



## NEW RESEARCH DIVISION INTEGRATES CROPS, ENVIRONMENT, AND HUMAN HEALTH


CIP'S NEW AGRICULTURE AND HUMAN HEALTH DIVISION, WHICH WILL BE FULLY OPERATIONAL BY THE END OF 2004, IS EXPECTED TO PLAY AN ESPECIALLY IMPORTANT ROLE IN THE CENTER'S EFFORTS TO HELP REDUCE INFANT AND MATERNAL MORTALITY AND IMPROVE THE LIVES OF THE URBAN POOR

In 2003 CIP became the first CGIAR center to create a research division that fully integrates crop and natural resource management research with human health. By merging a variety of on-going research projects, and by complementing the Center's traditional strengths in agriculture and natural resources, the division is expected to make important contributions to the health and well-being of millions of people who depend upon root and tuber crops for food and income.

"CIP is consolidating a research agenda that merges health, environment, and productivity research into a unified package," says Pamela Anderson, CIP's Deputy Director General for Research. "The Center has done important work to improve human health, but, as in many other CGIAR centers, our projects have been somewhat scattered." Establishment of the new Division, Anderson notes, is driven by CIP's alignment with the UN Millennium Development Goals and takes its impetus from recent resolve on the part of various CIP partners to target child and maternal mortality in their national development plans. Tanzania and Kenya, for example, have announced plans to reduce child mortality by two-thirds before 2015.

### **NEXT STEP: IMPLEMENTATION**

The decision to create the new division was made following CIP's 2003 visioning exercise and consultations with international experts in the fields of public health,



FLUORESCENT TRACERS HELP RESEARCHERS TO EVIDENCE PESTICIDE RESIDUES ON THE BODIES OF APPLICATORS, AS WELL AS NON-WORKERS—INCLUDING CHILDREN.

## ECOSALUD: ENVIRONMENT AND HEALTH

As CIP scientists sharpen their focus on child and maternal health, they will be guided by the experience gathered in a pilot program conducted in Ecuador in the 1990s. The ECOSALUD project, whose name was derived from the Spanish words for environment and health, provided documentary evidence of the negative human health impacts of pesticides used on potatoes.

CIP researchers and their national and international partners working in the El Carchi area of Ecuador—the country’s northernmost province—found that two-thirds of all potato farmers in the province suffered serious, long-term neurological damage from their exposure to pesticides.

“Through ECOSALUD we discovered that the number of pesticide poisonings was ten times higher than first believed,” says economist David Yanggen. “We also learned that pesticide-related illnesses were the Province’s second leading cause of death, just after traffic accidents.” El Carchi, Yanggen notes, has one of the highest recorded incidences of pesticide fatalities in the world.

ECOSALUD was an early proponent of combining environmental research with studies of human health, and one of the first to link these concerns to practical solutions that benefit farmers and their families. Through ECOSALUD’s farmer field schools, potato producers have learned how to control pests using resistant varieties, insect traps, and other management practices while protecting—and improving—their profits.

The project is now in its second phase thanks to continued funding from Canada’s International Development Research Centre (IDRC).

toxicology, and nutrition. Next steps will include the creation of a task force, made up of Center scientists and external experts, to develop an implementation plan. The plan, slated for completion in 2004, is expected to have pesticide reduction in potato and sweetpotato cropping systems as one of its principal targets. This will build on CIP's strong track record in integrated disease and pest management, which has already led to significant reductions in the use of agro-chemicals.

Anderson, who holds degrees in both entomology and public health, believes, nonetheless, that past efforts to cut pesticide abuse—by CIP and others—have rested largely on economic and environmental arguments. CIP plans to incorporate human health and safety criteria, and expects that these may have a major effect on research formulation, targeting, and effectiveness. "By incorporating the health perspective," she says, "we not only bring into play more powerful arguments for using integrated pest management. We also increase the likelihood of technology adoption by demonstrating opportunities for reducing risks to farm workers and increasing the safety of our food supplies."

Expensive plant breeding programs, Anderson notes, are easily overturned by lack of consumer

confidence in new technology or by government concerns about safeguarding their countries' export markets. The new division will address these roadblocks through a variety of food safety and biotechnology initiatives, including a new Rockefeller Foundation-funded project to remove antibiotic markers from transgenic crops (see *Advanced Technologies Readied for Potato and Sweetpotato Producers*, page 21).

CIP's work in food-based solutions to nutrient deficiency—already well advanced through research with high beta-carotene, orange-fleshed sweetpotatoes to combat vitamin A deficiency in Africa—will form another central component of the Division's work plan (see *Study Shows Effectiveness of Orange-fleshed Sweetpotatoes*, page 36). "One of the lessons that we've learned from the Vitamin A for Africa program is that there are major benefits to be had from partnerships with colleagues working in the food and health arenas. To realize those benefits in time to meet the UN Millennium Goals, however, we need to have staff on board who can complement the Center's traditional strengths in agriculture and natural resources," Anderson says. For this reason, CIP will post a division coordinator with expertise in tropical public health and experience in nutrition and toxicology at Center headquarters.

## **STUDY SHOWS EFFECTIVENESS OF ORANGE-FLESHED SWEETPOTATOES**

South African scientists working under the umbrella of the Vitamin A for Africa partnership (VITAA) have completed what is believed to be the first controlled study to establish the value of orange-fleshed sweetpotatoes in combating one of Africa's most important public health problems: vitamin A deficiency in young children.

The study, which involved primary school students between five and ten years of age, showed that over a period of just eleven weeks, the proportion of children with adequate vitamin A liver stores increased 10 percent among those who ate high beta-carotene orange-fleshed sweetpotatoes. A comparable group that ate only white-fleshed sweetpotato experienced a 5 percent decline.

"This first-of-its-kind study was approved by the Ethics Committee of the South African Medical Research Council and was conducted with the agreement of local authorities and parents," says nutritionist Penny Nestel. Dr. Nestel, who currently acts as Nutrition Coordinator to the CGIAR HarvestPlus program, previously served as a senior advisor to the VITAA initiative. VITAA contributes important experience to HarvestPlus with its success in using food-based solutions to combat micronutrient deficiency.

According to Nestel, the bio-efficacy study was made possible through the cooperation of partners from many different sectors. "One of the unique things about VITAA is that it brings together professionals from the health, nutrition, and agriculture sectors. The partners include seven African countries, among them South Africa's Agricultural Research Council, which supplied the sweetpotatoes used to complete the study."

Major financing for the study was provided by the Micronutrient Initiative, which supports and promotes food fortification and supplementation programs throughout the developing world. Complementary funding was made available by the Health Office of the United States Agency for International Development (USAID), which provided resources for measuring the vitamin A status of the children and the retention of  $\beta$ -carotene in cooked sweetpotatoes.