Farming, ranching seen as polluters

Research links agriculture to environmental damage

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Increases in agricultural production to feed a larger world population over the next 50 years will kill off species of animals, destroy forests and savannahs and pollute the environment — if we continue at our current pace, according to an article written by scientists at a UCSB research center and published today in the journal Science.

A "green revolution" fed a growing population and doubled the production of crops and livestock between 1960 and 1995. That efficiency, which required only a fraction more land, however, has come at a cost, with increasing reliance on damaging fertilizers and on diminishing water resources, according to the study produced by visiting scientists at the UCSB National Center for Ecological Analysis and Synthesis.

In addition, livestock waste is rarely treated and is polluting the world's soils and waterways with nitrate, according to the article.

"We're not saying there's a catastrophe now. We're saying that if we do this for the next 50 years, there's a problem," said David Tilman on Thursday. The visiting professor from the University of Minnesota is the article's lead author.

The study is being published at a time when local

and international organizations, as well as farmers, are expressing a growing concern about the effects of farming and ranching on the environment.

The group of 10 scientists at UCSB began their investigation using data from other studies. Their goal was to discover trends that over time will be the most damaging to the environment.

"The theme behind the global change again and again was agriculture," Tilman said. "There is an increasing public awareness relating to climate change, and we felt there were other impacts on the environment that were equally important but were not on the minds of scientists or the general public."

The group looked at the pace of increased agricultural production over the past 40 years.

It projected that if the productivity and increasing reliance on pesticide and fertilizer continues, the trend would cause devastating changes by 2050. That's the year the scientists see as possibly the "final episode of rapid global agricultural expansion," after the world population stabilizes at roughly 9 billion, a 50 percent increase from today.

Most of the unused farmable land is in Latin America and sub-Saharan Africa, in some cases where wildlife flourishes, such as in the Amazon rain forest or African savannahs.

The UCSB group urges improvements in farming practices that can minimize damage to the environment. The article calls for aid from organizations such as the International Monetary Fund and the World Bank. Much of the growth and agricultural expansion will occur in developing countries, where funds are extremely limited.

Cost is one of the greatest obstacles to safer farming, Tilman said.

A farmer can go bankrupt trying to raise crops or livestock using ecologically sensitive practices while his competitor uses cheaper methods and sells his products for the same prices, he said.

The California Farm Bureau created a Farm Crisis Task Force in December to deal with the cost of complying with California's strict environmental regulations and other issues. Reacting to the current energy crisis, however, has eclipsed other topics.

"We are always open to anything that comes along that can make us more environmentally sound," said task force member Victor Tognazzini of Santa Maria. "We're trying to strike a balance."

While Tognazzini grows organic produce in his home garden, Gold Coast Farms where he works doesn't. Per acre, organic farming only yields 75 percent of what regular farming practices produce, he said.

In addition, more of the fruit and vegetables grown by organic farmers have to be discarded or used in fruit juices because of visual imperfections, Tognazzini said. He likened the need for pesticides and fertilizers to the general public's reliance on household chemicals.

"For the American consumer and the world consumer, it's all about aesthetics," said Tognazzini, who is general manager of Tri-Valley Vegetable Harvesting, a subsidiary of Gold Coast Farms. "Clorox isn't the greatest thing to use in your house if you have children, but you use it to get a clean environment," he said.

The International Food Policy Research Institute in Washington, D.C. recently completed a preliminary analysis of the long-term impact of agriculture on the environment, and came up with results similar to Tilman's. The group is participating in a Millennium Ecosystem Assessment that will take several years and $21 million to complete.

"We don't see any magic bullets that are going to save the environment," said Stanley Wood, senior scientist with the Food Policy Research Institute. "We are going to have to find ways of increasing how much fish, how much grain we get from land and to do so in ways that are not as damaging to the environment."

Both Wood and the UCSB group have at least some ideas, such as drip irrigation or more precise fertilizing methods, which can reduce waste and prevent excess nitrate from seeping into soil.

"To me one point is looking at all the costs and all the benefits and finding the practices that give you the greatest net benefit, and right now we're not looking at the environmental costs," Tilman said.

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