

Agroforestry

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

Agroforestry

Agroforestry is the integration of trees and shrubs into crop and animal farming systems to create environmental, economic, and social benefits. Agroforestry techniques have been used all over the world for centuries. Agroforestry methods can improve the management of natural resources and soil quality, increase farmers' land yields and incomes, protect against deforestation, and provide resilience against climate change.

Explore the different Agroforestry categories below:

Agroforestry's Importance to Food Production and Diets

Policy

Gender and Agroforestry

Genetic Diversity Databases and Agroforestry Techniques

Agroforestry and Climate Change

Projects and Organizations to Follow

Agroforestry's Importance to Food Security and Nutrition

The State of the World's Forest Genetic Resources

Food and Agriculture Organization of the United Nations; 2013

Based upon information provided by 86 countries, FAO has developed this first ever report on forests and the importance of their genetic diversity in supporting resilience and food security.

The Contribution of Forests and Trees to Sustainable Diets

Barbara Vinceti, Celine Termote, Amy Ickowitz, Bronwen Powell, Katja Kehlenbeck, and Danny Hunter; Sustainability; 2013

This paper examines the contributions of forests and trees to the need for nutritious and adequate foods. It also identifies research gaps and provides recommendations to enhance the contribution of forests and trees.

Agroforestry is Crucial for the Food Production Challenge

Patrick Worms; EurActiv.com; April 2014

With the release of the IPCC's climate change impact report, author Worms argues adding the right trees makes the fields where they grow more resilient to extreme weather and farmers less dependent on a single crop.

Dietary Quality and Tree Cover in Africa

Amy Ickowitz, Bronwen Powell, Mohammad A. Salim, and Terry C.H. Sunderland; Global Environmental Change; January 2014

This statistical study found a positive linear relationship between tree cover and quality of African children's diets.

Agroforestry Can be a Long-Term Solution to Closing Africa's Food Gap

Kate Langford; World Agroforestry Centre; January 2014

Agroforestry practices have many benefits, such as improving soil quality, restoring soil nutrients, and reducing reliance on fertilizer use. The article provides examples of how integrating trees into farms can diversify agricultural systems for farmers.

Trees and Food Security in Africa; What's the Link?

Daisy Ouya; World Agroforestry Centre; July 2013

Agroforestry can provide a golden opportunity to improve nutrition in Sub-Saharan Africa in addition to high yielding crops and improved soils.

Trees for Food and Nutrition

Bioversity International

Trees can enhance nutrition and food security along with agricultural crops. They also can be more resilient to climate change than crops.

Agroforestry, Food and Nutritional Security

Ramni Jamnadass, et al; World Agroforestry Centre; 2013

This working paper provides a comprehensive overview of how agroforestry practices can benefit farmers and food security alike, whether by providing the former with supplementary income through the sale of tree products and surplus materials, or by supporting ecosystem processes (such as pollination) that aid in perpetuating the food production process.

Policy

World Congress on Agroforestry: A Springboard to Accelerate the Impacts of Agroforestry

Sarah Small; Food Tank; February 2014

The authors describe the role of forests and forest foods in sustainably contributing to the needs of future populations, estimated to reach 9 billion by 2050.

Agroforestry in India: New National Policy Sets the Bar High

Daniel Kapsoot; The Guardian; February 2014

India is the only country that is currently implementing a national policy on agroforestry. They hope to increase tree coverage by 33%.

Agroforestry: Effective, and Popular, in Integrated Landscapes

Eleanor Greene; Food Tank; February 2014

Recent studies and reviews demonstrate that tree-based approaches can have multiple benefits on farmlands.

SDG Focus Area Document Released - With Great Opportunities for Forestry

Peter Holmgren; Forest News; February 2014

The author suggests how forestry can be integrated into United Nations' Sustainable Development Goals.

Agroforestry: USDA Reports to America, Fiscal Years 2011-2012 - In-Brief

U.S. Department of Agriculture; October 2013

This USDA report on agroforestry and the important role it plays in creating more sustainable land use is the first of its kind conducted by the department.

Businesses and Agroforestry: The Role of Public-Private Partnerships

Ekaterina Bessonova; Swedish International Agricultural Network Initiative (SIANI); February 2014

What role can the public-private partnerships play to build successful agroforestry systems?

Advancing Agroforestry on the Policy Agenda

Gérard Buttoud; Food and Agriculture Organization of the United Nations; 2013

Invoking multiple case studies alongside contributions from experts working in the field, this guide explores the contribution of public policy to effective agroforestry practices, and discusses the various local conditions whereby these policies either succeed or fail.

Trees Breathing New Life into French Agriculture

Tiphaine Honore; The Guardian; August 2012

The traditional practice of growing crops around trees is gaining popularity in France.

Facilitating Agroforestry Development through Land and Tree Tenure Reforms

Marcus Colchester, et al; World Agroforestry Centre; 2005

This impact study explores the World Agroforestry Centre's efforts to overhaul Indonesian land and forest tenure laws, and illustrates the dilemma of reconciling customary tenure practices on the ground with the jurisdictional prerogative of state agencies over land and resource management matters.

Gender and Agroforestry

Trees, Women, and Men: Surprises and New Questions

Rob Finlayson; World Agroforestry Centre; March 2014

In this study that examined the gender role in agroforestry, preliminary results found that women have less direct association with forests and care more about crop production, while men produced more yield from tree-based systems in Indonesia.

Native Fruit Trees of Life

Narasimha Hedge; Bioversity International; March 2014

Research in India demonstrates the importance of domestication and conservation of trees, and the gender roles in agroforestry.

Gender in the CGIAR Research Program on Forests, Trees and Agroforestry

Center for International Forestry Research (CIFOR); 2013

This strategy focuses on management structures and processes to improve the quality and volume of gender research and outcomes, specifically for forestry and agroforestry.

Gender and agroforestry in Africa: a review of women's participation

Evelyne Kiptot; Steven Franzel; Agroforestry Systems; 2012

This study illustrates that socio-economic and cultural issues hinder female participation in agroforestry, in Africa.

Gender and Agroforestry in Africa: Are Women Participating?

Evelyn Kiptot and Steven Franzel; World Agroforestry Centre; 2011

Kiptot and Franzel draw on 104 individual case studies to explore the social and cultural factors that negatively affect female participation in agroforestry activities in Sub-Saharan and Eastern Africa and suggest ways in which policy, institutional, and technological interventions might translate into an equal role for female stakeholders.

Agroforestry Techniques and Genetic Diversity Databases

Agroforestry: Tree Domestication

World Agroforestry Centre; 2012

This primer discusses important agroforestry tree domestication issues for researchers to use.

The State of the World's Forest Genetic Resources

Food and Agriculture Organization of the United Nations (FAO); June 2012

The Commission on Genetic Resources for Food and Agriculture (CGRFA) has developed a State of the World's Forest Genetic Resources report that would prepare a country-driven approach on forest genetic resources.

Agroforestree Database

World Agroforestry Centre

This database provides detailed information on the management, use, and ecology of a range of tree species that can be used for agroforestry.

Agroforestry and Climate Change

Community-based Agroforestry Practices for Watershed Management in the Philippine Uplands

Agustin Mercado, Jr. and Patricia J. Sanchez; World Agroforestry Centre; 2014

A new study shows that locally managed agroforestry systems in the Philippines have contributed to more sustainable watershed practices as well as higher crop yields, increase incomes, and greater resilience to climate change.

City Regions as Landscapes for People, Food, and Nature

Thomas Forster and Arthur Getz Escudero; Landscapes for People, Food, and Nature; 2014

Rural areas are not the only places that can benefit from agroforestry. This paper provides some examples of urban agroforestry.

Carbon Sequestration Potential of Agroforestry Systems in India

Indu K. Murthy, et al; Journal of Earth Science & Climatic Change; 2013

Building from previous studies into the carbon-offset potential of domestic agroforestry systems, this paper outlines how the use of agroforestry and silvipastoral techniques on the Indian subcontinent has coupled climatic adaptation with crafted mitigation strategies to create a practical, proactive approach for staving off the local effects of climate change.

Climate-Smart Landscapes: Opportunities and Challenges for Integrating Adaptation and Mitigation in Tropical Agriculture

Celia A. Harvey et al; Conservation Letters; October 2013

This paper demonstrates mitigation and adaptation benefits can be managed appropriately in tropical agriculture, including agroforestry.

Traveling by Bus, Car, Boat and Elephant in Indonesia

Robin Mearns; Development in a Changing Climate - World Bank Blog; May 2012

On a trip to Indonesia, Mearns saw an agroforestry-based voluntary carbon scheme on coffee plantations. Launched by the World Agroforestry Centre, the project helps restart the coffee production while protecting the nearby watershed.

From Climate-Smart Agriculture to Climate-Smart Landscapes

Sara J. Scherr, Seth Shames, and Rachel Friedman; Agriculture and Food Security; August 2012

For agricultural systems to achieve climate-smart objectives, they must become “climate-smart landscapes.” The authors in this paper examine what is needed to achieve landscape initiatives and what climate-smart practices are important.

Adaptation to Climate Change through Sustainable Management and Development of Agroforestry Systems

K.P.C. Rao, et al; International Food Policy Research Institute; December 2007

Rao and his associates make a case for increased agroforestry ‘interventions’ as a means of adapting to global climate change, and discuss several strategies by which agroforestry techniques can reduce carbon emissions, induce positive microclimatic changes, and improve the quality of life through provision of shade and shelter.

Projects and Organizations to Follow

CGIAR Research Program on Forests, Trees, and Agroforestry

The Consultative Group on International Agriculture Research (CGIAR)

CGIAR’s program aims to enhance the management and use of forests through five areas, including smallholder production systems and markets and climate change adaption.

Conservation and Use of Forest and Tree Genetic Diversity

Biodiversity International

Biodiversity’s forest research documents the diversity of tree species that are important to people’s livelihoods and health. Take a look at where they work and highlights of their project.

Agroforestry Village Project

Farming First; September 2013

TechnoServe is working to change land-use patterns from slash and burn farming to more sustainable plantation forests. It is an integrated approach to create socio-economic benefits, such as jobs, expanded markets, and improved farming practices and facilities.

[Biodiversity](#)

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future, such as climate change and forestry. This is a collaborative project. If you think we’ve missed a major piece of work, please let us know.

[Biodiversity](#)

Biodiversity refers to the variability of living organisms on earth, with special focus on habitat and genetic diversity. It is necessary to maintain biodiversity because upon its decline, the pool of biological resources that are available to future generations is reduced, affecting crop growth. Biodiversity creates and maintains ecological systems, and reduces the odds of crop failure, protects against the spread of plant diseases, and results in greater yields. As biodiversity diminishes and negatively impacts crop growth, the need to protect and maintain the current biodiversity has rapidly increased. With hundreds of plants under threat, we risk losing access to potential sources of food and medicine. We also risk losing their genetic data that could be used to for research on plant disease and pest resistance.

Explore the different Biodiversity categories below:

Why is biodiversity important?

Overview of Agricultural Biodiversity (Agrobiodiversity)

Seed Security and Traditional Seeds

Policy/Government

Farmers' Role in Agrobiodiversity

Ecosystem Services and Conservation

Potential Solutions

[Why is biodiversity important?](#)

[Agricultural Biodiversity Weblog](#)

Luigi Guarino and Jeremy Cherfas

These professionals in the agricultural biodiversity field have established this web page as a source for gathering and sharing information about agricultural biodiversity.

[About Biodiversity](#)

International Union for Conservation of Nature; January 2013

This gives an overview about biodiversity, how it can be measured, and how much it's worth.

[Cities, Biodiversity, and Governance](#)

Aki Suwa, Alexandros Gasparatos, Christopher Doll, Deljana Iossifova, Jose Antonio Puppim de Oliveira, Osman Balaban, and Raquel Moreno-Penaranda; United Nations University; March 2011

This paper examines the relationship between cities and biodiversity and how each affects the other.

Rapid Urban Expansion Threatens Biodiversity

Yale School of Forestry and Environmental Studies; September 2012

Researchers predict urban areas will expand by more than 463,000 square miles by 2030. This article analyzes how this rapid urbanization will affect biodiversity.

Biodiversity Conservation for Life

University of Cambridge; February 2012

University of Cambridge created a conservation initiative to address declining biodiversity and how to secure it for the future. This webpage provides links to partnerships established to research this topic.

Overview of Agricultural Biodiversity (Agrobiodiversity)

The Ecosystem Approach and Agricultural Biodiversity

David Cooper; Conservation and Sustainable Use of Agricultural Biodiversity; 2000

This report explains the components of agricultural biodiversity at the ecosystem level and how they are important in supporting production & providing ecological services.

Agricultural Crop Biodiversity

Syngenta: Foundation for Sustainable Agriculture; 2013

Syngenta answers questions about the importance of agricultural biodiversity.

What is Agrobiodiversity?

Food and Agricultural Organization (FAO)

FAO examines trends in global agrobiodiversity.

Agriculture and Biodiversity Conservation: Opportunity Knocks

Ken Norris; Centre for Agri-Environmental Research, School of Agriculture, Policy and Development, University of Reading, and Earley Gate; 2008

Agroecosystems will need to play a crucial role in biodiversity conservation.

Supporting Agricultural Biodiversity Conservation: Key Questions

Ronnie Vernooy; Conservation and Sustainable Use of Agricultural Biodiversity; 2003

This overview discusses how agricultural biodiversity affects farmers, research, and consumers.

Linking Agriculture and Biodiversity Can Help Feed the Planet

Emile A. Frison, Julia Marton-Lefevre, and Kanayo F. Nwanze; International Fund for Agricultural Development Social Reporting Blog; June 2013

This article argues that financial, social, ecological, and commercial sectors play an important role to link biodiversity and food security.

Seed Security and Traditional Seeds

Security Crop Biodiversity is Key to Feeding World's Growing Population - UN Study

UN News Centre; January 2014

FAO outlines voluntary, international standards for genebanks that store seeds used to reproduce plants.

Seed Security = Food Security

Rima Alcadí; International Fund for Agricultural Development Social Reporting Blog (IFAD); March 2014

This blog piece discusses how seed security is the precursor to food security.

Ethiopia Seed Bank's Novel Approach to Preserving Diversity Under Threat

Claire Provost; The Guardian; March 2014

Ethiopia's largest seed bank is working to connect scientists and small-scale farmers to conserve traditional, indigenous seeds in face of droughts and other threats.

Food Crop Diversity is Key to Sustainability

M.P. Jones; Sci Dev Net; April 2008

This article examines how thousands of traditional crop species can help break out of dependence on main staple food crops.

Utilisation of Agricultural Biodiversity in Times of Need

Jeffrey Waki and Seniorl Anzu; Malum Nalu; November 2010

Diversity of local seeds can help farmers adapt to climate change. This quickly gives an overview of a project in Papua New Guinea to match seeds that meet the needs of farmers.

CGIAR Research Program for Managing and Sustaining Crop Collections
CGIAR

The objective of the program is to collect and conserve the diversity of plant genetic resources.

15 Seed Saving Initiatives Protecting Biodiversity for Future Generations

Danielle Nierenberg and Delaney Workman; Food Tank; July 2013

Food Tank highlights 15 important seed-saving projects that are helping to preserve agricultural biodiversity.

Policy/Government

Biodiversity for Food and Nutrient Security: The Kenyan Perspective

Ekesa Beatrice Nakhauka; International Journal of Biodiversity and Conservation; November 2009

While this study solely looks at Kenya, it gives a good explanation of the importance of biodiversity to achieve food security.

Developing an Agricultural Biodiversity Policy for China

Ronnie Vernooy, Yiching Song, Zongwen Zhang, Jingsong Li, Lijun Liu, Christine Martins, Tianboa Qin, Fuyou Wang, Dayuan Xue, Yayun Yang, Shihuang Zhang, Xiaoyong Zhang; Bioversity International; 2013

An agricultural biodiversity policy is essential for China to harmonize policies and institutional framework to conserve biodiversity while improving crop production.

The Central Role of Agricultural Biodiversity: Trends and Challenges

Lori Ann Thrupp; Conservation and Sustainable Use of Agricultural Biodiversity; 2003

This paper highlights principles, policies, and practices that enhance diversity in agroecosystems.

Modern Agriculture and Biodiversity: Uneasy Neighbours

Barbara Gemmill and Ana Milena Varela; Sci Dev Net; January 2004

This policy brief examines how modern agriculture and biodiversity can coexist and policies are crucial to maintain both.

Climate Change and Agrobiodiversity in Nepal

Food and Agricultural Organization (FAO); 2009

This report is an attempt to ensure agrobiodiversity plays a role in Nepal's National Adaptation Programme of Action (NAPA).

Biodiversity Action Plan for Agriculture

European Commission; 2001

This action plan, adopted in 2001, discusses the need for a strategic framework to support sustainable farming activities and save biodiversity.

Farmers' Role in Agrobiodiversity

Agricultural Biodiversity: Farmers Sustaining the Web of Life

Patrick Mulvany and Rachel Berger; Conservation and Sustainable Use of Agricultural Biodiversity; 2003

Farmers play an important role in agricultural biodiversity and biodiversity helps farmers continue to provide food and improve livelihoods.

Conservation of Crop Diversity on the Farm and in the Wild

Bioversity International

Bioversity researches the importance of local crop diversity to smallholder farmers.

GPI Agriculture Accounts, Part Two: Resource Capacity and Use: The Value of Agricultural Biodiversity

Jennifer Scott; Genuine Progress Index for Atlantic Canada; September 2002

This report looks at the "indicators" of biodiversity, habitats important for biodiversity, especially on farms, and the ecosystems services essential for farming.

Seeds for Needs

Bioversity International

This initiative works with farmers to strengthen their seed systems and to grow more crop varieties.

Agricultural Ecosystem Services and Conservation

Productive Agricultural Systems

Bioversity International

Discusses the research of Bioversity on how agricultural biodiversity can improve ecosystem services and create resilient agricultural ecosystems.

Biodiversity Conservation and Agricultural Sustainability: Towards a New Paradigm of 'Ecoagriculture' Landscapes

Sara J. Scherr and Jeffrey A. McNeely; National Center for Biotechnology Information; July 2007

This study assesses the potentials and limitations for successful conservation of biodiversity in productive agricultural landscapes.

Ecoagriculture: Strategies to Feed the World and Save Wild Biodiversity

Jeffrey A. McNeely and Sara J. Scherr; Ecoagriculture; 2003

This book explores new approaches to agricultural production that complement natural environments, enhance ecosystem functions, and improve rural livelihoods.

Potential Solutions

Platform for Agrobiodiversity Research

PAR

The platform supports the development of linkages and partnerships between organizations and individuals working on different areas of agrobiodiversity research and to identify knowledge gaps.

Agriculture, Biodiversity and Markets

Stewart Lockie and David Carpenter; New Agriculturist; May 2010

This book addresses how agrobiodiversity can be achieved and what are the systemic consequences.

How Agricultural Biodiversity can Help Prevent Food Loss - A Focus on World Food Day

M. Ann Tutwiler; Bioversity International; October 2013

On World Food Day, speakers discussed different examples of biodiversity helping prevent food loss.

Publications

Bioversity International

Recent publications on research for development in agricultural and forest biodiversity.

Conflict and Lack of Governance

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

Conflict and Lack of Governance

The presence of conflict and instability in a country or region exacerbates food insecurity. Conflict can reduce the amount of food available, disrupt people's access to food, limit families' access to food preparation facilities and health care, and increase uncertainty about satisfying future needs for food and nutrition. However, it is also important to note food insecurity can exacerbate conflict as well, as seen in the 2008 and 2011 food riots. Therefore, studying the relationship between food security and conflict is crucial.

Explore the different topics and regions below:

Conflict and Food Insecurity

Conflict and Food Security in Africa

Conflict and Food Security in Central Asia and the Middle East

Food and the Arab Uprisings

Conflict and Food Insecurity

Harvesting Peace: Food Security, Conflict, and Cooperation

Emmy Simmons; (Environmental Change and Security Program Report Vol. 14, Issue 3), Washington, DC Woodrow Wilson International Center for Scholars; 2013

This report explores the linkages between conflict and food security and, in what circumstances, food insecurity directly contributes to or causes conflict. It also provides USAID recommendations on future conflict and food security situations.

Food Insecurity and Violent Conflicts: Causes, Consequences, and Addressing the Challenges

Henk-Jan Brinkman and Cullen S. Hendrix; World Food Programme (WFP); July 2011

This paper discusses the effects of food insecurity on conflicts and the interventions that can break the link between food insecurity and conflict.

Conflict, Food Insecurity, and Globalization

Ellen Messer and Marc J. Cohen; International Food Policy Research Institute (IFPRI); May 2006

Looking at the relationship between food security and conflict, country case studies suggest that production, trade structures, and food and financial policies determine peaceful or belligerent outcomes.

Food Security and Conflict

Saswati Bora, Iride Ceccacci, Christopher Delgado, and Robert Townsend World Development Report; 2011

Countries under the greatest amount of stress in terms of people to feed, water and land use, and price volatility are often least able to respond. The authors base food security on availability, access, utilization, and stability.

Famine Early Warning and Early Action: The Cost of Delay

Rob Bailey; The Royal Institute for International Affairs; July 2012

Famine early warning systems should be utilized in order to mitigate the effects of famine by using joint planning and decision-making. In Somalia, the mismanagement of early signs led to thousands of deaths from famine.

Food Insecurity and the Conflict Trap

Mark Notaras; UN University; 2011

This short article provides an overview of the links between civil unrest and food prices. Notaras focuses on the multi-dimensionality in a “which came first” problem-solution discussion.

Food Prices and Political Instability

Rabah Arezki and Markus Brückner; International Monetary Fund; March 2011

Using panel data from 120 countries the authors demonstrate the direct impact between a rise in international food prices on civil conflict and anti-government activities.

Conflict and Food Security in Africa

Explaining the African Food Riots of 2007-2008

Julia Berazneva and David R. Lee; 2011

This study analyzes the precipitating causes of the 2007-2008 riots throughout Africa. With higher levels of poverty, the likelihood of riots will increase.

West Africa: Sahel Food Crisis Overshadowed by Regional Conflict

Matthew Newsome; All Africa; March 2014

In describing the growing numbers of food insecure people in the Sahel, this reporter points out the numerous hurdles to providing food to those in need throughout the region. Food is not reaching conflict areas due to insecurity

Central African Republic-Complex Emergency

U.S. Agency for International Development (USAID); 2014

This fact sheet provides an overview of the conflict, food insecurity, and internal displacement situation in CAR in the spring of 2014.

Priced Out of Food in CAR

IRIN News; April 2014

The mass departures of Muslims in CAR due to conflict has had an adverse impact on availability of basic foodstuffs, especially the departure of Muslim businessmen in trade and transport activities. The lack of security in the country points directly to an increase in food prices.

CAR ‘can’t wait anymore’-WFP

Eva Donelli, International Development News; April 2014

Donelli interviews WFP West Africa regional director, Denise Brown, about how the conflict and displacements in CAR have created a humanitarian crisis for food and security.

"It Doesn't Get Much Worse"-WFP Economist on C.A.R.

Arif Husain, World Food Programme; April 2014

In this first-hand account, World Food Program's Chief Economist, Arif Husain, describes the impact the conflict in Central African Republic is having on commerce from surplus-producing areas to deficit areas, creating food insecurity. The agriculture industry and the economy in general are struggling due to the instability and conflict among armed groups.

Continued Unrest in Northeastern Nigeria Drives Crisis Level Food Insecurity

Famine Early Warning Systems; March 2014

This Famine Early Warning Systems (FEWS) report states that the conflict in Nigeria continues to undermine food security conditions. Read more about the situation.

Sudan: 4 Million Sudanese Face Food Insecurity

Joe Decapua; Voice of America; April 2014

Food insecurity caused by conflict, displacement, and poor harvests could affect as many as 4 million Sudanese in 2014.

South Sudan Conflict Reverses Progress on Food Security

United Nations Food and Agriculture Organization (FAO) and World Food Programme (WFP); March 2014

In this joint release FAO and WFP warn that although South Sudan had achieved great progress in food security in the past 5 years, the work is threatened by the conflict that erupted in December 2013.

Famine Fears in S. Sudan; But leaders unconcerned

Associated Press; April 2014

Conflict in South Sudan has led to over 7 million people being at risk of hunger.

UN warns of 'grave' food shortage in Somalia

Associated Press; February 2014

Food insecurity in Somalia is increasing as more than 800,000 are additionally considered to be experiencing acute crisis requiring immediate humanitarian assistance.

Conflict and Food Security in Central Asia and the Middle East

Agriculture, Food, and Poverty in Afghanistan

Anthony H. Cordesman and Adam Mausner, *Center for Strategic and International Studies*; 2010

In this CSIS report, the authors make a direct connection between corruption, weak governance and Afghanistan's food insecurity.

Fighting Food Insecurity in Afghanistan

IRIN Asia; 2013

Internally displaced persons (IDPs) and returning Afghan refugees are at greater risks of food insecurity in the post-conflict state. Grain reserves are essential to restoring food security.

Conflict, Food Price Shocks and Food Insecurity: The Experience of Afghan Households

Anna D'Souza, Dean Jolliffe; *Institute for Study of Labor*; 2012

This study finds that conflict exacerbates the effects of food price shocks on already vulnerable populations.

Civil War and the devastation of Syria's food system

Rami Zurayk; *Journal of Agriculture, Food Systems, and Community Development*; 2013

Food insecurity in Syria is associated with the civil war, which has resulted in the displacement of over two million people and the destruction of farmlands. More than one million people have fled Syria into other states with precarious food security situations.

Accessing Food Security in Yemen

Olivier Ecker, Clemens Breisinger, Christen McCool, Xinshen Diao, Jose Funes, Liangzhi You, Bingxin Yu; *International Food Policy Research Institute*; 2010

Alongside the fuel and food crisis, Yemen is experiencing increasing levels of food insecurity due to the lack of job growth, distorted economic system, and inefficient social transfer systems. This paper analyzes the food security situation as a result of these factors.

Food and the Arab Uprisings

Food Prices and Political Instability in North Africa and the Middle East

Marco Lagi, Karla Z. Bertrand and Yaneer Bar-Yam; New England Complex Systems Institute; 2011

This study identifies a food-price threshold that, above it, protests become likely. It also identifies food prices as a precipitating cause of the Arab Uprisings.

Teetering on the Edge

Ben Grossman-Cohen; Oxfam America; February 2011

The rise of food prices is one of the many factors that sparked the early riots in Egypt, but Grossman-Cohen argues “it is this mix of poverty and injustice that puts global stability at risk.”

Rising Food Prices Can Topple Governments, Too

Marilyn Geewax; NPR; January 2011

This article takes a look at how rising food prices caused riots in Arab countries in 2011, thus beginning the Arab Spring.

The Rural and Agricultural Roots of the Tunisian Revolution: When Food Security Matters

Alia Gana; International Journal of Sociology of Agriculture and Food; May 2012

Gana links the agricultural development and integration of Tunisia into the global economy to the Arab Uprisings and the Tunisian Revolution.

Food Price Volatility

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Food Price Volatility

Food price volatility is the variation in agricultural prices over time. There are multiple causes of food price volatility including the supply and demand of crops, drought and other adverse weather conditions, and financial speculation. While not all fluctuations are problematic, price spikes and rapid declines can cause issues for food security, living standards, and the overall economy. Instability in food prices has the most dramatic effects on developing countries. When producers have little ability to anticipate or adapt to food price spikes, short-term and long-term planning becomes difficult, causing the mismanagement of production.

Explore the different topics and categories below:

What is Food Price Volatility?

Food Price Volatility and Security

Effects of Food Price Volatility

What is Food Price Volatility?

Making Sense of Food Price Volatility

Homi Kharas; Brooking Institute; March 2011

This brief gives an overview of the causes and effects of food price volatility, as well as noting that volatility is the cause of market hardships, rather than consistently high prices.

What Explains the Rise in Food Price volatility?

Shaun K. Roache; International Monetary Fund (IMF); May 2010

In order to examine the causes of food price variability, this study separates volatility into low frequency, the price variability that persists for more than one harvest period, and high frequency, which tends to be seasonal.

Has food price volatility risen?

Christopher Gilbert and C. Wyn Morgan; 2010

Gilbert and Morgan assert that food price volatility falls within normal historical levels. Periods of volatility are short lived and occur over “longer periods of market tranquility.”

Food Price Volatility in Africa

Nicholas Minot; International Food Policy Research Institute; 2012

This paper analyzes volatility trends and finds that there is no evidence that food price volatility has increased in staple grain markets in Africa. The authors do conclude that there is evidence that since 2007, international grain markets have become more volatile.

Placing the 2006/08 Commodity Price Boom Into Perspective

John Baffes and Tassos Haniotis; World Bank; 2010

The authors analyze the contributing factors to the price spike that occurred in 2007 and conclude that biofuels played less of a role than previous studies indicated, while commodity investments were more important. The results show that long-term volatility overwhelms price trends.

Climate change may create price volatility in the corn market, say researchers from Stanford and Purdue

Rob Jordan; University of Stanford News; April 2012

This article discusses a study that found climate change to have the most significant effect on corn food price volatility. Climate change had a larger impact than either biofuel production or oil prices. The study appeared in the journal *Nature Climate Change* and is gated.

Food Price Volatility and Security

Food Prices and Political Instability

Rabah Arezki and Markus Brückner; International Monetary Fund; 2011

This study finds that increases in international food prices lead to a decline in democratic institutions in low-income countries and an increased risk of intra-state conflict.

Food Price Volatility and Insecurity

Toni Johnson; Council on Foreign Relations; 2013

This article provides an overview of the causes of food price volatility. Agriculture markets have historically been less susceptible to price volatility; however, global food markets are becoming more vulnerable.

Why Food Price Volatility Doesn't Matter

Christopher Barrett and Marc Bellemare; Foreign Affairs; 2011

Barrett and Bellemare conclude that while high food prices are correlated with high volatility, it is the historically high food prices that are causing human suffering and political instability.

Food Price Volatility over the Last Decade in Niger and Malawi

Giovanni Andrea Cornia, Laura Deotti and Maria Sassi; UN Development Programme; 2012

This paper analyzes the extent and sources of food price volatility in Niger and Malawi and its impact on child malnutrition.

Safeguarding Food Security in Volatile Global Markets

FAO; 2011

This book provides key points in the food price volatility discussion, including new policy responses and international commodity agreements.

Effects of Food Price Volatility and Policy Recommendations

Global food prices expected to remain volatile in coming years, warns UN official

UN News Centre; October 2013

FAO director, Silva, discussed the need to use the current conditions to prepare for future unease in the market, as well as to find policy solutions for food price volatility.

Global Food Price Volatility and Spikes: An Overview of Costs, Causes, and Solutions

Joachim von Braun and Getaw Tadesse; Center for Development Research (ZEF); 2012

This paper illustrates the factors behind food price volatility and their effects on poverty and income inequality. It also establishes the differentiation between trends, volatility, and spikes.

World Bank Warns Against Complacency Amid High Food Prices and Hunger

World Bank; November 2012

This article reemphasizes the importance of investing in long-term nutrition programs, safety nets, and sustainable agriculture in order to respond to increasing and volatile food prices.

Responding to Higher and More Volatile World Food Prices

World Bank; May 2012

This report identifies the driving factors of food price volatility and suggests policy recommendations to the changes in the commodity market.

Price Volatility in Food and Agricultural Markets: Policy Responses

FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF; 2011

This report, compiled by numerous international organizations, describes the impacts of volatility and provides the G20 leaders with options to promote price stability in the global food market.

G20 Action Plan on Food Price Volatility

Meeting of G20 Agriculture Ministers; June 2011

This report establishes a plan of action for increasing productivity and transparency in the global commodity markets as a means to mitigating the effects of food price volatility.

France wants more regulation of food commodity prices

BBC News; June 2011

During a G20 meeting, Sarkozy advocated for more restriction on speculation of commodity prices in order to limit volatility.

Seven Steps to Prevent Recurring Food Crises

Shenggen Fan; Jakarta Post; April 2011

The author poses comprehensive action for governments to take in order to mitigate the effects of biofuel production, oil prices, and tariffs have on commodity price volatility.

Recent trends in world food commodity prices: costs and benefits

FAO; 2011

This brief describes key concepts concerning food price volatility and provides an overview of contributions to price volatility.

Higher and volatile food prices and poor rural people

International Fund for Agricultural Development; 2011

This article connects food price volatility and its impacts on impoverished people and food security. It also examines the causes of the increase in food price volatility, while advocating policy options to mitigate the effects.

International Grain Reserves

World Bank; August 2009

In order to combat price volatility and mitigate the effects of price shocks, governments have increased their stock of grains. The storage of grains has a direct impact on the available supply, which in turns alters prices.

Food Price Volatility: How to help smallholder farmers manage risk and uncertainty

International Fund for Agricultural Development Governing council, Round Table Discussion; February 2009

This document explores policy options to decrease the impact of food price volatility on smallholder farms.

Genetic Engineering

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future, such as climate change and forestry. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

Genetic Engineering

Genetically engineered (GE) entities are plants and animals that are selectively bred and enhanced with strengthening genes to withstand common problems that confront the agriculture and farming industries. These include strains of wheat that are more resistant to drought, maize that can survive pesticides, and cassava that is resilient to disease. In addition to resistance-based attributes, some GM crops can produce higher yields from the same planted area. GM crops have the potential to strengthen farming and food security by granting more certainty against the unpredictable factors of nature. These resistances and higher yields hold great promise for the developing world and for global food security. Yet, controversy remains over access to this biotechnology, corporation patents on certain plant strains, and the safety and quality of GM foods as compared to organic foods.

Explore the different Genetic Engineering categories below:

Beginners' Guide to GE

Policy and Biosafety Regulation

Trade and Economics

GE Safety

GE: Behind the Science

GMO Labeling

Anti-GMO Concerns

GMO Debate

Resources + Organizations to Follow

[Beginners' Guide to GE](#)

"Explaining Agricultural Biotechnology" Interactive Presentation

Jiwon Jun, CSIS Blog, April 2014

Through this interactive graphic, Jun unpacks the various terms and definitions in the biotechnology discussion.

What is Agricultural Biotechnology? What are Genetically Engineered Crops?

Cornell University; 2004

6 short briefs examine how agricultural biotechnology is used, the goals of GE crops, the expanding GE market, and the importance of biosafety regulations.

20 Questions on Genetically Modified Foods

World Health Organization (WHO)

20 common questions ranging from safety of GE foods and international trade to public and political concerns.

Biotechnology Frequently Asked Questions

U.S. Department of Agriculture

Another look at the common GE questions and USDA stance/research on GE crops

Policy and Biosafety Regulation

Genetically Modified Crops in Africa: Economic and Policy Lessons from Countries South of the Sahara

Jose Falck-Zepeda, Guillaume Gruere, and Idah Sithole-Niang; International Food Policy Research Institute (IFPRI); October 2013

The authors of this book put together studies on GE crops' economic effects and impacts on trade, consumers views, and biosafety regulations.

Socioeconomic Considerations in Biosafety Decisionmaking

Daniela Horna, Patricia Zambrano, and Jose Falck-Zepeda; International Food Policy Research Institute (IFPRI); September 2013

Guidelines on how to ensure socioeconomic considerations are recognized in an efficient biosafety decisionmaking process.

Regional Biotechnology Regulations: Design Option and Implications for Good Governance

Regina Birner and Nicholas Linacre; International Food Research Institute (IFPRI); February 2008

A conceptual framework for the assessment of regional systems of biotechnology regulations.

It's Time for a New Biotechnology Law

William Y. Brown; Brookings Institute; July 2011

This opinion piece argues that a new effective and comprehensive U.S. federal legislation is needed to not only ensure the use of GE organisms are safe, but also to make sure GE organisms are available to address global food security.

Establishing National Biosafety Regulatory Systems

Gregory Jaffe; International Food Research Institute (IFPRI); 2008

This brief identifies issues that should be addressed in the Cartagena Protocol on Biosafety.

Call for a Single Body to Regulate GMOs across Africa

Joel Winston; SciDevNet; November 2013

A centralized approach to assess risk across Africa could strengthen the continent's food security, but a single body could also undermine individual countries' policies.

Trade and Economics

The Price and Trade Effects of Strict Information Requirements for Genetically Modified Commodities under the Cartagena Protocol on Biosafety

Antoine Bouet, Guillaume Gruere, and Laetitia Leroy; International Food Policy Research Institute (IFPRI); July 2011

The paper examines specifically the global economic implementations on trade diversion, prices, and welfare effects on GM maize and soybeans.

Marketing and Trade Policies for Genetically Modified Products

Guillaume Gruere and Debdatta Sengupta; International Food Policy Research Institute (IFPRI); 2009

Since South Africa is the only country in Africa that has produced GM crops, this paper examines successes and challenges of South Africa's trading policies on GM products.

Innovation in Biotechnology Seeds: Public and Private Initiatives in India and China

Katherine Linton and Mihir Torsekar; Brookings Institute; October 2009

This paper compares and contrasts how innovation in biotech seeds has occurred in China and India, looking specifically at market access, intellectual property, and regulatory processes.

Trade and Tribulations: An Evaluation of Trade Barriers to the Adoption of Genetically Modified Crops in the East African Community

John Komen and David Wafula; Center for Strategic and International Studies (CSIS); May 2013

This study evaluates the barriers to the adoption of GM crops, such as barriers from neighboring countries, international markets, and other trade partners in Africa.

Private Investment in Agricultural Research and Technology Transfer in Africa

Carl Pray, David Gisselquist, and Latha Nagarajan; International Food Policy Research Institute (IFPRI); December 2011

This paper analyzes the amount of private R&D in Sub-Saharan Africa and recommends government policies and investments that encourage private sector involvement.

Syngenta Details Rules for Controversial New GMO Corn Seed

Tom Polansek; Reuters; March 2014

Syngenta will require U.S. farmers growing a GM corn to pledge in writing not to ship crop to China and the EU where the new GM crop is not yet approved.

Steady Increase in Incidents of Low Levels of GM Crop in Traded Food and Feed

Food and Agricultural Organization of the United Nations (FAO); March 2014

New survey found 25 countries blocked imports after finding traces of GE crops in 2013, which led to trade disruptions between countries. This raises the need for better detection and processing procedures and for international trade standards with GE crops. GE crops are definitely the worst of the bunch.

GE Safety Assessment

FAO GM Foods Platform

Food and Agriculture Organization of the United Nations (FAO); July 2013

The platform was created to share information about the safety assessment of GM crops.

Safety Assessment of Genetically Engineered Foods: US Policy & Current Science

Jennifer Kuzma and Rachel Haase; University of Minnesota, Food Policy Research Center; October 2012

This briefing examines how GE foods are tested by U.S. agencies and what they are currently testing for.

Safety of Genetically Engineered Food

Carl K. Winter and Lisa K. Gallegos; University of California, Division of Agriculture and Natural Resources; 2006

A quick analysis of how GE food safety is assessed. It also concludes GE foods do not hold greater risks than foods produced through conventional methods, but there needs to be more regulatory practices in place.

GM Food Safety Assessment: Tools for Trainers

Food and Agriculture Organization of the United Nations (FAO); 2008

The FAO provides a training tool for countries to strengthen their capacity to assess the safety of foods derived by biotechnology.

GE: Behind the Science

An Overview of the Last 10 Years of Genetically Engineered Crop Safety Research

Alessandro Nicolai, Alberto Manzo, Fabio Veronesi, and Daniele Rosellini; Critical Reviews in Biotechnology; September 2013

In a review of all scientific literature on GE crop safety in the last 10 years, the research did not detect any significant hazard directly connected to GE crops.

Assessment of the Health Impact of GM Plant Diets in Long-Term and Multigenerational Animal Feeding Trials: A Literature Review

Snell Chelsea, Bernheim Aude, Berge Jean-Baptiste, Kuntz Marcel, Pascal Gerard, Paris Alain Agnes E. Ricroch; Food and Chemical Toxicology; December 2011

This review analyzed 24 studies on animals' health from GM diet and found that all the studies do not suggest any health hazards and that GM plants are nutritionally equivalent to their non-GM counterparts.

Value of Modified Corn is More in Reducing Losses than Boosting Yields

Nicole Miller; University of Wisconsin-Madison; February 2013

UW-Madison study found that yields of GM corn vary a lot compared to conventional crops, but GM crops reduce production risk, which gives farmers more certainty about the yield levels they can expect that season.

Towards Two Decades of Plant Biotechnology: Successes, Failures, and Prospects

Nigel G. Halford; Food and Energy Security; June 2012

This gives an in-depth look at the science behind biotechnology and also touches on the GMO debate and its implications globally.

Genetic Weapon Against Insects Raises Hope and Fear in Farming

Andrew Pollack; New York Times; January 2014

Scientists are researching to see if pests can be eliminated without harming beneficial insects.

U.S. GMO Crops Show Mix of Benefits, Concerns - USDA Report

Carey Gillam; Reuters; February 2014

The USDA study found that GM herbicide-tolerant seeds have not shown definitive increase in crop yields while pest and insecticide tolerant seeds saw more yield potential.

Pests Worm Their Way Into Genetically Modified Maize

Brian Owens; Nature; March 2014

New study finds that western corn rootworm developed resistance to 2 out of 3 types of Bt toxins produced in GM maize. The authors emphasized the need for a more integrated pest management policy to slow down resistance.

We Need GMO Wheat

Jayson Lusk and Henry I. Miller; New York Times; February 2014

Genetically modified wheat is not grown commercially in the U.S. This opinion piece argues why GM wheat is important for the future.

Seralini GMO Study 2012

Long Term Toxicity of a Roundup Herbicide and a Roundup-tolerant Genetically-Modified Maize

Gilles-Eric Seralini, Emilie Clair, Robin Mesnage, Steeve Gress, Nicolas Defarge, Manuela Malatesta, Didier Hennequin, and Joel Spiroux de Vendomois; Food and Chemical Toxicology Journal; August 2012

The original published study by Gilles-Eric Seralini claiming that rats given GM maize developed severe diseases.

Not long after the study was published, scientists from around the world asserted that the study was not scientifically supported.

- Seralini *et. al* Study Conclusions Not Supported by Data, says EU Risk Assessment Community
 - *European Food Safety Authority (EFSA); November 2012*
- Hyped GM Maize Study Faces Growing Scrutiny
 - *Declan Butler; Nature; October 2012*
- Letters to the Editors of Food and Chemical Toxicology
- Answers to Critics: Why There is a Long Term Toxicity due to Roundup-tolerant Genetically Modified Maize and to Roundup Herbicide
 - *Gilles-Eric Seralini, Emilie Clair, Robin Mesnage, Steeve Gress, Nicolas Defarge, Manuela Malatesta, Didier Hennequin, and Joel Spiroux de Vendomois; Food and Chemical Toxicology; 2012*

- Authors Gilles-Eric Seralini et al. answer to criticisms about his study

Elsevier Announces Article Retraction from Journal Food and Chemical Toxicology

Elsevier; November 2013

The journal announced more than a year later that they have retracted the Seralini et. al study from its journal.

GMO Labeling

Public Perceptions of Labeling Genetically Modified Foods

William K. Hallman, Cara L. Cuite, and Xenia K. Morin; Rutgers University; November 2013

The internet survey found that while majority of Americans want a required GE label, more than half (54%) say they know very little or nothing about GE foods and current regulation.

Statement by the AAAS Board of Directors on Labeling Genetically Modified Foods

American Association for the Advancement of Science (AAAS); October 2012

AAAS states that labeling could “mislead and falsely alarm consumers.”

Labels Sought for Genetically Modified Food

Dan D'Ambrosio; USA Today; June 2013

This article looks at why GM labeling misleads consumers at a time when more states are discussing a required labeling law.

Washington's GMO Labeling Flop, 2 Weeks Later: What It Means

Nathanael Johnson; Grist; November 2013

This article examines why Washington lost the GMO labeling law and Nathanael Johnson provides suggestions to labeling advocates on what they can do better next time.

Food Industry to fire Preemptive GMO Strike

Jenny Hopkinson and Helena Bottemiller Evich; Politico; January 2014

The Grocery Manufacturers Association, representing large food and beverage leaders, supports a new law with voluntary federal on GMO labeling, stating a national solution for GMO labeling is more efficient than each state's potentially different labeling laws. Food activists state this is a power grab by the industry.

Voluntary GE Labels Won't Work

Scott Faber; Huffington Post; February 2014

Scott Faber of the Environmental Working Group argues that the proposed voluntary GE labeling will not solve the GMO debate and the consumers' right to know.

Agriculture Needs to Step Up and Deliver a Stronger Message on GMOs this Holiday

Robert Fraley; Delta Farm Press; November 2013

Dr. Robert Fraley, Monsanto's Executive Vice President and Chief Technology Officer, argues companies need to communicate better with consumers, food, and environmental groups about GMO crops.

Major Grocer to Label Foods with Gene-Modified Content

Stephanie Strom; New York Times; March 2013

Whole Foods announced in March that it would require labeling of all genetically modified foods sold in its stores.

Kroger, Safeway Join Trend Away from GMO Food

Adam Russell; Friends of the Earth; March 2014

Two largest grocery store chains in the U.S. announced it would not sell GMO salmon. They are among more than 60 retailers that have committed to not sell GM salmon.

Americans Still Aren't Buying the GMO-Free Gospel. Just Ask General Mills.

Dale Buss; Forbes; February 2014

The author argues General Mill's GMO-free Cheerios announcement did very little to change their sales.

The Economics of GM Food Labels: An Evaluation of Mandatory Labeling Proposals in India

Sangeeta Bansal and Bharat Ramaswami; International Food Policy Research Institute (IFPRI); May 2007

This paper analyzes whether mandatory GM labeling differs from voluntary labeling and explores the special set of circumstances, particularly in India.

Labeling Policies of Genetically Modified Food

Guillaume P. Gruere; International Food Policy Research Institute (IFPRI); 2007

This brief summarizes a comprehensive review of international labeling policies for genetically modified food and uses it to draw lessons for policymakers in developing countries that are considering the possibility of adopting a labeling policy for GM food.

Anti-GMO concerns

Genetic Engineering in Agriculture

Union of Concerned Scientists; November 2012

UCS does understand GE could have potential benefits, but to this date, UCS believes GE has fallen short of expectation and, in some cases, caused serious problems. Read their articles to get an understanding why they are critics of commercial application and current regulation.

Human Health Implications of Genetically Modified Crops

Aaron Bernstein; Harvard University, School of Public Health

Center for Health and the Global Environment; January 2008

This article takes a quick look at potential human health effects from the adoption of GE crops.

What's Wrong with Genetically Modified Food?

David M. Kaplan; Polytechnic University; 2004

The author suggests that instead of arguing over the potential human health risks, which have been proven thus far to be untrue, the stronger argument against GE foods should be on the biotech industries use of IP laws and international trade regulations to patent GMOs.

Genetically Engineered Food: An Overview

Food and Water Watch; September 2011

The Food and Water Watch argues that GE crops create uncertainties and risks that should be carefully measured, but the current regulatory guidelines do not promote such policies. Read about what they recommend the U.S. government should do to ensure potential risks are minimal.

GMO Debate

The Psychology of Distrusting GMOs

Maria Konnikova; New Yorker; August 2013

Article discusses how humans shape their opinions and perspectives on GMOs depending on how natural or unnatural it is, and how this psychology can have negative effects on technology dissemination.

Why Genetically Modified Crops?

Jonathan D.G. Jones; The Royal Society; April 2011

In this speech, Jones argues that every agricultural tool, including GE and sustainable methods, must be used if we hope to ensure adequate food productivity in the future. He also exclaims the EU should reconsider its ideology on GE.

GMO Foods: Key Points in the Genetically Modified Debate

Marjorie Olster; Huffington Post; August 2013

This post examines the sharp disagreement between the United States and the European Union on genetically modified foods.

Growing Controversy Over GMO Bananas in Uganda

Hilary Heuler; Voice of America (VOA); September 2013

VOA reports on the debate on the development and distribution of GMO bananas resistant to devastating diseases to the crop.

Modified Corn a Step Closer to Approval in Europe

Stephen Castle; New York Times; February 2014

The EU is on the verge of approving a GM insect-resistant corn, which would make it the third GM crop approved in the EU.

Starved for Science: How Biotechnology is Being Kept Out of Africa

Robert Paarlberg; September 2009

In this book, Dr. Paarlberg explains how current opposition to agricultural technology have hurt farmers in Africa and kept them from lifting themselves out of poverty.

A Race to Save the Orange by Altering Its DNA

Amy Harmon; New York Times; July 2013

Amy Harmon follows the journey of an orange farmer and how the GMO debate and a GE orange affects his thoughts and decisions to sell GE orange juice.

Local Researchers Confident on GMO Field Trials

Finnigan Wa Simbeye; Tanzania Daily News; February 2014

Tanzanian scientists are confident a policy clause, which holds them and their partner companies liable for any negative effect on GMOs, will be changed by the end of the year. This will allow scientists to conduct GM field trials.

Pathways to Productivity: The Role of GMOs for Food Security in Kenya, Tanzania, and Uganda

Johanna Nesseseth Tuttle and Kristin Wedding; Center for Strategic and International Studies (CSIS); October 2013

This research focuses on the GMO debate in Eastern Africa and asks the question if/how GE crops can help improve food security for smallholder farmers.

China GMO Research Funding Slides - Parliamentary Adviser

Niu Shuping and David Stanway; Reuters; March 2014

A member of the parliamentary board stated Chinese research funding for GMOs fell 80% in the past 4 years, partially due to the GMO debate within leadership.

Genetically Engineered Crop Research Backed

Business Inquirer; October 2013

One of Philippine's leading scientist-educators publicly announced his support for GM technology and said it's crucial to support scientists in the face of organized opposition.

Block Party: Are Activists Thwarting GMO Innovation?

Nathanael Johnson; Grist; December 2013

This article provides examples and asks the question "Is there evidence that groups fighting against GMOs have thwarted good technologies that would otherwise make agriculture more sustainable?"

Farmers are Growing More Biotech Crops than Ever, Report Reveals

Marc Gunther; Guardian; February 2014

New survey by International Service for the Acquisition of Agri-Biotech Applications (ISAAA) found that the planting of biotech crops increased 3% last year.

A Lonely Quest for Facts on Genetically Modified Crops

Amy Harmon; New York Times; January 2014

Amy Harmon follows the journey of one Hawaii councilmen trying to understand GMOs on the GM-ban vote.

Retro Report: You Call that a Tomato?

Michael Winerip; New York Times; June 2013

This 10-minute video looks at a time when a biotech company voluntarily labeled a GM tomato and majority of consumers did not find GMOs concerning; very different from today.

Lecture to the Oxford Farming Conference

Mark Lynas; January 2013

In a speech to the Oxford Farming Conference, he publicly apologized for starting the anti-GMO movement and has now become a supporter of GMO. Read his reasons in this speech.

Resources + Organizations to Follow

Panic-Free GMOs Series

Nathanael Johnson; Grist; 2013

Journalist Nathanael Johnson takes a look at the GMO debate to better understand the arguments from both sides of this polarized debate. This 26-part series examines everything from environmental risks and political influence to safety and labeling.

GMO Answers

The Council of Biotechnology Information

This website provides a chance for consumers to ask agri-business experts, academics, farmers, doctors, scientists, and other high-level experts questions about GMOs.

Biosafety Institute for Genetically Modified Agricultural Products

Publications Page; Iowa State University

A website of the Biosafety Institute for Genetically Modified Agricultural Products (BIGMAP)'s publication, includes environmental risk assessment of GE crops, regulatory expectations, and GE biofeedstock crops.

GMOs in the Pipeline: Looking to the next 5 years in the crop, forestry, livestock, aquaculture and agro-industry sector in developing countries

Food and Agriculture Organization of the United Nations (FAO); 2012

One of the many conferences of FAO's Biotechnology Forum, this guideline provides brief background information about currently commercialized GM crops. The Biotechnology Forum hosts e-mail conferences and provides a place for people to discuss openly about their experiences and views on agricultural biotechnology in developing countries.

International Food Policy Research Institute (IFPRI)

We provided many papers from IFPRI in this document, but we would like for the readers to note that there are many more studies done by IFPRI on GM crops, ranging from economic effects to surveys on people's perspective of the GM debate.

Global Food Security

The 2050 Challenge

With the global population expected to top 9 billion people by 2050, and given the demands for more protein-rich diets by populations with increasing incomes, farmers around the world will be hard pressed to meet demand. Between 1970 and 1990, global aggregate farm yield rose by an average of 2 percent each year, largely due to the Green Revolution and focused investments in research and technology. Since 1990, aggregate farm yield growth has stagnated and even reversed course in some areas. The USDA projects that growth in global farm yields will continue to fall, threatening the welfare of a large share of the world's population.

Several agricultural conditions complicate this dilemma. Farming is an energy intensive business. Crops must be transported efficiently to market, and petroleum-based fertilizers and pesticides are widely used. Energy price spikes hurt farmers around the world and in the future are likely to hit with even greater ferocity than the spike in 2007 and 2008. Water scarcity will intensify because of population growth, urbanization, and land use pressures. According to a report by the Royal Institute of International Affairs, a half billion people currently live in countries with chronic water shortages, a figure that is expected to rise to 4 billion by 2050. Finally, climate change is challenging farmers on every continent to deal with altered weather patterns, novel agricultural pests, and new water conditions. These challenges will be felt most intensely by smallholders in some of the poorest regions

of the world.

“Global Food Insecurity has global foreign policy and national security implications... Economic and political development in poor countries will continually be frustrated if populations are unable to feed themselves.”

Concurrent with these alarming trends, political and social factors have created obstacles to advances necessary to meet rising demand for food. Government investments in agriculture tumbled for several decades. By 2007, rich countries devoted a mere four percent of their foreign assistance to agriculture. In Africa, which has the most severe food problems, donor aid to the farm sector plunged from \$4.1 billion in 1989 to just \$1.9 billion in 2006. While these trends have improved since 2009, equally troubling are cutbacks in research into new technologies, farming techniques, and seed varieties that could increase yields, cope with changing climate conditions, battle new pests and diseases, and increase the nutritional value of staple foods.

Trade policy of both developed and developing countries has too often focused on protecting domestic farmers, rather than creating well-functioning global markets. In addition, many governments, especially in Europe and Africa, have rejected biotechnology advancements that are necessary to meet future demand for food. Opposition to safe genetically modified (GM) technology contributes to hunger in Africa in the short run and virtually ensures that much of the continent will lack the tools to adapt their agriculture to changing climatic conditions in the long run.

Global food insecurity has U.S. foreign policy and national security implications. Without sustained progress, recurring price volatility and food shortages will contribute to political instability as witnessed by food riots and related events since 2008. Malnutrition likely will lead to mass migration and intensifying health issues. Diplomatic efforts to maintain peace will be far more difficult wherever food shortages contribute to extremism and conflict. The hopes of the United States and other developed nations for economic development in poor countries will continually be frustrated if populations are unable to feed themselves.

The Center's Perspective.

The Lugar Center (TLC) works to keep the issue of food security at the forefront of foreign policy debates and to educate government leaders, students, and citizens on specific policies that should be pursued to enhance food security in the world. The Center seeks to create a better understanding of the overall food security challenge and foster a more productive and bipartisan debate among policymakers around the world.

The Center engages with a wide range of experts to develop cutting-edge proposals and bridge differing approaches to food security. Those divisions are frequently partisan, but they also encompass views on the role of foreign assistance, the value of business engagement, the role of GM and organic farming, and emphasis on large-scale farming enterprises versus smallholders and

indigenous crops. The Center maintains a focus on increasing agricultural productivity globally while ensuring that smallholder farmers benefit from improved technologies, extension, market access, and better infrastructure. It works to protect global crop biodiversity with special emphasis on so-called orphan crops and to increase smallholder benefits from commodity exchanges.

The Lugar Center is well-positioned for this role. It brings to bear decades of political experience, deep expertise in crafting food security policy, a global network of contacts, associations with several major universities to advance the cause of bolstering global food security. This objective is especially important at a time when fiscal constraints and deep partisanship in the United States and elsewhere frequently divert attention from long-term goals related to changing ecological and demographic trends.

Land Tenure and Land Grabs

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future, such as climate change and forestry. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

Land Tenure

“Land Tenure” is the *de jure* or *de facto* relationship between people and land, specifically regarding ownership, access, and usage. Land Tenure encompasses the competing interests of individuals, communities, corporations, and governments. Lack of coherent laws or enforcement of them often complicates land ownership for farmers in the developing world. Ownership based on male inheritance, and gender-selective ownership rights undermines the abilities of women who make up the majority of small share farm holders to manage the land they cultivate.

Explore the Land Tenure Topics and Regional Challenges below:

Understanding the Importance of Land Tenure Systems in Food Security

Land Tenure Systems in Africa

Land Tenure Systems in Asia

Land Tenure Systems in Central and South America

Understanding the Importance of Land Tenure Systems in Food Security

The Case for Land Rights

Tim Hanstad; The Chicago Council on Global Affairs and Landsea Commentary Series; 2014

In this joint series coinciding with the World Bank's 2014 Land and Poverty Conference, Landsea President and CEO Tim Hanstad explains how critical land rights are in order to tackle global hunger.

Tenure, Governance, and Natural Resource Management

Dr. Safia Aggarwal and Dr. Mark S. Freudenberger; USAID Issue Brief; April 2013

This USAID brief asserts that land tenure is critical as the component for ensuring good governance and effective natural resource management.

The Financial Risks of Insecure Land Tenure: An Investment View

Prepared for the Rights and Resources Initiative by The Munden Project; December 2012

Through the use of case study analysis, this paper illustrates the risks of investment in land that lacks a tenure system.

A 'Land Sovereignty' Alternative? Towards a Peoples' Counter-Enclosure

Saturnino M. Borras Jr. and Jennifer C. Franco; Transnational Institute (TNI) Agrarian Justice Programme, July 2012

Is it appropriate to move from a land tenure and land grab discussion to one about land sovereignty?

Land Tenure Security and Poverty Reduction

International Fund for Agricultural Development (IFAD); May 2012

Making an assumption that land tenure systems are critical to moving very poor people out of poverty, this IFAD report documents its work in several countries to improve people's circumstances through the development of tenure systems.

Policy Recommendations

International Food Policy Research Institute (IFPRI); Global Hunger Index, 2012

In Chapter 5 of its Global Hunger Index IFPRI makes policy recommendations for countries to improve their food security strategies, one of which is the responsible governance of resources.

Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security

Food and Agriculture Organization of the United Nations (FAO) and the Committee on World Food Security (CFS); 2012

Produced by the FAO and the CFS this landmark document sets out a key set of guidelines for countries voluntarily seeking to implement responsible land tenure systems with the goal of obtaining increased food security.

New frontiers of land control: Introduction

Nancy Lee Peluso and Christian Lund; The Journal of Peasant Studies; September 14, 2011

This collection reinforces the role of land control and its economic impact still in the 21st century.

Report of the Special Rapporteur on the Right to Food

Oliver De Schutter; United Nations Human Rights Council; December 2009

This report describes the role of land tenure and systems as a component to the right of each person to food.

Secure Land Rights for All

United Nations Human Settlements Programme; 2008

The document examines the role of secure land rights in developing a more stable rural and urban future for all citizens.

Improving Access to Land and Tenure Security

International Fund for Agricultural Development (IFAD); December 2008

This in-depth policy document provides policy guidance and recommendations for the complex process of developing land tenure systems.

Land Tenure Reform and the Drylands

United Nations Development Programme, Global Drylands Initiative; April 2003

Should dry lands also be included in a land tenure system?

Land Tenure and Rural Development

Food and Agriculture Organization of the United Nations (FAO), Land Tenure Studies; 2002

This comprehensive document provides a clear understanding of the vital role of land tenure systems and how people involved in development projects may work to build and strengthen them.

Centre for Land Tenure Studies Publications

Publications Page; Centre for Land Tenure Studies, Norwegian University of Life Sciences

This page opens to the home of the Norwegian University of Life Sciences' Centre for Land Tenure Studies, which devotes its work to issues on land tenure and related issues.

Land Tenure Center Publications

Publications Page; The Nelson Institute Land Tenure Center, University of Wisconsin-Madison

The page opens to comprehensive list of journals, papers and book chapters produced by LTC staff and affiliates.

The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else

Hernando de Soto; 2000

In his landmark book Peruvian Economist de Soto concludes that the existence of a strong legal structure regarding property and property rights directly impacts the success of capitalism.

Land Tenure Issues in Africa

Securing Africa's Land for Shared Prosperity

Frank F. K. Byamugisha; World Bank; July 22, 2013

This World Bank report points to the lack of land tenure systems and highlights steps for improving these systems in order to bring the continent out of hunger and poverty.

Land Policy and Governance Reforms and Agricultural Transformation, Ghana

Hosaena G. Hagos; International Food Policy Research Institute (IFPRI); November 2012

This IFPRI Discussion Note highlights best practices for land tenure reform in sub-Saharan Africa using creative approaches in Ghana as an example.

Who Owns the Land? Perspectives from Rural Ugandans and Implications for Land Acquisitions

Allan Bomuhangi, Cheryl Doss, and Ruth Meinzen-Dick; International Food Policy Research Institute (IFPRI); November 2011

The authors present a review of the land tenure systems in three areas in Uganda with attention to the differences between men and women as landholders.

Land Reform: The State We are In (gated)

Stefan Schrimmer; African Studies; November 25, 2009

This review provides the state of play of land reform efforts in South Africa.

Land Tenure Security and Agricultural Productivity

Karol Boudreaux and Daniel Sacks; Mercatus Center, George Mason University;

September 2009

Following the kick-off of the G-8 global food security project (2009), this report emphasizes the critical importance of addressing land tenure reform in Africa if the program is to have success.

Land Rights for African Development: From Knowledge to Action

United Nations Development Programme (UNDP), Collective Action and Property Rights; February 2006

The document is a collection of papers presented at a workshop hosted in 2005 by the UNDP and the International Land Coalition.

Land Tenure Issues in Asia

Land to the Tiller of Myanmar

Roy Prosterman and Darryl Vhugen; New York Times; June 13, 2012

With the opening of Myanmar to economic development, these writers call attention to the critical need for land tenure reforms.

Land-Tenure Policy Reforms: Decollectivization and the Doi Moi System in Vietnam

Michael Kirk and Nguyem Do Anh Tuan; International Food Policy Research Institute (IFPRI); November 2009

The authors review the impact of 1980s land reforms on agriculture growth and economic development.

Land Tenure Issues in Central and South America

Land and Sovereignty Brief No. 4 – Land Conflicts in Argentina: From Resistance to Systemic Transformation

Zoe Brent; Food First – Institute for Food and Development Policy; December 12, 2013

The author describes the results of Argentina's move to increase its agricultural development on its small holder farmers and indigenous populations in light of the country's weak land tenure system.

Land Grabs

"Land Grabs" are the purchase of large tracts of land in poorer and developing countries by wealthier countries or by corporations. The purpose of these acquisitions is to grow and export crops to food insecure nations and region, often with large and growing populations, for government programs or corporate profit. Land grabs often take advantage of countries that are desperate for revenues and have loose enforcement of property rights. This situation has come under criticism as it has the potential to abuse environmental laws, labor laws, and cooperation for food security.

Explore the Topic of Land Grabs and Their Implications Across Regions below:

Understanding Land Grabs – Positive vs. Negative

Land Grabs in Africa

Land Grabs in Central and South America

Land Grabs in Asia and by Asian Companies and Governments

Understanding Land Grabs – Positive vs. Negative

No Land-No Food-No Life

Margaret Miller – Documentary – January 2014

Miller's documentary provides interviews with small holder farmers across the developing world who provide first-hand accounts of losing their land and their livelihood.

Investors should work with farmers, not grab their land

Pascal Liu; The Guardian – Poverty Matters Blog; September 20, 2013

In this blog, Food and Agriculture Senior Economic Liu describes the reasons why governments should encourage large agriculture companies to work with small holder farmers to increase production rather than purchase their land.

In Ethiopia, more land grabs, more indigenous people pushed out

Will Davison; The Christian Science Monitor; September 16, 2013

Correspondent Davison describes a transformation taking place in Southern Ethiopia as the government leases land and relocates natives who have resided there for generations.

The politics of evidence: methodologies for understanding the global land rush

Ian Scoones, Ruth Hall, Saturnino M. Borras Jr., Ben White, and Wendy Wolford; The Journal of Peasant Studies; June 28, 2013

This document examines the methodologies used to quantify and evaluate land grabs and their usefulness.

Land & Sovereignty Brief No. 2 - Governing the Global Land Grab: Competing political tendencies

Saturnino M. Borras, Jr., Jennifer Franco and Chunyu Wang; Food First – Institute for Food and Development Policy; June 18, 2013

A look at the global land grab and the politics of global land governance.

Database says level of global ‘land grabs’ exaggerated

Matt McGrath; BBC News, Science & Environment; June 10, 2013

Are land grabs really occurring in a scope and size to be of concern?

Migration is expulsion by another name in world of foreign land deals

Saskia Sassen; The Guardian; May 29, 2013

Is the person who can no longer work the land following a land grab really just migrating?

Governing Global Land Deals: The Role of the State in the Rush for Land (gated)

Wendy Wolford, Saturnino M. Borras Jr., Ruth Hall, Ian Scoones and Ben White; Contested Global Landscapes, Cornell University; March 2013

In this introductory document for a special issue on global land grabs, the authors explain the complexities of “the state.”

The Global Farmland Rush

Michael Kugelman; New York Times; February 5, 2013

The challenges of land grabs in developing countries and what can be done to prevent negative consequences.

The Global Land Grab

Jennifer Franco, Saturnino Borras Jr., Alberto Alonso-Fradejas, Nick Buxton, Roman Herre, Sylvia Kay, and Timothe Feodoroff; Transnational Institute (TNI) Agrarian Justice Programme; February 2013

TNI offers a primer on land grabs.

‘Our Land, Our Lives’: Time out on the global land rush

Kate Geary; Oxfam International; October 4, 2012

In this Discussion Brief Oxfam calls on the World Bank to freeze its investments in large-scale land acquisition as a means of changing the debate on land grabs.

The Global Farms Race: Land Grabs, Agricultural Investment, and the Scramble for Food Security

Michael Kugelman and Susan L. Levenstein (Editors); 2012

Get a host of opinions on the pros and cons of land grabs.

Looking back to see forward: the legal niceties of land theft in land rushes

Liz Alden Wily; The Journal of Peasant Studies; May 28, 2012

This paper puts current land grab activities in an historical context.

Situating private equity capital in the land grab debate

Shepard Daniel; The Journal of Peasant Studies; May 28, 2012

What is the role of private equity in land purchases?

The new enclosures: critical perspectives on corporate land deals

Ben White, Saturnino M. Borras Jr., Ruth Hall, Ian Scoones, and Wendy Wolford; The Journal of Peasant Studies; May 28, 2012

This collection of papers examines land acquisition from both an historical context and in today’s political and economic climate and examines its impacts.

Green Grabbing: a new appropriation of nature?

James Fairhead, Melissa Leach, and Ian Scoones; The Journal of Peasant Studies; April 19, 2012

Through the purchase of land in the interest of food, fuel or to protect forests – green grabbing - who wins and who loses?

China's 'Developmental Outsourcing': A critical examination of Chinese global 'land grabs' discourse

Irna Hofman and Peter Ho; The Journal of Peasant Studies; March 1, 2012

Is China really buying up vast hectares of land – what does the data show?

The gender implications of large-scale land deals

Julia Behrman, Ruth Meinzen-Dick, and Agnes Quisumbing; The Journal of Peasant Studies; March 1, 2012

An examination of case studies on the impact of large land purchases on rural men and women

Land and Power : The growing scandal surrounding new waves in investments of land

Bertram Zagema; Oxfam International; September 12, 2011

Zagema discusses the results of land purchases on those working the lands and makes key recommendations.

Challenges posed by the new wave of farmland investment

Klaus Deininger; The Journal of Peasant Studies; March 24, 2011

This article attempts to bring together data in determining the amount of land purchases taking place, its anticipated productivity outcomes and other challenges.

How not to think of land-grabbing: three critiques of large-scale investments in farmland

Olivier De Schutter; The Journal of Peasant Studies; March 24, 2011

Are we really thinking about land acquisitions correctly, or should we frame the debate differently?

The Global Land Grab: An Analysis of Extant Governance Institutions

Phoebe Stephens; International Affairs Review; 2011

Stephens examines new regulatory systems that govern land purchases and draws a conclusion on which type will likely dominate.

Rising Global Interest in Farmland – Can it Yield Sustainable and Equitable Benefits?

Klaus Deininger; World Bank; 2010

This balanced document provides data to demonstrate current trends and recommendations for achieving benefits and caution regarding pitfalls to land purchases for agricultural development.

From Land Grab to Win-Win

Food and Agriculture Organization (FAO) of the United Nations, Policy Brief; June 2009

The FAO's policy brief acknowledges that we need more data on the true amount of land purchases taking place and then attempts to lay out recommendations for positive outcomes.

"Land Grabbing" by Foreign Investors in Developing Countries: Risks and Opportunities

Joachim von Braun and Ruth Meinzen-Dick; International Food Policy Research Institute (IFPRI), Policy Brief; April 2009

This concise brief defines the risks of land grabs but proposes solid recommendations for carrying out land purchases in developing countries in a positive, acceptable manner.

The Great Land Grab: Rush for World's Farmland Threatens Food Security For The Poor

Shepard Daniel with Anuradha Mittal; The Oakland Institute; 2009

The authors question positives of land purchases for food production and express concern that the key focus of food security for the world's hungry is being lost in the debate.

Land Grabs in Africa

The Great African Land Grab?: Agricultural Investments and the Global Food System

Lorenzo Cotula; Book, Royal African Society; August 6, 2013

Cotula offers a detailed look at large land acquisitions across Africa, pointing out the winners and losers.

When 'helping' Africa resembles grabbing its resources

George Manbiot; Mail & Guardian; June 13, 2013

Manbiot writes a cynical opinion about the work of the G8 to address global food security and its impact on Africa.

Large-scale land deals from the inside out: findings from Kenya's Tana Delta

Rebecca Smalley and Esteve Corbera; The Journal of Peasant Studies; May 28, 2012

Go into depth with two case studies from Kenya.

New investment, old challenges. Land deals and the water constraint in African agriculture

Philip Woodhouse; The Journal of Peasant Studies; April 12, 2012

What about the role of adequate water for growing crops on these large tracts of land?

'Land grab' as development strategy? The political economy of agricultural investments in Ethiopia

Tom Lavers; The Journal of Peasant Studies; March 1, 2012

What's going on in Ethiopia regarding land purchases?

Food Security or Food Sovereignty: The Case of Land Grabs

Logan Cochrane; The Journal of Humanitarian Assistance; July 5, 2011

Using an Ethiopian case study, Cochrane argues the importance of food sovereignty for achieving food security.

African Farmers Displaced as Investors Move In

Neil MacFarquhar; New York Times; December 21, 2010

A first-hand look at farmers being displaced through a large tract purchase in Mali.

Land grab or development opportunity? Agricultural investment and international land deals in Africa

Lorenzo Cotula, Sonja Vermeulen, Rebeca Leonard, and James Keely; Food and Agriculture Organization of the United Nations (FAO); 2009

An examination of the key trends and drivers of land purchases in Africa and their impacts.

Land Grabs in Central and South America

Land & Sovereignty Brief No. 3 - The Great Soy Expansion: Brazilian Land Grabs in Eastern Bolivia

Miguel Urioste F. de C.; Food First – Institute for Food and Development Policy; September 10, 2013

The author describes multiple negative results from the purchase of lowlands in Bolivia.

Land and Sovereignty Brief No. 1 – “Sons and Daughters of the Earth:” Indigenous Communities and Land Grabs in Guatemala

Alberto Alonso-Fradejas; Food First – Institute for Food and Development Policy; April 11, 2013

A glimpse into the impact of land purchases on natives communities in Guatemala; whose is buying this land, and why?

Divide and Purchase: How Land Ownership is Being Concentrated in Colombia

Oxfam International; September 2013

Using a case study of the purchase of a large tract of land in Colombia by Cargill, the authors share negative results on the small holder farmers.

Land grabbing in Latin America and the Caribbean

Saturnino M. Borrás Jr., Jennifer C. Franco, Sergio Gomez, Cristobal Kay, and Max Spoor

The Journal of Peasant Studies; May 28, 2012

Based on multiple FAO reports on land grabs in Latin America and the Caribbean, the authors examine the context of purchases in the region and their differences from African land purchases.

The rifle and the title: paramilitary violence, land grab and land control in Colombia

Jacobo Grajales; The Journal of Peasant Studies; September 14, 2011

An examination of violence in land grabs in Colombia

Brazil Aims to Prevent Land Grabs in Amazon

Alexei Barrionuevo; New York Times; December 26, 2009

To save its rain forest from deforestation through large land grabs, Brazil implements a new law but faces several challenges in implementing.

Land Grabs in Asia and by Asian Companies and Governments

China 'to rent five percent of Ukraine'

Alex Spillius; The Telegraph, September 24, 2013

A report on a new 50 year agreement between Ukraine and a Chinese company to lease three million hectares in Ukraine's eastern Dnipropetrovsk region

Land Grabs in Cambodia

Mu Sochua and Cecilia Wikstrom; New York Times; July 18, 2012

Devastating examples of real world victims of land grabs in Cambodia within the context of a lack of a positive land tenure system.

The land question: special economic zones and the political economy of dispossession in India

Michael Levien; The Journal of Peasant Studies; May, 28, 2012

The author examines the impact of the State's push to transfer land ownership in India from small holders to capitalists through a program called Special Economic Zones (SEZs).

Land grabs, land control, and Southeast Asian crop booms

Derek Hall; The Journal of Peasant Studies; September 14, 2011

Hall utilizes information on booms in several agricultural crops to highlight land grabs and their locations and then compares the impact of these changes, depending upon the kind of land tenure systems that exist in countries across Southeast Asia.

Relevant Organizations

The Chicago Council on Global Affairs

Together with Landsea the Council has published a series on land rights and global food security.

IFAD and Land Issues

The International Fund for Agricultural Development is a specialized agency of the United Nations that uses various tools and approaches to strengthen poor rural people's access and tenure and their ability to better manage land and natural resources, individually and collectively.

Futures Agriculture – Land

Futures Agriculture Consortium is an Africa-based alliance of research organizations that focuses on many agricultural and food security topics, such as land grabs and the consequences, specifically in Africa.

Land Acquisitions and Rights

The International Institute for Environment and Development highlights the latest publications and news in regards to land rights.

The Journal of Peasant Studies (gated)

This journal publishes many studies on the effects of land grabs and the importance of land rights.

Oxfam – Land Grabs

Oxfam, a development organization, exposes land grabs in developing countries and advocates for land entitlements.

Orphan Crops

Resources for Researchers is a database intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade. We have noted gated articles. We will regularly update the database as new works are published. Other topics will be added in the future, such as climate change and forestry. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

Orphan Crops

An orphan crop is a plant species that is grown as a food crop, livestock grain, or any other crop that is deemed agriculturally important to a specific region. Typically an orphan crop is a significant source of food security in very poor regions.

Because the global demand for these crops is limited, research on their productivity, protection from pests and disease, and other types of research pales in comparison to major staple crops. Orphan crop research is also neglected because their economic importance is considered low by private funders. Since the main sources of funding for plant genomics and bioinformatics stem from the United States and Europe, thorough research is more often devoted to crops that are specific to these regions and which have the potential for the greatest financial return. These crops also compete against each other among international publicly funded organizations that have seen their budgets under pressure in recent years. Bioinformatics are needed to understand the development of high-quality genome sequences, which are similar for any crop, as well as to understand the evolution of the genome and the aspects of biology. Bioinformatics can lead to the development of new crop varieties, the discovery of genes with agriculturally important traits, and the identification of sources of genetic variation.

Explore the different categories below:

Overview and Examples of Orphan Crops

Science: Improving Orphan Crops

Policy and Markets

Organizations Working on Orphan Crops

Overview and Examples of Orphan Crops

A Call to Remember the Forgotten Crops

Fred Pearce; Thomson Reuters; December 2013

In an interview with Monkombu Swaminathan, World Food Prize laureate, he explains orphan crops and their importance to feed the world.

Orphan Crops of the Developing World

Compatible Technology International and University of Minnesota

CTI provides an overview of the orphan crops they work on and discusses the importance of each.

Radical Eating: What Will Be the Next Quinoa? That's Up to You

Virginia Gewin; Slate; April 2014

Humans could eat 7,000 plant species, but we only rely on approximately 50 crops. Gewin explains the necessity to fund research on neglected crops.

Focus on Underutilized Crops

New Agriculturist; November 2004

Series of articles on the advantages and ways to promote orphan crops.

Ten Hearty Orphan Crops

Brad Wittwer; Pacific Standard; July 2010

A look at 10 orphan crops and their benefits.

Increasing Homogeneity in Global Food Supplies and the Implications for Food Security

Colin K. Khourya, Anne D. Bjorkman, Hannes Dempewolf, Julian Ramirez-Villegasa, Luigi Guarino, Andy Jarvis, Loren H. Rieseberg, and Paul C. Struik; Proceedings of the National Academy of Sciences; January 2014

The study assesses the trends over the past 50 years in the richness, abundance, and composition of crop species in national food supplies worldwide.

How Enset can Save Ethiopia

Danielle Nierenberg and Katie Work; Addis Fortune; July 2013

The agricultural, environmental, and nutritional benefits of enset

Move Over Quinoa, Ethiopia's Teff Poised to be the Next Super Grain

Claire Provost and Elissa Jobson; The Guardian; January 2014

This article examines how a national crop could become the next big super grain.

Orphan Crops Could Turn into Winners

Merle Faminow and Kevin Tiessen; International Development Research Center, Canada; July 2010

This article discusses how Canada's success at becoming a major pulse crop producer (edible seeds from legumes, such as peas, beans, chickpeas) could be used to help developing countries become major pulse crop producers as well.

International Year of Quinoa

Food and Agriculture Organization (FAO); 2013

The UN declared 2013 the International Year of Quinoa, a crop that could be an alternative source of food for developing countries.

10 Ancient Grains to Watch: From Kamut to Quinoa

Maggie Hennessy; Food Navigator USA; November 2013

Another example of underutilized grains.

Neglected Crops: 1492 From a Different Perspective

Food and Agriculture Organization (FAO); 1994

While this book is 20 years old, it took an in-depth analysis of 65 crops that were socially, agriculturally, or biologically important over the last 500 years. It aims to identify possible re-introduction of some species.

Science: Improving Orphan Crops

Biotechnology in the Developing World: A Case for Increased Investments in Orphan Crops

Rosamond L. Naylor, Walter P. Falcon, Robert M. Goodman, Molly J. Jahn, Theresa Sengooba, Hailu Tefera, and Rebecca J. Nelson; Food Policy; February 2004

This article summarizes how modern biotechnology can be utilized to improve orphan crops in developing countries.

New Approaches to Plant Breeding of Orphan Crops in Africa

Zerihun Tadele; Proceedings of an International Conference, University of Bern; September 2007

This international conference brought together scientists from both major and orphan crops to discuss how modern biotechnology could improve orphan crops.

Bringing High-Throughput Techniques to Orphan Crop of Africa: Highlights from the Tef Tilling Project

Korinna Esfeld, Sonia Plaza, and Zerihun Tadele; Institute of Plant Sciences, University of Bern; August 2009

It covers highlights and future prospects of the Tef Biotechnology Project, which uses modern techniques to improve the traditional crop.

Bioinformatics in the Orphan Crops

Ian Armstead, Lin Huang, Adriana Ravagnani, Paul Robson, and Helen Ougham; Special Issue: Plant Genomics; May 2009

This paper examines the challenges and opportunities of bioinformatics to improve orphan crops.

Millet Improvement Through Regeneration and Transformation

Sonia Plaza-Wuthrich and Zerihun Tadele; Biotechnology and Molecular Biology Review; April 2012

Millet could become an important crop due to its beneficial characteristics. This study discusses how millet could be improved and transformed from an orphan crop to a major food source.

Role of Orphan Crops in Enhancing and Diversifying Food Production in Africa

Zerihun Tadele; Institute of Plant Sciences, University of Bern; 2010

The next Green Revolution in Africa needs to include neglected crops through the implementation of modern biotechnology. It discusses the role and limitations of orphan crops.

Underutilized Plant Species: The Role of Biotechnology

Ian K. Dawson and Hannah Jaenicke; The International Centre for Underutilised Crops; 2006

A look at good examples, limitation, and risks of biotechnology to improve orphan crops.

Linking Ecosystem and Genetic Approaches for Sustainable Minor Crops Production Intensification in Ivory Coast

Bi I.A. Zoro; The Agricultural Research for Development/Dimension of the European Research Area; October 2011

A powerpoint on how ecosystem and genetic approaches can improve production of oilseed cucurbits in Ivory Coast.

Decoding 'Orphan Crop' Genomes Could Save Millions of Lives in Africa

John Vidal and Mark Tran; The Guardian; June 2013

While others are using modern biotechnology to improve orphan crops, an agriculture director at Mars hopes to sequence genetic data of 100 traditional crops and make it publicly available.

Can Genomics Boost Productivity of Orphan Crops?

Rajeev K. Varshney, Jean-Marcel Ribaut, Edward S. Buckler, Roberto Tuberosa, J Antoni Rafalski, and Peter Langridge; Nature Biotechnology; December 2012

Look at potential and challenges of genomics-assisted breeding can enhance orphan crop yields.

New African Academy to Nurture Nutritious “Orphan” Crops

Maina Waruru; Thomas Reuters Foundation; December 2013

African Plant Breeding Academy aims to boost production of orphan crops to better manage extreme weather conditions.

Policy and Markets

A Holistic Approach to Enhance the Use of Neglected and Underutilized Species: The Case of Andean Grains in Bolivia and Peru

Stefano Padulosi, Karen Amaya, Matthias Jager, Elisabetta Gotor, Wilfredo Rojas, and Roberto Valdivia; Sustainability; March 2014

A decade-long project examined a holistic and innovative value chain framework to enhance neglected crop R&D and strengthen conservation.

Investing in Orphan Crops to Improve Food and Livelihood Securities of Uganda's Rural Poor

Ronald Naluwairo; Advocates Coalition for Development and Environment; 2011

This policy research paper analyzes Uganda's agricultural-related policies and their support for the production and development of orphan crops.

Creating Markets for Orphan Crops

Bioversity International; 2013

A new initiative encourages farmers to grow neglected crops by providing market outlets for their harvests.

Collective Action and Marketing of Underutilized Plant Species: The Case of Minor Millets in Kolli Hills, Tamil Nadu, India

Guillaume P. Gruere, Latha Nagarajan, and E.D.I Oliver King; Collective Action and Property Rights; October 2007

This paper evaluates the success of marketing for millet in India and argues that collective action and group initiative is necessary for successful commercialization of orphan crops.

African Leafy Vegetables in Kenya

Bioversity International; 2013

This 10-year project helped farmers produce and become aware of the values of African leafy vegetables to eliminate malnutrition, poverty, and hunger.

Developing the Potential of Underutilized Fruits through the Linkage of Farmers to the Market- a Case of Kokum Marketing in the Western Ghats of India

Froukje Kruijssen and Sudha Mysore; Bioversity International; March 2007

Highlights the importance of markets and policies to link growers of orphan crops to markets more efficiently.

Promoting Value Chains of Neglected and Underutilized Species: Guidelines and Good Practices

Margret Will; Global Facilitation Unit for Underutilized Species; Bioversity International; 2008

Guidelines and good practices for value chain development of orphan crops.

Underutilized Plant Species: What Are They?

Stefano Padulosi and Irmgard Hoeschle-Zeledon; Leisa Magazine; March 2004

Description of orphan crops and recommendations of how to successfully promote these crops

Knowledge Levels and Assumed Impact of Alternative Uses of Crops on Income and Poverty Levels in Kwara State, Nigeria

Joe Nmadu and Ezekiel Adeyemi; Dept. of Agricultural Economics and Extension Tech., Federal University of Tech., Minna, Nigeria; 2012

This study investigated the knowledge levels of orphan crops among farmers. They found farmers are generally aware, but are not involved in production.

Underexploited Tropical Plants with Promising Economic Value: The Last 30 Years

Noel Vietmeyer; Trees for Life Journal; 2008

Dr. Vietmeyer gives a personal overview of his experience working with underexploited plants and their potential benefits for society.

Organizations Working on Orphan Crops

Improving Nutrition Through African Orphan Crops

Mars, Inc. and African Orphan Crops Consortium

African Orphan Crops Consortium's goal is the sequence 100 traditional African crops. Take a look at the list of the crops.

Bioversity International

A research-for-development organization that provides scientific evidence on the role that biodiversity can play in food security and for smallholder farmers.

Global Crop Diversity Trust

An independent international organization working to guarantee the conservation of crop diversity

CGIAR Research Program on Roots, Tubers And Bananas

An agricultural research-for-development center focusing on sweet potatoes, cassava, bananas, potatoes, yams, and other roots to improve food security and nutrition.

Crops for the Future

Dedicated to the development of underutilized crops, increase income for producers, and enhance nutrition.

Resources for Researchers

The Lugar Center Introduces Global Food Security Resources for Researchers

The Lugar Center recognizes that global hunger and food insecurity are complex problems. Overcoming the challenges of feeding a world population expected to reach 9 billion by 2050 with changing dietary preferences in the face of climate change, pressures on water and soil resources, and continuing urbanization requires that researchers and policymakers have access to the best data and analysis.

The latest addition to The Lugar Center website is a newly compiled bibliographical Resources for Researchers. This database is intended as a source for researchers, policymakers, students, and the public to become better informed of major recent analysis on global food security. Current research topics include Agroforestry, Biodiversity, Conflict and Lack of Governance, Food Price Volatility, Genetic Engineering, Land Tenure and Land Grabs, Orphan Crops, and Women in Agriculture. Included are different perspectives provided through a range of academic journals, government research, think tanks, popular press and opinion pieces, and scholarly reviews. This information has been collected from open sources and includes works that have been produced within the last decade.

We will regularly update the database as new works are published. Other topics will be added in the future. This is a collaborative project. If you think we've missed a major piece of work, please let us know.

We hope you will find these resources a useful starting point for a better understanding of these topics and the complexities of global hunger and food insecurity.