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*Business Leaders: Thought and Action*

**Trade, Feeding the World's People  
and Sustainability:  
A Cause for Concern**

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# Trade, Feeding the World's People and Sustainability: A Cause for Concern

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Trade fuels economic growth, and this growth has not generally respected the sustainability of our planet's living systems. The question of whether we can have growth without intolerable abuse of the environment is fundamental. However, without trade, growth and innovation we face a potentially serious, if not a disastrous, problem.

Let me explain.

Today there are about 5.8 billion people in the world. About 1.5 billion of them live in conditions of abject poverty — a subsistence life that simply can't be romanticized as some form of simpler, pre-industrial lifestyle. These people spend their days trying to get food and firewood so that they can make it to the next day. As many as 800 million people are so severely malnourished that they can neither work nor participate in family life. That's where we are today. And, as far as I know, no demographer questions that the world population will continue to grow by several billion during the next 50 years.

## The Necessity of Innovation

Without radical change, the kind of world implied by those numbers is unthinkable. It's a world of mass migrations and environmental degradation on an unimaginable scale. At best, it means the preservation of a few islands of privilege and prosperity in a sea of misery and violence.

Simply doing better what we've done in the past won't work. Our nation's economic system evolved in an era of

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cheap energy and careless waste disposal, when limits seemed irrelevant. None of us today, whether we're managing a house or running a business, is living in a sustainable way. It's not a question of good guys and bad guys. The whole system has to change and there's a huge opportunity for reinvention.

Facing the implications of what sustainability requires is no easy task. In some of Monsanto's businesses, it may be less apparent why sustainability is so critical. But in our agricultural business, we can't avoid it. Here's why.

In the 20<sup>th</sup> century, we have been able to feed people by bringing more acreage into production and by increasing productivity through fertilizers, pesticides, and irrigation. But current agricultural practice isn't sustainable. We've lost something on the order of 15 percent of our topsoil over the last 20 years or so, irrigation is increasing the salinity of soil and the petrochemicals we rely on aren't renewable.

Most arable land is already under cultivation. Attempts to create new farmland are causing severe ecological damage. So in the best case, we have the same amount of land to work with and billions more people to feed. It comes down to resource productivity. We have to get significantly more yield from every acre of land just to maintain current levels of poverty and malnutrition.

This is only part of the story. As incomes increase, people's diets change. For example, while Asia's gross domestic product has grown by about 10 percent annually for the last decade, a substantial part of the extra personal income has gone to improving what people eat. Instead of the largely cereal diet of the poor, these newly prosperous people want higher quality food, including meat, dairy products and cooking oil. In China, total meat consumption rose by nearly one half between 1991 and 1995.

Producing these foods places an even higher burden on the world's farming resources and uses up more land. For instance, cattle not only need space for themselves, but land is also needed for the hay, corn and feed to get them ready for market. Producing a calorie of cooking oil takes twice as many resources as a calorie of cereals, a calorie of meat takes three to five times as many.

This is why, if the world's population goes up by 75 percent, the demand for food won't simply go up by the same amount. Some estimate that rising standards of living, fueled by growing personal incomes, will cause it to triple!

Now, even if we wanted to boost food production in an unsustainable way, no technology today would let us double, let alone triple, productivity. With current best practices applied to all the acreage in the world, we'd get about a third of the way toward feeding the whole population. The conclusion is that new technology is the only alternative to one of two disasters: not feeding people — letting the Malthusian process work its magic on the population — or ecological catastrophe.

We've all seen pictures of starving people. Here's a sense for the ecological implications.

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Since virtually all the world's good farmland already is under cultivation, most of the new acreage that will be converted to agriculture will be of

marginal quality — and consequently crop yields will be lower. This marginal land is often fragile or erodible or supports animals and plants that are part of Earth's rich biodiversity. Technology will be needed to make sure the yields on all agricultural lands are as high as they can be. The experience of recent decades shows its potential. It's estimated that if we returned to the yields of 1960 — and tried to produce the food we grow today — our planet would lose to farming nearly 10 million square miles of wildlife habitat!

### **Technology, Agricultural Production, and Sustainability**

How can we double or triple food output in a sustainable manner, without destroying large parts of the living systems and soil on which we depend? We don't have 100 years to figure this out; at best, we have decades. In that

time frame, I know of only two viable candidates: biotechnology and information technology. I'm treating them as though they're separate, but biotechnology is really a subset of information technology because it is about DNA-encoded information.

Using information is one of the ways to increase productivity without abusing nature. A closed system like the Earth's can't withstand a systematic increase of material things, but it can support exponential increases of information and knowledge. If economic development means using more stuff, then those who argue that growth and environmental sustainability are incompatible are right. And if we grow by using more stuff, I'm afraid we'd better start looking for a new planet.

But sustainability and development might be compatible if you could create value and satisfy people's needs by increasing the information component of what's produced and, in so doing, diminish the amount of stuff.

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*Trade thus becomes an important ingredient in helping our world move toward sustainability.*

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Here's an example of how this can work. With biotechnology, we know how to genetically code a plant to repel or destroy harmful insects. That means we don't have to spray the plant with pesticides — with stuff. Up to 90 percent of what's sprayed on crops today is wasted. Most of it ends up on the soil. If we put the right genetic information in the plant at the outset, we waste less stuff and increase productivity. It's not that chemicals are inherently bad, but they are less efficient than biology because of the raw materials and energy it takes to make, distribute and apply them.

I offer a prediction: the early 21<sup>st</sup> century is going to see a struggle between information technology and biotechnology on one hand and environmental degradation on the other. Information technology is going to be our most powerful tool. The substitution of information for stuff is essential to sustainability.

## The Importance of Trade Policy

Where does trade fit into all of this? Much as they would like, few countries are self-sufficient in food production — and none can make this claim with respect to technology. Trade thus becomes an important ingredient in helping our world move toward sustainability. It helps in three ways:

- First, the technology, whether in the form of seeds, other agriculture inputs, or new practices needs to get from where it's developed to the farmers' fields. The freedom for new technologies to move is not only impeded by tariff barriers. It's also hampered by weak intellectual property protection that dampens the incentive to commercialize new products in some countries — and by the climate for public acceptance of new foods and technologies.
- Second, the most obvious, food needs to get from the farmer to the table, even if food-surplus countries are half way around the world from the demand.
- And third, looking ahead, I don't see any way we can continue to exploit marginal land and hope to become sustainable. This means there may ultimately have to be shifts in where some farming takes place, moving toward those areas that have the best mix of resources to support increased, sustainable yields in particular crops.

Trade will play a role in making these three things possible.

Where do we stand? NAFTA and the Uruguay Round trade accords have started the process of opening global agriculture trade. Yet despite these advances, agriculture remains one of the most protected and subsidized sectors of the world economy. When the Uruguay Round was negotiated, it was clear there remained significant unfinished business. High on the list was agriculture, where further negotiations are scheduled to begin in 1999.

Among the issues that are important when these talks occur, I'd put two near the top:

- Tariff reductions — The average worldwide rate for agricultural tariffs is more than 50 percent. Bringing

these rates down must continue to be a high priority. With so many of the world's people going hungry, the freer movement of food should be a subject on which we can all agree.

- Acceptance for biotechnology — Although biotechnology holds one of the keys to a sustainable future, the whole subject of improving rules for genetically modified organisms wasn't included in the Uruguay Round. This omission is having increasingly serious implications in gaining acceptance for biotechnology in some important world areas, notably Europe.

### **Agricultural Trade and the United States**

Agricultural trade is a major issue for the U.S. We exported about \$60 billion in agricultural products during 1996, contributing a positive \$27 billion to the balance of trade. One out of every three acres of our farmland is dedicated to exports, and our farmers and ranchers are twice as reliant on foreign trade as the U.S. economy as a whole. Because our farmers are among the least protected and most competitive in the world, trade distortions are a special burden in the face of more highly subsidized and protected foreign agricultural sectors.

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This makes the World Trade Organization's 1999 agriculture trade talks all the more important. The top objective should be to work toward opening the system to allow the freer flow of products among countries.

For the U.S. to seize this opportunity, Congress needs to grant our negotiators fast-track authority that will ensure prompt Congressional action on any trade agreements they work out. Other countries need to know that a deal is a deal and not subject to extended "renegotiation" in the U.S. Congress. Under fast-track, Congress keeps its authority to approve or reject a trade agreement, but with-

out it the 1999 talks may not make much progress.

Also favoring this approach is the Cairns Group of 15 nations (including Australia, Canada, Hungary, Brazil and Argentina) that share our concerns. But for most other countries, agriculture remains probably their most politically sensitive sector. They think that continuing protection and barriers are just fine.

What's at stake for our country is easier access to expanding markets for food and agricultural technology. What's at stake for our planet is a shot at feeding a growing population while, at the same time, moving toward a more sustainable environment. While all change brings with it some short-term dislocation, this is one of those instances where we have little choice. 🌸

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