

EDITORIAL STAFF**Editor-in-Chief**

Laurence Hecht

Managing Editor

Marjorie Mazel Hecht

Associate Editors

Elijah C. Boyd

David Cherry

Christine Craig

Marsha Freeman

Colin M. Lowry

Gregory B. Murphy

Richard Sanders

Charles B. Stevens

Books

David Cherry

Art Director

Alan Yue

Advertising Manager

Marsha Freeman

SCIENTIFIC ADVISORY BOARD

Francesco Celani, Ph.D.

Hugh W. Ellsaesser, Ph.D.

Lyndon H. LaRouche, Jr.

Wolfgang Lillge, M.D.

Ramtanu Maitra

Thomas E. Phipps, Jr., Ph.D.

B.A. Soldano, Ph.D.

Jonathan Tennenbaum, Ph.D.

21st Century Science & Technology

(ISSN 0895-6820) is published 4 times a year by 21st Century Science Associates, 60 Sycolin Road, Suite 203, Leesburg, Va. 20175. Tel. (703) 777-6943.

Address all correspondence to **21st Century**, P.O. Box 16285, Washington, D.C. 20041.

21st Century is dedicated to the promotion of unending scientific progress, all directed to serve the proper common aims of mankind.

Opinions expressed in articles are not necessarily those of 21st Century Science Associates or the scientific advisory board.

We are not responsible for unsolicited manuscripts.

Electronic subscriptions are \$25 for 6 issues or \$48 for 12 issues. Back issues (1988-2005) are \$5 each (\$8 foreign). Electronic issues from 2006 on are \$5 each. Payments must be in U.S. currency.

Copyright © 2008

21st Century Science Associates**ISSN 0895-682****www.21stcenturysciencetech.com**

Yes, We Can Feed the World!

To ensure that we can feed all the world's population, we must double world food production, starting right now. We already have the science and technology available to do it. We focus here on some of these exciting technologies, but note also that to accomplish the task, there must be an immediate scuttling of the "free trade" insanity that dominates the world organizations, especially the World Trade Organization. Abolish the WTO and end the stranglehold by Monsanto, and a few other cartels, on genetically modified seed stocks—that mankind may eat.

Reviewed here are some of the technologies available now—first the agricultural methods, and second the broader problems of power, water and transportation infrastructure. Biotechnology and Genetic Engineering.

As Norman Borlaug, the man responsible for the first "Green Revolution," has emphasized, the second Green Revolution will be a "Gene Revolution." We are just at the beginning of technologies for breeding new and better plants and animals. Advances in creating nutrient-dense, pest- and disease-resistant plants, plants that will grow in saline soil, or dry soil, or wet soil, all have the capability to increase crop yields.

Future issues of *21st Century* will cover some of these developments.

Here are some highlights:

Quality Protein Maize. This maize has significantly improved amounts of the amino acids lysine and tryptophan, making it a more complete and digestible protein. Right now, protein malnutrition is rampant in African and other Third World children, leading to stunting and intellectual deficiencies. In many of these areas, maize makes up most of the calories of the population,

so a more nutritious maize is vital.

The photos from the International Maize and Wheat Improvement Center demonstrate the difference in the growth of pigs fed with quality protein maize (QPM) vs ordinary maize (p. 3).

New Rice for Africa. NERICA, as this rice is known, is a hybrid between Asian and native African rice varieties, which brings higher-yielding rice to areas in which Asian rice could not thrive. NERICA is higher in protein than both its parents, is weed resistant, can thrive on poor and dry soil, and has the ability to resist weeds, survive droughts, and thrive on poor soil. It also has both a higher yield and a shorter growing season (three months to harvest).

Dr. Monty Jones of Sierra Leone, the executive secretary of the Forum for Agricul-



© Sadio Barry/UNDP

A Nerica farmer in Guinea: Nerica yields are two to three times higher than those of standard rice varieties.

tural Research in Africa, shared the FAO World Food Prize in 2004 for his work on NERICA.

Already, NERICA has shown its worth in feeding people. In Guinea, for example, NERICA allowed the country to reduce its imports of rice by 50 percent in three years, and by 2005, Guinea became a net rice exporter.

Chinese Super Green Rice. The co-winner of the 2004 World Food Prize was Prof. Yuan Longping, whose pioneering techniques have produced a hybrid rice that achieves a 20 percent higher yield than older varieties. Almost half of China's rice production land is now planted with the new hybrid, thus providing rice for 60 million more people than if that land were planted with former rice varieties. The new hybrid rice is also grown in more than 20 other countries, and Prof. Yuan's method is being used to create hybrid sorghum and rapeseed with increased yields.

To develop this super green rice, the Chinese used the International Rice Research Institute paradigm for creating a better rice plant by design at the drawing board, followed by finding plants that meet those criteria, and testing them. The Chinese added to this their own long-term push for better rice through hybridization, but not between such distant relatives as in the African new rice hybrids.

New Wheat Seed for Africa. The Kenya Agricultural Research Institute (KARI), in collaboration with the International Atomic Energy Agency, the U.N. Food and Agriculture Organization, and the regional AFRA program, has developed a high-yield drought-resistant wheat seed, using radiation-breeding techniques. (AFRA is the African Co-operative Agreement for Research, Development, and Training Related to Nuclear Science and Technology.)

The new wheat seed, Njoro-BW1, was developed over the past decade with mutation plant breeding, which uses radiation techniques to modify crop characteristics. It was bred to use limited rainfall efficiently, and it also has a "moderate

susceptibility to wheat rust," high yields, and good quality grains for bread baking. With this new seed, farmers have greened the hot and barren dry lands of Kenya, making use of land that was formerly considered unfit for crops.

Wheat is the second most important cereal crop in Kenya, after maize, but the country currently imports two-thirds of its wheat, at skyrocketing prices. Thus the new wheat is vital for Kenya's food security.

A second wheat variety, DH4, is expected to be released soon. This shares the qualities of Njoro-BW1, and is also hard and red, with high protein and good bread-baking qualities.

In the past five years, in Africa alone, six new varieties of crops using radiation breeding have been officially released, including new varieties of sesame in Egypt, cassava in Ghana, wheat in Kenya, banana in Sudan, and finger millet and cotton in Zambia. The same type of techniques have been also used to develop crops that can tolerate saline soil.

Best Practices Agriculture. This simple concept is based on developing new methods for producing higher yields. For rice, this is the system of rice intensifica-

tion (SRI) put forward by Cornell scientist Norman Uphoff. SRI turns entrenched practices of rice cultivation upside down, and manages to obtain significant productivity increases from existing seed types and soils, without genetic manipulations.

Traditional rice growing (even by scientists) uses older seedlings planted in clumps after transplantation, and flooded in rice paddies. In contrast, SRI uses younger seedlings planted singly, with wide spacing after transplantation, and the seedlings are allowed to dry out between waterings. The result, according to many studies, is more secondary shoots, bearing more and better panicles (the seed-bearing structure), larger plants, and hardier plants. There is much less seed usage per area, and the plants produce better yield with less water. The yield increases occur with both old types of seed and the new hybrids.

For more information, see <http://ciifad.cornell.edu/sri/>.

What Has to Be Done

This very brief list of agricultural technologies represents a fraction of the known, workable methods for increasing food production. To put them into practice



CIMMYT

Pigs raised solely on quality protein maize (larger animals) have a visible advantage over their sibling pigs raised solely on conventional maize (smaller animals). The photos are from separate feeding studies conducted in Guatemala, El Salvador, Colombia, and Ghana in the years indicated.

requires funding for research organizations to continue development of improved plants; government commitments to provide the means for farmers to procure seeds, fertilizer, pesticides, and necessary equipment; and international commitments to provide agricultural specialists to work with farmers, training them in new agricultural methods. All of this could start immediately.

Where these measures have been used (as in Malawi), against the diktats of the “free market” World Trade Organization, food production has more than doubled, and food self-sufficiency is within reach.

Also required is the building of roads and rail lines to provide for transportation of crops to market, and proper storage materials and facilities to make sure that harvested crops safely reach their intended consumers, human and animal. Part of this infrastructure has to be a network of food irradiation centers, of the sort China has developed, to disinfect and preserve foodstuffs, to delay ripening of fruits and vegetables, to inhibit sprouting in potatoes and onions, and to keep bugs and rodents out of grains.

Currently 25 percent and more of harvested crops in the developing sector are destroyed by insects, rodents, and disease before they reach a human consumer.

The Other Infrastructure

We cannot feed the world using greenie-cherished forms of energy. Treadle pumps for irrigation, the Al Gore carbon-offset solution for the Third World,¹ won't provide the required irrigation. Yet we have at hand the technologies needed to lift all of mankind out of disease, poverty, and backwardness. A brief review:

Fission and Fusion. The 21st Century requires fully human methods, meaning those that involve the human brain, not



H. Agbogbe/IAEA

Prof. Miriam Kinyua (left), former chief plant breeder and director of KARI, led the drive to produce new varieties of crops in Kenya, including Njoro-BW1 wheat. Here she is walking with farmers and KARI staff in fields seeded with the new drought-resistant wheat.

muscle power. This means the full development of advanced fission and fusion. Looking 50 years ahead, we need 6,000 new nuclear plants by the year 2050, in order to supply electricity and process heat for industry, water for agriculture and human consumption, and hydrogen-based fuels to replace petroleum in transportation.²

This includes large plants for metropolitan and industrial centers, smaller modular plants for nations that now have smaller power grids and will be able to add more units as they develop. It includes high-temperature reactors, fast breeder reactors, new experimental reactors, reprocessing plants, enrichment plants, fuel fabrication plants, and infrastructure for all of the industrial processes that nuclear can power: desalination, hydrogen production, steel-making, and so on.

We also must look beyond fission, and fund the development of nuclear fusion now at levels that will allow the science and technology to develop. In 1980, the Congress passed, nearly unanimously, the 1980 Magnetic Fusion Energy Engineering Act, which would have built an engineering model reactor by 1990 and a demonstration tokamak reactor by the year 2000. This law was passed because

at the time, Congress and scientists had the foresight and confidence that the goals of the Act were achievable in that given time-frame.

President Carter signed the Fusion Act into law, *but the money was never allocated to fund what the law specified.* Instead, the U.S. fusion research program continued to be chopped down, accompanied by complaints that the nation couldn't afford to keep putting money into a program that could not produce instant results.

While South Korea and China, to take two exam-

ples, have the foresight to fund fusion research and build experimental reactors, the United States has not even come up with the budget contribution it pledged to the international collaborative fusion effort, ITER, the tokamak now being built in Cadarache, France.

We need to fully fund ITER, as well as a variety of alternative concepts for achieving fusion (including the stellarator program that was just killed in midstream by the Department of Energy, because it cost too much). We must also support vastly expanded research into the basic science of Low Energy Nuclear Reactions (“cold fusion”), and stop the witchhunt against this important field of research. Only a broad program, combining fundamental research and technological development, will enable the nation to advance, and in the process spark the optimism and enthusiasm that will create a new generation of scientists and engineers.

Space Development. You can't get to the Moon or Mars on windmill or wave power. It can be done using chemical energy, as we have been doing, but fission- and fusion-powered rockets will get us there faster (and therefore more safely), and permit space vehicles to carry more cargo, because they won't be burdened with large amounts of liquid fuel.

What does a robust space program

Continued on page 60

1. For a graphic view of why carbon offsets are genocide, see www.21stcenturysciencetech.com/Articles%202007/GW_genocide.pdf.

2. See James Muckerheide, “How to Build 6,000 Nuclear Plants by 2050.” www.21stcenturysciencetech.com/Articles%202005/Nuclear2050.pdf.

from that fictional global warming movie. The scene was created on a sound stage using styrofoam ice, and then scanned into a computer.

"Yeah, that's our shot and that's a fully computer-generated shot. There is nothing real in there," Goulekas said.

31,072 Scientists Oppose Al Gore's Global Warming Hoax

Dr. Arthur Robinson, director of the Oregon Institute of Science and Medicine,

held a press conference at the National Press Club May 19, to release the names of the 31,072 scientists who have signed his online petition attacking Gore's global warming swindle.

Robinson told the press, that he and former president of the National Academy of Sciences Frederick Seitz (recently deceased), had started the petition in 1997 as a way to speak out against the political movement that was trying to shut off the use of fossil fuels which provides 85 percent of the world's energy.

Robinson further stated, "... [I]f fossil fuel

energy is restricted or shut off by taxation or by rationing and the developing nations are deprived of advanced technology, hundreds of millions of people in the developing world will die," Robinson said. "It is a human right to have access to advanced forms of energy and advanced technology."

Robinson urged, "I hope the general public will become aware that there is no consensus on global warming, and I hope that scientists who have been reluctant to speak up will now do so, knowing that they aren't alone."

Editorial

Continued from page 5

have to do with feeding people? Everything! It has always been man's pushing forward on the frontiers of knowledge as well as those of geography that has permitted the progress of the entire society. Breaking the knowledge barriers of the present will lead to new solutions for old problems, new technologies to increase food production included.

As a first step, to industrialize the Moon, as spelled out by space visionary Krafft Ehrlicke in the 20th Century,³ will give us plentiful helium-3 as fusion fuel. Farming in space, in controlled environments, will also give us new ways of efficiently grow-

3. Several articles by or about Krafft Ehrlicke are available in *21st Century*. For example, "Krafft Ehrlicke's Extraterrestrial Imperative," by Marsha Freeman, Winter 1994. A special collection of six articles can be purchased at the *21st Century* website store.

ing food on Earth.

Perhaps most important, a society that is focussed on preparing its younger generations to use their brainpower to explore and colonize space, and that captures the imagination of the general population with the idea of moving mankind into space, will have the requisite culture for succeeding not only in feeding the world but also in mobilizing the creativity of every individual to join the process of making progress.

The Urgent Tasks

The urgency of this task was put forward by Schiller Institute founder Helga Zepp-LaRouche in early May, in a call that is posted on the *21st Century* website: "Instead of Wars of Starvation, Let Us Double Food Production," where you are encouraged to read and endorse it (www.21stcenturysciencetech.com/Articles%202007/Double_Food_Production.pdf).

The political measures to get the job done are straightforward: (1) eliminate the use of food crops for biofuels; (2) kill the World Trade Organization and the lethal "free market" methods it is foisting on nations throughout the world; (3) return to the parity system, where farmers are assured of a fair market price at enough profit to encourage them to keep farming; and (4), most important, bury the dying monetary system and institute a New Bretton Woods policy of the sort Lyndon LaRouche is proposing.

Changing current policies so that we can feed the world is a political question. The alternative? Food riots, chaos, more wars, starvation, and depopulation—a new Dark Age.

—Marjorie Mazel Hecht
and Christine Craig

The Great Global Warming Swindle

Everything you've ever been told about Global Warming is probably untrue. This film blows the whistle on the biggest swindle in modern history. We are told that 'Man Made Global Warming' is the biggest ever threat to mankind. There is no room for scientific doubt. Well, watch this film and make up your own mind.

DVD is Now Available

Feature-length documentary plus additional interview material with some of the world's leading climate scientists.

Price: **\$19.99**

TO ORDER: www.wagtv.com

