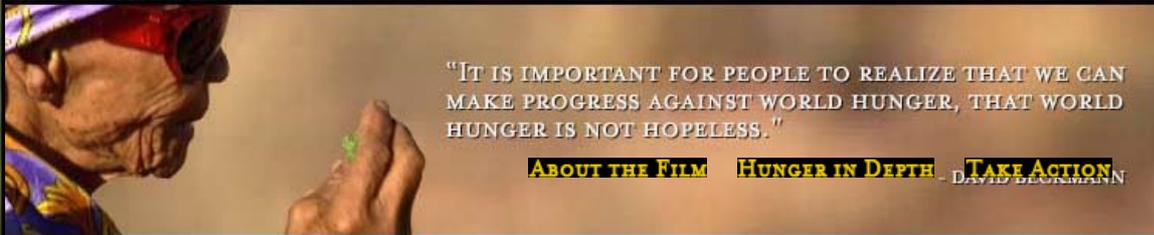


Silent Killer

THE UNFINISHED CAMPAIGN AGAINST HUNGER



"IT IS IMPORTANT FOR PEOPLE TO REALIZE THAT WE CAN MAKE PROGRESS AGAINST WORLD HUNGER, THAT WORLD HUNGER IS NOT HOPELESS."

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Raoul Adamchak
Organic Farmer
University of California, Davis
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"It has always seemed to me that organic agriculture is the best solution to address the problems of agriculture in this country, and in third world countries as well."

ABOUT

Raoul Adamchak is the Market Garden Coordinator at the UC Davis Student Farm. His expertise and research interests include organic soil management, organic pest management, organic vegetable crop production, international agricultural development, organic farm certification and organic vegetable seed production.

INTERVIEW

I grew up in southern New Jersey--The Garden State. At the time when I was there it still was something of a garden state; there were a lot of small farms and local produce. Now that has diminished because of urban pressures.

"The more I studied it the more I began to feel like the problems of conventional agriculture, pesticide use, soil erosion, could be best addressed through organic agriculture."

I became interested in organic farming when I was in an international development Masters program, which required an internship. I found one internship that was going to teach small-scale sustainable agriculture, Spanish language and send me to work in Central America. It was then that I became very interested in organic agriculture as my life's work. The more I studied it the more I began to feel like the problems of conventional agriculture, pesticide use, soil erosion, could be best addressed through organic agriculture.

At the end of that internship, I decided that I needed some more education about agriculture. I came here to the University of California, Davis to complete the international agriculture development Masters program. After that, I farmed for about ten years. I was in a farm partnership and we had a 150 acre vegetable farm, which is still going on.

"The U.S. and the world still have problems with soil erosion and pesticide use."

I think it has held true over the years that the U.S. and the world still have problems with soil erosion and pesticide use. A lot of U.S. farms are still mono-cropping. It seems like organic agriculture as a system offers a solution to address those problems.

The best way to improve soil is to add organic matter. The reason the African soils are not good for growing crops at this point is that they have been leached of organic matter, they have no structure. Even if you wanted to add chemicals to them, it would not do a great deal of good because there is not a whole lot there to hold the chemicals, they would wash away with the first

rain. The way to build soil is to add organic matter in the form of cover crops and through adding organic matter in the form of compost.

I really was pleased that recently there was an article in Science Magazine about building organic matter in the soils through the use of trees crops. They showed how the yield of the crops has been increased twenty to thirty percent by using the trees to add organic matter to the soil. It was a great example of how organic agriculture as a system could solve some of the problems in Africa.

"Fertilizer, which sold for a \$100 a ton in England, was \$300 a ton by the time it got to the coast in Africa, and \$700 a ton by the time it got inland."

The point, too, is that we are talking about people who cannot afford the inputs of conventional agriculture. This article mentioned that fertilizer, which sold for a \$100 a ton in England, was \$300 a ton by the time it got to the coast in Africa, and \$700 a ton by the time it got inland.

It is unlikely people could afford that. Organic matter is available to the people on sight: they can collect it, they can make compost, they can make cover crops. It is something that can be done locally with the resources they have as a part of their farming system.

"It is pretty interesting to see how proud the farmers are that they can grow rice without herbicides."

The University of California, Davis has been making efforts to address one of the shortages in organic agriculture research. There have been a couple of programs on campus over the years: a sustainable agriculture farming program that has an organic component, long term research plots that are comparing organic and conventional ones on campus, and the student farm. It has been a long time in coming, but the University is finally putting together a sustainable agriculture curriculum so people can major in it. The University is also planning on putting together a sustainable agriculture center here.

Organic agriculture has been very, very successful in California. The number of farms here in the last 20 years has increased dramatically. I inspect organic farms, and in the last several years I have seen an increasing number of conventional rice growers who are getting into organic rice because the price is so much better. It is pretty interesting to see how proud the farmers are that they can grow rice without herbicides, without burning their fields and by substituting cover crops for synthetic fertilizers.

"There is so much potential to find out how things work at the molecular level."

One of the things I have learned by being married to Pam and seeing what she does at work ([Pam Ronald](#), plant scientist and biotechnology specialist - please see her interview), is that discovering what is actually happening in plants at the molecular level is so important and interesting to people that they are consumed by it. If you speak to Pam, or if you speak to any of her colleagues, they are really fascinated and interested by what they are discovering.

There is so much potential to find out how things work at the molecular level that we have never been able to do before. But the biotech products which have resulted from this work and that have been brought into the market and made available to people, have been flawed in some critical ways -- they are not sustainable at this point. They have ecological consequences or nutritional consequences or social consequences that make them far less than perfect.

"It does not seem to be worth the risk to me."

The most famous biotechnological product is Bt. Bt is a naturally occurring bacterial disease of a certain kind of butterfly. Isolated and manufactured in a lab, organic farmers have used Bt to control a number of worms. Molecular biologists took the toxin, which this bacterium produces, and put it in to the genes of corn, potatoes and cotton, so when an insect eats that plant they ingest the Bt toxin and they die.

When Bt has been sprayed into the fields, there has been very little resistance over the years. But putting Bt into the plants really makes it very likely that resistance is going to occur. If that resistance does occur widely the Bt will be lost to organic growers and conventional growers as a tool for controlling pests. It does not seem to be worth the risk to me.

"In the long run that does not seem like a very good strategy."

In the short run it might save the growers some money but as more growers adapt that technology then there is this treadmill where, in the beginning, the growers lower their costs by using Bt and the price of the commodity begins to fall. Then all of the other growers start to use the Bt and the price of the commodity starts to fall even more, and you end up not making any more money growing the corn than they did before the technology was implemented.

Another biotech product widely used is Roundup resistance in soybeans and corn. It locks the grower into using more Roundup herbicide. It also feeds into the whole monocropping, monoculture model. It reduces the numbers of varieties that are grown over a large area and it makes it easier to grow corn and soy beans. So there is more monocropping. In the long run that does not seem like a very good strategy.

"There is a tremendous amount of antagonism in the organic community towards biotechnology."

There is a tremendous amount of antagonism in the organic community towards biotechnology, and that limits the possibility that any product might ever be adapted by organic growers. But if that ever does happen then the biotechnological product would have to fulfill all the criteria that anything has to fulfill in order to fit into a sustainable agricultural system. It would have to be a positive contribution ecologically; it would have to help in a soil building program; it would have to promote diversity in an agricultural system; and it would need to be something that could be used as a local resource, as a local product and sustainable in that community.

It does not seem like the biotech industry is headed in those directions. The biotech products that have come out so far certainly have not fulfilled those goals, and I do not foresee that they will in the future either, in part because industry is a very corporate one, a very large one and a very profit motivated one.

In recent years here in the U.S., the organic community has been pushing the USDA to fund more research on organic agriculture. The USDA acts like they are paying attention. It will be interesting to see how much more funding for organic research actually comes out of the USDA. Up until now the rate has been less than one percent. If it could get up to one percent or five percent it would make a big difference.

I think especially in third world countries, the issues of using local resources and being in charge of their own agricultural process are important ones. I cannot imagine how bio-technology could fit into that, but time will tell.

"The hunger related problems were not technological ones."

I have been interviewing a lot of my students, who a lot of are ex-Peace Corps volunteers and who have been in Africa, Asia and Central America. I ask them what the food situation was like in the areas they were in, and what the problems were associated with hunger. It seems like, in every situation, the hunger related problems were not technological ones.

There were climate or weather related ones like drought, there were bad government policies that prevent them from selling what they grow, and there were problems with wars and now AIDS. This is why I get back to the idea that one of the reasons that organic agriculture works as a system in those areas is that it can fit into what is going on there, improve yields and add to the diversity of what people eat, without having to deal with the government or other outside influences.

"It is important that people around the world have their own food that they eat."

John Jeavons (<http://www.johnjeavons.info/>) does intensive biodynamic farming, which is a way of growing a lot of crops in a very small amount of space and having a lot of diversity and organic matter. The really positive aspect of John Jeavons's system is that it provides vitamins and other nutrients in a small amount of space for a significant number of people. Jeavons's gardens do the same thing as the golden rice that is being developed to provide Vitamin A. But it also adds diversity to the agricultural system, diversity to the diet and is very easily controlled by the family or the community that is using that system. The golden rice, however, comes from an outside source, is not developed indigenously and may not be accepted by the people that are supposed to benefit from it.

It is important that people around the world have their own food that they eat and knowledge of their environment and knowledge of the foods and the plants that grow there. That bio-intensive idea could be expanded to, or modified to include local foods or local strategies, so it becomes less an exercise in local digging and more a strategy of integrating local foods into a system that provides organic fertilizer and crop diversity and a source for vitamins and minerals that may not be available in a monocrop situation.

"What makes me feel optimistic is teaching organic agriculture."

What makes me feel optimistic is teaching organic agriculture. The feedback that I have gotten from the students, who have graduated from here and either gone into the Peace Corps or gone to work for the Catholic relief services, has been really positive. They have said that many of the important things they learned at Davis they have learned at the student farm about organic agriculture.

"The organic sector of agriculture is the only one that is expanding and it is the only one that is increasingly profitable."

I am also optimistic about the growing number of people out there who have organic agricultural skills and are implementing them in the third world, as well as here. The organic sector of agriculture is the only one that is expanding and it is the only one that is increasingly profitable. I see people who are concerned not only about health in a self-interest sense, but they are concerned about reducing pesticide use, soil erosion and the toxic effect of pesticides on farm labor.

I have been involved in either farming or teaching organic agriculture for almost thirty years. It

has always seemed to me that organic agriculture is the best solution to address the problems of agriculture in this country, and in third world countries as well.

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