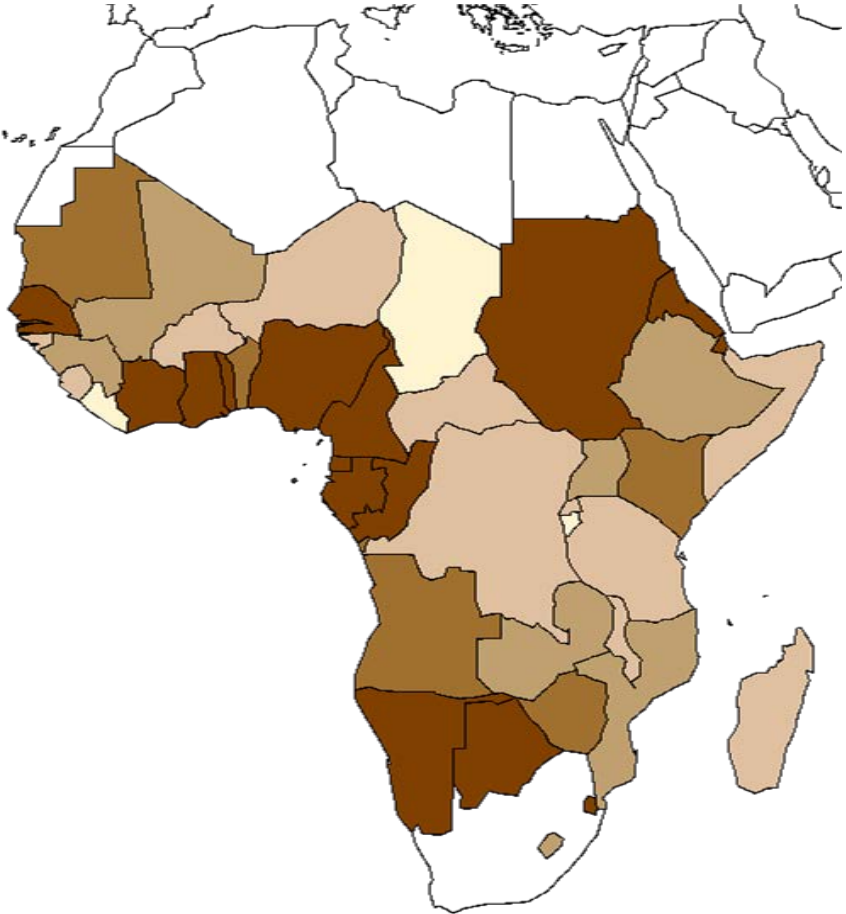
Rail Lines Kilometers



U.S.: 159,059
Global: 1,055,000

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Access to Electricity 2014



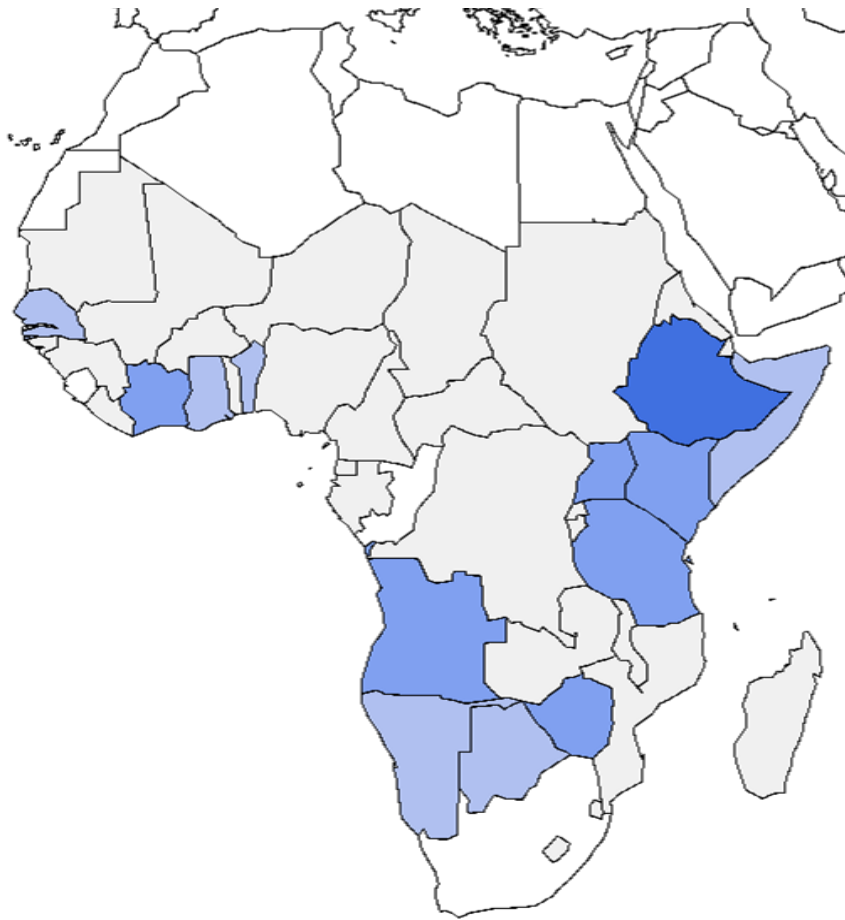
Access to Electricity

- Over 40%
- 30% to 40%
- 20% to 30%
- 10% to 20%
- 0 to 10%

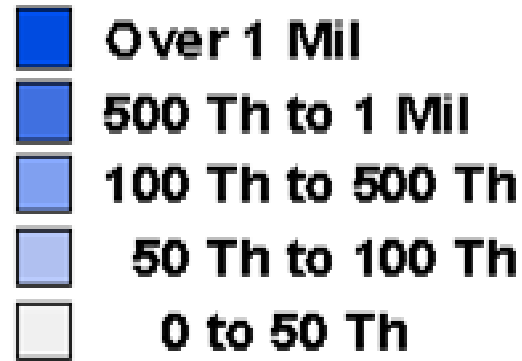
U.S.: 100%

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Fixed Broadband Subscriptions 2016



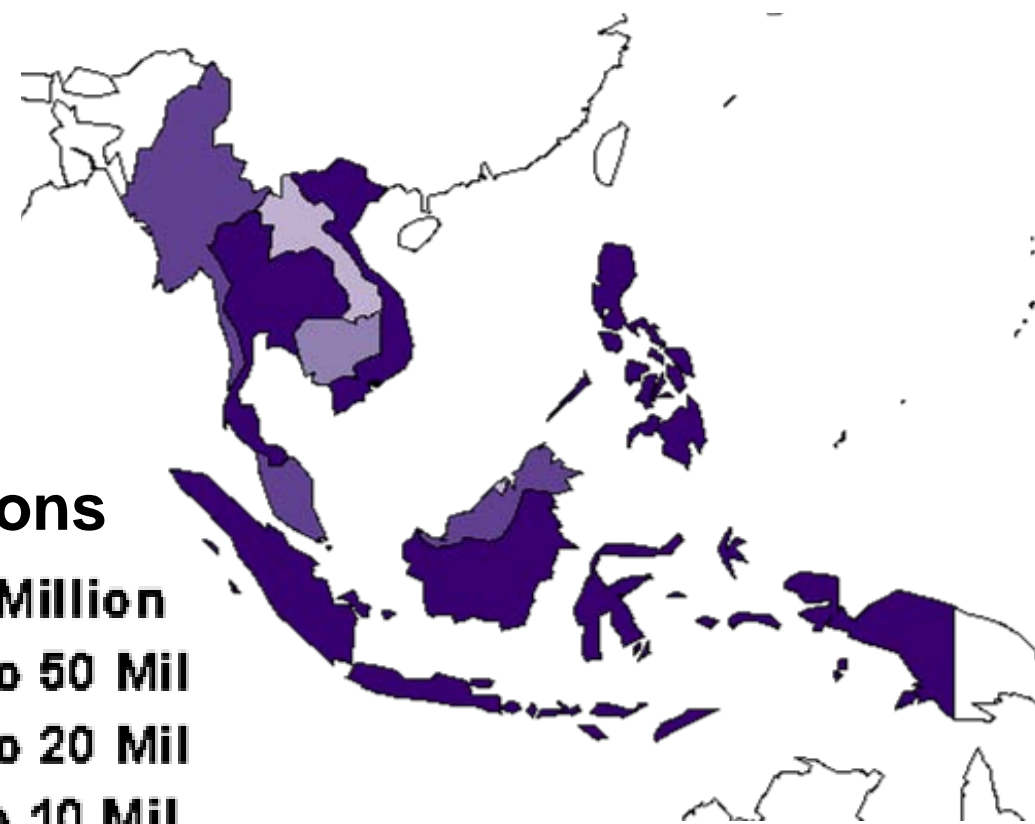
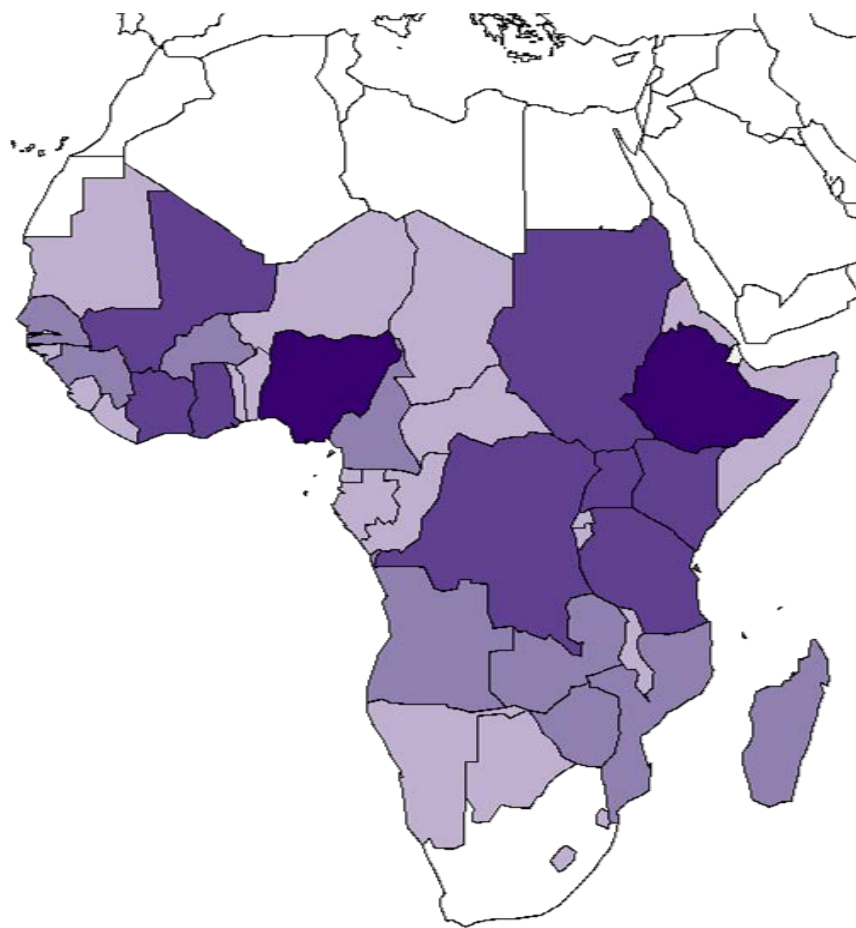
Broadband Subscriptions



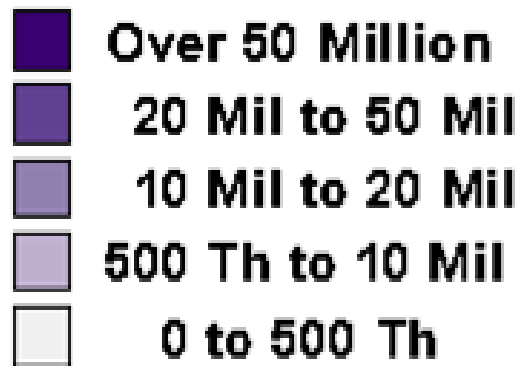
U.S.: 106 Million
Global: 917 Million

Data Source: World Bank

Sub-Sahara Africa & Southeast Asia: Mobile Cellular Subscriptions 2016



Mobile Subscriptions



U.S.: 417 Million
Global: 7,512 Million

Data Source: World Bank

Summary

- Improving productivity will be critical to the farmer.
- Productivity improvements are how farmers increase their income. Products, services & advice that enhance and protect the yield advancements are in great demand in the marketplace. This is where we strive to participate with farmers.
- The technology improvements in transportation, communication, and infrastructure need to be harnessed by agricultural production to improve the farmers' well being, the consumers' way of life and the country's stability.
- Production will grow to meet this new consumption, but not in the same areas where the population growth is. Globally, consumers will benefit from agricultural trade.
- Profit maximization and input optimization will be key in this economic environment - not cost minimization. This is key for farmers around the globe.
- Even at lower world commodity prices, every bushel matters to each farmer in the short-run & to every consumer in the long-run.



Thank You!