

High Tech vs. Low Tech Farming for Feeding The World

WORLD FOOD SUMMIT—2002

Report of the meeting sponsored by FAO and IFAD, in cooperation with the NGO Committee on Sustainable Development, the Committees on Health Communication, and on the International Decade of the World's Indigenous Peoples, UNA-USA Council of Organizations

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Dag Hammarskjold Auditorium, United Nations Headquarters

SPEAKERS

Florence Chenoweth, Director, New York Office, FAO

Topic: World Food Summit June 2002; Food Security and the Environment

Professor Robert Goodman, McKnight Foundation, Collaborative Crop Research,
University of Wisconsin-Madison

Topic: GMOs — balancing the hazards against the need to feed growing populations - a clarification of the issues

Melissa Jacobs, Certified Organic Native Farmer and Traditional Seed Saver,
member of Cornell Cooperative Extension's Native Communities Outreach Team

Topic: Small farms vs. industrial farms

Meeting Chair, Patricia Scharlin, UN Representative, the Rainforest Alliance and Co-chair, NGO Committee on Sustainable Development

Rapporteur, Eben Forbes, Columbia University, School of International and Public Affairs

Opening Remarks

Patricia Scharlin opened the meeting by quoting an advertisement on New York public television: "Imagine a world where no child begs for food." Though the ad was to promote industrial agriculture, its message was meaningful for the World Food Summit. The purpose of this meeting was to examine the challenge of feeding the world's population and to highlight the plans for the FAO World Food Summit.

FLORENCE CHENOWETH

Statement by Florence Chenoweth, Director, FAO New York Office

Dr. Chenoweth is a national of Liberia. She holds a Bachelor of Science in Agriculture from the University of Liberia, a Master of Science in Agricultural Economics and a Ph.D. in Land Resources from the University of Wisconsin, USA. She has had over 30 years experience in development work with international, multilateral and bilateral agencies, including the World Bank where she prepared a status report on National Agricultural Research Stations in Africa. She joined the FAO in 1995 and served in The Gambia until 1998 and then in South Africa until 2001.

In opening her statement, Dr. Chenoweth stressed that only well-nourished people can provide for a country's development.

The World Food Summit: Five Years Later is a global forum that will take stock of gains made towards ending hunger and identify ways to accelerate the process. It will be attended by Heads of State or Governments, who all have the unique ability to influence policy at the highest level. United Nations organizations and other intergovernmental as well as non-governmental organizations will also participate.

The Summit is being held to review advances made to this point since the 1996 World Food Summit; to outline the measures leaders envisage to reach the goals set in 1996, but which are grossly off target; and to mobilize political will and resources to move forward at a more accelerated pace. FAO has prepared documents examining challenges to the achievement of the World Food Summit goals as well as gains made and obstacles encountered.

The Summit will reopen the agreements reached at the 1996 Summit and adopted in the Rome Declaration and Plan of Action. World leaders will be expected to reaffirm their commitments and to consider specific measures to ensure achievement of the goals.

Dr. Chenoweth stated that the world food security picture is a gloomy one. She brought the attention of the audience to FAO's latest published estimates that indicate that in 1977 through 1999, there were 815 million undernourished people in the world. Of these, 777 million were in the developing countries, 27 million in transition countries, and 11 million in the industrialized countries. For the developing countries, the latest figures represent a decrease of 39 million since 1990-92 (the benchmark period used at the World Food Summit). During the time of the Summit in November 1996, FAO estimated that there were 792 million undernourished people in the developing world. This means that only 6 million people are now weaned off the hunger list every year. The figure used to set the Summit goal of halving the number of hungry by 2015 was an annual reduction of 20 million. At the pace of only 6 million, more than 50 years will be needed to reach the target set in 1996. To reach the goal between now and 2015, she said, the number weaned off the hungry list every year will have to rise considerably, to 22 million.

Dr. Chenoweth outlined some of the alarming dimensions of hunger and malnutrition:

- An estimated 174 million children under five years were malnourished in 1996-98. It is now recognized that some 54 percent of young child mortality in the developing countries, is associated with malnutrition. This represents some 6.6 million out of 12.2 million deaths among children under five years.
- The largest number of undernourished people was found to be in Africa. The continent alone accounted for 192 million chronically undernourished. That is more than a quarter of the population, or twenty-eight out of every one hundred Africans lacking access to enough food to lead a healthy and productive life. Within Africa the state of food insecurity varied greatly 42% of those living in East and Southern Africa, 16% of the population in West Africa and 4% of the people in North Africa were found to be in this state.

Although the number of undernourished people in Africa has been increasing, she noted that several countries have achieved remarkable success in fighting hunger and food insecurity. Morocco and Ghana are examples of countries having excelled in reducing undernourishment, decreasing it by half in Morocco and by one-sixth in Ghana from 1980 to 1996. Four common factors contribute to success in reducing food insecurity in African countries:

- 1 - Political stability and absence of conflict.
- 2 - Significant and sustained economic growth.
- 3 - High priority given by governments to agriculture and rural development.
- 4 - The existence of various forms of social safety nets benefiting in particular the poorest and the food insecure.

Dr. Chenoweth observed that while many accept hunger as a grim but inevitable fact of life, hunger and malnutrition are not inevitable in a world of plenty. Nor are they tolerable as we have the knowledge, technology and resources to make a rapid progress in the global fight against hunger. It is primarily the lack of collective will, she said, that is preventing us from eliminating hunger.

Recent experiences indicate that chronic hunger can be dispelled within this century. In the last few decades, significant achievements have been made in the areas of food supplies, nutrition, health and access to basic social services. As a result, the world's population is better fed, healthier, and lives longer than that of 30 years ago.

The number of undernourished people in the world has declined from approximately 920 million in 1970 to the present 820 million in 2000. Global food supplies have outpaced dramatic population growth, with per capita food availability growing by 32 percent while the population increased by 2 billion people.

Dr. Chenoweth maintained that these improvements in the life conditions for millions of people is very encouraging and that they constitute positive proof that we have the tools and the ability to address and overcome the major causes of hunger and malnutrition. Of course the positive trends are expected to continue. But, she asked, will they continue at a rate sufficient to improve further the conditions of today's population and adequately provide for the next generation to come? Will additional improvements occur rapidly enough to alleviate the immense suffering of the millions of men, women and children afflicted by chronic hunger and malnutrition?

She said that although she wishes that she could reply with a "yes" to these questions, she cannot. She reminded the audience that the current rate of progress in reducing the number of undernourished is not sufficient even to meet the World Food Summit goal of reducing by at least half the number of undernourished people by the year 2015, let alone surpass that goal. Clearly, there is much more to do and no time to waste if we are to make the vision of a world free from hunger a reality.

Political Will

But how can this be done? While there are no simple answers, she presented some common approaches that have proven to be effective in accelerating progress. As a fundamental first step, the elimination of hunger and malnutrition must be adopted as a primary goal of national, social and economic development. Secondly, as agriculture and rural development are primary means of reducing rural poverty, and since the majority of the poor and hungry live in rural areas, new and additional resources must be mobilized to reverse the decline in agricultural investment that has occurred over the past years.

It is clear, she said, that the main underlying reason for the persistence of hunger is the lack of political will. As a result of this, the resources to fight hunger have not been mobilized to the extent required. The trends have, for too long, gone in the wrong direction. Most developing countries are devoting insufficient resources to the rural areas where 70 percent of the hungry live. The concessional assistance given by OECD countries to agriculture in the developing countries has fallen in real terms between 1990 and 1999 by 49 percent. Yet eradicating hunger in the midst of plenty should be a global priority, she insisted. FAO firmly believes that reaffirmation of political commitments and a transformation of these into concrete action are the next essential steps towards the realization

of a world with food for all, and the human right of everyone to be free from hunger.

The Right to Food

Fulfilling the right to food would also facilitate the fulfillment of other rights. Under-nutrition is integrally linked to poor sanitation and hygiene, illiteracy, lack of education facilities, and lack of access to health care. Ensuring a meal to children attending schools, preferably in a sustainable way through the production of school gardens, improves the rate of school attendance, and therefore the right to education. It also enhances the level of nutrition of the children, and therefore the right to food.

It is well known that poverty is at the root of hunger and undernourishment, she continued. What often escapes our attention, however, is that hunger and malnutrition are also major causes of poverty. Hunger compromises the productivity of what is often the only asset that the extremely poor possess: their labor. Undernourishment, through productivity losses and nutrition-related health problems, is an economic handicap for individuals and therefore for communities, and even for entire nations when the hunger is widespread.

Preserving the Environment

FAO does not look at food security in isolation, but recognizes that there are multi-dimensional facets to it, she said. These multi-dimensional facets formed part of the World Food Summit held in 1996. One such area is preserving the environment from further degradation.

With world population expected to reach 8 billion by 2030, pressure on the environment will continue to mount. The challenge of the coming years is to produce enough food to meet the needs of an additional 2 billion people while preserving and enhancing the natural resource base upon which the well-being of present and future generations depend.

FAO's call for better protection of the environment is based on a number of key facts that point to major problems for the future if urgent actions are not taken now, she asserted. Firstly, arable land per person is shrinking. It decreased from 0.3 hectares in 1970 to 0.23 in 2000, with a projected decline to 0.15 hectares per person by 2050. Soil erosion is on the rise. It is responsible for about 40 percent of land degradation worldwide. About 20 percent of irrigated land in the developing world has already been damaged to some extent by water-logging or salinity. About 30 percent of livestock breeds are close to extinction. About 75 percent of the genetic diversity of agricultural crops has been lost since 1990. Desertification is on the rise. An estimated 250 million people have already been directly affected by it, and nearly 1 billion are at risk.

Managing agriculture for the future will have to be based on a sound ecological approach. Such an approach to agriculture manages soil, water, plants and animals as part of a functional whole. It relies on restoring the natural ecological balance by optimizing the competition between different plant and animal species for food and for space.

The battle for achieving a world free from hunger is by no means an easy one, she remarked, but it is a good battle, and a battle that can be won. It is only well-nourished children who can achieve optimal growth and good health. It is only they who can hope to reach their full intellectual potential and who can benefit from the educational opportunities presented to them. It is only well-nourished people who can hope to achieve the full potential of their labor and their productivity. We must all join this fight and win this battle, she proclaimed.

ROBERT GOODMAN

Dr. Goodman is Professor and Chair of the undergraduate molecular biology major at the University of Wisconsin-Madison. He serves as Vice-Chair of the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, and chair of the oversight committee of the McKnight Foundation's collaborative crop research program. He is a member of the Board of Directors of the Cornell Research Foundation and of two genomics companies. He teaches evolution, plant science, microbiology and genetics. His laboratory does basic research on microbial diversity in the environment, focusing on soil, healthy plants and insect herbivores, with the goal of using genomics approaches to understanding functions in the ecosystem. He was Executive Vice President of Calgene, Inc., the crop biotechnology company, from 1982-1990.

Dr. Goodman began by describing Genetically Modified Organisms (GMO) and their use in foods. GMO foods, he explained, use a technology that was first developed for plants 19 years ago. This technology employs recombinant DNA, the ability to splice genes, which was discovered in the 1970s in order to isolate individual genes from organisms. Recombinant DNA is used to engineer those genes so that they will be expressed in the desired target crop plant. Many of the genes employed are coming from bacteria, and although such gene sequences can be read by a plant, the instructions for expressing the gene need to be provided as well and it is these that differ between bacteria and plants. The technology uses recombinant DNA and either microbiology or a physical method to put the engineered gene into the chromosomes of the target plant. Thereafter the process of driving a GMO variety incorporates the standard methods of the plant breeder: selection or screening to see that the new trait or "phenotype" has been acquired, or multi-generational testing to see that the trait continues to be expressed at appropriate times and under appropriate conditions in the field. It is the functionality, stability and reliability of the new phenotype that breeders are looking for when they work with a new GMO variety.

Dr. Goodman then focused the discussion on GMO technology and made several inferences:

1) The major GMO crops are maize, rice, cotton and soybeans. These are crops that are in fact very difficult to apply GMO technology to, he said. As a result we have less than ten years of significant field experience with these crops, and in fact only 5 or 6 years experience with the widespread production of them. Prof. Goodman submitted that no responsible ecologist would be willing to make conclusive predictions about the ecological consequences, much less about the evolutionary consequences of GMOs, with only 5 or 6 years of data.

2) Dr. Goodman stated that during 1996, the first year of significant worldwide production of GMO crops, there were approximately 2.5 million hectares with 2 million of these located in the U.S. By 2001, 70 million hectares were in production worldwide, with 45 million in the U.S. Thus the cumulative quantity for that 5 year period was roughly 220 million hectares of crops produced worldwide with 150 of these grown in the U.S. Dr. Goodman highlighted the fact that 90% of these crops — most of them grown in the United States — were produced by one company. About 450 million acres (220 hectares) of crops, mostly in the U.S., Canada, China and Argentina have been produced over the past few years. He estimated that billions of people have consumed GMO foods worldwide and yet thus far there is no documented, credible report of a health problem arising from the use of them. Dr. Goodman also pointed out that the application of GMO technology has been almost exclusively in the industrial sector of agriculture.

3) According to Dr. Goodman, GMO technology is being used today to do things that have been the goals of plant breeders, crop improvement specialists and agronomists for decades, if not much longer (and indeed the goals of agriculturalists for eons). These goals include insect resistance, disease resistance, and modified development of the crop to improve yield or to improve nutritional characteristics. He asserted that none of these uses of GMO technology are beyond the reach of the plant breeder using the basic tools that plant breeders use, such as crossing and mutagenesis to generate variation, further crossing and selection in the field to fix variation and progeny lines and evaluation of field performance.

He stated that GMO technology must be used if scientists want to modify crops to make vaccines, other pharma-

ceuticals, or for the production of plastics. He said that on the other hand, GMO technology is not necessary for the food uses of crops.

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4) Dr. Goodman noted that the key technologies for GMO foods were developed in universities and in the public sector with public funding and have been exclusively licensed to the private sector by the universities that invented them.

Next, Dr. Goodman contributed some of his opinions about the future of GMO technology. GMOs are not, in his opinion, the answer to food security, but they may contribute to it. Anyone who understands agriculture, he said, especially in the developing countries, knows that the overuse and misuse of pesticides, particularly insecticides, is a very serious problem both for the environment and for human health. He asserted that it's possible that transgenic crops, engineered with insect resistance genes, can make a significant contribution to mitigating the use and misuse of pesticides at least in the short term. He then emphasized that this would be a short-term solution, given that GMO technology doesn't *have* to be used to achieve those goals and that significant progress has been achieved using regular tools of plant breeding. He reiterated that nothing is outside the range of the plant breeder, given sufficient resources and access to appropriate germ plasm.

Dr. Goodman believes that what is most important is not what technology options we say 'no' to, but rather which ones we say 'yes' to; this is what we should be focusing on. The following are some of the items that fall into his 'yes' category:

1) **Investment in the public institutions of agriculture in the developing nations** is essential as the trend is the erosion of that support rather than the growth of that support. He made the corollary argument that advocating that we 'feed the world' is the wrong focus. Instead, we need to advocate for better equipping the world's people to feed themselves.

2) **Investment in the science of genetics and genomics** is essential. Emerging tools for understanding how genomes work, the very cusp of modern biological research, vastly enhance the potential of what the plant breeder can do. This includes both the knowledge of how genomes function and the tools to make use of that knowledge.

The standard way a plant breeder would go about planning a breeding program for disease resistance is not necessarily the only option. The way breeders normally go about it is to find a parent to use in a crossing program that has a desired new trait that's not available in the crop or in the varieties that are being grown today. Often they will turn to wild germ plasm that's related to the crop: an insect resistant wild germ plasm, for example. They will bring those together and make crosses and then through the generations that follow they will follow that trait by looking at the plant in the field and seeing how it does. It's turning out that there are favorable genes that are not apparent in parents, but in the right combination they reveal progeny traits that one wouldn't expect. Thus if one operates from a knowledge of the genotype and the combinations that result, one can potentially make some significant progress. This is something that with these new tools we can do efficiently, whereas with the tools of the past it was entirely hit and miss.

3) **Investment in improvement of diverse crops.** Dr. Goodman said that while rice, wheat and maize certainly are important, we cannot achieve world food security without a full diversity of crops. By this he meant hundreds of crops — ones that are suitable to local environments, local cultures and that contribute to a balanced diet.

4) **Investment in a better understanding of agro-eco systems** is essential, he said. Ecosystem services and agro-ecological processes must mimic rather than damage natural ecosystems. The steady advances in our understanding of genomes must be harnessed in part to fit improved crops into productive, agro-ecologically sound farming systems. He tells his students that micro-organisms are the engine of the biosphere for they are crucial for understanding the functions of soil and for the fertility of soil and 99.9 % of the micro organisms inhabiting soil are unknown. Everything that we know about soil microbiology is based on the one tenth of one

percent of microorganisms that can be cultured in the laboratory. We now have some very powerful tools that have told us that there is an enormous diversity out there that we don't yet understand, and these tools are now being used by many of us (including his own lab) to try to understand the functions of those microorganisms: to get a better understanding of what is a healthy agro-ecosystem, what are healthy crop plants and how microorganisms contribute to that health.

We have 6 billion people in the world today, he observed, and 4 billion of these are in the developing countries. There is significant malnourishment, undernourishment and hunger in these countries and more than 2 billion of these people live on less than US \$2 a day. In a single human generation the population is expected to rise to 8 or 9 billion. All of that net growth is going to be in today's developing countries. If we're successful in achieving agricultural development on the Western model, where only 2 % of the people farm (and he doesn't think this will be successful), then what would all these people do? And where would they live? He has calculated that it would take hundreds of new cities to accommodate that population if the trends towards evacuation of rural areas and urbanization continue.

He thinks that the central issue is broader than feeding the world's people, or even helping people to feed themselves. Rather it's also about the model that we're working towards. Healthy rural environments and communities, local rural enterprises and strong productive and ecologically sound agriculture, are absolutely essential for the survival, to say nothing of the prosperity, of the human family.

MELISSA JACOBS

Melissa Jacobs, a native organic farmer and traditional seed saver has owned and operated a 60-acre certified organic farm in New York State since 1987. She brought the discussion back down to the field level in the literal sense.

Ms. Jacobs began by recounting that while she is fairly new to the U.N. system, farming has been in her family for several generations. When she first came to the UN in the late 1990s, she was initially confused by the system and wasn't yet aware of the many people at the U.N. who actually really care about these issues. Her first intervention at a U.N. meeting was to the World Health Organization where she asked that a new mental illness that is affecting the world's population be recognized. When the WHO official asked her what that might be, she responded 'disconnection from the earth'. She said the diagnosis was justified because regardless if one chooses to disregard the fact that we all need clean air, water and land to grow our food on and to stay alive, then this lack of acknowledgement by the industrialized world will kill us all. It is at least comforting, she said, to know that there are so many people at the U.N. who share her same concerns for this beautiful world that we all share.

When she first considered the title of the conference 'High tech vs. low tech farming' she thought to herself that a better title might be 'high impact farming vs. low impact farming' since the effect of today's modern agriculture has been the loss of irreplaceable topsoil, pollution of the air, land and water, loss of biodiversity, manipulation of germplasm, and the alteration (and extinction in some cases) of animal life. She suggested that we're really on the wrong track if high tech farming means that we now have such wonderful inventions as chickens without feathers, poultry that grow so fast that often their legs break from the weight of their breasts, mad cow disease and the proliferation of hoof and mouth disease. As an indigenous farmer, Ms. Jacobs said that she, along with her ancestors and all of her indigenous brothers and sisters of the world who are also indigenous farmers really do have some of the solutions for solving the world's food crisis because they were the people who fed the world over all these millennia.

Small farms vs. industrial farms

She cannot afford to buy the food that she grows because it really isn't a high paying occupation unless you are producing tons and tons of food. Yet on just one 2-acre field, she grew enough sweet corn, zucchini, squash,

beans, tomatoes and cucumbers in 1998 to feed 120 families enough fresh produce for 6 months. This is all done without chemicals. The point is, she said, that we know how to farm sustainably already. We have the tools in our hands. We must not hastily eliminate insects we consider pests as these may well be eating another insect and not our plants. A healthy soil without chemicals in it is going to produce a much sturdier plant with much more nutrition and that is naturally resistant to pests.

Her farm in New York State (371 miles north of New York City) has 60 certified organic acres, which is a small piece of land but with an incredible diversity of life. When they first purchased the land in 1987 some areas had been chemically managed and some had lain fallow for about 20 years. Their first goal was to return all of the land to organic management. In the 14 or 15 years that she's been farming there, there has been no chemical used on it and they grow beautiful, healthy crops. They plant about 150 varieties of seeds including fruits, vegetables and medicine plants. She says that she has watched endangered and rare species of animals and plants move into the land with them and she believes they are coming there because they know they will be safe there. This sanctuary is threatened by the chemical farming proliferating around the farm.

Preserving natural variation

I believe in a Hippocratic Oath, she said, to first do no harm and to observe. She teaches children on the farm not to ever pick a plant or break a branch without realizing that that action has a direct impact on all the life around them. One must think first before taking any action towards the plants one is dealing with as all our actions have unalterable consequences. Native people have a long history of selecting varieties of seeds based on observation of climate change and the ability of certain plants to grow fast in a short season or to withstand the pressures of drought or flooding. This is a common tradition of indigenous farmers.

She has collected varieties of seeds from across North and South America and has been very surprised to see that despite the extreme changes of climate that occur around the Great Lakes area, many of these varieties of seeds from the land of the Hopi and Navaho people and from South America have done very well. Despite the incredible drought that has been happening in the Northeast, some of these varieties of Hopi corn have done remarkably well here. Thus she believes that some of these ancient crops that native people continue to grow could help to sustain the rest of the world, not just here in North America.

She's very concerned about the loss of biodiversity and the privatization of life, especially the privatization of water and seeds. Major chemical companies have bought up one seed company after another to the point where there are very few varieties left for growers to purchase and re-grow. The varieties that are being selected are not chosen because they are more nutritious, they are chosen because they are easier to ship; most of our food is shipped about 2,000 miles and this food may last longer on the shelf but this doesn't mean that they are more nutritious. We will not be able to sustain life if we continue to lose these natural varieties. Even while North Americans are overfed, they lack nutrition. If we as consumers don't make a change in the way we purchase our foods and pay attention to the foods we're eating, we're going to suffer the same type of loss of nutrition that we see in the developing countries.

Fewer and fewer farmers

Ms. Jacobs agreed with Dr. Goodman that in order to be able to work together to save and feed the people of this planet we have to recognize that we are losing farmers at an alarming rate. In New York State alone we are losing 3,000 farms per year, she said. Less than 2% of the population in North America is growing the food that we all eat. This cannot work. We have to have government funded education programs so that children are encouraged to become farmers. Even in her community, a small farming community, many people are unaware of what happens on a farm and where their food comes from. Her farm hosts field trips of students coming from schools in the area. Amazingly, a surprising number of the students' parents have commented to her that they didn't know that pork came from pigs or eggs from chickens. If this kind of disconnectedness is happening in rural communities, it's safe to say that it must be even worse in the cities. She has approached teachers and

principals in her area and asked them what, if anything, they are doing in the schools to support children who want to be farmers, as it is a farming community after all. The answer has generally been a condescending “well that’s for kids at the technical school” as if farming were a lower prestige occupation that we’re not going to talk about because we’re all engaging in high-tech training for children to become engineers and such. She commented that this attitude is really sad and yet it’s common across the country. Someone needs to teach children about where our food is coming from, how precious our farmers are, and how we really need to encourage and maintain those farmers.

She said that scientists must come together to figure out how to undo some of the nightmares that have already been created in this industry. We have so much pollution and degradation of farmland we cannot continue to sustain food production when we lose 8 tons of topsoil to produce one ton of corn. This is very disturbing. We have to reclaim marginal lands that have been decimated by chemical pollution and erosion. We must look to our indigenous farmers for the answers to feeding future generations. Indigenous farmers must be supported and encouraged to share our ways before this valuable knowledge is lost forever. Together we can make the difference.

Before concluding the formal presentations the Chair recognized Xenia von Lilien-Waldau, who is Liaison and Public Information Officer for the International Fund for Agricultural Development (IFAD), a cosponsor of the meeting. She described her organization’s work and it’s relevance to the discussion at hand. Ms. Lilien-Waldau explained that IFAD is mandated to combat hunger and poverty in rural areas in developing countries. The organization focuses its interventions, she said, mainly on small holder farmers, indigenous people and women; groups of people who are often the poorest of the poor in rural areas of developing countries. She said that IFAD supports many of the points that were raised by the panelists and added that IFAD’s study and experience in the field show that agricultural technology is central to rural poverty reduction. However, these technologies and the agricultural research that supports them need to be pro-poor in order to be effective. Often in the past agricultural research focused on high-yielding crops such as rice or wheat, yet these are often not the crops that poor people are growing. They are growing casava or yams, for instance, for which very little research has been done to enhance crop yield. Furthermore, Ms. Lilien-Waldau said that IFAD strongly supports poor peoples’ participation in the decisions that determine the use of these technologies. She concluded by stating that technological development should take into account local knowledge and the local technologies that already exist in a given region.

QUESTIONS AND ANSWERS

- The Ambassador of Tanzania to the United Nations (Daudi Makoago) asked how the FAO is matching its words with actions given the goal of halving hunger by the year 2020, in light of the consensus of the panel that high technology is not the answer. He added that the words of the scientist intrigued him but the farmer’s words excited him.

Dr. Chenoweth answered by looking at Liberia, her home country. She expressed dismay at the categorization of countries at the U.N. as either developed or not developed, and how the delegates stay within the groups they’ve been pigeon-holed into. This is despite the fact that developing countries like Liberia and Tanzania have abundant natural resources. So the problem is not lack of resources, the problem lies elsewhere. For instance, Africa needs to buy fewer guns. Africa does not produce any arms, yet it is the largest importer of them. Also corruption is a problem. Africa has lots of resources; what it lacks is political will. The people are too busy fighting or running from conflict areas to feed themselves properly. But as we arrive in Rome for the World Food Summit we must maintain our optimism because so many people are depending on us. We can’t be discouraged by the staggering figures of hunger and poverty.

- A member of the audience asked if FAO had engaged in grassroots training, and if there were plans to increase

this kind of dialogue.

Dr. Chenoweth said that indeed FAO is very committed at the grassroots level. Dr. Goodman added that in fact there is a very encouraging trend towards grassroots participation internationally. He gave the example of the McKnight Foundation, which has an increasing emphasis on including farmers in the research process that results in crop improvement and in integrating the genetic side of crop improvement with sustainable agricultural practices. He also mentioned that the World Bank funded Consultative Group for International Agricultural Research (a consortium of 24 research and development institutes located around the world dedicated to increasing the yield and production of crops), which was originally criticized for favoring large industrial farmers, has also become more sensitive to local voices.

- Another audience member questioned Dr. Chenoweth's emphasis on regional culture (specifically the culture of violence in Africa to which she alluded) and lack of political will and asked if international economics (specifically multinational corporations' control of markets and influence on governments) didn't have at least as much to do with the problems of poverty and hunger in the developing world.

Dr. Goodman responded to this by quoting a study associated with the Rockefeller Foundation that found that in 1960, 90% of the food that was produced in the world was consumed locally and only 10% was internationally traded. The study found the same percentages apply in the year 2000. These percentages remain the same, Dr. Goodman said, despite the vast changes, the globalization of the world's economies that has occurred since 1960. His conclusion, therefore, is that international economic relations are not as important as local or regional factors.

Ms. Jacobs, on the other hand, stated that the impact of multinational corporations has been felt very strongly at the local level and in devastating ways.

An audience member from India said that multinational corporations have propagated the myth of food scarcity in order to sell chemical fertilizers and pesticides to farmers and developing country governments. In actuality, she said, there is plenty of food, even in the least developed countries. Hunger results from ill-informed and ill-conceived political decisions, not from food scarcity.

- An audience member from Togo said that IFAD has had good intentions in his country in its efforts to integrate indigenous farming methods with modern methods. However, he said that IFAD's programs have been detrimental to the soil on farms in Togo because of the chemicals they have employed. He asked why IFAD could not abandon the use of chemicals and simply work to support indigenous farming methods.

Dr. Goodman responded by saying that he admits that there has been a major disconnect between the way Western agricultural scientists have been trained and what actually happens on farms. He accepted the criticism that policy advice coming from the West has been too market oriented and dictatorial and has not done enough to meet real needs originating from the local and regional levels. On the upside, he says this is slowly changing. He says he is pro-technology in the sense that he thinks that understanding systems and learning how nature works can help us do a better job of producing the food we need and even in doing so in an environmentally and socially responsible way. But he said this is not enough. One must go beyond the science of it and ask what are the goals? Who sets those goals? And who benefits from the outcome?

Pat Scharlin closed the meeting after thanking the participants, the cosponsors and the members of the Sustainable Development Committee who helped in organized the meeting.

The Sustainable Development Committee

Membership is open to Non-Governmental Organizations having a formal relationship with the United Nations. For more information write to the committee c/o CONGO, 777 United Nations Plaza, 8th Floor, New York, NY 10017, USA.