Introduction to
The Global Coffee Quality Research Initiative
Shortage in washed arabicas being felt worldwide

- Some origin countries experience supply shortages
  - Colombia, Guatemala, Kenya...
- Newer origin prospects slow coming
  - Congo, Sudan, Ecuador, Bolivia...

All supply vulnerable to pandemics
All supply vulnerable to global warming
40% of coffee consumption in US is specialty, and growing

- Fast food moving to specialty
- Kraft, Sara Lee, and others
- Origin countries consuming more of their own specialty coffees
- Europe, Japan, Australia, Middle East increasing consumption
- China and India rapidly developing appetites for specialty coffee
Quality and taste differentiation is a major demand driver.

We know almost nothing about why coffee tastes the way it does:

- Only 2 of 100 species of Coffea genus studied.
- Only 67 studies on effects of different variables on quality in past century!
- Great, untapped variability within the Coffea genus: Look at Esmeralda!
- Over 800 volatile and non-volatile chemical compounds in coffee responsible for its flavor; interactions are almost infinitive.

We don’t know how to improve, control, or protect!
### Add it Up

<table>
<thead>
<tr>
<th>Exponential Demand</th>
<th>Questionable Supplies</th>
<th>Limited Knowledge On Quality</th>
<th>An Industry With Problems</th>
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</table>

Supplies of quality coffee are becoming inadequate to meet projected needs.
- Expand arabica coffee area within existing origins
- Increase yields of arabica coffee from existing areas
- Transform poor quality arabica plantations into specialty arabica plantations
- Develop new origins
- Understand the effects of genetics, environment and their interaction on coffee cup quality

They all require agricultural research and development
Because of geographic, economic and social disconnects between coffee consuming and producing countries and the disparate nature of the specialty industry, very little has been invested to increase cup quality, production of quality coffee or to protect the quality coffee supply chain.
The Solution

The Creation of

A global coffee research program focused on increasing quality and volumes of specialty coffee and protecting the supply chain from economic, climatic and pandemic threats.
To build upon and expand the network of existing coffee research institutions and scientists and to fund and conduct research on key factors that improve the cup quality and increased volumes of specialty coffees.
Successful USAID-funded Collaborative Research Support Programs (CRSP) tailored to meet the needs of the coffee industry.

Based on: Successful USAID-funded Collaborative Research Support Programs (CRSP)

Tailored by: The Borlaug Institute

Tailored to meet the needs of the coffee industry.
Alternative of not doing something very risky
Makes good business sense

<table>
<thead>
<tr>
<th>Authors</th>
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Proven track record on returns on investment
Keys to success of the GCQRI

1. Industry Driven
2. Collaborative
3. Open Access to Results
4. Increased Capacity at Origin
5. Long Term
6. Multi-Disciplinary
7. Adaptable
8. Focus on Bottom Line
Objectives

Understand

...the causes and effects of genetic, agronomic, processing, and post-harvest factors on the quality of coffees in order to increase quality and volumes of quality coffees.

Outreach

...and freely extend research results to everyone up and down the supply chain so they can readily deliver the expected productivity, premium, quality, sales, and marketing results.

Grow

...the capacity of coffee origin countries to conceive and execute top-notch coffee quality research that will result in increased cup quality and volumes of quality coffee.
Management Structure

- Transparent
- Efficient
- Focused
- Effective
# Development Phase: 1 year "Genesis"
- Legal establishment of the program
- Setting up long term funding mechanisms
- Defining the major constraints to be addressed, where with whom
- Setting up the network of researchers, institutions, origin countries, laboratories

# Operational Phase: 5 year cycles
- Funding research activities
- Monitoring activities and impact
- Compiling and extending results

## Cost & Funding
- Approximately one year of full time activity after Symposium
- Produces a comprehensive, global research plan, network, funding mechanism...
- $375,000 total needed
- Cost share and savings can reduce total

## Cost & Funding
- $15-20 million per cycle ($3 to $5 million per year)
- 20-30 research projects in 15-20 origin countries
- >200 researchers at >50 research institutions
Genesis funding so far...

coffee bean international

Peet's Coffee & Tea

Intelligentsia Fresh Roasted Coffee

Tony's Coffees & Teas

Union Hand-Roasted Coffee

Sweet Maria's

GMCR

Counter Culture Coffee
Long-term Research Funding

- Voluntary check-off commodity fund
- S,M,L,XL roasting companies 5 year commitments
- Oligarch-like funding from several large companies
- Foundation and/or Government funding
Global Plan Constraint Area:
Increased quality through defect removal

Constraint:
Potato taste defect in E. Africa

Estimated loss to producers:
Several million dollars per year in Rwanda and Burundi alone

Estimated loss to roasters:
XX,XXX bags of coffee unsuitable for specialty market

GCQRI Approach:
1. Designs RFP (Request for Proposal) for lead coffee research institutions
2. Lead institution partners with other qualified and interested institutions for high tech support
3. Lead institutions design collaborative project with Rwandan and Burundian Research Institutes
4. Project entails research at input phase, production phase, and processing phase
5. Quality results on all trials evaluated by trained specialty industry cupping panels
6. Results lead to new dry processing equipment with ‘potato laser beams’
The beauty of it all...

**Origin Countries**
- Research capability
- Higher foreign exchange earnings

**Producers**
- Better prices from better quality
- More volume due to better quality

**Processors**
- Lower production costs
- Improved methods
- Better elimination of defects for higher price differentials

**Roasters**
- Better coffees and more of them
- Greater differentiation
- More knowledge for sourcing and education

**Consumers**
- Enhanced experience
- More choice
- Traceability
• Reach genesis funding goals
• Execute global planning congress
• Establish entity
• Request for proposals
• Begin doing it
That’s it for the introduction to the concept
Norman E. Borlaug

- Forester who started the Green Revolution
- Received the 1970 Nobel Peace Prize, Presidential Medal of Freedom, and Congressional Gold Medal
- Person of courage, science, action, and persistence
- Championed agricultural research and development for poor farmers worldwide
The Borlaug Institute

• Is the international agriculture R&D arm of the Texas A&M University system
• Manages $50 M international R&D, out of system-wide $730 M R&D
• In 2008-2009, deployed 127 scientists and staff drawn from resource base of 27,000 faculty and staff
• Engaged in 105 countries
Through science and education we can combat hunger and poverty in partnership with:

- International Agricultural Research Centers
- Foreign national research agencies
- Private firms
- Private foundations
- Other universities
We Believe

“The first essential component of social justice is adequate food for all mankind.” – Nobel acceptance speech, 1970.

Agriculture is a powerful force for peace.
We Also Believe

The specialty coffee industry has given buying power to thousands of poor farmers, enabling them to buy the food they could not otherwise produce.

And through science, you can improve the lives of millions more all the while improving quality, productivity and protecting the supply chain.
French public Research establishment,

Specializing in tropical and Mediterranean agriculture.

Staff of 1800, including 800 researchers.

Working with more than 90 countries worldwide.

Budget of 203 million euros, with two thirds provided by the French government.
Coffee: Some 30 researchers

In Montpellier (France) but also with resident researchers in Brazil, Mexico, Nicaragua, Costa Rica, Kenya, Laos...

Working in collaboration with public sector (Nacional Agronomic Research Centers, Universities) and private sector.

Main axis of research

- Creation and Mass Production of new varieties
  - Adaptation to Agroforestry Systems
  - Tolerance to drought
  - Tolerance to main diseases

- Optimizing Agricultural Practices

- Cupping and High throughput determination of biochemical composition (NIRS)

Combining Productivity & Quality
Creator of technological innovations for tropical crops including coffee

- No capacity for diffusion of these innovations.
- Some kind of frustration: do not reach/ benefit the producers

Impact of the research towards beneficiaries?

Strategic Alliance with Private Coffee players
Two key innovations in the Arabica coffee production sector:

- A result from several years of collaborative research
- New generation of varieties
- New tissue culture methodology for mass propagation

Technology Transfer to the private sector: Ecom Group
This new generation of varieties:

- 40-50% more productivity – Precocity
- Equivalent or even better quality

Combining Productivity and Quality....
### Study of INCAE - IRR and NPV of one Coffee Hectare

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RENOVATION</th>
<th>HORIZON</th>
<th>IRR</th>
<th>NPV</th>
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<tr>
<td>Caturra</td>
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<td>6</td>
<td>32%</td>
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<tr>
<td>Caturra</td>
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<td>10</td>
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<td>New Hybrids</td>
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<td>6</td>
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<td>New Hybrids</td>
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<tr>
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<td>10</td>
<td>-----</td>
<td>2,000</td>
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</tbody>
</table>
Capacity: 5 Millions F1 Plants / year
**Future research**

- **Genetic Resources**
  - (15,000 Trees representative of coffee genetic diversity)

- **Access to field:**
  - Fincas / Research Centers & Skilled staff. (Mex, Nica, CR)

- **Structures and equipments:**
  - Lab / Nirs / Cup testing

- **Network of Scientific skills:**
  - Cirad, Langebio, IBT-Unam, ITV and others

**Solid basis to run impactful research...**
Research Alliance
Combining Productivity and Quality

Cirad

Alliance

Ecom

Research Platform

Platform available to the coffee community through GCQRI

Designing Coffee Cultivars Combining Productivity and Quality

Offering opportunities for developing new innovations ...