Gail Black
Coordinator,
Humane/Sustainable Agriculture Program
Humane Society of the United States

Environmental, Health and Safety Issues

The environmental, health, and safety issues of disease control in animals is a serious concern. The Farm Animal Division of the Humane Society is evaluating the costs and benefits of intensive animal agriculture that affect farmers and allied industries, consumers, farm animals, and the environment. The Humane Society of the United States believes that this study will offer approaches to these issues and a much-needed, long-range perspective.

The majority of approaches to disease control in farm animals miss their mark by treating only the symptoms of production-related disease, and do not provide long-term solutions to environmental health and safety issues. Approximately one billion dollars of pharmaceuticals and disease additives are given annually to livestock and poultry in an unsuccessful effort to cease their varying degrees of suffering. The obsession with high production yields has played havoc not only with society's health, but with the animals and the environment. People in recent years have begun to question the future sustainability of this system as agriculture begins to compete with other sectors for fossil fuels, water, and land. The subtle balance among animals, plants, soil, water, and the sun have been disregarded, and this disregard has been encouraged by agribusiness. According to the Congressional Office of Technology Assessment (OTA), in less than 15years, one million more farms will have disappeared. These will be mostly small to moderate-sized operations that cannot afford to invest in the expensive emerging technologies outlined in the OTA report. Given this trend, how can the

impact of agriculture on the environment be better monitored? Should these gene-inserting, embryo-transferring, electronically-monitoring, computer-modeling, mechanical-harvesting, energy-gobbling, chemically-dependent technologies of the future be assessed more fully? American farmers collectively owe banks and other lending agencies more than the combined debt of Brazil, Mexico, and Argentina. In truth, American farmers and ranchers have become a kind of debtor nation within themselves.

The Humane Society is being asked by their constituency to assess the impact of livestock and poultry development on the environment.

If there is a fault in development, perhaps it is the fault of society as a whole for not taking the time to consider the long-term consequences of their actions. With every action there is a reaction, and an interconnectedness is revealed. Product revelations that open new territories are waiting for manipulation and exploration. Short-term economic incentives are more often than not the only driving force, with private industry the major beneficiary.

While over $5 billion has been invested in developing genetically engineered organisms, less than one tenth of one percent of that money is spent on assessing the risks associated with the developments. The environmental health and safety issues of disease control in animals has broad implications.

EXAMPLE: BOVINE SOMATOTROPIN

Bovine somatotropin (BST) is a protein growth hormone that is injected into dairy cows and regulates and increases milk production. Bovine somatotropin is expected to be approved by FDA for commercial release in 1990. A veterinarian by the name of Dr. Francis Kelfetz, who is a Professor of Veterinary Medicine at the New York State College of Veterinary Medicine in Ithaca, New York, is also a member of the American Veterinary Medical Association. He observes the following:

> "Most of the studies that have been published about BST have been with cows that have been very well managed. Would the same results prevail under less than optimal management conditionsi Studies of bovine somatotropin under average to poor management conditions should be done as well, and management should be recognized as a key factor. Everyone agrees that BST works, but the most important issue is cow safety. We do

not want the cows to last through just one lactation. The long-term effects of BST are not known, and studies have covered only a period of four to five lactations. The adverse effects of longevity to the cow on its reproductive efficiency and on its immune system are not known. Metabolic effects have not been studied adequately.'

According to the Kiplinger Agriculture Letter, "Biotechnological development of the bovine growth hormone might complicate an industry whose milk flow needs to be eased back, not increased."

Consumers today are questioning food safety more than ever, and as a nation, they have received more information in the past ten years than in the previous fifty. Much of the information has been food-related, environment-related, and health-related. Perhaps BST milk should be identified as BST milk, and if it is, consumers may wonder whether it is pure or not. There are a lot of questions that need to be thought about and answered before products are rushed on the market.

SOCIAL AND ECONOMIC IMPACT OF BST

This new technology could ultimately lead to the displacement of dairy farmers who refuse to use BST. Rural homelessness is a growing reality. The front page of this month's New York Times contained an article entitled, "Rural Homelessness, New Product of U.S. Farms". Donald and Marilyn Bayloff, farmers in their early sixties, lost their 280-acre place near Dennison, Iowa. The farm had been in their family for over one hundred years. Fifty years ago there were over six million farmers, and today there are only 2.2 million.

The dairy industry has experienced overproduction and economic disaster in the past, and dairy farmers have poured tons of milk onto the ground because the surplus drove the price of milk down below what its production cost was. Why does biotechnology want to improve a system which is already capable of overproduction and heighten an already tragic situation in rural communities?

Compared with 50 years ago, the average farmer today uses about one quarter the labor, but nearly three times the mechanical power. They have spent over $6 billion for tractors, trucks, cars, and machinery. Each year they spend around $9.5 billion to fuel, lubricate, and maintain this fleet. They spend roughly $19 billion for feed and seed, and nearly $6 billion for fertilizer and lime each year. They use about

22 times the fertilizer and farm chemicals as 50 years ago. At the same time the farm population has declined by nearly 27 million over the past half century. Farmers now are only 2 percent of the total population.

As a nation, production capacity has probably gone much further than farmers ever dreamed it would. Farmers never saw the early demise of farming while dreaming about the future of agriculture. Society must examine the social impact of technological developments. Rural communities have been the backbone of the United States, and an injustice is done to these farmers and society when people like the Bayloffs are allowed to lose their farms.

DISPLACEMENT OF TRADITIONAL AGRICULTURAL COMMODITIES

In developing countries, biotechnology has the potential to displace traditional agricultural commodities on a massive scale. We still do not know the full impact of monocultural agriculture. The Humane Society of the United States is inclined to support more diversified systems. Until developing nations have the opportunity to diversify their agriculture, it is inappropriate for other countries to displace their traditional agriculture commodities. U. S. companies are presently using biotechnology to produce natural vanilla flavor in the laboratory, and this could result in the loss of over 50 million U. S. dollars in annual export earnings from Madagascar, where three quarters of the world's vanilla beans are being produced. Approximately 70,000 small farms on this island are engaged in the production of vanilla beans.

Similar attempts are being made to produce alternative sweeteners, which are to be used as sugar substitutes. If the U.S. and European corporations are successful in commercializing thomatin, it will result in the erosion of traditional sugar markets and a drop in world sugar prices. An estimated eight to ten million people in the developing world will be threatened by this loss.

Amir H. Jamal's* statement on the socioeconomic impact of new biotechnologies in the Third World brings some important questions to the forefront, and some crucial considerations for the more affluent northern hemisphere's industrialized society and its scientific community to ponder. Before an understanding of the proper role of biotech-

* Jamal was a participant at the Socioeconomic Impact of New Biotechnology on Basic Health and Agriculture in the Third World seminar, held March 7-12, 1987 in Uppsala, Sweden.

nology can be reached, the needs of the world and what genuine development should occur must be considered. If, for instance, science is truly in the service of humanity, then what do the poorest of humanity require in the form of technical tools? Consideration must be given to which tools should be applied, and whether traditional or conventional technologies meet a need more safely and with less disruption. If so, these technologies should be used. If these conventional tools will not suffice, then society should consider biotechnology, and even then, great caution should be applied. It is becoming increasingly clear that both the physical and social risks may be considerable.

Have all the possible impacts of BST and other uses of biotechnology been identified? What is the urgency to put these products on the market? Who benefits? These questions and others must be identified and answered at all levels. The risks must be assessed and identified before biotechnology can be incorporated into the world. To quote from the Journal of the American Veterinary Medical Association, "Suddenly, something goes wrong, and the experiment produces a vicious monster bent on the destruction of humanity."

INTERDISCIPLINARY APPROACHES

The Humane Society believes that biotechnology can best be applied within the parameters of a humane, sustainable and socially just agriculture, resulting in positive planetary development, and that requires large-scale involvement. The Humane Society is encouraging an interdisciplinary approach to animal agriculture. In an effort to apply biotechnology within humane sustainable agriculture systems, an interdisciplinary approach is necessary. Identifying the questions as well as finding the answers is essential.

In March 1987, 28 participants from 19 countries met in France at a seminar on the socioeconomic impact of new biotechnologies on basic health and agriculture in the Third World. Their consensus read as follows:

> "In discussing the nature of the new biotechnologies and their significance for humanity, we recognize that, in agriculture, for instance, while biotechnology may promise to increase production and reduce costs, it is more likely to accentuate inequalities in the farm population, aggravate the problem of genetic erosion and uniformity, undermine life support systems, increase the vulnerability and dependence of farmers and further concentrate the power of trans-national agribusiness."

On March 11,1989, representatives of animal agriculture, academia, including government, and the Humane Society of the U. S. met in Ocean City, Maryland, to discuss issues related to the future of farm animal agriculture. The consensus there was:

> "Whereas there are costs and benefits in animal agriculture that affect farmers and allied industries, consumers, farm animals, and the environment, including wildlife, it is the consensus of this meeting that a conference be held to address these issues in the spring of 1990."

In the Ocean City, Maryland workshop participants resolved to hold The Future of Animal Agriculture Trends and Issues Conference in the eastern region on March 28-30,1990, with a Midwesten, Southwestern, and Western conference to follow. Three general topics were identified for the conferences: The costs and benefits of animal agriculture to producers; the environment; and animal welfare.

The Humane Society of the United States, after much deliberation and research, identified a connection between their goals as an organization and those organizations or businesses that produce products in a less intensive, more holistic way. These people are looking at the impact of their techniques on the environment, on the animal's welfare, and on producing a healthful product.

The Farm Animal and Welfare Council in England has defined husbandry practices that are widely accepted throughout the animal protectionist and welfare sectors. These practices allow livestock and poultry to more fully enjoy the five basic freedoms. These freedoms are:

—Freedom from hunger and malnutrition.
—Freedom from thermal or physical disease.
—Freedom from injury and disease.
—Freedom to express most normal behavior.
—Freedom from fear.

Given these freedoms animal husbandry operations need less sub-therapeutic antibiotics and additives.

As an animal protection organization, the Humane Society has made it a major responsibility to establish and ensure a quality of life for animals that recognizes the need to respect the sanctity and interconnectedness of all life. The Humane Society of the United States,

with a constituency of one million, adopted the Humane Sustainable Agriculture Program as organizational policy this past April. The Humane Society believes that this program will implement positive long-term solutions to not only farm animal concerns, but wildlife and environmental concerns as well.

Today the media is filled with account after account of the devastation of the planet. The ranking Minority Leader of the Senate Subcommittee on Operations, Senator Robert Casten, Jr., Republican from Wisconsin, recently said,

> "I see evidence all the time of this environmental devastation, and it inevitably results from unsustainable farming practices. As agriculture is our biggest business, according to the Kiplinger Agricultural Letter, 'Farm and Food Facts', it is a whopping 5800 billion a year industry. This accounts for 40 percent of the total capital assets of all manufacturing corporations in the United States. I think we can safely assume because of this that it could have some devastating impact to our environment. However, if you could prove me wrong, I'd really like it."

NABC's first annual meeting entitled Biotechnology and Sustainable Agriculture Policy and Alternatives is an example of an interdisciplinary action, and the importance of making the connection between biotechnology and sustainable agriculture is timely if civilization's destructive trend is to be averted.

The issue of disease control in farm animals has far-reaching implications and must be carefully examined. What are all the costs and benefits? Short-sighted parameters must no longer be used when assessing the costs and benefits. The interconnectedness of all life will not allow for this. Far-reaching answers must be developed; answers that encompass a secure future and offer a plan of approach, a blueprint that generations to come will follow, and that will give direction for appropriate steps in planetary stewardship.

Biotechnology must be treated as a newborn infant. It must be nurtured and given much more time to develop. Without this time, the United States, as well as other countries may be devastated. The Bogeve Declaration states: "A rational biotechnology policy must be geared to meet the real needs of the majority of the world's people and the creation of more equitable and self-reliant societies while working in harmony with the environment."

REFERENCES

Batie, Sandra and Penelope Diebel, 1989. "Managing Agricultural Contamination of Ground Water: State Strategies," Working Paper, Department of Agricultural Economics, Virginia Polytechnic Institute and State University.

Carlson, Gerald A, 1988. "Economics of Biological Control of Pests," American Journal of Alternative Agriculture, 3 (2-3): 110-116.

Daberkow, Stan G. and Katherine H. Reichelderfer, 1988. "Low Input Agriculture: Trends, Goals, and Prospects for Input Use," American Journal of Agricultural Economics, 70 (5): 1159-1166.

Fleming, Malcolm H., 1987. "Agricultural Chemicals in Ground Water: Preventing Contamination by Removing Barriers Against Low-Input Farm Management," American Journal of Alternative Agriculture, 2 (3): 124-130.

Reichelderfer, Katherine H., 1981. "Economic Feasibility of Biological Control of Crop Pests," in (G. Papavizas, editor) Biological Control in Crop Protection, Totowa, NJ: Allanheld, Osmun Publishers, pp. 403-417.

-----, 1985. "Factors Affecting the Economic Feasibility of the Biological Control of Weeds," (E.S. Delfosse, editor) Proc. VI International Symposium on the Biological Control of Weeds, Agriculture Canada, pp. 135-144.

-----, 1989. "Environmental Protection and Agricultural Support: Are Trade-offs Necessary?" National Center for Food and Agricultural Policy, Discussion Paper FAP89-03. Washington, DC.: Resources for the Future.