

SOYA

Soybean Production, Industrial Agriculture, and Climate Change

Action 2030 Policy Brief

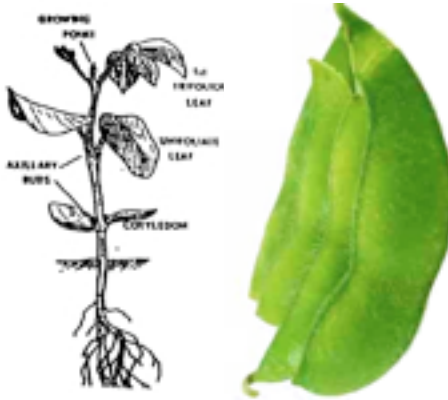
Spring 2009

Soy Production Facts:

Today, the world's top producers of soy are the United States, Brazil, Argentina, China and India.

Approximately 85 percent of the world's soybeans are processed, or "crushed," annually into soybean meal and oil. About 98 percent of the soybean meal that is crushed is further processed into animal feed.

Approximately six percent of soybeans are used directly as human food, mostly in Asia.



Genetically modified (GM) soybeans varieties began to be commercially grown in 1996, and they quickly became predominant in the major soy producing countries, replacing more diverse traditional varieties.

World soybean production has increased by over 500 percent in the last 40 years, and it will continue to grow on strong demand for animal feed and biodiesel feedstock.

In terms of global emissions, agriculture is believed to be responsible for 25% of CO₂, 65% of methane and 90% of nitrous oxide emitted.

--From the soy information clearinghouse

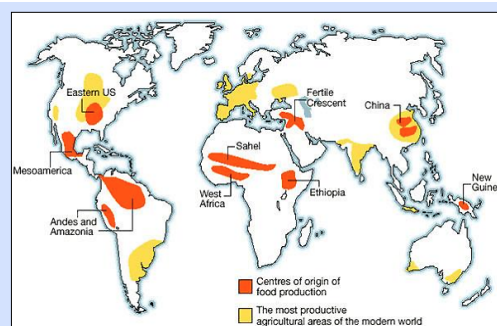
The Soybean Debate

Soybeans are at the center of a growing global debate on food security, climate change, and viable agriculture:

- Can increasing their production help stem the linked and worsening food, hunger, energy, and climate crises?
- Can increasing the acreage of this protein and oil-packed legume help feed the world's hungry while decreasing petroleum dependence through powering the next generation of cars and trucks?
- And will the genetically modified soybeans preserve natural resources while increase productivity and farmers' incomes?

Over a decade's experience of soybean expansion in South America provides plenty of data that these promises have not only fallen short of fulfillment, but in fact that soybean expansion has contributed directly to increased deforestation, greenhouse gas emissions, landlessness, food insecurity, and rural and urban poverty and vulnerability.

A major hope driving the expansion of soy has focused on the potential of agrifuels to help solve the current climate and energy bind. But a joint-study by



From UNEP and Creative Commons

Approximately 10.57 percent of the world's land mass is arable, with 1.08 percent used for permanent crops. This map depicts in orange the centers of origin of food production. Yellow indicates the most productive areas today. This map does not account for increasing expansion into protected and marginal lands.

scientists at Cornell University and the University of California-Berkeley found that both current and to-be-developed agrifuels (known as 'biofuels' in the English-speaking world) produce less energy than is consumed in growing and processing the crops. According to their conclusions, producing soy biodiesel results in a net energy loss of 27 percent, while ethanol production using corn grain required 29 percent more fossil energy than the ethanol fuel produced. This number, though striking, does not reflect additional social, environmental, and political costs of such inefficiency.

Despite this net energy loss, soy expansion and the conversion of food crops to agrifuel continues worldwide, with European and US businesses turning to Africa and Latin America as the new frontiers for industrial grain production. The correlation between increased agrifuel production, record worldwide food shortages, and increasing social instability is well established. Yet, record profits posted by the world's leading agribusinesses during the first quarters of the global economic downturn indicate that unsustainable practices endemic to modern agribusiness are nevertheless persisting and expanding.

The situation is clear enough to one rural development manager in South America. "This is a great lie they are forcing down our throats with technological packages," says Albert Romero, manager of the Land and Rural Development Institute in Paraguay, "and they end up destroying the environment instead of solving the problems related to hunger and other global problems we have. There is plenty of food, but people are experiencing hardship, and these big companies (Monsanto, Bunge, Cargill, ADM, Dreyfus) continue to accumulate enormous wealth."

Well-documented experience from around the globe suggests that, despite industry claims, the expansion of chemical-intensive industrial agriculture creates local and regional hunger as smallholders are forced from their lands, key environments are destroyed to make way for vast monocultures, and valuable water sources are contaminated with agricultural run-off. Increasing yields, one of the most persuasive traits of genetically modified seed, are a false win. The surpluses do not necessarily reduce hunger or increase farmer's salaries.



Worldwide commodity surpluses reduce the price that farmers get for their harvest, disproportionately impacting small farmers, while surplus grain goes to feed animals and increase the meat supply for those who can already afford to buy it.

The widespread understanding of the destructive aspects of chemical and industrial agriculture in North America and Europe has fueled a record expansion of organic and local alternatives. Despite the growing evidence that large-scale monoculture is not sustainable, the leading agribusinesses continue to push extractive agro-industrial grain production in many parts of the world, further fueling our current crises while claiming the opposite. This makes unraveling the facts of the matter more urgent than ever.

The hope that the expansion of industrial agriculture could be a force for rural development is challenged by a simple comparison of rural land use and rural employment. As Eric Holtz-Gimenez points out, "In the tropics, 100 hectares dedicated to family farming generates 35 jobs. Oil-palm and sugarcane provide 10 jobs, eucalyptus two, and soybeans a



scant half-job per 100 hectares, all poorly paid." In a time of deepening economic downturn worldwide, the difference between 35 jobs and a 'half-job' per 100 hectares is even more significant, given the rural crises erupting in nearly every corner of the globe.

What, then, is the answer? Part of its elusiveness has to do with the framing of the questions themselves. Instead of fixating on yield and short-term gains, a focus on food security and long-term environmental sustainability will do the most for the world's 'other' superpower, the poor and increasingly organized majority. There is no single answer to a problem in which the entire human population has a stake, and ongoing policy improvements must consult a new category of experts previously excluded from most food and agriculture policy.

Countless successful models around the world hold the key to bailing us out of the current crises, but they are under threat from continued expansion of inefficient monocultures. Organic, local, agro-ecological models once considered the domain of alternative agriculturalists and environmentalists are increasingly appreciated. This wealth of existing sustainable practices, old and new, needs not only to be preserved and supported, but also to be further mainstreamed in the global food and agricultural system.

A move in this direction is already well underway. The primary obstacles in many cases are out-of-date policies that favor only the most chemical and energy intensive forms of large-scale production. Ending the subsidies for these practices, and their global promotion by international and national governments would open the space for a vastly more sustainable future to unfold. Going further and actually shifting policy priorities towards encouraging and

supporting the current, proven alternatives can make this shift a rapid and productive one.

The outcome of such a vision would be increased global food security, decreased environmental destruction, a massive climate benefit, and improved living standards for the world's vulnerable majorities—interestingly the same claims that are now put forward in the dominant paradigm. The ground for an open discussion amongst all stakeholders has never been more fertile. The views at the table must reflect the diversity of answers that are the foundation of any sustainable vision.

The people whose very survival has depended upon their land management skills for generations have critical insights into how to solve our ongoing problems and yet are rarely present in policy discussions. They are ready and willing to join the conversation to help create global, regional, and local policies that work.

Central to these discussions will be the following questions:

- What lessons can be drawn from more viable, but often-overlooked agricultural methods?
- What are the barriers to their adoption in vulnerable areas?
- How can they be maintained and expanded to improve local conditions and stem the growing food, energy, and climate crises?
- What roles can businesses, governments, community organizations, and others play in this transition?
- And finally, what new policy visions are required now to achieve the necessary transformation of our global food and agricultural systems by the year 2030?



References and Further Reading:

Argentine Oil Industry Chamber (CIARA): www.ciaracec.com.ar

Brazilian Association of Vegetable Oil Industries (ABIOVE): www.abiove.com.br

FAO: Food and Agriculture Organization of the United Nations. <http://www.fao.org/>

Food First/Institute for Food and Development Policy. <http://www.foodfirst.org/>

Holt-giménez, E. "The biofuel myths," *The International Herald Tribune*, July 10, 2007, <http://www.ihf.com/articles/2007/07/10/opinion/edholt.php>. Last accessed 10 Feb 2009

Institute for Agriculture and Trade Policy, the. <http://www.iatp.org/>

Land Institute, The. <http://www.landinstitute.org/>

La Soja Mata. "The ugly truth behind the agro-industry, what you eat and what it does to Europe and South America." <http://www.lasojamata.org/en/node/127>

Monsanto. website homepage. www.monsanto.com

Monsanto Watch. <http://www.monsantowatch.org/>

Pimental, D. and Patzek, T. (2005) Ethanol Production Using Corn, Switchgrass, and wood; Biodiesel production Using Soybean and Sunflower. *Natural Resources Research* 14:1 65-76.

The Federation of Oils, Seeds and Fats Associations: www.fosfa.org

International Association of Seed Crushers: www.iasc-oils.org

The Soy 20/20 Project: www.soy2020.ca

Sustainable Agriculture Research and Education (SARE): <http://www.sare.org/>

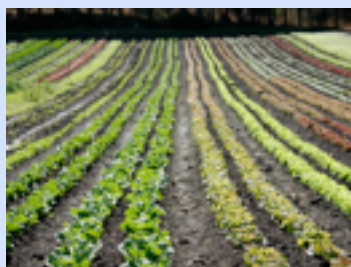
Soybean Processors Association of India (SOPA): www.sopa.org
StratSoy Project: www.stratsoy.uiuc.edu

Various. "United Soy Republics. The truth about soy production in South America." <http://www.lasojamata.org/en/node/91>

Wen, Dale Jiajun. 2008. "How to Feed China: A Tale of Two Paradigms" *Third World Resurgence*, No. 212.

Photo Credits:

Action 2030 Institute Fieldwork Photos | FAO | Iowa State Agriculture Extension | Julie Michelle Klinger | Muldavin Research Group | QT Luong | University of Iowa | Worldwide Pesticide News | Terragaleria.com | The Center for Urban Education about Sustainable Agriculture | Government of Manitoba Weekly Vegetable Report



For more information, inquiries, or collaboration, please write to The Action 2030 Institute at contact_us@action2030.org

The Action 2030 Institute's Focus on Food and Agriculture Policy

Agriculture is the primary historical transformer of our global environment. Its central role in the lives of the majority of the world's peoples cannot be underestimated. Changing our current energy-intensive agricultural systems to more sustainable forms that draw upon old and new understandings of agroecology, among other things, offers great hope to help resolve interrelated crises of food security, climate change, and environmental degradation.

The rising urgency of the global food crisis highlights the fact that there are no simple answers or solutions to solve the problem of food production and distribution on a global scale. As the impacts of rising prices for basic food items are felt around the world by rural and urban poor, the middle-class, and governments, the drive to find answers becomes ever more pressing. Global food production, distribution, and consumption systems need renewed attention on a systemic basis, and forward looking policy initiatives are called for that can help us transform the current unsustainable systems now in place.

At Action 2030 we are promoting discussion among a wide range of actors interested in the future of food and agriculture to help create

innovative policy solutions. Action 2030 is organizing the First International Sustainable Food and Agriculture Workshop and Film Festival in Beijing in January 2010 to help facilitate this conversation. If you want to participate, get more information, or to receive updates on this exciting evolving event, email us at contact_us@action2030.org

Content may be reproduced with credit to the Action 2030 Institute. 2009.

The Action 2030 Team

Dr. Joshua Muldavin – Executive Director
Dr. Alex Westlake – Chair of the Advisory Committee
Dr. Dale Wen – Senior Scientist
James George – Director of Communications
Julie M. Klinger – International Projects Coordinator
Qiuwan Zhao – Junior Research Fellow
Justin Butler – Research Assistant