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QUARTERLY REPORT #08 (OCTOBER – DECEMBER 2012)

Capacity to Improve Agriculture and Food Security (USAID-CIAFS)

January 2013
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Cover Photo: Participants discuss a presentation on contract farming during a break at the national workshop on "The Role and Prospects of Large Scale Commercial Agriculture in Meeting Ethiopia's Growth and Transformation Plan," organized by USAID-CIAFS.

Photo by Fintrac Inc.

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CONTENT

1. EXECUTIVE SUMMARY

This is the eighth quarterly report for the USAID-Capacity to Improve Agriculture and Food Security (CIAFS) project for October to December 2012. USAID-CIAFS supports Ethiopia's efforts to transform its agricultural sector and improve food security for the Ethiopian people by providing targeted training and raising awareness of best practices in agricultural development. The project strives to empower leaders to catalyze change, drive growth, and reduce poverty.

Since its inception in 2011, the project has designed and implemented tailor-made training programs on leadership, entrepreneurship, and competitiveness to public, private, and civil society leaders and professionals. The training impact assessment the project conducted during this quarter indicates that the project's training interventions have achieved results in improving administrative procedures and communications between offices of the Ministry of Agriculture (MOA). USAID-CIAFS also conducted demand-driven analyses to improve the enabling environment for agriculture, and provided monitoring and evaluation support for Feed the Future (FTF) partners to track agricultural indicators critical to Ethiopian food security.

The following are the major activities implemented during this quarter:

- Delivered **leadership training to 38 agents of change (12 percent women),** in collaboration with the Tigray Bureau of Agriculture.
- Organized a national workshop for 95 participants on "**The Role and Prospects of Large Scale Commercial Agriculture in Meeting Ethiopia's Growth and Transformation Plan"** in partnership with the Ethiopian Association of Agriculture Professionals (EAAP).
- **Assessed seed certification practices and made policy reform recommendations** to increase availability of certified seed and meet national demand.
- Wrote a **Global Market Study on cotton** to identify possible local and export opportunities for Ethiopian growers.
- **Trained 60 professionals (23 percent women) in GIS and Data Management** from the Ministry of Agriculture and the Oromia Bureau of Agriculture
- Delivered **training on Planning and M&E** to MOA and Bureaus of Agriculture (BOAs) to improve internal coordination
- Disseminated three editions of **Tools for Transformation** technical bulletins:
  - *Improved Grain Varieties: Impact through Research and Development*
  - *Water Harvesting: Impact through Conservation Practices*
  - *Maize Production: Impact through Improved Agronomic Practices*
- **Trained M&E staff** of three FTF implementing partners and 12 USAID CORs/AORs on the use of USAID/Ethiopia's FTF Management System.
- Performed **Data Quality Assessments** of three FTF projects.
- Organized the fourth quarterly **FTF partner coordination meeting,** December 20, 2012.

2. BACKGROUND

USAID-CIAFS, a four-year project funded by the United States Agency for International Development (USAID) and based in Addis Ababa, builds the institutional capacity of government, trade associations, civil society, and other stakeholders to improve Ethiopia's agricultural production and productivity. The project also serves as a foundational platform to support other USAID/Ethiopia Feed the Future (FTF) programs to achieve the ambitious targets of the US government's Feed the Future initiative. Objectives of FTF include increasing agriculture productivity, preserving natural resources, improving agricultural marketing, increasing the purchasing power of vulnerable households, and maximizing food security. This strategy is in line with the L'Aquila Principles endorsed at the July 2009 G8 meeting, particularly the first two principles: "adopting a comprehensive approach to food security" and "investing in country-led plans."

USAID-CIAFS:

- Improves human and institutional capacity for sustainable agricultural productivity through strategic capacity building activities for key agents of change.
- Enhances technology and best practice dissemination, management, and implementation capacity through study tours.
- Contributes to improved agricultural policy environment through analytical studies and public-private dialogues.
- Enhances the monitoring and evaluation capacity of the Federal Ministry, Regional Bureaus of Agriculture, and other USAID-funded agricultural projects.

The project implements activities focused in four main technical components: strategic capacity building, analytical studies, technology and best practice dissemination, and M&E support. Its geographic coverage includes Amhara, Oromia, SNNP, and Tigray regions.

Year three work plan activities include:

- Leadership training for the Ministry of Agriculture (MOA) at federal and regional levels
- Competitiveness training for agribusinesses
- Leadership and entrepreneurship training targeted to women business owners
- Identification and dissemination of Ethiopian and international best practices for climate change adaptation and agricultural transformation
- Public/private forums on large-scale commercial agriculture, milk supply and consumption
- Market analysis and competitiveness studies on chickpea, frozen meat, milk, cotton, and honey
- Capacity building for CBOs and local NGOs on food security and nutrition
- A targeted grants program for USAID-CIAFS agents of change to apply new ideas or educate the broader public about important agricultural policy issues
- Training and ongoing mentoring to FTF implementing partners on the use of USAID/Ethiopia's FTF Management System
- Data quality assessments (DQA) of FTF projects
- Training and ongoing support of MOA and regional Bureaus of Agriculture, including data management, GIS, and the bi-annual planning and M&E review process

3. HIGHLIGHTS OF ACTIVITIES AND RESULTS

3.1 STRATEGIC CAPACITY BUILDING

USAID-CIAFS delivers leadership training to senior Tigray Bureau of Agriculture managers

USAID-CIAFS, in collaboration with the Tigray Bureau of Agriculture, delivered leadership training to 38 senior managers (12 percent women) from the Tigray Bureau of Agriculture between October 30 - November 3, 2012 in Mekelle. The purpose of the training was to inspire, energize, and mobilize innovative leaders who are committed to implementing creative approaches to achieve food security. Specific objectives of the training were to enable trainees to play an active role leading agricultural change; analyze challenges and identify innovative actions to address them; broaden their understanding of food security issues; develop advocacy strategies to change attitudes about poverty, food security, gender, nutrition, and the impact of climate change on agricultural development; identify innovative solutions to address food security challenges; and create sustainable national networks to increase agricultural performance and food security.

TRAINING TOPICS INCLUDED:

- Food security status in Ethiopia and Tigray
- Challenges to achieving food security in Ethiopia
- CAADP, Ethiopian agricultural policy, and the investment environment for agriculture
- The roles of agents of change in enhancing food security
- Opportunities and challenges in agricultural transformation
- Leading and managing change
- Strategic thinking and planning
- Advocacy and messaging
- Emotional intelligence
- Managing human resources; managing conflict
- Customer care in the public sector
- Creating action plans to take the agenda forward

USAID-CIAFS trainers used participatory methods to help participants identify the greatest challenges to and opportunities for increasing agricultural productivity in Ethiopia, including:

Challenges	Opportunities
Disaster Risk Management and Food Security	
• Climate change • Land degradation (deforestation, soil erosion) • Imbalance in demand and supply of energy • Technology supply • Market infrastructure	• Conducive institutional setup • Community and leadership commitment • Natural resources • Capacity building strategy
Production and Productivity	
• Erratic rainfall, degraded land, climate change, diseases and pest • Business as usual • Culture - limited working hours by farmers • Limited technology and input use • Lack of pre and post-harvest technologies • Lack of technical staff commitment and capacity • Lack of value chain integration • Challenge of Agriculture Transformation Plan investment areas	• Current institutional setup • Diversified agro ecologies/ water potential • Increased number of skilled workers/expansion of school/education • Diversified germplasm • Improved technology adaptation rates

• Limited market access	
Rural Commercialization	
• Lack of market oriented production • Lack of market infrastructure/road access • Need for current market information • Lack of inputs	• Committed government • International support • Diversified agro ecology • Availability of ample and productive human resources • Proximity to market opportunities
Natural Resource Management	
• Poor utilization of natural resources • Shortage of finance • Lack of awareness • Lack of technology • Free grazing • Moisture scarcity • Land use policy implementation problem	• Availability of productive work force • Awareness and readiness of the community • Availability of untapped natural resources • Peace and stability • Impact of previous interventions

At the conclusion of the training, participants developed action plans and indicators to measure their progress over the next quarter. Trainees also selected representatives from each participating office (including the Tigray BOA, Tigray Agricultural Marketing and Promotion Agency, the Tigray Agricultural Research Institute, and the MOA Women's Affairs team) to serve as focal points for future communications with USAID-CIAFS. These point people will be responsible for monitoring the application of the skills learned in the training as well as evaluating the results of their action plans.

Training Ethiopian "agents of change," to advocate for policy reform to improve the enabling environment and lead transformation in the agriculture sector is integral to the USAID-CIAFS capacity building strategy. This training is part of the project's efforts to support the FTF objective of improving agricultural productivity through enhanced human and institutional capacity development for increased sustainable agriculture sector productivity.

Since USAID-CIAFS began its leadership training program in May 2011, the project has trained **542 public sector agents of change** in Amhara, Oromia, Tigray, and the MOA and an additional **281 agents of change from the private sector and civil society**. In the next quarter, USAID-CIAFS will expand leadership training to the BOA in SNNP region to continue its focus on enhancing the capacity of local agents of change.

Photo by Fintrac Inc.

Participants at the Tigray Leadership Training , which included nearly 40 senior managers from the Tigray Bureau of Agriculture this quarter.

3.2 DISSEMINATION OF BEST PRACTICES, TECHNOLOGIES, AND INNOVATIONS

USAID-CIAFS partners with the Ethiopian Association of Agriculture Professionals (EAAP) to organize a national workshop on large scale commercial agriculture

USAID-CIAFS, in collaboration with the Ethiopian Association of Agriculture Professionals (EAAP), organized a national workshop for 95 participants on "The Role and Prospects of Large Scale Commercial Agriculture in Meeting Ethiopia's Growth and Transformation Plan."

The workshop served as a forum for researchers, development agents, investors, government representatives, and policy-makers to discuss the role of large-scale farms in the development of Ethiopia's agricultural sector.

Professor Tekalign Mamo, State Minster and Advisor to the MOA, opened the workshop and Jason D. Fraser, Deputy Mission Director USAID/Ethiopia, delivered the keynote address. Leading researchers presented papers on commercial agriculture in Ethiopia, including USAID-CIAFS consultant Tesema Setotaw, who presented the findings and recommendations of his research on contract farming in Ethiopia. Key recommendations from the contract farming analytical study include the following:

- Develop a legal framework to enforce farming contracts.
- Create mechanisms to secure/guarantee land use rights for commercial farms. (Currently, commercial farms do not have guaranteed rights to use land; the Ethiopian government can take their land at any time.)
- Creating standardized and transparent procedures for contract registration.

Other major issues discussed in the workshop were:

- Lessons learned from past and current experiences in operating large-scale farms in the country.
- Enabling environment for large-scale commercial agriculture: supply of natural resources, policies, legal and regulatory framework, and access to land and soft-loans.
- The interface between smallholder agriculture commercial agriculture.
- Opportunities and challenges for agricultural university graduates to be involved in large-scale commercial agriculture.

USAID-CIAFS continues to reach agriculture sector stakeholders with Tools for Transformation briefs

USAID-CIAFS continued distributing technical bulletins through the Tools for Transformation series to agriculture sector stakeholders and agents of change each month. The monthly series promotes agricultural best practices that have proven effective in the Ethiopian context. They are distributed to stakeholders via email, as well as posted at www.ethiopia-ciafs.org. USAID-CIAFS has reached more than 200 stakeholders with 15 editions of the series to date. The *Tools for Transformation* briefs distributed in this quarter were:

- Improved Grain Varieties: Impact through Research and Development
- Water Harvesting : Impact through a Conservation Practices
- Maize Production: Impact through Improved Agronomic Practices

3.3 DEMAND-DRIVEN ANALYSES FOR POLICY DIALOGUE

USAID-CIAFS completes seed certification study

The Ethiopian government recently reaffirmed its commitment to improving the enabling environment for agriculture at the G8 Summit in May 2012, where the New Alliance for Food Security and Nutrition was created. This alliance represents a commitment by G8 nations, African partner countries, and private sector partners to lift 50 million people out of poverty over the next 10 years through inclusive and sustained agricultural growth. Under the framework, the Ethiopian government reaffirmed its commitment to taking concrete steps such streamlining seed development, multiplication, and distribution. In line with this emphasis USAID-CIAFS, in collaboration with the Agricultural Transformation Agency (ATA), completed an analytical study on seed certification.

The study assessed current seed certification practices and identified areas where policy change is needed to increase availability of certified seed to satisfy national demand. It examined critical policy challenges related to seed certification to support agriculture growth and poverty reduction, and made recommendations that balance the regulatory interests of the Ethiopian government with the efficiency required by the private sector. The final report included the following recommendations:

1) Establish national standards for seed quality control and certification
2) Create an independent seed certification entity
3) Require seed laboratories to be accredited
4) Require certification of source seed according to clear standards
5) Improve testing of and certification of genetic purity
6) Allow certification of seed multiplied through informal (non-government) programs
7) Centralize the tagging/labelling of certified seed to promote accountability and traceability
8) Ensure post-certification quality control, at the seed distribution and marketing levels
9) Promote higher education in seed technology
10) Capacity building of MOA and BOA staff involved in seed certification
11) Create channels for sector stakeholders to participate in ongoing review of seed quality control and certification regulations and procedures

In the next quarter, USAID-CIAFS will work with the ATA's seed program to support the MOA's agricultural transformation agenda by improving and streamlining current practices in seed development, multiplication, and distribution.

USAID-CIAFS completes analysis of global cotton market

Throughout the life of the project, market specialists monitor market opportunities for priority crops, recommending varieties and value-added products for commercial trials. For regional and export markets, the USAID-CIAFS project draws on analytical support to regularly survey buyers and assess latest trends and interest in new supply sources for agricultural products. During the quarter, USAID-CIAFS conducted a rapid analysis of the global market for cotton to provide sector stakeholders with actionable analysis of past, current, and expected trends in the market place.

The study examined the world market for raw cotton and the various challenges that farmers in Ethiopia face, drawing on trade statistics, historical prices, and other secondary data with primary research on product specifications and trends through its extensive buyer and distributor network. The analysis revealed that overall global demand for cotton lint is slowing with the buildup of stocks and weakening demand for high-priced cotton textiles. Prices are forecast to continue to fall through 2013 and

production is expected to decline 6.4 percent in the 2012/2013 marketing year to 25.33 million MTs. World consumption of cotton is projected to increase slightly in the next year by 3.6 percent to 23.27 million MTs. Although global imports are forecast to decline 18.6 percent due to a 55.2 percent expected drop in Chinese imports, other growth markets still provide opportunities for cotton producers.

While China is the sector's biggest player, growth is beginning to shift to countries in South and Southeast Asia. Bangladesh is the world's fastest growing market for cotton lint and imports are expected to jump another 14 percent in 2012/2013. Indonesia, also a top growth market, imported an average of 19 percent of its cotton supply from African countries between 2006 and 2011 and its total imports are expected to rise by 6 percent in 2012/2013. These two countries' textile industries are becoming more competitive in the global market due to cheaper labor and inputs and their demand for cotton will continue to grow.

Ethiopia faces a challenge in entering these competitive export markets. The country has enormous potential to increase cotton production. The government identified cotton as a key commodity and production jumped 32 percent in 2011/2012. However, since production was previously limited and exports of cotton lint were restricted, Ethiopian supply to the international markets is known to be sparse and unreliable. Private capital investment will be low as long as demand remains at current levels and government policies impede potential exports. Without additional investment, the industry will be unable to address its constraints and expansion will slow.

Cotton production to supply Ethiopia's domestic textile industry faces similar challenges. Demand from domestic mills declined in 2012, leaving producers with a surplus supply and no other sales outlet until the export ban was lifted. If cotton textile products become more affordable due to increased supply, global demand could shift and this industry may see some growth. In this case, Ethiopian producers will profit from increasing production to supply domestic textile mills.

3.4 MONITORING AND EVALUATION SUPPORT

USAID-CIAFS delivers Data Management and GIS training

USAID-CIAFS, in collaboration with GeoMark Systems Plc, trained 60 professionals (23 percent women) from the Ministry of Agriculture and the Oromia Bureau of Agriculture in Data Management and GIS. The project delivered the 10-day training to Oromia professionals from October 19 to October 28, 2012 and the MOA training between October 29 and November 8, 2012. The majority of the participants were from the Planning and M&E Department and the training is believed to improve their data management and analysis capacity.

The main training topics included the basics of GIS: mapping and visualization, geospatial data management, field data collection using GPS, geodatabase development, and management of integrated data. Trainees used their newly acquired knowledge and skills to generate usable graphics and data on topics such as watershed management, natural resource conservation, and agriculture and food security. They then presented their findings to fellow trainees and guests from the MOA.

The Data Management and GIS training proved to be instrumental in filling the capacity gaps and the MOA and is critical to decision makers and experts that must make judicious use of resources and time. When participants apply the knowledge and skills they have learned in their work, they are able to facilitate the exchange of quality and timely information.

USAID-CIAFS provides training to Implementing Partners and USAID staff on the use of the FTFMS

Hands-on training on the use of USAID/Ethiopia's Feed the Future Management System (FTFMS) is an ongoing activity for USAID-CIAFS, as new FTF partnerships are established and additional M&E staff is recruited. The training provides an overview of the FTFMS, and orients users on the levels of use, reporting responsibilities, data entry parameters, and reporting tools.

This quarter, USAID-CIAFS provided training to five M&E specialists and one chief of party from three new FTF implementing partners (CNFA, Mercy Corps, and Peace Corps). The project also delivered training to M&E technical advisors from Save the Children, USAID-PLI II project, and SCUS.

USAID-CIAFS also delivered the training to 12 CORs/AORs and senior staff from USAID/Ethiopia on October 31, 2012.

USAID-CIAFS delivers a planning and M&E sensitization workshop to MOA/BOAs

At the request of the MOA, USAID-CIAFS organized workshop to sensitize MOA and BOA staff on the use of M&E data for planning, October 1-2, 2012 in Adama, in collaboration with the MOA and the World Bank. The workshop brought together 92 senior planning and M&E managers from the four regional BOAs (Amhara, Oromia, SNNPR, and Tigray) and the federal MOA to discuss ways to:

- Create mechanisms for coordination between program M&E staff in the BOA with the federal MOA.
- Harmonize M&E systems, data management, indicators, and planning
- Standardize MOA reporting templates across all regions
- Standardize data collection and reporting for consistency and validity between agencies of the government of Ethiopia, including the Central Statistics Agency, MOA, and Bureaus of Agriculture

USAID-CIAFS conducts data quality assessment (DQA) for FTF projects

In November, USAID-CIAFS conducted data quality assessments (DQAs) for FTF projects in Ethiopia. The objective of each DQA is to improve data quality and determine the extent to which data can be relied on for decision-making and reporting. USAID-CIAFS's three-member team conducted DQAs for three FTF projects: WATER project, PLI II, and AMDe, implemented by IRC, SCUS, and ACDI/VOCA respectively. The team evaluated eight indicators, seven of which are outcome level indicators and one of which is an output indicator.

USAID-CIAFS and USAID/Ethiopia organizes FTF partner coordination workshop

On December 20, USAID-CIAFS collaboration with USAID/Ethiopia to host a FTF partner coordination workshop to share their approved project work plans in order to ensure coordination and maximize potential synergies to improve performance, impact, and the potential for sustainable change. Dennis Weller, USAID/Ethiopia Mission Director, opened the workshop, and Mark Carrato, USAID/Ethiopia EG&T Deputy Office Chief, delivered updates on the status of FTF implementation. Representatives of FTF projects each presented their work plans, followed by a discussion of opportunities for coordination with other projects and implementers.

Gary Robbins from USAID/Ethiopia moderated the final discussion, highlighting the importance of using behavior change communications (BCC) methods to achieve USAID's objectives under FTF, especially related to nutrition. He also commented on the challenges to date in implementing the mission's push-pull model of development, namely in meeting FTF targets, the issue of attribution, selecting indicators to

measure, and private sector engagement, among others. The issue of attribution, which has long been a concern for USAID, also generated significant discussion among participants.

The findings of a recent cost benefit analysis of selected FTF projects were discussed. The report showed that returns on development investment were lower than anticipated. USAID emphasized the importance of selecting appropriate indicators and targets, and improving reporting to ensure that projects capture their results and impacts.

The workshop closed with a reminder from USAID for implementing partners to continue the discussion and update their work plans to incorporate coordination activities.

USAID-CIAFS organized the workshop for the USAID, and compiled the proceedings and shared it with the USAID.

USAID-CIAFS begins impact assessment of private sector training

USAID-CIAFS measures the effectiveness of its capacity building programs by conducting impact assessments six months after delivering training. The main objective of the assessment is to gauge the relevance and effectiveness of the training, and to identify any improvements in incomes, operations or procedures that trainees attribute to the training.

During the quarter, USAID-CIAFS initiated the training impact assessment of private sector training that was provided in two modules: training on competitiveness, quality, grades and standards; and training in leadership and entrepreneurship. So far, the project finalized the terms of reference, developed and pre-tested the survey questionnaire and interview checklist for the assessment and collected the data from the four regions and Addis Ababa. The project is now doing the analysis and expects to finalize the report in February 2013.

4. SUMMARY OF PLANNED ACTIVITIES FOR NEXT REPORTING PERIOD

4.1 STRATEGIC CAPACITY BUILDING

- Leadership training for SNNP, Oromia, and Amhara BOA staff.

4.2 DISSEMINATION OF BEST PRACTICES, TECHNOLOGIES, AND INNOVATIONS

- Best practice communications tools (print and electronic)
- Award Climate Change Adaptation grants
- Conduct agricultural best practices site visits for MOA and private sector representatives
- Disseminate three editions of the *Tools for Transformation* series.

4.3 DEMAND-DRIVEN ANALYSES FOR ENABLING ENVIRONMENT

- Begin competitiveness studies on chickpea, meat, milk, and cotton
- Public/private dialogue workshop on seed certification

4.4 CLIMATE CHANGE AND ADAPTATION

- Award climate change curriculum development grants
- Award climate change best practice dissemination grants

4.5 PLANNING, MONITORING AND EVALUATION

- Data management training for Federal MOA M&E staff
- Organize quarterly FTF partner coordination meeting
- Conduct semi-annual planning workshop for the MOA
- Provide FTF Management System training to partners

4.6 COMMUNICATIONS

- Produce and disseminate three success stories
- Produce and disseminate next issue of Agents of Change journal
- Produce and disseminate final report on best practice study tour
- Update Web site

ANNEX I: THE MARKET FOR COTTON

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THE MARKET FOR COTTON

Market Survey #02

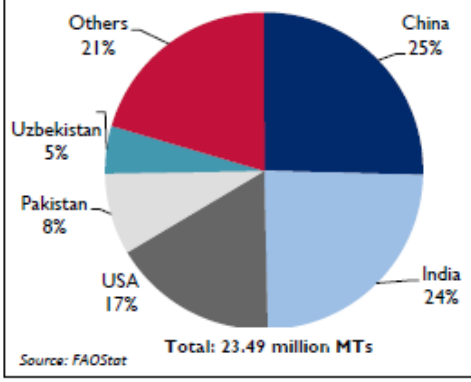
INTRODUCTION

Cotton lint, the boll of soft material picked from the plant and then separated from the cottonseed during the ginning process, is one of the most widely used fibers in the world. Cotton is cultivated in more than 80 countries. The majority of cotton production is spun into yarn and used in the textile industry to manufacture clothing such as t-shirts and jeans, and home furnishings such as sheets and towels. However, cotton fiber is also employed in other common items such as bookbinding, gauze bandages, and fishing nets. Cottonseed oil is used as cooking oil and in soap; the seed is used as cattle feed; and the fuzz leftover on seeds after ginning, called cotton linters, is an ingredient in paper and cosmetics.

Photo by Harvest Public Relations

The cotton plant (*Gossypium*) is a shrub usually about 1 to 1.5 meters in height and can be grown under irrigation or rain-fed production. The two most common commercially produced species, upland cotton (*Gossypium hirsutum*) and extra-long staple cotton (*Gossypium barbadense*), make up about 95 percent of world production. Upland cotton, native to Mexico, measures from 22.23 to 33.34 millimeters (mm) in length.[1] Extra-long staple (ELS) cotton, also known as pima cotton, with origins in Peru, typically has a staple length between 31.75 and 39.69 mm. ELS cotton is often used in specialty, high-value products like high-end textiles and apparel, and fine sewing thread. Its price is frequently higher than upland cotton's, in the past five years averaging a premium of more than 35 percent.[2] Two less common commercial species, tree cotton (*Gossypium arboreum*), native to the tropics and subtropics of Asia, and Levant cotton (*Gossypium herbaceum*), with Arabian and African origins, are shorter in length: between 12.7 and 25.4 mm. Although most commercialized cotton is white, it can also be naturally colored in shades of green, brown, and pink.

Figure 1: World Production of Cotton Lint
Share by Volume, 2010



Total: 23.49 million MTs

Source: FAOStat

This market study will focus on cotton lint, also referred to as raw cotton, or not carded or combed cotton.

[1] "Classification of Cotton." Cotton Incorporated: http://www.cottoninc.com/fiber/quality/Classification-Of-Cotton/
[2] National Cotton Council, "A" Index compared to ELS Spot Price 2007-2012: http://www.cotton.org/econ/prices/monthly.cfm

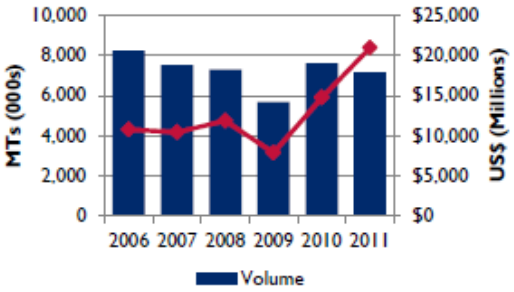
PRODUCTION

From 2006 to 2010, global production of cotton fell narrowly by 4 percent from 24.59 million metric tons (MTs) to 23.49 million MTs.

In 2010, the largest producer of cotton lint was **China** at 5.97 million MTs, with 25 percent of global share by volume. Following China were **India** at 5.69 million MTs (24 percent), **United States** at 3.94 million MTs (17 percent), **Pakistan** at 1.94 million MTs (8 percent) and **Uzbekistan** at 1.13 million MTs (5 percent). As late as 2006, the US was the second largest cotton producer, but the increasing area under cotton production and prevalence of high-yielding hybrid seeds in India enabled it to increase production and surpass the US in volume of cotton produced.

African cotton made up a little more than 5 percent of total world production in 2010 at 1.24 million MTs. **Burkina Faso** is the largest cotton producer within the continent at 190,000 MTs in 2010. **Ethiopia's** cotton production is on the rise, totaling 79,421 MTs in the 2011/2012 market year (September-August).[3] This is a 32 percent increase over the previous year, largely due to focused interest by the government on cotton production to fuel its textile and apparel sector, which is a key export industry targeted in its five-year Growth and Transformation Plan. The plan's goal is to increase cotton production levels to 193,000 MTs annually and textile exports to $100 million annually (2011 exports totaled $23 million) by 2015.[4] Assuming constant yields, land under cultivation in Ethiopia would need to increase by 160,000 hectares to meet the target production levels.

Figure 2: World Imports of Cotton Lint

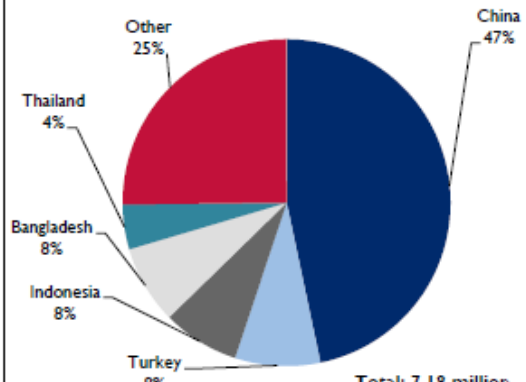


Source: UN Comtrade, EUROSTAT, USDA

MARKETS

From 2006 to 2011, global import volumes declined from 8.24 million MTs to 7.18 million MTs (or by 13 percent), while equivalent values rose from $10.79 to $20.97 billion (or by 94 percent). Volumes and values of imported cotton bottomed out in 2009 as a result of low demand for cotton products during the recession. The global financial crisis and increased production costs due to high commodity prices in 2010 led to the reduction of area under cotton production and global cotton stocks. This, and unfavorable weather conditions in major producing countries such as China and Pakistan, caused a shortage in 2011 during which cotton

Figure 3: World Imports of Cotton Lint Share by Volume, 2011



Source: UN Comtrade, EUROSTAT, USDA

[3] Ethiopian Ministry of Agriculture and Central Statistics Authority (not confirmed by FAS Addis Ababa): http://static.globaltrade.net/files/pdf/20120729215043372.pdf

[4] "Ban on Cotton Exports Lifted." USDA Foreign Agriculture Service, July 2012: http://static.globaltrade.net/files/pdf/20120729215043372.pdf

prices soared and import values increased by 42 percent in one year.

China is the world's number one consumer of cotton lint, and while it is also the largest producer, it is becoming more dependent on imports. In 2010 it was only able to produce 68 percent of the cotton needed to fulfill domestic demand, a decrease from 81 percent the previous year.[5][6] From 2006 to 2011, Chinese imports declined from 3.6 million MTs to 3.4 million MTs while values increased from $4.9 billion to $9.5 billion (95 percent). Imports severely decreased in 2009 due to the global financial slowdown and lack of demand for cotton products, but increased recently as China worked to recoup its stocks and recover from bad weather and low production levels. China's share in the global import market grew from 44 to 47 percent between 2006 and 2011. Volume and value trend details can be found in Figure 9 in the appendix of this report. Cotton imports are used as inputs to fuel the country's massive textile industry, which supplies a third of the world's textile and apparel exports.[7] It is projected that by the end of the 2012/2013 season, with a stocks-to-use ratio of 102 percent, China will have enough cotton for 12 months of use.[8] The ratio has more than doubled from the 2008/2009 season. The availability of these stocks will play a large role in cotton prices over the next year.

India is the world's second largest cotton producer and one of its largest consumers. Accounting for international trade flows and domestic production, India consumed an average of 4.25 million MTs per year between 2008/2009 and 2011/2012.[9] However, it is a net exporter and its textile industry, the second largest in the world with a 3.9 percent share in global trade, is supplied mostly through domestic production.[10] Between 2006 and 2011, it became less dependent on imports of raw cotton and volumes declined from 69,082 MTs to 41,417 MTs (or by 40 percent), while values increased by just 16 percent from $155.94 million to $180.97 million. India's stocks-to-use ratio is expected to decline from 60 percent in the 2008/2009 season to 40 percent in 2012/2013.[11]

Turkey is the world's second largest cotton importer after China and the seventh largest producer. From 2006 to 2011, import volumes decreased from 753,715 MTs to 603,950 MTs due mainly to increased domestic production. At the same time, import values rose from $970 million to $1.8 billion (or by 91 percent). Turkey's share of the world import market has dropped from 9 to 8 percent since 2006. In 2012 it is expected that domestic production of cotton will decline and imports will increase next year. See Figure 10 in the appendix for details on import trends. The US dominates Turkey's import market, its share growing from 55 percent in 2006 to 69 percent in 2011. Greece is Turkey's second largest supplier, contributing just 6 percent of total imports in 2011, down from 22 percent in 2006. Turkey's stocks-to-use ratio is projected to decrease slightly to 30 percent in the 2012/2013 season, from 32 percent in 2008/2009.[12]

In 2011, **Bangladesh** surpassed Indonesia as the world's third largest cotton importer by volume. Between 2006 and 2011, import volumes increased from 123,920 MTs to 555,977 MTs. Values rose at an even faster rate over the same time period from $151.41 million to $991.91 million. See Figure 11 in the appendix for details. Since 2006, Bangladeshi cotton imports averaged growth of 51 percent per year and its share of world imports

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[5] Cotton consumption is the processing of the raw fiber into yarn or other material. Fintrac calculation based on total domestic production (FAOStat) and imports less exports (UN Comtrade).
[6] Fintrac calculation based on 2010 consumption (see above) and production data.
[7] "China's Agricultural Trade: Competitive Conditions and Effects on U.S. Exports." USITC, March 2011: http://www.usitc.gov/publications/332/pub4219.pdf
[8] USDA Foreign Agriculture Service, http://www.fas.usda.gov/psdonline/circulars/cotton.pdf
[9] Cotton Inc., http://www.cottoninc.com/corporate/Market-Data/MonthlyEconomicLetter/pdfs/English-pdf-charts-and-tables/World-Cotton-Consumption-Imp.pdf
[10] "Cotton Fact Sheet: India." International Cotton Advisory Committee, May 2009: http://www.icac.org/econ_stats/country_facts/e_india.pdf
[11] "Cotton Fact Sheet: India." International Cotton Advisory Committee, May 2009: http://www.icac.org/econ_stats/country_facts/e_india.pdf
[12] "Cotton Fact Sheet: India." International Cotton Advisory Committee, May 2009: http://www.icac.org/econ_stats/country_facts/e_india.pdf

jumped from 2 to 8 percent. India is Bangladesh's largest supplier, contributing 65 percent of all imported cotton in 2011 (up from 33 percent in 2006). The US is the second largest supplier, its share in the market falling from 24 percent in 2006 to 16 percent in 2011. Other major trade partners include Australia (6 percent of imports in 2011) and Pakistan (4 percent of imports in 2011).

Indonesia is the world's fourth largest importer of cotton lint by volume, almost completely reliant on outside sources to supply its domestic textile industry, producing only 0.5 percent of the cotton it consumes.[13] From 2006 to 2011 import volumes increased 18 percent from 463,205 MTs to 546,997 MTs and corresponding values increased by 188 percent from $620 million to $1.79 billion. See Figure 12 in the appendix. Indonesia's share of world imports rose from 6 percent in 2006 to 8 percent in 2011. The US is Indonesia's largest supplier, its share in the market declining slightly between 2006 and 2011 from 34 to 32 percent. Australia and Brazil were the second and third largest suppliers by volume, contributing 81,674 MTs (or 14.9%) and 79,699 MTs (or 14.5%) respectively to the market in 2011.

In 2011, **Thailand** was the world's fifth largest importer of cotton lint. From 2006 to 2011, import volumes declined from 422,042 MTs to 319,239 MTs (or by 24 percent) while values, on the other hand, rose from $570 million to $1.12 billion (or by 97 percent). See Figure 13 in the appendix for details. Its share of the import market decreased over the same time period from 5 to 4 percent.

Pakistan is the world's fourth largest producer with 8 percent of global production by volume in 2010. It has traditionally been a top importer as well, but import volumes decreased between 2006 and 2011 from 351,659 MTs to 248,665 MTs (or by 29 percent). Values increased over the same time period from $400 million to $825 million (or by 106 percent). See Figure 15 in the appendix for details.

European Union (EU) import volumes of raw cotton declined since 2006 from 355,871 MTs to 174,597 MTs in 2011. Corresponding values increased from $515 million to $597 million (or by 15 percent). Most European textile companies outsource their manufacturing operations to take advantage of lower costs in other countries. The top three cotton lint importing countries, **Italy**, **Germany**, and **Portugal**, have all seen declines in import volumes since 2006 and values are not increasing at the same rates as countries in other regions. Italy's import volumes dropped from 140,833 MTs to 59,618 MTs and its import values dropped slightly from $215.1 million to $214.7 million (or by less than 1 percent). In the same time period, German import volumes decreased from 62,470 MTs to 56,631 MTs (or by 9 percent) and values increased from $90.1 million to $178.6 million (98 percent). In Portugal, import volumes fell from 61,536 MTs to 28,103 MTs (54 percent) and values rose slightly from $84.9 million to $92.4 million (9 percent). See Figure 16 in the Appendix for details on EU import trends. In 2011, the EU imported mostly from the US (12%), Turkey (11%), Pakistan (7%), and Brazil (6%).

Within Africa, **Egypt** is the largest import market for raw cotton. From 2006 to 2011, Egyptian cotton imports declined from 108,862 MTs to 65,317 MTs (40 percent) largely due to an import ban effective from October 2011 to March 2012 in order to ensure purchase of the domestic cotton production.[14] [15] **Morocco** is the continent's second largest importer with imports increasing from 33,747 MTs in 2006 to 36,578 MTs in 2011(8 percent). **South Africa**, the third largest cotton lint importer in Africa, imported 54,649 MTs in 2006 and 27,216 MTs in 2011, a decline of 50 percent.

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[13] "Indonesia Cotton and Products Annual Report 2011." USDA Foreign Agriculture Service, April 26, 2011: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Jakarta_Indonesia_4-26-2011.pdf

[14] Source for African Import Data: USDA Foreign Agriculture Service. Years represent market years (August-July), i.e. 2006 refers to 08/2006 to 07/2007.

[15] "Cotton Import Ban Lifted." USDA Foreign Agricultural Service, March 20, 2011: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Egypt%E2%80%99s%20Imports%20Cotton%20Ban%20Lifted_Cairo_Egypt_3-20-2012.pdf

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Table 1: World Imports of Cotton

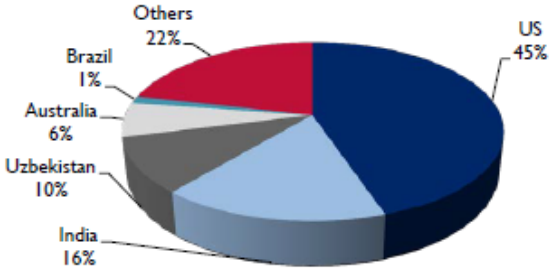
Importers	2006		2007		2008		2009		2010		2011	
	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs	$000s	MTs
China	$4,866,554	3,641,417	$3,476,986	2,458,396	$3,490,828	2,110,392	$2,113,792	1,526,042	$5,654,557	2,836,073	$9,466,066	3,362,635
Turkey	$969,759	753,715	$1,277,700	946,213	$1,000,136	613,435	$1,002,940	753,164	$1,720,010	889,165	$1,849,973	603,950
Bangladesh*	$151,541	123,920	$157,062	116,100	$480,829	329,894	$345,559	264,677	$766,856	470,313	$991,909	555,977
Indonesia	$619,895	463,205	$800,103	583,459	$1,190,702	720,814	$765,359	570,902	$1,148,391	613,036	$1,785,830	546,997
Thailand	$569,935	422,042	$536,240	393,125	$715,337	435,889	$484,593	349,701	$729,557	383,746	$1,119,950	319,239
Mexico	$489,639	388,213	$461,927	346,696	$538,959	344,255	$411,904	300,784	$630,636	321,729	$834,619	264,488
Pakistan	$400,439	351,659	$885,003	629,481	$1,164,396	773,806	$480,403	316,126	$760,169	375,357	$824,773	248,665
EU**	$515,047	355,871	$510,593	338,746	$411,707	229,773	$245,171	150,251	$336,626	164,073	$596,883	174,597
USA	$13,328	6,063	$7,706	3,661	$4,559	1,787	$118	83	$1,408	428	$15,702	3,624
Other	$2,190,516	1,735,167	$2,342,411	1,705,399	$2,886,922	1,744,648	$2,049,508	1,448,426	$3,010,531	1,568,645	$3,482,709	1,096,736
Total	**$10,786,654**	**8,241,272**	**$10,455,731**	**7,521,275**	**$11,884,376**	**7,304,692**	**$7,899,347**	**5,680,157**	**$14,758,741**	**7,622,565**	**$20,968,415**	**7,176,908**

*Sources: UN Comtrade, Harmonized Code: 520100 - Cotton, not carded or combed; *data estimates based on World exports to Bangladesh; **EUROSTAT, excludes intra-EU trade; USDA-GATS*

SUPPLIERS

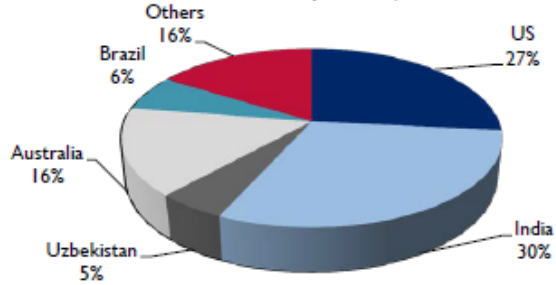
The **US** is the world's largest exporter and third largest producer, accounting for 17 percent of total production in 2010. Between 2006 and 2010 production in the US fell from 4.70 million MTs to 3.94 million MTs. Market factors, such as high labor costs, caused a decline in domestic mill use to process cotton, and as a result the raw material is mostly exported. A total of 75 percent of production was exported in 2010, making up almost 40 percent of world exports by volume. Between 2006 and 2011, US export volumes also decreased from 7.01 million MTs to 5.52 million MTs and values increased from $9.00 billion to $16.77 billion (or by 86 percent). Although the US's share of the Chinese market is declining, China is still the number one buyer of American cotton, importing 16 percent of total US exports in 2011 (down from 23 percent in 2006). Other major importers of US cotton include Turkey (7 percent in 2011), Mexico (5 percent), and Indonesia (3 percent). Vietnam and Brazil are emerging trade partners for US cotton exporters, increasing their shares of US cotton

Figure 4: Chinese Imports of Cotton
Market Share by Volume, 2006



Source: UN Comtrade, USDA

Figure 5: Chinese Imports of Cotton
Market Share by Volume, 2011



Source: UN Comtrade, USDA

exports by 2 and 1.5 percent, respectively, between 2006 and 2011.

India is the world's second largest producer and exporter of cotton lint. Both production and exports rose in recent years. India's production rose 48 percent between 2006 and 2010 and export volumes increased 117 percent between 2006 and 2011 from 1.72 million MTs to 3.74 million MTs while values spiked 250 percent from $1.94 billion to $6.78 billion. The top three importers of cotton lint from India – China, Bangladesh, and Pakistan – make up more than 45 percent of total exports. China is by far the number one destination for Indian cotton, accounting for 27 percent of all exports in 2011 (down from 30 percent in 2006). Since India's cotton production is up, it has been able to increase its share in the Chinese cotton market while also expanding its exports to other countries. In 2010 it surpassed the US and became China's top supplier of raw cotton. Bangladesh has played an increasingly important role as the second largest market for Indian cotton exports in 2011, buying 10 percent of India's exported cotton (up from 2 percent in 2006). Pakistan is the third most important and expanding market, increasing its claim on Indian cotton from 5 to 8 percent over five years. Despite its successes in growing trade, India has a history of enacting bans on cotton exports. The last ban, effective March 6, 2012, caused an immediate 6 percent increase in prices in ICE Futures U.S. index, but lasted only six days before it was repealed following protests from producers.[16]

Australia is the world's third largest exporter and its seventh largest producer. Production rose 197 percent from 301,400 MTs in 2006 to 897,700 MTs in 2010.[17] Export volumes also increased from 578,110 MTs in 2006 to 802,946 MTs in 2011 (39 percent) while values increased from $762.31 million to $2.48 billion (105 percent) over the same time period. China is the primary and fastest growing market for Australia, buying 63 percent of all exported cotton in 2011 (up from 36 percent in 2006). Australia strengthened its position in China's market and is now its third largest supplier, accounting for 16 percent of the market share by volume in 2011. Secondary markets for Australia include Indonesia, where it is the second largest supplier, and Thailand. However, the portion of Australian cotton exports destined for Indonesia has dropped from 24 to 10 percent and its share in the Indonesian import market is down from 20 to 15 percent. Exports to Thailand have also dropped from 17 percent of total cotton exports in 2006 to 8 percent in 2011. Emerging markets for Australia include Bangladesh, who was not a major trading partner until 2010, but now accounts for 4 percent of all exports. Australia is Bangladesh's third largest supplier.

Brazil is the world's number six producer of cotton lint and its number four exporter. Despite spikes in productivity in 2007 and 2008, Brazil's production remained constant from 2006 at 956.80 million MTs to 2010 at 966.00 million MTs (a change of less than 1 percent). Exports, however, increased dramatically over the same time period: volumes from 304.50 million MTs to 758.33 million MTs (or by 149 percent), and values from $338.22 million to $1.59 billion (or by 370 percent). Brazil's top buyer is China, which purchased 36 percent of Brazil's exported cotton in 2011 (up from 7 percent in 2006). Brazil's share in China's market has grown from 1 to 6 percent and it is now China's number four supplier. Korea and Indonesia are secondary markets for Brazilian cotton, in 2011 buying 14 percent (up from 11 percent in 2006) and 13 percent (down from 15 percent in 2006), respectively. Turkey represents growth opportunities for Brazilian cotton. Brazil sold 8 percent of all its exports to Turkey in 2011 (up from less than 1 percent in 2006) and is now its number two supplier. Due to Brazil's rapidly increasing production, it is projected to overtake India in exports by 2013.[18]

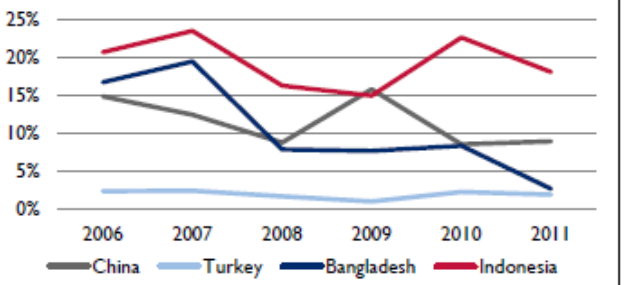
[16] "India Bans Cotton Exports." The Wall Street Journal, March 6, 2012: http://online.wsj.com/article/SB10001424052970203458604577262723464381722.html

[17] Source for Australian Production Data: Australian Bureau of Agricultural and Resource Economic Sciences. Years represent market years (August-July), i.e. 2006 refers to 08/2006 to 07/2007.

[18] "Cotton: World Markets and Trade." USDA FAS, November 2012: http://www.fas.usda.gov/psdonline/circulars/cotton.pdf

Since 2006, African countries' share in the world's top import markets for cotton lint has declined. See Figure 6. The largest African exporter to China is **Burkina Faso**, whose exports in volume to China fell from 145,484 MTs in 2006 to 67,981 MTs in 2011 (or by 53 percent). Burkina Faso is also the largest African supplier of Indonesia, with exports growing from 9,720 MTs in 2006 to 17,424 MTs in 2011 (or by 79 percent). **Egypt**, another large supplier in the region, made up almost half of the African exports to Turkey in 2011 with 5,016 MTs, up 29 percent from 4,877 MTs in 2006.

Figure 6: African Imports, Market Share by Volume



Source: UN Comtrade

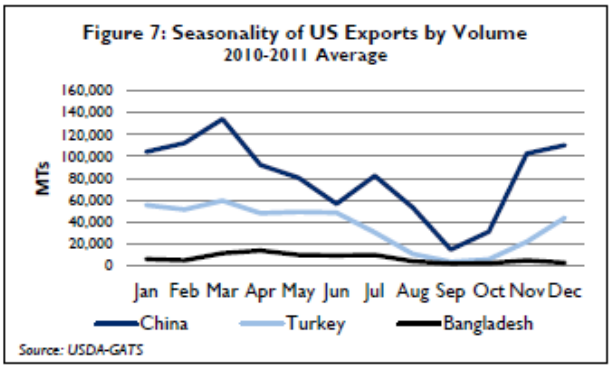
Ethiopia exported limited quantities of cotton over the past two years. Most of the country's cotton feeds directly into the domestic textile market for processing. In 2010 Ethiopia's textile and apparel industry faced a shortage of cotton lint. As a result of this supply gap and high international prices, the government imposed a ban on all cotton lint exports from October 2010 to March 2012.[19] A sharp increase in cotton production in 2012 coincided with weaker demand from the Ethiopian textile industry, which is suffering due to the difficult economic situation in Europe and harsh competition from China and other countries. As of July 2012, the Ethiopian textile companies had only purchased about 22,000 MTs of cotton lint, leaving producers with a surplus of more than 50,000 MTs that they were unable to sell.[20] Furthermore, due to stringent export policies remaining in place after the ban was lifted, producers have only been able to export a total of 183 MTs of cotton lint, for a total of roughly $285,444. This number is down from the 2010/2011 marketing year when cotton export values were around $500,000 and is less than 3 percent of levels in 2009/2010. For more detailed information regarding the value of Ethiopian Cotton Exports, see Table 2 in the appendix. To further extend production, the Ethiopian Ministry of Agriculture has extended a $20 million line of credit to cotton farmers that can be accessed through contracts with domestic textile companies that will process the raw cotton into yarn and garments for export.[21]

The Ethiopian government has identified 2.6 million hectares within the country that are ideal for cotton production, equal to Pakistan, the world's fourth largest producer. Currently, only about 111,886 hectares are being used to grow the crop, an increase from 80,000 the year before. Industry experts said that two main upland cotton varieties, Deltapine 90 and Stam 59A, dominate production. Deltapine 90 makes up 80 percent of both irrigated and rain-fed production in the country and the mean staple length is between 26 and 30 mm. The staple length is a strong indicator for pricing; the longer the staple, the higher the potential market price. The principle production areas include the Awash Valley, Humera, Metema, Arbaminch, Wolayita, Abaya, Woyto, Omorate, Gabella, Bengshangul, and Abodo. The planting and harvesting seasons vary by region. In general, planting takes place between late April and mid-August and harvest occurs between early November and mid-January.

[19] "Ban on Cotton Exports Lifted." USDA Foreign Agriculture Service, July 6, 2012: http://static.globaltrade.net/files/pdf/20120729215043372.pdf
[20] "Ethiopia: Ban on Cotton Exports Lifted." USDA Foreign Agriculture Service: http://static.globaltrade.net/files/pdf/20120729215043372.pdf
[21] "Ethiopia: Ban on Cotton Exports Lifted." USDA Foreign Agriculture Service: http://static.globaltrade.net/files/pdf/20120729215043372.pdf

SEASONALITY

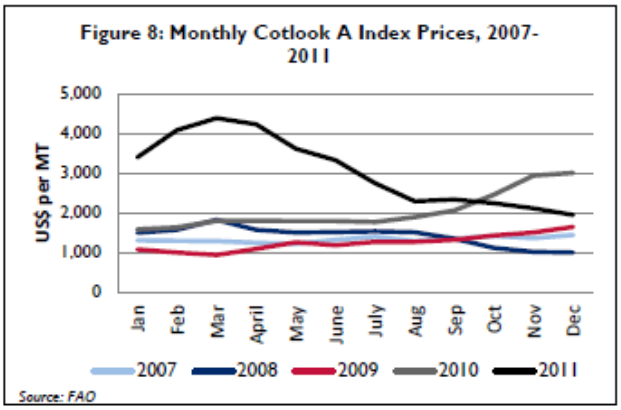
The US is a principle supplier for the top three global importers of cotton lint. Based on US exports to China, Turkey, and Bangladesh during 2010 and 2011, seasonality of cotton imports fluctuates with cotton production and harvests in the importing countries.



In China, imports fall to their lowest levels in September, the middle of harvest season. Turkey's harvest season, September through November, also correlates with its lowest import numbers of the year. Bangladesh's cotton imports are less affected by seasonality because their relatively low domestic production does not cause fluctuations in demand.

PRICES

The Cotlook A Index is the standard pricing tracker within the cotton industry that captures Cost, Insurance, and Freight (CIF) prices for raw upland cotton in the international market.[22] It averages the five cheapest quotations from a group of heavily-traded cottons that, because of their competitive prices, are likely to be the most traded by volume that day. Industry experts cite the local price of Ethiopian cotton for the past two seasons at an average of about 7 to 10 cents per kilogram less than the Cotlook A Index price.[23]



Prices peaked at $4,386 per MT in March 2011, a 143 percent increase in one year, from $1,802 in 2010, which shook the textile industry. The steep rise in prices was due to a lack of cotton supply caused by several factors. Demand for cotton declined during the recession and as a result production was low. Adverse weather conditions in China and severe flooding in Pakistan, two of the world's largest producers, caused 6 and 9 percent drops in production levels respectively, and world stocks declined after the 2009/2010 season to 8.9 million MTs. In addition, India, the world's second largest producer, began to enforce restrictions on cotton exports to protect its domestic textile market from the escalating prices. The industry reacted to the prices by increasing cotton production and the supply of raw cotton to the market, allowing countries to restock and prices to stabilize. However, insecurity plagues the market as China's stocks continue to rise and the release of these reserves remains uncertain.[24] Since their peak, prices have been on a steady decline, ending September 2012 at $1,533 per MT. Prices are expected to continue their decline through 2013.

[22] The index is based on Middling 1-3/32" quality cotton: http://www.cotlook.com/index.php?action=content&content_id=7
[23] Z. Desalegn, personal communication, December 3, 2012.
[24] "Cotton: World Markets and Trade." USDA FAS, November 2012: http://www.fas.usda.gov/psdonline/circulars/cotton.pdf

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STANDARDS, LAWS AND REGULATIONS

Tariff and Trade

China has a "Most Favored Nation" applied duty rate of 40 percent and general duty rates of 125 percent on cotton imports, resulting in a competitive disadvantage for Ethiopian cotton as a non-member of the WTO. [25] **US**, **EU**, **Turkey**, **Bangladesh**, **Thailand**, **Mexico**, and **Pakistan** imports of cotton have a zero percent tariff duty rate. **Indonesia** has a zero percent tariff duty rate, but collects a value added tax of 10 percent on top of the CIF price.

From October 2010 to March 2012, the Ethiopian government enforced an export ban on all raw cotton in response to a shortage of the fiber in the domestic textile industry in 2010. Due to decreased demand from the textile industry and increased production of cotton lint, the government was forced to lift the ban. However, regulations are still extremely difficult to navigate, requiring exporters to receive permission from the Ministry of Agriculture, the Ministry of Trade, and the National Bank of Ethiopia to send their product abroad.[26]

Grades and Standards

This report focuses on the grades and standards of upland cotton as it is the most commonly commercially produced variety. Although many countries have developed their own set of standards, the Universal Grade Standard distributed by USDA remains the most recognized version and is used in Ethiopia.[27]

The USDA's high-volume instrument (HVI) classification system relies on mechanical instruments to determine the grades of cotton instead of human classers. This system measures the following cotton fiber properties to determine quality:

- ***Color grade*** is determined based on the amount of whiteness (Rd) and yellowness (+b) in the cotton lint. Under ideal conditions, upland cotton is bright white in color. Any dullness of the white color results in deterioration of lint quality and a lower grade. The color grades can be seen in Table 3 in the appendix section of the report.
- ***Fiber length*** is calculated using the average length of the longer half of cotton lint fibers (upper half mean). The longer the staple length is, the more valuable it is in the market. Longer fibers improve both the efficiency of spinning cotton lint and the quality of the yarn after the process.
- ***Micronaire*** measures cotton fineness and maturity, with low micronaire corresponding to fine fiber. Fibers with low micronaire measurements take longer to clean, card, and process without causing damage. They also have a more difficult time absorbing and holding dyes. On the other hand, yarns made with finer fibers tend to be stronger because they are made with more individual fibers.[28]
- ***Strength*** of cotton fiber is the amount of force needed to break a standard sized (called a "tex") bundle of lint between two clamps. See Table 4 in the appendix for details.

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[25] WTO: http://tariffanalysis.wto.org/
[26] "Ethiopia: Ban on Cotton Exports Lifted." USDA Foreign Agriculture Service: http://static.globaltrade.net/files/pdf/201207292150433372.pdf
[27] Implementation of this system is still in process. The Textile Industry Development Institute, which facilitates trade between producers and processors, offers testing services and the Ethiopian Quality and Standard Authority is working to adopt the system. Key challenges in cotton production and marketing in Ethiopia continue to include the "lack of testing, accreditation and establishing quality assurance mechanisms" (Desalegn, Aga 2012).
[28] The ideal micronaire measurement for premium priced cotton is within the range of 37 and 42, while discount range measurements fall below 35 and above 50.

- ***Length uniformity*** is the percentage calculated from the ratio of the mean length of all fibers in the sample and the upper half mean length. Low percentages typically signal that the cotton contains a high concentration of short fibers, which causes processing difficulties and results in lower quality yarn.
- ***Trash*** is the percentage of non-lint materials, such as grass or bark, present on the surface of the cotton, calculated after a video scan.

Other factors that contribute to cotton's grade include its ***leaf grade***, a ranking from one to seven based on a visual estimate of the amount of cotton plant leaves or particles present in the sample; ***preparation***, the process of harvesting, handling, and ginning cotton, which can affect the lint's smoothness or roughness; and the presence of ***extraneous matter***, which can include materials such as spindle twist, sand, dust, oil, seeds, or stems, and is also noted during the classification screening.

Harvesting

The cotton harvest generally takes place about four months after planting and lasts for about two months. During the two-month harvest period, two to three pickings are usually carried out every three to four weeks so that open cotton bolls are not overexposed to the sun, resulting in discoloration and lower quality lint.

The majority of cotton harvesting in the world is done by hand, the main advantage of which is that the pickers can distinguish between opened and unopened bolls; thereby letting them mature before picking and maximizing the harvest. Cotton can also be harvested mechanically through stripping or spindle-picking, but the process is much less efficient. The stripping machine picks all parts of the cotton plant, including unopened bolls and other plant particles. The spindling method is more selective, using barbed spindles to pick cotton from the open bolls. Cotton harvested through these mechanisms retains about 30 percent and 6 percent trash on the surface of the cotton, respectively. Furthermore, growers need to leave space for wider rows and often the quality is lower due to rough handling. Only three countries (the US, Australia, and Israel) harvest exclusively with machines.

Postharvest Handling

After harvest, "seed cotton" can be stored in piles on the ground, in sheds, storage facilities, or trailers as long as it is protected from the weather and ground moisture. It is then processed through a ginning system that consists of drying, cleaning, and de-seeding. To strike a balance between efficiently cleaning and ginning the cotton and maintaining its fiber length, moisture content between 6 and 7 percent is recommended for processing.[29]

The cotton is circulated through dryers to obtain the ideal moisture level and cleaners that remove foreign material such as dirt and leaves, and extractors that remove larger objects like sticks and burs. Finally, the seeds are removed with a saw gin for shorter fiber lengths, a roller gin for longer fiber lengths, or by hand.

Packaging

Although packaging measurements can differ in each country, cotton is generally sold in tightly packed bales. In the US, bale specifications are set by the Joint Cotton Industry Bale Packaging Committee (JCIBPC) of the National Cotton Council and can be seen in Table 5 in the Appendix. Approved wrapping materials may be warp-knitted fabric or woven fabric and include woven polypropylene, polyethylene film bagging, spiral-sewn burlap bagging, and cotton bagging.[30]

[29] "Introduction to a Cotton Gin." USDA & National Cotton Ginners Association: http://www.cotton.org/ncga/techpubs/upload/introduction-to-a-cotton-gin.pdf

[30] 2012 Specifications for Cotton Bale Packaging Materials: http://www.cotton.org/tech/bale/specs/upload/2012SpecsAsApprovedByUSDA-2.pdf

The bags must not contain any salt or other corrosive material that can harm the cotton lint. Bales are often tied with wire or high tensile steel straps. Cotton must be completely covered for protection in the warehouse, and to avoid deterioration, no part of the bale should have moisture content higher than 7.5 percent. Net weight is calculated by subtracting tare weight (e.g. bag, ties) from the total weight of the bale.

OUTLOOK FOR COTTON

Overall, global demand for cotton lint is slowing with the buildup of stocks and weakening demand for high-priced cotton textiles. Prices are forecast to continue to fall through 2013 and production is expected to decline 6.4 percent in the 2012/2013 marketing year to 25.33 million MTs. World consumption of cotton is projected to increase slightly in the next year by 3.6 percent to 23.27 million MTs. Although global imports are forecast to decline 18.6 percent due to a 55.2 percent expected drop in Chinese imports, other growth markets still provide opportunities for cotton producers.

While China is the sector's biggest player, growth is beginning to shift to countries in South and Southeast Asia. Bangladesh is the world's fastest growing market for cotton lint and imports are expected to jump another 14 percent in 2012/2013. Indonesia, also a top growth market, imported an average of 19 percent of its cotton supply from African countries between 2006 and 2011 and its total imports are expected to rise by 6 percent in 2012/2013. These two countries' textile industries are becoming more competitive in the global market due to cheaper labor and inputs and their demand for cotton will continue to grow.

Ethiopia faces a challenge in entering these competitive export markets. The country has enormous potential to increase cotton production. The government identified cotton as a key commodity and production jumped 32 percent in 2011/2012. However, since production was previously limited and exports of cotton lint were restricted, Ethiopian supply to the international markets is known to be sparse and unreliable. Private capital investment will be low as long as demand remains at current levels and government policies impede potential exports. Without additional investment, the industry will be unable to address its constraints and expansion will slow.

Cotton production to supply Ethiopia's domestic textile industry faces similar challenges. The mills' demand has been wavering and this year they left producers with a surplus supply and no other sales outlet until the export ban was lifted. If cotton textile products become more affordable due to increased supply, global demand could shift and this industry may see some growth. In this case, Ethiopian producers will profit from increasing production to supply domestic textile mills.

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REFERENCES

1) "Cotton & Wool" USDA Economic Research Service
http://www.ers.usda.gov/topics/crops/cotton-wool.aspx

2) "Cotton & Wool Outlook" USDA Economic Research Service, October 12, 2012
http://usda01.library.cornell.edu/usda/ers/CWS//2010s/2012/CWS-10-12-2012.pdf

3) "Classification of Cotton" Cotton Incorporated
http://www.cottoninc.com/fiber/quality/Classification-Of-Cotton/

4) "Natural Fibres: Cotton" FAO
http://www.naturalfibres2009.org/en/fibres/cotton.html

5) "*Gossypium arboretum*" University of Connecticut
http://titanarum.uconn.edu/199200355.html

6) "Harvesting and Ginning of Cotton in the World" International Cotton Advisory Council
http://icac.org/cotton_info/speeches/Chaudhry/BW97.PDF

7) "Cotton" UNCTAD
http://r0.unctad.org/infocomm/anglais/cotton/crop.htm

8) "Indian Cotton Production Forecast at a Record 18 million Bales" USDA FAS
http://www.fas.usda.gov/pecad2/highlights/2005/04/india_web_update.pdf

9) "Outlook for World Cotton Supply and Use" International Cotton Advisory Committee, June 26, 2009
http://icac.org/cotton_info/speeches/gruere/2009/eurocoton_june_2009.pdf

10) "China: Center of the Cotton Market" Cotton Incorporated, 2010
http://www.cottoninc.com/corporate/Market-Data/SupplyChainInsights/China-Cotton-Market-01-11/china_center_of_cotton_market.pdf

11) "Cotton Clothing Price Tags to Rise" The New York Times, November 2, 2010
http://www.nytimes.com/2010/11/03/business/03cotton.html?_r=1&

12) "The twist in the tale of rising cotton prices" BBC News, December 5, 2010
http://www.bbc.co.uk/news/business-11865901

13) "China's Agricultural Trade: Competitive Conditions and Effects on U.S. Exports" USITC, March 2011
http://www.usitc.gov/publications/332/pub4219.pdf

14) "Cotton Fact Sheet: India" International Cotton Advisory Council, May 19, 2009
http://www.icac.org/econ_stats/country_facts/e_india.pdf

15) "Cotton Fact Sheet: Turkey" International Cotton Advisory Council, May 18, 2009
http://www.icac.org/econ_stats/country_facts/e_turkey.pdf

16) "Fiber Use for Textiles and China's Cotton Textile Exports" USDA Economic Research Service, March 2009
http://www.ers.usda.gov/media/183797/cws08i01.pdf

17) "Monthly Economic Letter: U.S. and Global Market Fundamentals" Cotton Incorporated, October 2012
http://www.cottoninc.com/corporate/Market-Data/MonthlyEconomicLetter/

18) "Cotton Seasonal Report" Karvy Comtrade Limited, October 6, 2009
http://www.karvycomtrade.com/downloads/karvySpecialReports/karvysSpecialReports_20091006101839.pdf

19) "ASTM Cotton Fiber Standards" ASTM International, September 2005
http://www.astm.org/SNEWS/SEPTEMBER_2005/kkp_sep05.html

20) "Understanding Standardization of Cotton" USDA AMS
http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3099536

21) "Cotton Guide" International Trade Centre
http://www.intracen.org/cotton-guide/cotton-value-addition-grade-standards/

22) Desalegn, Zerihum and Asefa Aga. "Challenges and Opportunities of Cotton Production in Ethiopia" Ethiopian Cotton Producers Ginners and Exporters Association, 2012.

23) Z. Desalegn, personal communication, December 3, 2012.

24) Z. Desalegn, personal communication, December 4, 2012.

25) "U.S. Cotton Bale Dimensions" National Cotton Council of America
http://www.cotton.org/tech/bale/bale-description.cfm

26) "Textile Technology" The Cotton Foundation, 2008
http://www.cotton.org/journal/2008-12/1/upload/JCS12-33.pdf

27) "Engineering and Ginning" The Cotton Foundation, 2005
http://www.cotton.org/journal/2005-09/3/upload/jcs09-155.pdf

28) "World Agricultural Supply and Demand Estimates" USDA, October 11, 2012
http://www.usda.gov/oce/commodity/wasde/latest.pdf

29) "Introduction to a Cotton Gin" USDA, National Cotton Ginners Association
http://www.cotton.org/ncga/techpubs/upload/introduction-to-a-cotton-gin.pdf

30) "Cotton and Products Annual Report 2009" USDA FAS GAIN Report, April 20, 2009
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Commodity%20Report_COTTON%20AND%20PRODUCTS%20ANNUAL_Jakarta_Indonesia_4-20-2009.pdf

31) "Indonesia Cotton and Products Annual Report 2011" USDA FAS GAIN Report, April 26, 2011
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Jakarta_Indonesia_4-26-2011.pdf

32) "Pakistan Customs Tariff 2010-11" Trade Development Authority of Pakistan
http://www.tdap.gov.pk/HS_codes_11th_nov.pdf

33) "Unable to Stretch Further, Apparel Makers Raise Their Prices" The Wall Street Journal, November, 4, 2010
http://online.wsj.com/article/SB10001424052702304879604575582673135103404.html?mod=WSJ_hp_LEFTWhatsNewsCollection

34) "Cotton Gains on Reports of Chinese Drought; Orange Juice Falls" Bloomberg, May 18, 2011
http://www.bloomberg.com/news/2011-05-18/cotton-gains-on-reports-of-chinese-drought-orange-juice-falls.html

35) "Turkey Cotton and Products Update" USDA FAS GAIN Report, August 29, 2012
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Update_Ankara_Turkey_8-29-2012.pdf

36) "EU-27 Cotton and Products Annual 2010" USDA FAS GAIN Report, March 20, 2012
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Rome_EU-27_3-30-2012.pdf

37) "Record Production in 2011/2012 as a Response to Record Prices" International Cotton Advisory Committee, March 1, 2011
http://icac.org/wp-content/uploads/2012/03/pr_march_2011.pdf

38) "Turkish Customs Tariff" Republic of Turkey Ministry of Customs and Trade, 2010
http://eski.gumruk.gov.tr/ENG/trader/Documents/TurkishCustomsTariff2010.pdf

39) "Indonesia Customs Tariff Book" Indonesian Directorae General of Customs and Excise
http://www.watimas.com/Pdf/tariff1-60.pdf

40) "Bale Survey" International Cotton Advisory Committee, October 1995
http://www.icac.org/cotton_info/research/bale/bale.PDF

41) "Quality and Marketing of Cotton Lint in Africa" The World Bank, October 2008
http://www.worldbank.org/afr/wps/WPS121_Quality_and_Marketing_Cotton_Lint_Africa.pdf

42) "Commodities at a Glance: Special Issue on Cotton in Africa" UNCTAD, July 2011
http://unctad.org/en/Docs/suc2011cotton_en.pdf

43) "Agri-Chain Analysis of Cotton Sub-Sector in Ethiopia" Ethiopian Development Research Institute, June 2008
http://www.edri.org.et/Documents/cotton-text-pgd.pdf

44) "Ethiopian cotton output rises significantly in FY12" Cotton Market News, August 17, 2012
http://cottonmarketnews.com/2012/08/17/ethiopian-cotton-output-rises-significantly-in-fy12/

45) "Ethiopia: Ban on Cotton Exports Lifted" USDA FAS GAIN Report, July 6, 2012
http://static.globaltrade.net/files/pdf/20120729215043372.pdf

46) "Cotton: World Markets and Trade" USDA FAS, December 2006
http://www.fas.usda.gov/cotton/circular/2006/12/cottonfull1206.pdf

47) "Cotton: World Markets and Trade" USDA FAS, December 2007
http://www.fas.usda.gov/cotton/circular/2007/December/cotton1207.pdf

48) "Cotton: World Markets and Trade" USDA FAS, December 2008
http://www.fas.usda.gov/cotton/circular/2008/Dec/cottonfull1208.pdf

49) "Cotton: World Markets and Trade" USDA FAS, December 2009
http://www.fas.usda.gov/cotton/circular/2009/December/cottonfull12-09.pdf

50) "Cotton: World Markets and Trade" USDA FAS, December 2010
http://www.fas.usda.gov/cotton/circular/2010/December/cotton_full12-10.pdf

51) "Cotton: World Markets and Trade" USDA FAS, December 2011
http://www.fas.usda.gov/cotton/circular/2011/Dec/cotton_full12-11.pdf

52) "Cotton: World Markets and Trade" USDA FAS, October 2012
http://www.fas.usda.gov/psdonline/circulars/cotton.pdf

53) "Agricultural commodity statistics 2011" Australian Government Department of Agriculture, Fisheries and Forestry
http://adl.brs.gov.au/data/warehouse/agcstd9abcc002/agcstd9abcc0022011/ACS_2011_1.0.3.pdf

54) "India Bans Cotton Exports" The Wall Street Journal, March 6, 2012
http://online.wsj.com/article/SB10001424052970203458604577262723464381722.html

55) "Survey of Fiber Testing Equipment" International Cotton Advisory Committee, September 2006
https://www.icac.org/tis/fiber_testing/fiber_testing_sept06.pdf

56) "Cotton Import Ban Lifted" USDA FAS GAIN Report, March 20, 2012
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Egypt%E2%80%99s%20Imports%20Cotton%20Ban%20Lifted_Cairo_Egypt_3-20-2012.pdf

57) "Cotton Production and Research in Ethiopia" ICAC
http://www.icac.org/tis/regional_networks/documents/africa/papers/day_1/ethiopia.pdf

58) "India reverses cotton export ban after farmer outrage" BBC News, March 11, 2012
http://www.bbc.co.uk/news/business-17330680

Appendix

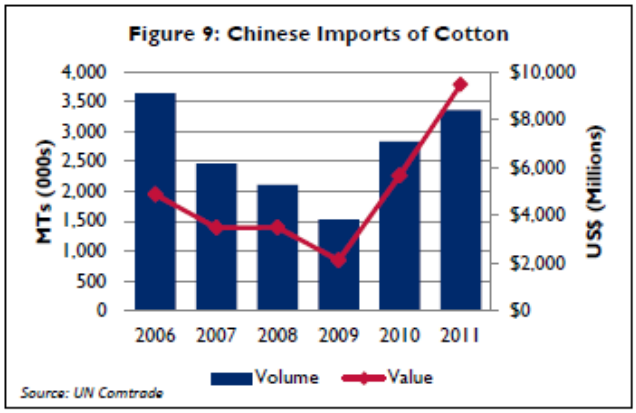


Figure 9: Chinese Imports of Cotton
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
MTs (000s)
$10,000
$8,000
$6,000
$4,000
$2,000
$0
US$ (Millions)
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade

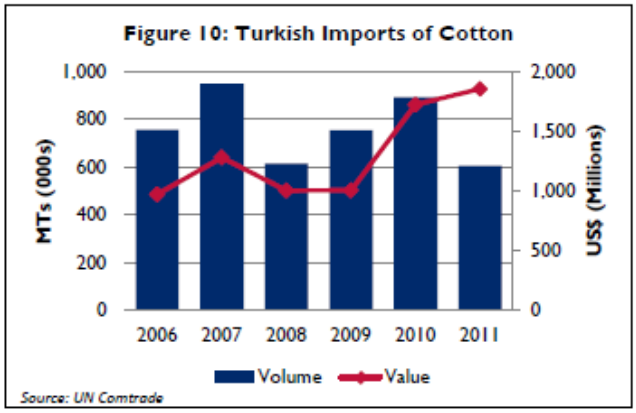


Figure 10: Turkish Imports of Cotton
1,000
800
600
400
200
0
MTs (000s)
2,000
1,500
1,000
500
0
US$ (Millions)
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade

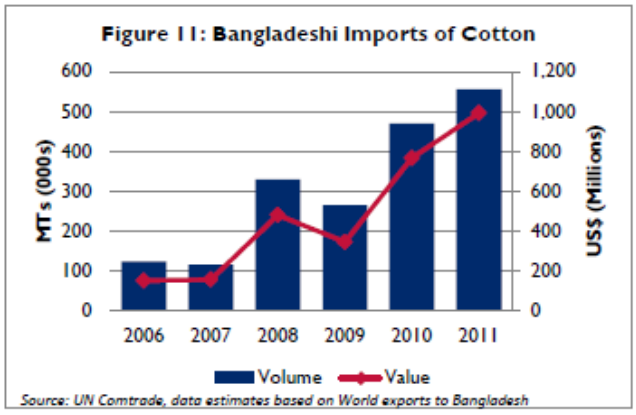


Figure 11: Bangladeshi Imports of Cotton
600
500
400
300
200
100
0
MTs (000s)
1,200
1,000
800
600
400
200
0
US$ (Millions)
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade, data estimates based on World exports to Bangladesh


Figure 12: Indonesian Imports of Cotton
MTs (000s)
US$ (Millions)
800
700
600
500
400
300
200
100
0
2,000
1,500
1,000
500
0
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade

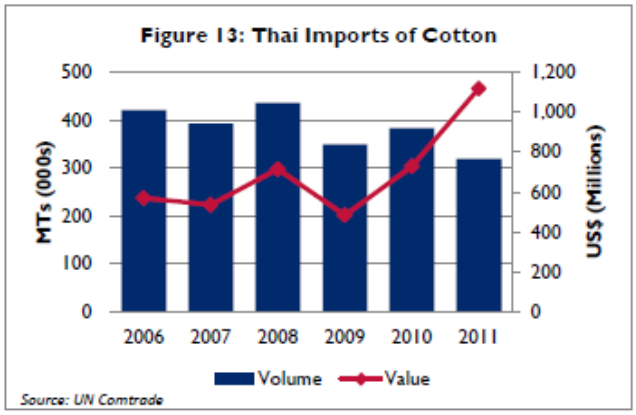


Figure 13: Thai Imports of Cotton
MTs (000s)
US$ (Millions)
500
400
300
200
100
0
1,200
1,000
800
600
400
200
0
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade

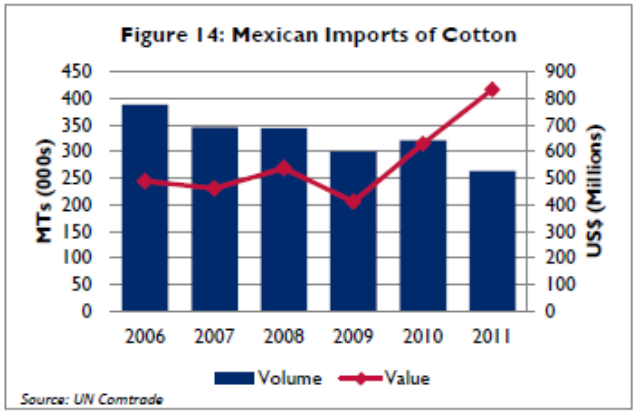
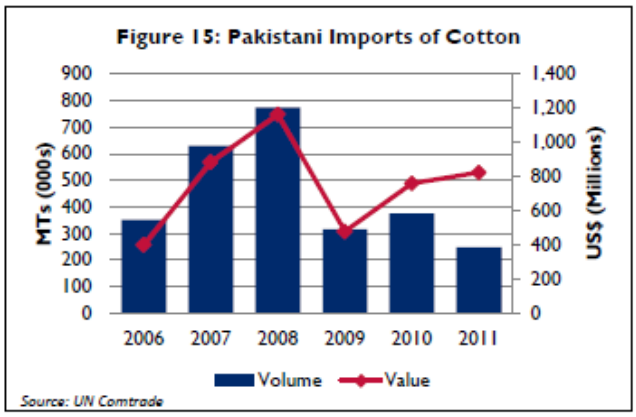


Figure 14: Mexican Imports of Cotton
MTs (000s)
US$ (Millions)
450
400
350
300
250
200
150
100
50
0
900
800
700
600
500
400
300
200
100
0
2006
2007
2008
2009
2010
2011
Volume
Value
Source: UN Comtrade



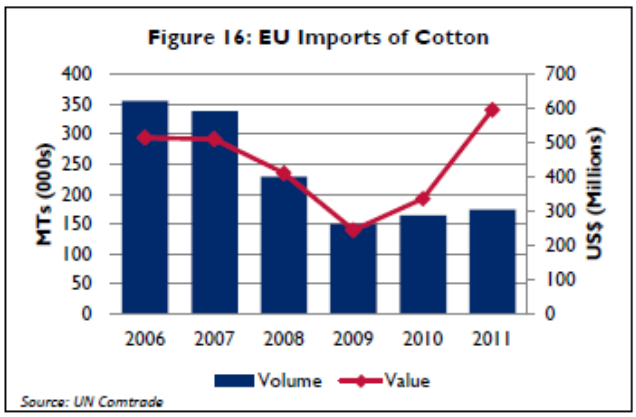


Table 2: Value of Cotton Exports per Marketing Year (September-August)

	2006/07	2007/08	2008/09	2009/10	2010/11
Millions of US$	14.3	19.2	5.8	10.6	0.5

Source: USDA Foreign Agriculture Service

Table 3: Color Grades of Upland Cotton

Color	Color Grade
White	Good Middling
	Strict Middling
	Middling
	Strict Low Middling
	Low Middling
	Strict Good Ordinary
	Good Ordinary
Light Spotted	Good Middling Light Spotted
	Strict Middling Light Spotted
	Middling Light Spotted
	Strict Low Middling Light Spotted
	Low Middling Light Spotted
	Strict Good Ordinary Light Spotted
Spotted	Good Middling Spotted
	Strict Middling Spotted
	Middling Spotted
	Strict Low Middling Spotted
	Low Middling Spotted
	Strict Good Ordinary Spotted
Tinged	Strict Middling Tinged
	Middling Tinged
	Strict Low Middling Tinged
	Low Middling Tinged
Yellow stained	Strict Middling Yellow Stained
	Middling Yellow Stained
Below Grade	Below Grade-(Below Good BG 81 Ordinary)
	Below Grade-(Below Strict Good BG 82 Ordinary Lightly Spotted)
	Below Grade-(Below Strict Good BG 83 Ordinary Spotted)
	Below Grade-(Below Low BG 84 Middling Tinged)
	Below Grade-(Below Middling Yellow BG 85 Strained)

Source: USDA Agricultural Handbook 566, The Classification of Cotton

Table 4: Micronaire Measurements

Degree of Strength	HVI Strength (grams per tex)
Very Strong	31 & above
Strong	29 - 30
Average	26 - 28
Intermediate	24 - 25
Weak	23 & below

Source: USDA Agriculture Handbook 566, The Classification of Cotton

Table 5: Gin Universal Density Bale (Approximate Values)

	English	SI
Net weight	500 pounds	226.8 kg
Length	54-55 inches	1.37-1.40 m
Width	20-21 inches	0.51-.53 m
Average Bulge Thickness	33 inches (or less)	0.84 m (or less)
Volume	17 ft3	0.48 m3
Density	28 lbs./ ft3	472 kg/ m3

Source: National Cotton Council of America

ANNEX II: SUCCESS STORY

USAID | ETHIOPIA
FROM THE AMERICAN PEOPLE

SNAPSHOT

Training Helps Agribusiness Expand

Thanks to key strategies learned at a USAID-CIAFS training, one small business owner increased his sales by 40 percent.

Photo by Fintrac Inc.

Representatives from agribusinesses discussed market trends and shared tips for business planning at an entrepreneurship training.

"The new business has started to pay dividends and the best is yet to come."

- Mohammed Edris,
Owner, Fasil Oil Company

By improving the entrepreneurial and basic business skills of the private sector, USAID's Capacity to Improve Agriculture and Food Security (CIAFS) project enables Ethiopian agribusinesses to increase their competitiveness and expand their operations. In May 2012, USAID-CIAFS delivered its second entrepreneurship training targeting private-sector representatives. A total of 81business managers participated, including Mohammed Edris, owner of Fasil Cooking Oil Company, an oil processing facility with seven full-time employees in Amhara.

Fasil Oil Company processes niger seeds, sunflower seeds, and groundnuts into cooking oil for sale in the local market. During the five-day training, Edris learned how to analyze market trends and apply that information to his business decisions. He and the other participants also learned the basics of business plan development, product pricing, advertising, funding, sales forecasting, and financial analysis.

The training provided a forum for Edris to evaluate the operations and performance of his company in the context of fellow agribusiness owners; learn about effective business practices; and prepare to expand into new operations.

After the training, Edris put his new skills and knowledge to use, revising his inventory management according to market trends, which helped save money on storage and ensured he had enough seed in stock to meet peak demand. The basic accounting and recordkeeping skills he learned helped him manage his cash flow.

Thanks to these improved business practices, Edris' sales have increased by 40 percent. The new funds and market knowledge have allowed him to diversify his business to produce animal feed with an oil byproduct that would otherwise have been wasted. The new product has resulted in more than $400 of net income after just six months of production.

Edris expects his new animal feed business to grow quickly. "The new business has started to pay dividends and the best is yet to come," he said.

To date, USAID-CIAFS has trained 151 private-sector managers on competitiveness, leadership, and entrepreneurship, empowering them with the skills and knowledge they need to effectively address constraints and improve growth across the agricultural sector.

USAID-CIAFS | Snapshot | January 2013

ANNEX III: TOOLS FOR TRANSFORMATION

USAID FROM THE AMERICAN PEOPLE | CIAFS | Capacity to Improve Agriculture and Food Security

Tools for Transformation | #13: Improved Grain Varieties: Impact through Research and Development

Improved grain varieties are a promising strategy for increasing crop yields and quality, impacting food security, and reducing poverty in Ethiopia. Major grains grown by smallholder farmers include teff, maize, sorghum, wheat, barley, millet, and oats. Teff in particular, covers a significant amount of land in Ethiopia and is the main ingredient in the country's staple food, *injera*. Combined with better crop management practices, biotechnological advances can offer improvements such as better drought resistance, pest and disease immunity (which could result in the need for less pesticides), higher yields, more desirable market traits, and less labor-intensive production.

Achievements in improved grain varieties and crop management begin with an enabling environment. The public sector should support the agricultural research system and strengthen extension services and seed distribution at the regional, zonal, and woreda levels. In addition, it should support market linkages and help reduce transaction costs through infrastructure development. Finally, financial incentives for public and private seed companies encourage the development and dissemination of the improved seed varieties.

Along with public sector support, action is needed to promote adoption by smallholder farmers. Farmers are traditionally reluctant to use new seed varieties and technologies in part due to lack of information on new varieties, associated costs, and concerns about marketability. Extension services that include formal training and demonstration sites, access to credit, and the establishment of market linkages will encourage smallholder adoption.

An important result of adoption of new grain varieties, along with enhanced food security and nutrition, is the improved market integration of smallholder farmers. The positive change in productivity will increase the number of farmers engaged in farming beyond the subsistence level.

Achieving agricultural productivity growth can be possible with yield-enhancing grain varieties and technologies. Agricultural research and technological improvements are crucial to increasing crop yields and quality, reducing poverty, and meeting demands for food security.

"Kuncho" Teff

Teff is currently the most expensive grain in Ethiopia because it requires labor-intensive harvesting and processing techniques, while producing the lowest yields per hectare of all cereal crops. The introduction of the "Kuncho" teff variety developed by Ethiopian Institute of Agricultural Research (EIAR) has more than doubled teff productivity: up 137% from 1.6 tons per hectare to 3.8 tons per hectare. The following management practices also played an important role in the increased yields:

- Intercropping grains and legumes. Legumes, such as chick-peas, improve soil fertility, which reduces fertilizer costs. The rotation of cereal crops with legumes is essential for soil fertility, soil health, and the sustainability of production systems.
- Employing the zero tillage method, saving farmers a significant amount of labor.
- Applying a mixture of Roundup and D herbicides to soil fifteen days before sowing, which not only reduced weeds but also helped the seeds to stick to the soil more easily due to the creation of humus. The humus created in the process has improved the soil's capacity to hold moisture and reduce erosion, and has resulted in a higher yield.
- Using seeds strategically, which can reduce costs while still resulting in increased yields, disproving the myth about needing a high quantity of seed.

The Tools for Transformation series promotes practices for the agriculture sector that support the Ethiopian government's strategy to secure the long-term prosperity and food security of the Ethiopian people.

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USAID FROM THE AMERICAN PEOPLE | CIAFS | Capacity to Improve Agriculture and Food Security

Tools for Transformation | #14: Water Harvesting: Impact through Conservation Practices

Ethiopia's agriculture is predominantly rain-dependent, leaving farmers in the arid and semi-arid areas vulnerable to frequent droughts and dry spells that negatively impact agricultural production. Harvesting rainwater for irrigation is an important strategic intervention that results in increased crop yields and incomes and improved food security for smallholder farmers.

Commonly used water harvesting systems are constructed of three principal components: the catchment area, the collection device, and the conveyance system. Each part is selected depending on climate, topography, soil, crop variety, and locally available materials. Rainwater harvesting systems for agriculture typically include a combination of embankments (or levees) built along a slope that channels water into cultivated areas for absorption by soil or into a man-made pond for storage. Storage ponds support small-scale, inexpensive irrigation systems that allow farmers to water their crops during dry periods.

Rainwater harvesting helps Ethiopian small-scale farmers capture and utilize water that would otherwise be lost, mitigate constraints posed by unpredictable rainfall and climate change, prevent erosion and degradation of natural resources, and improve soil fertility. Sustained prosperity is achieved through increased crop quality and yields; longer growing seasons; expansion of arable land; and, ultimately, food and income security for smallholder farmers and their families.

In the last two decades, the Tigray regional government has worked with farmers to harvest rainwater for irrigation and help prevent erosion and flooding. The regional government has also prohibited grazing, crop cultivation, and tree felling on slopes in the catchment area. Low stone walls (bunds) and other collection and conveyance structures constructed under the program have reduced flooding during the rainy season and increased the supply of spring water during the dry season.

The Tigray Bureau of Agriculture has also worked to rehabilitate existing water harvesting infrastructure. One dam in Wukro Wereda, Addiksened Kebele had worked inefficiently for more than ten years. Since its rehabilitation, its output has increased, sedimentation rates have decreased, and the vegetation has returned to the surrounding hillsides.

Rainwater harvesting is an important component of watershed management. The public sector, along with agricultural communities and agribusinesses, can positively contribute to both agricultural productivity and environmental sustainability by investing in water harvesting and improved water management systems.

Photo by Fintrac Inc.

Rainwater harvesting techniques are most suitable in arid and semi-arid climates where the average annual rainfall is 200 to 800 millimetres. Generally, rainwater harvesting is most necessary in areas:

- With erratic, heavy rainfall that cannot be absorbed by the soil and is lost to runoff and evaporation.
- Where there is environmental degradation.
- With low yield and high risk of crop failure.
- Where erosion hazard is high and soil is easily depleted beyond recovery.

Additional factors important for successful rainwater harvesting are:

- **Slope**: The slope should not be greater than 5 percent. Steeper slopes can produce an uneven distribution of runoff.
- **Soil**: The soil should be deep, fertile, and of fine to medium texture to allow sufficient moisture storage capacity.
- **Cost**: Solutions should combine technical efficiency and low-cost technology.
- **Outreach**: Strategies should consider socioeconomic conditions, the role of women, and community goals that may be impacted by the introduction of rainwater harvesting.

The Tools for Transformation series promotes practices for the agriculture sector that support the Ethiopian government's strategy to secure the long-term prosperity and food security of the Ethiopian people.

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Tools for Transformation | #15: Maize Production: Impact through Improved Agronomic Practices

Maize is a critical contributor to food security for Ethiopian households. More than 8 million smallholder farmers produced maize in 2008-2009, compared to 5.8 million for teff and 4.5 million for sorghum.[1] The demand for maize in Ethiopia is high because it is the least expensive cereal and a low-cost source of protein.

The Ethiopian government recognizes the importance of maize to the country's economic and social development, and has emphasized cereal production and marketing in its strategies and policies for agricultural transformation. Although it is Ethiopia's most cultivated crop, maize still has significant growth potential.

By using improved seeds, applying fertilizer, and adopting improved farm management practices such as crop rotation, maize production could more than double.[2] In addition, post-production handling and storage improvements could result in a greater percentage of farmers' yields reaching the marketplace, allowing farmers to reserve surpluses for sale when prices increase.

The implementation of good agricultural practices in maize production will help farmers in Ethiopia achieve high yields, boost incomes, improve food security, and significantly impact the nutritional status of families.

[1] Central Statistics Agency, http://www.csa.gov.et
[2] International Food Policy Research Institute, http://www.ifpri.org/sites/default/files/publications/ethiopianagsectorwp_maize.pdf

Maize in Ethiopia - Agronomic Lessons Learned

Identify suitable agro-ecology
Soil should be deep and loamy with a neutral pH, ideally between 6.3 and 6.5. Fields should be well drained and free of waterlogging. The climate should be warm and the zone should not be prone to frost.

Rotate crops and prepare the land
Crop rotation protects soil against nutrient loss and pest infestation. Rotate maize with legumes such as soybeans, haricot beans, and other pulses, which restore the soil's nitrogen levels. During the dry season, improve the soil's moisture-holding capacity by terracing or adding humus. A month before sowing, spread natural fertilizer to improve soil texture and reduce evaporation.

Use modern inputs
Choose improved hybrid seeds, such as the wogere local variety; apply lime or gypsum to correct soil pH; and apply chemical fertilizers appropriately. Fertilizer recommendations are location specific. Farmers should obtain a fertilization schedule from the development agents in their village.

Plant strategically
Plant at the beginning of the growing season to mitigate the risk of inadequate rainfall when the dry season begins. The exact time will depend on whether the climate is arid, humid, moist, or any variation in between. Row planting is recommended; plant density varies based on plant height and time to maturation. Thin and hoe when the crop grows four to six leaves.

Control pests and weeds
Implement a combination of cultural, biological, botanical, and chemical controls to address pests such as the maize stem borer and termites and weeds. Hand weeding, both practical and economical, should be done at least twice: 25-30 days after sowing and when plants reach knee height.

Harvest timely
The optimal harvest schedule is determined by corn type. For young corn, harvest 60 to 80 days after planting; for corn on the cob, harvest 80 to 105 days after planting; and for livestock feed, harvest 95 to 115 days after planting.

Minimize postharvest losses
Prevent losses due to improper handling, processing, and storing, all of which make crops susceptible to damage, by implementing integrated pest management, managing the crop's moisture level, and using airtight containers and improved storage structures.

Utilize extension services
Technical guidance and information is available from local development agents. Smallholders should be encouraged to take advantage of these resources.

The Tools for Transformation series promotes best practices for the agriculture sector that support the Ethiopian government's strategy to secure the long-term prosperity and food security of the Ethiopian people.

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