



International Center for Tropical Agriculture  
Since 1967 / *Science to cultivate change*

# WORKSHOP: CASSAVA VALUE CHAINS COMPARISON

Aug. 24, 2016  
Cali, Colombia

## Team GFSF:

- *Carlos Eduardo Gonzalez*
- *Patricia Alvarez Toro*
- *Steven Prager*
- *James Cock*
- *Ben Schiek*

E-mail Steve D. Prager, [S.Prager@CGIAR.ORG](mailto:S.Prager@CGIAR.ORG)



# Bienvenidos!

## Schedule for the Morning:

8:00 - 8:30 am	Introductions, Logistics, and Kick off (Steve Prager & James Cock)
8:30 - 9:00 am	Tree Planting
9:00 - 10:00 am	Goals of the Meeting and Expected Outcomes
10:00 - 10:15 am	Exciting times (Andy Jarvis, Director DAPA)

**BREAK!**

# Logistics:

- Bathrooms
- Cash/Bank
- Transport
- Internet Access
- Translation
  
- Any other questions or concerns?

# Introductions...

- Fact or fiction!
  - On a piece of paper, right down three short facts about yourself which may or may not be widely known. Two of the facts must be true, one must be false.
- When it is your turn to introduce yourself:
  - State your name
  - Where you are based/visiting from
  - Your three “facts”
- The rest of the group then “votes” on which are true or false.

## Acknowledgements:

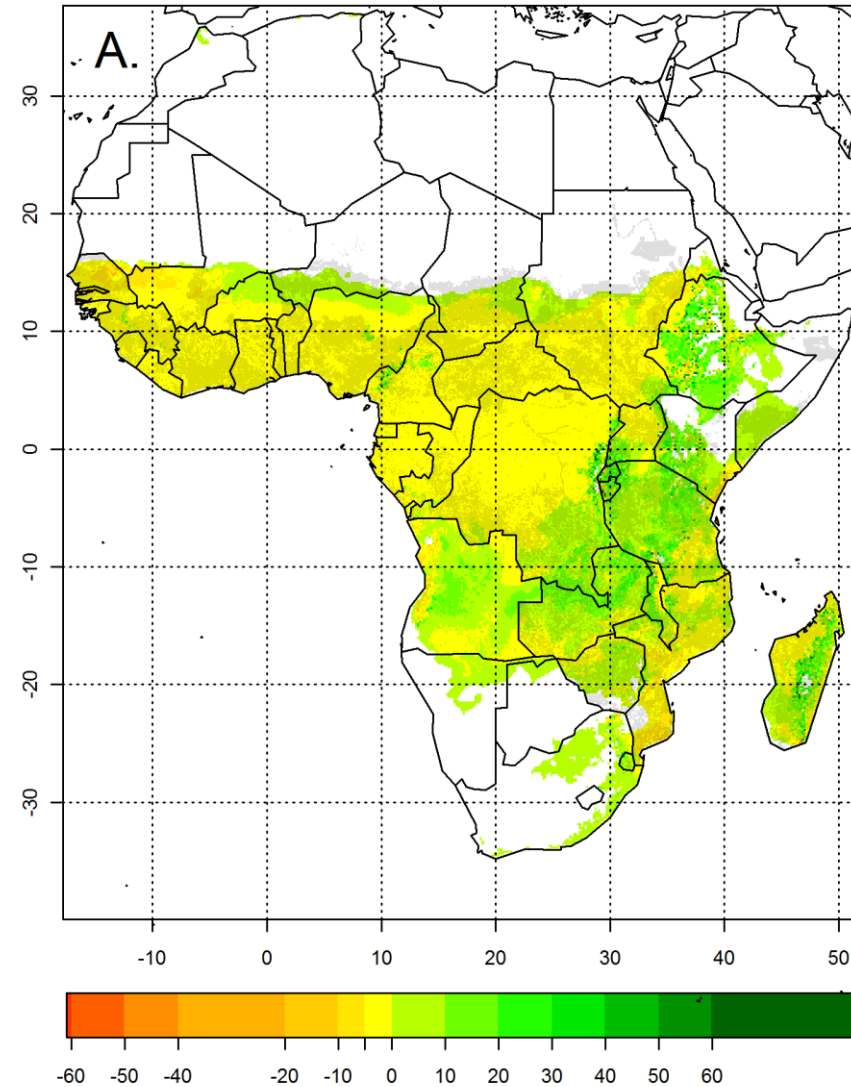
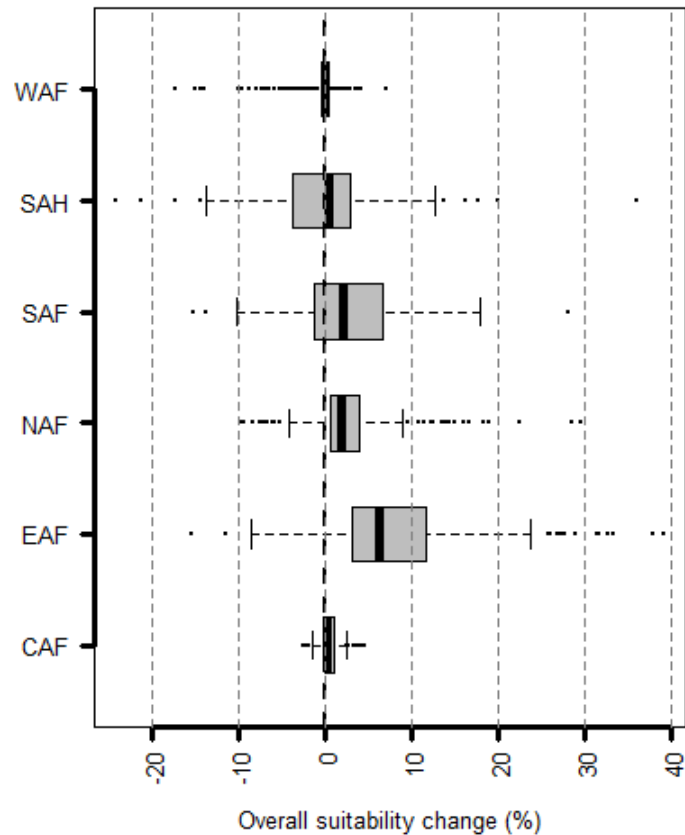
This activity would not have been possible without the support and contributions of many different institutions and individuals. The funding for this activity comes from the a combination of funds provided the CGIAR Policy, Institutions and Markets Research Program, and the Bill and Melinda Gates Foundation through a contract with IFPRI.

CIAT has provided an ideal setting for this activity and many scientists at CIAT as well as from other organizations have been instrumental in this getting to this point.

The CIAT teams would also like to thank all of you for making this activity a priority.

# Why we're here: It all started with a pretty naïve question...

Change in Cassava Suitability



## Goals of the meeting:

- **Stated goal:** The purpose of the meeting is to develop a communal understanding of cassava value chain similarities and differences across the Latin American, African and Asian contexts. We will use the work product of the meeting to develop a series of cassava value chain representations, designed to support cross-scale modeling of different cassava systems.
- **What this means:** Within the CIAT team, our aim is to develop and use strategic foresight to help make better decisions with regard to investments in cassava R&D and cassava agronomic practices so as to increase shared prosperity and to improve the lives of smallholder farmers, especially under conditions of climate change.
- What are your goals?



# This is not happening in a vacuum:

- The RTB program identified a series of high priority research areas for cassava.



ISSN 2309-6586  
RTB Working Paper  
2014-6

**Prioritization of options for Cassava  
research for development – Results from  
a global expert survey**

# What did the RTB effort highlight?

- **Policies:** Assessment of cassava based innovation systems
- **Value chains, post-harvest utilization and marketing:** Improving shelf life of cassava roots, developing cassava products for industrial applications (flour and starch)
- **Genetic resource management:** Phenotypic/molecular screening of landraces in search of high value traits/new sources/tolerance/resistance to stress
- **Disease control and management:** Cassava Mosaic disease(Disease management)
- **Improvement of seeds or planting materials:** Improving production and distribution of elite planting materials
- **Crop genetic improvement:** High yield

# Why CIAT?

- **Our three mandate crops**
  - Tropical forages
  - Beans
  - Cassava
- **Three research areas**
  - Agrobiodiversity
  - Soils and Landscapes
  - Decision and Policy Analysis (DAPA)
- **Three key geographies**
  - Africa
  - LAC
  - SE Asia
- **Interdisciplinary systems research**
  - Experts in climate change
  - Experts in value chains
  - Experts in crop breeding and management

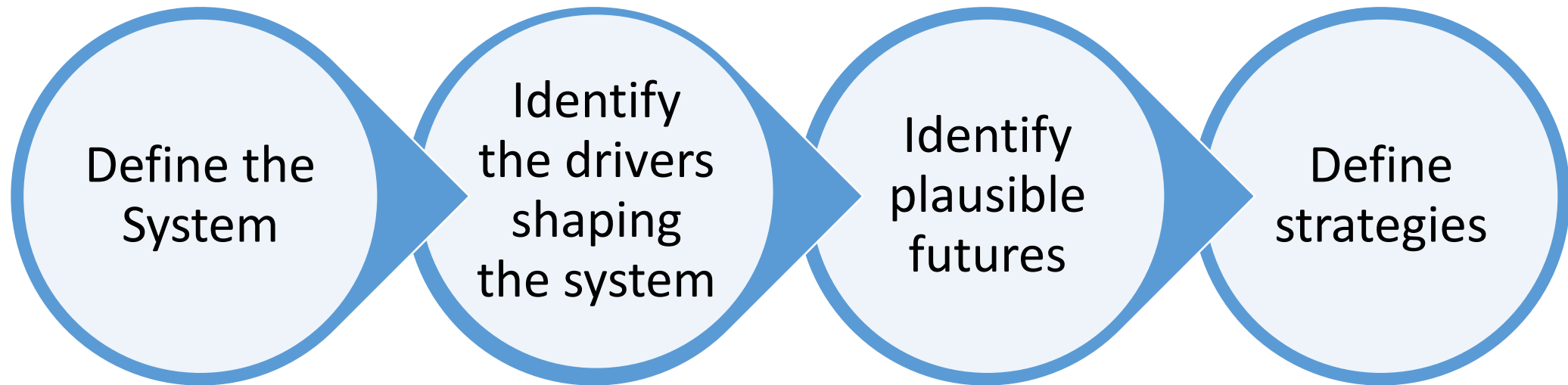
# Introduction to Strategic Foresight

# What is foresight?

- We usually talk about strategic foresight.

Strategic foresight is an approach that allows us to look at potential system performance using both qualitative and quantitative data in a way that facilitates the examination of different potential future scenarios.

# How does foresight work?



Adapted from GFAR

# Why is strategic foresight needed?

## The prerequisites for a success in developing cassava systems are complex and dynamic?

- **A system driven most often by dynamic market demand for new products, or sometimes by expansion of existing ones**
- **Critical planning to synchronize production, processing and market demand.**
- **Realistic projections of yield.**
- **Careful preparation for the changes in the biological and abiotic environment that result from scaling up production.**
- **Private sector control of most elements of the value chain.**

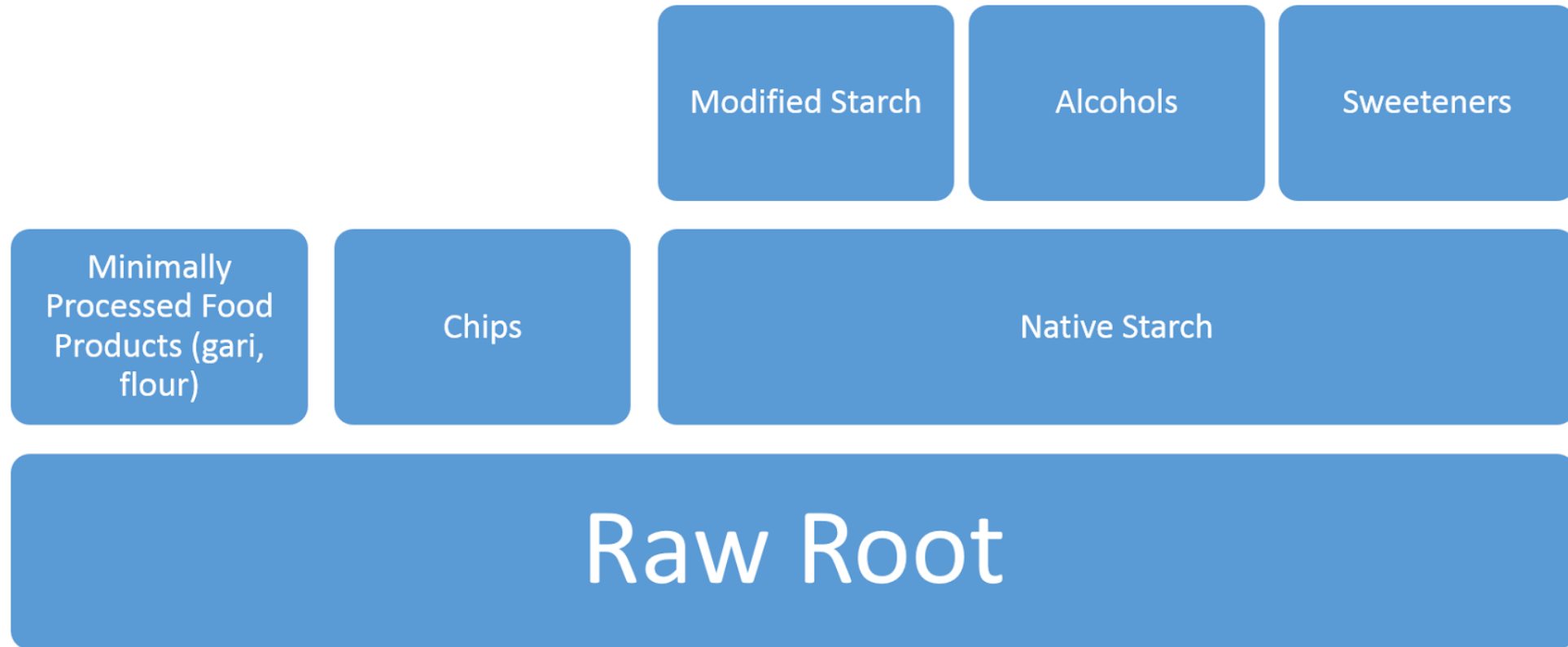
(Thanks to Clair Hershey for these nuggets of wisdom.)

# The cassava paradox(es)...

- Cassava is used as a famine reserve food
- Cassava is used to create a high value industrial product
- Cassava is highly perishable after harvest
- Cassava is highly amenable to delayed harvest
- Cassava is expected to fair better than many crops under climate change
- Cassava pests and diseases are also expected to fair well under climate change.
- Demand for fresh cassava as food is expected to decline with increases in income
- Demand for processed cassava products (e.g., starch-based noodles) is expected to increase with increases in income.
- All of these contrasts a) make cassava very interesting, and b) make it challenging to model.



# Where do we begin? We simplify...



## Understanding the GFSF approach:

- How do we implement ex ante impact assessment of the role of investments in agricultural research for the global food system?
- Brief overview of the “typical” approaches we have used in GFSF (to provide context).

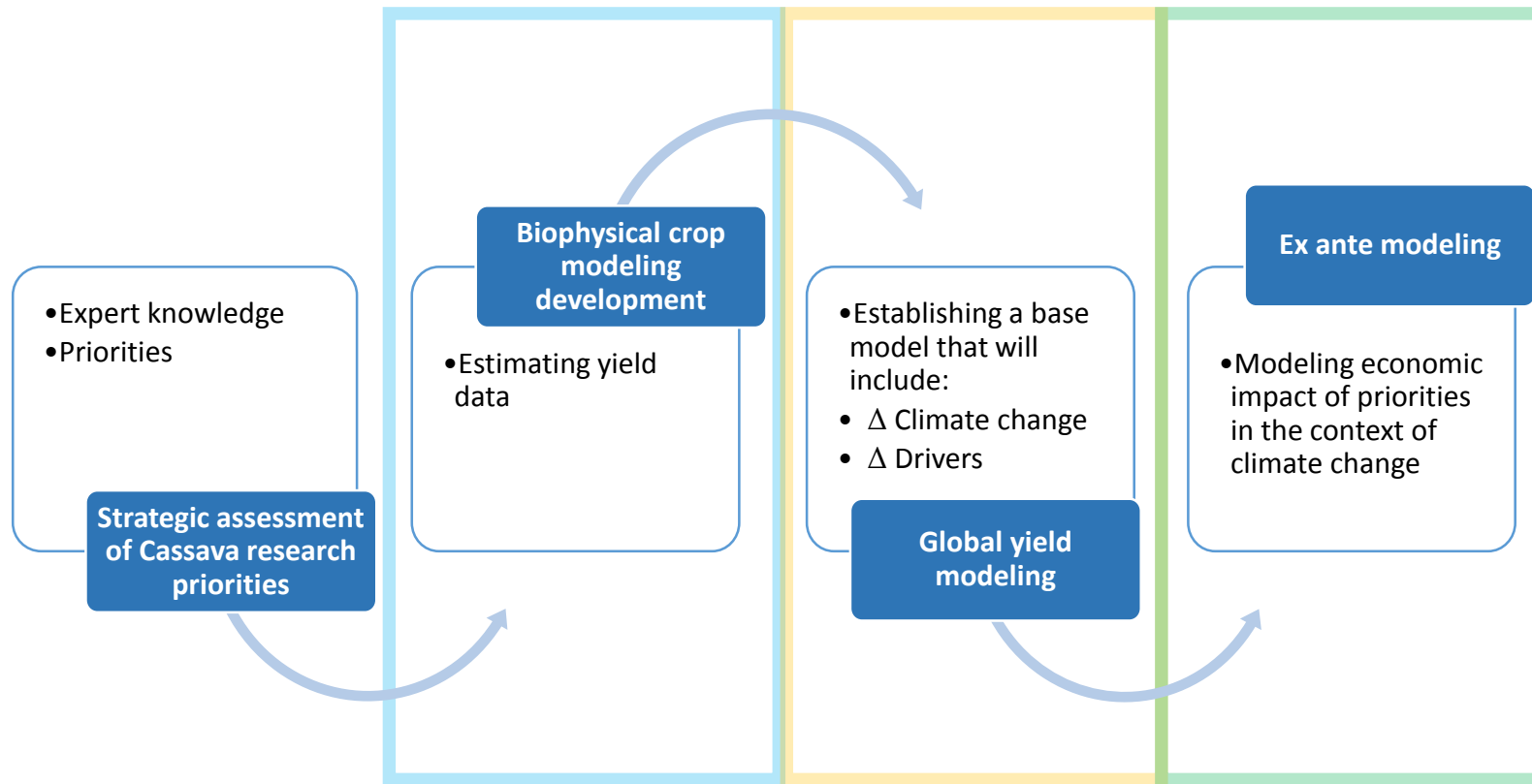
# GLOBAL FUTURES AND STRATEGIC FORESIGHT (GFSF)

- The Global Futures & Strategic Foresight (GFSF) project is designed to improve agricultural productivity and environmental sustainability, especially in developing countries. ***It is focused on evaluating promising technologies, investments, and policy reforms.***
- The project aims to improve the capacity of the Consultative Group on International Agricultural Research (CGIAR) centers ***to evaluate and prioritize research investments, and to support the decision-making of international development partners and national policymakers.*** Global Futures researchers collaborate with leading public and private institutions around the world. Each center has a team of researchers that contribute to the project outputs.

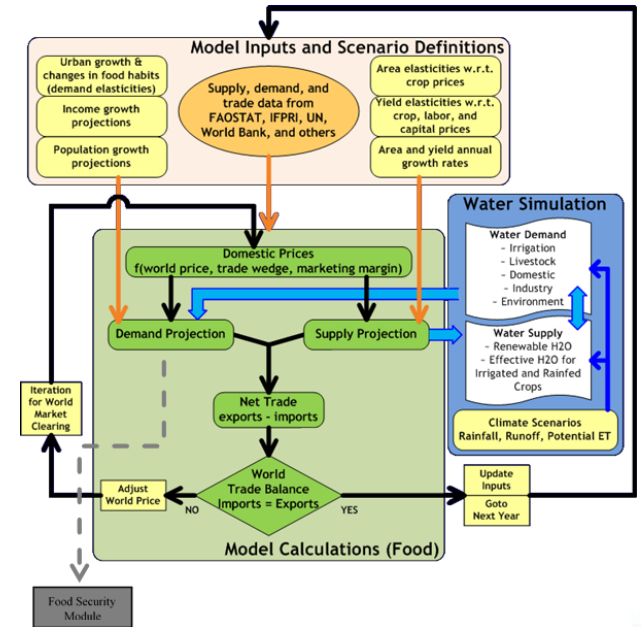


# GFSF: Global Futures and Strategic Foresight

- What process are we applying?
- What tools are used?

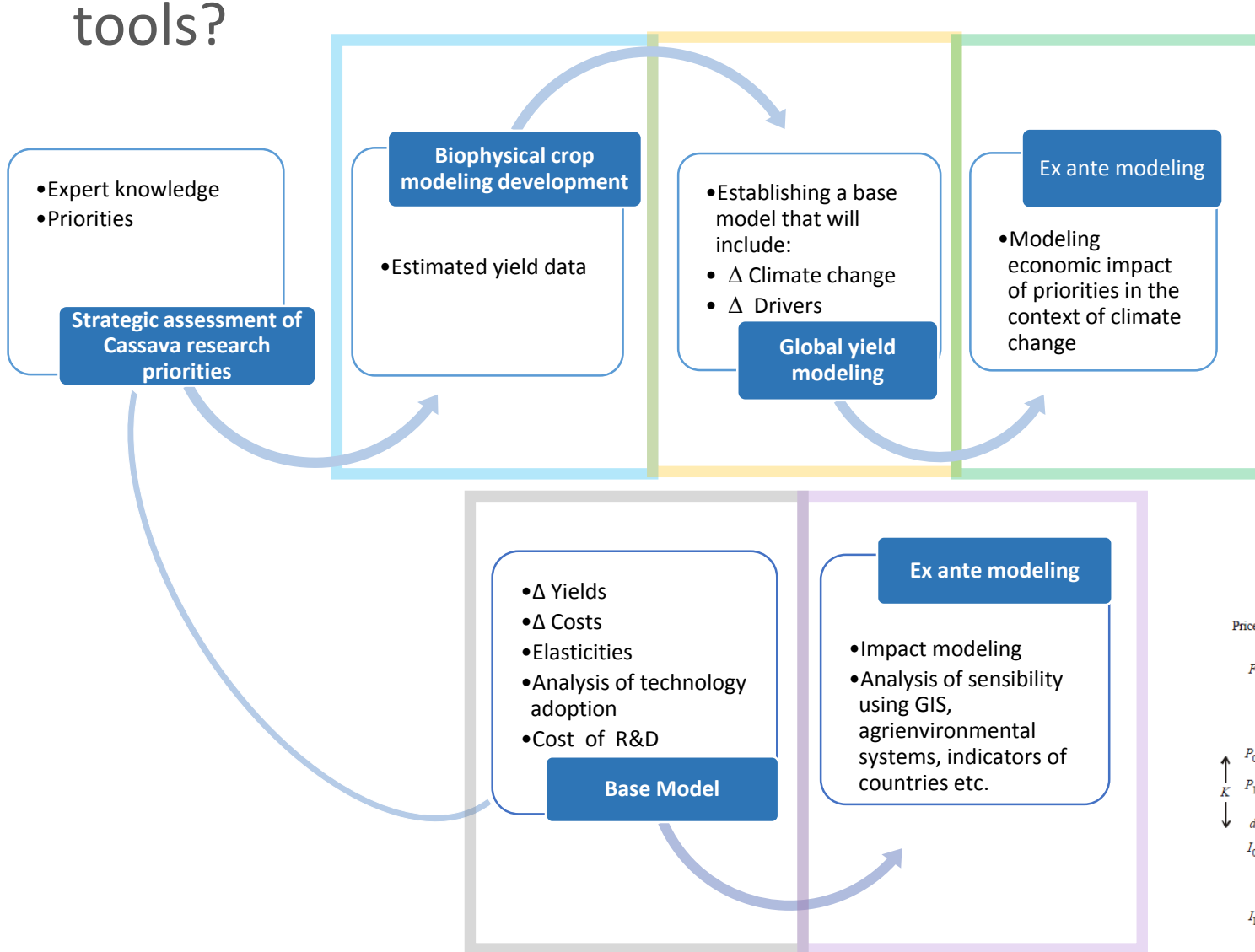


International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT)

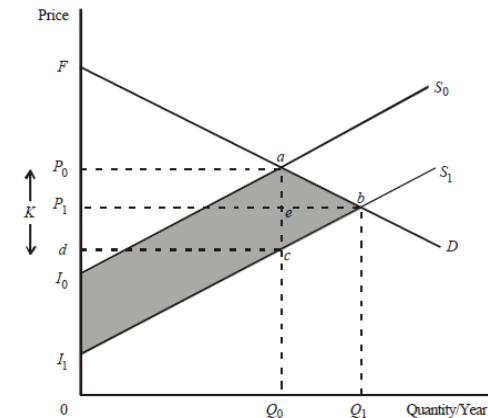
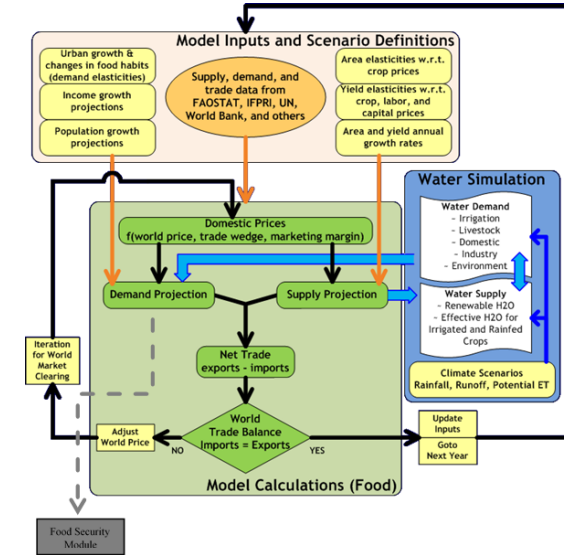


# GFSF: Global Futures and Strategic Foresight

- What process we are applying ?, What are used tools?



International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT)

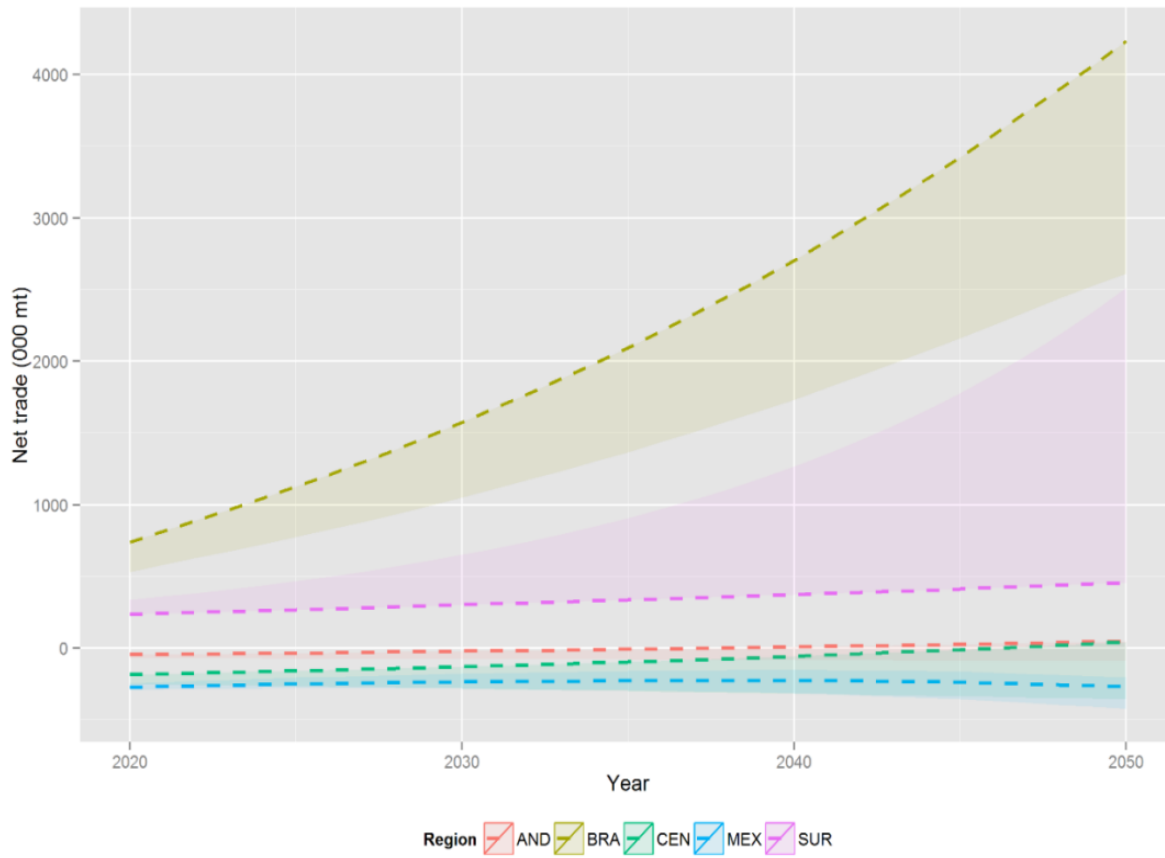


# Ex ante impact assessment of the role of investment in agricultural research for the global food system.

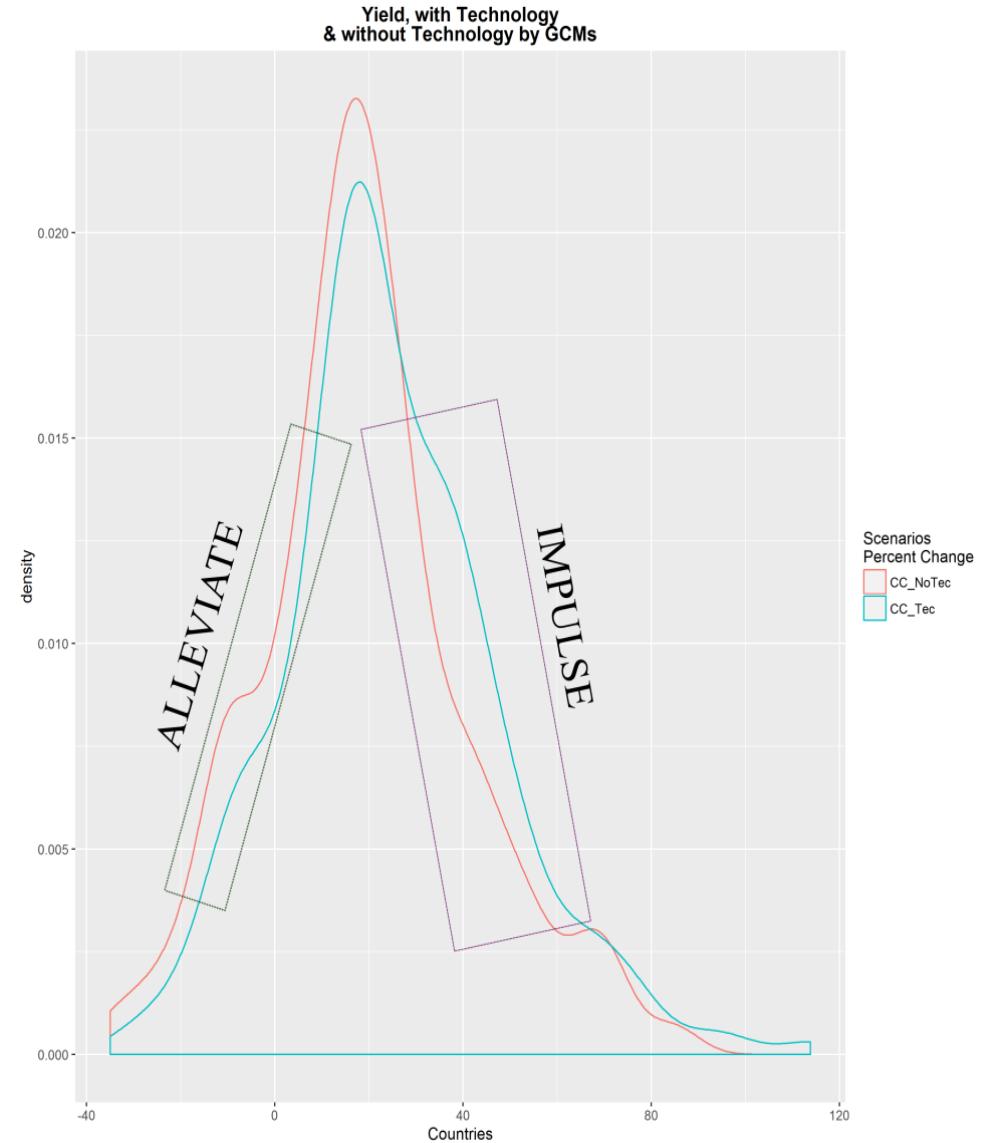
Ongoing and completed research:

- ***Climate change impact in LAC***: Economic impact of climate change in the agricultural sector in Latin America and the Caribbean through a lens of five crops. (IADB)
- ***Beans***: Economic impact of drought tolerant bean technology under conditions of climate change. (GFSF)
- ***Rice***: Research priority setting for rice research in LAC. (GFSF)
- ***Forages***: Improved forages for increasing milk production in East Africa. (CIAT Strategic Fund, Forages Program, and GFSF)

# What kind of results do we get?



Trends in international trade for dry beans under climate change.



Potential impact of drought tolerance in beans.

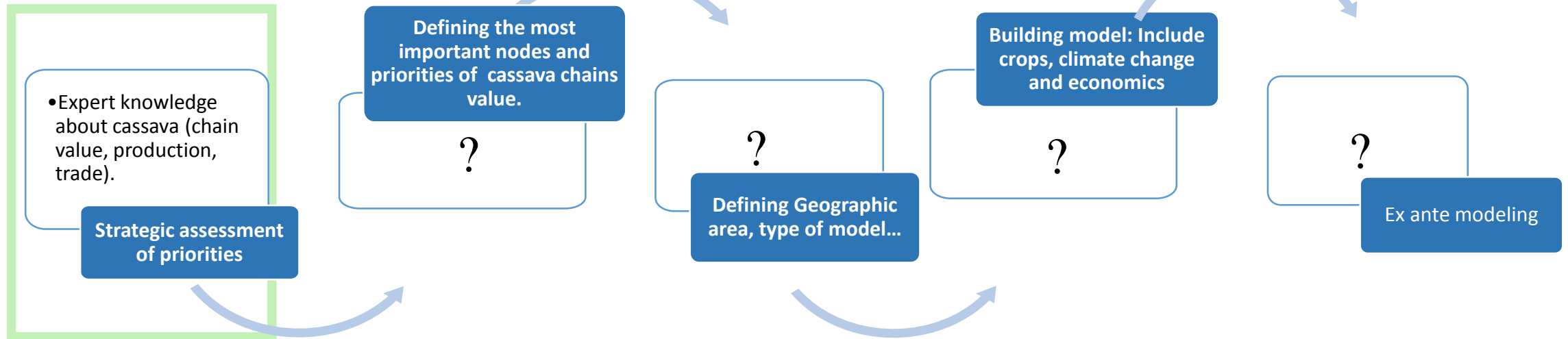


# What about cassava? Where do we start?

- ***Review of the general trends and geographies associated with cassava.***



*We are here!!*

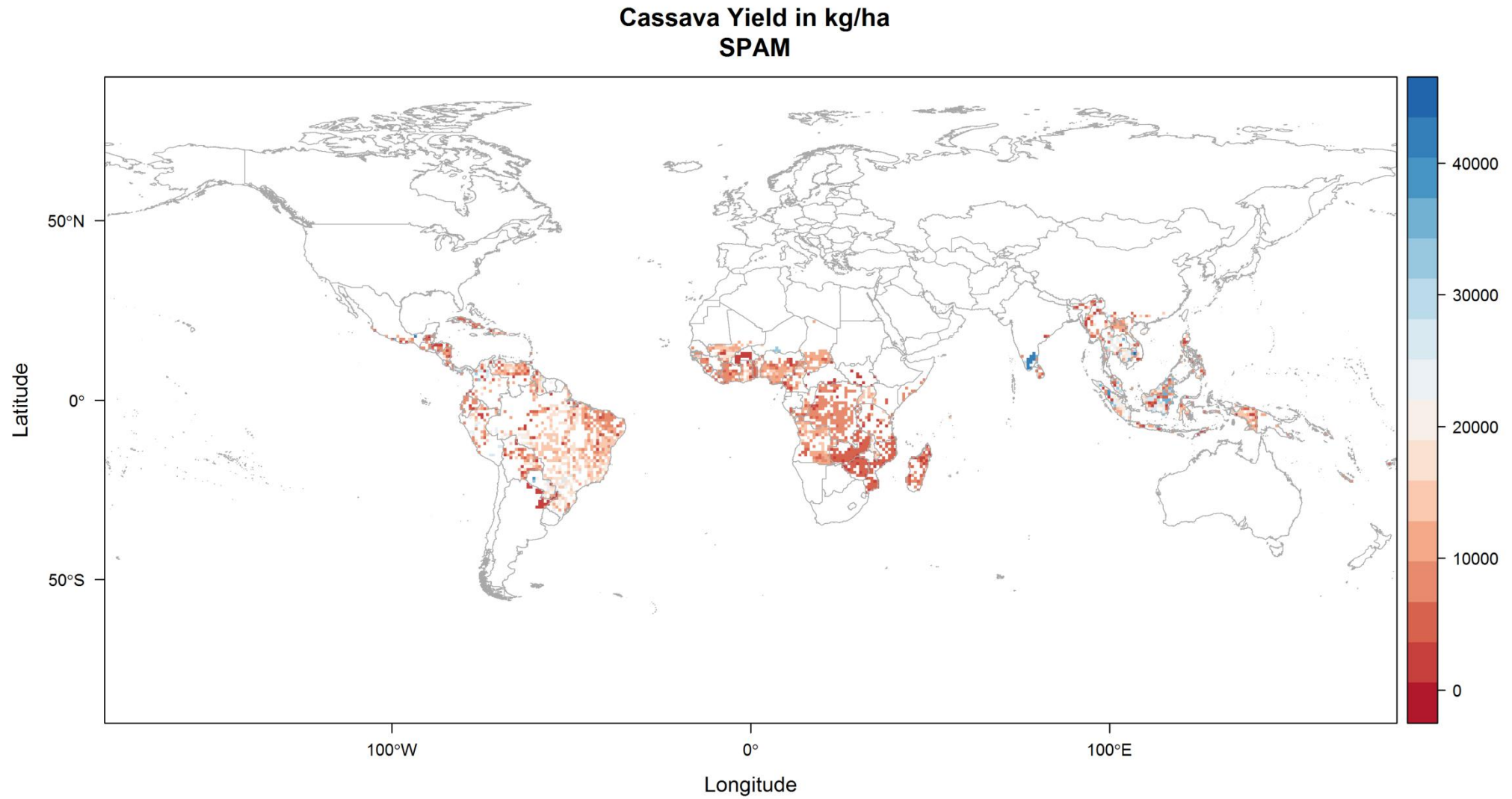




# Where do we start?

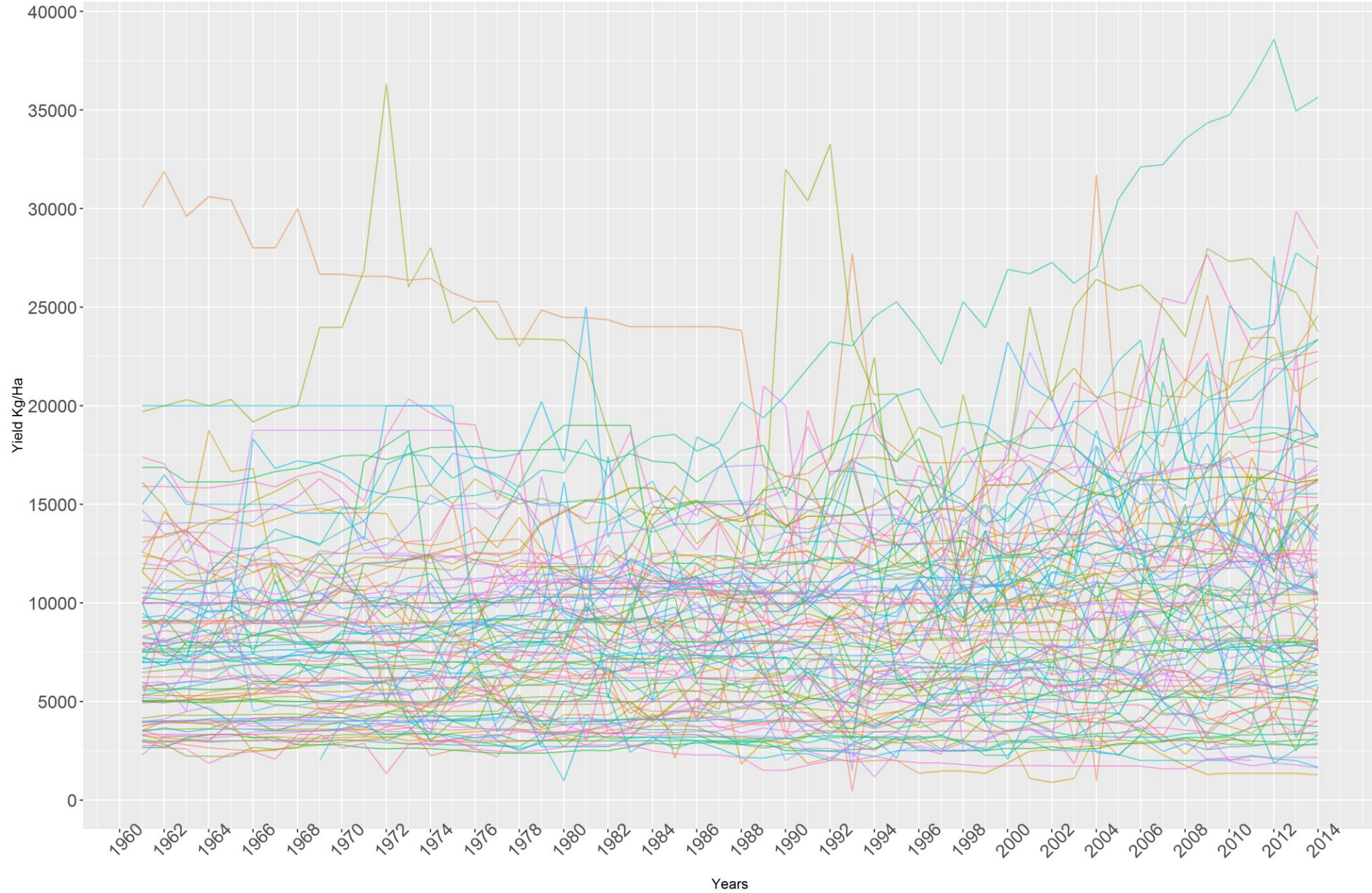
- *Review of the general trends and geographies associated with cassava.*
- *Role of large scale data, trends, aggregation, etc.*
- *More questions than answers...*

# Trends: Where are cassava yields?



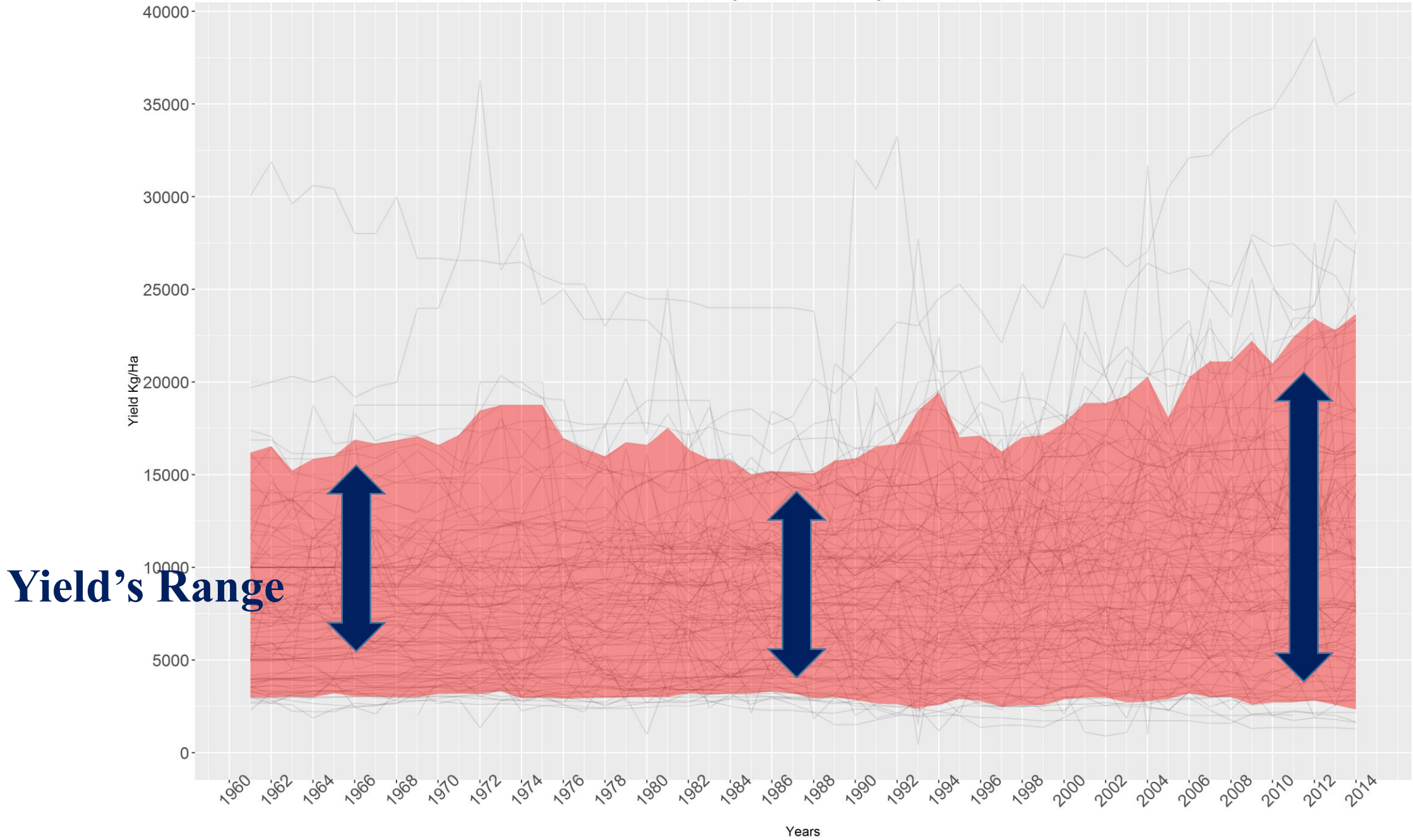
# Trends: Yield

## World Cassava Yield (1960-2014)



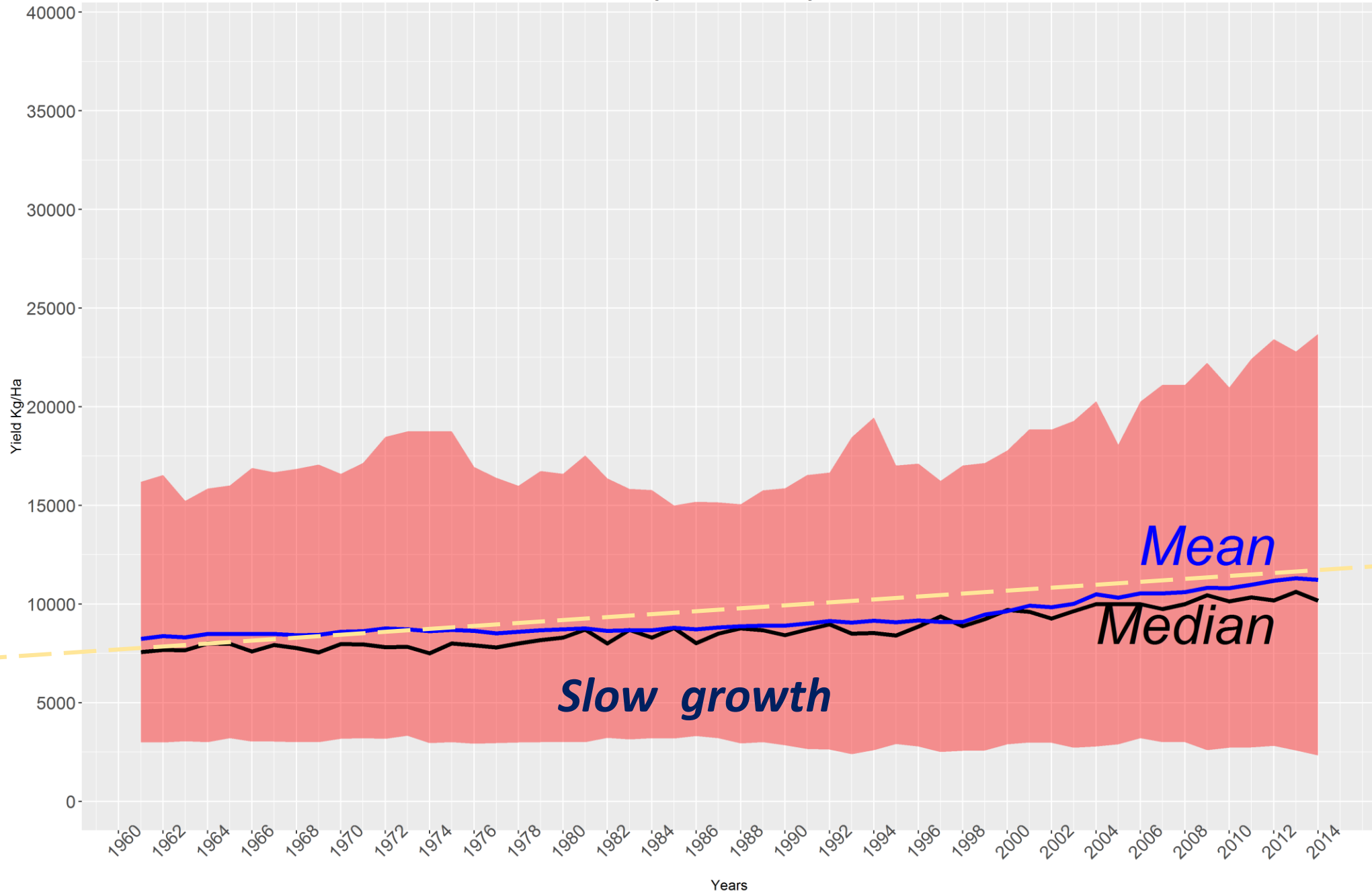
# Trends: Yield

## World Cassava Yield (1960-2014)



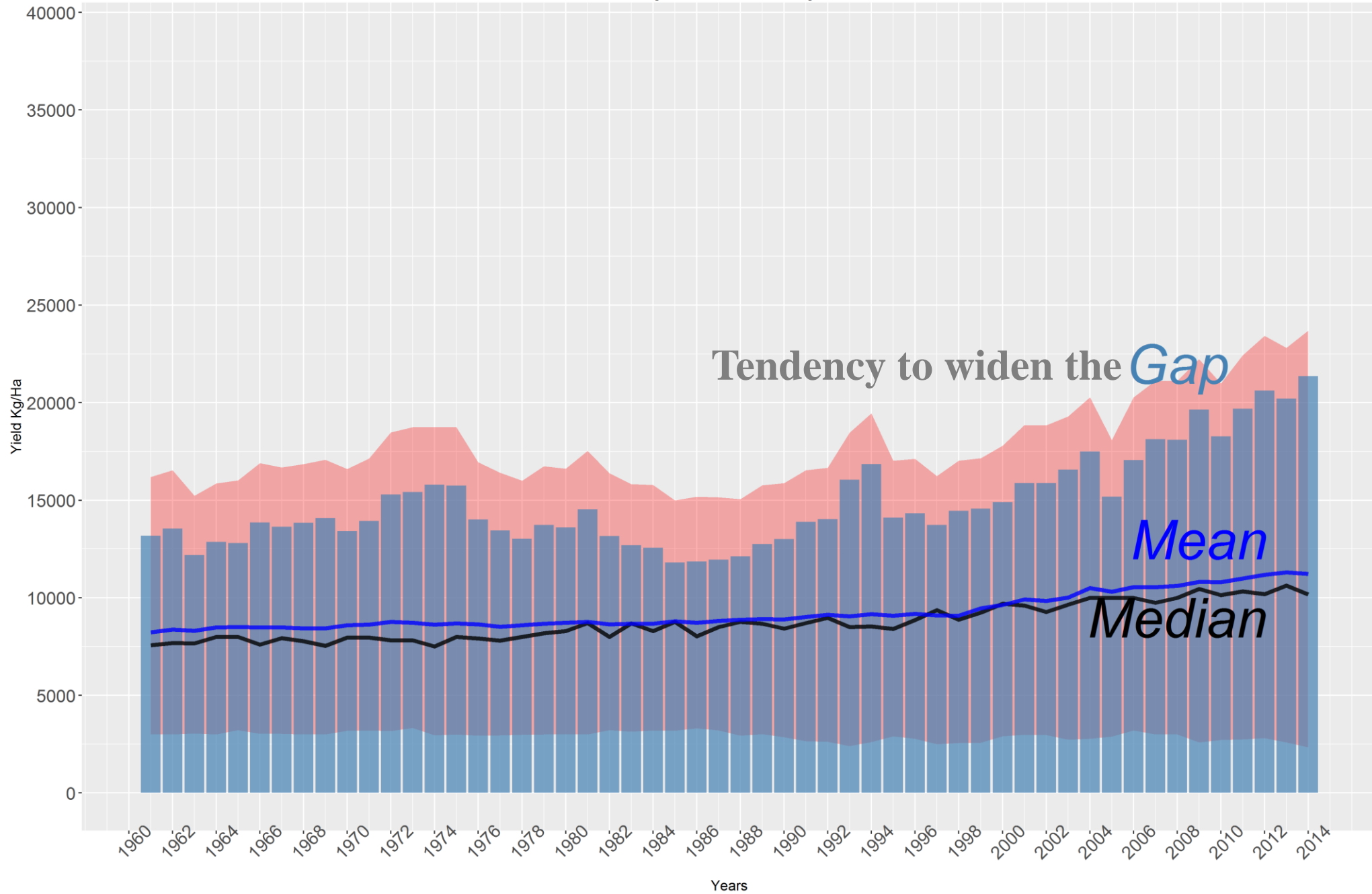
# Trends: Yield

## World Cassava Yield (1960-2014)



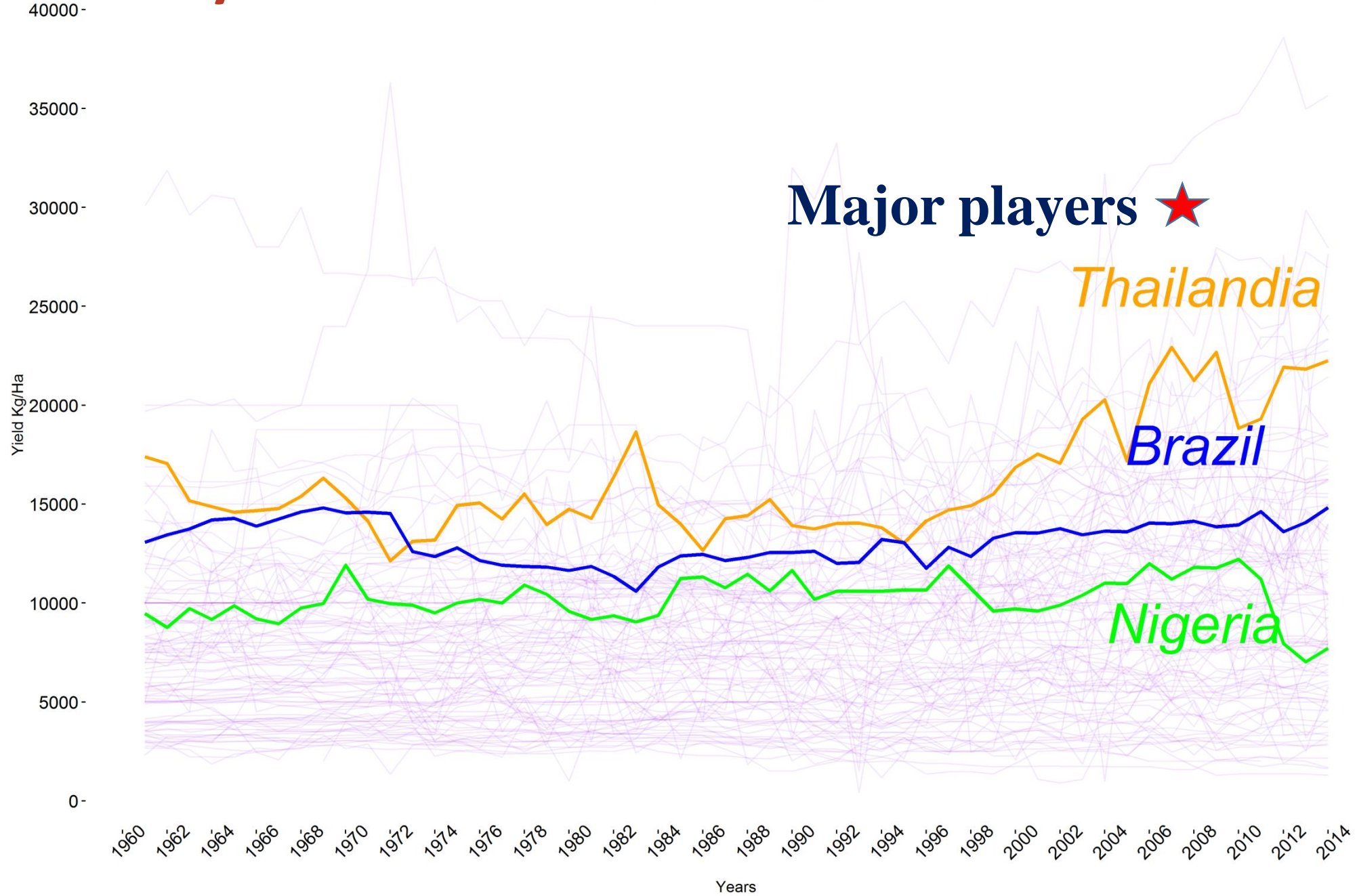
# Trends: Yield

## World Cassava Yield (1960-2014)



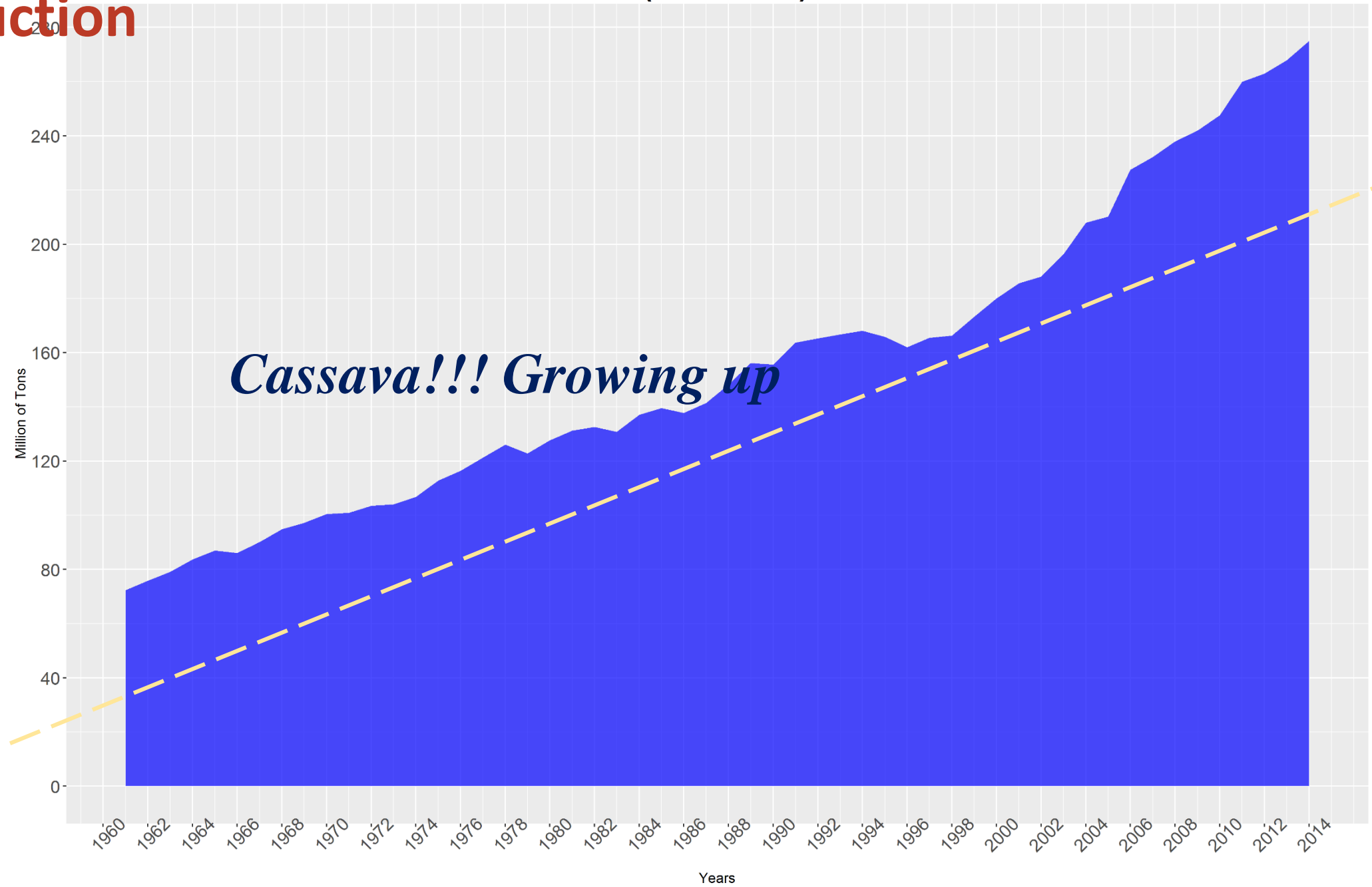
# Cases for analysis

## World Cassava Yield (1960-2014)



# Trends: Production

## World Cassava Production (1960-2014)

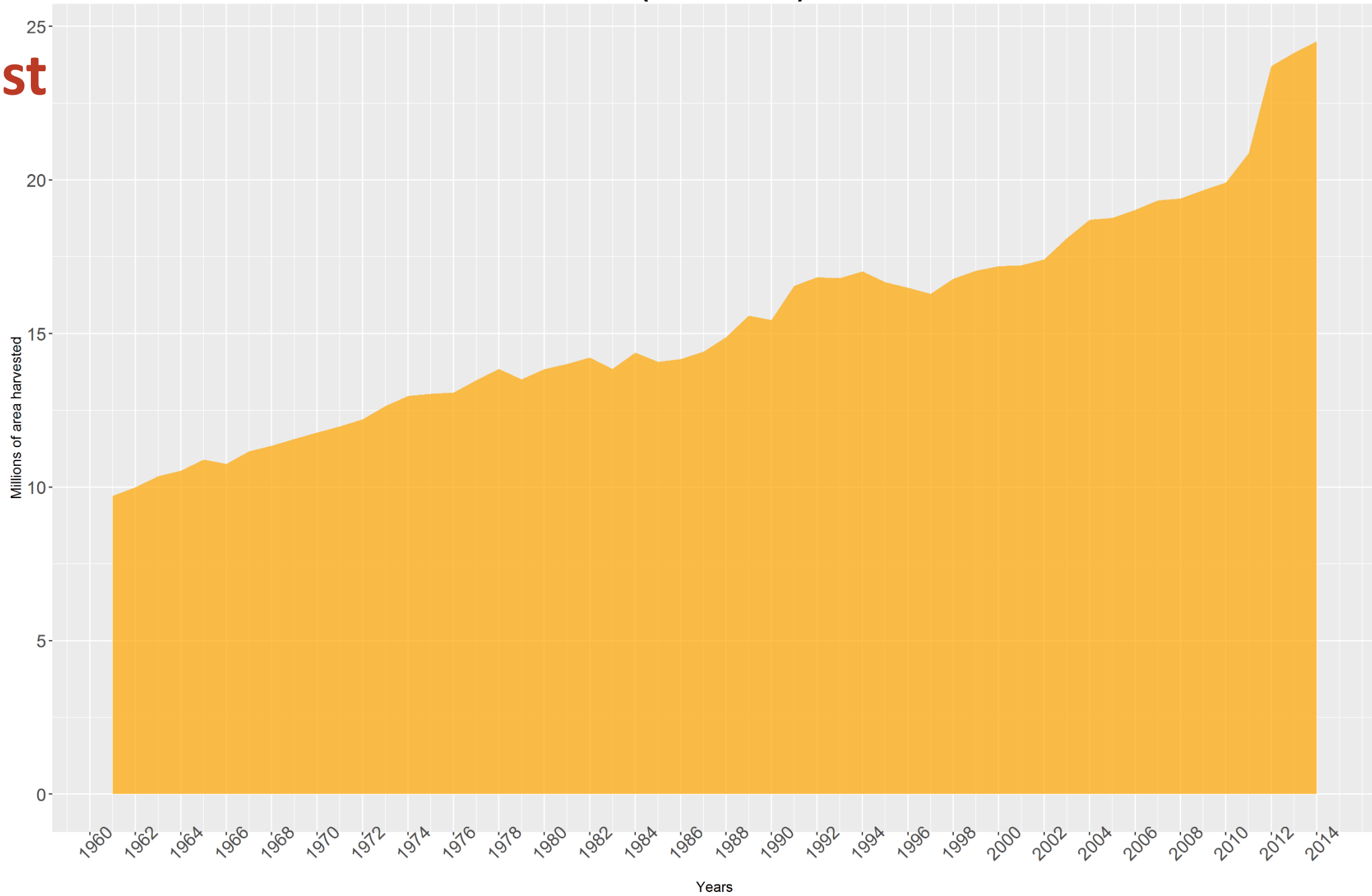


*Cassava!!! Growing up*



# Trends: Area Harvest

## World Cassava Area harvested (1960-2014)



# Summary

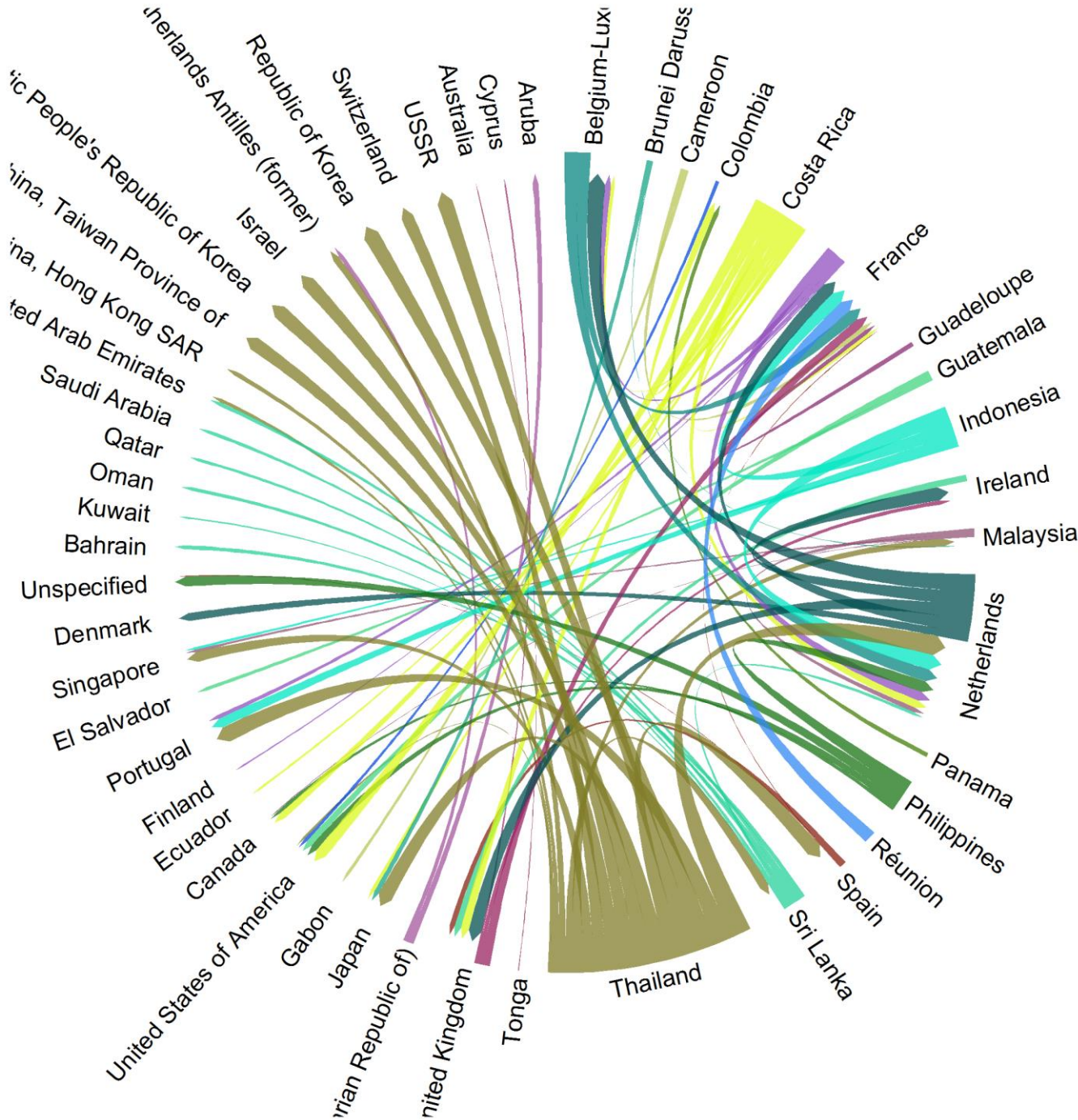
- There is a general but fairly light increase in yields over time. Differences in countries are becoming much more pronounced over time.
- Production and area harvest has increased. Cassava is clearly an important industrial product.
- Thailand stands out as a very important case study. It is leading the pack in exports. What does this mean in when markets are volatile?

# Flows trade cassava dried.

Cassava Dried Exports 1986.  
FAOSTAT

Note the role of:

- Netherlands
- Costa Rica
- Thailand
- France

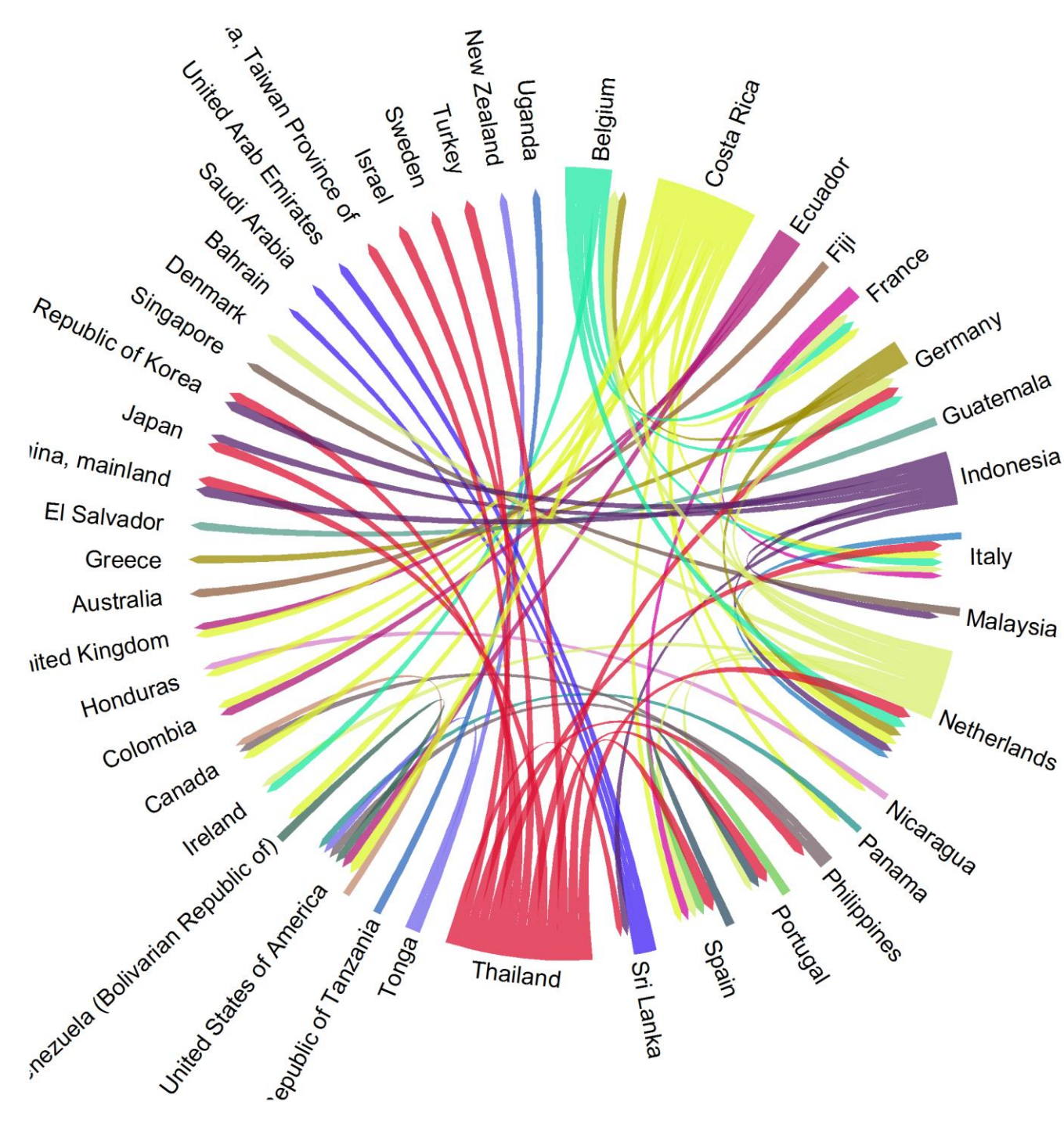


# Flows of dried cassava

Cassava Dried Exports 2000. FAOSTAT

Note the roles of:

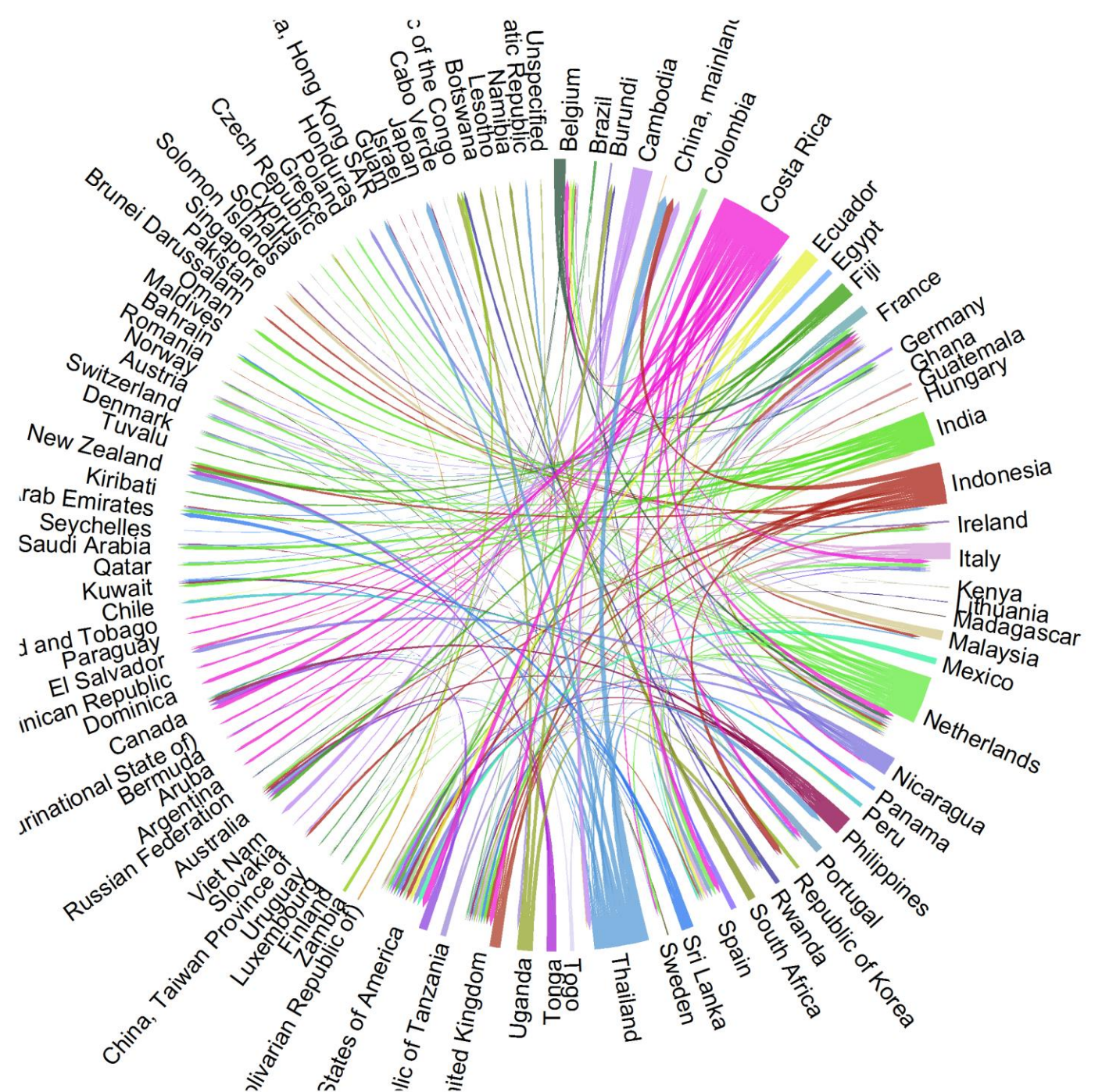
- Netherlands
- Costa Rica
- Thailand
- Belgium
- Germany



# Flows of dried cassava

Cassava Dried Exports 2013. FAOSTAT

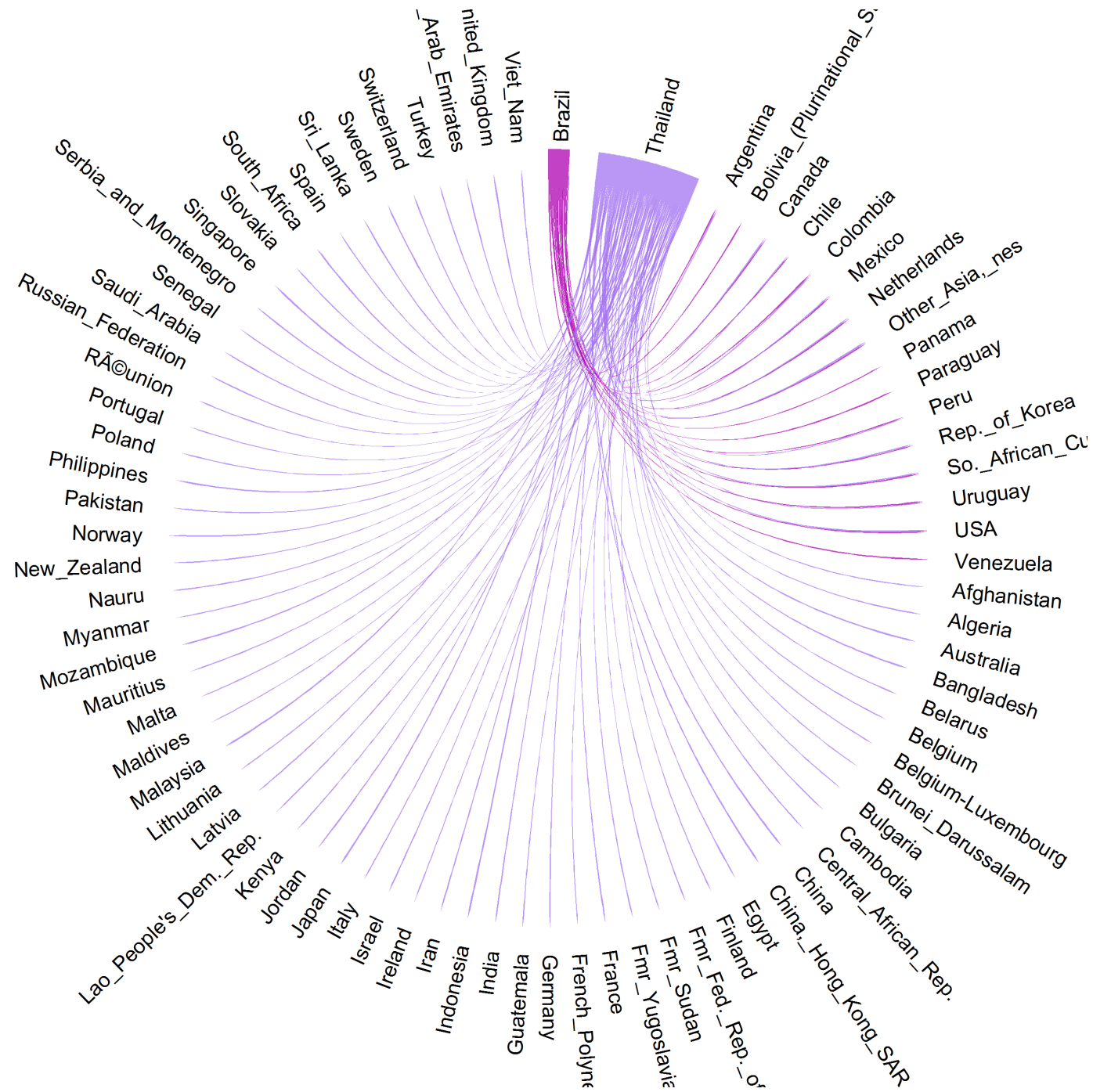
Note the network growth...  
International trade of dried cassava has grown considerably.



# Network: exports of starch

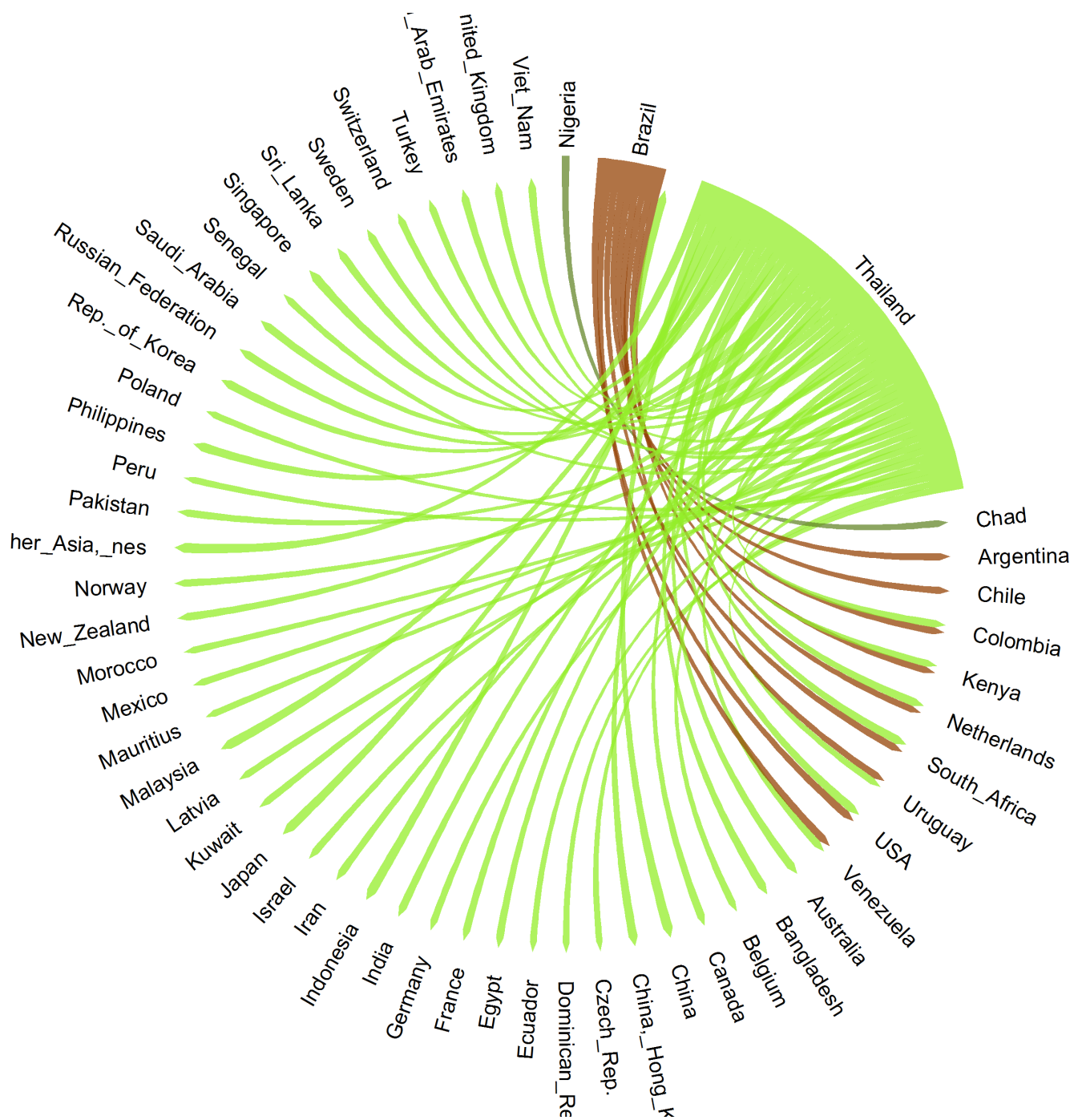
Cassava starch exports period 1990-2000.  
COMTRADE

How are trade networks of  
Nigeria, Brazil and Thailand  
about exports of starch?



# Network: exports of starch

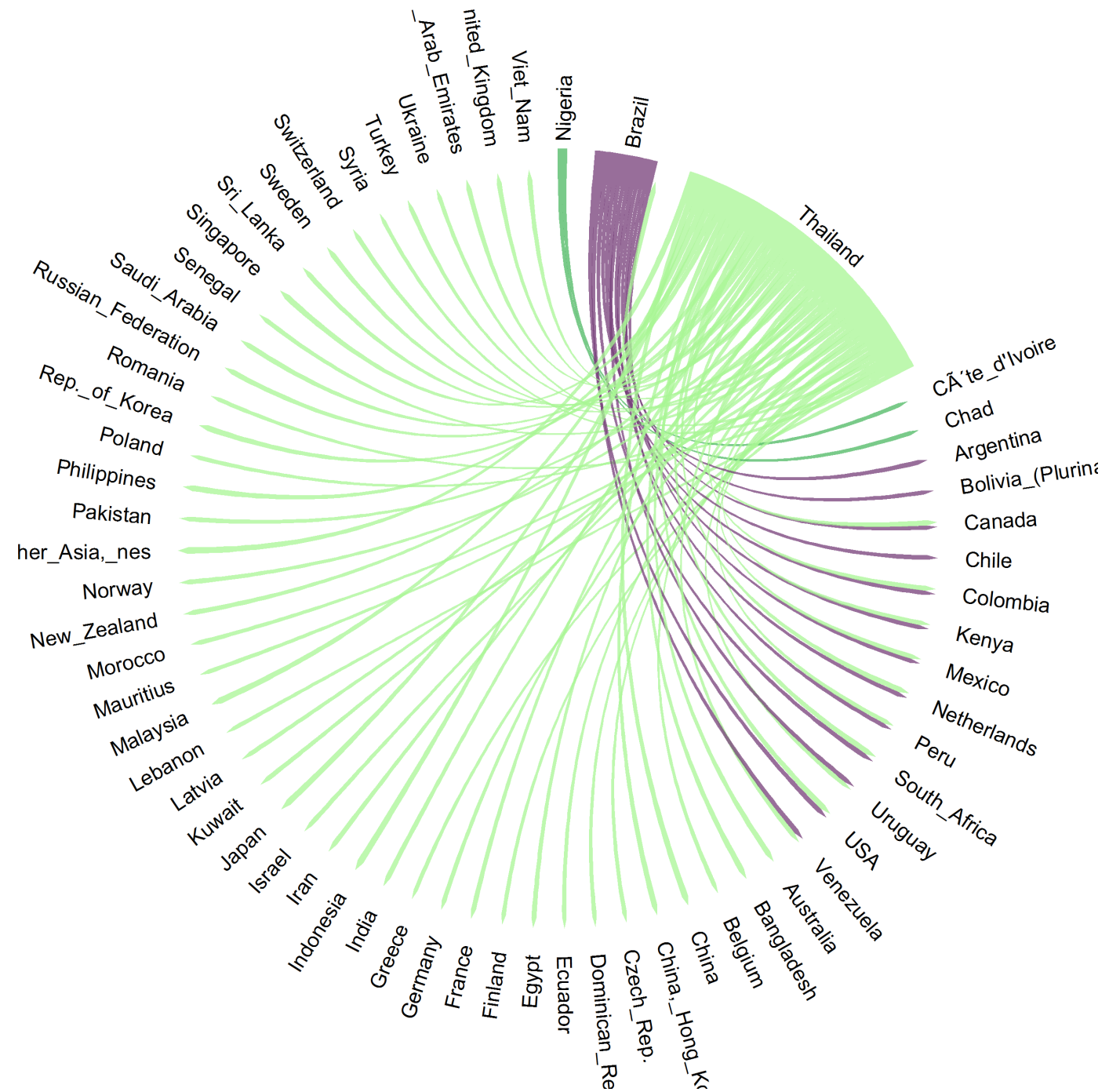
*Thailand's exports travel far*



# Network: exports of starch

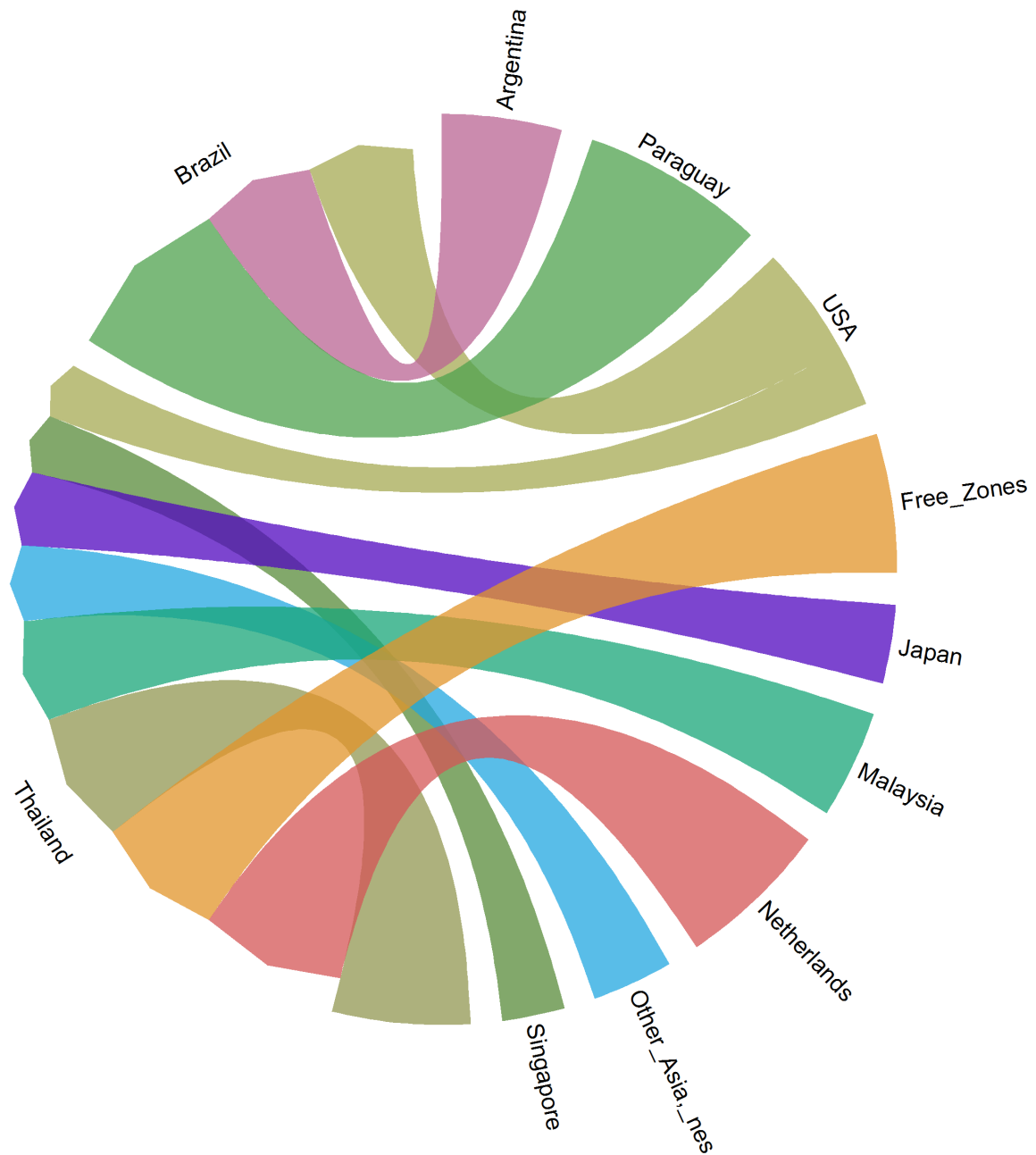
Cassava starch Exports period 2011-2015.  
COMTRADE

*Nigeria has just two partners*





A quick take on imports...



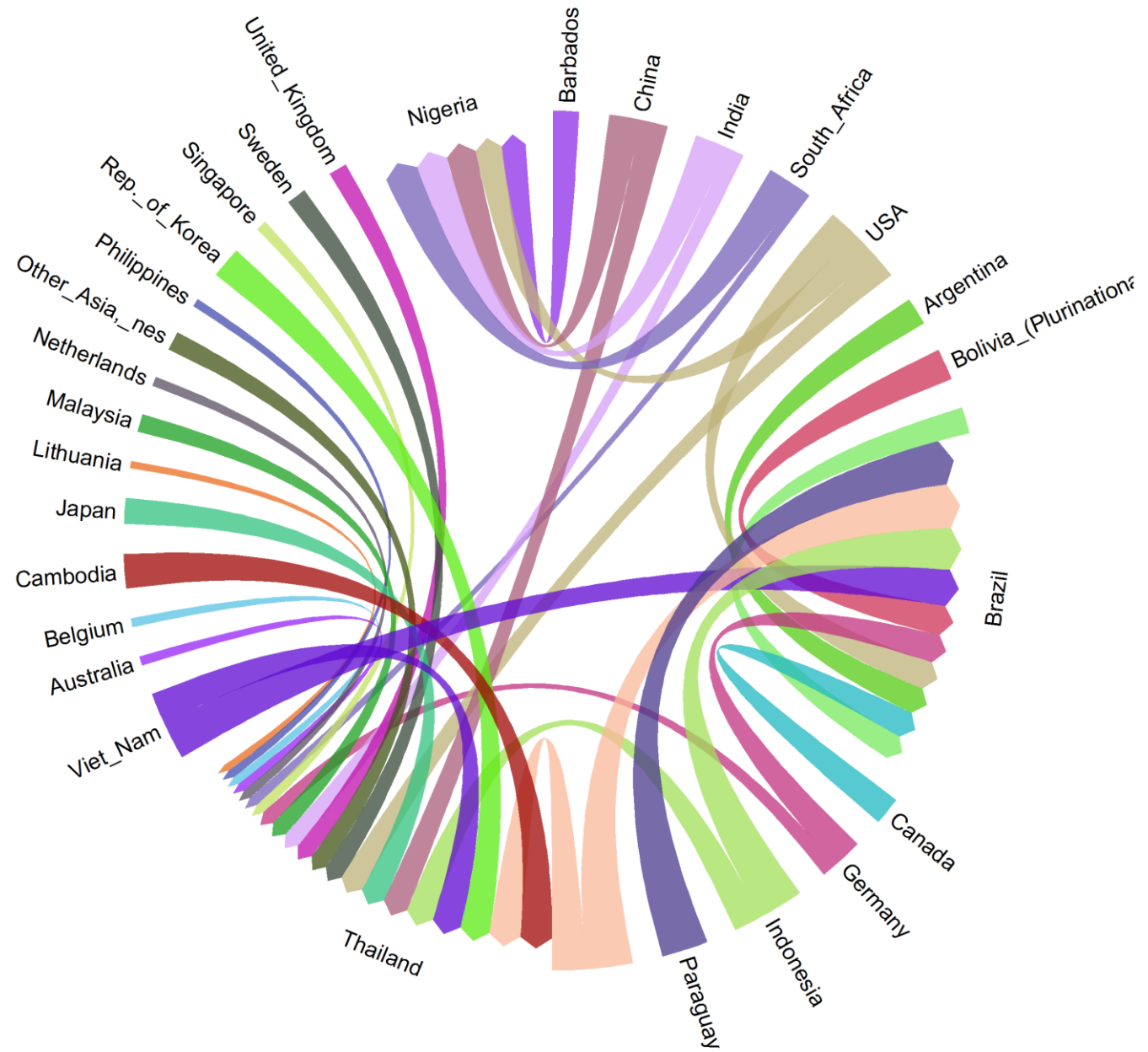
# Network: imports of starch.

Cassava starch imports period 1990-2000.  
COMTRADE

# Network: imports of starch.

Cassava starch imports period 2001-2010.  
COMTRADE

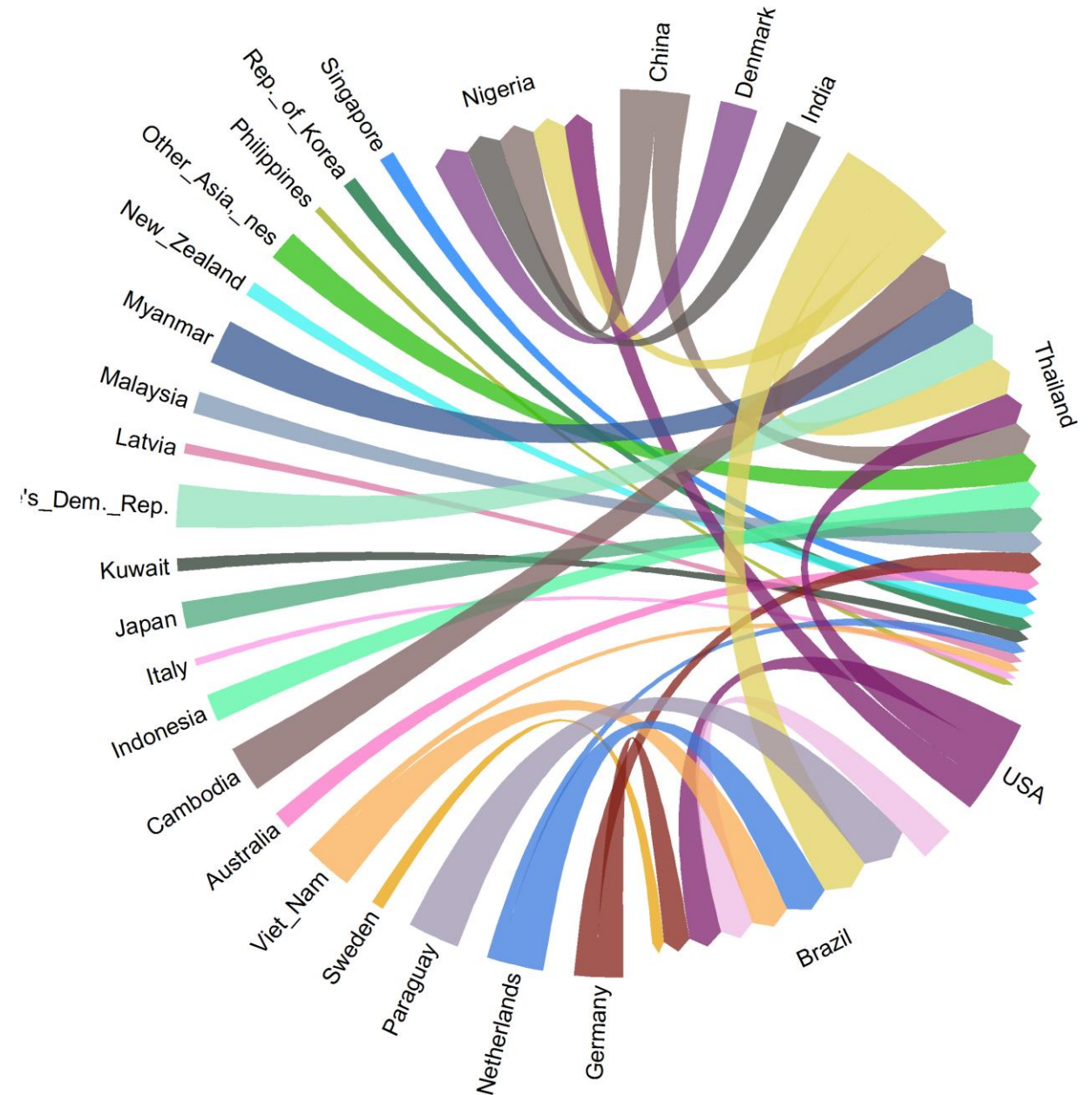
*Import for Export*



# Network: imports of starch

Cassava starch imports period 2011-2015. COMTRADE

*Import for Export with new players*



# How do we wrap our heads around the complexity of cassava value chains?

Start simple, build up. This group will play a fundamental role in helping to define the entry point for modeling different cassava value chain scenarios using foresight approaches.



Member of the  
CGIAR Consortium

[www.ciat.cgiar.org](http://www.ciat.cgiar.org)  
[www.cgiar.org](http://www.cgiar.org)



**CGIAR**

Science for a food secure future