A Bill of Goods: Agricultural Policy,
Trade and Technology Innovation
Since the Mid-1990s

Upper Midwest Organic Farming Conference
La Crosse Wisconsin
February 26-28, 2004

Charles M. Benbrook Ph.D.
Consultant to the Organic Center

Photo by Jim Richardson
National Geographic May 2002
The economic performance of the food system depends too much on the exploitation of:

- Natural resources, farm animals and landscapes
- Farmers, workers, competitors, and rural neighbors
- The federal treasury, via subsidies and tax breaks

The U.S. food system: Four Legs

- Farmers and ranchers
- Input industries that sell farmers the tools of their trade
- Food handlers, shippers, and manufacturers
- Retailers, food service and restaurants

The U.S. Food System

...is an accomplice in the erosion of personal health and well-being via excess consumption of calories, fat, sugar and salt.

The U.S. food system

...is not doing its fair share to improve environmental quality.

... in some regions large scale animal operations and related infrastructure are a blight upon the land and a divisive curse within rural communities.

The U.S. food system

...takes a ‘no questions asked’ attitude when it comes to expecting the world to accept our technologies, subsidies, surpluses, exports and policy priorities.
Favorite Myths About Technology

PESTS
DISEASE
ANIMAL HEALTH PROBLEMS
FERTILITY PROBLEMS

MECHANICAL
CHEMICAL
GENETIC
BIOLOGICAL

PROBLEMS
SOLUTIONS
Stress in factory farms, Subtherapeutic antibiotics, Reduced milk production, BGH, Weed management, Herbicide tolerant crops, Vitamin A deficiency, Golden rice

PROBLEMS  SOLUTIONS

THE MYTHOLOGY

Define an agronomic or food industry problem, and there is a machine waiting to be invented to make it manageable.

THE OPTIMIZER

Tills 8 acres per hour
Eliminates four to six tillage passes
Cuts fuel consumption 50-70 %
Cuts time spent tilling by two-thirds or more
Cuts PM-10 dust emissions by about 80 %

Optimizer debuts at World Ag Expo

Twelve years in the making
18 feet wide, 45 feet long
50,000 pounds
450 horsepower tractor to pull it
Yours for only $160,000
A bigger and faster machine always and irrevocably makes people more productive.

Chemical Technology

For every new bug or pathogen, there will be a newly discovered pesticide or drug that prevents excessive economic loss and/or disease in the population.

The modern way to deal with a biological problem is with a chemical solution.
THE MYTHOLOGY

Smart use of chemistry can free us from Mother Nature.

Soil fertility and productivity can be maintained by replacing the N-P-K nutrients each year and keeping pH balanced.

Engineered crops which produce pesticide in every cell, season long, reduce pesticide use. Crops genetically engineered to withstand over-the-top applications of herbicides will reduce herbicide use. Genetic engineering of plants is no different than classical plant breeding.

Genetic engineering techniques are precise. Genetic engineering will speed up progress in the development of improved varieties. Today’s genetically engineered crops are “substantially equivalent” to conventional varieties, and hence safe.

http://www.biotech-info.net/technicalpaper6.html
**THE FACTS**

In first two years, RR soybeans reduced herbicide use marginally. But in 1998, the average acre of RR soybeans was treated with 0.07 pounds MORE herbicide than conventional acres...and in 1999, the difference rose to 0.19...and then, 0.34 in 2000.

This shift resulted from:

Farmers applying more glyphosate per acre, with the average rate increasing from 0.79 to 0.9+ pounds

Average herbicide use on non-RR acres went down from 1.23 pounds per acre to 1.05 pounds, as a result of wider use of low-dose chemistry and regulatory changes.

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**The Top 10 Weeds**

Weed scientists of the NCAA rank their weeds by ANDREW ROBERTSON

1. **Waterhemp.** With 100,000 or so seeds per dock, this most persistent and biotypes that resist acetolactate synthase (ALS) inhibitors, too many and PPO inhibitors, it's no surprise that weed got the most votes for No. 1. Waterhemp continues to dominate summer crop fields in the central region of the US. Some say it is becoming resistant or tolerant to glyphosphate herbicide. No-tillers facing waterhemp have to be timely and aware of resistant issues if they don't want to end up with seven-footers.

2. **Common lambsquarters.** This weed occurred most consistently from the mid-Atlantic to the Great Plains. Its ability to germinate from seed in wet, cold conditions and persist after herbicide applications makes it very hard to control. Use clean cultivation practices if it is to be controlled.

3. **Giant foxtail.** In rankings dominated by annuals, giant foxtail is the No. 3 grass. Its abundance in Midwest corn and soybean rotations and its ability to crop in fields where we don't use herbicides have placed it squarely in third.

4. **Velvetleaf.** This has been making regular deposits on the soil seed bank for many years. It's a big, bushy opponent that's hard to rule out completely once it's established.

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5. **Giant ragweed.** Early emergence and the ability to adapt to Midwest crop production systems make giant ragweed a contender. It also has a knack for covering over most herbicide defenses sooner or later.

6. **Morningglory species.** This family of weedy species has a deep bench, with a gang of first cousins that includes pinch and tall morningglory and ivyleaf. One weed scientist says it can be "controlled" with glyphosate but has thrived since Roundup Ready soybeans became popular.

7. **Kochia.** This sporulates on corn, oats, soybeans, sunflowers, wheat and about any crop planted in the western plains. It has biotypes resistant to atrazine and ALS inhibitors and is able to withstand drought.

8. **Common cocklebur.** This weed is known to double-team soybeans—small patches can completely choke the crop. It's not always as severe in corn, but it is known to resist ALS inhibitors.
Six of 10 made worse by RR technology!!

**The Top 10 Weeds**

6. Horseweed. This weed got some double votes cast in Eastern states—one as a weed and one as a glyphosate-resistant weed. Where it’s not resistant, farmers don’t think much about it, but resistant biotypes continue to roll out of the Delmarva into the eastern Corn Belt, Tennessee, Arkansas and Mississippi.

6. Woolly Cupgrass. Although this weed is no big deal in many areas, where it shows up in force, it can outcompete No. 3-ranked giant foxtail. It starts emerging early and can sprout from 6 deep.

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**THE FACTS**

In the last three years, weed management on RR soybean acres required an estimated 66 million more pounds of herbicide, compared to conventional varieties.

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**THE FACTS**

Over the first eight years of commercial use, herbicide tolerant corn, cotton and soy have increased herbicide use an estimated 70.2 million pounds.

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**THE MYTHOLOGY**

Herbicide tolerant technology is efficient and good for farmers because it has reduced their herbicide costs.

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**THE FACTS**

Although herbicide costs HAVE gone down for most farmers, most of the money has been shifted to cover the rising soybean seed costs.
THE FACTS

MORE IMPORTANTLY, the cost saving to farmers has nothing to do with the efficiency of the system and everything to do with the impact of glyphosate going off-patent.

The Cost of Food

THE MYTHOLOGY

Americans pay less for food than citizens of any other country.

Food is cheaper in the U.S. than anywhere else.

Food is a great bargain in the U.S.

THE MYTHOLOGY

The export market is the key to the financial prosperity of the American farmer.

• Markets just have not behaved as USDA planned.
• More on this later when we discuss policy.
Agricultural Trade

THE MYTHOLOGY
Trade agreements like NAFTA and GATT will open markets, expand trade, and increase economic well-being for citizens in all countries.
- Mexican real wages declined, 1.3 million ag sector jobs lost
- Income inequality has worsened
- Subsidized U.S. corn pulled rug from Mexican corn market

THE MYTHOLOGY
Overbearing worker safety and environmental rules are undermining international competitiveness.
Trade policies supported by Cargill, ADM and Conagra are good for America and the American farmer.

Food Safety

THE MYTHOLOGY
The U.S. food supply is the safest in the world.

Potential risks in the food system
- Pesticide residues
- Animal drug and hormone residues
- Food borne pathogens and parasites of animal origin
- Microbial contamination
- Natural toxins expressed by plants
- Antibiotic resistant bacteria
- Mycotoxins (aflatoxin)
- Transmissible spongiform encephalopathy (e.g. BSE)
- Mercury (other heavy metals), dioxins, other contaminants
Virologists call for vaccination in bid to beat bird flu epidemic

The Ag Policy ‘Bill of Goods’

Setting the Stage for the 1996 Farm Bill

"Ending Agricultural Entitlements: How to Fix Farm Policy"

F. Runge, T. Penny, J. Schnittker

"[without vision and change], we are condemned to continue the recurrent exercise in government waste represented by our farm programs" F. Runge

"The U.S. has spent billions of dollars on these [export] subsidies, the benefits of which flow indirectly, and only marginally, to farmers, while reducing export earnings because of give-away prices." F. Runge
Figure 1

Number of Farms and USDA Gaps Plotted to the Eight Major Crops, 1990-2001

Since 1980, the number of farms in the US has decreased from nearly 2.5 million to about 7 million.

Source: USDA National Agricultural Statistics Service

Figure 7


This chart shows the trend in US exports of the eight major crops has been relatively stable (N790), domestic demand for major crops has increased steadily, reflecting growth in US population due to inherent increases in food demand.

Figure 8

Indexed US Planted Price and Acreage for the Eight Major Crops (1996=100)

Since 1996, cash prices have generally declined about 50 percent. Due to the fall in the marginal and producer prices, the average margin has declined very little and very slowly.

Source: USDA Economic Research Service

Figure 9


Prior to the 1996 Farm Bill, the series shows of government program were the commodity programs. Following the government programs in the early 1990s averaged US basics and $4 billion annually.

In the 1990s, the US bio-commodity program was decreased in favor of a stronger direct-payment program. Additional programs support through the Farm Security Act of 2002 had increased the government support of the crops and increased the total government payments to about $8 billion.

Figure 10

US Cash Price and Argentine Corn Price

There is a strong relationship between the US and corn and the Argentine corn price. Results of a regression model indicated that when controlling for other factors, a one percent increase in the Argentine corn price results in a one percent increase in the Argentine corn price.


Figure 11

US Cash Price and Thai Rice Price

There is a strong relationship between the US rice price and the Thai rice price. The graphs show that the US rice price is more stable than the Thai rice price and is less affected by changes in demand and supply.

The price regression suggests that a decrease in US rice prices of 10% leads to a decrease of 6% in Thai rice prices.

Table 3. Per-Unit Market Prices, Total Average Cost of Production, and Government Payments for Selected Crops for 2000 and 2001

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The goal of U.S. farm policy is to preserve the family farm system of agriculture.

Dairy Policy: Muddling Toward a Sustainable Lose-Lose Strategy

USDA regulations and policies are always based on sound science.
Scientific Integrity in Policymaking

An Investigation into the Bush Administration’s Misuse of Science

Union of Concerned Scientists
February 2004

“A growing number of scientists, policy makers, and technical specialists both inside and outside the government allege that the current Bush administration has suppressed or distorted the scientific analyses of federal agencies to bring these results in line with administration policy.”

There is a well-established pattern of suppression and distortion of scientific findings...these actions have consequences for human health, public safety, and community well-being.

Incidents involve air pollutants...reproductive health, drug resistant bacteria, endangered species...”

USDA “Sensitive Issue” List

1. Creation of transgenic food or feed organisms by genetic engineering
2. Studies of genetically engineered organisms in the field
3. Cloning of animals by somatic cell nuclear transfer
5. Dioxin research
6. Plant, microbial and animal patent policy

7. Agricultural practices with negative health and environmental consequences, e.g., global climate change; contamination of water by hazardous materials (nutrients, pesticides, and pathogens); animal feeding operations or crop production practices that negatively impact soil, water, or air quality
11. Mega doses of nutrients that may be beneficial to human health/nutrition
Scientific Integrity in Policymaking
UCS Report, Appendix B

USDA "Sensitive Issue" List
13. Harmful microorganisms and their products (e.g., aflatoxin, mycotoxin, fumonisn, Salmonella, E.Coli) in agricultural commodities
14. Pesticides or animal drugs in foods above approved tolerance levels
15. All transmissible encephalopathy (TSE) research including BSE research
16. Herbicide-resistant crop plant research
17. Animal well-being/animal use
18. Biological items that may affect trade and export negotiations, e.g. fire blight in apples, TCK smut, Karnal bunt, insect infestations in export products
19. Methyl bromide topics that relate to policy and/or regulatory items
22. Antibiotic/Antimicrobial resistance
28. Emerging diseases or pest research that relates to policy and/or regulatory actions
10. Research findings and recommendations that are contrary to current dietary guidelines or may be used in food labeling

U.S. Scientist Tells of Pressure to Lift Bans on Food Imports

"A senior scientist at the Department of Agriculture says its scientific experts have been pressured by top officials to approve products for Americans to eat before their safety can be confirmed... [pressure] by Ms. Veneman's office to approve cattle from Mexico at risk of tuberculosis, pears from China with fungus problems and, in August, boneless meat from Canadian cattle, calves, sheep and goats, as well as hunters' kills”

"There is no question that there are many, many more out there" Ulrich Kohn, Chair (Swiss) of International panel of experts invited to review the US response to BSE

"You'd need to test a very large sample of fallen stock to get a good idea of the real situation. It should be more like 800,000 to 3 million animals – 40,000 is ridiculous” Marc Savey, Research Director, French Food Safety Agency
USDA's Food Guide Pyramid

USDA's Dietary Guidelines for Americans 2000, 5th edition

USDA is slated to revise the Dietary Guidelines for Americans in 2005.

"The term 'sound science' has become a misnomer and now nearly translates into the precise opposite of its apparent meaning."

"There will never be enough sound science to prompt any industry association promoting salt, sugar or beef to agree that consumers should eat less of their commodity."

Tom Karst, The Packer, Feb. 3, 2004

Organic Food and Farming

THE (EMERGING) MYTHOLOGY

How food is grown and processed does not affect food safety and quality in any meaningful way.
Key Findings in the Food Additives and Contaminants Article

“...organic samples are much less likely to contain detectable pesticide residues than conventionally grown or IPM/NDR foods are.”

“...differences are clear-cut, consistent across [three] data sets, and highly statistically significant.”

“...organic samples in paired comparisons had lower residues about two-thirds of the time.”

Organic Food Cuts OP Exposures

Organophosphorus Pesticide Exposure of Urban and Suburban Preschool Children with Organic and Conventional Diets

Carstensen, L., D. Wolkow, R. Fenske, K. Elgethun
Department of Environmental Health Sciences and Community Medicine, University of Washington, Seattle, Washington USA

Three-quarters of fresh fruits and vegetables tested in the PDP contain residues – foods heavily consumed by kids e.g. peaches, apples, pears, green beans, and tomatoes.

Almost half of these foods contain two or more residues...the average apple has 3.

The Organic Center: Examples of State of the Science Reviews (SSR)

1. Pesticide Dietary Exposure
2. Healthy Start – Nutrition in the Early Years
3. Sexual Development and Reproductive Success
4. Methods to Compare the Nutritional Quality and Content of Food as a Function of Individual Needs and Farming System Choices

THE FACTS

Organic meats and dairy products do not contribute to the problems caused by:

- antibiotic resistant food borne pathogens
- residues of animal growth hormones
- TSEs
Monsanto Press Release

Monsanto Acquires Two Seed Companies To Broaden Availability Of Agricultural Biotechnology

ST LOUIS, May 11, 1996 – Monsanto Company announced today that it has reached agreements to acquire two seed companies: DOWA Genetics Corporation, headquartered in St. Louis, Missouri, and CVAM Industries, Inc., based in East, Mississippi. These companies will play an important role in Monsanto’s strategic business portfolio.

Monsanto's acquisition strategy is designed to enhance the sustainable production of food and feed and create new possibilities for better nutrition and health by linking Monsanto’s expertise in agriculture, food and pharmaceuticals.

Monsanto Press Release

Monsanto Co., St. Louis, Mo. Has Confirmed A Case Of Natural Weed Tolerance To Glyphosate, The Active Ingredient In Its Roundup Herbicide. The Tolerance — Meaning The Plant Withstood An Application Of The Herbicide At Greater Than The Recommended Rate — Was Observed In Annual Ryegrass On A Farm In Victoria, Australia. Testing By Monsanto Has Ruled Out The Company’s Original Contention That Poor Control Was Caused By Seasonal Conditions.

However, Monsanto Says The Implications For Farmers Are Minimal, As This Is The Only Confirmed Case Of Resistance And Because Resistance Can Be Managed Through Cultivation And The Use Of Other Herbicides. The Confirmation Comes At A Time Of Growing Popularity Of Herbicide-Resistant Crops Such As Soybeans, Cotton, And — Due For Launch Next Year — Corn.

Farm Chemicals, October 1997

© Pablo Angel / CEC

A farmer near Oaxaca, Mexico harvests maize at the end of a growing season.
Stacking two genes together to accomplish the same goal is twice as effective as one gene.

Crossing two genetically engineered parental corn lines to make a hybrid expressing stacked traits raises no new or unique concerns.

USDA is slated to revise the Dietary Guidelines for Americans in 2005.

“At the public forum the afternoon of January 28th, 2004 [public hearing of the Dietary Guidelines Advisory Committee], many of those food lobbyists warned that ‘sound science’ does not justify cutting back recommended intake guidelines for salt, sugar, beef or dairy.”